ORing

Product Catalog

Industrial Networking Solutions

EN 50155
EN 50121

IEC 60945
EN 60945

IEC61850

Class I Division II
Hazardous

IRIS
Certification

www.ORingnet.com

About ORing

Value Proposition

- Professional and excellent expertise in Industrial Ethernet network
- Wide selection of high quality and cost-effective products
- Customized solutions to meet customer's needs
- Superior technical support and service
- Trusted Long-term partnership
- Low TCO and high ROI

Core Value

- Customer-Oriented R&D
- Technology Innovation
- Premium Quality
- Proficiency, Reliability and Efficiency
- Swift Time-to-Market product development

Mission

- Satisfy specific needs of industrial networking customers
- Build up a trusted partnership and maximize customer value
- Become the best solution provider for new generation industrial networking
- Provide superior quality products and extraordinary services with reasonable price

Leading the Way for Industrial Networking

As an IRIS certificated company, ORing has played a leading role in the network industry, and has been devoted to the development of next-generation network communications products and innovative industrial solutions. ORing has developed a comprehensive product portfolio designed to meet customers' various needs.

ORing's products and solutions are characterized by 10 Gigabit-level bandwidth, industrial-grade ruggedness, high-power PoE+, POE++ up to 30W/90W support, advanced network redundancy abilities, multi-vendor compatibility, and visualized network management for ease of operation.

ORing has launched redundancy technologies and products to ensure fast recovery in the event of network failure such as the self-healing O-Ring and O-Chain (recovery time < 10 ms with up to 250 switches) technologies, active hardware-based hacker prevention (Device Binding), high compatibility with other vendors' products (Open-Ring), powerful network management software (Open-Vision, with Google map features) and centralized management controller (OCS-815).

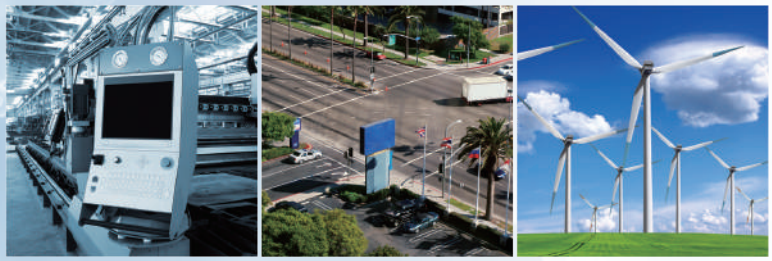
For wireless communications, ORing has developed industrial-grade products conforming to IEEE 802.11n and IEEE 802.11ac standards, X-Roaming technology (cross-AP wireless roaming handoff time < 60 ms), X-Mesh technology for large-scale redundant wireless networks and many more. Other products include industrial M2M gateways and 4G LTE cellular routers featuring link aggregation (load balancing) and redundancy technologies.

In addition to serial signals, DIDO, Ethernet interfaces and powerful VPN in the M2M gateway to collect data from the SCADA system, ORing has released new-generation 1/ 2/ 4/ 8/ 16-port serial device servers and Modbus gateways with innovative product function.

ORing's products have obtained various certifications, including CE/FCC, UL 60950-1/UL508/C1D2/ ATEX/IECEx, IEC-61850-3 for power utilities, EN50155/50121-4 for railway applications, and IEC-60945 for marine environments. All of ORing's products are covered by a warranty for up to 5 years.

Company Overview

- Founded in 2005 as a system design house known as Supercom
- Provides a wide selection of industrial Ethernet products
- Headquartered in Taiwan
- Products with ease of use, high quality, reliability, open architecture, and advanced network technology
- Rugged industrial-grade products designed for harsh environments
- Technical expertise in:
  - Ethernet, Protocols, and Internet
  - PoE Solutions
  - Wireless communications
  - Optical Fiber networks
  - Serial Communications
  - Network Management Software



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Company Information

Company Profile

As a global leading brand, ORing Industrial Networking Corp. was established by a group of experienced industrial software and hardware engineers in 2005. Since its establishment, ORing has focused on the innovation of Industrial networking products and has developed a complete product portfolio, such as industrial-grade media converters, Ethernet switches, wireless routers and device servers. ORing has passed the ISO9001:2008 Quality and Management System certification and been accredited with numerous international certifications, providing evidence of product quality and regulatory compliance. Our numerous products have been successfully deployed in various applications throughout the world, such as railway/ highway monitoring, intelligent transportation systems, building automation, etc. ORing is committed to providing world-class products, strong technical support, and the best after-sale service.

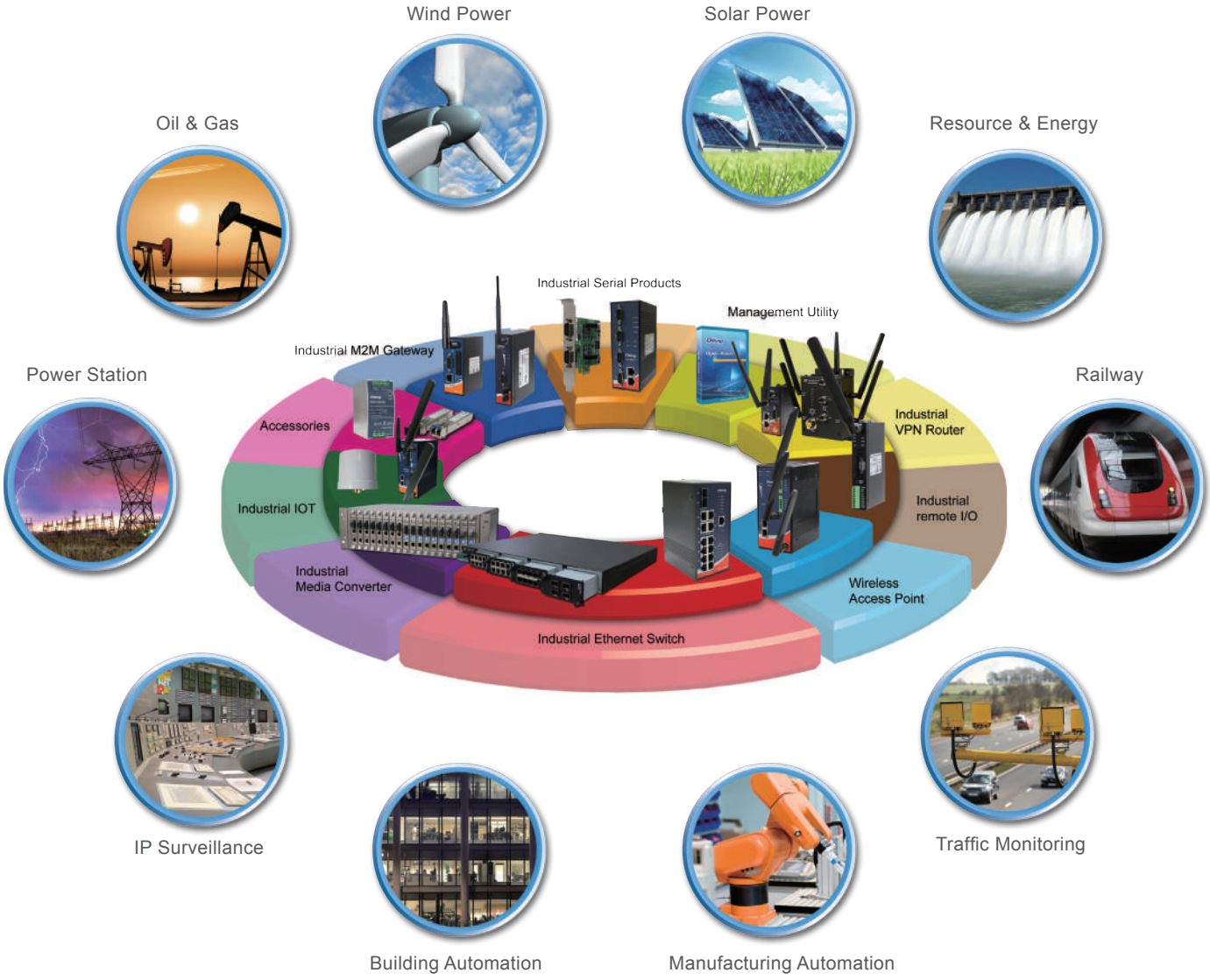
Milestone

2017	ORIO + sensor passed NB-IoT testing conducted by Nokia/ Ericsson's lab Launched ORing's first cloud platform
2016	ORing Launched the First Onboard 2.5G/10G Ethernet Switch with Copper Interface and PoE Functions
2015	ORing passes IRIS Certification Launched Layer3 10G modular switches & din-rail switch with IEC-61850-3 compliance
2014	Reduced X-Roaming time to less than 60ms and launched IEC 60945 certified products for marine applications
2013	Passed C1D2 Certification in Q3 and integrated MRP and Modbus supporting into ORing switches.
2012	Launched IEC 61850-3 certified products for substations and introduced device servers supporting Windows 7 and 8.
2011	Launched EN50155 Transporter Series products and teamed up with AXIS Communication to develop the IP surveillance market.
2010	Launched industrial Gigabit Ethernet switches and high-power IEEE 802.3at PoE Gigabit switches.
2009	Introduced X-roaming technology and IPv6 products to the market.
2008	Established and developing ORing brand.
2007	Launched NMS(Open-Vision) technology.

Product Coverage

ORing Industrial Networking Corp. offers a wide variety of products for all of your industrial networking needs. ORing's complete product portfolio consists of industrial Ethernet switches, industrial media converters, industrial device servers, industrial wireless access points, industrial cellular VPN routers, accessories, and network management software.

You can find the right products for you easily based on network speeds (Gigabit, fast, etc.), mounting options (rack-mount, DIN-rail, wall-mount, as well as other special-installation types), data transmission types (regular Ethernet, weatherproof Ethernet, PoE, wireless LAN, etc.), applications (railway, oil & gas, etc.), and many more.



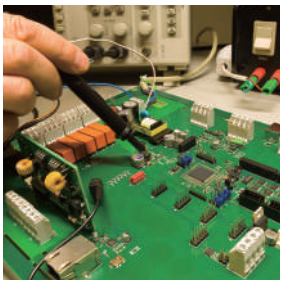
Product Development

ORing places a high value on product quality and reliability during product planning and development processes with an ultimate goal to improve availability, minimize costs, and maximize product life cycle. As a result, ORing has set up a strict and systematic product development procedure from idea generation to planning and analysis, research & design, trial and test, pilot run, and massive production, to ensure the compatibility of different vertical markets. During the initial stages, highly skilled design engineers and experienced project managers from different departments work closely on innovative product design catering to the customer's needs and identify possible problems in order to minimize project risks, reduce product development costs, and guarantees consistent product quality and performance. Once the prototype is developed, serious tests will be conducted. All products will be tested and improved before entering pilot run and massive production. With in-house design engineering and manufacturing, we can ensure quality consistency and minimized risks.

Idea Stage

Plan & Analysis

Research & Design



Trial & Test

Pilot Run

Massive Production

Customer-Oriented R&D Capability

ORing's innovations are geared to meet customers' needs. ORing's R&D team insists on developing stable, reliable, well-tested, and cost-effective industrial networking products. ORing R&D team accounts for one-third of the total workforce and has a vast knowledge and experience in the industry. ORing's R&D team work closely with project managers to develop innovative products based on customers' requirements. Apart from standard products, ORing's R&D team also conduct customized product design and in-house testing to ensure all products meet high quality requirements. Customers' feedback will be forwarded to our R&D team so they can make product improvements or develop new products that fulfill customers' expectations.

Quick Time-to-Market Product Solution

ORing has been known for its ability to provide products with a swift time-to-market as evidenced by the provisioning of the solution for the Beijing-Shanghai High-Speed Rail project, also known as the Jinghu High-Speed Rail, in 2010. The whole process from receiving the customer's requirements to product delivery took only three months. ORing's R&D team also possesses complete OEM/ODM capabilities and expertise in project planning, custom solution development, and technical support.

ODM Service

Besides own-brand products, ORing also offers ODM services to develop fully-customizable solutions for our customers. From design integration through prototyping to mass production, we apply our in-depth expertise on manufacturing, quality control, and new technology to provide the best, most reliable products for our partners.

ORing has provided ODM services for several major projects including the Beijing-Shanghai High-speed Rail project in 2010 and the Beijing Subway Line 8 project, to name a few. These successful projects have demonstrated ORing's ability to lead large-scale ODM projects with high-efficiency and excellence.

Customer Feedback

ORing takes customer feedback very seriously. In fact, customer needs are ORing's first priority. Customer feedback serves as valuable reference for making improvement in existing products as well as inspiration for future product innovation. Therefore, we have built a continuous customer feedback loop throughout the product development cycle in which customer feedback is collected before, during, and after product development. We not only listen for customer feedback but also identify customers' unmet needs proactively by engaging them during new product development to validate their requirements.

Technical Support and Quality Assurance

Comprehensive quality assurance tests are performed on all ORing products throughout the product development cycle to make sure the products achieve high quality standards.We have SMT lines that run with high speed mounting and dedicated staff for different QA procedures such as stencil cleaning, automatic optical inspection, burn-in testing, and RoHS compliance testing.

All ORing products are covered by a warrant for up to five years. To provide real-time services to customers, ORing has sales offices and distributors around the globe. The OCE (ORing Certification Engineer) training program enables ORing and its distributors to provide professional services and support for ORing customers.

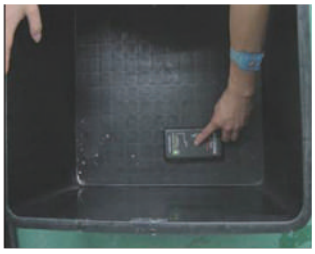
N2 Generator

SMT Line

Stencil Cleaner

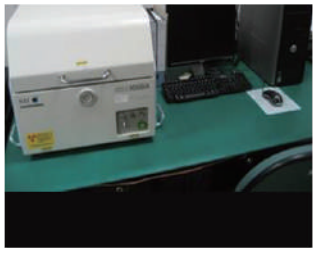
AOI Machine

Burning Room with temperature testing at 50 degrees Celsius



60 degrees Celsius Chamber

Micro Scope



RoHS X-ray Machine

Focused Vertical Markets with Industrial Grade Certifications

Over 100 models of ORing products have been deployed in a wide variety of applications and environments worldwide. Vertical markets have played a key role in ORing's business. As vertical markets adhere to standards and certification which can be complex, costly, and time-consuming, ORing has made sure all products are produced and tested in certificated labs and manufacturing stages. Also, ORing products are fully compliant with a variety of safety standards including EMC, IPv6, UL508, EN50155, and C1D2, indicating the ruggedness and durability of ORing products in harsh environments. To show our care for the environment, all of ORing's products are qualified with EU's WEEE and RoHS directives.

IRIS

IRIS (International Railway Industry Standard) is an extension of the internationally recognized ISO 9001 quality standard but is specific to the railway industry. The standard is developed by the UNIFE Group (the Association of the European Rail Industry) to attests to the quality and reliability of networks products and solutions for railway applications. ORing has been IRIS certified since 2015. ORing's partners and customers can rest assured that their ORing solutions meet the extremely rigorous requirements in the railway industry and that ORing will constantly improve its management, research, and development processes. The IRIS certification not only stands for topnotch quality, but also helps ORing partners save time and costs since they can directly use ORing's solutions to achieve higher safety, cost- effectiveness and quality of their railway appliances without undergoing additional qualifications. Optimal operational reliability and system availability can be guaranteed as comprehensive support ranging from development to production, servicing, and management will be provided.

EN50155

EN50155 is an international standard set for railway applications. EN50155 requires compliance with temperature, humidity, and electromagnetic interference. The standard guarantees the reliability of railway services by governing the operation, design, construction, and testing of electronic equipment.

EN50121-4

EN50121-4 is an European standard applies for emission and immunity of the signalling and telecommunications apparatus in railway applications. It specifies the limits of emission as well as immunity, and identifies products that can operate despite the extreme surge and emissions hazards of railway environments.

EN 45545

EN 45545 is a European standard that specifies the fire protection requirements for materials and products used on railway vehicles. EN 45545-1 includes regulations regarding the classification of rail vehicles in operational and design categories, as well as fire safety objectives. EN 45545-2, which will become mandatory in all European countries in 2016, defines the requirements for the fire behavior of materials and components.

EN 60945

EN60945 is a standard that specifies the use of maritime navigation and radio communication equipment on a ship. All such equipment must undergo various tests such as temperature, vibration, humidity, corrosion, water immersion, and electromagnetic emissions to prove their abilities to withstand severe conditions found across the world's oceans.

C1D2/ATEX/IECEx

C1D2, ATEX, and IECEx are three standards for equipment used in hazardous areas such as oil & gas, mining, energy detection systems. C1D2 is a US standard referring to situations in which ignitable concentrations of gases, vapors or liquids are present, but are contained. ATEX is a European standard that consists of two EU directives describing what equipment and working environment is allowed in a space with an explosive atmosphere. IECEx is an international standard regulating the use of electrical equipment and components in potentially explosive areas.

IEC/UL/EN 60950-1/UL 508

IEC/UL/EN 60950-1 are standards for the safety of mains-powered or battery-powered information technology equipment, including electrical business equipment and associated equipment, with a RATED VOLTAGE not exceeding 600 V and designed to be installed in accordance with the National Electrical Code, NFPA 70. UL 508 is the Underwriters laboratories (UL) safety standard for industrial control panels and internal components. Requirements of this standard cover devices rated 1500 volts.

IEEE 1613

IEEE-1613 is the IEEE standard specifying ratings, environmental performance, and testing requirements for communications networking devices installed in electric power substations. Within the standard, two classes (Class 1; Class2) of devices are defined, based on the outcome of a specific set of potentially destructive EMI type tests (EMI stress) designed to stimulate EMI phenomena in the substation.

IEC 61850-3

IEC 61850 is a standard for the design of electrical substation automation while "-3" signifies general requirements. Abstract data models defined in IEC 61850 can be mapped to a number of protocols that run over TCP/IP networks or substation LANs using high speed switched Ethernet to obtain the necessary response times below four milliseconds for protective relaying.

E-mark

E-mark is a European standard specifying the safety requirements of vehicles and their components. To obtain an e-mark, the products must be tested by a Technical Service appointed by the VCA (Vehicle Certification Agency), which will issue the certificate and approval number to be marked on the product. E-mark is a mandatory requirement and all products installed on a vehicle must have an e-mark to be sold legally in Europe.

PTCRB

PTCRB is a US standard that ensures mobile devices are compliant with cellular network standards within the operators' networks so that operators can be sure the mobile devices will not harm their networks. Cellular devices to be sold in North America are required to have a PTCRB certificate because it is a requirement for launching cellular devices on the US operators such as AT&T, Verizon, etc.

RCM

Regulatory Compliance Mark is used to indicate the compliance of radio-communication, electrical and electronic equipment that are subject to the EMC arrangement, and equipment required to meet EME standards. Earlier this year (March 1st, 2013), RCM has been confirmed as the single compliance mark for all arrangements, including previous labels such as A-Tick and C-Tick.

ANATEL

ANATEL, created by the General Telecommunication Law in 1997, is the telecommunications sector regulator in Brazil. Anatel is responsible for implementing the national telecommunication policy; regulating, authorizing and enforcing operators on the provision of telecommunication services; Defining standards to be accomplished by operators on the provision of telecom services.

TELEC

TELEC is a series of technical standards regulated by the Ministry of Internal Affairs and Communications of Japan. TELEC engages in the technical regulations conformity certification service for all kinds of specified radio equipment. It provides polished and professional services in a neutral and fair manner for the customers..

CE

The CE marking is a mandatory European conformity marking for certain products sold within, manufactured in, or targeted at the European Economic Area (EEA) since 1993. It is consists of the CE-Logo and, if applicable, the four digit identification number of the notified body involved in the conformity assessment procedure. The CE marking is the manufacturer's declaration that the product meets the requirements of the applicable EC directives.

RoHS

The RoHS directive aims to restrict certain dangerous substances commonly used in electronic and electronic equipment. Any RoHS compliant component follows EU Directive 2011/65/EC and 2015/863/EU, with respect to the following six substances: Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBB), Polybrominaed Diphenyl Ethers (PBDE).

FCC

The FCC Declaration of Conformity or the FCC label or the FCC mark is a certification mark employed on electronic products manufactured or sold in the United States which certifies that the electromagnetic interference from the device is under limits approved by the Federal Communications Commission

Compliant Standards and Regulations

・IPv6

・IPv6

・ISO 9001:2008

・IRIS

Global Sales Offices and Services

ORing-USA

E-mail:sales_us@oringnet.com
Technical support: support@oringnet.com
Toll Free number: 800-815-4321

Headquartered in Taiwan, ORing currently has two overseas sales offices, one in the US and one in China. ORing has also worked with regional distributors to provide products, customer services, and technical support in real time. Besides a complete understanding of our products and solutions, ORing's well-trained sales representatives and channel partners have solid knowledge of different industries to help our customers choose the right products and solutions based on their needs. Customers can access our sales team for any questions or problems as they are backed by research and marketing experts.

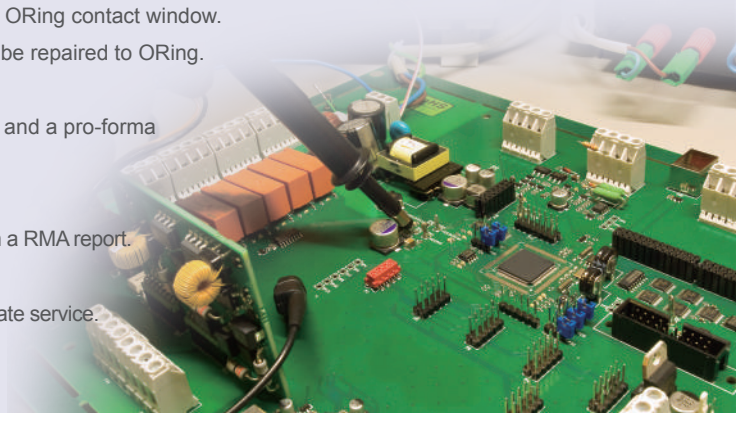
Customers can contact ORing directly by email at sales@oring-networking.com or through our worldwide distributors. For more contact information, please visit ORing's website at www.ORingnet.com

RMA Service

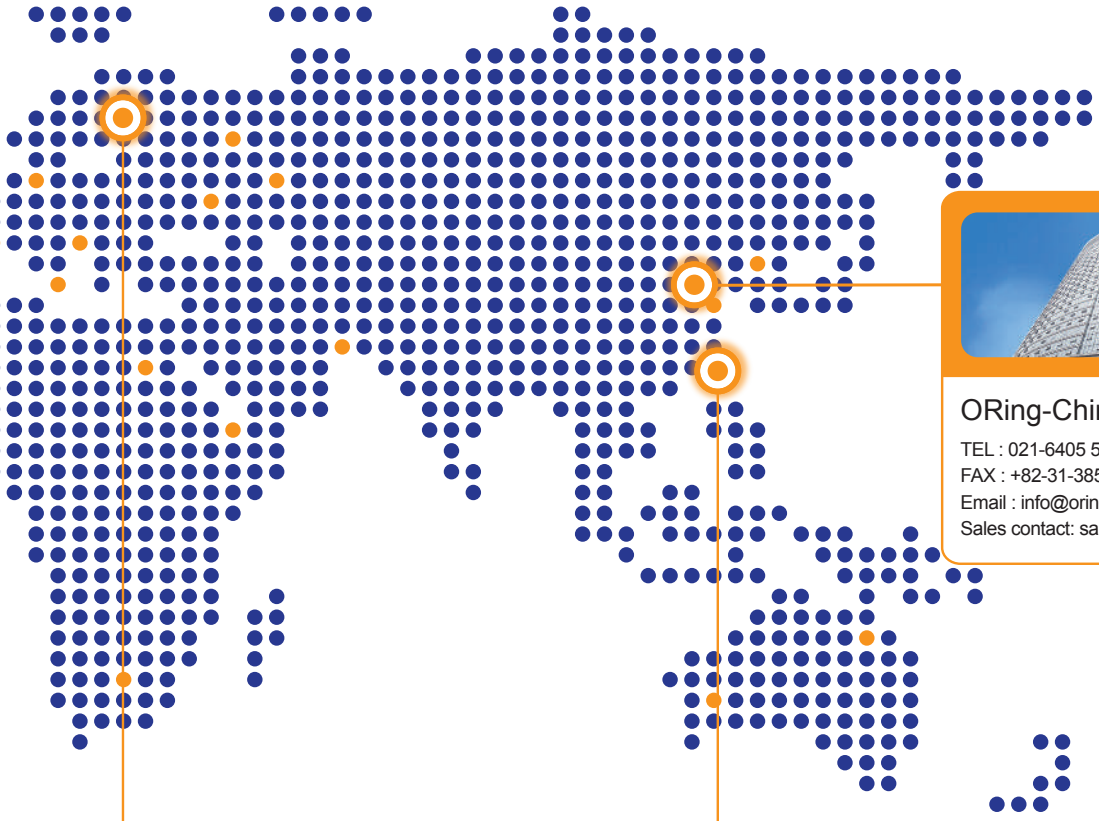
ORing provides maintenance and repair services for both warranty and out-of-warranty products. RMA items to be repaired or replaced will be defined in the following procedures:

1) The customer completes the RMA request form and submits to an ORing contact window.
2) Upon receiving a RMA number, the customer ships the product to be repaired to ORing.
3) ORing checks the product and identify the problem.
4) A service charge will be requested if the product is out of warranty and a pro-forma invoice will be issued to the customer.
5) ORing repairs or replaces the product.
6) The repaired or replaced product is shipped back to the customer with a RMA report.
7) ORing marks the RMA request as closed.

We are available at any time to provide you the most friendly and immediate service.



ORing Office



ORing-China

TEL : 021-6405 5815 / 6405 5853
FAX : +82-31-385 -7789
Email : info@oring-china.com
Sales contact: sales@oring-china.com

ORing-Europe

TEL : +48 604 414 474
Sales contact : sales_eu@oringnet.com
Technical support : support@oringnet.com

ORing-Headquarters

ORing Industrial Networking Corp.

Tel : +886-2-2218-1066
Fax : +886-2-2218-1014
Email : sales@oringnet.com

Product Warranty

ORing products are provided with a warranty for up to five years.

Get Connected Anytime, Anywhere

ORing members are able to access the monthly forum to learn about the latest product information, application solutions, and events. Please visit ORing website and register now!

Product Overview

· Industrial Ethernet Switch

- Rack-Mount (Non-PoE)
- DIN-Rail Gigabit (DIN-Rail / Wall-Mount, Non-PoE)
- DIN-Rail Fast (DIN-Rail / Wall-Mount, Non-PoE)
- PoE (Rack-Mount / DIN-Rail / Wall-Mount)
- IP-67
- PCI/PCIe-Card
- EN50155
- C1D2
- Optical & PoE Network Accessories

· Industrial Media Converter

- Rack-Mount Ethernet-To-Fiber
- DIN-Rail Ethernet-To-Fiber (DIN-Rail / Wall-Mount)
- PoE Ethernet-To-Fiber (DIN-Rail / Wall-Mount)
- USB-To-Serial
- Serial-To-Serial

· Industrial Serial Products

- Rack-Mount Serial Device Server
- Serial Device Server
- EN50155 Device Server
- Wireless Serial Device Server
- Serial USB Converters
- Serial Media Converters

· Industrial Wireless Access Point

- WLAN Access Point (DIN-Rail)
- WLANIP-67 Access Point
- EN50155 WLAN Access Point

· Industrial Cellular VPN Router

- 3.5G Cellular VPN Router
- 3.5G WLAN Cellular VPN Router
- EN50155 3.5G WLAN Cellular VPN Router
- 4G LTE Cellular VPN Router
- 4G LTE WLAN Cellular VPN Router
- EN50155 4G LTE WLAN Cellular VPN Router

· Accessories

- RF Antenna, RF/ Optical Fiber Patch Cord/ M-Series Cables, Power Supplies
- Gigabit / Fast Ethernet SFP/ BIDI-SFP modules

· Management Utility/Controller

- Open-Vision v3.6

· Industrial M2M Gateway

- Din-Rail M2M Gateway

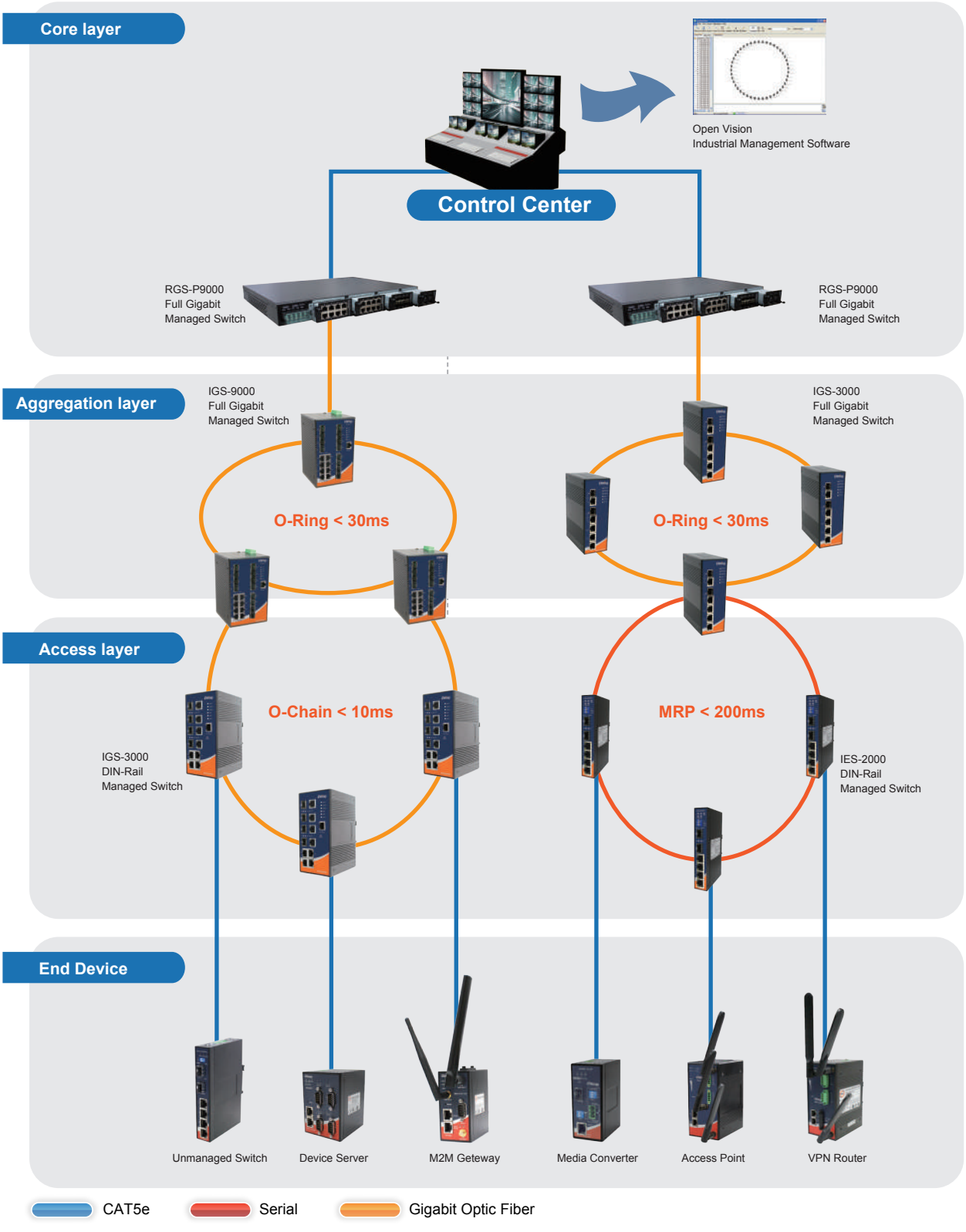
· Industrial IOT Product

- Wireless Remote I/O (ORIO)
- Smart Meter (ORGate)
- Street Light Controller (Zigbee/LoRa/NB-IoT/CMS 1.0)

· ORing Cloud

- ORing PaaS Products
- ORing SaaS Product

ORing Product Topology



ORing Highlight Products

- Redundant Power
- O-Ring: ORing's proprietary redundant ring technology
- PD: PoE Powered Device
- PSE: PoE Power Sourcing Equipment
- Full Gigabit
- WIFI
- 3G/4G LTE
- Operating Temperature
- Bypass
- IEC 61850: Power Utility Certified
- EN 50155: Railway Certified
- X-Roaming: Support X-roaming
- IP67: Waterproof model
- RS232/422/485: Serial Port interface
- SSL: Secure Sockets Layer protocol
- VPN: Supports VPN for secured network connection
- Isolation: Serial port with Isolation

Rack-Mount Ethernet Switch

RGPS-R9244GP+-P

Layer-3 24G P.S.E.+4 1G/10G SFP Ports Managed Gigabit Ethernet Switch

Rack-Mount Ethernet Switch

RGS-PR9000-A Series

Layer-3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch up to 24 1G ports plus 4 10G ports

RGS-P9000/PR9000

Layer-2/Layer-3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots

RGS-P9160M1 Series

IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch

RGPS-92222GCP-NP Series

22G P.S.E.+2G Combo P.S.E.+2G SFP Ports Managed Gigabit Ethernet Switch

RGS-9168GCP Series

24-port rack mount managed Gigabit Ethernet switch

Gigabit PoE Ethernet Switch

IGPS-1082GP/24V

10-port unmanaged Gigabit PoE Ethernet switch with

ORing Highlight Products

IRIS Certification EN50121 EN50155 Transporter Series

EN50155 Ethernet Switch

IGS-9122GPM

EN50155 modular managed Gigabit Ethernet switch with 12x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket, 3 module extender slots

TES-3162GT-M12-BP1

EN50155 16+2G Ports, 1xBypass, Managed Ethernet Switch

TES-180-M12

EN50155 8-Ports Unmanaged Ethernet Switch

TXPS-141XT-M12 Series

EN50155 5-port unmanaged PoE Ethernet switch

EN50155 Ethernet Switch

TPS-3162GT-M12-BP1 Series

EN50155 16 P.S.E.+2G Ports, 1xBypass, Managed Ethernet Switch

TPS-3882GT-M12-BP1 Series

EN50155 8 P.S.E.+8+2G, Ports, Managed Ethernet Switch

TGPS-9084GT-M12X-BP2 Series

EN50155 8G P.S.E.+4G Ports, 2xBypass, Managed Gigabit Ethernet Switch

TGPS-9164GT-M12X-BP2 Series

EN50155 16G P.S.E.+4G Ports, 2xBypass, Managed Gigabit Ethernet Switch

ORing Highlight Products

Industrial Wireless Access Point

IAP-420/420+

IEEE 802.11 b/g/n Wireless AP with 2x10/100Base-T(X)

IGAP-6620+

Dual RF in IEEE 802.11 a/b/g/n Wireless AP with 2x10/100/1000Base-T(X)

IGAP-820+

IEEE 802.11 ac/g/n Wireless AP with 2x10/100/1000Base-T(X)

TGAP-620+-M12

EN50155 IEEE 802.11 a/b/g/n Wireless AP with 2x10/100/1000Base-T(X), M12 connector

Industrial Wireless Access Point

IAP-W420+/W422+

Outdoor IEEE 802.11 b/g/n Wireless AP with 2x10/100Base-T(X) PoE P.D., IP-67 Grade

IAP-W520+/522+

Outdoor IEEE 802.11 a/n Wireless AP with 2x10/100Base-T(X) PoE P.D., IP-67 Grade

TGAP-W610+-M12

Outdoor IEEE 802.11 a/b/g/n AP with 1x10/100/1000Base-T(X) PoE P.D., ,M12 connector,IP-67 Grade

TGAP-W6610+-M12

EN50155 Dual RF in IEEE 802.11 a/b/g/n Wireless AP with 2x10/100/1000Base-T(X) PoE P.D., M12 connector,IP-67 Grade

ORing Highlight Products

Industrial VPN Router

IGR-20/20+

Industrial VPN Router with 2x10/100/1000Base-T(X)

IAR-142(+)-3G/4G Series

IEEE 802.11 b/g/n 3G/4G Cellular Router with 2x10/100Base-T(X)

TGAR-W1061+-3G/4G-M12

EN50155 IEEE 802.11 a/b/g/n 3G/4G Cellular Router with 1x10/100/1000Base-T(X), PoE P.D.

TGAR-1062+-3GS/4GS-M12

EN50155 IEEE 802.11 a/b/g/n 3G/4G Cellular GPS Router with 2x10/100/1000Base-T(X), M12 connector

Industrial VPN Router

IGAR-2062+-4G

IEEE 802.11 a/b/g/n Dual 4G Cellular Router with 2x10/100/1000Base-T(X)

IGAR-1062+-4G

IEEE 802.11 a/b/g/n 4G Cellular Router with 2x10/100/1000Base-T(X)

TGAR-1662+-3GS/4GS-M12 series

EN50155 Dual IEEE 802.11 a/b/g/n 3G/4G LTE Cellular Router With 2x10/100/1000Base-T(X), M12 connector

TGAR-2062+-3GS/4GS-M12

EN50155 IEEE 802.11 a/b/g/n Dual 3G/4G Cellular GPS Router with 2x10/100/1000Base-T(X), M12 connector

ORing Highlight Products

Industrial M2M Gateway

IMG-6322GT Series

Industrial Cellular M2M Gateway with IEEE 802.11 a/b/g/n and 1 Port RS-422/485, 1 port RS-232/422/485 & 2x10/100/1000Base-T(X) Gateway

IMG-W6121+-3G/4G-M12

Industrial Cellular M2M Gateway with IEEE802.11 a/b/g/n, 1G PoE P.D. and 2xRS-232

ORing Management Server

DMG-S15

Industrial 6-port Rack-mount multi-functional Management Server

Industrial Media Converter

IGMC-111GP/IGPMC-111GP

Industrial Gigabit PoE Ethernet to fiber media converter with 1x10/100/1000Base-T(X) P.S.E. and 1x100/1000Base-X, SFP socket

Industrial PoE Ethernet Accessories

INJ-101GT++-60W

Industrial 1-port Gigabit High Power PoE++ Injector

SPL-101GT++

Industrial 1-port Gigabit PoE Splitter, 60Watts Output

PET-102GT++

Industrial 2-port Gigabit High Power PoE++ Extender

Industrial Media Converter

IPMC-111PB++-60W

Industrial mini type Ethernet to fiber High power PoE++ media converter with 1x10/100Base-T(X) P.S.E. and 1x100Base-FX, SFP socket

ORing Highlight Products

Industrial Serial Products

IDS-312/312+, IDS-322/322+, IDS-342/342+

1/2/4xRS-232/422/485 to 2x10/100Base-T(X), 1-port PoE P.D. Device Server

RDS-3166G

16xRS-232/422/485 to 4x10/100/1000Base-T(X)+2x100/1000Base-X SFP Socket Device Server

RDS-P3000

IEC 61850-3 Modular Rack-mount Device Server with 4 Serial Slots and 1 Ethernet Slot

PCard-E1041L-S-D4/PCard-E1041L-D4

IIndustrial 4-Ports RS-232 PCI Express Card With Low Profile and 6KV Surge Protection

Industrial Media Converter

ISC-1310FR

Industrial Serial Media Converter 1-port RS-232/422/485 to Fiber

Wireless Remote I/O

ORIO-G30218

Support two Serial Ports for RS232/RS422/4W-RS485/2W-RS485

Smart Lighting

LoRa Street Light Controller

Lighting System, corresponding with LPWAN technology, LoRa module and antenna (Gateway & Cell Controller)

NB-IoT Street Light Controller

Lighting System, corresponding with LPWAN technology, NB-IoT mPCIe module and antenna design

Vertical Market Applications

Intelligent Transportation System

Building Secure Surveillance Systems with Gigabit backbone Network

Intelligent transportation systems must handle massive real-time transportation video and statistics data to ensure effective management of public transportation, traffic signals, freeways, tunnels, and parking lots. Therefore, the backbone network must be reliable In order to be dependable long distance high-bandwidth data transmission under tough outdoor conditions would be industrial-grade Gigabit Ethernet backbone network infrastructure along with fiber-optics, wired, and/or wireless networks. With such networks, traffic control centers can benefit from vastly improved timeliness and accuracy of real-time traffic information. ORing, with many years of experience of industrial Ethernet networking know-how and innovative network management technologies, provides rugged and durable industrial Gigabit networking products ,the most suitable for intelligent transportation systems.

Key Products

IGPS-1080-24V

Industrial 8-port Unmanaged Gigabit PoE Ethernet Switch

- Supports 8x10/100/1000Base-T(X) PoE (P.S.E.) ports; up to 30 watts per port
- Rigid IP-30 housing design
- -40° to 70°C operating temperature range

IGPS-9084GP

Industrial 12-port Managed Gigabit PoE Ethernet Switch

- 8 ports P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 watts per port
- Supports IEEE 1588v2 clock synchronization
- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function

IGS-9042GP Series

Industrial 6-port Managed Gigabit Ethernet Switch

- Supports IEEE 802.3az energy-efficient Ethernet technology
- Supports Modbus TCP protocol
- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function

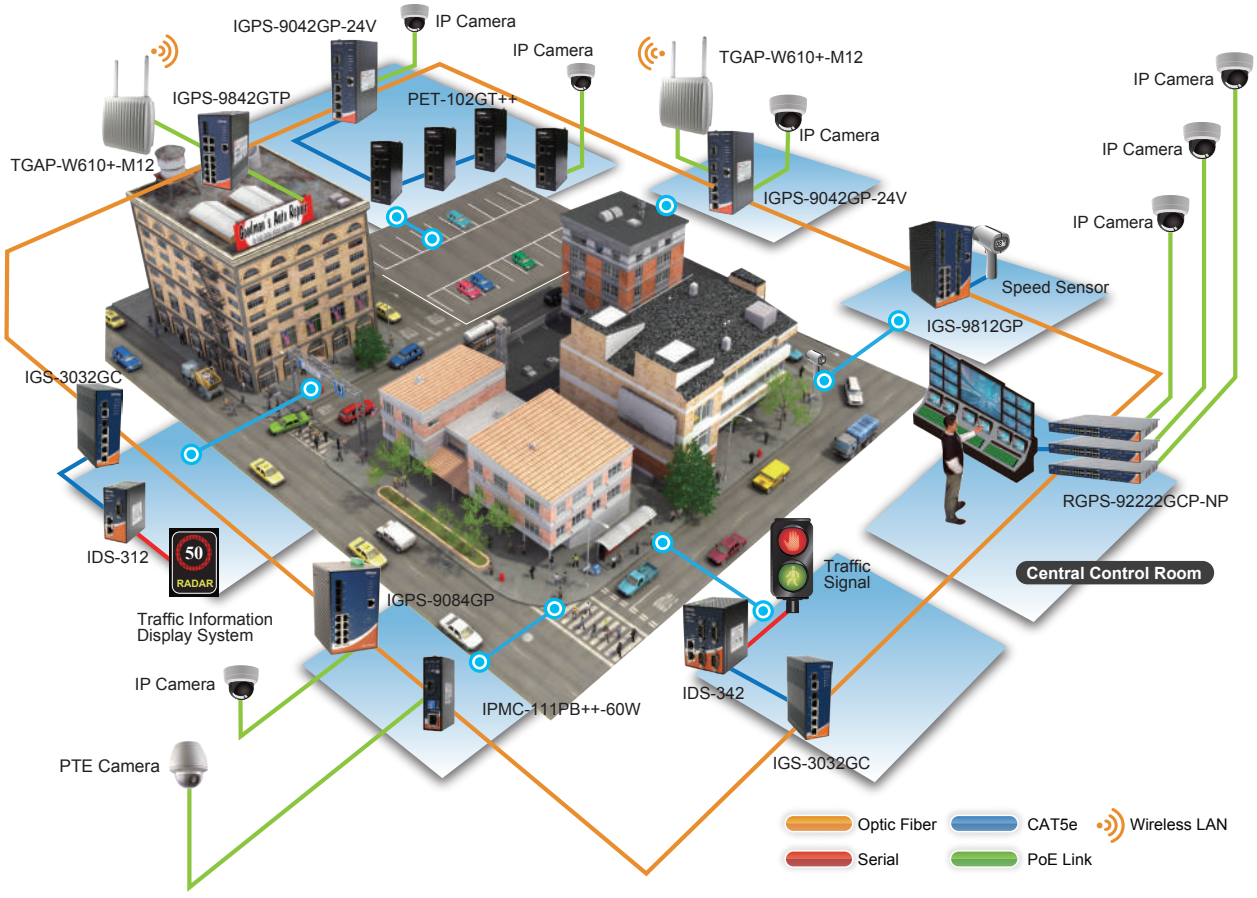
DGS-9812GP-AIO_S

Industrial 20-port Desktop Managed Gigabit Bypass Ethernet Switch

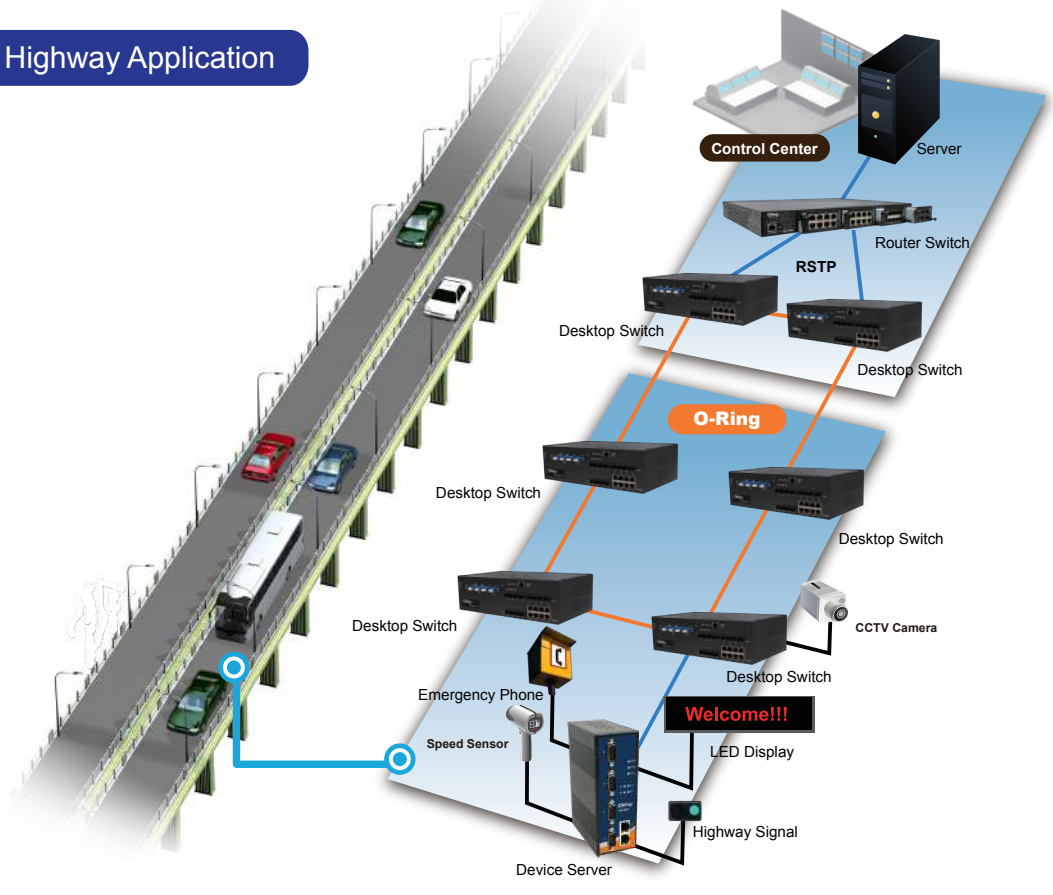
- Supports 8x10/100/100Base-T(X) ports and 12x100/100Base-X SFP ports
- Supports Jumbo frame up to 9.6K bytes
- Supports O-Ring (recovery time < 30ms over 250 units of connection), MSTP/RSTP/STP (IEEE 802.1s/w/D) for Ethernet redundancy

*NOTE: This function is available by request only

Intelligent Transportation System



Highway Application



City Surveillance

Improve City Safety with ORing's Advanced Network Technologies

To help the law enforcement to fight against criminal activities and to help the emergency personnel to respond swiftly to emergency situations, city surveillance is an indispensible aid of modern city. With the rapid digitization of video surveillance systems, video quality has vastly improved with capability of long distance transmission without quality degradation. However, in relaying such critical video information, the network connections involved need to stay uninterrupted in critical situations and to have the toughest security features to guard against hacker attacking. For these purposes, ORing's PoE+, Gigabit and Optical Ethernet switches would ensure continuous and well-protected surveillance video network traffic at all times. Additionally, secure industrial-grade ORing wireless APs can be used for venues where implementation of network cables would be difficult and/or costly.

Key Products

RGS-PR9000

Industrial Layer-3 IEC 61850-3 Modular Rack Mount Managed Gigabit Ethernet Switch with 4 Slots

- Design for power substation and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Modular design makes network planning easy
- Supports Layer 3 static routing, RIP and VRRP function
- Supports GRE (Generic Routing Encapsulation) tunneling protocol

IGPS-9042GP-24V

Industrial 6-port Managed Gigabit PoE Ethernet Switch

- 4 port P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 watts per port
- Supports IEEE 802.3az energy-efficient Ethernet technology
- Supports Modbus TCP protocol

RGPS-9084GP-P

Industrial 12-port Rack Mount Managed Gigabit PoE Ethernet Switch

- Supports IEEE 802.3at compliant PoE 30 watts per port
- Supports PoE schedule configuration and PoE alive check function
- Supports IEEE 1588v2 clock synchronization

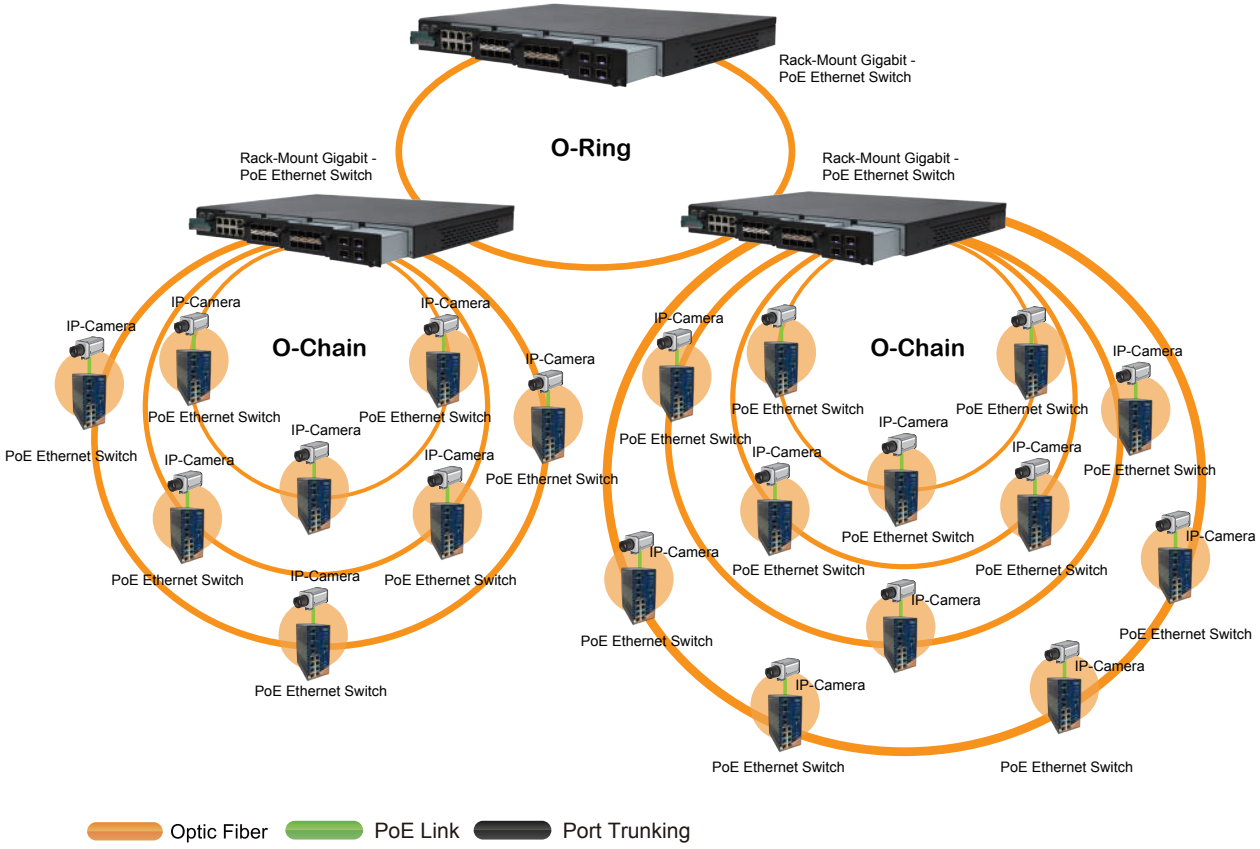
IGPS-9842GTP-24V

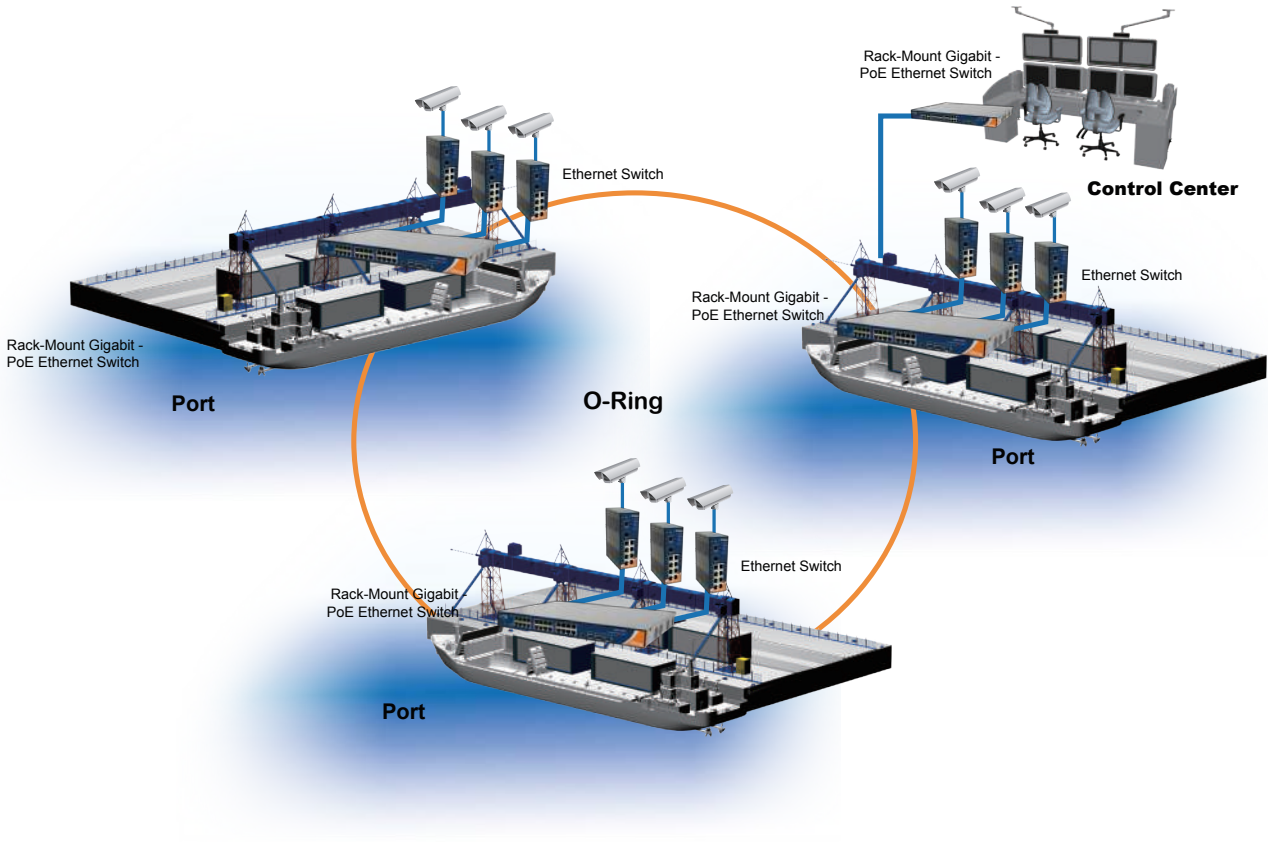
Industrial 14-port Managed Gigabit PoE Ethernet Switch

- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- Supports IEEE 802.3at compliant PoE with maximum 30 watts per port
- Supports PoE schedule configuration and PoE alive check function

***NOTE: This function is available by request only**

City Surveillance





Railway

Establish Robust and Secure Railway Networking Solutions

Rolling stock, including trains, high-speed rail, and community trains, is the most important transport between cities and towns. These vehicles not only connect people in different places, but also bring convenience and efficiency to our life. With such important rolling stock industry, dependable safety management of railway traffic is absolutely necessary, calling for the need of rugged networking capable of handling massive real-time traffic information accurately without interruptions. As a leading network solution provider for rolling stock, ORing has developed the complete railway network solutions featuring PoE, outdoors and bypass function with EN50155/50121-4/IRIS compliance. The devices are perfect for complex and distributed railway applications.

Key Products

IGPS-9084GP

Industrial 12-port Managed Gigabit PoE Ethernet Switch

- 8 ports P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 watts per port
- Supports IEEE 1588v2 clock synchronization
- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function

RGPS-R9244GP+-P

Industrial Layer-3 28-port Managed Gigabit PoE Ethernet Switch

- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- 24 port P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 watts per port
- Supports PoE scheduled configuration and PoE auto-ping check function

TPS-3162GT-M12-BP1

Industrial EN50155 18-port Managed PoE Ethernet Switch

- Leading EN50155-compliant Ethernet switch for rolling stock application
- 16 ports P.S.E. fully compliant with IEEE802.3af standard, provide up to 15.4 watts per port
- World's Fastest Redundant Ethernet ring: O-Ring (recovery time < 10ms over 250 units of connection)
- HW Bypass with two Gigabit ports

TGAR-2062+-3GS/4GS-M12

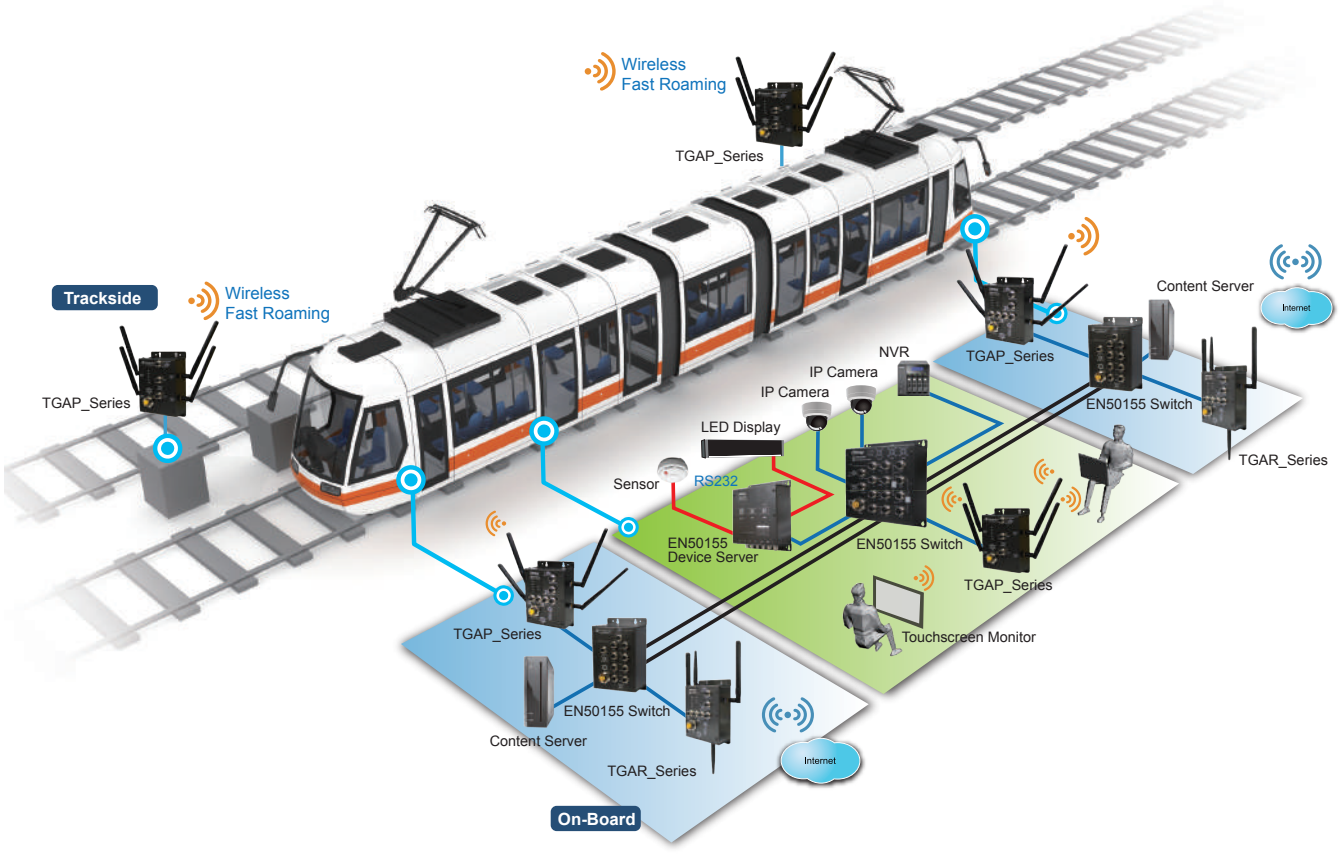
Industrial EN50155 IEEE 802.11 a/b/g/n Dual 3G Cellular GPS Router/4G LTE GPS Cellular Router

- EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- GPS model supports GPS function

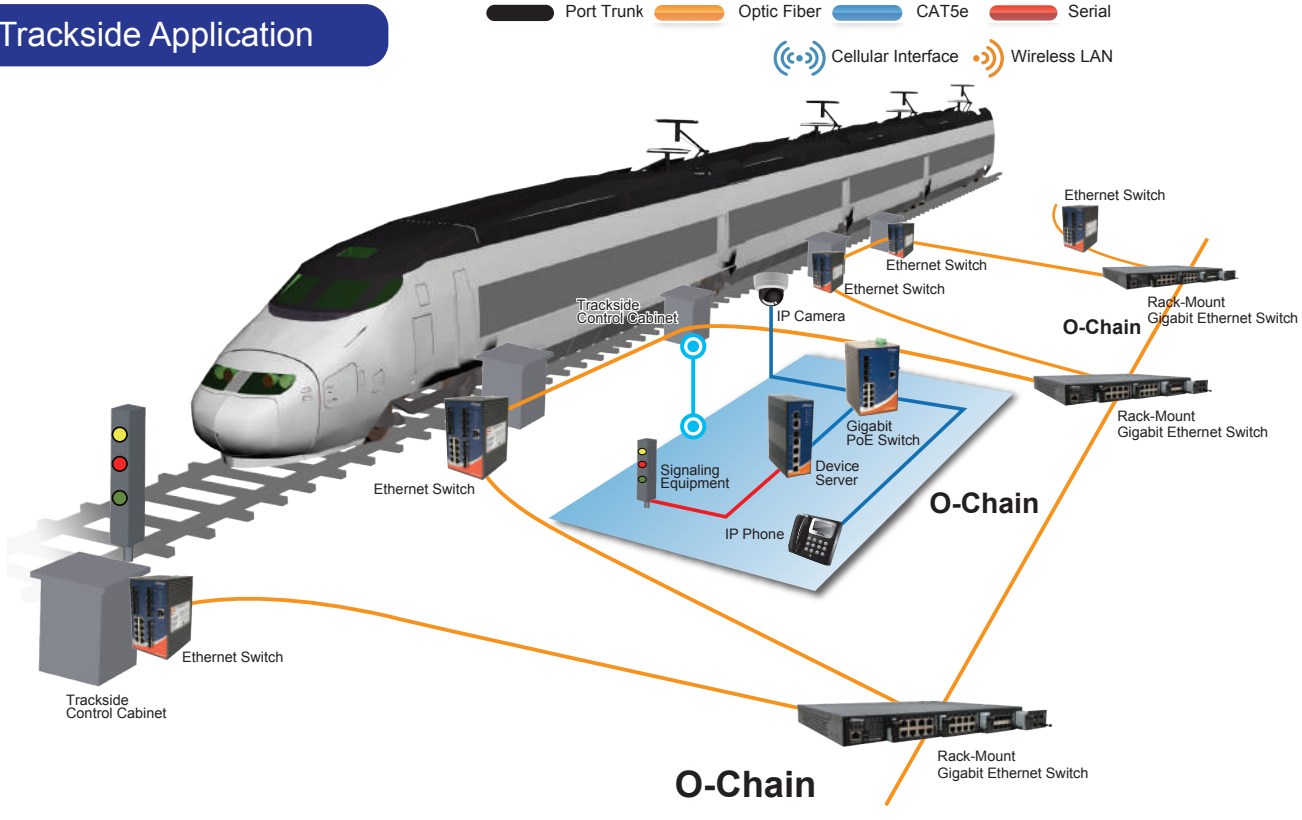
***NOTE: This function is available by request only**

Railway Application

IRIS Certification EN50121 EN50155 Transporter Series



Trackside Application



In-Vehicle Surveillance

Construct Reliable & Efficient Network Monitoring Systems

IP surveillance technologies are on the rise in the video surveillance industry, thanks to convenience and cost-effectiveness of Ethernet networks. Hence IP surveillance systems can be implemented on buses for passenger safety, bus fleet management, or traffic monitoring, allowing the driver and the transportation control center to get real-time driving status at any time. Additionally, wireless AP can be implemented on buses to provide passengers with wireless internet service. For use on moving vehicles, networking equipment must adapt to tough conditions on moving vehicles. ORing products, with ruggedized design and industrial-grade wide temperature tolerance, ensure vehicle network reliability and thus are the best choice for vehicle surveillance and network systems.

Key Products

IGPS-1080-24V

Industrial 8-port Unmanaged Gigabit PoE Ethernet Switch

- 8x10/100/1000Base-T(X) PoE (P.S.E.) ports; up to 30 watts per port and totally 120 watts; dual 24~36 VDC power inputs
- Rigid IP-30 housing design
- -40~70°C operating temperature range

IGAR-1062+-4G

Industrial IEEE 802.11 a/b/g/n 4G LTE Cellular Router with 2x10/100/1000Base-T(X)

- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Provide 2 port 10/100/1000Base-T(X) port and 1 sim card slot
- 4G LTE Modem dial up included
- Provide HNAT enhance LAN to WAN routing performance

TGAR-W1061+-4G-M12

Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE Cellular Router with 1x10/100/1000Base-T(X) PoE P.D., IP-67

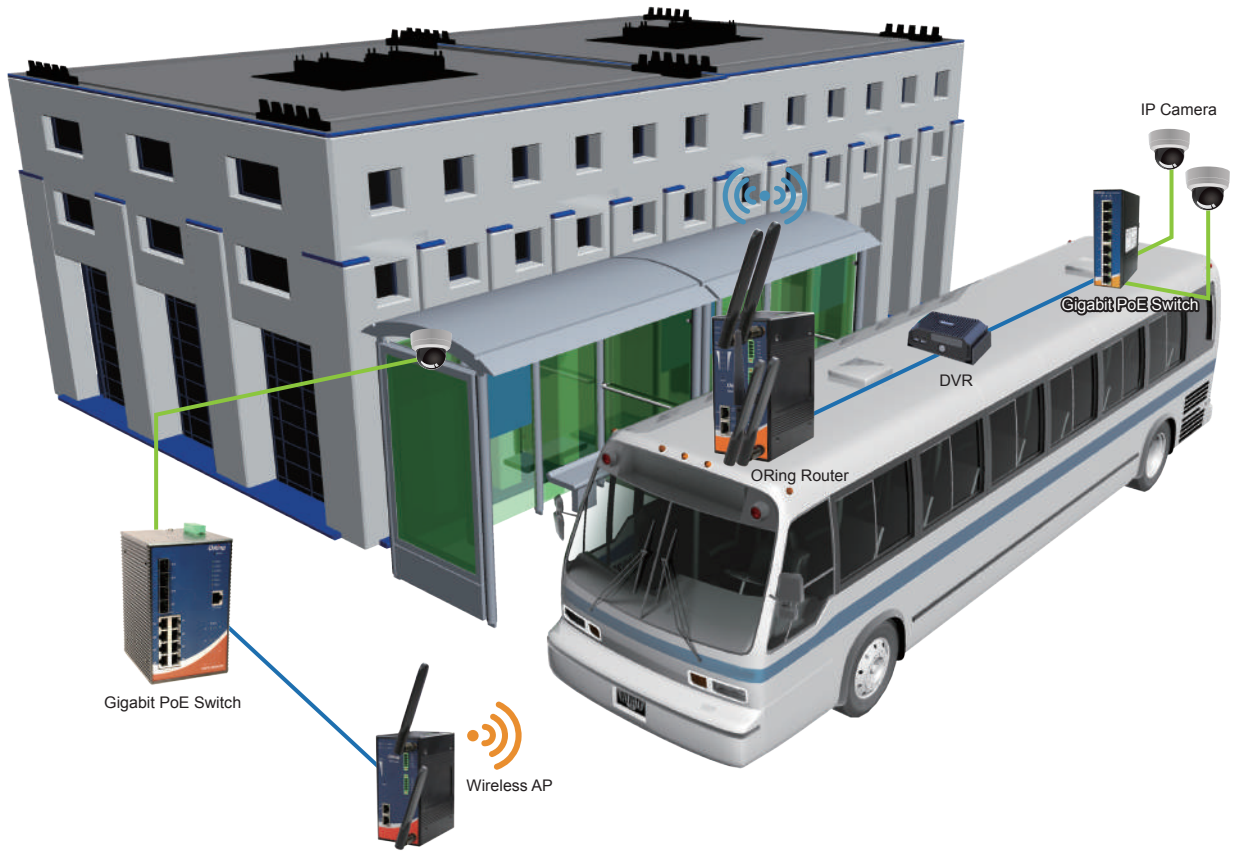
- EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: WLAN interface supports up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X authentication supported

IGPS-9042GP-24V

Industrial 6-port Managed Gigabit PoE Ethernet Switch

- 4 ports P.S.E. ,fully compliant with IEEE802.3at standard, provide up to 30 watts per port
- Supports IEEE 802.3az energy-efficient Ethernet technology
- Supports Modbus TCP protocol

In-Vehicle Surveillance



Building Automation

Strengthen BA Systems with ORing Advanced Network Technologies

Rapid development of digital contents and networks, building surveillance systems also have evolved as intelligent digital active surveillance systems. As a result, overall video surveillance quality has vastly improved while labor and security costs are minimized. Therefore digital networks are used in important public buildings – airports, train stations, office buildings, banks, etc. – to provide connections for door access control, temperature control, lighting monitoring, security system, etc. With ORing Gigabit Ethernet switches and ORing optical Fiber Switches, high quality surveillance video can be transmitted from high-resolution IP surveillance cameras to applicable surveillance systems reliably and securely without interruptions. Additionally, secure industrial-grade ORing wireless APs can be used for building locations where implementation of network cables would be difficult and/or costly.

Key Products

IGS-150B

Industrial 5-port Mini Type Unmanaged Gigabit Ethernet Switch

- Supports auto-negotiation and auto-MDI/MDI-X
- Supports Jumbo frame up to 9.6 K bytes
- Supports store-and-forward transmission
- Supports flow control

IGAP-620+

Industrial IEEE 802.11 a/b/g/n Wireless Access Point with 2x10/100/1000Base-T(X)

- High speed Air Connectivity: WLAN interface supports up to 300Mbps link speed
- Supports 2x10/100/1000Base-T(X) ports
- Supports PoE P.D. feature on ethernet port which is fully compliant with IEEE802.3af PoE P.D. specification
- Dual redundant Ethernet port support redundant mode (Recovery time < 10ms)

RGPS-92222GCP-NP-P

Industrial 26-port Rack-Mount Managed Gigabit PoE Ethernet Switch

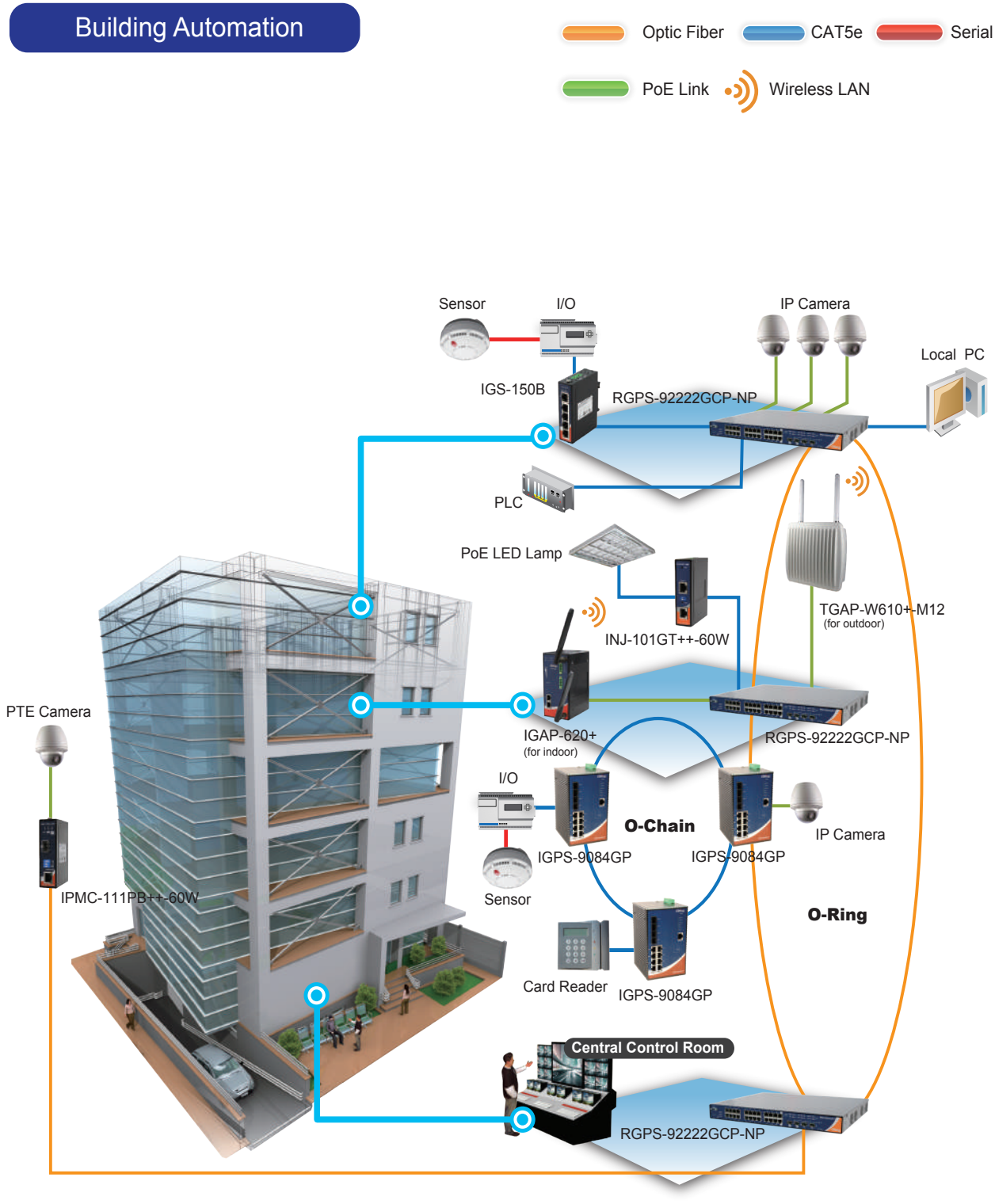
- Supports P.S.E. based on IEEE 802.3at standard
- Supports IPv6 new Internet protocol version
- Supports Modbus TCP protocol
- Supports IEEE 802.3az energy-efficient Ethernet technology

TGAP-W610+-M12

IIndustrial IEEE 802.11 a/b/g/n wireless Access Point

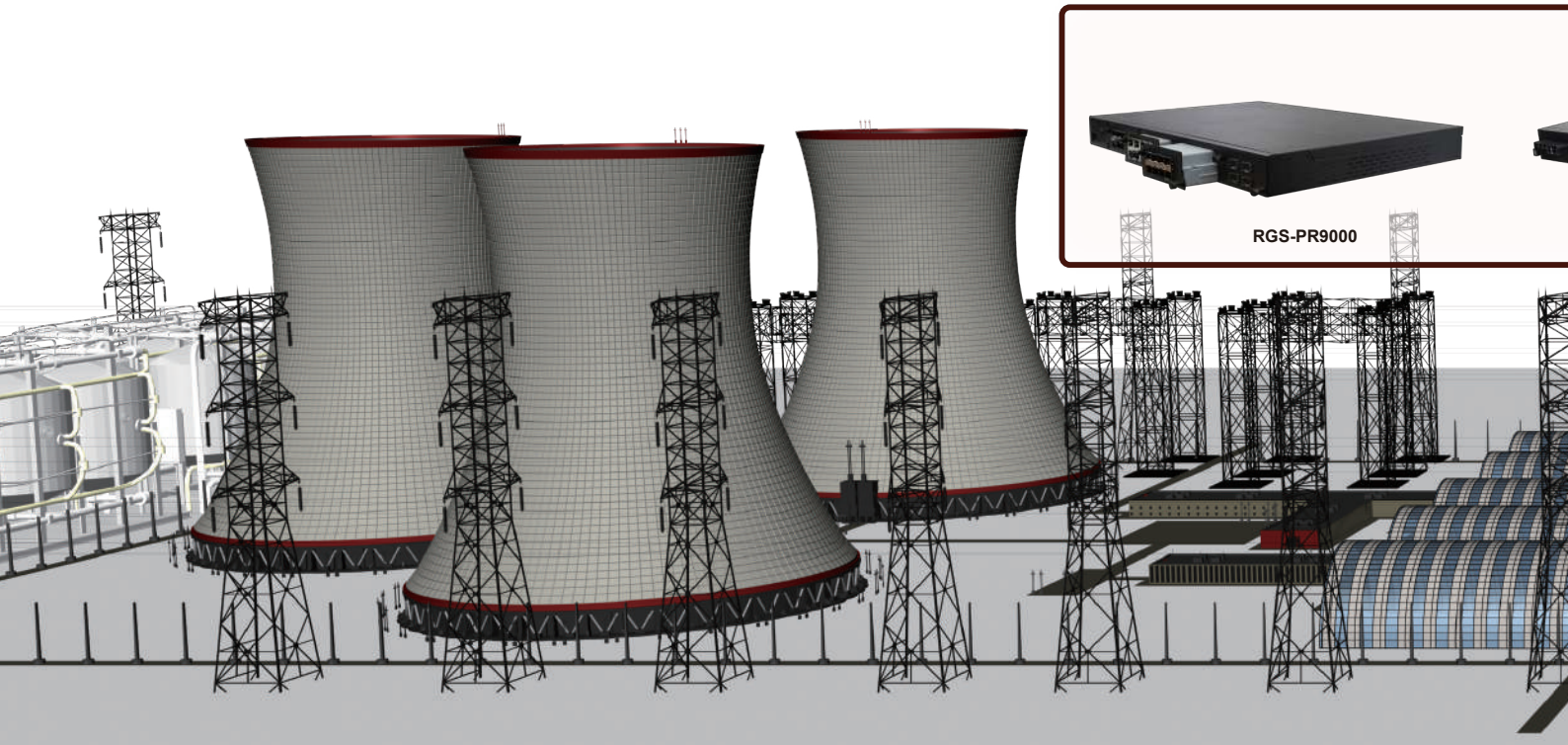
- Supports X-Roaming < 60 ms
- Supports 1KV isolation for PoE P.D.
- Supports up to 300Mbps link speed
- Supports AP/Bridge/Client/AP-Client Mode

Building Automation



Power Substation Solution

Fully compliant with IEC 61850-3



ORing's industrial Ethernet managed switches offer users possibility to draw maximum benefits from IEC 61850-3. Our products both meet IEC 61850-3 and IEEE 1613. Many of ORing products are tailor-made for applying in substation automation system and also support the IEEE 1588v2 standard (PTPv2). The IEC 61850-3 standard is not just the Ethernet-based substation automation protocol but serving the whole solution of power networks. ORing's commitment from developing the standard and implementing the products into solutions are the key reasons why brings users to next stage of reliability and efficiency.

Key Products

RGS-PR9000 Series

Industrial Layer-3 IEC 61850-3 Modular Rack Mount Managed Gigabit Ethernet Switch with 4 slots

- Design for power substation and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Modular design makes network planning easy
- Supports Layer 3 static routing, RIP and VRRP function

IGS-P9164GF Series

Industrial IEC 61850-3 20-port Managed Gigabit Ethernet Switch

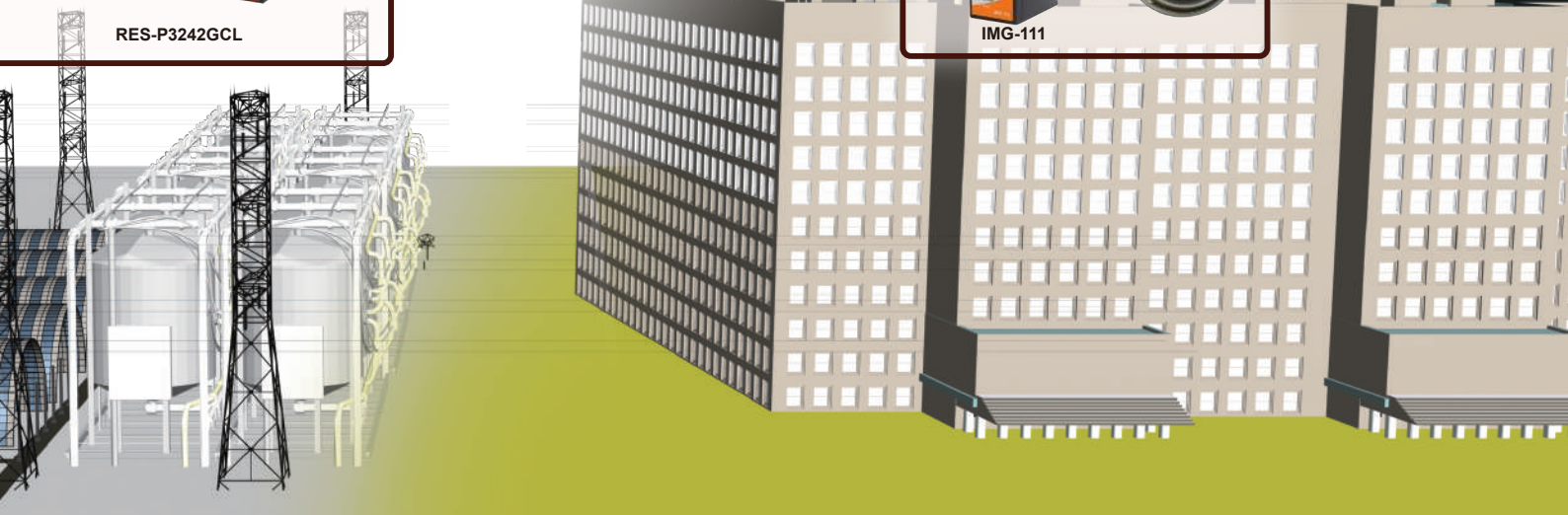
- Supports O-Ring (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- Design for power substation / railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Supports Device Binding security function

IEC61850
IEEE1613

IEEE 1588_v2


RES-P3242GCL


IMG-111



IGS-P9812GP Series

Industrial IEC 61850-3 20-port Managed Gigabit Ethernet Switch

- Design for power substation / railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- EN50155-compliant Ethernet switch for rolling stock application
- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function

IMC-P111FX

Industrial IEC 61850-3 Ethernet to Fiber Media Converter

- Supports 1 x 10/100 Base-T(X) port to 1x100Base-FX fiber/ 1x100Base-FX SFP socket
- Design for Railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- EN50155-compliant Ethernet switch for rolling stock application
- Supports auto-negotiation and auto-MDI/MDI-X

IMG-W6121+-3G/4G/M12

Industrial Outdoor Cellular M2M Gateway with IEEE802.11 a/b/g/n

- Supports 1x10/100/1000Base-T(X) port with PoE P.D.
- 3.5G HSUDPA or 4G LTE modem included
- Supports 2xRS-232 serial ports

Natural Resources & Energy

ORing Empowers You with Rugged Excellence

If we ever pay attention to natural energy cultivation,we may notice that they are often exposed in tough environments of great dangers. To ensure industrial safety, ORing Corp. has come up with series of industrial-grade networking products that operate flexibly in wide temperatures and harsh environments. With ruggedized designs and reliable certifications, ORing's surveillance systems and information network are presented as dustproof, waterproof, and shockproof. Benefit from such high-end products, supervisors or control centers can get timely work data and communicate effectively on high-bandwidth and reliable industrial networks through the process of energy acquisition and production. ORing's products are the best choice that proves to be beneficial for energy production and large-scale network applications: mining, oil & gas, power plants, steel factory, power management system, etc.

Key Products

IES-A3080/A3062

Industrial C1D2/ATEX 8-port Managed Ethernet Switch

- World's fastest redundant Ethernet ring: O-Ring (recovery time < 10ms over 250 units of connection)
- Open-Ring supports the other vendor's ring technology in open architecture
- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- Supports Auto Negotiation Speed

IES-A1080/A1062 Series

Industrial C1D2/ATEX 8-port Unmanaged Ethernet Switch

- IES-A1080 supports 8x10/100Base-T(X) ports
- IES-A1062 series provided 6x10/100Base-T(X) and 2x100FX or 2 x1000X fiber ports
- Supports store and forward transmission
- Supports auto-negotiation and auto-MDI/MDI-X

IGPS-R9084GP

Industrial Layer-3 12-port Managed Gigabit PoE Ethernet Switch

- Supports Layer 3 static routing, RIP and VRRP function
- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- 8 ports P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 watts per port

RGPS-R9244GP+-P

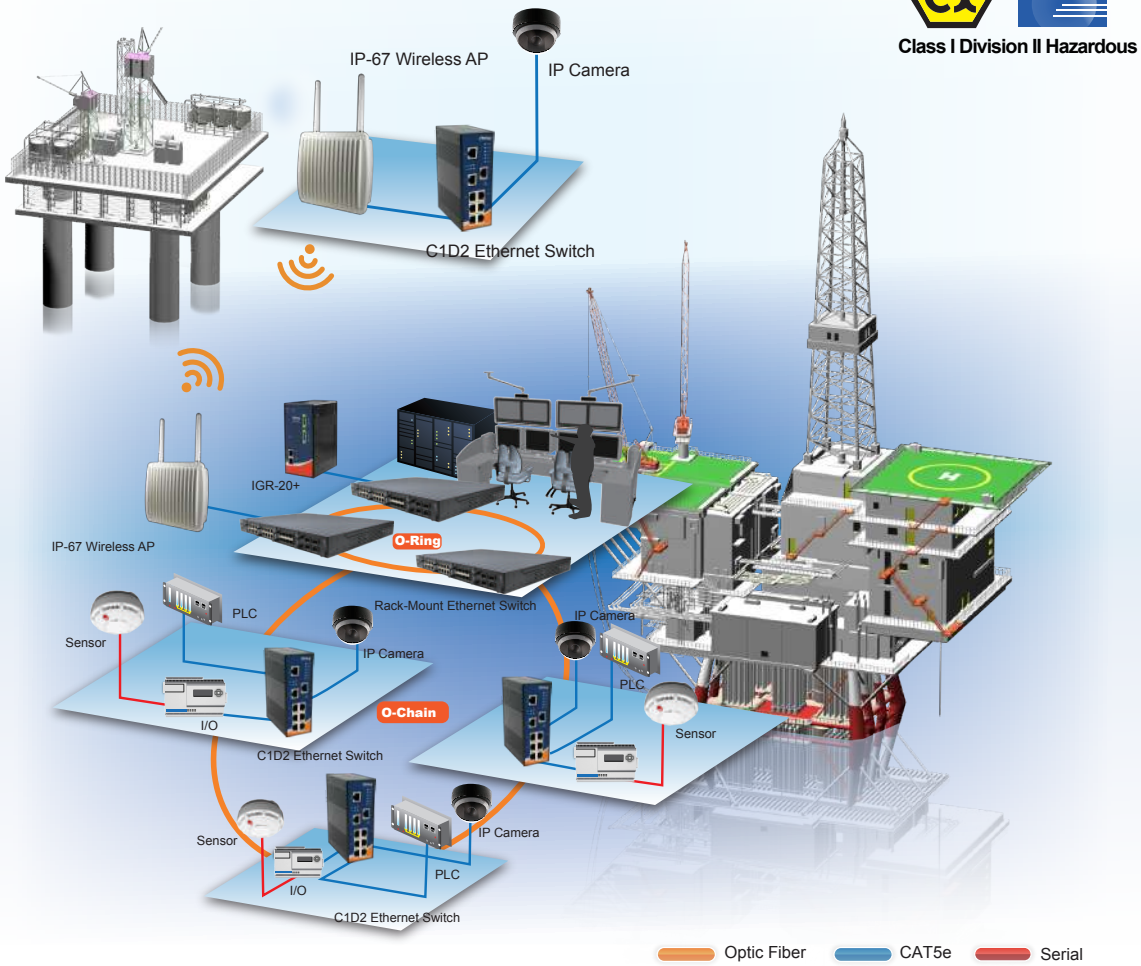
Industrial Layer-3 28-port Managed Gigabit PoE Ethernet Switch

- Supports Layer 3 static routing, RIP and VRRP function
- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- 24 ports P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 watts per port
- Supports PoE schedule configuration and PoE auto-ping check function

***NOTE: This function is available by request only**

Oil Field Application

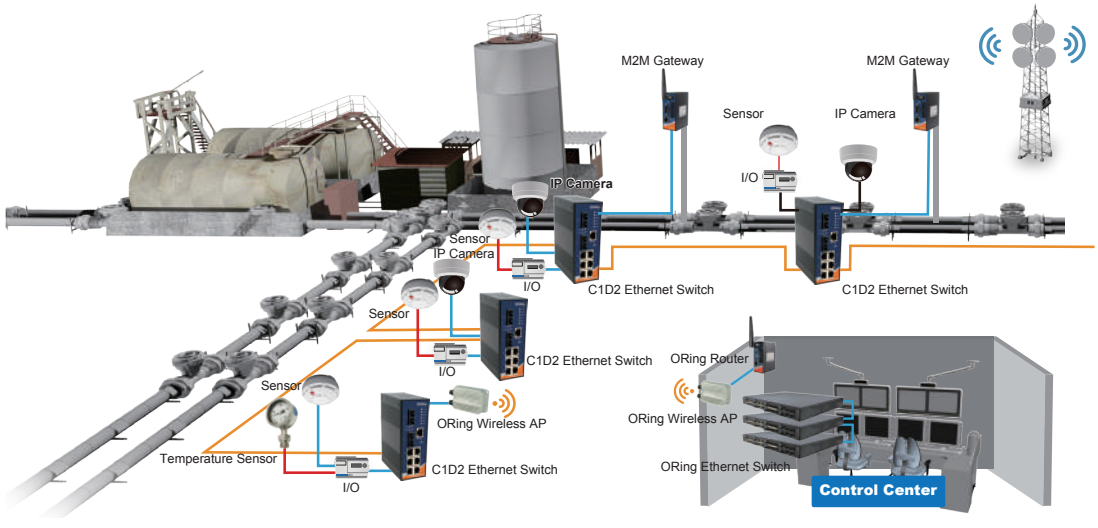
Class I Division II Hazardous



Optic Fiber CAT5e Serial

Cellular Interface Wireless LAN

Oil Pipe Application



Renewable Energy

Featuring Reliable Performance with Non-Stop Connectivity

With global warming, green energy development and energy conservation have become the global trend. ORing, with industry-leading expertise of industrial networking, has significantly contributed to this green movement by helping PV solar electricity and wind electricity power plants to set up complete industrial-grade long-range Ethernet communication systems for green power production surveillance. Certified by rigorous industrial-grade tests, ORing products can withstand tough outdoor conditions while providing outstanding network performance reliably at all times, ensuring stable and uninterrupted data transmission of real-time information to and from the control center. Also, industrial Ethernet networks are easily expandable without sacrificing ruggedness, saving time and cost in the long run. Together with many governments and corporations, ORing is helping the world in the fight against global warming.

Key Products

IDS-322+

Industrial 2 Secure Serial Ports to Ethernet Device Server

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
- NAT-pass through: user can manage IDS-322+ through NAT router
- Event Warning by Syslog, Email, SNMP trap, Relay

IMC-111PB

Industrial Mini type Ethernet to fiber media converter

- Supports 1 port 10/100Base-T(X) auto-negotiation and auto-MDI/MDI-X
- Supports Ethernet to fiber or Ethernet to SFP port
- Supports LFP (Link Fault Pass-through) function

IGPS-9842GTP

Industrial 14-port Managed Gigabit PoE Ethernet Switch

- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- Supports IEEE 802.3at compliant PoE with maximum 30 watts per port
- Supports PoE schedule configuration and PoE auto-ping check function

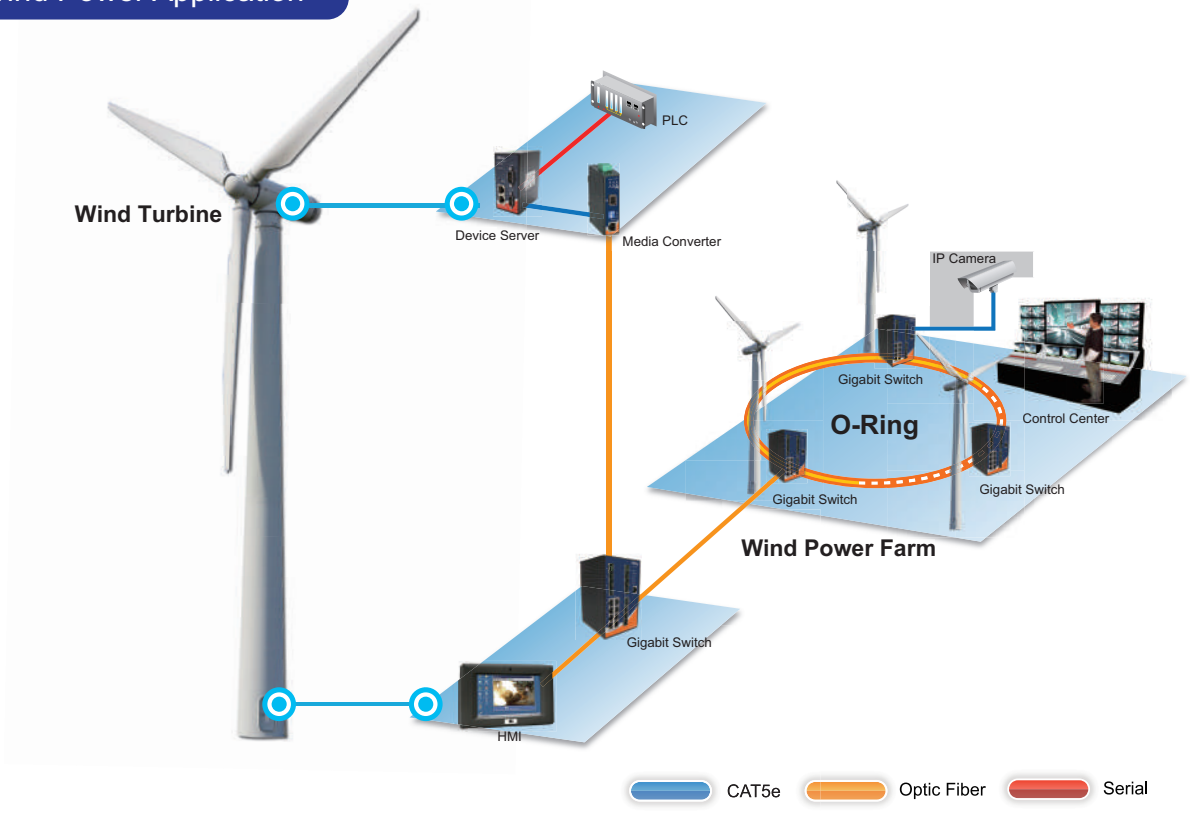
RGS-P9000

Industrial IEC 61850-3 Modular Rack Mount Managed Gigabit Ethernet Switch

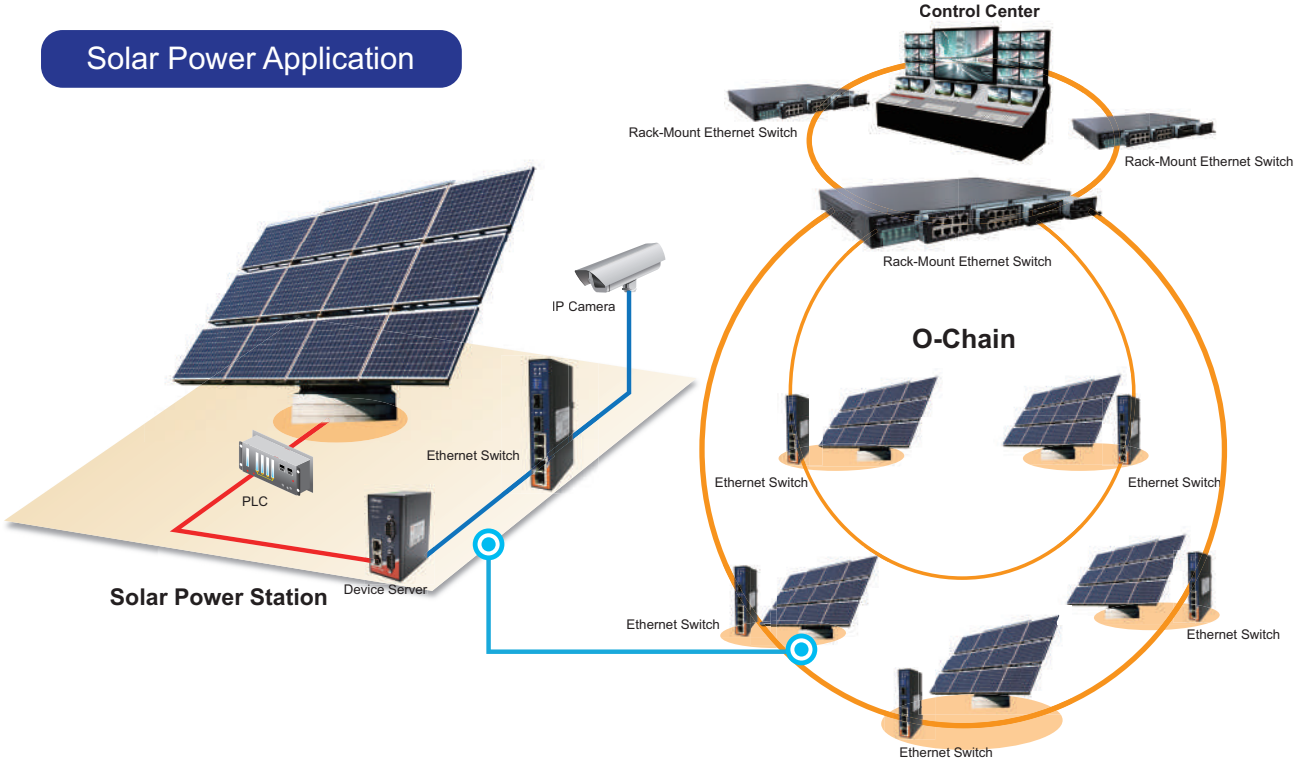
- Design for power substation / railway applications and fully compliant with the requirements of IEC 61850-3 and IEEE 1613
- Modular design makes network planning easy
- Supports IEEE 1588v2 clock synchronization

***NOTE: This function is available by request only**

Wind Power Application



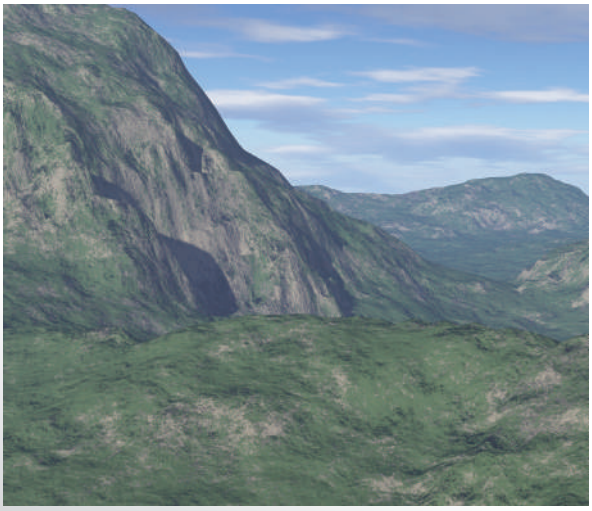
Solar Power Application



Mountain Surveillance

Ensure Reliable Data Transmission of IP Surveillance Systems for Mountainous Areas

Mountainous areas are prone to landslides, usually caused by torrential rain or earthquakes, posing serious threats to people's life. Although natural disasters are unavoidable, the consequences can be significantly reduced through preventive measures such as rainfall monitoring and alert systems. Furthermore, tunnels built in the mountains must be monitored at all times for rescue operations to be carried out efficiently when accidents occur. For this reason, mountainous areas must be furnished with a video surveillance system to help the remote control room keep an eye on these places and take action immediately whenever needed. Due to the harsh environment in the mountains, stable and secure data transmission is the top priority for surveillance systems. This is why ORing's reliable and cost-effective industrial solutions come into play.



Key Products

IAR-142-3G

IEEE 802.11 b/g/n 3G Cellular Router with 2x10/100Base-T(X)

- High Speed Air Connectivity: WLAN interface support up to 150Mbps link speed
- Provide 2 port 10/100Base-T(X) port and 1 sim card slot
- 3.5G HSDPA Modem dial up included

DGS-9812GP-AIO_S

Industrial 20-port Desktop Managed Gigabit Bypass Ethernet Switch

- Supports 8x10/100/100Base-T(X) ports and 12x10/100/100Base-X SFP ports
- Supports Jumbo frame up to 9.6K bytes
- Supports O-Ring (recovery time < 30ms over 250 units of connection), MSTP/RSTP/STP (IEEE 802.1s/w/D) for Ethernet redundancy

IGPS-9842GTP

Industrial 14-port Managed Gigabit PoE Ethernet Switch

- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- Supports IEEE 802.3at compliant PoE with maximum 30 watts per port
- Supports PoE schedule configuration and PoE auto-ping check function

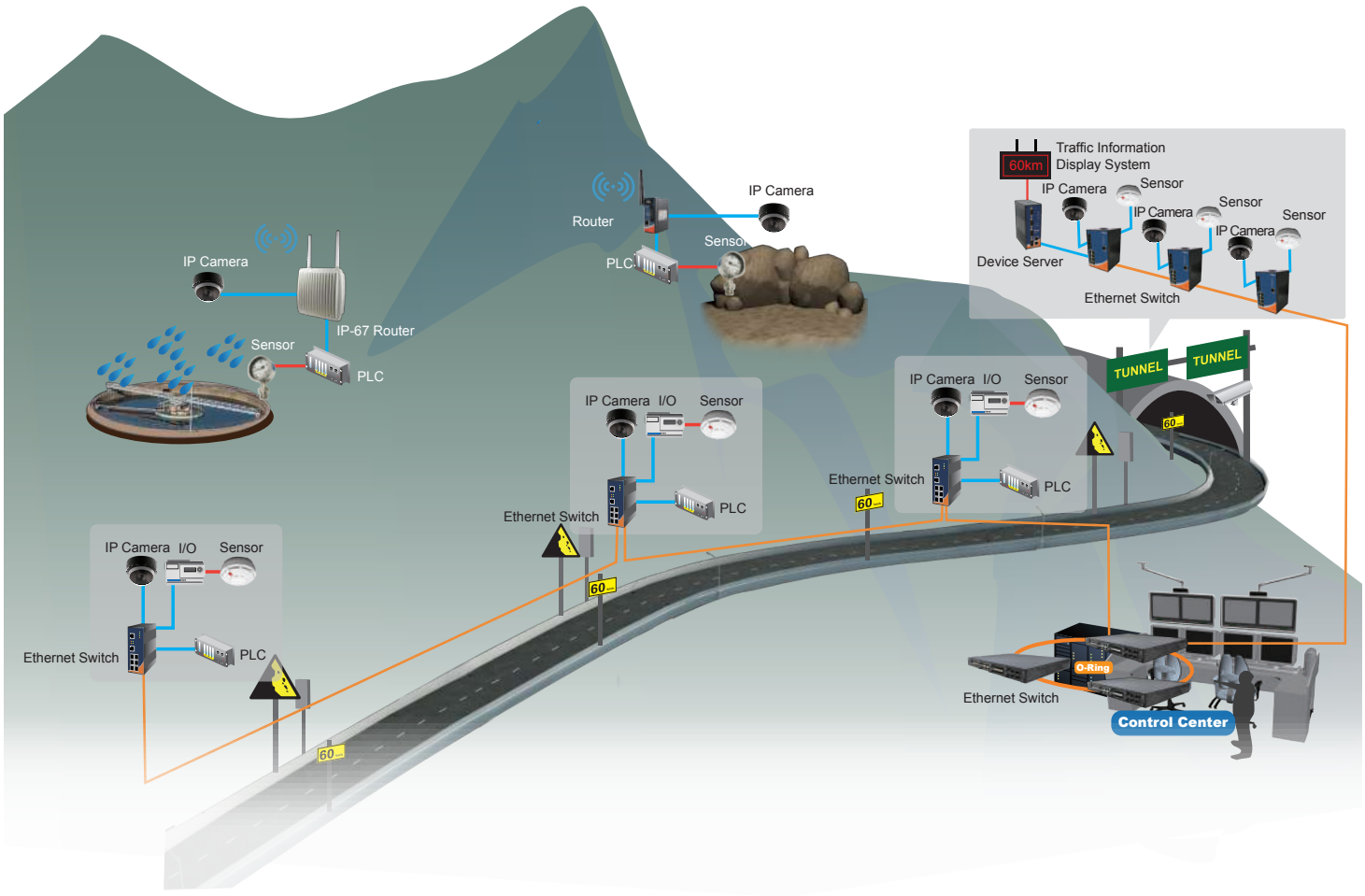
IBS-102FX

Industrial 2-port Optical Bypass Switch for Fiber Optical Network with 4xLC Duplex Connector

- Supports 100M/1G/10G optical bypass function of 2-port duplex or 4-port simplex fiber connection
- Different models support multi-mode or single-mode optical-fiber
- Throughput will not be affected and no extra delay

***NOTE: This function is available by request only**

Mountain Surveillance



Optic Fiber CAT5e Serial

PoE Link Wireless LAN

Manufacturing Automation

Advance Industrial Communication into the Next Generation

For factory automation, it is necessary to have accurate real-time information of automated production-line at all times. Traditionally radio and serial connections are used for factory communications, but the integration of Ethernet and SCADA automation systems can make such communications even more effective. ORing has the right products for industrial network communications – e.g. PoE Ethernet Switch and Device Server – allowing traditional serial devices (including RS485 type) to be connected to more robust Ethernet networks. With such upgrade, factory supervisors can get real-time production data much faster and much more reliably, thanks to much higher data bandwidth along with stable and swift redundant ring backup protection. The overall result would be vastly improved work efficiency and lower costs.

Key Products

IDS-342GT

Industrial 4-port secure serial to Ethernet device server with 4xRS-232/422/485 and 2x10/100/1000Base-T(X)

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP, Modbus Gateway
- Support Modbus Gateway : Modbus TCP, Modbus RTU, Modbus ASCII
- Security: SSL data encryption; secured management by HTTPS and SS

IGAP-6620+

Industrial Dual RF in IEEE 802.11 a/b/g/n Wireless Access Point

- High Speed Air Connectivity: WLAN interface supports up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X authentication supported
- Supports X-Roaming < 60 ms

IGAR-1062+-4G

Industrial IEEE 802.11 a/b/g/n 4G LTE Cellular Router with 2x10/100/1000Base-T(X)

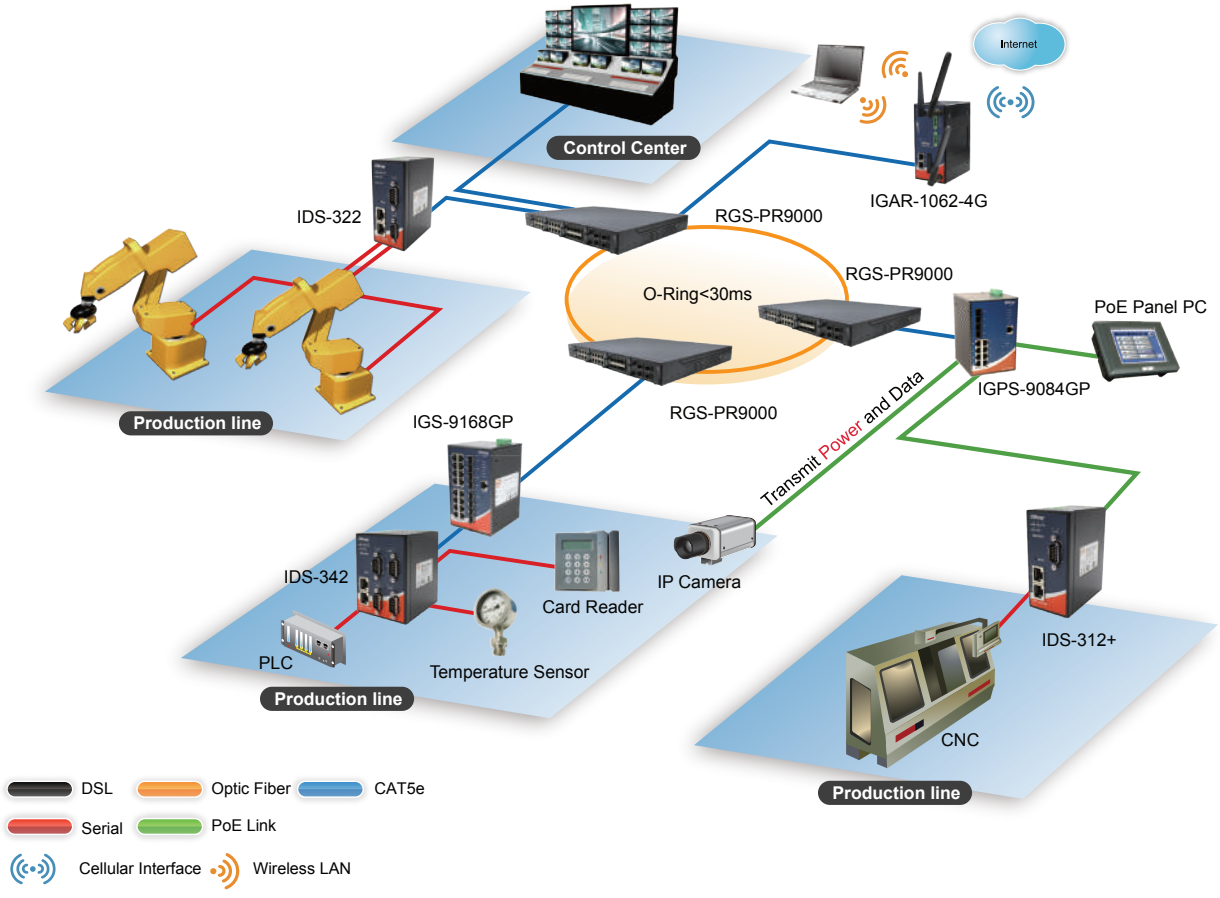
- High Speed Air Connectivity: WLAN interface supports up to 300Mbps link speed
- Provide 2 port 10/100/1000Base-T(X) port and 1 SIM card slot
- 4G LTE Modem dial up included

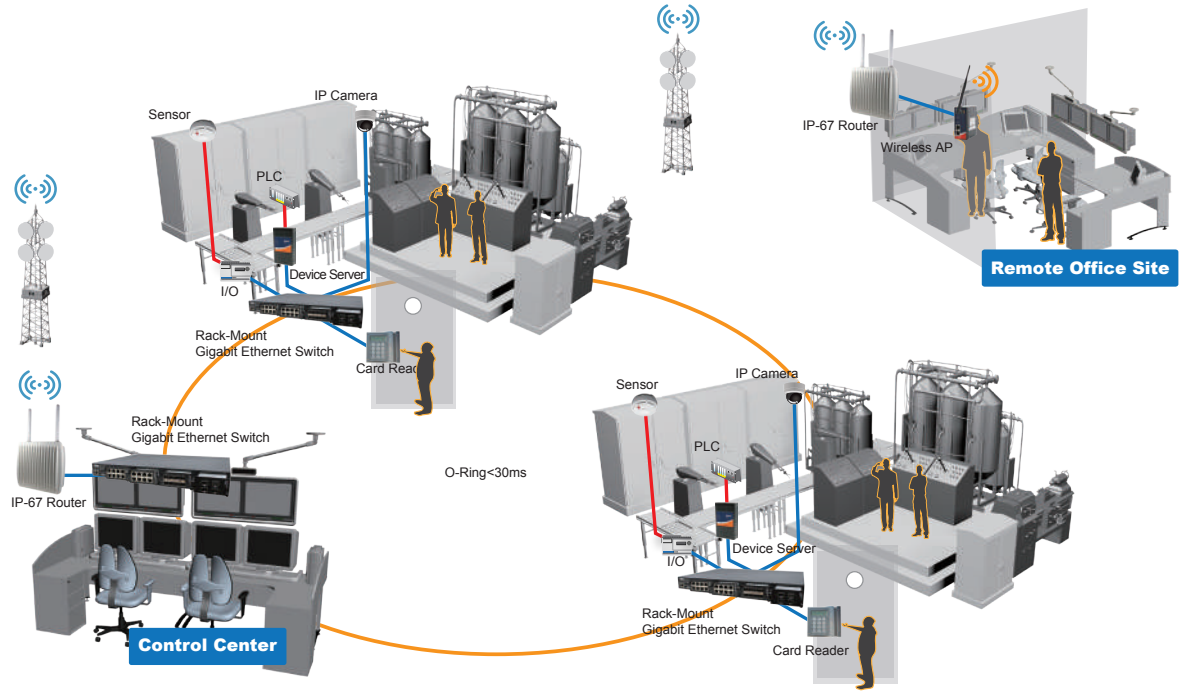
RGPS-R9244GP+-P

Industrial Layer-3 28-port Managed Gigabit PoE Ethernet Switch

- Supports Layer 3 static routing, RIP and VRRP function
- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- 24 ports P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 watts per port
- Supports PoE schedule configuration and PoE auto-ping check function

***NOTE: This function is available by request only**


Internet
Control Center
IDS-322
RGS-PR9000
IGAR-1062-4G
O-Ring<30ms
RGS-PR9000
PoE Panel PC
IGPS-9084GP
RGS-PR9000
Production line
IGS-9168GP
Transmit Power and Data
IDS-342
Card Reader
IP Camera
PLC
Temperature Sensor
Production line
IDS-312+
CNC
Production line
DSL
Optic Fiber
CAT5e
Serial
PoE Link
Cellular Interface
Wireless LAN


IP Camera
Sensor
PLC
Device Server
I/O
Rack-Mount
Gigabit Ethernet Switch
Card Reader
IP-67 Router
Wireless AP
Remote Office Site
Rack-Mount
Gigabit Ethernet Switch
IP-67 Router
Control Center
O-Ring<30ms
Sensor
IP Camera
PLC
Device Server
I/O
Rack-Mount
Gigabit Ethernet Switch
Card Reader

Smart City

Upgrade Your City with Our IIoT Solution

From the forecast of Strategy Analytics 2015, urban living will contain 86% of the developed countries and 64% of developing countries by 2020.

The circumstance of global population shifting to urban centers is stimulating the development of “Smart Cities” which is to maximize the eciency of crucial resources such as utilities, water supply and transportation services and so on. These cities in the future will combine and leverage Internet of Things (IoT) and Information and Communications (ICT).

From the forecast of Strategy Analytics 2015, urban living will contain 86% of the developed countries and 64% of developing countries. It makes resource allocation me more critical for global development, especially in ICT and relative integrated IoT system. According to the report of “The Future of Smart Cities- Opportunities, solution and Players,” ICT revenues from urban living will reach $977 Billion by 2022. End to end systems such as cloud computing and data collection mechanism becomes essential to sustainably urban living in terms of how to make proper use of energy and further increase service quality of public infrastructure.

Key Products

LoRa Street Light Controller

Lighting System, corresponding with LPWAN technology, LoRa module and antenna

- LoRa module and antenna
- Wi-Fi and 3G/4G function are also included in Gateway Controller
- Wide Temp range -30 to +70˚C

NB-IoT Street Light Controller

Lighting System, corresponding with LPWAN technology, NB-IoT mPCIe module and antenna design

- NB-IoT mPCIe module and antenna design
- NEMA ANSI C136.41 Standard
- IP54 NEMA Certification

ORIO-G30218

Support two Serial Ports for RS232/RS422/4W-RS485/2W-RS485

- Support two Serial Ports for RS232/RS422/4W-RS485/2W-RS485
- Support NB-IOT/CAT M1/CAT 1/ZigBee/BT (BLE3.0)/LoRa (by model)
- Support 4 Digital inputs (Dry/Wet) / 4 Digital outputs (Sink)

IOT Meter

- Standard product for variety meter application
- Support UART /TTL/RS-485
- Support NB-IOT

LoRa P2P Gateway with Wifi Hotspot
a. 1: 80 Gateway
b. Coverage : 1.5km
c. Installation Height : 6m (Light Pole)

LoRa P2P Cell Controller / NB-IoT Street Light Controller

LoRa / NB-IoT Alarm button

IP Surveillance 4G / Optical Fiber

LoRa / NB-IoT Sensor and Meter IO

Smart City Communication Backbone
a. Fiber Switch
b. 3G/4G Gateway
c. 3G/4G Router
d. Wifi Hot-Spot

LoRa Repeater

LoRa / NB-IoT Tracker

1 Industrial Ethernet Switches

Industrial Rack-Mount Gigabit/Fast Ethernet Switch

Industrial DIN-Rail Gigabit Ethernet Switch

TGPS-9164GT-M12 Series	EN50155 20-port managed Gigabit PoE Ethernet switch with 16x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), M12 connector and 2xbypass included	1-651
TGPS-9084GT-M12 Series	EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x10/100/1000Base-T(X), M12	1-658
TGPS-9084GT-M12X Series	EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), X-coded M12 connector	1-665
TGPS-9084GT-M12X-BP2 Series	EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), X-coded M12 connector and 2xbypass included	1-671
TGPS-TGPS-9080-M12A-MV	EN50155 8-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. with A-coded M12 connector, 110VDC power input	1-677
TGPS-1080-M12 Series	EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., M12 connector	1-683
TGPS-1080-M12-BP2 Series	EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., M12 connector and 2xbypass included	1-687
TGXPS-1080-M12-24V Series	EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/500/1000Base-T(X) P.S.E., M12 connector, 24VDC power input	1-691
TGXPS-141GX-M12 Series	EN50155 5-port unmanaged Gigabit PoE Ethernet switch with 4x10/100/500/1000Base-T(X) P.S.E. and 1x10/100/500/1000Base-T(X), M12 connector	1-695
TXPS-141XT-M12 Series	EN50155 5-port unmanaged PoE Ethernet switch with 4x10/100/500Base-T(X) P.S.E. and 1x10/100/500Base-T(X), M12 connector	1-699
TSPL-101GT-M12 Series	EN50155 Industrial 1-port Gigabit PoE Splitter, M12 connector	1-703
TINJ-101GT-M12 Series	EN50155 Industrial 1-port Gigabit High Power PoE Injector ,M12 connector	1-707
TINJ-101-M12 Series	EN50155 Industrial 1-port FET PoE Injector with 30W output, M12 connector	1-711

Optical / PoE Network Accessories

IBS-102FX Series	Industrial 2-port optical bypass switch for fiber optical network with 4xLC duplex Connector	1-715
INJ-102GT	Industrial 2-port Gigabit High Power PoE Injector	1-719
INJ-102GT-24V	Industrial 2-port Gigabit High Power PoE Injector,24V~50V Input Support	1-722
INJ-102GT++ Series	Industrial 2-port Gigabit High Power Plus PoE++ Injector	1-726
INJ-101GT++-60W	Industrial 1-port Gigabit High Power PoE++ Injector	1-730
SPL-101GT Series	Industrial 1-port Gigabit PoE Splitter	1-733
SPL-101GT++-12V	Industrial 1-port Gigabit PoE Splitter, 60Watts Output	1-737
PET-102GT++	Industrial 2-port Gigabit High Power PoE++ Extender	1-740

Naming Rules

Model Name Symbol Color Legend

BLACK: For the associated sub-category, the symbol is constant for both this Overall List or in the Datasheet(s) of the indicated model(s).

PURPLE: For the associated sub-category, the symbol is variable or optional for this Overall List and is constant or optional for the Datasheet(s) of the indicated model(s).

BLUE: For the associated sub-category, the symbol is variable or optional for both this Overall List and the Datasheet(s) of the indicated model(s).

INDUSTRIAL ETHERNET SWITCH	Industrial Rack-Mount Ethernet Switch
Model Name	RES-YZAABCC
	RGS-YZAABCC (Gigabit)
Ordering info & label	RES-YZAABCC-D_EE
	RGS-YZAABCC-D_EE (Gigabit)
Code Definition	**Y: Weatherproof Option**
	W: waterproof (IP-67)
	Z: Management Type
	1: Unmanaged
	2: Lite-Managed
	3: Managed
	7: Managed (Thunder Rack Series)
	AA: (RES) 10/100Base-T(X) Port Number
	(RGS) Gigabit Cooper (Combo for CC=GCP) Port Number
	B: Additional Port Number
	CC: Additional Port Type
	GP: 1000Base-X in SFP socket
	GC: Gigabit Combo port with SFP socket
	GCP: Gigabit Combo + 1000Base-X SFP socket
	D: Enhanced Model
	E: enhanced model with enhanced function
	EE: Power Cord Option
	_US: US power cord
	_EU: EU power cord

INDUSTRIAL ETHERNET SWITCH	Industrial DIN-Rail Gigabit Ethernet Switch
Model Name	IGS-YZAABCCS-DD-HH
Ordering info & label	IGS-YZAABCCS-DD-HH
Code Definition	**Y: Weatherproof Option**
	W: waterproof (IP-67)
	Z: Management Type
	1: Unmanaged
	2: Lite-Managed
	3: Managed
	7: Managed (Thunder Rail Series)
	AA: Gigabit Cooper (Combo for CC=GCP) Port Number
	B: Additional Port Number
	CC: Additional Port Type
	GF: 1000Base-X
	GP: 1000Base-X in SFP socket
	GC: Gigabit Combo port with SFP socket
	GCP: Gigabit Combo + 1000Base-X SFP socket
	S: Slenderness
	A: Slim-type
	B: Mini-type
	DD: Fiber Optical Mode (CC=GF only
	MM: Multi-mode
	SS: Single-mode
	EE: Fiber Optical Connector (CC=FX or GF only)
	SC
	ST
	HH: Special-type Connector
	M12: M12 weatherproof connector

INDUSTRIAL ETHERNET SWITCH	Industrial DIN-Rail Fast Ethernet Switch
Model Name	IES-YZABCCS-DD-DD IES-YZAABCCS-DD-DD
Ordering info & label	IES-YZABCCS-DD-DD-EE-F IES-YZAABCCS-DD-DD-EE-F
Code Definition	**Y: Weatherproof Option**
	W: waterproof (IP-67)
	Z: Management Type
	1: Unmanaged
	2: Lite-Managed
	3: Managed
	A: 10/100Base-T(X) Port Number (1-digit form)
	AA: 10/100Base-T(X) Port Number (2-digit form)
	B: Additional Port Number
	CC: Additional Port Type
	GT: 10/100/1000Base-T(X)
	FX: 100Base-FX
	P : 100Base-FX in SFP socket
	GF: 1000Base-X
	GP: 1000Base-X in SFP socket
	GC: Gigabit Combo port with SFP socket

Code Definition	**S: Slenderness**
	A: Slim-type
	B: Mini-type
	DD: Fiber Optical Mode (CC=FX and GF only)
	MM: Multi-mode
	SS: Single-mode
	EE: Fiber Optical Connector (CC=FX or GF only)
	SC
	ST
	HH: Special-type Connector
	M12: M12 weatherproof connector

INDUSTRIAL ETHERNET SWITCH	Industrial Card-Type Ethernet Switch
Model Name	ICS-4AAB-CC-DD
Ordering Info & label	ICS-4AAB-CC-DD-EE
Code Definition	**AA: 10/100Base-T(X) Port Number**
	B: Additional Port Number
	CC: Additional Port Type
	GT: 10/100/1000Base-T(X)
	FX: 100Base-FX
	GF: 1000Base-X
	GP: 1000Base-X in SFP socket
	GC: Gigabit Combo port with SFP socket
	DD: Fiber Optical Mode (CC=FX and GF only)
	MM: Multi-mode
	SS: Single-mode

INDUSTRIAL ETHERNET SWITCH	Industrial IP-67 (Fast) Ethernet Switch
Model Name	IES-2AAB-M12 (Lite-Managed)
Ordering Info & label	IES-2AAB-M12 (Lite-Managed)
Code Definition	**AA: 10/100Base-T(X) Port Number**
	B: Additional Port Number

INDUSTRIAL ETHERNET SWITCH	Industrial PoE Ethernet Switch
Model Name	IPS-YZAABCCS-DD
	IGPS-YZAABCCS-DD-FF (Gigabit DIN-Rail)
	RGPS-YZAABCCS-DD-F (Gigabit Rack-Mount)
Ordering Info & label	IPS-YZAABCCS-DD-EE-HH_GG
	IGPS-YZAABCCS-DD-EE-FF-HH_GG (Gigabit DIN-Rail)
	RGPS-YZAABCCS-DD-EE-HH-F_GG (Gigabit Rack-Mount)
Code Definition	**Y: Weatherproof Option**
	W: waterproof (IP-67)
	Z: Management Type
	1: Unmanaged
	2: Lite-Managed
	3: Managed
	7: Managed (Thunder PoE Series)
	AA: (IPS) 10/100Base-T(X) P.S.E. Port Number
	(IGPS, RGPS) Gigabit Cooper P.S.E. Port Number
	B: Non-P.S.E. Port Number or Additional Port Number
	CC: Non-P.S.E. Port Type or Additional Port Number
	GT: 10/100/1000Base-T(X)
	FX: 100Base-FX
	TX: 10/100Base-T(X)
	P : 100Base-FX in SFP socket
	GF: 1000Base-X
	GP: 1000Base-X in SFP socket
	GC: Gigabit Combo port with SFP socket
	S: Slenderness
	A: Slim-type
	B: Mini-type
	DD: Fiber Optical Mode (CC=FX and GF only)
	MM: Multi-mode
	SS: Single-mode
	EE: Fiber Optical Connector (CC=FX or GF only)
	SC
	ST
	HH: Special-type Connector
	M12: M12 weatherproof connector
	F: (RGPS) Built-in Power Supply
	P: Power supply included
	FF: (IGPS) Custom Power Input Option
	24V: 24VDC power inputs
	GG: Power Cord Option
	_US: US power cord
	_EU: EU power cord

INDUSTRIAL ETHERNET SWITCH	Industrial EN50155 (Transporter Series) Ethernet Switch
Model Name	TES-YZABCC-DD-HH-FFG TES-YZAABCC-DD-HH-FFG TPS-YZABCC-DD-HH-FFG (EN50155 PoE)
Ordering Info & label	TES-YZABCC-DD-EE-HH-FFG TES-YZAABCC-DD-EE-HH-FFG TPS-YZABCC-DD-HH-FFG (EN50155 PoE)

Code Definition	**Y: Weatherproof Option**
	W: waterproof (IP-67)
	Z: Management Type
	1: Unmanaged
	2: Lite-Managed
	3: Managed
	A: 10/100Base-T(X) Port Number (1-digit form)
	AA: 10/100Base-T(X) Port Number (2-digit form)
	B: Additional Port Number
	CC: Additional Port Type
	GT: 10/100/1000Base-T(X)
	FX: 100Base-FX
	P : 100Base-FX in SFP socket
	GF: 1000Base-X
	GP: 1000Base-X in SFP socket
	GC: Gigabit Combo port with SFP socket
	HH: Special-type Connector
	M12: M12 weatherproof connector
	FF: Special Features
	BP: Hardware Bypass
	G: Hardware Bypass Pair Count

INDUSTRIAL ETHERNET SWITCH	Optical (Fiber) Bypass Protection (Switch)
Model Name	IBS-10Y-ZZ-AA
Ordering info & label	IBS-10Y-ZZ-AA-BB
Code Definition	**Y: Port Count**
	2: 2-port
	ZZ: Port Type
	FX: 100/1G/10G
	AA: Fiber Optical Mode
	MM: Multi-mode
	SS: Single-mode
	BB: Fiber Optical Connector
	LC

INDUSTRIAL ETHERNET SWITCH	PoE Accessories
Model Name	XXX-10YZZ-AA
Ordering info & label	XXX-10YZZ-AA
Code Definition	**XXX: Accessory Type**
	INJ: Injector
	SPL: Splitter
	Y: Port Count
	1: 1-port
	2: 2-port
	ZZ: Port Type
	GT: 10/100/1000Base-T(X)
	blank: 10/100/Base-T(X)
	AA: PoE Type
	AT: IEEE802.3at standard compliant
	AF: IEEE802.3af standard compliant

Product Selection Guide

	Industrial Rack-Mount Gigabit/Fast Ethernet Switch			
	Managed Switch			
Industrial Ethernet Switch				
	RGS-92222GCP-NP / RGS-92222GCP-NP-E		RGS-9168GCP Series/-E	RES-9242GC
Port Number				
Number of ports	26		24	26
10/100Base-T(X) RJ45 Ports	-		-	24
10/100/1000Base-T(X) Ports	22		-	-
100Base-FX Fiber Ports	-		-	-
1000Base-X Fiber Ports			-	-
100Base-FX SFP Ports	-		-	-
100/1000Base-X SFP Ports	2		8	-
Gigabit Combo Ports	2		16	2
Power Redundancy				
DC Terminal Block	-	2 (-E)	2 (-E)	-
DC Power Jack	-		-	-
AC Power Cord	1	1	1	2
Installation				
DIN-Rail Mounting	-		-	-
Wall Mounting	-		-	-
Rack Mounting	•		•	•
Physical Characteristics				
Casing Protection	IP-20		IP-20	IP-20
Dimensions (mm)	443.7(W)x200(D)x44(H)	431(W)x342(D)x44(H)	431(W)x342(D)x44(H)	440(W) x 200(D) x 44(H)
Operating Temperature				
-10 to 60°C	-		-	-
-40 to 70°C	-		-	-
-40 to 75°C	•		•	•
Network Redundancy				
O-Ring	•		•	•
Open-Ring	•		-	•
O-Chain	•		•	•
MRP*NOTE	•		•	•
MSTP/STP/RSTP	•		•	•
Management and Control				
802.1X	•		•	•
Rate Limit	•		•	•
Port Mirror	•		•	•
Port Security	•		•	•
IGMP v2/v3	•		•	•
QoS Port Base/COS/TOS	•		•	•
Port Trunk Static/LACP	•		•	•
LLDP	•		•	•
System Alarm	SYSLOG / SNMP Trap	SYSLOG / SNMP Trap / Relay	SYSLOG / SNMP Trap / Relay	SYSLOG / SNMP Trap
DHCP	Server / Client		Server / Client	Server / Client
VLAN	802.1Q		802.1Q	802.1Q
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)		WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)
Warranty	5 years			

*NOTE: This function is available by request only

Product Selection Guide

	Industrial Rack-Mount Gigabit/Fast Ethernet Switch	Industrial Din-Rail Gigabit Ethernet Switch
	Managed Switch	Manageed Switch
Industrial Ethernet Switch		
	RES-1242P	IGS-9122GPM
Port Number		
Number of ports	**26**	**Max:26**
10/100Base-T(X) RJ45 Ports	24	-
10/100/1000Base-T(X) Ports	-	12
100Base-FX SFP Ports	2	-
100/1000Base-X SFP Ports	-	2
Gigabit Combo Ports	-	-
Power Redundancy		
DC Terminal Block	-	2
DC Power Jack	-	-
AC Power Cord	1	-
Installation		
DIN-Rail Mounting	-	●
Wall Mounting	-	-
Rack Mounting	●	-
Physical Characteristics		
Casing Protection	IP-20	IP-30
Dimensions (mm)	443.7(W) x 262.7(D) x 44(H)	184(W) x 155(D) x 150(H)
Operating Temperature		
-40 to 70°C	-	-
-40 to 75°C	-	●
-40 to 85°C	●	-
Network Redundancy		
O-Ring	●	●
Open-Ring	●	●
O-Chain	●	●
MRP*NOTE	●	●
MSTP/STP/RSTP	●	●
Management and Control		
802.1X	●	●
Rate Limit	●	●
Port Mirror	●	●
Port Security	●	●
IGMP v2/v3	●	●
QoS Port Base/COS/TOS	●	●
Port Trunk Static/LACP	●	●
LLDP	●	●
System Alarm	SYSLOG / SNMP Trap	SYSLOG / SNMP Trap / Relay
DHCP	Server / Client	Server / Client / Relay
VLAN	802.1Q	Port-Based / 802.1Q / Q-in-Q
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)
Warranty	5 years	

*NOTE: This function is available by request only

Product Selection Guide

	Industrial Rack-Mount Modular Ehernet Switch			
	Manageed Switch			
Industrial Ethernet Switch				
	RGS-PR9000-A-LV	**RGS-PR9000-A-LV (10G)**	**RGS-PR9000-A-HV**	**RGS-PR9000-A-HV (10G)**
Port Number				
Number of ports	up to 24	up to 28	up to 24	up to 28
10/100/1000Base-T(X) Ports	-			
100Base-FX Fiber Ports	-			
1000Base-X Fiber Ports	-			
100/1000Base-X SFP Ports	-			
10G SFP+ Ports	-	4	-	4
Gigabit Combo Ports	-			
Power Redundancy				
DC Terminal Block	2		-	
DC Power Jack	-		-	
AC Power Cord	-		2	
Installation				
DIN-Rail Mounting	-			
Wall Mounting	-			
Rack Mounting	•			
Physical Characteristics				
Casing Protection	IP 30			
Dimensions (mm)	440(W) x 325(D) x 44(H)			
Operating Temperature				
-20 to 60°C		•		•
-40 to 85°C	•		•	
Network Redundancy				
O-Ring	•			
Open-Ring	-			
O-Chain	•			
MRP*NOTE	-			
MSTP(RSTP/STP Compliant)	•			
Management and Control				
Static Routing / RIP /VRRP	•			
802.1X	•			
Rate Limit	•			
Port Mirror	•			
Port Security	•			
IGMP v2/v3	•			
QoS Port Base/COS/TOS	•			
Port Trunk Static/LACP	•			
LLDP	•			
Static Routing	•			
IEEE 1588v2	•			
System Alarm	SYSLOG / SNMP Trap / Relay			
DHCP	Server / Client / Relay			
VLAN	Port-Based / 802.1Q / Q-in-Q			
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)			
Warranty	5 years			

Product Selection Guide

	Industrial Rack-Mount Modular Ehernet Switch			
	Manageed Switch			
Industrial Ethernet Switch				
	RGS-PR9000	**RGS-P9000**	**RGS-R9244GP+/-E**	
Port Number				
Number of ports	Max:28	Max:28	28	
10/100/1000Base-T(X) Ports	-	-	24	
100Base-FX Fiber Ports	-	-	-	
1000Base-X Fiber Ports	-	-	-	
100/1000Base-X SFP Ports	-	-	-	
1G/10G SFP+ Ports	-	-	4	
Gigabit Combo Ports	-	-	-	
Power Redundancy				
DC Terminal Block	2(LV)	2(LV)	-	2(-E)
DC Power Jack	-	-	-	-
AC Power Cord	2(HV)	2(HV)	1	1
Installation				
DIN-Rail Mounting	-	-	-	
Wall Mounting	-	-	-	
Rack Mounting	●	●	●	
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	
Dimensions (mm)	443.7(W) x 330(D) x 44(H)	443.7(W) x 330(D) x 44(H)	431 (W) x 342 (D) x 44 (H)	
Operating Temperature				
-20 to 60°C	-	-	●	
-40 to 70°C	-	-	-	
-40 to 85°C	●	●	-	
Network Redundancy				
O-Ring	●	●	●	
Open-Ring	●	●	●	
O-Chain	●	●	●	
MRP*NOTE	●	●	●	
MSTP(RSTP/STP Compliant)	●	●	●	
Management and Control				
Static Routing / RIP /VRRP	●	-	●	
802.1X	●	●	●	
Rate Limit	●	●	●	
Port Mirror	●	●	●	
Port Security	●	●	●	
IGMP v2/v3	●	●	●	
QoS Port Base/COS/TOS	●	●	●	
Port Trunk Static/LACP	●	●	●	
LLDP	●	●	●	
Static Routing	●	-	●	
IEEE 1588v2	●	●	●	
System Alarm	SYSLOG / SNMP Trap / Relay	Relay/SYSLOG / SNMP Trap / Relay	Relay/SYSLOG / SNMP Trap / Relay	
DHCP	Server / Client / Relay	Server / Client / Relay	Server / Client / Relay	
VLAN	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q	
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	
Warranty	5 years			

*NOTE: This function is available by request only

Product Selection Guide

	Industrial Rack-Mount Modular Ehernet Switch		
	Manageed Switch		
Industrial Ethernet Switch			
	RGS-P9160GCM1	RGS-P9160GFM1	RGS-P9160FXM1
Port Number			
Number of ports	Max:24	Max:24	Max:24
10/100/1000Base-T(X) Ports	-	-	-
100Base-FX Fiber Ports	-	-	16
1000Base-X Fiber Ports	-	16	-
100/1000Base-X SFP Ports	-	-	-
1G/10G SFP+ Ports	-	-	-
Gigabit Combo Ports	16	-	-
Power Redundancy			
DC Terminal Block	-	-	-
DC Power Jack	-	-	-
AC Power Cord	-	-	-
Installation			
DIN-Rail Mounting	-	-	-
Wall Mounting	-	-	-
Rack Mounting	•	•	•
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	440(W) x 325(D) x 44(H)	440(W) x 325(D) x 44(H)	440(W) x 325(D) x 44(H)
Operating Temperature			
-20 to 60°C	-	-	-
-40 to 70°C	-	-	-
-40 to 85°C	•	•	•
Network Redundancy			
O-Ring	•	•	•
O-Chain	•	•	•
MRP*NOTE	•	•	•
MSTP(RSTP/STP Compliant)	•	•	•
Management and Control			
802.1X	•	•	•
Rate Limit	•	•	•
Port Mirror	•	•	•
Port Security	•	•	•
IGMP v2/v3	•	•	•
QoS Port Base/COS/TOS	•	•	•
Port Trunk Static/LACP	•	•	•
LLDP	•	•	•
System Alarm	SYSLOG / SNMP Trap / Relay	SYSLOG / SNMP Trap / Relay	SYSLOG / SNMP Trap / Relay
DHCP	Server / Client	Server / Client	Server / Client
VLAN	802.1Q	802.1Q	802.1Q
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)
Warranty	5 years		

Product Selection Guide

	Industrial Rack-Mount Modular Ehernet Switch		
	Manageed Switch		
Industrial Ethernet Switch			
	RGS-P9160GCM2	RGS-P9160GFM2	RGS-P9160FXM2
Port Number			
Number of ports	Max:20	Max:20	Max:20
10/100/1000Base-T(X) Ports	-	-	-
100Base-FX Fiber Ports	-	-	16
1000Base-X Fiber Ports	-	16	-
100/1000Base-X SFP Ports	-	-	-
1G/10G SFP+ Ports	-	-	-
Gigabit Combo Ports	16	-	-
Power Redundancy			
DC Terminal Block	2(LV)	2(LV)	2(LV)
DC Power Jack	-	-	-
AC Power Cord	2(HV)	2(HV)	2(HV)
Installation			
DIN-Rail Mounting	-	-	-
Wall Mounting	-	-	-
Rack Mounting	●	●	●
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	440(W) x 325(D) x 44(H)	440(W) x 325(D) x 44(H)	440(W) x 325(D) x 44(H)
Operating Temperature			
-20 to 60°C	-	-	-
-40 to 70°C	-	-	-
-40 to 85°C	●	●	●
Network Redundancy			
O-Ring	●	●	●
O-Chain	●	●	●
MRP*NOTE	●	●	●
MSTP(RSTP/STP Compliant)	●	●	●
Management and Control			
802.1X	●	●	●
Rate Limit	●	●	●
Port Mirror	●	●	●
Port Security	●	●	●
IGMP v2/v3	●	●	●
QoS Port Base/COS/TOS	●	●	●
Port Trunk Static/LACP	●	●	●
LLDP	●	●	●
System Alarm	SYSLOG / SNMP Trap / Relay	SYSLOG / SNMP Trap / Relay	SYSLOG / SNMP Trap / Relay
DHCP	Server / Client	Server / Client	Server / Client
VLAN	802.1Q	802.1Q	802.1Q
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)
Warranty	5 years		

Product Selection Guide

	Industrial Rack-Mount Modular Ethernet Switch			
	Accessories Module			
Industrial Ethernet Switch				
	SWM-80GT	SWM-08GP	SWM-04GP+_4	SWM-02GP+_4
Port Number				
Number of ports	8	8	4	2
10/100/1000Base-T(X) Ports	8	-	-	-
100Base-FX Fiber Ports	-	-	-	-
1000Base-X Fiber Ports	-	-	-	-
100/1000Base-X SFP Ports	-	8	-	-
10G SFP+ Ports	-	-	4	2
Gigabit Combo Ports	-	-	-	-
Power Redundancy				
DC Terminal Block	-	-	-	-
DC Power Jack	-	-	-	-
AC Power Cord	-	-	-	-
Installation				
DIN-Rail Mounting	-	-	-	-
Wall Mounting	-	-	-	-
Rack Mounting	Module Plug-in	Module Plug-in	Module Plug-in	Module Plug-in
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	99(W) x 122(D) x 40.8(H)	99(W) x 122(D) x 40.8(H)	86.7(W) x 151.5(D) x 40.8(H)	86.7(W) x 151.5(D) x 40.8(H)
Operating Temperature				
-20 to 60°C	-	-	•	•
-40 to 85°C	•	•	-	-
Network Redundancy				
O-Ring	-	-	-	-
Open-Ring	-	-	-	-
O-Chain	-	-	-	-
MRP*NOTE	-	-	-	-
MSTP(RSTP/STP Compliant)	-	-	-	-
Management and Control				
802.1X	-	-	-	-
Rate Limit	-	-	-	-
Port Mirror	-	-	-	-
Port Security	-	-	-	-
IGMP v2/v3	-	-	-	-
QoS Port Base/COS/TOS	-	-	-	-
Port Trunk Static/LACP	-	-	-	-
LLDP	-	-	-	-
Static Routing	-	-	-	-
IEEE 1588v2	-	-	-	-
System Alarm	-	-	-	-
DHCP	-	-	-	-
VLAN	-	-	-	-
Management / Configuration	-	-	-	-
Warranty	5 years			

*NOTE: This function is available by request only

Product Selection Guide

	Industrial Rack-Mount Modular Ethernet Switch			
	Accessories Module			
Industrial Ethernet Switch				
	SWM-04FX-MM-SC	SWM-04FX-MM-ST	SWM-04FX-SS-SC	SWM-04FX-SS-ST
Port Number				
Number of ports	4			
100Base-FX Fiber Ports	4			
Power Redundancy				
DC Terminal Block	-	-	-	-
DC Power Jack	-	-	-	-
AC Power Cord	-	-	-	-
Installation				
DIN-Rail Mounting	-	-	-	-
Wall Mounting	-	-	-	-
Rack Mounting	Module Plug-in	Module Plug-in	Module Plug-in	Module Plug-in
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	99(W) x 122(D) x 40.8(H)	99(W) x 122(D) x 40.8(H)	86.7(W) x 151.5(D) x 40.8(H)	99(W) x 122(D) x 40.8(H)
Operating Temperature				
-40 to 70°C	-	-	-	-
-40 to 85°C	•	•	•	•
Network Redundancy				
Fiber mode	multi-mode	multi-mode	single-mode	single-mode
Connector Type	SC	ST	SC	ST
Data Rate	100Mbps	100Mbps	100Mbps	100Mbps
Typical Distance	2km	2km	30km	30km
Wavelength	1310nm	1310nm	1310nm	1310nm
Optical Output Power 9/125µm fiber (Max. TX)	-	-	-8dbm	-8dbm
Optical Output Power 9/125µm fiber (Min. TX)	-	-	-15dbm	-15dbm
Optical Output Power 62.5/125 µmfiber (Max. TX)	-14dbm	-14dbm	-	-
Optical Output Power 62.5/125 µmfiber (Min. TX)	-20dbm	-20dbm-	-	-
Optical Output Power 50/125µm fiber (Max. TX)	-14dbm	-14dbm	-	-
Optical Output Power 50/125µm fiber (Min. TX)	-23.5dbm	-23.5dbm	-	-
Optical Input Power-minimum (Sensitivity)	-31dbm	-31dbm	-34dbm	-34dbm
Optical Input Power-maximum (Saturation)	0dbm	-8dbm	0dbm	0dbm
Link Budget	7.5db	8.5db	19db	19db
Warranty	5 years			

Product Selection Guide

	Industrial Rack-Mount Modular Ethernet Switch			
	Accessories Module			
Industrial Ethernet Switch				
	SWM-04GF-MM-SC	SWM-04GF-MM-ST	SWM-04GF-SS-SC	SWM-04GF-SS-ST
Port Number				
Number of ports	4			
1000Base-X Fiber Ports	4			
Power Redundancy				
DC Terminal Block	-	-	-	-
DC Power Jack	-	-	-	-
AC Power Cord	-	-	-	-
Installation				
DIN-Rail Mounting	-	-	-	-
Wall Mounting	-	-	-	-
Rack Mounting	Module Plug-in	Module Plug-in	Module Plug-in	Module Plug-in
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	99(W) x 122(D) x 40.8(H)	99(W) x 122(D) x 40.8(H)	99(W) x 122(D) x 40.8(H)	99(W) x 122(D) x 40.8(H)
Operating Temperature				
-40 to 70°C	-	-	-	-
-40 to 85°C	•	•	•	•
Network Redundancy				
Fiber mode	multi-mode	multi-mode-	single-mode	single-mode
Connector Type	SC	ST	SC	ST
Data Rate	1GMbps	1GMbps	1GMbps	1GMbps
Typical Distance	550m	550m	10km	10km
Wavelength	850nm	850nm	1310nm	1310nm
Optical Output Power 9/125μm fiber (Max. TX)	-	-	-3dbm	-3dbm
Optical Output Power 9/125μm fiber (Min. TX)	-	-	-9.5dbm	-9.5dbm
Optical Output Power 62.5/125 μmfiber (Max. TX)	-4dbm	-4dbm	-	-
Optical Output Power 62.5/125 μmfiber (Min. TX)	-9.5dbm	-9.5dbm-	-	-
Optical Output Power 50/125μm fiber (Max. TX)	-4dbm	-4dbm	-	-
Optical Output Power 50/125μm fiber (Min. TX)	-9.5dbm	-9.5dbm	-	-
Optical Input Power-minimum (Sensitivity)	-18dbm	-18dbm	-20dbm	-20dbm
Optical Input Power-maximum (Saturation)	0dbm	-8dbm	0dbm	0dbm
Link Budget	8.5db	8.5db	10.5db	10.5db
Warranty	5 years			

Product Selection Guide

Industrial Ethernet Switch	Industrial Din-Rail Gigabit Ethernet Switch Managed Switch		
			
	IGS-9844GPF/IGS-9844GPFX	IGS-9812GP	IGS-9168GP
Port Number			
Number of ports	16	20	24
10/100Base-T(X) RJ45 Ports	-	-	-
10/100/1000Base-T(X) Ports	8	8	16
100Base-FX Fiber Ports	- / 4	-	-
1000Base-X Fiber Ports	4 / -	-	-
1000Base-X SFP Ports	-	-	-
100/1000Base-X SFP Ports	4	12	8
Gigabit Combo Ports	-	-	-
Power Redundancy			
DC Terminal Block	2	2	2
DC Power Jack	-	-	-
AC Power Cord	-	-	-
Installation			
DIN-Rail Mounting	•	•	•
Wall Mounting	•	•	•
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	96.4(W)x105.5(D)x154(H)	96.4(W)x105.5(D)x154(H)	96.4(W)x105.5(D)x154(H)
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 70°C	-	-	-
-40 to 75°C	•	•	•
-40 to 85°C	-	-	-
Network Redundancy			
O-Ring	•	•	•
Open-Ring	•	•	•
O-Chain	•	•	•
MRP*NOTE	•	•	•
MSTP/RSTP/STP	•	•	•
Management and Control			
802.1X	•	•	•
Rate Limit	•	•	•
Port Mirror	•	•	•
Port Security	•	•	•
SNMP v1/v2/v3	•	•	•
IGMP v2/v3	•	•	•
QoS Port Base/COS/TOS	•	•	•
Port Trunk Static/LACP	•	•	•
LLDP	•	•	•
IEEE 1588v2	•	•	•
System Alarm	SYSLOG/ SNMP Trap / Relay	SYSLOG/ SNMP Trap / Relay	SYSLOG/ SNMP Trap / Relay
DHCP	Server / Client/ Relay	Server / Client/ Relay	Server / Client/ Relay
VLAN	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)
Warranty	5 years		

*NOTE: This function is available by request only

Product Selection Guide

Industrial Ethernet Switch	Industrial Din-Rail Gigabit Ethernet Switch Managed Switch		
			
	IGS-9164GF/FX Series	IGS-9122GP	IGS-9084GP
Port Number			
Number of ports	20	14	12
10/100Base-T(X) RJ45 Ports	-	-	-
10/100/1000Base-T(X) Ports	16	12	8
100Base-FX Fiber Ports	- / 4(Multi)/Single Mode)	-	-
1000Base-X Fiber Ports	4(Multi)/Single Mode)	-	-
1000Base-FX SFP Ports	-	-	-
100/1000Base-X SFP Ports	-	2	4
Gigabit Combo Ports	-	-	-
Power Redundancy			
DC Terminal Block	2	2	2
DC Power Jack	-	-	-
AC Power Cord	-	-	-
Installation			
DIN-Rail Mounting	•	•	•
Wall Mounting	•	•	•
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	96.4(W)x105.5(D)x154(H)	74.3(W)x109.2(D)x153.6(H)	74.3(W)x109.2(D)x153.6(H)
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 70°C	-	-	-
-40 to 75°C	•	•	•
Network Redundancy			
O-Ring	•	•	•
Open-Ring	•	•	•
O-Chain	•	•	•
MRP*NOTE	•	•	•
MSTP/RSTP/STP	•	•	•
Management and Control			
802.1X	•	•	•
Rate Limit	•	•	•
Port Mirror	•	•	•
Port Security	•	•	•
SNMP v1/v2/v3	•	•	•
IGMP v2/v3	•	•	•
QoS Port Base/COS/TOS	•	•	•
Port Trunk Static/LACP	•	•	•
LLDP	•	•	•
IEEE 1588v2	•	•	•
System Alarm	SYSLOG/ SNMP Trap / Relay	SYSLOG/ SNMP Trap / Relay	SYSLOG/ SNMP Trap / Relay
DHCP	Server / Client/ Relay	Server / Client/ Relay	Server / Client/ Relay
VLAN	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)
Warranty	5 years		

*NOTE: This function is available by request only

Product Selection Guide

Industrial Ethernet Switch

IGS-9080 Series

IGS-9042GP

IGS-7084GCP

	IGS-9080 Series	IGS-9042GP	IGS-7084GCP
Port Number			
Number of ports	8	6	12
10/100Base-T(X) RJ45 Ports	-	-	-
10/100/1000Base-T(X) Ports	8	4	-
100Base-FX Fiber Ports	-	-	-
1000Base-X Fiber Ports	-	-	-
1000Base-FX SFP Ports	-	-	4
100/1000Base-X SFP Ports	-	2	-
Gigabit Combo Ports	-	-	8
Power Redundancy			
DC Terminal Block	2	2	2
DC Power Jack	-	-	-
AC Power Cord	-	-	-
Installation			
DIN-Rail Mounting	•	•	•
Wall Mounting	•	•	•
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	54.3(W)x108.5(D)x145.1(H)	54.3(W)x108.5(D)x145.1(H)	96.4(W)x105.5(D)x154(H)
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 70°C	-	-	•
-40 to 75°C	•	•	-
Network Redundancy			
O-Ring	•	•	•
Open-Ring	•	•	•
O-Chain	•	•	•
MRP*NOTE	•	•	•
MSTP/RSTP/STP	•	•	•
Management and Control			
802.1X	•	•	•
Rate Limit	•	•	•
Port Mirror	•	•	•
Port Security	•	•	•
SNMP v1/v2/v3	•	•	•
IGMP v2/v3	•	•	•
QoS Port Base/COS/TOS	•	•	•
Port Trunk Static/LACP	•	•	•
LLDP	•	•	•
IEEE 1588v2	•	•	•
System Alarm	SYSLOG/ SNMP Trap / Relay	SYSLOG/ SNMP Trap / Relay	SYSLOG/ SNMP Trap / Relay
DHCP	Server / Client/ Relay	Server / Client/ Relay	Server / Client/ Relay
VLAN	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)
Warranty	5 years		

*NOTE: This function is available by request only

Product Selection Guide

Industrial Ethernet Switch	Industrial Din-Rail Gigabit Ethernet Switch Managed Switch	
		
	IGS-R9812GP	IGS-R9812GP
Port Number		
Number of ports	**20**	**20**
10/100Base-T(X) RJ45 Ports	-	-
10/100/1000Base-T(X) Ports	8	8
100Base-FX Fiber Ports	-	-
1000Base-X Fiber Ports	-	-
1000Base-X SFP Ports	-	-
100/1000Base-X SFP Ports	12	12
Gigabit Combo Ports	-	-
Power Redundancy		
DC Terminal Block	2	2
DC Power Jack	-	-
AC Power Cord	-	-
Installation		
DIN-Rail Mounting	•	•
Wall Mounting	•	•
Physical Characteristics		
Casing Protection	IP-30	IP-30
Dimensions (mm)	96.4(W)x145.5(D)x154(H)	96.4(W)x145.5(D)x154(H)
Operating Temperature		
-10 to 60°C	-	-
-20 to 60°C	-	-
-40 to 75°C	•	•
-40 to 85°C	-	-
Network Redundancy		
O-Ring	•	•
Open-Ring	•	•
O-Chain	•	•
MRP*NOTE	•	•
MSTP/RSTP/STP	•	•
Management and Control		
Static Routing/RIP/VRRP	SYSLOG/ SNMP Trap / Relay	SYSLOG/ SNMP Trap / Relay
802.1X	•	•
Rate Limit	•	•
Port Mirror	•	•
Port Security	•	•
SNMP v1/v2/v3	•	•
IGMP v2/v3	•	•
QoS Port Base/COS/TOS	•	•
Port Trunk Static/LACP	•	•
LLDP	•	•
IEEE 1588v2	•	•
System Alarm	SYSLOG/ SNMP Trap / Relay	SYSLOG/ SNMP Trap / Relay
DHCP	Server / Client/ Relay	Server / Client/ Relay
VLAN	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)
Warranty	5 years	

*NOTE: This function is available by request only

Product Selection Guide

	Industrial Din-Rail Gigabit Ethernet Switch			
	Managed Switch			
Industrial Ethernet Switch				
	IGS-P9812GP Series	IGS-P9164GF / FX / GC Series		
Port Number				
Number of ports	20	20		
10/100Base-T(X) RJ45 Ports	-	-		
10/100/1000Base-T(X) Ports	8	16		
100Base-FX Fiber Ports	-	-	4	-
1000Base-X Fiber Ports	-	4	-	-
1000Base-X SFP Ports	-	-	-	-
100/1000Base-X SFP Ports	12	-	-	-
Gigabit Combo Ports	-	-	-	4
Power Redundancy				
DC Terminal Block	2 (LV)	2 (LV)		
DC Power Jack	-	-		
AC Power Cord	2 (HV)	2 (HV)		
Installation				
DIN-Rail Mounting	•	•		
Wall Mounting	•	•		
Physical Characteristics				
Casing Protection	IP-30	IP-30		
Dimensions (mm)	115(W)x159(D)x154(H)	115(W)x159(D)x154(H)		
Operating Temperature				
-10 to 60°C	-	-		
-40 to 70°C	-	-		
-40 to 75°C	•	•		
-40 to 85°C	-	-		
Network Redundancy				
O-Ring	•	•		
Open-Ring	•	•		
O-Chain	•	•		
MRP*NOTE	•	•		
MSTP/RSTP/STP	•	•		
Management and Control				
Static Routing/RIP/VRRP	•	-		
802.1X	•	•		
Rate Limit	•	•		
Port Mirror	•	•		
Port Security	•	•		
SNMP v1/v2/v3	•	•		
IGMP v2/v3	•	•		
QoS Port Base/COS/TOS	•	•		
Port Trunk Static/LACP	•	•		
LLDP	•	•		
IEEE 1588v2	•	•		
System Alarm	SYSLOG/ SNMP Trap / Relay	SYSLOG/ SNMP Trap / Relay		
DHCP	Server / Client/ Relay	Server / Client/ Relay		
VLAN	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q		
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)		
Warranty	5 years			

*NOTE: This function is available by request only

Product Selection Guide

	Industrial DIN-Rail Gigabit Ethernet Switch		
	Managed Switch		Unmanaged Switch
Industrial Ethernet Switch			
	IGS-3044GC	IGS-3032GC	IGS-1082GP
Port Number			
Number of ports	8	5	10
10/100Base-T(X) RJ45 Ports	-	-	-
10/100/1000Base-T(X) Ports	4	3	8
100Base-FX Fiber Ports	-	-	-
1000Base-X Fiber Ports	-	-	-
1000Base-X SFP Ports	-	-	-
100/1000Base-X SFP Ports	-	-	2
Gigabit Combo Ports	4	2	-
Power Redundancy			
DC Terminal Block	2	2	2
DC Power Jack	-	1	-
AC Power Cord	-	-	-
Installation			
DIN-Rail Mounting	●	●	●
Wall Mounting	●	●	●
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	74.3(W)x109.2(D)x153.6(H)	54.2(W)x106.1(D)x145.4(H)	54.3(W)x108.3(D)x145.1(H)
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 70°C	●	●	-
-40 to 75°C	-	-	●
Network Redundancy			
O-Ring	●	●	-
Open-Ring	●	●	-
O-Chain	●	●	-
MRP*NOTE	●	●	-
MSTP/RSTP/STP	●	●	-
Management and Control			
802.1X	●	●	-
Rate Limit	●	●	-
Port Mirror	●	●	-
Port Security	●	●	-
SNMP v1/v2/v3	●	●	-
IGMP v2/v3	●	●	-
QoS Port Base/COS/TOS	●	●	-
Port Trunk Static/LACP	●	●	-
LLDP	●	●	-
IEEE 1588v2	-	-	-
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	-
DHCP	Server / Client	Server / Client	-
VLAN	Port-Based / 802.1Q / Q-in-Q / GVRP	Port-Based / 802.1Q / Q-in-Q / GVRP	-
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)	-
Warranty	5 years		

*NOTE: This function is available by request only

Product Selection Guide

	Industrial DIN-Rail Gigabit Ethernet Switch			
	Unmanaged Switch			
Industrial Ethernet Switch				
	IGS-1080A	IGS-1041GPA / 1050A	IGS-1042GPA	IGS-150B
Port Number				
Number of ports	8	5	6	5
10/100Base-T(X) RJ45 Ports	-		-	-
10/100/1000Base-T(X) Ports	8	4 / 5	4	5
100Base-FX Fiber Ports	-	- / -	-	-
1000Base-X Fiber Ports	-	- / -	-	-
1000Base-X SFP Ports	-	- / -	-	-
100/1000Base-X SFP Ports	-	1 / -	2	-
Gigabit Combo Ports	-	- / -	-	-
Power Redundancy				
DC Terminal Block	2	2	2	2
DC Power Jack	-	-	-	-
AC Power Cord	-	-	-	-
Installation				
DIN-Rail Mounting	•	•	•	•
Wall Mounting	•	•	•	•
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	26.1(W)x94.9(D)x144.3(H)	26.1(W)x94.9(D)x144.3(H)	26.1(W)x94.9(D)x144.3(H	26.1(W)x70(D)x95(H
Operating Temperature				
-10 to 60°C	-	-	-	-
-40 to 70°C	•	•	•	•
-40 to 85°C	-	-	-	-
Network Redundancy				
O-Ring	-	-	-	-
Open-Ring	-	-	-	-
O-Chain	-	-	-	-
MRP*NOTE	-	-	-	-
MSTP/RSTP/STP	-	-	-	-
Management and Control				
802.1X	-	-	-	-
Rate Limit	-	-	-	-
Port Mirror	-	-	-	-
Port Security	-	-	-	-
SNMP v1/v2/v3	-	-	-	-
IGMP v2/v3	-	-	-	-
QoS Port Base/COS/TOS	-	-	-	-
Port Trunk Static/LACP	-	-	-	-
LLDP	-	-		
IEEE 1588v2	-	-	-	-
System Alarm	Relay	Relay	Relay	-
DHCP	-	-	-	-
VLAN	-	-	-	-
Management / Configuration	-	-	-	-
Warranty	5 years			

Product Selection Guide

Industrial Ethernet Switch	Industrial DIN-Rail Fast Ethernet Switch				
	Managed Switch				
					
	IES-3240	IES-3162GC	IES-3160	IES-P3073GC Series	IES-3073GC
Port Number					
Number of ports	24	18	16	10	10
10/100Base-T(X) RJ45 Ports	24	16	16	7	7
10/100/1000Base-T(X) Ports	-	-	-	-	-
100Base-FX Fiber Ports	-	-	-	-	-
1000Base-X Fiber Ports	-	-	-	-	-
100Base-FX SFP Ports	-	-	-	-	-
1000Base-X SFP Ports	-	-	-	-	-
Gigabit Combo Ports	-	2	-	3	3
Power Redundancy					
DC Terminal Block	2	2	2	2 (LV)	2
DC Power Jack	-	-	-	-	-
AC Power Cord	-	-	-	2 (HV)	-
Installation					
DIN-Rail Mounting	•	•	•	•	•
Wall Mounting	•	•	•	•	•
Rack Mounting	-	-	-	-	-
Physical Characteristics					
Casing Protection	IP-30	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	96.4(W)x108.5(D)x154(H)	96.4(W)x108.5(D)x154(H)	74.3(W)x109.2(D)x153.6(H)	96.4(W)x145.5(D)x154(H)	74.3(W)x109.2(D)x153.6(H)
Operating Temperature					
-10 to 60°C	-	-	-	-	-
-40 to 70°C	•	•	•	-	•
-40 to 85°C	-	-	-	•	-
Network Redundancy					
O-Ring	•	•	•	•	•
Open-Ring	•	•	•	•	•
O-Chain	•	•	•	•	•
STP/RSTP	•	•	•	•	•
MSTP	•	•	•	•	•
Management and Control					
802.1X	•	•	•	•	•
Rate Limit	•	•	•	•	•
Port Mirror	•	•	•	•	•
Port Security	•	•	•	•	•
IGMP v2/v3	•	•	•	•	•
QoS Port Base/COS/TOS	•	•	•	•	•
Port Trunk Static/LACP	•	•	•	•	•
LLDP	•	•	•	•	•
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay
DHCP	Server / Client	Server / Client	Server / Client	Server / Client	Server / Client
VLAN	Port-Based / 802.1Q / Q-in-Q / GVRP	Port-Based / 802.1Q / Q-in-Q / GVRP	Port-Based / 802.1Q / Q-in-Q / GVRP	Port-Based / 802.1Q / Q-in-Q / GVRP	Port-Based / 802.1Q / Q-in-Q / GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)
Warranty	5 years				

Product Selection Guide

Industrial Ethernet Switch	Industrial DIN-Rail Fast Ethernet Switch Managed Switch			
				
	IES-3082GC	IES-3082GP	IES-3062 Series / IES-3080	
Port Number				
Number of ports	10	10	8	
10/100Base-T(X) RJ45 Ports	8	8	6	8
10/100/1000Base-T(X) Ports	-	-	2	-
100Base-FX Fiber Ports	-	-	2 (Multi/Single-Mode)	-
1000Base-X Fiber Ports	-	-	2 (Multi/Single-Mode)	-
100Base-FX SFP Ports	-	-	-	
1000Base-X SFP Ports	-	2	-	
Gigabit Combo Ports	2	-	-	
Power Redundancy				
DC Terminal Block	2	2	2	
DC Power Jack	1	1	1	
AC Power Cord	-	-	-	
Installation				
DIN-Rail Mounting	•	•	•	
Wall Mounting	•	•	-	
Desktop	-	-	-	
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	
Dimensions (mm)	52(W)x106.1(D)x144.3(H)	52(W)x106.1(D)x144.3(H)	52(W)x106.1(D)x144.3(H)	
Operating Temperature				
-10 to 60°C	-	-	-	
-40 to 70°C	•	•	•	
Network Redundancy				
O-Ring	•	•	•	
Open-Ring	•	•	•	
O-Chain	•	•	•	
MRP*NOTE	•	•	•	
MSTP/RSTP/STP	•	•	•	
Management and Control				
802.1X	•	•	•	
Rate Limit	•	•	•	
Port Mirror	•	•	•	
Port Security	•	•	•	
IGMP v2/v3	•	•	•	
QoS Port Base/COS/TOS	•	•	•	
Port Trunk Static/LACP	•	•	•	
LLDP	•	•	•	
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	
DHCP	Server / Client	Server / Client	Server / Client	
VLAN	Port-Based / 802.1Q / Q-in-Q / GVRP	Port-Based / 802.1Q / Q-in-Q / GVRP	Port-Based / 802.1Q / Q-in-Q / GVRP	
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet / Console(CLI)	
Warranty	5 years			

*NOTE: This function is available by request only

Product Selection Guide

Industrial Ethernet Switch	Industrial DIN-Rail Fast Ethernet Switch					
	Lite-Managed Switch			Unmanaged Switch		
						
	IES-2060 / 2042FX Series	IES-2042PA	IES-2050A	IES-1240	IES-1162GC	IES-1160
Port Number						
Number of ports	6	6	5	24	18	16
10/100Base-T(X) RJ45 Ports	6 / 4	4	5	24	16	16
10/100/1000Base-T(X) Ports	-	-	-	-	-	-
100Base-FX Fiber Ports	- / 2 (Multi/Single-Mode)	-	-	-	-	-
1000Base-X Fiber Ports	-	-	-	-	-	-
100Base-FX SFP Ports	-	2	-	-	-	-
1000Base-X SFP Ports	-	-	-	-	-	-
Gigabit Combo Ports	-	-	-	-	2	-
Power Redundancy						
DC Terminal Block	2	2	2	2	2	2
DC Power Jack	1	-	-	-	-	-
AC Power Cord	-	-	-	-	-	-
Installation						
DIN-Rail Mounting	•	•	•	•	•	•
Wall Mounting	•	•	•	•	•	•
Rack Mounting	-	-	-	-	-	-
Physical Characteristics						
Casing Protection	IP-30	IP-30	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	52(W)x106.1(D)x144.3(H)	26.1(W)x94.9(D) x144.3(H)	26.1(W)x94.9(D) x144.3(H)	96.4(W)x108.5(D)x154(H)	96.4(W)x108.5(D)x154(H)	74.3(W)x109.2(D)x153.6(H)
Operating Temperature						
-10 to 60°C	-	-	-	-	-	-
-40 to 70°C	•	•	•	•	•	•
Network Redundancy						
O-Ring	•	•	•	-	-	-
Open-Ring	•	•	•	-	-	-
O-Chain	•	•	•	-	-	-
STP/RSTP	•	•	•	-	-	-
MSTP	-	-	-	-	-	-
Management and Control						
802.1X	-	-	-	-	-	-
Rate Limit	-	-	-	-	-	-
Port Mirror	-	-	-	-	-	-
Port Security	-	-	-	-	-	-
IGMP v2/v3	-	-	-	-	-	-
QoS Port Base/COS/TOS	-	-	-	-	-	-
Port Trunk Static/LACP	-	-	-	-	-	-
LLDP	•	•	•	-	-	-
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	Relay	Relay	Relay
DHCP	Client	Client	Client	-	-	-
VLAN	Port-Based	Port-Based	Port-Based	-	-	-
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet	-	-	-
Warranty	5 years					

Product Selection Guide

Industrial Ethernet Switch	Industrial DIN-Rail Fast Ethernet Switch					
	Unmanaged Switch					
						
	IES-1142P	IES-1082GP	IES-1062 Series / IES-1080		IES-1050A / 1080A	
Port Number						
Number of ports	16	10	8		5	8
10/100Base-T(X) RJ45 Ports	14	8	6	8	5	8
10/100/1000Base-T(X) Ports	-	-	2	-	-	
100Base-FX Fiber Ports	-	-	2 (Multi/Single-Mode)	-	-	
1000Base-X Fiber Ports	-	-	2 (Multi/Single-Mode)	-	-	
100Base-FX SFP Ports	2	-	-		-	
1000Base-X SFP Ports	-	2	-		-	
Gigabit Combo Ports	-	-	-		-	
Power Redundancy						
DC Terminal Block	2	2	2		2	
DC Power Jack	-	1	1		-	
AC Power Cord	-	-	-		-	
Installation						
DIN-Rail Mounting	•	•	•		•	
Wall Mounting	-	•	•		•	
Rack Mounting	-	-	-		-	
Physical Characteristics						
Casing Protection	IP-30	IP-30	IP-30		IP-30	
Dimensions (mm)	74(W)x140(D)x170(H)	52(W)x106.1(D)x144.3(H)	52(W)x106.1(D)x144.3(H)		26.1(W)x94.9(D)x144.3(H)	
Operating Temperature						
-10 to 60°C	-	-	-		-	
-40 to 70°C	•	•	•		•	
Network Redundancy						
O-Ring	-	-	-		-	
Open-Ring	-	-	-		-	
O-Chain	-	-	-		-	
STP/RSTP	-	-	-		-	
MSTP	-	-	-		-	
Management and Control						
802.1X	-	-	-		-	
Rate Limit	-	-	-		-	
Port Mirror	-	-	-		-	
Port Security	-	-	-		-	
IGMP v2/v3	-	-	-		-	
QoS Port Base/COS/TOS	-	-	-		-	
Port Trunk Static/LACP	-	-	-		-	
LLDP	-	-	-		-	
System Alarm	-	Relay	Relay		Relay	
DHCP	-	-	-		-	
VLAN	-	-	-		-	
Management / Configuration	-	-	-		-	
Warranty	5 years					

Product Selection Guide

	Industrial DIN-Rail Fast Ethernet Switch			
	Unmanaged Switch			
Industrial Ethernet Switch				
	IES-1041FX / 1042FX		IES-150B	IES-180B
Port Number				
Number of ports	5	6	5	8
10/100Base-T(X) RJ45 Ports	4		5	8
10/100/1000Base-T(X) Ports	-		-	-
100Base-FX Fiber Ports	1 (Multi/Single-Mode)	2 (Multi/Single-Mode)	-	-
1000Base-X Fiber Ports	-		-	-
100Base-FX SFP Ports	-		-	-
1000Base-X SFP Ports	-		-	-
Gigabit Combo Ports	-		-	-
Power Redundancy				
DC Terminal Block	2		2	2
DC Power Jack	-		-	-
AC Power Cord	-		-	-
Installation				
DIN-Rail Mounting	•		•	•
Wall Mounting	•		•	•
Rack Mounting	-		-	-
Physical Characteristics				
Casing Protection	IP-30		IP-30	IP-30
Dimensions (mm)	26.1(W)x94.9(D)x144.3(H)		26.1(W)x70(D)x95(H)	41(W)x90(D)x95(H)
Operating Temperature				
-10 to 60°C	-		-	-
-40 to 70°C	•		•	•
Network Redundancy				
O-Ring	-		-	-
Open-Ring	-		-	-
O-Chain	-		-	-
STP/RSTP	-		-	-
MSTP	-		-	-
Management and Control				
802.1X	-		-	-
Rate Limit	-		-	-
Port Mirror	-		-	-
Port Security	-		-	-
IGMP v2/v3	-		-	-
QoS Port Base/COS/TOS	-		-	-
Port Trunk Static/LACP	-		-	-
LLDP	-		-	-
System Alarm	Relay		-	-
DHCP	-		-	-
VLAN	-		-	-
Management / Configuration	-		-	-
Warranty	5 years			

Product Selection Guide

Industrial Ethernet Switch	Industrial DIN-Rail Fast Ethernet Switch Unmanaged Switch	
		
	IES-180-L	IES-162FX-L Series
Port Number		
Number of ports	**8**	**8**
10/100Base-T(X) RJ45 Ports	8	6
10/100/1000Base-T(X) Ports	-	-
100Base-FX Fiber Ports	-	2 (Multi/Single-Mode)
1000Base-X Fiber Ports	-	-
100Base-FX SFP Ports	-	-
1000Base-X SFP Ports	-	-
Gigabit Combo Ports	-	-
Power Redundancy		
DC Terminal Block	1	1
DC Power Jack	-	-
AC Power Cord	-	-
Installation		
DIN-Rail Mounting	•	•
Wall Mounting	•	•
Rack Mounting	-	-
Physical Characteristics		
Casing Protection	IP-30	IP-30
Dimensions (mm)	41(W)x75(D)x115(H)	41(W)x83.98(D)x115(H)
Operating Temperature		
-20 to 60°C	•	•
-40 to 70°C	-	-
Network Redundancy		
O-Ring	-	-
Open-Ring	-	-
O-Chain	-	-
STP/RSTP	-	-
MSTP	-	-
Management and Control		
802.1X	-	-
Rate Limit	-	-
Port Mirror	-	-
Port Security	-	-
IGMP v2/v3	-	-
QoS Port Base/COS/TOS	-	-
Port Trunk Static/LACP	-	-
LLDP	-	-
System Alarm	-	-
DHCP	-	-
VLAN	-	-
Management / Configuration	-	-
Warranty	5 years	

Product Selection Guide

	Industrial Desktop Gigabit Ethernet Switch		
	Managed Switch		
Industrial Ethernet Switch			
	DGS-9812GP-AIO_S Series	DGS-9168GP-AIO_S Series	DGS-R9812GP-AIO_S
Port Number			
Number of ports	20	24	20
10/100Base-T(X) RJ45 Ports	-	-	-
10/100/1000Base-T(X) Ports	8	16	8
100Base-FX Fiber Ports	-	-	-
1000Base-X Fiber Ports	-	-	-
Fiber bypass ports	2	2	2
100/1000Base-X SFP Ports	12	8	12
Gigabit Combo Ports	-	-	-
Power Redundancy			
DC Terminal Block	-	-	-
DC Power Jack	-	-	-
AC Power Cord	2 AC(one socket)	2 AC(one socket)	2 AC(one socket)
Installation			
DIN-Rail Mounting	-	-	-
Wall Mounting	-	-	-
Desktop	•	•	•
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	300(W)x165(D)x88(H)	300(W)x165(D)x88(H)	200(W)x130(D)x88(H)
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 75°C	•	•	•
Network Redundancy			
O-Ring	•	•	•
Open-Ring	•	•	•
O-Chain	•	•	•
MRP*NOTE	•	•	•
MSTP/RSTP/STP	•	•	•
Management and Control			
Static Routing/RIP/VRRP	-	-	•
802.1X	•	•	•
Rate Limit	•	•	•
Port Mirror	•	•	•
Port Security	•	•	•
IGMP v2/v3	•	•	•
QoS Port Base/COS/TOS	•	•	•
IEEE1588v2	•	•	•
Port Trunk Static/LACP	•	•	•
LLDP	•	•	•
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay
DHCP	Server / Client	Server / Client	Server / Client
VLAN	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console(CLI)
Warranty	5 years		

*NOTE: This function is available by request only

Product Selection Guide

	Industrial Desktop Fast Ethernet Switch		
	Managed Switch		
Industrial Ethernet Switch			
	DES-3082GP-AIO_S Series	DES-3082GP-P	DES-3073GC-P
Port Number			
Number of ports	**10**	**10**	**10**
10/100Base-T(X) RJ45 Ports	8	8	7
10/100/1000Base-T(X) Ports	-	-	-
100Base-FX Fiber Ports	-	-	-
1000Base-X Fiber Ports	-	-	-
Fiber bypass ports	2	-	-
100/1000Base-X SFP Ports	2	2	2
Gigabit Combo Ports	-	-	3
Power Redundancy			
DC Terminal Block	-	-	-
DC Power Jack	-	-	-
AC Power Cord	2 AC(one socket)	1 AC(one socket)	2 AC(one socket)
Installation			
DIN-Rail Mounting	-	-	-
Wall Mounting	-	-	-
Desktop	•	•	•
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	300(W)x165(D)x88(H)	200(W)x130(D)x88(H)	150(W)x149(D)x70(H)
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 70°C	•	•	•
Network Redundancy			
O-Ring	•	•	•
Open-Ring	•	•	•
O-Chain	•	•	•
MRP*NOTE	•	•	•
MSTP/RSTP/STP	•	•	•
Management and Control			
802.1X	•	•	•
Rate Limit	•	•	•
Port Mirror	•	•	•
Port Security	•	•	•
IGMP v2/v3	•	•	•
QoS Port Base/COS/TOS	•	•	•
PTP Client	•	•	•
Port Trunk Static/LACP	•	•	•
LLDP	•	•	•
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay
DHCP	Server / Client	Server / Client	Server / Client
VLAN	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console(CLI)
Warranty	5 years		

*NOTE: This function is available by request only

Product Selection Guide

	Industrial Gigabit PoE Ethernet Switch		
	Managed Rack-Mount Switch		
Industrial Ethernet Switch			
	RGPS-R9244GP+-LP/P	**RGPS-92222GCP-NP/LP/P Series**	**RGPS-9084GP-P**
Port Number			
Number of ports	**28**	**26**	**12**
10/100Base-T(X) RJ45 Ports	-	-	-
10/100/1000Base-T(X) Ports	24 (P.S.E) IEEE 802.3 at (max.360/720 Watts)	22 (P.S.E) IEEE 802.3 at (max.720/320 Watts)	8 (P.S.E) IEEE 802.3 at (max 240 Watts)
100Base-FX Fiber Ports	-	-	-
1000Base-X SFP Ports	-	-	-
100/1000Base-X SFP Ports	-	2	4
10G SFP+	4	-	-
Gigabit Combo Ports	-	2(P.S.E.)	-
Power Redundancy			
DC Terminal Block	-	1 - -	-
DC Power Jack	-	- - -	-
AC Power Cord	1	- 1 1	1
Installation			
Rack Mounting	●	●	●
Physical Characteristics			
Casing Protection	IP-20	IP-20	IP-20
Dimensions (mm)	431(W) x 342(D) x 44(H)	431(W) x 342(D) x 44(H)	443.7(W) x 230(D) x 44(H)
Operating Temperature			
-20 to 60°C	●	-	-
-40 to 60°C	-	●	-
-40 to 70°C	-	-	-
-40 to 75°C	-	-	●
Network Redundancy			
O-Ring	●	●	●
Open-Ring	●	●	●
O-Chain	●	●	●
MRP*NOTE	●	●	●
MSTP/RSTP/STP	●	●	●
Management and Control			
802.1X	●	●	●
Rate Limit	●	●	●
Port Mirror	●	●	●
Port Security	●	●	●
IGMP v2/v3	●	●	●
QoS Port Base/COS/TOS	●	●	●
Port Trunk Static/LACP	●	●	●
LLDP	●	●	●
IEEE 1588v2	●	-	●
System Alarm	SYSLOG / SNMP Trap	SYSLOG / SNMP Trap	SYSLOG / SNMP Trap
DHCP	Server / Client	Server / Client	Server / Client
VLAN	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q	802.1Q
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 /Telnet /Console(CLI)
Warranty	5 years		

Product Selection Guide

Industrial Ethernet Switch

Industrial Gigabit PoE Ethernet Switch

Managed DIN-Rail Switch

	IGPS-9842GTP/-24V	IGPS-9084GP
Port Number		
Number of ports	14	12
10/100Base-T(X) RJ45 Ports	-	-
10/100/1000Base-T(X) Ports	8 (P.S.E) IEEE 802.3 at (max 240 /120 Watts)+4	8 (P.S.E.) IEEE 802.3 at
100Base-FX Fiber Ports	-	-
1000Base-X Fiber Ports	-	-
100Base-FX SFP Ports	-	-
100/1000Base-X SFP Ports	2	4
Gigabit Combo Ports	-	-
Power Redundancy		
DC Terminal Block	2	2
DC Power Jack	-	-
AC Power Cord	-	-
Installation		
DIN-Rail Mounting	•	•
Wall Mounting	•	•
Rack Mounting	-	-
Physical Characteristics		
Casing Protection	IP-30	IP-30
Dimensions (mm)	74.3(W)x109.2(D)x153.6(H)	96.4(W)x105.5(D)x154(H)
Operating Temperature		
-40 to 60°C	-	-
-40 to 75°C	•	•
Network Redundancy		
O-Ring	•	•
Open-Ring	•	•
O-Chain	•	•
MRP*NOTE	•	•
MSTP/RSTP/STP	•	•
Management and Control		
Static Routing/RIP/VRRP	-	-
802.1X	•	•
Rate Limit	•	•
Port Mirror	•	•
Port Security	•	•
IGMP v2/v3	•	•
QoS Port Base/COS/TOS	•	•
Port Trunk Static/LACP	•	•
LLDP	•	•
IEEE 1588v2	•	•
System Alarm	SYSLOG / SNMP Trap / Relay	SYSLOG / SNMP Trap / Relay
DHCP	Server / Client / Relay	Server / Client /Relay
VLAN	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c , v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet /Console(CLI)
Warranty	5 years	

*NOTE: This function is available by request only

Product Selection Guide

Industrial Ethernet Switch

Industrial Gigabit PoE Ethernet Switch

Managed DIN-Rail Switch

IGPS-9080/-24V

IGPS-9042GP-24V

IGPS-R9084GP

Port Number			
Number of ports	8	6	12
10/100Base-T(X) RJ45 Ports	-	-	-
10/100/1000Base-T(X) Ports	8 (P.S.E.) IEEE 802.3 at (max 240 /120 Watts)	4 (P.S.E) IEEE 802.3 at	8 (P.S.E.) IEEE 802.3 at
100Base-FX Fiber Ports	-	-	-
1000Base-X Fiber Ports	-	-	-
100Base-FX SFP Ports	-	-	-
100/1000Base-X SFP Ports	-	2	4(100/1000M)
Gigabit Combo Ports	-	-	-
Power Redundancy			
DC Terminal Block	2	2	2
DC Power Jack	-	-	-
AC Power Cord	-	-	-
Installation			
DIN-Rail Mounting	•	•	•
Wall Mounting	•	•	•
Rack Mounting	-	-	-
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	54.1(W)x106.1(D)x145.4(H)	54.1(W)x106.1(D)x145.4(H)	96.4(W)x145.5(D)x154(H)
Operating Temperature			
-40 to 60°C	-	-	-
-40 to 75°C	•	•	•
Network Redundancy			
O-Ring	•	•	•
Open-Ring	•	•	•
O-Chain	•	•	•
MRP*NOTE	•	•	•
MSTP/RSTP/STP	•	•	•
Management and Control			
Static Routing/RIP/VRRP	-	-	•
802.1X	•	•	•
Rate Limit	•	•	•
Port Mirror	•	•	•
Port Security	•	•	•
IGMP v2/v3	•	•	•
QoS Port Base/COS/TOS	•	•	•
Port Trunk Static/LACP	•	•	•
LLDP	•	•	•
IEEE 1588v2	•	•	•
System Alarm	Relay / SYSLOG / SNMP Trap	Relay / SYSLOG / SNMP Trap	Relay / SYSLOG / SNMP Trap
DHCP	Server / Client / Relay	Server / Client / Relay	Server / Client / Relay
VLAN	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q	Port-Based / 802.1Q / Q-in-Q
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c, v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c, v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c, v3 /Telnet / Console(CLI)
Warranty	5 years		

Product Selection Guide

Industrial Ethernet Switch	Unmanaged DIN-Rail Switch			
				
	IGPS-1080-24V	IGPS-1080-24V-I	IGPS-1080A	IGPS-1042GPA
Port Number				
Number of ports	8	8	8	6
10/100Base-T(X) RJ45 Ports	-	-	-	-
10/100/1000Base-T(X) Ports	8 (P.S.E) IEEE 802.3 at (max 120 Watts)	8 (P.S.E) IEEE 802.3 at (max 120 Watts)	8 (P.S.E.) IEEE 802.3 at	4 (P.S.E.) IEEE 802.3at
100Base-FX Fiber Ports	-	-	-	-
1000Base-X Fiber Ports	-	-	-	-
100Base-FX SFP Ports	-	-	-	-
1000Base-X SFP Ports	-	-	-	2
Gigabit Combo Ports	-	-	-	-
Power Redundancy				
DC Terminal Block	2	2	2	2
DC Power Jack	-	-	-	-
AC Power Cord	-	-	-	-
Installation				
DIN-Rail Mounting	•	•	•	•
Wall Mounting	•	•	•	•
Rack Mounting	-	-	-	-
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	41(W)x94.9(D)x144.3(H)	41(W)x94.9(D)x144.3(H)	26.1(W)x94.9(D)x144.3(H)	26.1(W)x94.9(D)x144.3(H)
Operating Temperature				
-40 to 60°C	-	-	-	-
-40 to 70°C	•	•	•	•
Network Redundancy				
O-Ring	-	-	-	-
Open-Ring	-	-	-	-
O-Chain	-	-	-	-
STP/RSTP	-	-	-	-
MSTP	-	-	-	-
Management and Control				
802.1X	-	-	-	-
Rate Limit	-	-	-	-
Port Mirror	-	-	-	-
Port Security	-	-	-	-
IGMP v2/v3	-	-	-	-
QoS Port Base/COS/TOS	-	-	-	-
Port Trunk Static/LACP	-	-	-	-
LLDP	-	-	-	-
System Alarm	Relay	Relay	Relay	Relay
DHCP	-	-	-	-
VLAN	-	-	-	-
Management / Configuration	-	-	-	-
Warranty	5 years			

Product Selection Guide

Industrial Ethernet Switch	Industrial Gigabit PoE Ethernet Switch Unmanaged DIN-Rail Switch			
				
	IGPS-1042GP-24V	IGPS-1411GTP-24V	IGPS-1411GTPA	IGPS-1082GP Series
Port Number				
Number of ports	6	6	6	10
10/100Base-T(X) RJ45 Ports	-	-	-	-
10/100/1000Base-T(X) Ports	4 (P.S.E.) IEEE 802.3at	4 (P.S.E.) + 1 IEEE 802.3at	4 (P.S.E.) + 1 IEEE 802.3at	8 (P.S.E.) IEEE 802.3at
100Base-FX Fiber Ports	-	-	-	-
1000Base-X Fiber Ports	-	-	-	-
100/1000Base-X SFP Ports	2	1	1	2
Gigabit Combo Ports	-	-	-	-
Power Redundancy				
DC Terminal Block	2	2	2	2
DC Power Jack	-	-	-	-
AC Power Cord	-	-	-	-
Installation				
DIN-Rail Mounting	•	•	•	•
Wall Mounting	•	•	•	•
Rack Mounting	-	-	-	-
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	41(W)x94.9(D)x144.3(H)	41(W)x94.9(D)x144.3(H)	26.1(W)x94.9(D)x144.3(H)	54.3(W)x108.3(D)x145.1(H)
Operating Temperature				
-40 to 60°C	-	•	-	-
-40 to 70°C	•	-	•	-
-40 to 75°C	-	•	-	•
Network Redundancy				
O-Ring	-	-	-	-
Open-Ring	-	-	-	-
O-Chain	-	-	-	-
STP/RSTP	-	-	-	-
MSTP	-	-	-	-
Management and Control				
802.1X	-	-	-	-
Rate Limit	-	-	-	-
Port Mirror	-	-	-	-
Port Security	-	-	-	-
IGMP v2/v3	-	-	-	-
QoS Port Base/COS/TOS	-	-	-	-
Port Trunk Static/LACP	-	-	-	-
LLDP	-	-	-	-
System Alarm	Relay	Relay	Relay	-
DHCP	-	-	-	-
VLAN	-	-	-	-
Management / Configuration	-	-	-	-
Warranty	5 years			

Product Selection Guide

	Industrial PoE Fast Ethernet Switch					
	Managed Switch	Lite-Managed Switch		Unmanaged Switch		
Industrial Ethernet Switch						
	IPS-3082GC-24V/AT	IPS-2042P	IPS-2042TX / 2042FX	IPS-1080A/24V	IPS-1042FA	IPS-1042FX-24V
Port Number						
Number of ports	10	6	6	8	6	6
10/100Base-T(X) RJ45 Ports	8 (P.S.E.) IEEE802.3 af/at	4 (P.S.E.) IEEE802.3 af	2+4 (P.S.E.) IEEE802.3 af / 4 (P.S.E.) IEEE802.3 af	8 (P.S.E.) IEEE802.3 at (max.180/120 Watts)	4 (P.S.E.) IEEE802.3 at	4 (P.S.E.) IEEE802.3 at
10/100/1000Base-T(X) Ports	-	-	-	-	-	-
100Base-FX Fiber Ports	-	-	- / 2 (Multi/Single-Mode)	- / -	2 (Multi/Single-Mode)	2 (Multi/Single-Mode)
100Base-FX SFP Ports	-	2	-	-	-	-
1000Base-X SFP Ports	-	-	-	-	-	-
Gigabit Combo Ports	2	-	-	-	-	-
Power Redundancy						
DC Terminal Block	2	2	2	2	2	2
DC Power Jack	-	1	1	-	-	-
Installation						
DIN-Rail Mounting	•	•	•	•	•	•
Wall Mounting	•	•	•	•	•	•
Physical Characteristics						
Casing Protection	IP-30	IP-30	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	74.3(W)x109.2(D)x153.6(H)	54.2(W)x106.1(D)x145.4(H)	54.2(W)x106.1(D)x145.4(H)	26.1(W)x94.9(D)x144.3(H) / 41(W)x94.9(D)x144.3(H)	26.1(W)x94.9(D)x144.3(H)	41(W)x94.9(D)x144.3(H)
Operating Temperature						
-10 to 60°C	-	-	-	-	-	-
-40 to 60°C	-	-	-	-	-	-
-40 to 70°C	•	•	•	•	•	•
Network Redundancy						
O-Ring	•	•	•	-	-	-
Open-Ring	•	•	•	-	-	-
O-Chain	•	•	•	-	-	-
MRP*NOTE	•	-	-	-	-	-
MSTP/RSTP/STP	•	RSTP/STP	RSTP/STP	-	-	-
Management and Control						
802.1X	•	-	-	-	-	-
Rate Limit	•	-	-	-	-	-
Port Mirror	•	-	-	-	-	-
Port Security	•	-	-	-	-	-
IGMP v2/v3	•	-	-	-	-	-
QoS Port Base/COS/TOS	•	-	-	-	-	-
Port Trunk Static/LACP	•	-	-	-	-	-
LLDP	•	•	•	-	-	-
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	-	-	-
DHCP	Server / Client	Client	Client	-	-	-
VLAN	Port-Based/802.1Q/Q-in-Q/ GVRP	Port-Based	Port-Based	-		-
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet	-	-	-
Warranty	5 years					
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*NOTE: This function is available by request only

Product Selection Guide

	Industrial IP-67 Ethernet Switch	Card-Type Ethernet Switch	
	Lite-Managed Switch	Industrial CompactPCI Ethernet Switch	
Industrial Ethernet Switch			
	IES-2050-M12	CPS-3080-C	CPS-3162GC-C
Port Number			
Number of ports	5	8	18
10/100Base-T(X) RJ45 Ports	5 (M12 A-coding)	8(in Compact PCI Socket)	8+8(in Compact PCI Socket)
10/100/1000Base-T(X) Ports	-	-	-
100Base-FX Fiber Ports	-	-	-
100Base-FX SFP Ports	-	-	-
1000Base-X SFP Ports	-	-	-
Gigabit Combo Ports	-	-	2
Power Redundancy			
DC Terminal Block	1(M12)	-	-
DC Power Jack	-	-	-
CompactPCI bus power	-	●	●
Installation			
DIN-Rail Mounting	●	-	-
Wall Mounting	●	-	-
CompactPCI Slot	-	●	●
Physical Characteristics			
Casing Protection	-	-	-
Dimensions (mm)	190 (W) x 40.5 (D) x 155 (H)	20 (W) x 20.9 (D) x 130.7 (H)	80 (W) x 209 (D) x 130.7 (H)
Operating Temperature			
-10 to 60°C	-	-	-
-20 to 70°C	-	-	-
-40 to 70°C	●	●	●
Network Redundancy			
O-Ring	●	●	●
Open-Ring	●	●	●
O-Chain	●	●	●
STP/RSTP	●	●	●
MSTP	-	●	●
Management and Control			
802.1X	-	●	●
Rate Limit	-	●	●
Port Mirror	-	●	●
Port Security	-	●	●
SNMP v1/v2/v3	-	●	●
QoS Port Base/COS/TOS	-	●	●
Port Trunk Static/LACP	-	●	●
LLDP	●	●	●
System Alarm	SYSLOG / SMTP / SNMP Trap	SYSLOG / SMTP / SNMP Trap	SYSLOG / SMTP / SNMP Trap
DHCP	Client	Client	Client
VLAN	Port-Based	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet/Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet/Console(CLI)
Warranty	5 years		

Product Selection Guide

Industrial Ethernet Switch	Card-Type Ethernet Switch Managed Switch Industrial CompactPCI Ethernet Switch			
				
	CPGS-9080-C	CPGS-9120-C	CPGS-9120-M12-C	CPGS-9160-M12-C
Port Number				
Number of ports	8	12	12	16
10/100Base-T(X) RJ45 Ports	-	-	-	-
10/100/1000Base-T(X) Ports	8xCPCI interface	8xCPCI interface+4xRJ-45	8xCPCI interface+4xM12	8xCPCI interface+8xM12
100Base-FX Fiber Ports	-	-	-	-
100Base-FX SFP Ports	-	-	-	-
1000Base-X SFP Ports	-	-	-	-
Gigabit Combo Ports	-	-	-	-
Power Redundancy				
DC Terminal Block		-	-	-
DC Power Jack	-	-	-	-
CompactPCI bus power	●	●	●	●
Installation				
DIN-Rail Mounting	-	-	-	-
Wall Mounting	-	-	-	-
CompactPCI Slot	●	●	●	●
Physical Characteristics				
Casing Protection	-	-	-	-
Dimensions (mm)	20 (W) x 209 (D) x 130.7 (H)	40 (W) x 209 (D) x 130.7 (H)	40 (W) x 209 (D) x 130.7 (H)	81.7 (W) x 209 (D) x 130.7 (H)
Operating Temperature				
-10 to 60°C	-	-	-	-
-20 to 70°C	-	-	-	-
-40 to 70°C	●	●	●	●
Network Redundancy				
O-Ring	●	●	●	●
Open-Ring	●	●	●	●
O-Chain	●	●	●	●
MRP*NOTE	○	○	○	○
MSTP/RSTP/STP	●	●	●	●
Management and Control				
802.1X	●	●	●	●
Rate Limit	●	●	●	●
Port Mirror	●	●	●	●
Port Security	●	●	●	●
SNMP v1/v2/v3	●	●	●	●
QoS Port Base/COS/TOS	●	●	●	●
Port Trunk Static/LACP	●	●	●	●
LLDP	●	●	●	●
System Alarm	SYSLOG / SMTP / SNMP Trap	SYSLOG / SMTP / SNMP Trap	SYSLOG / SMTP / SNMP Trap	SYSLOG / SMTP / SNMP Trap
DHCP	Server / Client /Relay	Server / Client /Relay	Server / Client /Relay	Server / Client /Relay
VLAN	Port-Based / 802.1Q / Q-in-Q/ GVRP	Port-Based / 802.1Q / Q-in-Q/ GVRP	Port-Based / 802.1Q / Q-in-Q/ GVRP	Port-Based / 802.1Q / Q-in-Q/ GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet /Console(CLI)
Warranty	5 years			

*NOTE: This function is available by request only

Product Selection Guide

Industrial Ethernet Switch	Card-Type Ethernet Switch Managed Switch Industrial CompactPCI Ethernet Switch	
		
	CPGS-B9142ET-C	CPGS-B9142ET-M12-C
Port Number		
Number of ports	16	16
10/100Base-T(X) RJ45 Ports	-	-
10/100/1000Base-T(X) Ports	14-port (8-port with CompactPCI interface, 6-port with RJ45 connector)	14-port (8-port with CompactPCI interface, 6-port with M12 connector)
1000Base-X SFP Ports	-	-
2-Wire Extension Ports	2 (RJ-11)	2 (M12)
Power Redundancy		
DC Terminal Block		
DC Power Jack		
CompactPCI bus power	●	●
Installation		
DIN-Rail Mounting	-	-
Wall Mounting	-	-
CompactPCI bus	●	●
Physical Characteristics		
Casing Protection	-	-
Dimensions (mm)	81.7 (W) x 209 (D) x 129.0 (H)	81.7 (W) x 209 (D) x 129.0 (H)
Operating Temperature		
-10 to 60°C	-	-
-20 to 70°C	-	-
-40 to 70°C	●	●
Network Redundancy		
O-Ring	●	●
Open-Ring	●	●
O-Chain	●	●
MRP*NOTE	○	○
MSTP/RSTP/STP	●	●
Management and Control		
802.1X	●	●
Rate Limit	●	●
Port Mirror	●	●
Port Security	●	●
SNMP v1/v2/v3	●	●
QoS Port Base/COS/TOS	●	●
Port Trunk Static/LACP	●	●
LLDP	●	●
System Alarm	SYSLOG / SMTP / SNMP Trap	SYSLOG / SMTP / SNMP Trap
DHCP	Server / Client / Relay	Server / Client /Relay
VLAN	Port-Based / 802.1Q / Q-in-Q / GVRP	Port-Based / 802.1Q / Q-in-Q / GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c, v3 /Telnet / Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet /Console(CLI)
Warranty	5 years	

*NOTE: This function is available by request only

Product Selection Guide

Industrial Ethernet Switch	Card-Type Ethernet Switch			
	Industrial PCI Ethernet Switch	Industrial PCIe Gigabit Ethernet Switch	Industrial PCIe Gigabit PoE Ethernet Switch	
				
	ICS-4040	IGCS-E140	IGPCS-E140	IGPCS-E131GP
Port Number				
Number of ports	4	4	4	4
10/100Base-T(X) RJ45 Ports	4	-	-	-
10/100/1000Base-T(X) Ports	-	4	4 (P.S.E.) IEEE 802.3at(max.65 Watts)	3 (P.S.E.) IEEE 802.3at(max.65 Watts)
100Base-FX Fiber Ports	-	-	-	-
100Base-FX SFP Ports	-	-	-	-
100/1000Base-X SFP Ports	-	-	-	1
Gigabit Combo Ports	-	-	-	-
Power Redundancy				
DC Terminal Block	-	-	-	-
DC Power Jack	-	-	-	-
Card Bus Power	PCI bus	PCIe bus	PCIe bus	PCIe bus
Installation				
DIN-Rail Mounting	-	-	-	-
Wall Mounting	-	-	-	-
Card Slot	PCI	PCIe	PCIe	PCIe
Physical Characteristics				
Casing Protection	-	-	-	
Dimensions (mm)	121(W) x 100(D)	21.3(W)x136(D)x121(H)	21.3(W)x178(D)x121(H)	21.3(W)x178(D)x121(H)
Operating Temperature				
-10 to 60°C	●	●	●	●
-20 to 70°C	-	-	-	-
-40 to 70°C	-	-	-	-
Network Redundancy				
O-Ring	●	-	-	-
Open-Ring	●	-	-	-
O-Chain	●	-	-	-
STP/RSTP	-	-	-	-
MSTP	●	-	-	-
Management and Control				
802.1X	-	-	-	-
Rate Limit	-	-	-	-
Port Mirror	-	-	-	-
Port Security	-	-	-	-
SNMP v1/v2/v3	-	-	-	-
QoS Port Base/COS/TOS	-	-	-	-
Port Trunk Static/LACP	-	-	-	-
LLDP	●	-	-	-
System Alarm	SYSLOG / SMTP / SNMP Trap	-	-	-
DHCP	Client	-	-	-
VLAN	Port-Based	-	-	-
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet	-	-	-
Warranty	5 years			

Product Selection Guide

	Optical / PoE Network Accessories				
	Optical Bypass Switch	PoE Injector			
Industrial Ethernet Switch					
	IBS-102FX-MM/SS-LC	INJ-102GT/24V		INJ-102GT++/24V	INJ-101GT++-60W
Port Number					
Number of ports	4	4		4	1
10/100Base-T(X) RJ45 Ports	-	-	-	-	-
10/100/1000Base-T(X) RJ45 Ports	-	2		2	1
PoE+(30 Watts) Output Ports	-	2 (P.S.E.)		-	-
PoE++(60 Watts) Output Ports	-	-	-	-	1(P.S.E.)
PoE++(90 Watts) Output Ports	-	-	-	2 (P.S.E.)	-
100/1G/10G Fiber Ports	-	-	-	-	-
Optical Bypass ports	4 (LC connector)	-	-	-	-
Power Redundancy					
DC Terminal Block	1	1	1	1	1
DC Power Jack	1	-	-	-	-
Operating Voltage	-	50-57VDC	12-57VDC	50-57VDC	12-57VDC	50-57VDC
Output Power	-	30 Watts Per Port		90 Watts per port	90 Watts in total	60 Watts
Installation					
DIN-Rail Mounting	•	•		•	•
Wall Mounting	•	•		•	•
PCIe Slot	-	-		-	-
Physical Characteristics					
Casing Protection	IP-30	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	26.1(W)x94.9(D)x144.3(H)	26.1(W)x70(D)x95(H)	40(W)x70(D)x95(H)	40(W)x70(D)x95(H)	26.1(W)x70(D)x95(H)
Operating Temperature					
-20 to 70°C		•		•	-
-40 to 70°C	•	-		-	-
-40 to 75°C	-	-		-	•
Network Redundancy					
O-Ring	-	-		-	-
Open-Ring	-	-		-	-
O-Chain	-	-		-	-
STP/RSTP	-	-		-	-
MSTP	-	-		-	-
Management and Control					
802.1X	-	-		-	-
Rate Limit	-	-		-	-
Port Mirror	-	-		-	-
Port Security	-	-		-	-
SNMP v1/v2/v3	-	-		-	-
QoS Port Base/COS/TOS	-	-		-	-
Port Trunk Static/LACP	-	-		-	-
LLDP	-	-		-	-
System Alarm	Relay	-		-	-
DHCP	-	-		-	-
VLAN	-	-		-	-
Management / Configuration	-	-		-	-
Warranty	5 years				

Product Selection Guide

Industrial Ethernet Switch	Optical / PoE Network Accessorie			
	PoE Splitter		EN50155 PoE Injector	
				
	SPL-101GT/-12V	SPL-101GT++-12V	TINJ-101GT-M12/24V	TINJ-101-M12/24V
Port Number				
Number of ports	2	2	2(M12)	2(M12)
10/100Base-T(X) RJ45 Ports	-	-	-	1 (M12)
10/100/1000Base-T(X) RJ45 Ports	1	1	1 (M12)	-
PoE+(30 Watts) Ports	1(P.D.)	-	1 (P.S.E.)	1 (P.S.E.)
PoE++(90 Watts) Ports	-	1(P.D.)	-	-
100/1G/10G Fiber Ports	-	-	-	-
Optical Bypass ports	-	-	-	-
Power Redundancy				
DC Terminal Block	1 (24VDC output) / 1 (12VDC output)	1 (12VDC output)	1	1
DC Power Jack	-	-	-	-
Operating Voltage	36-57VDC	36-57VDC	50-57VDC / 12-57VDC	50-57VDC / 12-57VDC
Output Power	24V@0.9A MAX / 12V@1.8A MAX	12V@5A MAX	30 Watts Max.PerPort	30 Watts Max.PerPort
Installation				
DIN-Rail Mounting	•	•	•	•
Wall Mounting	•	•	•	•
PCIe Slot	-	-	-	-
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	26.1(W)x70(D)x95(H)	41(W) x 75 (D) x 115 (H)	88.9(W)x40(D)x178.2(H)	88.9(W)x40(D)x178.2(H)
Operating Temperature				
-10 to 60°C	-	-	-	-
-20 to 70°C	•	-	-	-
-25 to 70°C	-	-	•	•
-40 to 75°C	-	•	-	-
Network Redundancy				
O-Ring	-	-	-	-
Open-Ring	-	-	-	-
O-Chain	-	-	-	-
STP/RSTP	-	-	-	-
MSTP	-	-	-	-
Management and Control				
802.1X	-	-	-	-
Rate Limit	-	-	-	-
Port Mirror	-	-	-	-
Port Security	-	-	-	-
SNMP v1/v2/v3	-	-	-	-
QoS Port Base/COS/TOS	-	-	-	-
Port Trunk Static/LACP	-	-	-	-
LLDP	-	-	-	-
System Alarm	-	-	-	-
DHCP	-	-	-	-
VLAN	-	-	-	-
Management / Configuration	-	-	-	-
Warranty	5 years			

Product Selection Guide

	Industrial EN50155 Ethernet Switch		
	Managed Switch		
Industrial Ethernet Switch			
	TES-3162GT-M12-BP1	TES-3082GT-M12-BP1	TES-3080-M12 / -BP2
Port Number			
Number of ports	**18**	**10**	**8**
10/100Base-T(X) M12 D-Coding Ports	16	8	8 | 4+4(2-pair bypass)
10/100/1000Base-T(X) M12 A-Coding Ports	2(1-pair bypass)	2	-
100Base-FX Fiber Ports	-	-	-
1000Base-X Fiber Ports	-	-	-
Gigabit Combo Ports	-	-	-
Power Redundancy			
On M12 Connector	-	-	-
On M23 Connector	2(M23)	2(M23)	2(M23)
Installation			
DIN-Rail Mounting	-	-	-
Wall Mounting	●	●	●
Physical Characteristics			
Casing Protection	IP-40	IP-40	IP-40
Dimensions (mm)	260(W) x 91.3(D) x 216(H)	170(W) x 75(D) x 196(H)	125(W) x 65(D) x 196(H)
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 70°C	●	●	●
Network Redundancy			
O-Ring	●	●	●
Open-Ring	●	●	●
O-Chain	●	●	●
MRP*NOTE	○	○	○
MSTP/RSTP/STP	●	●	●
Management and Control			
802.1X	●	●	●
Rate Limit	●	●	●
Port Mirror	●	●	●
Port Security	●	●	●
IGMP v2/v3	●	●	●
QoS Port Base/COS/TOS	●	●	●
Port Trunk Static/LACP	●	●	●
LLDP	●	●	●
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay
DHCP	Server / Client / Relay	Server / Client / Relay	Server / Client / Relay
VLAN	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)
Warranty	5 years		

*NOTE: This function is available by request only

Product Selection Guide

	Lite-Managed Switch	Unmanaged Switch		
Industrial Ethernet Switch				
	TES-250-M12	TES-1080-M12 / -BP2	TES-180-M12	TES-150-M12
Port Number				
Number of ports	**5**	**8**	**8**	**5**
10/100Base-T(X) M12 D-Coding Ports	5	8 4+4(2-pair bypass)	8	5
10/100/1000Base-T(X) M12 A-Coding Ports	-	-	-	-
100Base-FX Fiber Ports	-	-	-	-
1000Base-X Fiber Ports	-	-	-	-
Gigabit Combo Ports	-	-	-	-
Power Redundancy				
On M12 Connector	1(M12)	-	1(M12)	1(M12)
On M23 Connector	-	2(M23)	-	-
Installation				
DIN-Rail Mounting	-	-	-	-
Wall Mounting	●	●	●	●
Physical Characteristics				
Casing Protection	IP-40	IP-40	IP-40	IP-40
Dimensions (mm)	89(W) x 40(D) x 178(H)	125(W) x 65(D) x 196(H)	88.9(W) x 40(D) x 178.2(H)	89(W) x 40(D) x 178(H)
Operating Temperature				
-10 to 60°C	-	-	-	-
-40 to 70°C	●	●	●	●
Network Redundancy				
O-Ring	●	-	-	-
Open-Ring	●	-	-	-
O-Chain	●	-	-	-
MRP*NOTE	-	-	-	-
MSTP/RSTP/STP	RSTP/STP	-	-	-
Management and Control				
802.1X	-	-	-	-
Rate Limit	-	-	-	-
Port Mirror	-	-	-	-
Port Security	-	-	-	-
IGMP v2/v3	-	-	-	-
QoS Port Base/COS/TOS	-	-	-	-
Port Trunk Static/LACP	-	-	-	-
LLDP	●	-	-	-
System Alarm	SYSLOG / SMTP / SNMP Trap	Relay	-	-
DHCP	Client	-	-	-
VLAN	Port-Based	-	-	-
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet	-	-	-
Warranty	5 years			

*NOTE: This function is available by request only

Product Selection Guide

	Industrial EN50155 PoE Ethernet Switch			
	Managed Switch			
Industrial Ethernet Switch				
	TPS-9168GT-M12	**TPS-3882GT-M12-BP1/-24V**	**TPS-3162GT-M12-BP1/-24V**	**TPS-3044TX-M12**
Port Number				
Number of ports	**24**	**18**	**18**	**8**
10/100Base-T(X) M12 D-Coding Ports	16 (P.S.E.)+8 IEEE 802.3 af	8 (P.S.E.)+8 IEEE 802.3 af	16 (P.S.E.) IEEE 802.3 af	4 (P.S.E.)+4 IEEE 802.3 af
10/100/1000Base-T(X) M12 A-Coding Ports	8	2(1-pair Bypass)	2(1-pair Bypass)	-
100Base-FX Fiber Ports	-	-	-	-
1000Base-X Fiber Ports	-	-	-	-
100Base-FX SFP Ports	-	-	-	-
1000Base-X SFP Ports	-	-	-	-
Gigabit Combo Ports	-	-	-	-
Power Redundancy				
On M12 Connector	-	-	-	-
On M23 Connector	2(M23)	2(M23)	2(M23)	2(M23)
Installation				
DIN-Rail Mounting	-	-	-	-
Wall Mounting	●	●	●	●
Physical Characteristics				
Casing Protection	IP-40	IP-40	IP-40	IP-40
Dimensions (mm)	320(W) x 91.3(D) x 228(H)	260(W) x 91.3(D) x 216(H)	260(W) x 91.3(D) x 216(H)	170(W) x 75(D) x 196(H)
Operating Temperature				
-40 to 70°C	-	●	●	●
-40 to 75°C	●	-	-	-
Network Redundancy				
O-Ring	●	●	●	●
Open-Ring	-	●	●	●
O-Chain	●	●	●	●
MRP*NOTE	○	○	○	○
MSTP/RSTP/STP	●	●	●	●
Management and Control				
802.1X	●	●	●	●
Rate Limit	●	●	●	●
Port Mirror	●	●	●	●
Port Security	●	●	●	●
IGMP v2/v3	●	●	●	●
QoS Port Base/COS/TOS	●	●	●	●
Port Trunk Static/LACP	●	●	●	●
LLDP	●	●	●	●
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay
DHCP	Server / Client/ Relay	Server / Client/ Relay	Server / Client/ Relay	Server / Client/ Relay
VLAN	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)
Warranty	5 years			

*NOTE: This function is available by request only

Product Selection Guide

	Industrial EN50155 PoE Ethernet Switch			
	Managed Switch			
Industrial Ethernet Switch				
	TPS-3082GT-M12-BP1	**TPS-3082GT-M12X-BP1**	**TPS-3082GF-MM-M12-QODC**	**TPS-B3082ET-M12-BP1**
Port Number				
Number of ports	**10**	**10**	**10**	**10**
10/100Base-T(X) M12 D-Coding Ports	8 (P.S.E.) IEEE 802.3 af	8 (P.S.E.) IEEE 802.3 at	8 (P.S.E.) IEEE 802.3 af	8 (P.S.E.) IEEE 802.3 af
10/100/1000Base-T(X) M12 A-Coding Ports	2(1-pair Bypass)D-Coding	-	-	-
1000Base-X Fiber Ports	-	-	2(QODC)	-
10/100/1000Base-T(X) ports in M12 X-coding Ports	-	2 x M12 connector (8-pin X-coding)	-	-
Gigabit Combo Ports	-	-	-	-
Extension ports	-	-	-	2
Power Redundancy				
On M12 Connector	-	-	-	-
On M23 Connector	2	2	2	2
Installation				
DIN-Rail Mounting	-	-	-	-
Wall Mounting	●	●	●	●
Physical Characteristics				
Casing Protection	IP-40	IP-40	IP-40	IP-40
Dimensions (mm)	170(W) x 75(D) x 196(H)	212(W) x 75(D) x 198(H)	212(W) x 75(D) x 198(H)	212(W) x 75(D) x 198(H)
Operating Temperature				
-40 to 70°C	●	-	-	-
-40 to 75°C	-	●	●	●
Network Redundancy				
O-Ring	●	●	●	●
Open-Ring	●	●	●	●
O-Chain	●	●	●	●
MRP*NOTE	○	○	○	○
MSTP/RSTP/STP	●	●	●	●
Management and Control				
802.1X	●	●	●	●
Rate Limit	●	●	●	●
Port Mirror	●	●	●	●
Port Security	●	●	●	●
IGMP v2/v3	●	●	●	●
QoS Port Base/COS/TOS	●	●	●	●
Port Trunk Static/LACP	●	●	●	●
LLDP	●	●	●	●
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay
DHCP	Server / Client / Relay	Server / Client / Relay	Server / Client / Relay	Server / Client / Relay
VLAN	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)
Warranty	5 years			

*NOTE: This function is available by request only

Industrial Ethernet Switch

Unmanaged Switch

TPS-141TX-M12 Series

TPS-1080-M12 -BP2/-24V

TPS-1080-M12/-24V

Port Number					
Number of ports	**5**	**8**		**8**	
10/100Base-T(X) M12 D-Coding Ports	4 (P.S.E.) + 1 IEEE 802.3 at	8 (P.S.E.)(2-pair bypass) IEEE 802.3 at	8 (P.S.E.)(2-pair bypass) IEEE 802.3 at (max.120W)	8 (P.S.E.) IEEE 802.3 at	8 (P.S.E.) IEEE 802.3 at (max.120W)
10/100/1000Base-T(X) M12 A-Coding Ports	-	-		-	
100Base-FX Fiber Ports	-	-		-	
1000Base-X SFP Ports	-	-		-	
Gigabit Combo Ports	-	-		-	
Extension ports	-	-		-	
Power Redundancy					
On M12 Connector	1	-		-	
On M23 Connector	-	2		2	
Installation					
DIN-Rail Mounting	-	-		-	
Wall Mounting	●	●		●	
Physical Characteristics					
Casing Protection	IP-40	IP-40		IP-40	
Dimensions (mm)	89(W) x 40(D) x 178(H) / 89(W) x 55(D) x 178(H) 24V/MV	125(W) x 65(D) x 196(H)		125(W) x 65(D) x 196(H)	
Operating Temperature					
-40 to 75°C	●	●		●	
Network Redundancy					
O-Ring	-	-		-	
Open-Ring	-	-		-	
O-Chain	-	-		-	
MRP*NOTE	-	-		-	
MSTP/RSTP/STP	-	-		-	
Management and Control					
802.1X	-	-		-	
Rate Limit	-	-		-	
Port Mirror	-	-		-	
Port Security	-	-		-	
IGMP v2/v3	-	-		-	
QoS Port Base/COS/TOS	-	-		-	
Port Trunk Static/LACP	-	-		-	
LLDP	-	-		-	
System Alarm	-	Relay		Relay	
DHCP	-	-		-	
VLAN	-	-		-	
Management / Configuration	-	-		-	
Warranty	5 years				

*NOTE: This function is available by request only

Product Selection Guide

	Industrial EN50155 Gigabit Ethernet Switch		
	Managed Switch		Unmanaged Switch
Industrial Ethernet Switch			
	TGS-9200-M12 / -BP2	TGS-9120-M12 / -BP2	TGS-1080-M12 / -BP2
Port Number			
Number of ports	**20**	**12**	**8**
10/100Base-T(X) M12 D-Coding Ports	-	-	-
10/100/1000Base-T(X) M12 A-Coding Ports	**20**/ 16+4(2-Pair HW bypass)	**12**/ 8+4(2-Pair HW bypass)	**8**/ 4+4(2-Pair HW bypass)
100Base-FX Fiber Ports	-	-	-
1000Base-X Fiber Ports	-	-	-
100Base-FX SFP Ports	-	-	-
1000Base-X SFP Ports	-	-	-
Gigabit Combo Ports	-	-	-
Power Redundancy			
On M12 Connector	-	-	-
On M23 Connector	2(M23)	2(M23)	2(M23)
Installation			
DIN-Rail Mounting	-	-	-
Wall Mounting	●	●	●
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-40
Dimensions (mm)	260(W) x 91.3(D) x 216(H)	260(W) x 91.3(D) x 216(H)	125(W) x 65(D) x 196(H)
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 70°C	●	●	●
Network Redundancy			
O-Ring	●	●	-
Open-Ring	●	●	-
O-Chain	●	●	-
MRP*NOTE	○	○	-
MSTP/RSTP/STP	●	●	-
Management and Control			
802.1X	●	●	-
Rate Limit	●	●	-
Port Mirror	●	●	-
Port Security	●	●	-
IGMP v2/v3	●	●	-
QoS Port Base/COS/TOS	●	●	-
Port Trunk Static/LACP	●	●	-
LLDP	●	●	-
IEEE 1588v2	●	●	-
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	Relay
DHCP	Server / Client / Relay	Server / Client / Relay	-
VLAN	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	-
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	-
Warranty	5 years		

*NOTE: This function is available by request only

Product Selection Guide

Industrial Ethernet Switch	Industrial EN50155 Gigabit PoE Ethernet Switch Managed Switch		
			
	TGPS-9168GT-M12	TGPS-9164GT-M12 / -24V	TGPS-9164GT-M12-BP2 / -24V
Port Number			
Number of ports	**24**	**20**	**20**
10/100/1000Base-T(X) M12 A-Coding P.S.E. Ports	16 IEEE 802.3 af	16 IEEE 802.3 af 16 IEEE 802.3 af (max.120W)	16 IEEE 802.3 af 16 IEEE 802.3 af (max.120W)
10/100/1000Base-T(X) M12 A-Coding Ports	8	4	4(2-Pair HW bypass)
100Base-FX Fiber Ports	-	-	-
1000Base-X Fiber Ports	-	-	-
100Base-FX SFP Ports	-	-	-
1000Base-X SFP Ports	-	-	-
Gigabit Combo Ports	-	-	-
Power Redundancy			
On M12 Connector	-	-	-
On M23 Connector	2(M23)	2(M23)	2(M23)
Installation			
DIN-Rail Mounting	-	-	-
Wall Mounting	●	●	●
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	320(W) x 91.3(D)x 228(H)	260(W) x 91.3(D)x 216(H)	260(W) x 91.3(D)x 216(H)
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 75°C	●	●	●
Network Redundancy			
O-Ring	●	●	●
Open-Ring	●	●	●
O-Chain	●	●	●
MRP*NOTE	○	○	○
MSTP/RSTP/STP	●	●	●
Management and Control			
802.1X	●	●	●
Rate Limit	●	●	●
Port Mirror	●	●	●
Port Security	●	●	●
IGMP v2/v3	●	●	●
QoS Port Base/COS/TOS	●	●	●
Port Trunk Static/LACP	●	●	●
LLDP	●	●	●
IEEE 1588v2	●	●	●
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay
DHCP	Server / Client / Relay	Server / Client / Relay	Server / Client / Relay
VLAN	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)
Warranty	5 years		

*NOTE: This function is available by request only

Product Selection Guide

Industrial Ethernet Switch	Industrial EN50155 Gigabit PoE Ethernet Switch Managed Switch		
			
	TGPS-9084GT-M12 / -24V	TGPS-9084GT-M12-BP2 / -24V	TGPS-9080-M12A-MV
Port Number			
Number of ports	**12**	**12**	**8**
10/100/1000Base-T(X) M12 A-Coding P.S.E. Ports	8 IEEE 802.3 af 8 IEEE 802.3 af (max.120W)	8 IEEE 802.3 af 8 IEEE 802.3 af (max.120W)	8
10/100/1000Base-T(X) M12 A-Coding Ports	4	4(2-pair Bypass)	-
100Base-FX Fiber Ports	-	-	-
1000Base-X Fiber Ports	-	-	-
100Base-FX SFP Ports	-	-	-
1000Base-X SFP Ports	-	-	-
Gigabit Combo Ports	-	-	-
Power Redundancy			
On M12 Connector	-	-	-
On M23 Connector	2(M23)	2(M23)	-
7/8 inch male connector	-	-	1
Installation			
DIN-Rail Mounting	-	-	-
Wall Mounting	●	●	●
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-40
Dimensions (mm)	260(W) x 91.3(D)x 216(H)	260(W) x 91.3(D)x 216(H)	205(W) x 99(D)x 175(H)
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 75°C	●	●	●
Network Redundancy			
O-Ring	●	●	●
Open-Ring	●	●	●
O-Chain	●	●	●
MRP*NOTE	○	○	○
MSTP/RSTP/STP	●	●	●
Management and Control			
802.1X	●	●	●
Rate Limit	●	●	●
Port Mirror	●	●	●
Port Security	●	●	●
IGMP v2/v3	●	●	●
QoS Port Base/COS/TOS	●	●	●
Port Trunk Static/LACP	●	●	●
LLDP	●	●	●
IEEE 1588v2	●	●	●
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay
DHCP	Server / Client / Relay	Server / Client / Relay	Server / Client / Relay
VLAN	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)
Warranty	5 years		

*NOTE: This function is available by request only

Product Selection Guide

Industrial Ethernet Switch	Industrial EN50155 Gigabit PoE Ethernet Switch Managed Switch	
		
	TGPS-9084GT-M12X Series	TGPS-9084GT-M12X-BP2 Series
Port Number		
Number of ports	**12**	**12**
10/100/1000Base-T(X) M12 X-Coding P.S.E. Ports	8	8
10/100/1000Base-T(X) M12 X-Coding Ports	4	4
100Base-FX Fiber Ports	-	-
1000Base-X Fiber Ports	-	-
100Base-FX SFP Ports	-	-
1000Base-X SFP Ports	-	-
Gigabit Combo Ports	-	-
Power Redundancy		
On M12 S-Coding Connector	2	2
On M23 Connector	-	-
7/8 inch male connector	-	-
Installation		
DIN-Rail Mounting	-	-
Wall Mounting	●	●
Physical Characteristics		
Casing Protection	IP-40	IP-40
Dimensions (mm)	260(W) x 91.3(D)x 216(H)	260(W) x 91.3(D)x 216(H)
Operating Temperature		
-10 to 60°C	-	-
-40 to 75°C	●	●
Network Redundancy		
O-Ring	●	●
Open-Ring	-	-
O-Chain	●	●
MRP*NOTE	○	○
MSTP/RSTP/STP	●	●
Management and Control		
802.1X	●	●
Rate Limit	●	●
Port Mirror	●	●
Port Security	●	●
IGMP v2/v3	●	●
QoS Port Base/COS/TOS	●	●
Port Trunk Static/LACP	●	●
LLDP	●	●
IEEE 1588v2	●	●
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay
DHCP	Server / Client / Relay	Server / Client / Relay
VLAN	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI)
Warranty	5 years	

*NOTE: This function is available by request only

Product Selection Guide

	Industrial EN50155 Gigabit PoE Ethernet Switch	
	Unmanaged Switch	
Industrial Ethernet Switch		
	TGPS-1080-M12/24V	**TGPS-1080-M12-BP2/24V**
Port Number		
Number of ports	**8**	**8**
10/100Base-T(X) M12 D-Coding Ports	-	-
10/100/500 Base-T(X) M12 D-Coding Ports	-	-
10/100/1000Base-T(X) M12 A-Coding Ports	8 (P.S.E.) IEEE 802.3 at/8 (P.S.E.) IEEE 802.3 at (Max.120W)	4 (P.S.E.)+4 (P.S.E.)(2-pair Bypass)IEEE 802.3 at / 4 (P.S.E.)+4 (P.S.E.)(2-pair Bypass)IEEE 802.3 at(Max.120W)
100Base-FX Fiber Ports	-	-
1000Base-X Fiber Ports	-	-
100Base-FX SFP Ports	-	-
1000Base-X SFP Ports	-	-
Gigabit Combo Ports	-	-
Power Redundancy		
On M12 Connector	-	-
On M23 Connector	2	2
Installation		
DIN-Rail Mounting	-	-
Wall Mounting	●	●
Physical Characteristics		
Casing Protection	IP-30	IP-30
Dimensions (mm)	125(W) x 65(D) x 196(H)	125(W) x 65(D) x 196(H)
Operating Temperature		
-10 to 60°C	-	-
-40 to 70°C	●	●
-40 to 75°C	-	-
Network Redundancy		
O-Ring	-	-
Open-Ring	-	-
O-Chain	-	-
MRP*NOTE	-	-
MSTP/RSTP/STP	-	-
Management and Control		
802.1X	-	-
Rate Limit	-	-
Port Mirror	-	-
Port Security	-	-
IGMP v2/v3	-	-
QoS Port Base/COS/TOS	-	-
Port Trunk Static/LACP	-	-
LLDP	-	-
System Alarm	Relay	Relay
DHCP	-	-
VLAN	-	-
Management / Configuration	-	-
Warranty	5 years	

*NOTE: This function is available by request only

Product Selection Guide

Industrial Ethernet Switch	Industrial EN50155 Gigabit PoE Ethernet Switch		
	Unmanaged Switch		
			
	TGXPS-1080-M12-24V Series	TGXPS-141GX-M12/24V(MV)	TXPS-141XT-M12/24V(MV)
Port Number			
Number of ports	**8**	**5**	**5**
10/100Base-T(X) M12 D-Coding Ports	-	-	-
10/100/500 Base-T(X) M12 D-Coding Ports	-	-	4 (P.S.E.) IEEE 802.3 at+1
10/100/500 /1000Base-T(X) M12 A-Coding Ports	8 (P.S.E.)	4 (P.S.E.) IEEE 802.3 at+1	-
10/100/1000Base-T(X) M12 A-Coding Ports	-	-	-
100Base-FX Fiber Ports	-	-	-
1000Base-X Fiber Ports	-	-	-
100Base-FX SFP Ports	-	-	-
1000Base-X SFP Ports	-	-	-
Gigabit Combo Ports	-	-	-
Power Redundancy			
On M12 Connector	-	1	1
On M23 Connector	1	-	-
Installation			
DIN-Rail Mounting	-	-	-
Wall Mounting	●	●	●
Physical Characteristics			
Casing Protection	IP-30	IP-40	IP-40
Dimensions (mm)	125 (W) x 65 (D) x196 (H) mm	88.9(W) x 40(D) x 178.2(H) / 88.9(W) x 55(D) x 178.2(H)	88.9(W) x 40(D) x 178.2(H) / 88.9(W) x 55(D) x 178.2(H)
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 70°C	-	-	-
-40 to 75°C	●	●	●
Network Redundancy			
O-Ring	-	-	-
Open-Ring	-	-	-
O-Chain	-	-	-
MRP*NOTE	-	-	-
MSTP/RSTP/STP	-	-	-
Management and Control			
802.1X	-	-	-
Rate Limit	-	-	-
Port Mirror	-	-	-
Port Security	-	-	-
IGMP v2/v3	-	-	-
QoS Port Base/COS/TOS	-	-	-
Port Trunk Static/LACP	-	-	-
LLDP	-	-	-
System Alarm	-	-	-
DHCP	-	-	-
VLAN	-	-	-
Management / Configuration	-	-	-
Warranty	5 years		

Product Selection Guide

	Industrial EN50155 Gigabit PoE Ethernet Switch		
	Unmanaged Switch		
Industrial Ethernet Switch			
	TSPL-101GT-M12 Series	TINJ-101GT-M12 series	TINJ-101-M12 series
Port Number			
Number of ports	**2(M12)**	**2(M12)**	**2(M12)**
10/100Base-T(X) RJ45 Ports	-	-	1(M12)
10/100/1000Base-T(X) RJ45 Ports	1(M12)	1(M12)	-
PoE+(30 Watts) Ports	1(P.D)	1(P.S.E.)	1(P.S.E.)
PoE++(90 Watts) Ports	-	-	-
100/1G/10G Fiber Ports	-	-	-
Optical Bypass ports	-	-	-
Power Redundancy			
DC Terminal Block	1	1	1
DC Power Jack	-	-	-
Operating Voltage	36 to 57 VDC	50-57VDC / 12-50VDC	50-57VDC / 12-50VDC
Output Power	-	30 Watts Max.	30 Watts Max.
Output Voltage	24V@1A / 12V@2A	-	-
Installation			
DIN-Rail Mounting	-	•	•
Wall Mounting	•	•	•
Physical Characteristics			
Casing Protection	IP-40	IP-30	IP-30
Dimensions (mm)	88.9(W)x40(D)x178.2(H)	88.9(W)x40(D)x178.2(H)	88.9(W)x40(D)x178.2(H)
Operating Temperature			
-10 to 60°C	-	-	-
-25 to 70°C	-	•	•
-25 to 75°C	•	-	-
Network Redundancy			
O-Ring	-	-	-
Open-Ring	-	-	-
O-Chain	-	-	-
STP/RSTP	-	-	-
Management and Control			
802.1X	-	-	-
Rate Limit	-	-	-
Port Mirror	-	-	-
Port Security	-	-	-
IGMP v2/v3	-	-	-
QoS Port Base/COS/TOS	-	-	-
Port Trunk Static/LACP	-	-	-
LLDP	-	-	-
System Alarm	-	-	-
DHCP	-	-	-
VLAN	-	-	-
Management / Configuration	-	-	-
Warranty	5 years		

Product Selection Guide

Industrial Ethernet Switch	Industrial C1D2 DIN-Rail Fast Ethernet Switch				
		Managed Switch		Unmanaged Switch	
					
	IES-A3162GC	IES-A3062 Series / IES-A3080		IES-A1062 Series / IES-A1080	
Port Number					
Number of ports	18	8		8	
10/100Base-T(X) RJ45 Ports	16	6	8	6	8
10/100/1000Base-T(X) Ports	-	2	-	2	-
100Base-FX Fiber Ports	-	2 (Multi/Single-Mode)	-	2 (Multi/Single-Mode)	-
1000Base-X Fiber Ports	-	2 (Multi/Single-Mode)	-	2 (Multi/Single-Mode)	-
100Base-FX SFP Ports	-	-		-	
1000Base-X SFP Ports	-	-		-	
Gigabit Combo Ports	2	-		-	
Power Redundancy					
DC Terminal Block	2	2		2	
DC Power Jack	-	1		1	
AC Power Cord	-	-		-	
Installation					
DIN-Rail Mounting	•	•		•	
Wall Mounting	•	•		•	
Desktop	-	-		-	
Physical Characteristics					
Casing Protection	IP-30	IP-30		IP-30	
Dimensions (mm)	96.4(W)x108.5(D)x154(H)	52(W)x106.1(D)x144.3(H)		52(W)x106.1(D)x144.3(H)	
Operating Temperature					
-10 to 60°C	-	-		-	
-40 to 70°C	•	•		•	
Network Redundancy					
O-Ring	•	•		-	
Open-Ring	•	•		-	
O-Chain	•	•		-	
MRP*NOTE	○	○		-	
MSTP/RSTP/STP	•	•		-	
Management and Control					
802.1X	•	•		-	
Rate Limit	•	•		-	
Port Mirror	•	•		-	
Port Security	•	•		-	
IGMP v2/v3	•	•		-	
QoS Port Base/COS/TOS	•	•		-	
Port Trunk Static/LACP	•	•		-	
LLDP	•	•		-	
System Alarm	SYSLOG / SMTP / SNMP Trap	SYSLOG / SMTP / SNMP Trap		-	
DHCP	Server / Client	Server / Client		-	
VLAN	Port-Based / 802.1Q / Q-in-Q / GVRP	Port-Based / 802.1Q / Q-in-Q / GVRP		-	
Management / Configuration	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet /Console(CLI)	WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet /Console(CLI)		-	
Warranty	5 years				

*NOTE: This function is available by request only

Industrial Ethernet Switch Overview

ORing provides a comprehensive line of fully managed, lite-managed, and unmanaged industrial Ethernet switches with industrial-grade ruggedness and network reliability. You can choose between different speeds (Gigabit, Fast Ethernet, optical fiber, etc.), mounting types, power supplies, and casing. The switches comply with a variety of safety standards such as IEC61850-3/EN50155/C1D2. The flagship Thunder Series (Thunder Rail, Thunder Rack, & Thunder PoE) feature advanced technologies (Gigabit speed, 9K Jumbo Frame support, Device Binding, and many more) to guarantee the best networking performance.

ORing's Ethernet switches also support optic fiber technology to provide long-haul transmission. Users can use advanced management software to configure various settings such as network redundancy, QoS, VLANs for network segregation, and IGMP for multicast filtering to achieve optimal network performance through. For handling harsh industrial applications, ORing also offers IP-67 grade waterproof Ethernet switches.

Industrial Modular Ethernet Switch

ORing's industrial modular Ethernet switch comes with 3 slots supporting up to total 24 of Gigabit ports and 1 slot supporting up to total 4 of 10G ports

RGS-P9000

Industrial Din-Rail Gigabit Ethernet Switch

ORing's full Gigabit Ethernet switch series includes unmanaged and managed models which support various technologies for transmitting Ethernet packets at a rate of a Gigabit per second, as defined by the IEEE 802.3-2005 standard.

IGS-9168GP

Industrial PoE Ethernet Switch

ORing's ruggedized industrial PoE (Power over Ethernet) switches By enabling alive checking, the switch will periodically communicate with end devices to monitor the real-time status of PDs. This reduces management burden and increases system reliability. Power scheduling will schedule provision of power to end devices. This enables PDs to be switched off at certain times when they are not needed.

By enabling alive checking, the switch will periodically communicate with end devices to monitor the real-time status of PDs. This reduces management burden and increases system reliability. Power scheduling will schedule provision of power to end devices. This enables PDs to be switched off at certain times when they are not needed.

IGPS-9842GTP-24V

Key Technologies

ORing products comply with several international global standards or protocols to provide better solutions in order to meet customers' high standard requirement.

MRP*NOTE

Media Redundancy Protocol (MRP) is a data network protocol standardized for ring redundancy in industrial environment by the International Electrotechnical Commission as IEC 62439-2. MRP is compatible with redundant ring coupling, supports VLANs, and is distinguished by very short reconfiguration times. In the fault-free state of the network, this protocol provides reliable data communication, and preserves determinism of real-time data communication. In cases of fault, removal, and insertion of a component, it provides deterministic recovery times. This function is available by customer's reguest.

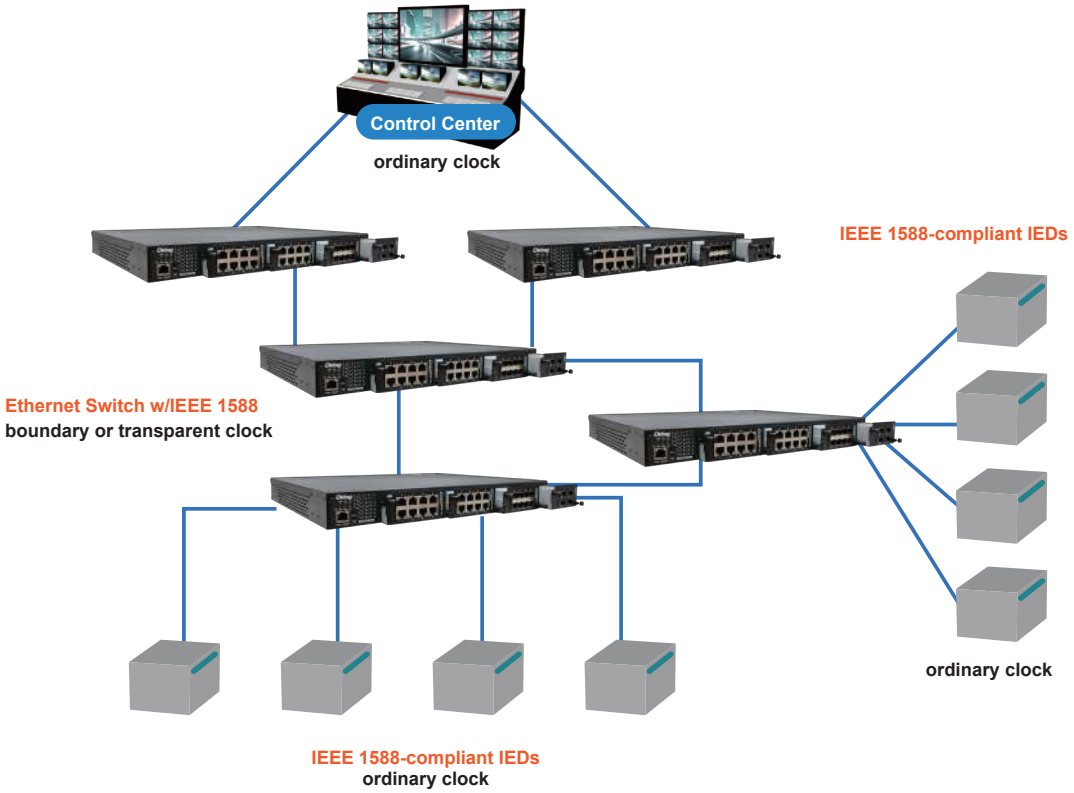
***NOTE: This function is available by request only**

IEEE 802.3az

Energy-Efficient Ethernet is a set of enhancement to the twisted-pair and backplane Ethernet family of computer networking standards that allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more, while retaining full compatibility with existing equipment. The Institute of Electrical and Electronics Engineers (IEEE), through the IEEE 802.3az task force developed the standard. ORing's 9000 series products are all compliant with this standard.

IEEE 1588v2

A clock synchronization algorithm drafted by the Institute of Electrical and Electronics Engineers (IEEE). The algorithm provides a standard for clock synchronization based on data packet transmission. In 2001, with the support of the National Institute of Standards and Technology (NIST), the committee drafted the related standard, which has been used as the IEEE 1588 standard since the end of 2002. In the communications industry, the clock signal transmission technology of the PSN(Packet Switched Networks) develops fast. The revised IEEE 1588 standard was issued in June 2006 and the IEEE 1558v2 was revised in 2007. ORing's 9000 series products are all compliant with IEEE 1588v2 hardware-based standard.



IPv6

Internet Protocol version 6 (IPv6) is the latest revision of the Internet Protocol (IP) developed by the Internet Engineering Task Force (IETF). This protocol is for communication and the traffic across the internet.

Jumbo Frame

ORing's Gigabit Ethernet switches, with 10 times the bandwidth of 1000Base-T Ethernet switches, feature Jumbo frame support, which enables Jumbo Frame is useful for transmitting mega-pixel IP surveillance videos since the CPUs have fewer frames to process as a larger payload is put into each frame. This will increase data transmission efficiency, thereby improving network performance.

Redundant Technologies

Technology Description

Many network redundancy or recovery protocols have been defined by the IEEE, such as STP, RSTP, MSTP, to ensure recovery from network disconnections. However, industrial applications require a much shorter recovery time than commercial applications. Hence, industrial networking devices often use proprietary redundant ring technologies to minimize downtime. ORing has developed a variety of proprietary redundancy technologies including O-Ring, O-Chain, and Open-Ring. These proprietary redundant ring technologies not only meet the needs of different networking topologies, but also assure the reliability of the network.

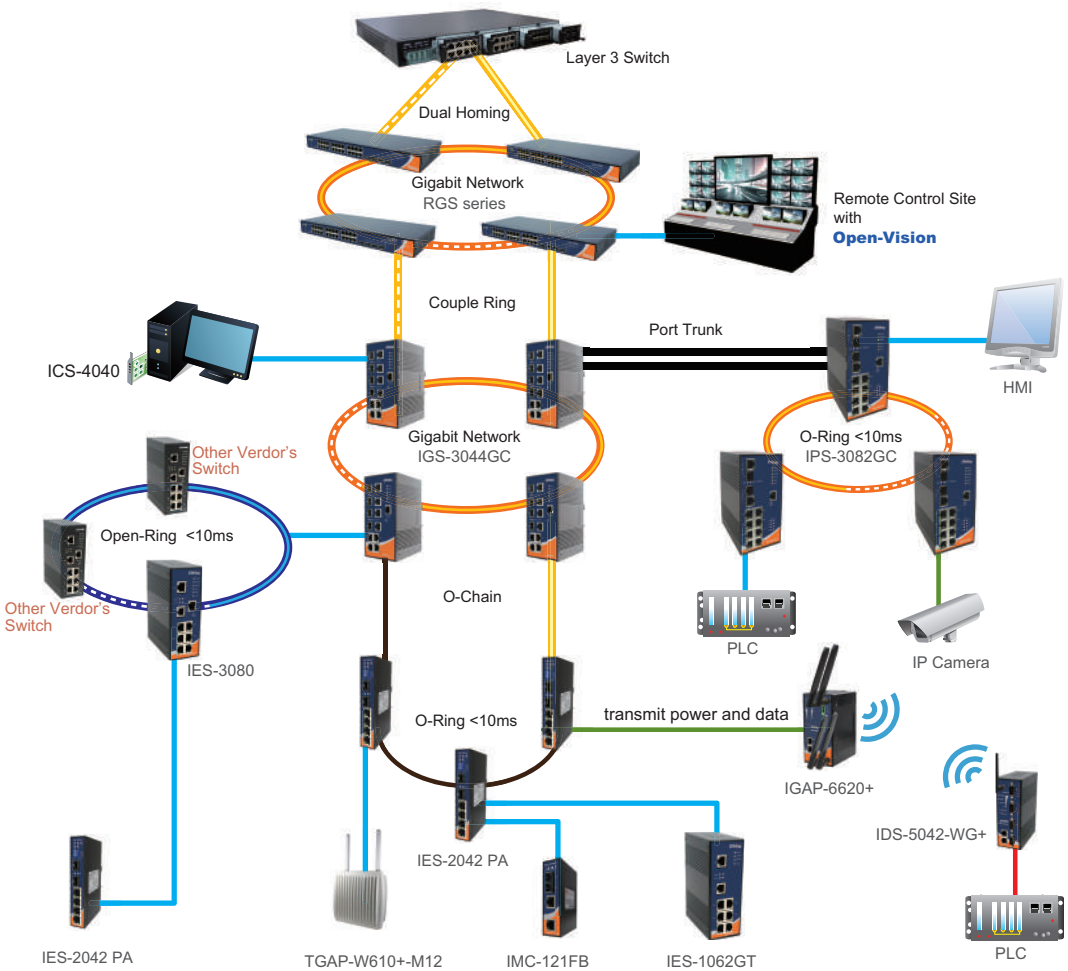
Support for IEEE Standard Redundant Technologies

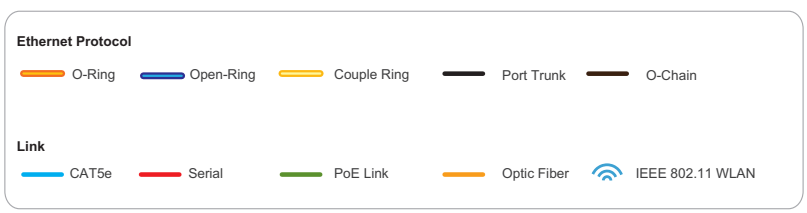
- IEEE802.1d - STP (Spanning Tree Protocol)
- IEEE802.1w – RSTP (Rapid Spanning Tree Protocol)
- IEEE802.1s – MSTP (Multiple Spanning Tree Protocol)
- IEC 62439-2 MRP*NOTE (Media Redundancy Protocol)

Support for ORing's Proprietary Redundant Technologies

- O-Ring (ORing's Proprietary Redundant Ring)
- Open-Ring (Open Architecture Technology)
- O-Chain (ORing's Proprietary Redundant Chain Technology)

***NOTE: This function is available by request only**





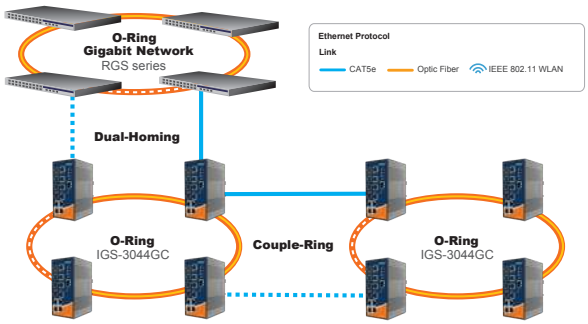
Network Redundancy Comparison Table

Recovery Technology	STP	RSTP	RSTP 2004	MSTP	Open-Ring	O-Ring	O-Chain
Recovery Time	10 ~ 50 Seconds	3 ~ 5 Seconds	< 100 ms	3 ~ 5 Seconds	-	< 10 ms	< 10 ms
Maximum Nodes	40	20 (Note: Recovery time is unpredictable if there are more than 9 nodes)	80 (Note: Recovery time is unpredictable if there are more than 9 nodes)	20 (Note: Recovery time is unpredictable if there are more than 9 nodes)	250	250	250
Per VLAN STP	NO	NO	NO	YES	NO	NO	NO

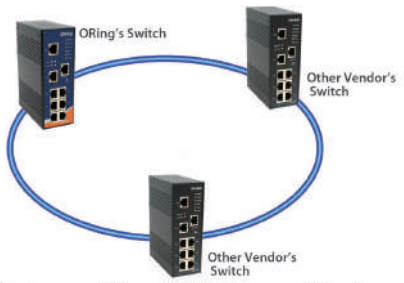
Comparison Table of Redundant Technologies

Benefits of ORing's Redundant Technologies

O-Ring : O-Ring is ORing's proprietary redundant ring technology, boasting a recovery time of less than 10 milliseconds and the ability to support up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical applications from network interruptions or temporary malfunction.



Open-Ring : Open-Ring is an enhanced redundant technology that allows ORing's switches to work with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switches. In cases where the ring is deployed using proprietary technologies, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.



ORing's managed Ethernet Switches are compatible with other vendors' switches in the same redundant ring.

MRP*NOTE: All of ORing's Ethernet switches come with Media Rendundancy Protocol (MRP) support.
MRP is a data network protocol standardized as IEC 62439-2, allowing rings of Ethernet switches to overcome any single failure, providing deterministic recovery time and supporting steamless data transmission. Therefore, it is suitable to most Industial Ethernet applications and in the same time assures the most reliable communication environment.

Modbus TCP : Modbus TCP is simply the Modbus RTU protocol with a TCP interface that runs on Ethernet. Specifically, it covers the use of Modbus messaging in an 'Intranet' or 'Internet' environment using the TCP protocols. The most common use of the protocols at this time are for Ethernet attachment of PLC's, I/O modules, and 'gateways' to other simple field buses or I/O networks. SCADA system can monitor / Control Industrial Ethernet Switch going through Modbus TCP.

RSTP 2004: RSTP-2004 is an enhanced version of RSTP designed to overcome the slow recovery time in certain situations which might take up to 30 seconds when using RSTP. To speed up the recovery time, some significant changes have been made and one of them is transmission of the Bridge Protocol Data Unit (BPDU). When a link in the topology is broken, the device will send out a topology change notice which is encapsulated in the BPDU. Since the notice is triggered by the event, it can be sent out at a much faster rate, making the protocol faster than RSTP standard. With a millisecond-level recovery time, RSTP-2004 can provide higher network availability.

***NOTE: This function is available by request only**

O-Chain: O-Chain is a revolutionary network redundancy technology that provides an *add-on* network redundancy topology for any backbone network, providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.

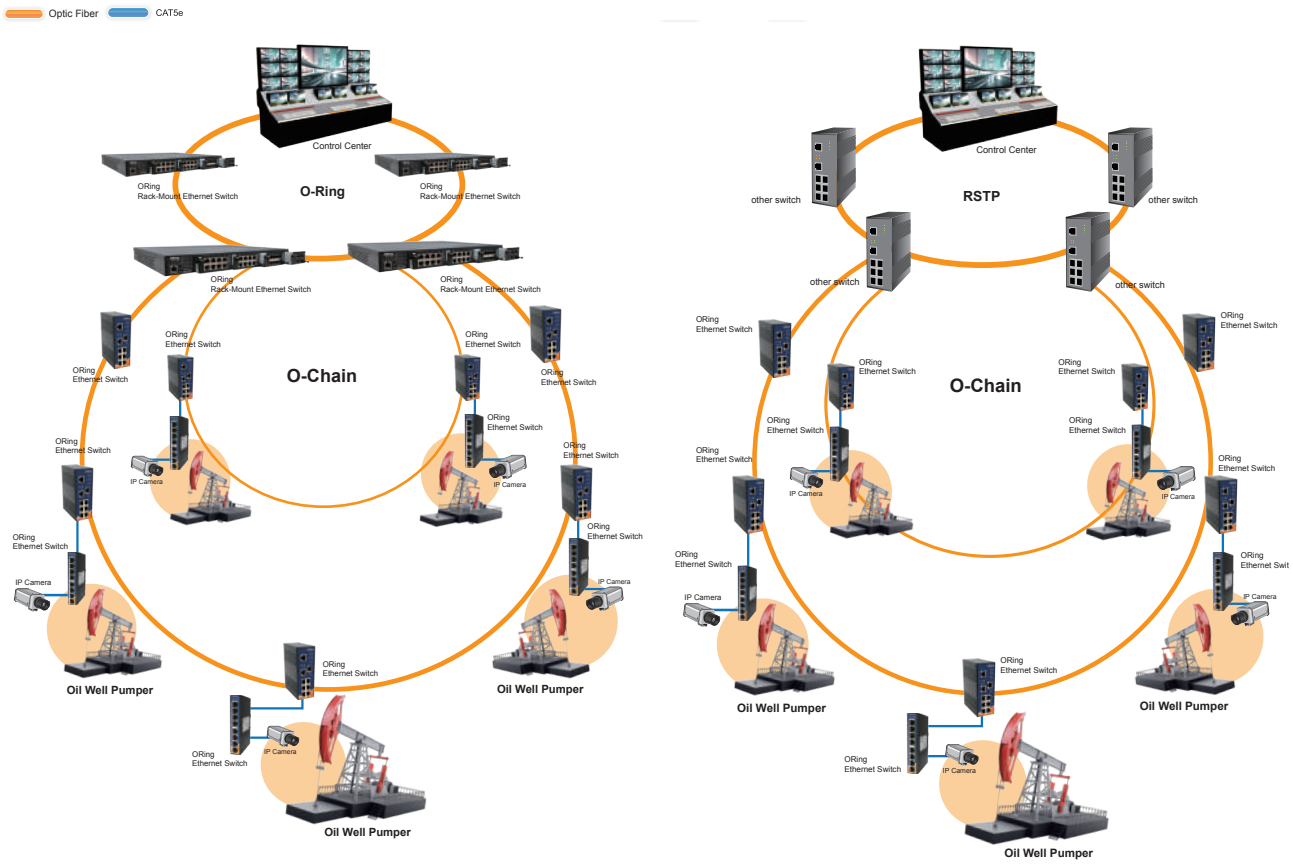
O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology, i.e. the creation of multiple redundant networks beyond the limitations of current redundant ring technology.

O-Chain is a highly flexible self-healing Ethernet technology designed for distributed and complex industrial networks. It allows our switches to be quickly and easily deployed in any type of complex redundant network and offer fast fault recovery, flexible construction, unlimited expansion, and cost-effective configuration. If at any time a segment of the chain fails, the network is able to recover in less than 10ms for up to 250 switches.

O-Chain is very easy to configure and manage. Simply define an edge port on the edge switch and enable the O-Chain function of other switches, O-Chain will be up and running.

O-Chain provides the following key advantages:

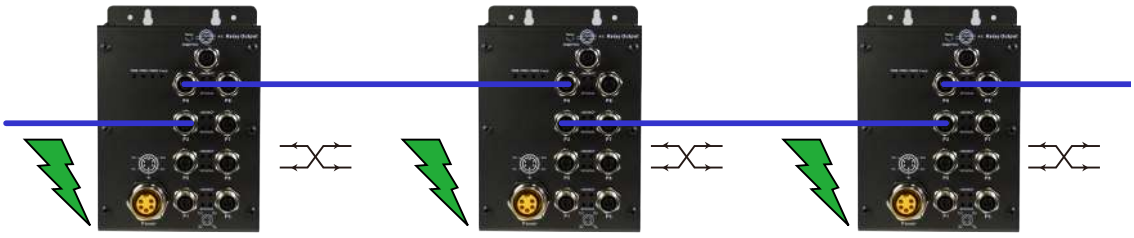
1. Outstanding recovery time (< 10ms) for up to 250 switches
2. Flexible, scalable redundant network topologies
3. Compatible with other redundant protocols (RSTP, STP, etc.)
4. Significant reduction in development costs (time and effort, cables, and Ethernet ports)



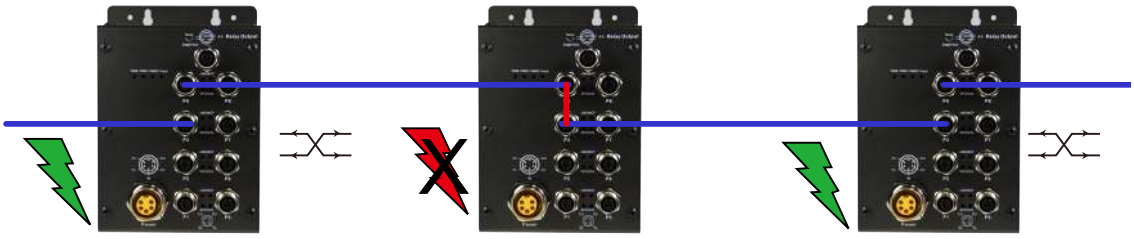
ORing's Hardware Bypass redundancy technology naturally and effectively avoids single-point power failure in daisy chain topology or multi-point power failures . For conventional wired Ethernet network, there is the Copper Interface Bypass. An ORing Ethernet switch with Copper Interface Bypass would have 2 of the Ethernet ports designated as the bypass path. Under normal circumstances, these ports would function just like any other ports. However, when one of the switches in the loop loses power, the internal bypass circuit will connect the two bypass ports to pass the traffic on to other active switches.

Copper Interface Bypass - TES series

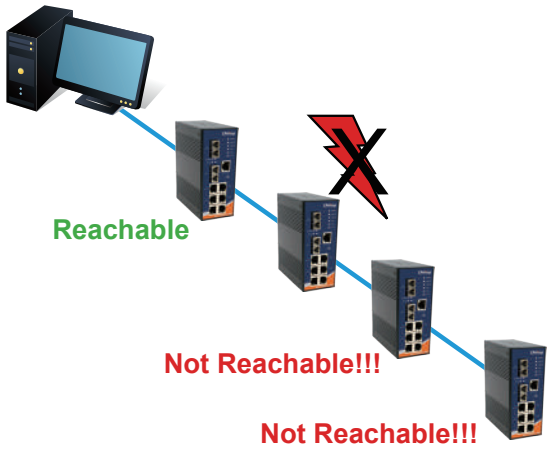
➤ Normal Communication



➤ Single point power failure activate bypass mechanism



Hardware Bypass: Redundancy technologies are great for network topologies. When one node fails, the system quickly finds another path and continues to run again. However, if two or more nodes fail in a ring structure, or if one node fails in a daisy chain structure, the network will be irrecoverable until the node problems are solved.



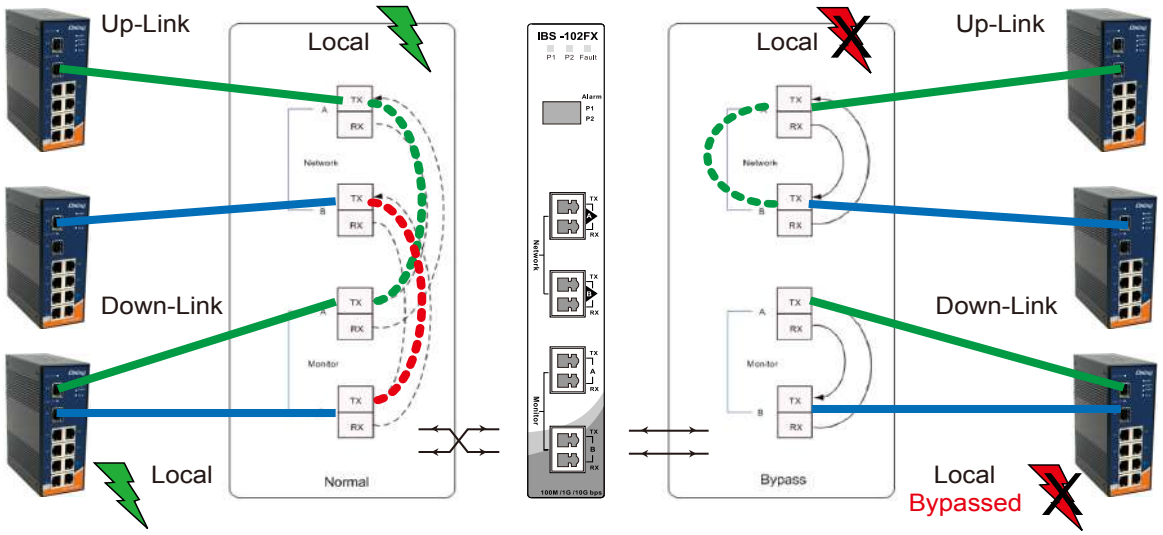
ORing also has the optical solution for hardware bypass network redundancy – Optical Interface Bypass in a dedicated optical bypass switch such as one from the IBS-102FX series. In normal operations, the Bypass switch diverts data from the Network ports to the Monitor ports. When power failure occurs, the Network data traffic is routed directly to the other Network port. Moreover, the Bypass switch has relay output for power failure warning. For different optical data transmission modes, IBS-102FX series comes in two variations – IBS-102FX-MM-LC for multi-mode optical links and IBS-102FX-SS-LC for single-mode optical links.

Optical Interface Bypass - IBS-102FX

- Same as copper Interface but use optical for Bypass Feature.

➤ Normal Communication

➤ Power failure activate bypass mechanism



Supporting Product(s):

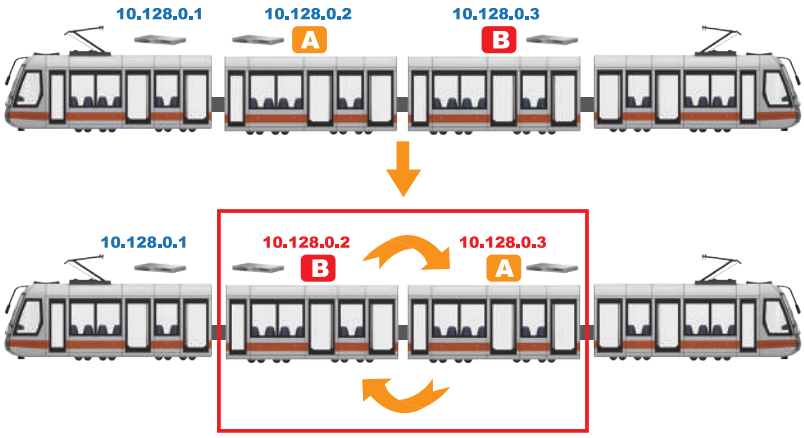
All of ORing's industrial managed and lite-managed Ethernet switch products support O-Ring, Open-Ring, and redundancy technologies. Ethernet switches with the -BP2 suffix support Cooper Interface Bypass, while the IBS-102FX Series support Optical Interface Bypass.

TTDP(Train Topology Discovery Protocol)

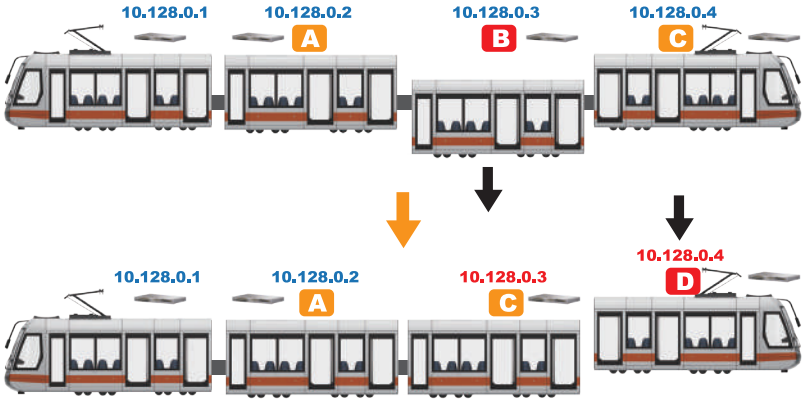
Train topology is dynamic and frequently changes since carriages are constantly added, removed, or replaced. Every time the order of the carriages changes, the network must be reconfigured, which is very time-consuming and prone to errors if it's done manually.

TTDP (Train Topology Discovery Protocol) protocol has thus been developed to enhance the efficiency of railway network reconfiguration. The protocol enables Ethernet switches to negotiate automatically with other network devices after the network topology is changed and will reassign an IP address to the network devices based on the new order of the carriages. Therefore IT staff or operators do not need to reconfigure the network devices manually at all. With this technology, train operators can vastly improve their operational efficiency and minimize configuration errors.

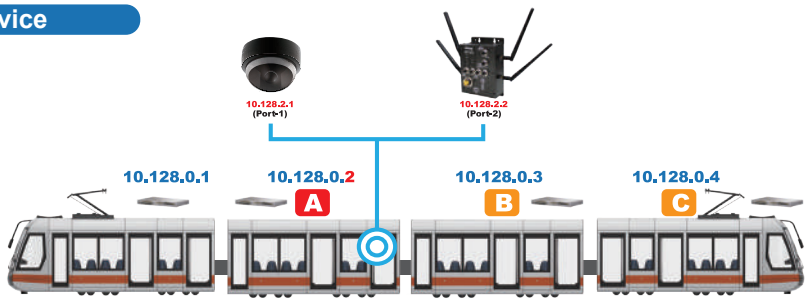
Exchange



Remove & Add

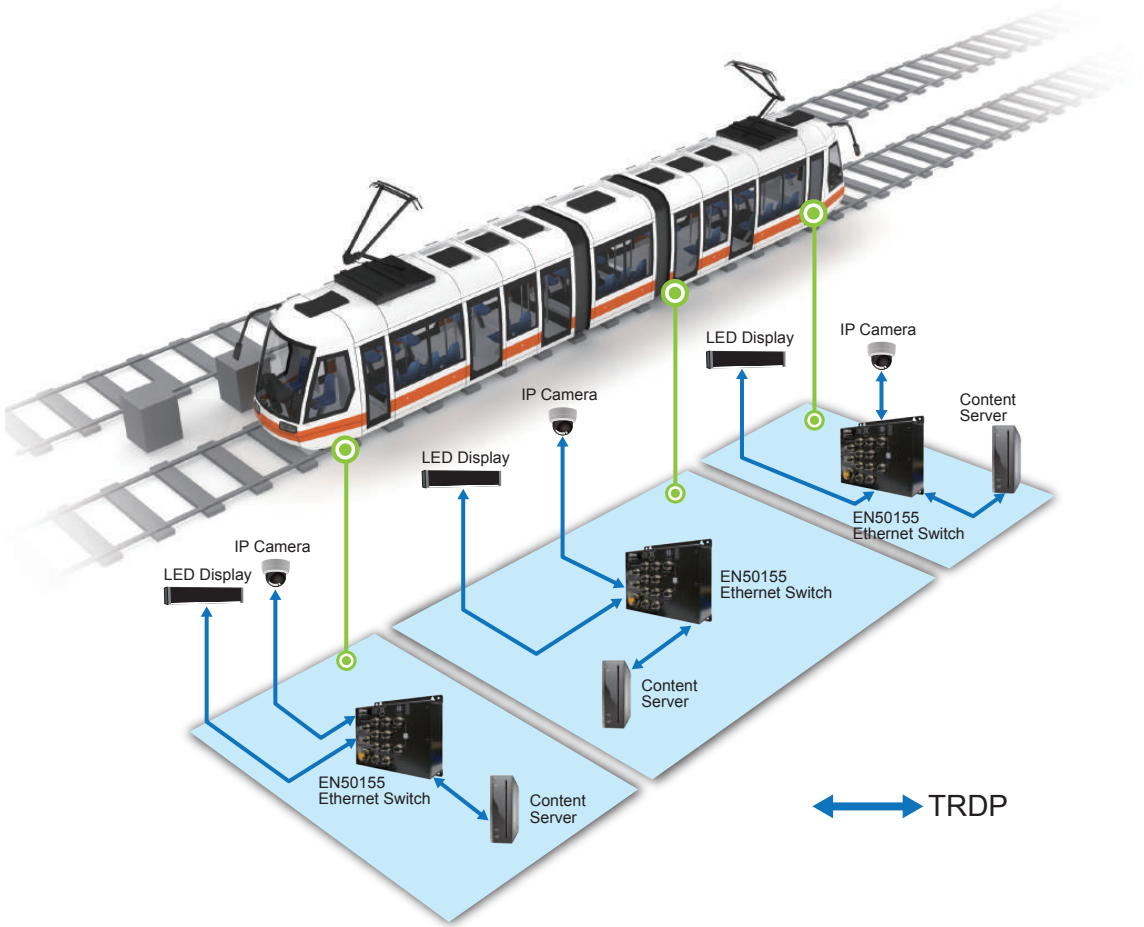


Add Device



TRDP(Train Real-time Data Protocol)-IEC 61375-2-3

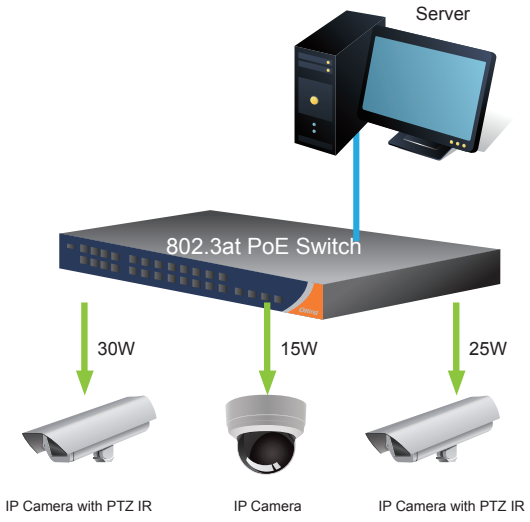
Train Real-time Data Protocol (TRDP) is a protocol for communication and control solutions on board of rolling stock. Railway industries created this new protocol with the aim to improve data communication on board of trains.



Power over Ethernet with Power Management

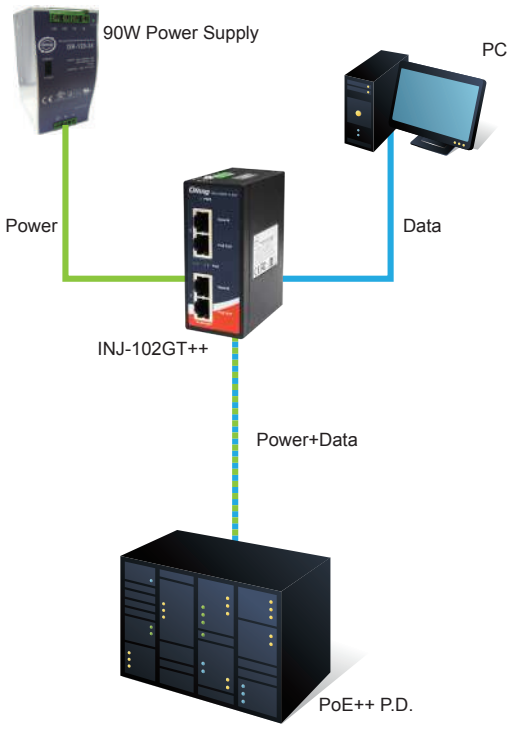
Power over Ethernet (IEEE 802.3at) with PoE+

PoE provides numerous benefits in terms of network efficiency and cost-effectiveness, such as flexible network designs, simplified, faster, and lower-cost installation, easy and fast rearrangement of existing deployments, and centralized power management. The IEEE has ratified two PoE standards, the IEEE 802.3af and the IEEE 802.3at. The former provides up to 15.4W of DC power to each device and the latter, also known as PoE+ or PoE plus, provides up to 30W of power. The IEEE 802.3at technology delivers 30W of power via two twisted pairs — a significant boost from the IEEE 802.3af standard.



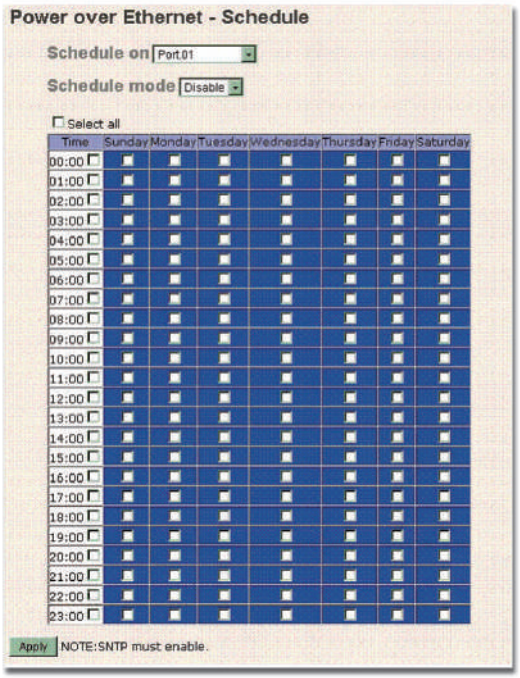
Power over Ethernet with PoE++

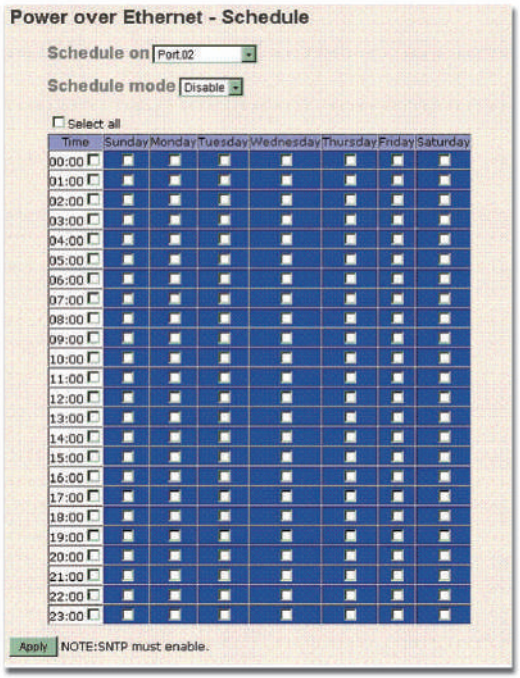
PoE has been widely used in IP surveillance applications with constant addition of new features in IP cameras such as PTZ, IR, and WDR, and hence requiring more power. With the introduction of more power-hungry devices, a new proprietary standard known as LTPoE++ has be developed which extends the PoE and PoE+ specifications to up to 90W of power. With complete interoperability with the IEEE PoE standards, LTPoE++ is backward compatible and interoperable with existing PoE devices. ORing INJ-102GT++ power injector is an advanced high power PoE injector capable of providing 90W of power to a PD device.



Green Power Scheduling

Power schedule allows the administrator to set up power supply schedules based on their operation modes such as power on, power off, restart, or sleep needs so that network devices will be powered at a specified time, instead of consuming power around the clock even when not in use. For example, if the factory wireless PoE access point only needs to be powered on during work hours, the network administrator can enable power output for the device from 6a.m to 10p.m and disable power output from 10p.m to 6a.m.





Alive Checking

ORing's managed/lite-managed PoE switches could be configured to monitor the real-time status of connected powered devices (PD). ORing's managed/lite-managed PoE switches could send alive-checking packets to assure the connected PDs are in working state. If the connected PDs fail to response, ORing's managed/lite-managed PoE switches would reactivate the connected PDs to assure the reliability of the network.

• 3 steps of alive checking

ORing Launched the First Onboard 2.5G/10G Ethernet Switch with Copper Interface and PoE Functions

The demand of bandwidth for data transmission is dramatically increased nowadays. Those applications include popular deployed wireless network(Wi-Fi) for internet access, video streaming for IP surveillance, and network distribution/data concentrator in control center. Thus, the 10G/40G/100G standards or higher data rate technologies were developed for those demands.

Feature	IEEE 802.11ac Wave 1	IEEE 802.11ac Wave 2			
Data Rate	1.3 Gbps	1.3 Gbps	1.73 Gbps	2.6 Gbps	3.5 Gbps
# of Spatial Streams	3	3	4	3	4
Modulation	256 QAM	256 QAM	256 QAM	256 QAM	256 QAM
Channel Bandwidth	20, 40, 80 MHz	20, 40, 80 MHz	20, 40, 80 MHz	20, 40, 80 80+80, 160 MHz	20, 40, 80 80+80, 160 MHz
MIMO IEEE	Single User	Single User Multi User	Single User Multi User	Single User Multi User	Single User Multi User
802.11 protocol support	a, n, ac	a, n, ac	a, n, ac	a, n, ac	a, n, ac

Just take the application of wireless(Wi-Fi) access as the example, the technology of IEEE802.11ac is matured and very popular for huge amount of multimedia data access in these years. Existing 1Gb backbone Ethernet network can not fulfill the demands but become the bottleneck since the data rate of wireless technology already exceed 1Gbps. Then how to upgrade and increase the bandwidth of existing network cable become an important task.

As you know, new wired technology for higher transmission data rate may need new physical cable with better quality and higher dta bandwidth. But the problem is the Cat5e Ethernet cable is so popular and already deployed all over the world in past tens of years. It will be very costly and difficult to replace the cable for new technology. The 10GBase-T technology was already proven which is not possible to operate on existing Cat5e cable but need Cat6a or Cat7 cable. Even though, it is still suitable for network distribution/data concentrator application.

For field side application, we need to find out a solution to increase the data rate on existing Cat5e Ethernet cable to save cost and time. Therefore, the new standard of 2.5GBase-T was defined and developed for faster Ethernet data transmission up to 100 meters like traditional 1Gb Ethernet network did. In addition, the PoE(Power over Ethernet) technology is also possible to be implemented to deliver power and data within the same Ethernet cable.

ORing launched a new series of 2.5G/10G Industrial (PoE) Ethernet switch products for these applications. They are the first 2.5G/10G Industrial grade Ethernet switch products with copper interface and PoE functions for industrial applications with requirement of very high speed data transmission.

RGS-92222GCP-NP Series

RGS-92222GCP-NP Series

Industrial 26-port managed Gigabit Ethernet switch with 22x10/100/1000Base-T(X), 2xGigabit combo and 2x100/1000Base-X, SFP socket

Features

- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP*NOTE** (Media Redundancy Protocol) function
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- SFP socket support DDM function
- Multiple notification for warning of unexpected event
- Support **backup unit device DBU-01** for quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- 19 inches rack mountable design

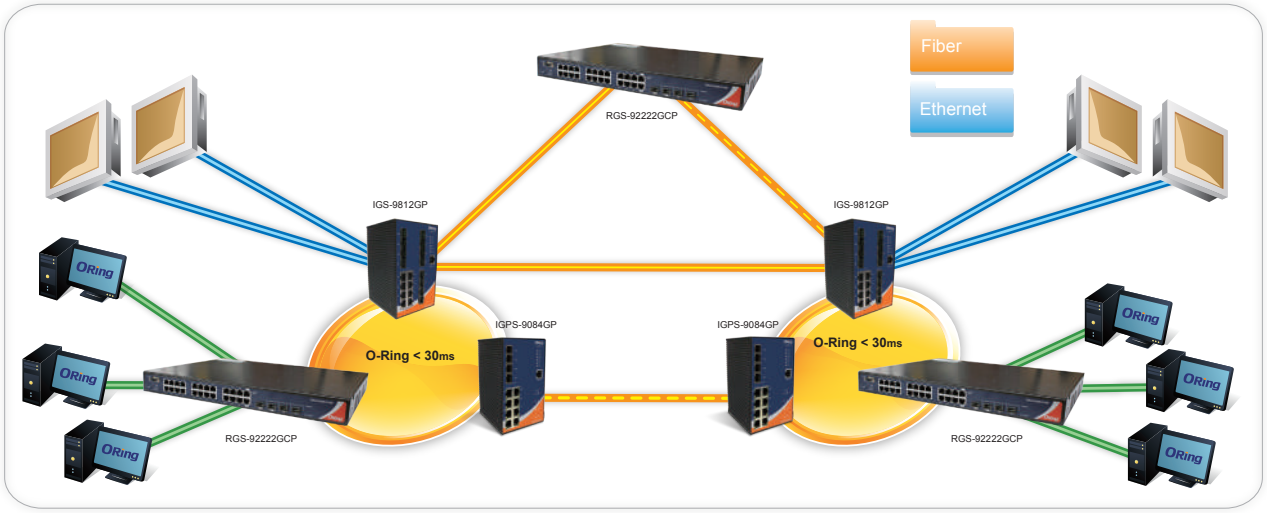
***NOTE: This function is available by request only**

Introduction

RGS-92222GCP-NP series are Gigabit managed redundant ring Ethernet switch with 22x10/100/1000Base-T(X) copper ports and 2xGigabit combo ports and 2x100/1000Base-X SFP ports. These switches support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE, Fast Recovery and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. RGS-92222GCP-NP series can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring :** Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.

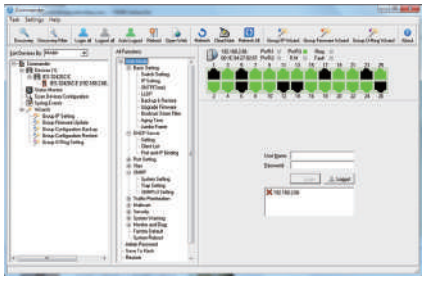
- **MRP**[*NOTE] : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management :** The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS :** The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function :** ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention :** The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP :** This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet :** This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



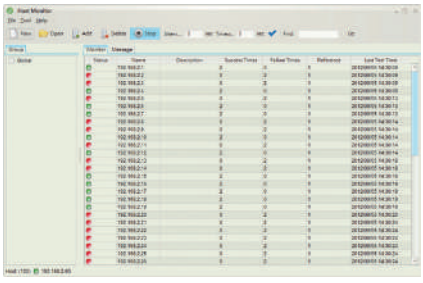
Network connection

Open-Vision

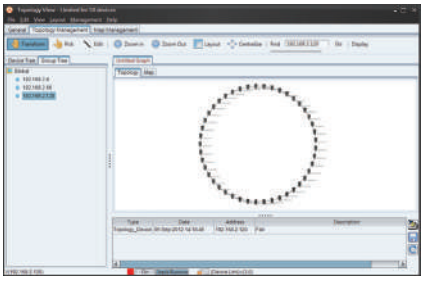
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor

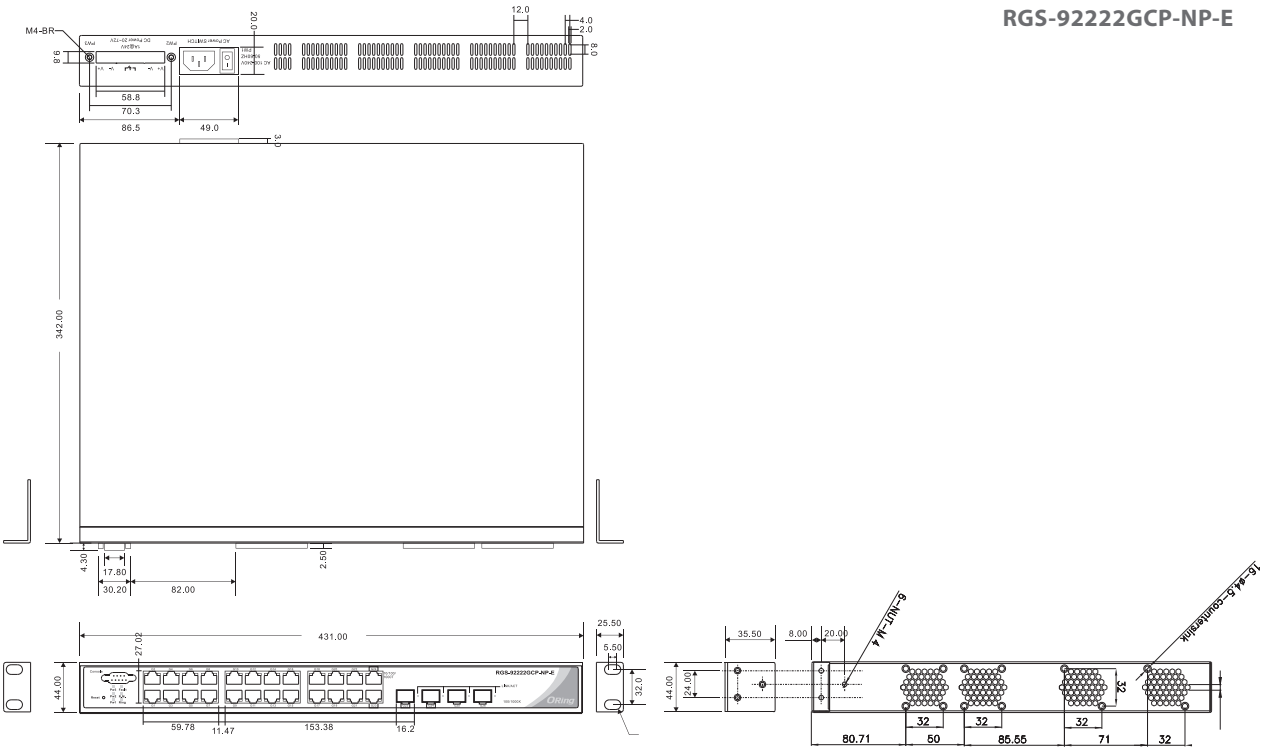


Topology View

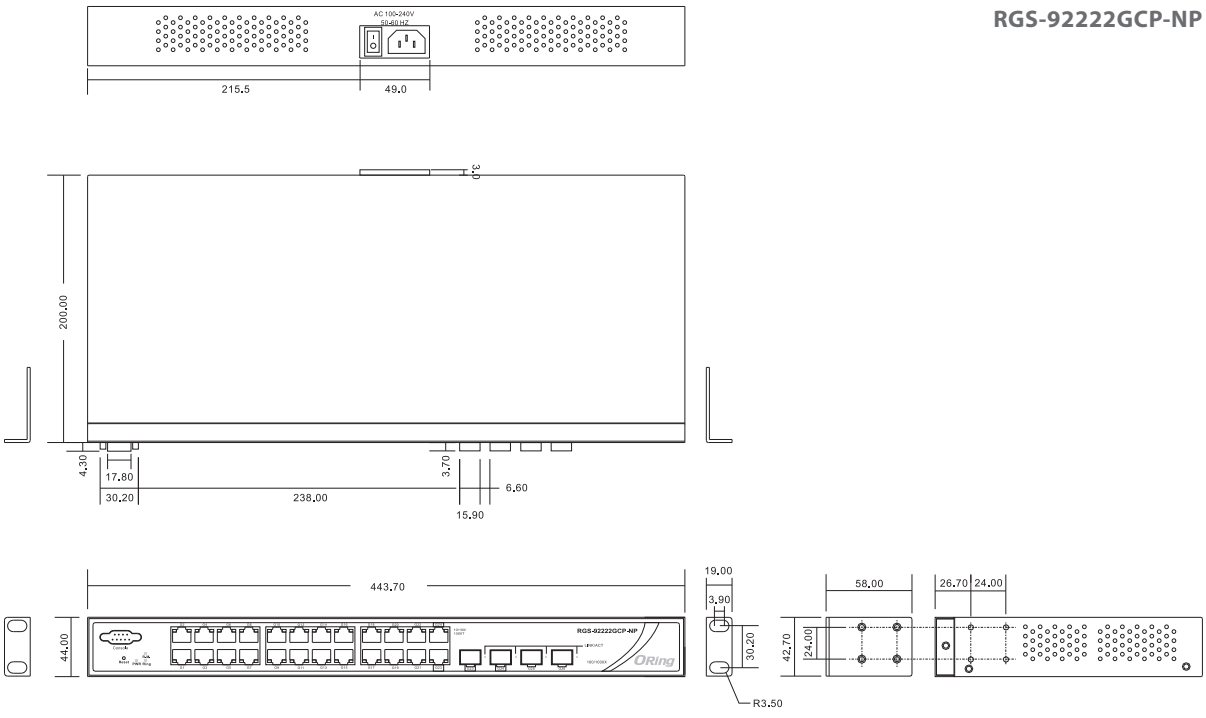
***NOTE: This function is available by request only**

Dimensions

RGS-92222GCP-NP-E



RGS-92222GCP-NP



(Unit=mm)

Specifications

ORing Switch Model	RGS-92222GCP-NP	RGS-92222GCP-NP-E
Physical Ports		
10/100/1000Base-T(X) with Ports in RJ45 Auto MDI/MDIX	22	
Gigabit Combo port with 10/100/1000Base-T(X) and 100/1000Base-X SFP ports	2	
100/1000Base-X with SFP port	2	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8k	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 52Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define	
Jumbo frame	Up to 9.6K Bytes	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) Single 802.1x and Multiple 802.1x MAC-based authentication QoS assignment MAC address limit TACACS+ VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization IP source guard	
Software Features	IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client DHCP Relay Modbus TCP DNS client proxy SMTP Client NTP server	
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** Fast Recovery MSTP (RSTP/STP compatible)	

RS-232 Serial Console Port	RS-232 in DB-9 connector with console cable. 115200bps, 8, N, 1	
LED Indicators		
Power Indicator	Green : Power indicator	Green LED x 3 : Power indicator for AC and DC
Ring Master Indicator	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.	
Fault Indicator	None	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps	
100/1000Base-X SFP Port Indicator	Green for port Link/Act.	
Fault contact		
Relay	None	Relay output to carry capacity of 1A at 24VDC
Power		
Power Input	100 ~ 240VAC with power cord	100~240VAC with power cord, and dual 48VDC (36~72VDC) power inputs at 6-pin terminal block
Power consumption (Typ.)	22Watts	23Watts
Overload current protection	Present	
Reverse Polarity Protection	Not Present	Present on DC only
Physical Characteristic		
Enclosure	19 inches rack mountable	
Dimension (W x D x H)	443.7 x 200 x 44mm (17.47 x 7.87 x 1.73 inch)	431 x 342 x 44mm (17 x 13.46 x 1.73 inch)
Weight (g)	2850 g	4360 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD) EN61000-4-4 (EFT), EN61000-4-6 (CS), EN61000-4-11 EN61000-4-3 (RS), EN61000-4-5 (Surge), EN61000-4-8,	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
MTBF	481088.3883	400391.3925
Warranty	5 years	

***NOTE: This function is available by request only**

Ordering Information

RGS-9 AA B C DDD -NP - E

Code Definition	10/100/1000Base-T(X) Port Number	Gigabit Combo Port Number	Additional Port Number	Additional Port Type	Model Type
Option	**- 22:** 22 ports	**- 2:** 2 ports	**- 2:** 2 ports	**-GCP:** Gigabit Combo ports and Gigabit SFP ports	**-E:** enhanced model with dual DC inputs and Relay output

	Model Name	Description
Available Model	RGS-92222GCP-NP_US	Industrial 26-port managed Gigabit Ethernet switch with 22x10/100/1000Base-T(X) , 2xGigabit combo ports and 2x100/1000Base-X, SFP socket, US power cord
	RGS-92222GCP-NP_UK	Industrial 26-port managed Gigabit Ethernet switch with 22x10/100/1000Base-T(X) , 2xGigabit combo ports and 2x100/1000Base-X, SFP socket, UK power cord
	RGS-92222GCP-NP_EU	Industrial 26-port managed Gigabit Ethernet switch with 22x10/100/1000Base-T(X) , 2xGigabit combo ports and 2x100/1000Base-X, SFP socket, EU power cord
	RGS-92222GCP-NP_JP	Industrial 26-port managed Gigabit Ethernet switch with 22x10/100/1000Base-T(X) , 2xGigabit combo ports and 2x100/1000Base-X, SFP socket, JP power cord
	RGS-92222GCP-NP-E_US	Industrial 26-port managed Gigabit Ethernet switch with 22x10/100/1000Base-T(X) , 2xGigabit combo ports and 2x100/1000Base-X, SFP socket, enhanced version, US power cord
	RGS-92222GCP-NP-E_UK	Industrial 26-port managed Gigabit Ethernet switch with 22x10/100/1000Base-T(X) , 2xGigabit combo ports and 2x100/1000Base-X, SFP socket, enhanced version, UK power cord
	RGS-92222GCP-NP-E_EU	Industrial 26-port managed Gigabit Ethernet switch with 22x10/100/1000Base-T(X) , 2xGigabit combo ports and 2x100/1000Base-X, SFP socket, enhanced version, EU power cord
	RGS-92222GCP-NP-E_JP	Industrial 26-port managed Gigabit Ethernet switch with 22x10/100/1000Base-T(X) , 2xGigabit combo ports and 2x100/1000Base-X, SFP socket, enhanced version, JP power cord

Packing List

- RGS-92222GCP-NP/-E x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1
- Rack-mount Kit x 1
- Power Cable x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100M series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- DBU-01 : Backup unit device

RGS-PR9000-A Series

RGS-PR9000-A Series

Industrial advanced Layer 3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch up to 24 1G ports plus 4 10G ports

Features

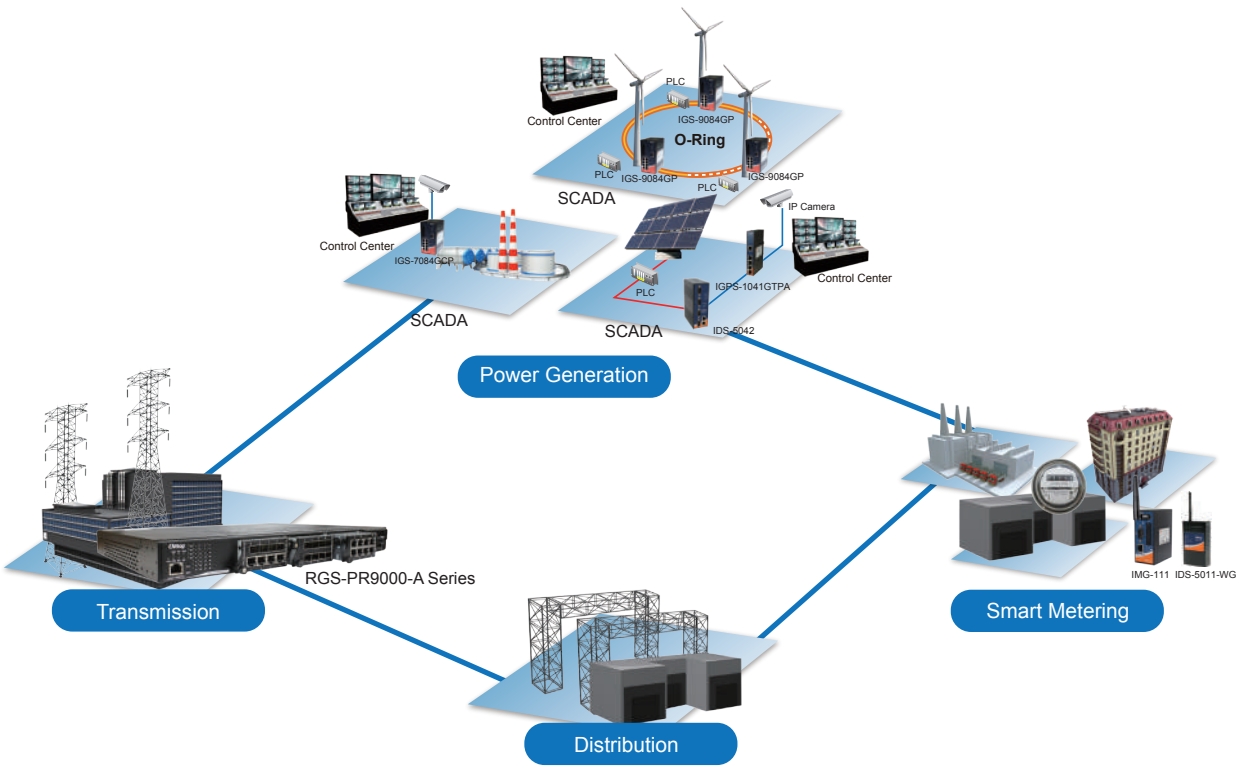
- Designed for power substation fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Modular designed makes network planning easy
- Support static routing and route redistribution for IPv4 and IPv6
- Support routing protocols – RIP v1/v2, OSPF, DVMRP, PIM-SM, PIM-DM
- Support VRRP for router redundancy
- Support **O-Ring** (recovery time < 30ms) and MSTP (RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support Modbus TCP
- Provided HTTPS/SSH/SSL protocol to enhance network security
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Support SMTP client and SNTP server protocol
- Support TFTP transmission protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & 802.1Q VLAN Network Management
- Support multicast MIB (RFC 2932)
- Support port mirror function to monitor port data
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 10KBytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support multiple levels of CLI user privileged
- Support backup unit device **DBU-01** to quickly configuration backup/restore
- Support redundant power inputs with optional voltage range
- 19 inches rack mountable design

Introduction

RGS-PR9000-A is advanced Layer 3 modular managed redundant ring Ethernet switch with 3 module slots. The switch is designed for power substation application, fully compliant with the requirement of IEC 61850-3, IEEE 1613. It also supports routing protocols OSPF which are suitable for large scale network environment. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 20ms) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Otherwise, support wide operating temperature from -20°C to 60°C when running with 10G ports, and it 's up to -40°C to 75°C without 10G ports. RGS-PR9000-A can also be managed centralized and convenient by Open-Vision, besides the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for power substation application.

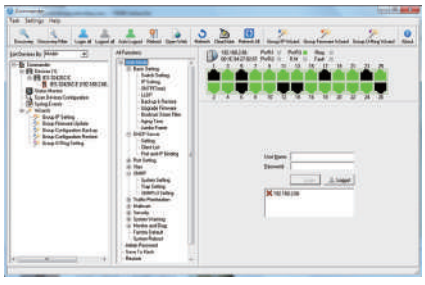
- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.
- **Modular Designed** : Modular designed can makes network planning easy and allow greater flexibility by letting you install other Ethernet/Optical fiber modular.

***Note : The product is unsupported hot plug function, if need to change switch module must be power off then can change.**

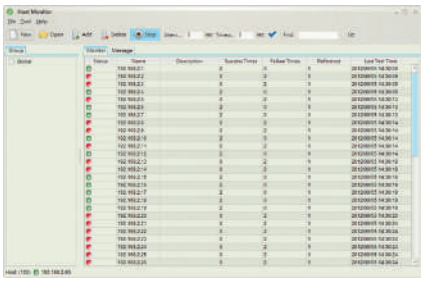


Open-Vision

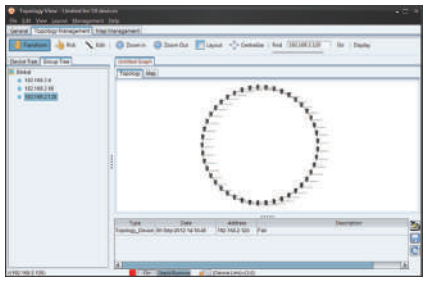
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

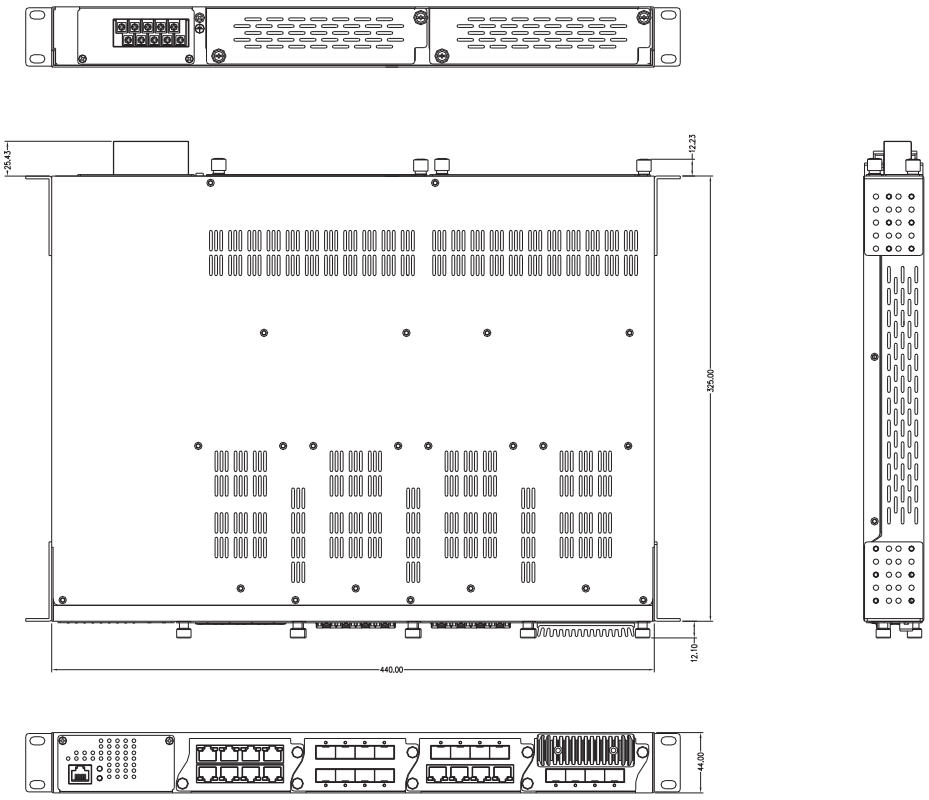


Host Monitor



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RGS-PR9000-A-LV	RGS-PR9000-A-LV (10G)	RGS-PR9000-A-HV	RGS-PR9000-A-HV (10G)
Physical Ports				
Slot Number	3			
10G Base-X with SFP+ port	NA	4	NA	4
Technology				
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3ae for 10Gigabit Ethernet IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)			
CPU	Core clock 800MHz			
SDRAM Size	DDR2 512MBytes			
Flash ROM Size	64MBytes NAND Flash			
MAC Table	16k			
Priority Queues	8			
Processing	Store-and-Forward			
Switch Properties	Switching latency: 7 us Switching bandwidth: 128Gbps Max. Number of Available VLANs: 256 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define			

Jumbo frame	Up to 10K Bytes			
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) MAC-based authentication VLAN (802.1Q) to segregate and secure network traffic SNMPv3 encrypted authentication and access security Https / SSH / SSL enhance network security Web and CLI authentication and authorization IP source guard			
Software Features	Routing protocols – static routing, RIP v1/v2, OSPF, BGP, DVMRP, PIM-SM, PIM-DM VRRP for router redundancy IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) MMRP and MVRP MSTP/RSTP/STP Ethernet redundancy Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TCP/IP stack for IPv4 and IPv6 (including ARP, ICMP, ND, UDP) GARP, GMRP and GVRP TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic Private VLANs PVRST+ (Per VLAN Rapid Spanning Tree Protocol - enhanced) Q-in-Q VLAN tunneling and provider bridging IGMP snooping/filtering/Proxy RADIUS client SNMP v1/v2c/v3 agent and MIB support IP-based bandwidth management Application-based QoS management DHCP Server/Client/Relay for IPv4 SMTP Client SNTP Server TFTP			
Industrial Protocol	Modbus TCP			
Network Redundancy	O-Ring O-Chain MSTP/RSTP/STP			
RS-232 Serial Console Port	RS-232 in RJ-45 connector with console cable. 115200bps, 8, N, 1, and support backup unit			
LED Indicators				
System Ready Indicator (PWR)	Green: Indicates that the system ready. The LED is blinking when the system is upgrading firmware			
Power Indicator (PWR1 / PWR2)	Green: Power LED x 2			
Ring Master Indicator (R.M.)	Green: Indicates that the system is operating in O-Ring Master mode			
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking: Indicates that the Ring is broken.			
Fault Indicator (Fault)	Amber: Indicate unexpected event occurred			
Reset To Default Running Indicator (DEF)	Green: System resets to default configuration			
Supervisor Login Indicator (RMT)	Green: System is accessed remotely			
Smart LED Display system	Link (LINK) / Speed(SPD) / Duplex(FDX) / Remote (RMT) green LED indicator x 4 Mode select Button (MODE) : Link(LINK) / Speed(SPD) / Duplex(FDX) / Remote (RMT) mode select button Port 1 ~ 28 Link LED show : Green x 28			
Fault Contact				
Relay	Relay output to carry capacity of 1A at 24VDC			
Power				
Redundant power input modular	Dual 24/48VDC (24~72VDC) power inputs at terminal block		Dual 100~240VAC / 100~370VDC power inputs at terminal block	
Power consumption (Typ.)	46watts		43.5watts	
Overload current protection	Present			
Reverse Polarity Protection	Present			
Physical Characteristic				
Enclosure	19 inches rack mountable			
Weight (g) without modules	4610g	4,950g	4760g	5,100g
Dimension (W x D x H)	440(W) x 325(D) x 44(H) mm (17.32x12.8x1.73 inches)			
Environmental				
Storage Temperature	-40 to 85°C (-40 to 185 °F)			
Operating Temperature	-40 to 75°C (-40 to 158°F)	-20 to 60°C(-40 to 140°F)	-40 to 75°C(-40 to 158°F)	-20 to 60°C(-40 to 140°F)
Operating Humidity	5% to 95% Non-condensing			
Regulatory Approvals				
EMC	EN 55022, EN 55024 (CE EMC), EN 50121-1, EN 50121-4, FCC, IEC 61000-3-2, IEC 61000-3-3			

EMI	CISPR 22, FCC Part 15B Class A
EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8 (PFMF), IEC 61000-4-11 (DIP)
Shock	IEC 60068-2-27,
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	EN60950-1
Power Automation	IEC 61850-3, IEEE 1613 (pending)
Warranty	5 years
MTBF	130,166hrs

Ordering Information

	Model Name	Description
Available Model	RGS-PR9000-A-LV	Industrial advanced Layer 3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 3x8-ports slots, low-voltage power input
	RGS-PR9000-A-HV_US	Industrial advanced Layer 3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 3x8-ports slots, high-voltage power input, US power cord
	RGS-PR9000-A-HV_UK	Industrial advanced Layer 3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 3x8-ports slots, high-voltage power input, UK power cord
	RGS-PR9000-A-HV_EU	Industrial advanced Layer 3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 3x8-ports slots, high-voltage power input, EU power cord
	RGS-PR9000-A-HV_JP	Industrial advanced Layer 3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 3x8-ports slots, high-voltage power input, JP power cord
	RGS-PR9000-A-LV (10G)	Industrial advanced Layer 3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4x10G, and 3x8-ports slots, low-voltage power input
	RGS-PR9000-A-HV_US (10G)	Industrial advanced Layer 3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4x10G, and 3x8-ports slots, high-voltage power input, US power cord
	RGS-PR9000-A-HV_UK (10G)	Industrial advanced Layer 3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4x10G, and 3x8-ports slots, high-voltage power input, UK power cord
	RGS-PR9000-A-HV_EU (10G)	Industrial advanced Layer 3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4x10G, and 3x8-ports slots, high-voltage power input, EU power cord
	RGS-PR9000-A-HV_JP (10G)	Industrial advanced Layer 3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4x10G, and 3x8-ports slots, high-voltage power input, JP power cord

Packing List

- RGS-PR9000-A x 1 / RGS-PR9000-A (10G) x1
- ORing Tool CD x 1
- Console Cable x 1
- Quick Installation Guide x 1
- Rack-mount Kit x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP 1G series : 1Gbps SFP optical transceiver
- SFP 10G series : 10Gbps SFP+ optical transceiver
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply

Optional Ethernet Module

For 1 G slot:

SWM-80GT-A

Industrial 8-port Gigabit Ethernet switch module with 8x10/100/1000Base-T(X) ports

Weight : 272g **MTBF:** TBD

For 1 G slot:

SWM-80GP-A

Industrial 8-port Gigabit fiber module with 8x100/1000Base-X, SFP socket

Weight : 192g **MTBF:** TBD

For 1 G slot:

SWM-44GTP-A

Industrial 8-port Gigabit Ethernet switch module with 4x10/100/1000Base-T(X) and 4x100/1000Base-X, SFP socket

Weight : 232g **MTBF:** TBD

RGS-PR9000 Series

RGS-PR9000 Series

Industrial Layer-3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots

Features

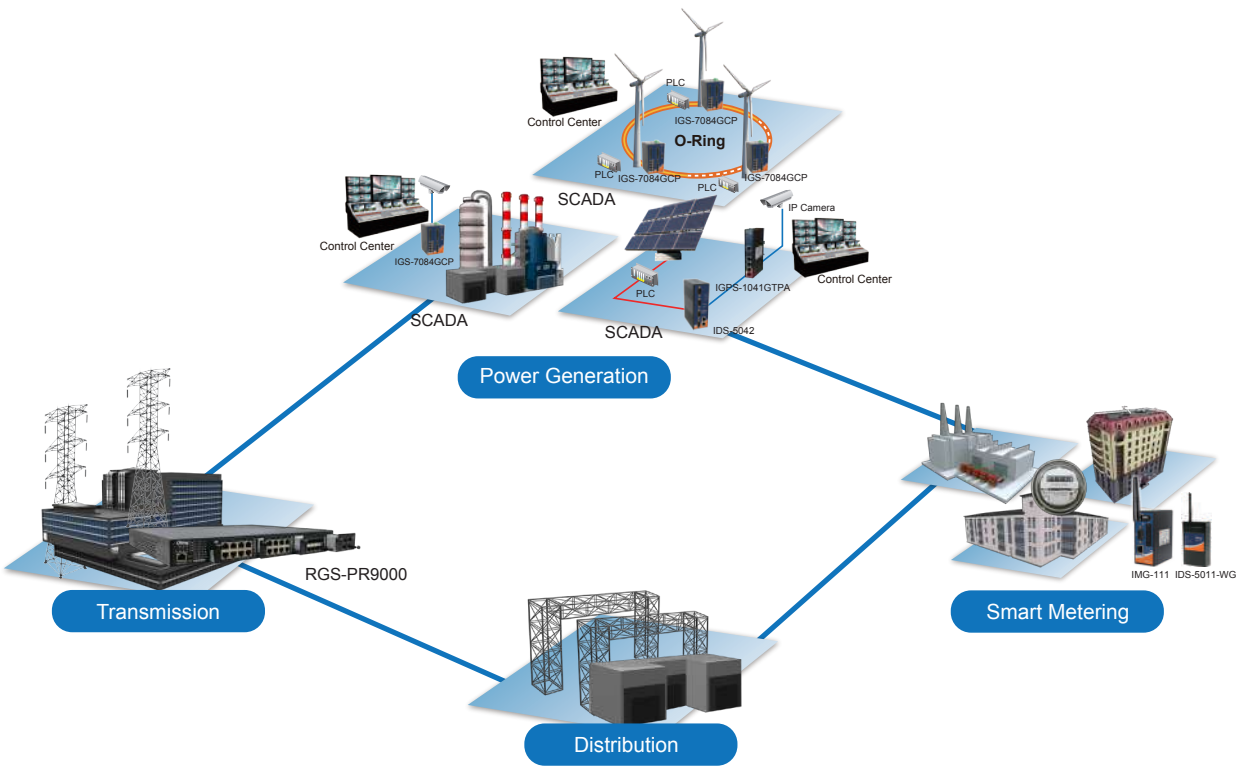
- Designed for power substation / Railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Modular designed makes network planning easy
- Supports Layer 3 static routing, RIP and VRRP function
- Supports **O-Ring** (recovery time < 30ms) and MSTP (RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Supports standard IEC 62439-2 MRP ***NOTE 1** (Media Redundancy Protocol) function
- Supports IEEE 1588v2 clock Synchronization
- Supports IPV6 new internet protocol version
- Supports Modbus TCP protocol
- VLAN unaware : Supports priority-tagged frames to be received by specific IEDs
- Provided HTTPS/SSH protocol to enhance network security
- Supports IEEE 802.3az **Energy-Efficient Ethernet** technology
- Supports SMTP client and SNTP server protocol
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Supports port mirror function to monitor port data
- Support ACL and 802.1x User Authentication for security
- Supports 10K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Supports redundant power inputs with optional voltage range
- 19 inches rack mountable design

***NOTE 1: This function is available by request only**

Introduction

RGS-PR9000 is Layer-3 modular managed redundant ring Ethernet switch with 4 slots. The switch is designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40°C to 85°C (**If use 10G SFP module then operating temperature is -20°C ~ 60°C**). RGS-PR9000 can also be managed centralized and convenient by Open-Vision, as well as the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet power substation and rolling stock application.

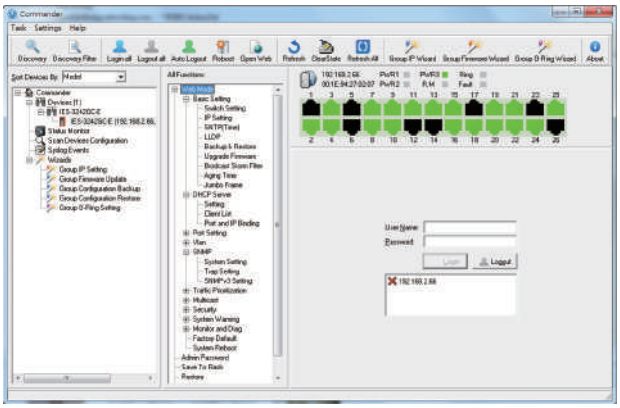
- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE 1** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modular Designed** : Modular designed can makes network planning easy and allow greater flexibility by letting you install other Ethernet/Optical fiber modular.



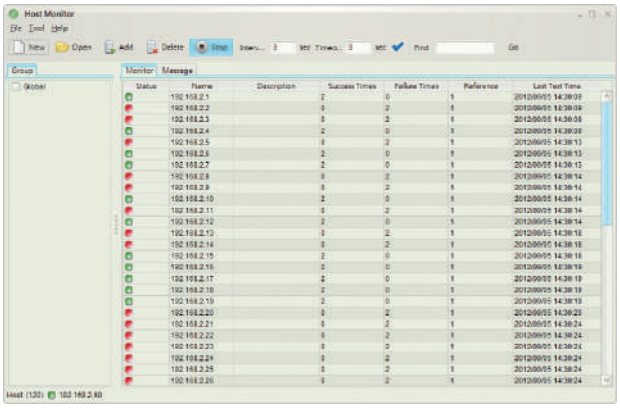
*NOTE 1 : This function is available by request only

Open-Vision

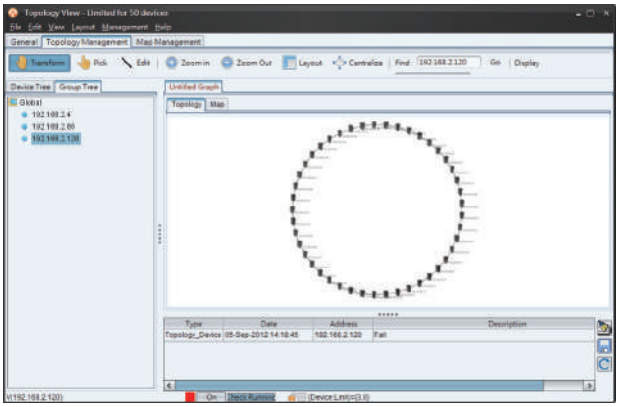
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

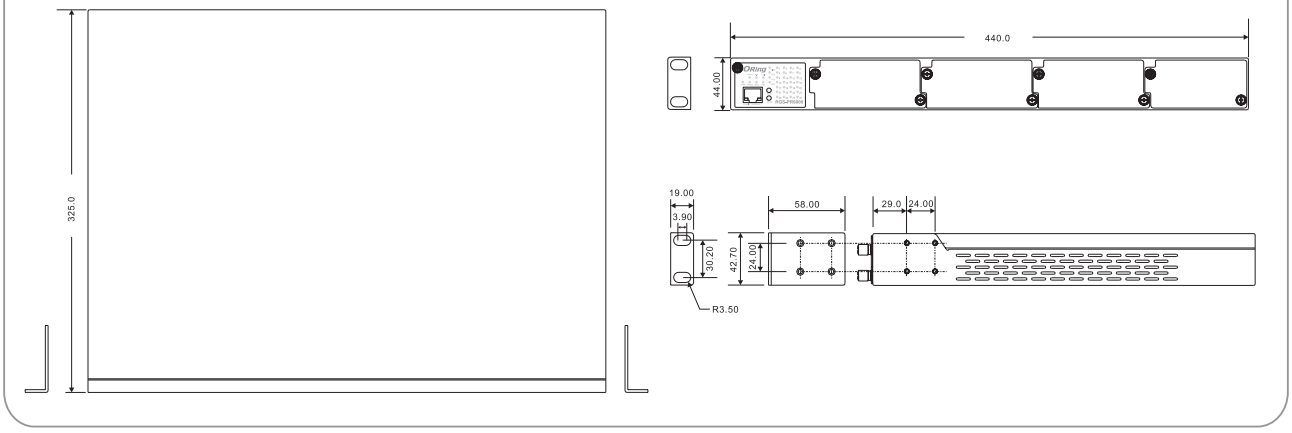


Host Monitor



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RGS-PR9000-LV	RGS-PR9000-HV
Physical Ports		
Slot Number	**4 (up to 3 slots for 8x1G ports and 1 slot for 4x10G port)**	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3ae for 10Gigabit Ethernet IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	32k	
Packet Buffer	32Mbits	
Flash Memory	128Mbits	
DRAM Size	1Gbits	
Jumbo frame	Up to 10K Bytes	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 128Gbps Max. Number of Available VLANs: 4095 VLAN ID range: VID 1 to 4094 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) MAC-based authentication (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization IP source guard	
Software Features	Hardware routing, RIP and static routing IEEE 1588v2 clock synchronization IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging Guest VLAN GVRP IGMP v2/v3 Snooping Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay Modbus TCP SMTP Client SNTP server Firmware upgrade and configuration backup and restore	
Network Redundancy	O-Ring O-Chain MRP***NOTE 1** MSTP (RSTP/STP compatible) ERPS	

***NOTE 1: This function is available by request only**

RS-232 Serial Console Port	RS-232 in RJ-45 connector with console cable. 115200bps, 8, N, 1		
LED Indicators			
System Ready Indicator (PWR)	Green : Indicates that the system ready. The LED is blinking when the system is upgrading firmware		
Power Indicator (PWR1 / PWR2)	Green : Power LED x 2		
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode		
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken		
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred		
Reset To Default Running Indicator (DEF)	Green : System resets to default configuration		
Supervisor Login Indicator (RMT)	Green : System is accessed remotely		
Smart LED Display system	Link/Act(LINK) / Speed(SPD) / Duplex(FDX) / Remote (RMT) green LED indicator x 4 Mode select Button (MODE) : Link/Act(LINK) / Speed(SPD) / Duplex(FDX) / Remote (RMT) mode select button Port 1 ~ 28 Link/Act(LK/ACT) LED show : Green x 28		
Fault Contact			
Relay	Relay output to carry capacity of 1A at 24VDC		
Power			
Dual 24/48VDC (24~72VDC) power inputs at terminal block Note2	Dual 24/48VDC (24~72VDC) power inputs at terminal block ***NOTE 2**		Dual 100~240VAC / 100~370VDC power inputs at terminal block
46Watts max.	46Watts max.		43.5Watts max.
Present	Present		
Physical Characteristic			
Enclosure	19 inches rack mountable		
	IP-30		
Weight (g)	6,450g		6,600g
Dimension (W x D x H)	440 (W) x 325 (D) x 44 (H) mm (17.32x12.8x1.73 inch)		
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	24VDC~36VDC	10G SFP+ module absent : -40 to 75°C 10G SFP+ module used: -20 to 50 °C	10G SFP+ module absent : -40 to 85°C 10G SFP+ module used: -20 to 60°C
	36VDC~72VDC	10G SFP+ module absent : -40 to 85°C 10G SFP+ module used: -20 to 60 °C	
Operating Humidity	5% to 95% Non-condensing		
Regulatory Approvals			
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B, IEC 61850-3, IEEE 1613, EN 61000-6-2/-4 ; EN 50121-1/-4		
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A, EN 61000-6-4		
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP)), EN 61000-6-2		
Shock	IEC 60068-2-27		
Free Fall	IEC 60068-2-31		
Vibration	IEC 60068-2-6		
Safety	IEC 60950-1, UL 60950-1, EN60950-1		
Other	NEMA TS1&TS2		
MTBF ***NOTE 3**	246,537 hours		316,958 hours
MTBF ***NOTE 4**	608,907 hours		647,420 hours
Warranty	5 years		

***NOTE1: This function is available by request only**

***NOTE2: Different DC power inputs have different operating temperature.**

***NOTE3: The value is calculated under the combination of 3 SWM-80GT and 1 SWM-04GP+ module. (Worst case)**

***NOTE4: The value is calculated without any module slot.**

Ordering Information

	Model Name	Description
Available Model	RGS-PR9000-LV	Industrial Layer-3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, low-voltage power input
	RGS-PR9000-HV_US	Industrial Layer-3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, high-voltage power input, US power cord
	RGS-PR9000-HV_UK	Industrial Layer-3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, high-voltage power input, UK power cord
	RGS-PR9000-HV_EU	Industrial Layer-3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, high-voltage power input, EU power cord
	RGS-PR9000-HV_JP	Industrial Layer-3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, high-voltage power input, JP power cord
	RGS-PR9000-HV_AU	Industrial Layer-3 IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, high-voltage power input, AU power cord

Packing List

- RGS-PR9000 x 1
- Rack-mount Kit x 1
- ORing Tool CD x 1
- Console Cable x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- SFP 10G series : 10Gbps SFP optical transceiver
- DR/SDR/DRP Series DIN-Rail power supply
- DBU-01 : backup unit device

Optional Module

For 10G slot:

SWM-02GP+_4

Industrial 2-port 10G SFP+ module with 2x10GBase-X, SFP+ socket

For 10G slot:

SWM-04GP+_4

Industrial 4-port 10G SFP+ module with 4x10GBase-X SFP+ ports

For 10G slot:

SWM-04GP_4

Industrial 4-port Gigabit fiber module with 4x1GBase-X SFP ports

For 10G slot:

SWM-04GF-MM/SS-SC_4

Industrial 4-port Gigabit fiber module with 4x1000Base-FX SC Fiber ports

For 10G slot:

SWM-04GF-MM/SS-ST_4

Industrial 4-port Gigabit fiber module with 4x1000Base-FX ST Fiber ports

For 1G slot:

SWM-80GT

Industrial 8-port Gigabit Ethernet switch module with 8x10/100/1000Base-T(X) ports

For 1G slot:

SWM-08GP

Industrial 8-port Gigabit fiber module with 8x100/1000Base-X, SFP socket

For 1G slot:

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Industrial 4-port Gigabit fiber module with 4x1000Base-FX SC Fiber ports

For 1G slot:

SWM-04FX-MM/SS-SC

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For 1G slot:

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Industrial 4-port Gigabit fiber module with 4x1000Base-FX ST Fiber ports

For 1G slot:

SWM-04FX-MM/SS-ST

Industrial 4-port fiber module with 4x100Base-FX ST Fiber ports

For 1G slot:

SWM-60GT-M12

Industrial 6-port Gigabit Ethernet switch module with 6x10/100/1000Base-T(X), M12 connector

For 1G slot:

SWM-40GT-M12

Industrial 4-port Gigabit Ethernet switch module with 4x10/100/1000Base-T(X), M12 connector

RGS-P9160M1 Series

RGS-P9160M1 Series

Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports/1000Base-X/100Base-FX and 1 switch module slot

Features

- Designed for power substation application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Supports **O-Ring** (recovery time < 30ms) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Supports standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Provided one switch module slot for extend switch port
- Supports IEEE 1588v2 clock Synchronization
- Supports IPV6 new internet protocol version
- Supports Modbus TCP protocol
- Supports IEEE 802.3az **Energy-Efficient Ethernet technology**
- Provided HTTPS/SSH protocol to enhance network security
- Supports SMTP client and NTP server protocol
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
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- Supports ACL and 802.1x User Authentication for security
- Supports 10K Bytes Jumbo Frame
- Supports **DBU-01** backup unit to quickly backup/restore configuration
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- 19 inches rack mountable design

*NOTE: This function is available by request only

Introduction

RGS-P9160M1 series have three different models, RGS-P9160GCM1, RGS-P9160GFM1 and RGS-P9160FXM1. They are IEC 61850-3 and up to 24-port modular rack mount Gigabit managed redundant ring Ethernet switch with 16xGigabit combo / Gigabit fiber / 100Mbit fiber ports and provided 1 modular switch slot to extend switch function. The switch is designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613. RGS-P9160M1 series support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms), O-Chain, MRP*NOTE, Fast Recovery and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. RGS-P9160M1 series can also be managed centralized and convenient by Open-Vision, as well as the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet power substation application.

- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound

network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.

- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management :** The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS :** The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
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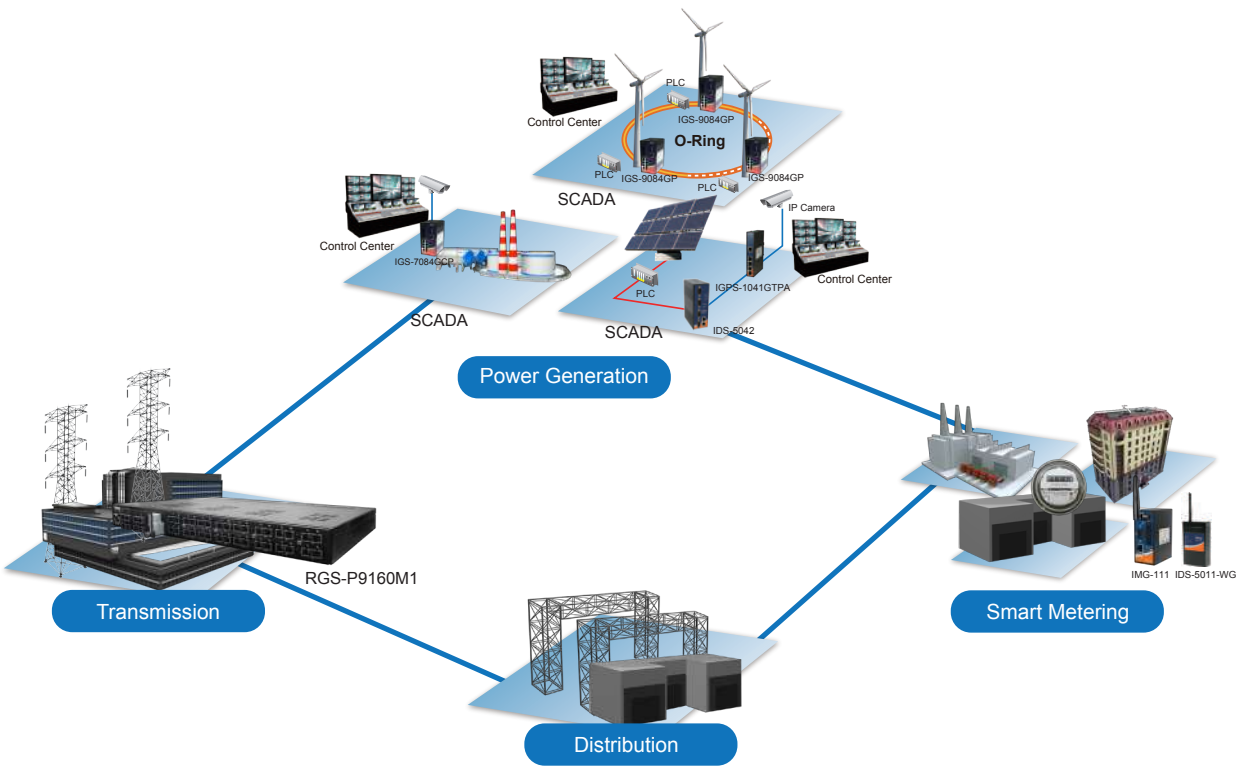

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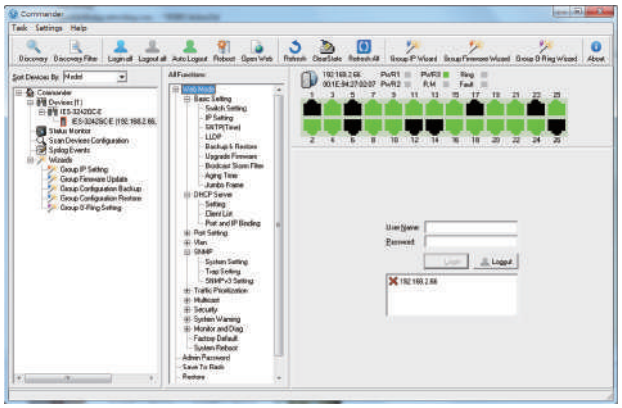
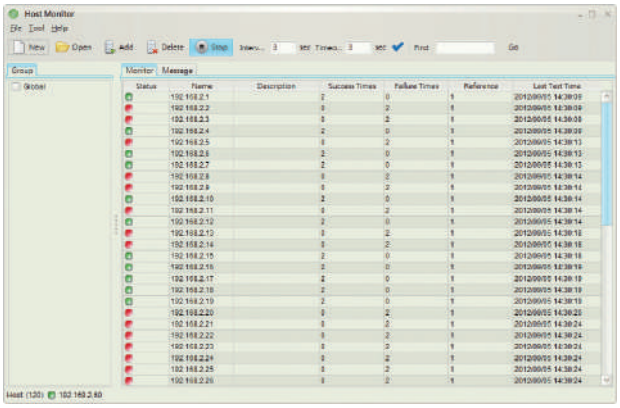
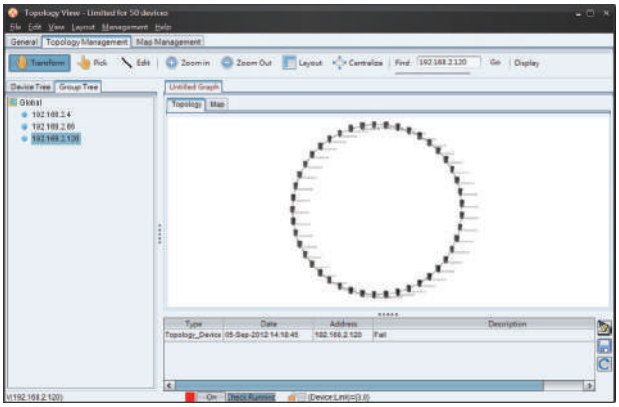


Commander

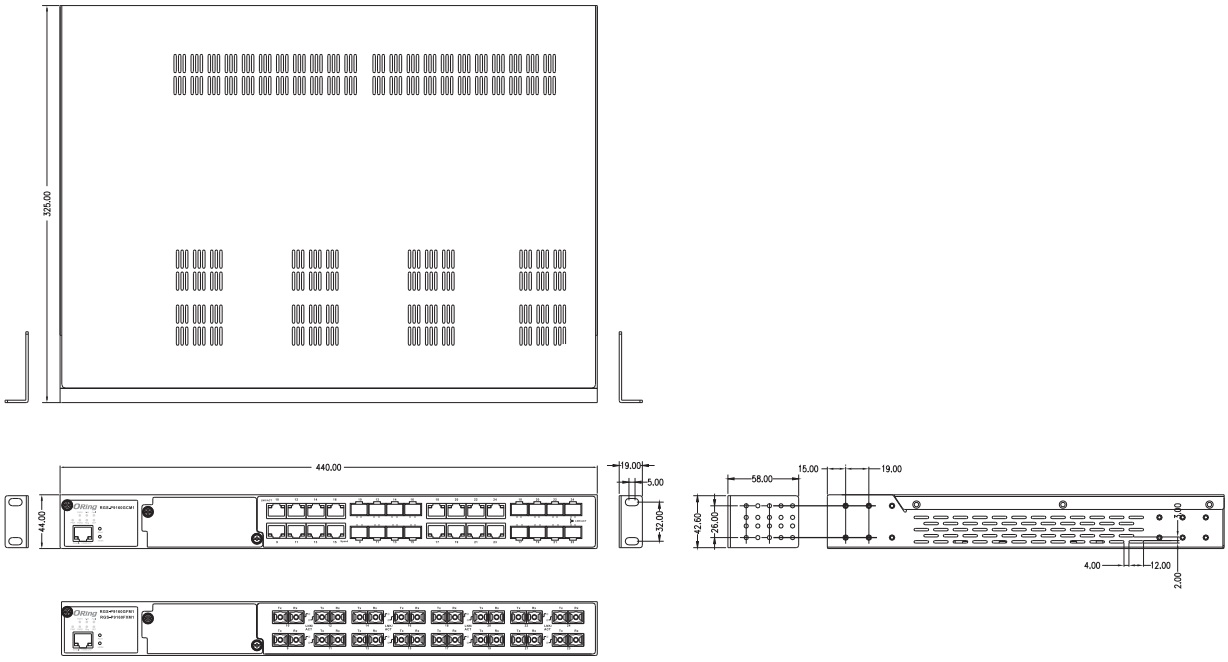


Host Monitor



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RGS-P9160GCM1-LV	RGS-P9160GFM1-LV	RGS-P9160FXM1-LV	RGS-P9160GCM1-HV	RGS-P9160GFM1-HV	RGS-P9160FXM1-HV
Physical Ports						
Gigabit Combo port with 10/100/1000Base-T(X) and 100/1000Base-X SFP ports	**16**	-	-	**16**	-	-
100Base-FX Ports	-	-	**16**	-	-	**16**
1000Base-FX Ports	-	**16**	-	-	**16**	-
Modular Slot	1					
Technology						
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)					
MAC Table	8k					
Packet Buffer	32Mbits					
Flash Memory	128Mbits					
DRAM Size	1Gbits					
Jumbo frame	Up to 10K Bytes					
Priority Queues	8					
Processing	Store-and-Forward					
Switching bandwidth (module not included)	32Gbps	32Gbps	3.2Gbps	32Gbps	32Gbps	3.2Gbps
Switch Properties	Switching latency: 7 us Max. Number of Available VLANs: 4095 VLAN ID Range: 1 to 4094 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define					
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) MAC-based authentication (802.1x) VLAN (802.1Q) to segregate and secure network traffic SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization IP source guard					
Software Features	IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/ Relay Modbus TCP SNTP server SMTP Client					

Network Redundancy	O-Ring O-Chain MRP*NOTE Fast Recovery MSTP (RSTP/STP compatible)					
RS-232 Serial Console Port	RS-232 in DB-9 connector with console cable. 115200bps, 8, N, 1					
LED indicators						
System Ready Indicator (PWR)	Green : Indicates that the system ready. The LED is blinking when the system is upgrading firmware					
Power Indicator (PWR1 / PWR2)	Green : Power LED x 2					
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode					
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking: Indicates that the Ring is broken.					
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred					
Reset To Default Running Indicator (DEF)	Green : System resets to default configuration					
Supervisor Login Indicator (RMT)	Green : System is accessed remotely					
Fault contact						
Relay	Relay output to carry capacity of 3A at 30VDC					
Power						
Power Input	Dual 24/48VDC (24~72VDC) power inputs at terminal block			Dual 100~240VAC / 100~370VDC power inputs at terminal block		
Power consumption (Typ.)	34	TBD	TBD	31W	TBD	TBD
Overload current protection	Present					
Reverse Polarity Protection	Present					
Physical Characteristic						
Enclosure	19 inches rack mountable					
Dimension (W x D x H)	440 (W) x 325 (D) x 44 (H) mm (17.32x12.8x1.73 inch)					
Weight (g)	4,787g	4,524g	4,524g	4,823g	4,560g	4,560g
Environmental						
Storage Temperature	-40 to 85°C (-40 to 185°F)					
Operating Temperature	-40 to 85°C (-40 to 185°F)					
Operating Humidity	5% to 95% Non-condensing					
Regulatory approvals						
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B, IEC 61850-3(pending), IEEE 1613 (pending)					
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A					
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))					
Shock	IEC 60068-2-27					
Free Fall	IEC 60068-2-31					
Vibration	IEC 60068-2-6					
Safety	EN 60950-1					
Other	IEC 61850-3(pending), IEEE 1613 (pending)					
MBTF	287,837 hrs	TBD	TBD	360,167 hrs	TBD	TBD
Warranty	5 years					

***NOTE: This function is available by request only**

Ordering Information

RGS-9 AA B CC D 1 - EE

Code Definition	Port Number	Additional Port Number	Main Port Type	Additional Port Type	Model Type
Option	**- 16:** 16 ports	**- 0:** Modular type	**-GC:** Gigabit Combo ports **-GF:** Giga fiber ports **-FX:** Fast Ethernet fiber ports	**-M:** Modular	**-LV:** Low-voltage power inputs **-HV:** High-voltage power inputs

	Model Name	Description
Available Model	RGS-P9160GCM1-LV	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 1 switch module slot, low-voltage power inputs
	RGS-P9160GCM1-HV_US	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 1 switch module slot, high-voltage power inputs, US power cord
	RGS-P9160GCM1-HV_UK	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 1 switch module slot, high-voltage power inputs, UK power cord
	RGS-P9160GCM1-HV_EU	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 1 switch module slot, high-voltage power inputs, EU power cord
	RGS-P9160GCM1-HV_JP	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 1 switch module slot, high-voltage power inputs, JP power cord
	RGS-P9160GFM1-MM-SC-LV	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x1000Base-X and 1 switch module slot, multi-mode, 550m/850nm, SC connector, low-voltage power inputs
	RGS-P9160GFM1-SS-SC-LV	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x1000Base-X and 1 switch module slot, single-mode, 10Km/1310nm, SC connector, low-voltage power inputs
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	RGS-P9160FXM1-MM-SC-LV	Industrial IEC 61850-3 16-port modular rack mount managed Ethernet switch with 16x100Base-FX and 1 switch module slot, multi-mode, 2Km/1310nm, SC connector, low-voltage power inputs
	RGS-P9160FXM1-SS-SC-LV	Industrial IEC 61850-3 16-port modular rack mount managed Ethernet switch with 16x100Base-FX and 1 switch module slot, single-mode, 30Km/1310nm, SC connector, low-voltage power inputs
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Packing List

- RGS-P9160GCM1-LV/HV x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1
- Rack-mount Kit x 1
- Power Cable x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100M series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply

Optional Module

For 1G slot:

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RGS-P9160M2 Series

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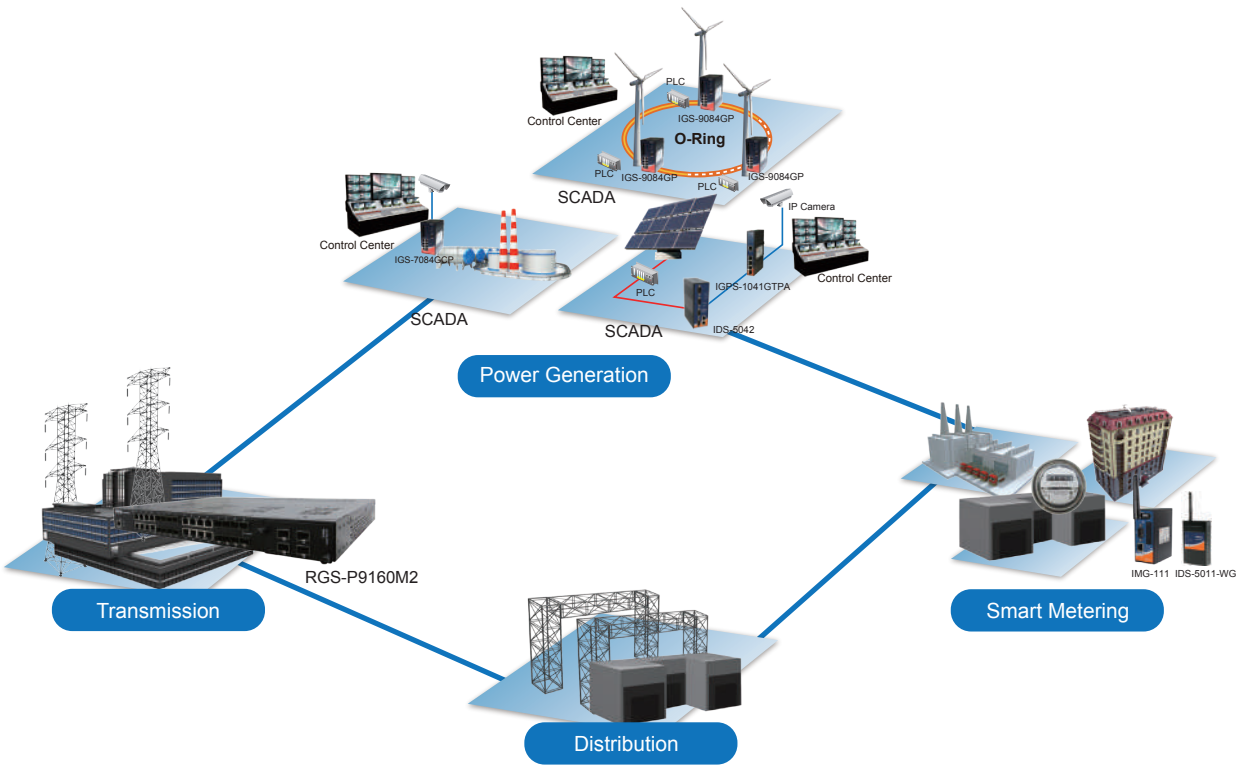

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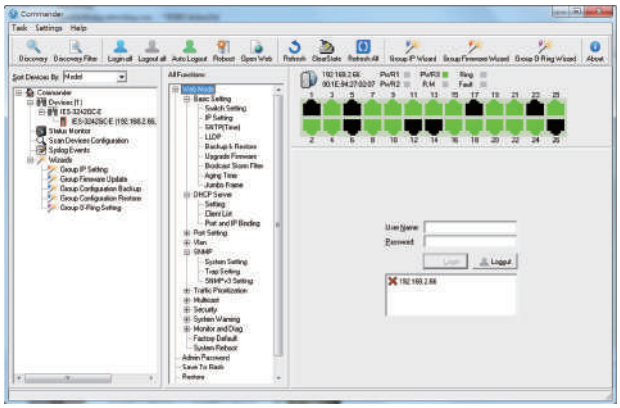
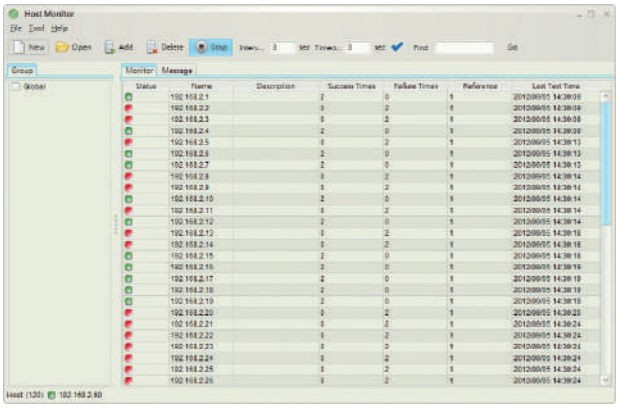
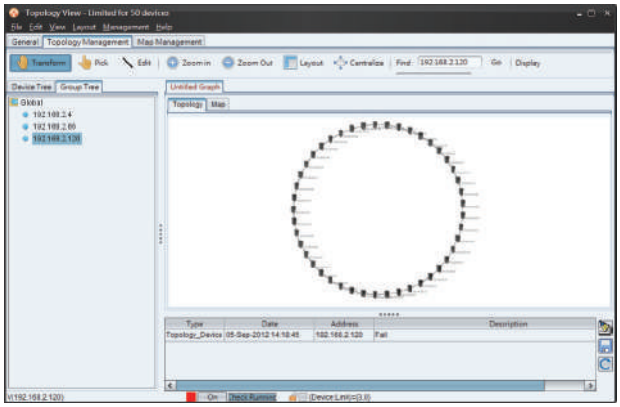


Commander

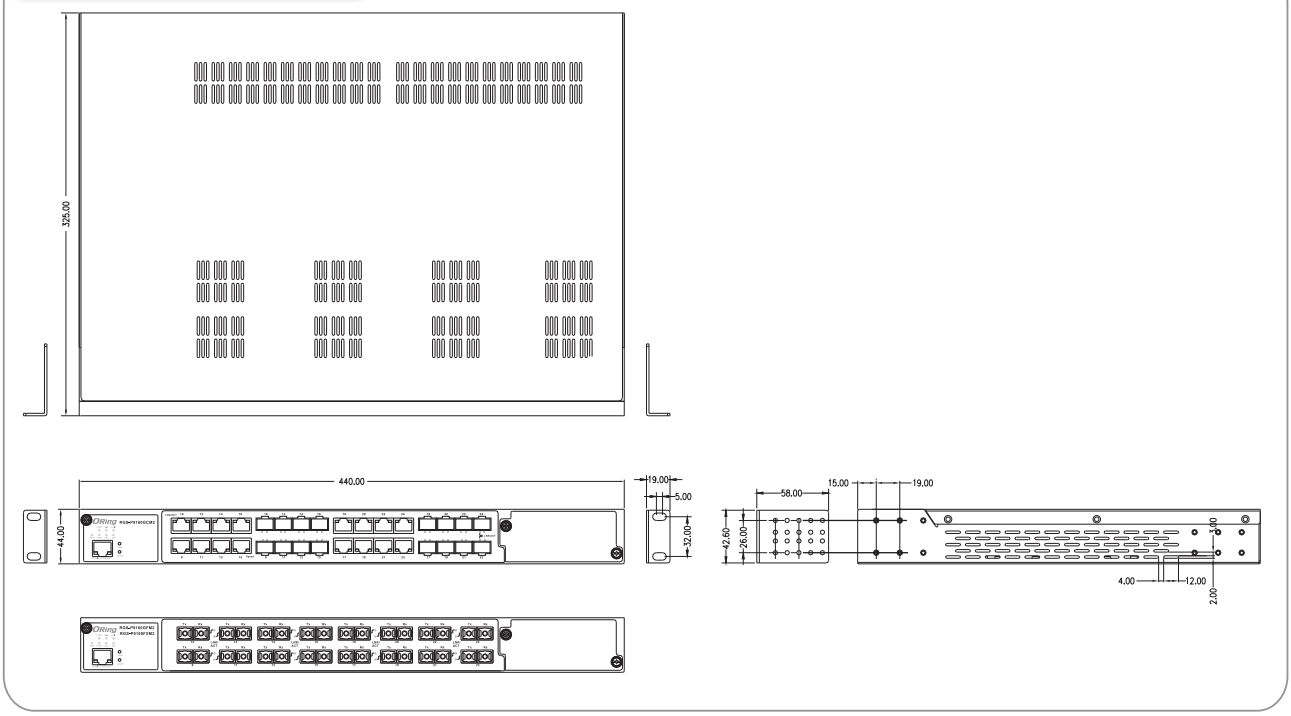


Host Monitor



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RGS-P9160GCM2-LV	RGS-P9160GFM2-LV	RGS-P9160FXM2-LV	RGS-P9160GCM2-HV	RGS-P9160GFM2-HV	RGS-P9160FXM2-HV
Physical Ports						
Gigabit Combo port with 10/100/1000Base-T(X) and 100/1000Base-X SFP ports	**16**	-	-	**16**	-	-
100Base-FX Ports	-	-	**16**	-	-	**16**
1000Base-X Ports	-	**16**	-	-	**16**	-
Modular Slot	1					
Technology						
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)					
MAC Table	32k					
Packet Buffer	32Mbits					
Flash Memory	128Mbits					
DRAM Size	1Gbits					
Jumbo frame	Up to 10K Bytes					
Priority Queues	8					
Processing	Store-and-Forward					
Switching bandwidth (module not included)	32Gbps	32Gbps	3.2Gbps	32Gbps	32Gbps	3.2Gbps
Switch Properties	Switching latency: 7 us Max. Number of Available VLANs: 4095 VLAN ID Range: 1 to 4094 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define					
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) MAC-based authentication (802.1x) VLAN (802.1Q) to segregate and secure network traffic SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization IP source guard					
Software Features	IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/ Relay Modbus TCP SNTP server SMTP Client					
Network Redundancy	O-Ring O-Chain MRP***NOTE** Fast Recovery MSTP (RSTP/STP compatible)					

RS-232 Serial Console Port	RS-232 in DB-9 connector with console cable. 115200bps, 8, N, 1					
LED indicators						
System Ready Indicator (PWR)	Green : Indicates that the system ready. The LED is blinking when the system is upgrading firmware					
Power Indicator (PWR1 / PWR2)	Green : Power LED x 2					
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode					
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.					
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred					
Reset To Default Running Indicator (DEF)	Green : System resets to default configuration					
Supervisor Login Indicator (RMT)	Green : System is accessed remotely					
Fault contact						
Relay	Relay output to carry capacity of 3A at 30VDC					
Power						
Power Input	Dual 24/48VDC (24~72VDC) power inputs at terminal block			Dual 100~240VAC / 100~370VDC power inputs at terminal block		
Power consumption (Typ.)	40	TBD	TBD	39	TBD	TBD
Overload current protection	Present					
Reverse Polarity Protection	Present					
Physical Characteristic						
Enclosure	19 inches rack mountable					
Dimension (W x D x H)	440 (W) x 325 (D) x 44 (H) mm (17.32x12.8x1.73 inch)					
Weight (g)	4,787g	4,524g	4,524g	4,823g	4,560g	4,560g
Environmental						
Storage Temperature	-40 to 85°C (-40 to 185°F)					
Operating Temperature	10G SFP+ module absent : -40 to 85°C 10G SFP+ module used: -20 to 60 °C					
Operating Humidity	5% to 95% Non-condensing					
Regulatory approvals						
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B, IEC 61850-3(pending), IEEE 1613 (pending)					
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A					
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))					
Shock	IEC 60068-2-27					
Free Fall	IEC 60068-2-31					
Vibration	IEC 60068-2-6					
Safety	EN 60950-1					
Other	IEC 61850-3(pending), IEEE 1613 (pending)					
MBTF	287,351 hrs	TBD	TBD	359,407 hrs	TBD	TBD
Warranty	5 years					

***NOTE: This function is available by request only**

Ordering Information

RGS-9 AA B CC D 1 - EE

Code Definition	Port Number	Additional Port Number	Main Port Type	Additional Port Type	Model Type
Option	**- 16:** 16 ports	**- 0:** Modular type	**-GC:** Gigabit Combo ports **-GF:** Giga fiber ports **-FX:** Fast Ethernet fiber ports	**-M:** Modular	**-LV:** Low-voltage power inputs **-HV:** High-voltage power inputs

	Model Name	Description
Available Model	RGS-P9160GCM2-LV	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 1 switch module slot, low-voltage power inputs
	RGS-P9160GCM2-HV_US	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 1 switch module slot, high-voltage power inputs, US power cord
	RGS-P9160GCM2-HV_UK	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 1 switch module slot, high-voltage power inputs, UK power cord
	RGS-P9160GCM2-HV_EU	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 1 switch module slot, high-voltage power inputs, EU power cord
	RGS-P9160GCM2-HV_JP	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 1 switch module slot, high-voltage power inputs, JP power cord
	RGS-P9160GFM2-LV	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x1000Base-X and 1 switch module slot, low-voltage power inputs
	RGS-P9160GFM2-HV_US	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x1000Base-X and 1 switch module slot, high-voltage power inputs, US power cord
	RGS-P9160GFM2-HV_UK	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x1000Base-X and 1 switch module slot, high-voltage power inputs, UK power cord
	RGS-P9160GFM2-HV_EU	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x1000Base-X and 1 switch module slot, high-voltage power inputs, EU power cord
	RGS-P9160GFM2-HV_JP	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x1000Base-X and 1 switch module slot, high-voltage power inputs, JP power cord
	RGS-P9160FXM2-LV	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x100Base-FX and 1 switch module slot, low-voltage power inputs
	RGS-P9160FXM2-HV_US	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x100Base-FX and 1 switch module slot, high-voltage power inputs, US power cord
	RGS-P9160FXM2-HV_UK	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x100Base-FX and 1 switch module slot, high-voltage power inputs, UK power cord
	RGS-P9160FXM2-HV_EU	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x100Base-FX and 1 switch module slot, high-voltage power inputs, EU power cord
	RGS-P9160FXM2-HV_JP	Industrial IEC 61850-3 16-port modular rack mount managed Gigabit Ethernet switch with 16x100Base-FX and 1 switch module slot, high-voltage power inputs, JP power cord

Packing List

- RGS-P9160GC/GF/FXM2-LV/HV x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1
- Rack-mount Kit x 1
- Power Cable x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP 1G series : 1Gbps SFP optical transceiver
- SFP 10G series : 10Gbps SFP+ optical transceiver
- DR-45 series : 45 Watts DIN-Rail power supply (Only for –E model)
- DR-75 series : 75 Watts DIN-Rail power supply (Only for –E model)
- DR-120 series : 120 Watts DIN-Rail power supply (Only for –E model)

Optional Module

For 10G slot:

SWM-02GP+_4

Industrial 2-port 10G SFP+ module with 2x10GBase-X, SFP+ socket

For 10G slot:

SWM-04GP+_4

Industrial 4-port 10G SFP+ module with 4x10GBase-X SFP+ ports

For 10G slot:

SWM-04GP_4

Industrial 4-port Gigabit fiber module with 4x1GBase-X SFP ports

For 10G slot:

SWM-04GF-MM/SS-SC_4

Industrial 4-port Gigabit fiber module with 4x1000Base-FX SC Fiber ports

For 10G slot:

SWM-04GF-MM/SS-ST_4

Industrial 4-port Gigabit fiber module with 4x1000Base-FX ST Fiber ports

RGS-P9000 Series

RGS-P9000 Series

Industrial IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots

Features

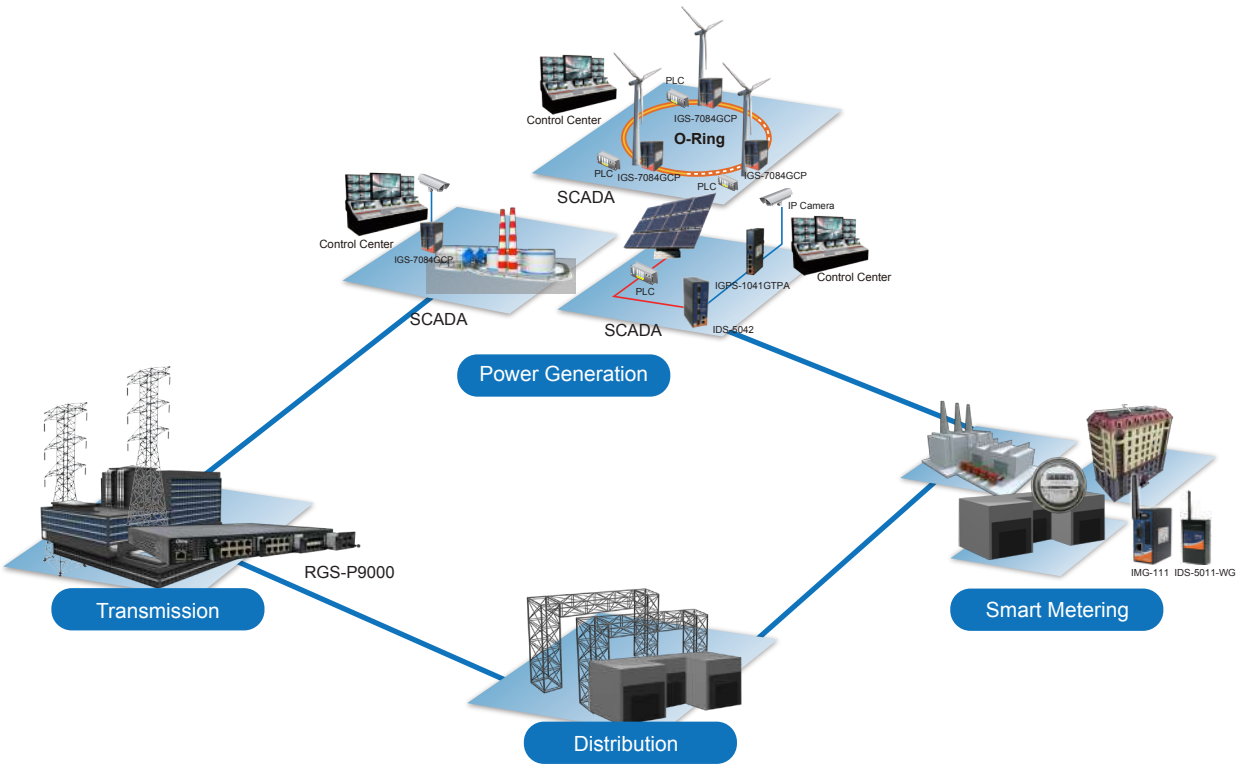
- Designed for power substation / Railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Modular designed makes network planning easy
- Supports **O-Ring** (recovery time < 30ms) and MSTP (RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Supports standard IEC 62439-2 MRP*NOTE 1 (Media Redundancy Protocol) function
- Supports IEEE 1588v2 clock Synchronization
- Supports IPV6 new internet protocol version
- Supports Modbus TCP protocol
- VLAN unaware : Supports priority-tagged frames to be received by specific IEDs
- Provided HTTPS/SSH protocol to enhance network security
- Supports IEEE 802.3az **Energy-Efficient Ethernet technology**
- Supports SMTP client and SNTP server protocol
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Supports port mirror function to monitor port data
- Support ACL and 802.1x User Authentication for security
- Supports 10K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Supports redundant power inputs with optional voltage range
- 19 inches rack mountable design

Introduction

RGS-P9000 is modular managed redundant ring Ethernet switch with 4 slots. The switch is designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 oC to 85 oC (**If use 10G SFP module then operating temperature is -20°C ~ 60°C**). RGS-P9000 can also be managed centralized and convenient by Open-Vision, as well as the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet power substation and rolling stock application.

***Note1: This function is available by request only**

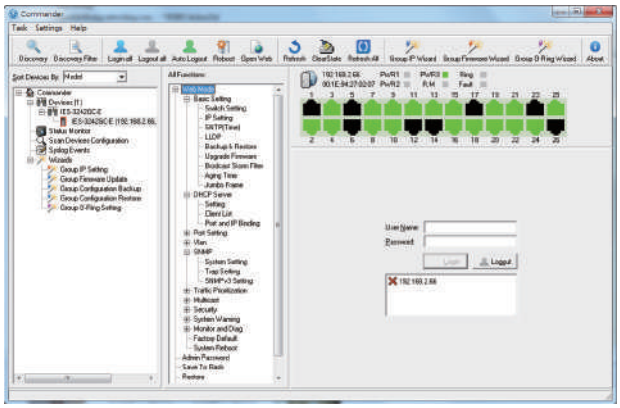
- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP**[*NOTE 1] : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modular Designed** : Modular designed can makes network planning easy and allow greater flexibility by letting you install other Ethernet/Optical fiber modular.



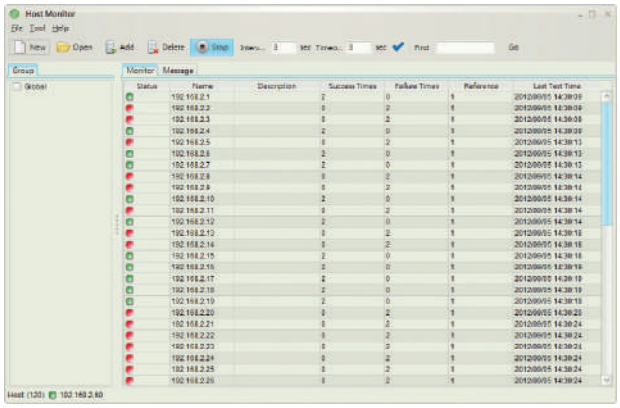
*NOTE 1 : This function is available by request only

Open-Vision

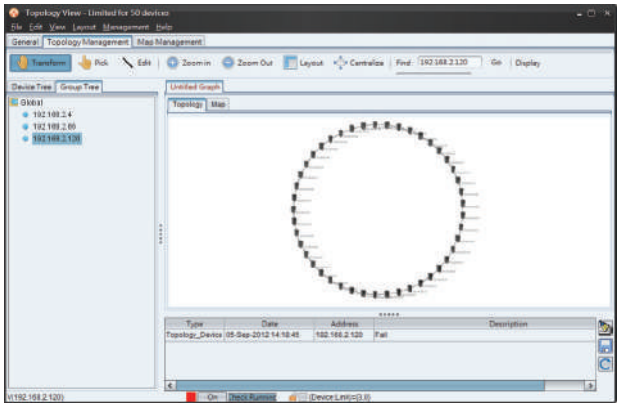
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

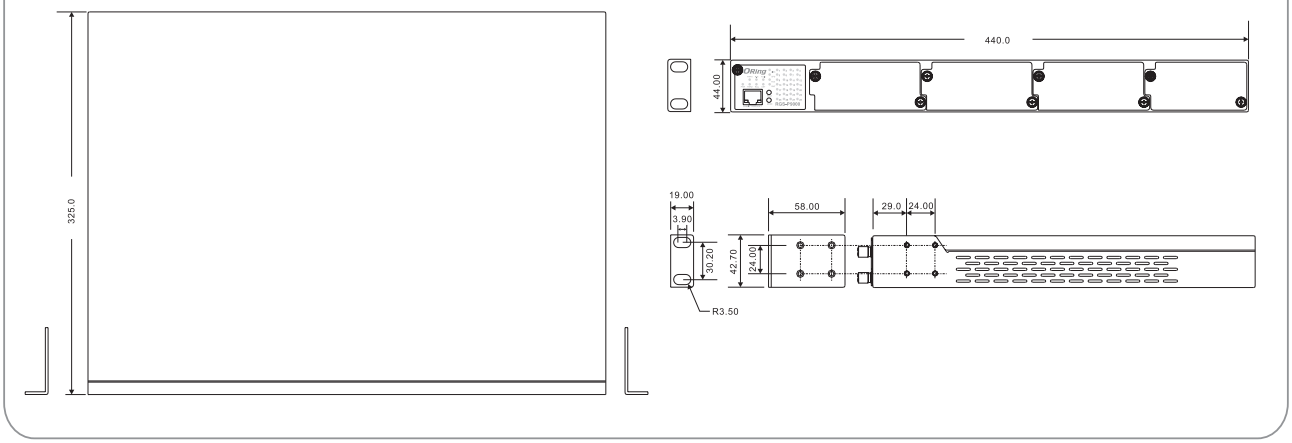


Host Monitor



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RGS-P9000-LV	RGS-P9000-HV
Physical Ports		
Slot Number	**4 (up to 3 slots for 8x1G ports and 1 slot for 4x10G port)**	
Technology		
Ethernet Standards	IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3ae for 10Gigabit Ethernet IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8k	
Packet Buffer	32Mbits	
Flash Memory	128Mbits	
DRAM Size	1Gbits	
Jumbo frame	Up to 10K Bytes	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 128Gbps Max. Number of Available VLANs: 4095 VLAN ID range: VID 1 to 4094 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) MAC-based authentication(802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization IP source guard	
Software Features	IEEE 1588v2 clock synchronization IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging Guest VLAN GVRP IGMP v2/v3 Snooping Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay Modbus TCP SMTP Client SNTP server Firmware upgrade and configuration backup and restore	
Network Redundancy	O-Ring O-Chain MRP***NOTE 1** MSTP (RSTP/STP compatible) ERPS	
RS-232 Serial Console Port	RS-232 in RJ-45 connector with console cable. 115200bps, 8, N, 1	

***NOTE 1 : This function is available by request only**

LED Indicators			
System Ready Indicator (PWR)	Green : Indicates that the system ready. The LED is blinking when the system is upgrading firmware		
Power Indicator (PWR1 / PWR2)	Green : Power LED x 2		
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode		
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken		
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred		
Reset To Default Running Indicator (DEF)	Green : System resets to default configuration		
Supervisor Login Indicator (RMT)	Green : System is accessed remotely		
Smart LED Display system	Link/Act(LINK) / Speed(SPD) / Duplex(FDX) / Remote (RMT) green LED indicator x 4 Mode select Button (MODE) : Link/Act(LINK) / Speed(SPD) / Duplex(FDX) / Remote (RMT) mode select button Port 1 ~ 28 Link/Act(LK/ACT) LED show : Green x 28 Port 1 ~ 28 SPD: Green for 1000Mbps, Amber for 10/100Mbps Port 1 ~ 28 FDX: Green for Full Duplex; Amber for Half Duplex		
Fault Contact			
Relay	Relay output to carry capacity of 1A at 24VDC		
Power			
Redundant power input modular	Dual 24/48VDC (24~72VDC) power inputs at terminal block ***NOTE 2**	Dual 100~240VAC / 100~370VDC power inputs at terminal block	
Power consumption (Typ.)	46Watts max.	43.5Watts max.	
Overload current protection	Present		
Physical Characteristic			
Enclosure	19 inches rack mountable		
	IP-30		
Weight (g)	6,450g	6,600g	
Dimension (W x D x H)	440 (W) x 325 (D) x 44 (H) mm (17.32x12.8x1.73 inch)		
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	24VDC~36VDC	10G SFP+ module absent : -40 to 75°C 10G SFP+ module used: -20 to 50 °C	10G SFP+ module absent : -40 to 85°C 10G SFP+ module used: -20 to 60°C
	36VDC~72VDC	10G SFP+ module absent : -40 to 85°C 10G SFP+ module used: -20 to 60 °C	
Operating Humidity	5% to 95% Non-condensing		
Regulatory Approvals			
EMC	EN 55032, EN 55024 (CE EMC), EN 50121-1, EN 50121-4, FCC Part 15 B, EN 61000-6-2, EN 61000-6-4, IEC 61000-3-2, IEC 61000-3-3		
EMI	CISPR 32, EN 55032, FCC Part 15 B Class A		
EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8 (PFMF), IEC 61000-4-11 (DIP)		
Shock	IEC 60068-2-27		
Free Fall	IEC 60068-2-31		
Vibration	IEC 60068-2-6		
Safety	IEC 60950-1, UL 60950-1, EN60950-1		
Power Automation	IEC 61850-3, IEEE 1613		
Transport	NEMA TS1&TS2		
MTBF***NOTE 3**	246,537 hours	316,958 hours	
MTBF***NOTE 4**	608,907 hours	647,420 hours	
Warranty	5 years		

***NOTE1: This function is available by request only**

***NOTE2: Different DC power inputs have different operating temperature.**

***NOTE3: The value is calculated under the combination of 3 SWM-80GT and 1 SWM-04GP+ module. (Worst case)**

***NOTE4: The value is calculated without any module slot.**

Ordering Information

	Model Name	Description
Available Model	RGS-P9000-LV	Industrial IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, low-voltage power input
	RGS-P9000-HV_US	Industrial IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, high-voltage power input, US power cord
	RGS-P9000-HV_UK	Industrial IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, high-voltage power input, UK power cord
	RGS-P9000-HV_EU	Industrial IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, high-voltage power input, EU power cord
	RGS-P9000-HV_JP	Industrial IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, high-voltage power input, JP power cord
	RGS-P9000-HV_AU	Industrial IEC 61850-3 modular rack mount managed Gigabit Ethernet switch with 4 slots, high-voltage power input, AU power cord

Packing List

- RGS-P9000 x 1
- Rack-mount Kit x 1
- ORing Tool CD x 1
- Console Cable x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- SFP 10G series : 10Gbps SFP optical transceiver
- DR/SDR/DRP Series DIN-Rail power supply
- DBU-01 : backup unit device

Optional Module

For 10G slot:

SWM-02GP+_4

Industrial 2-port 10G SFP+ module with 2x10GBase-X, SFP+ socket

For 10G slot:

SWM-04GP+_4

Industrial 4-port 10G SFP+ module with 4x10GBase-X SFP+ ports

For 10G slot:

SWM-04GP_4

Industrial 4-port Gigabit fiber module with 4x1GBase-X SFP ports

For 10G slot:

SWM-04GF-MM/SS-SC_4

Industrial 4-port Gigabit fiber module with 4x1000Base-FX SC Fiber ports

For 10G slot:

SWM-04GF-MM/SS-ST_4

Industrial 4-port Gigabit fiber module with 4x1000Base-FX ST Fiber ports

For 1G slot:

SWM-80GT

Industrial 8-port Gigabit Ethernet switch module with 8x10/100/1000Base-T(X) ports

For 1G slot:

SWM-08GP

Industrial 8-port Gigabit fiber module with 8x100/1000Base-X, SFP socket

For 1G slot:

SWM-04GF-MM/SS-SC

Industrial 4-port Gigabit fiber module with 4x1000Base-FX SC Fiber ports

For 1G slot:

SWM-04FX-MM/SS-SC

Industrial 4-port fiber module with 4x100Base-FX SC Fiber ports

For 1G slot:

SWM-04GF-MM/SS-ST

Industrial 4-port Gigabit fiber module with 4x1000Base-FX ST Fiber ports

For 1G slot:

SWM-04FX-MM/SS-ST

Industrial 4-port fiber module with 4x100Base-FX ST Fiber ports

For 1G slot:

SWM-60GT-M12

Industrial 6-port Gigabit Ethernet switch module with 6x10/100/1000Base-T(X), M12 connector

For 1G slot:

SWM-40GT-M12

Industrial 4-port Gigabit Ethernet switch module with 4x10/100/1000Base-T(X), M12 connector

RGS-R9244GP+ Series

RGS-R9244GP+ Series

Industrial Layer-3 28-port managed Gigabit Ethernet switch with 24x10/100/1000Base-T(X) and 4x1G/10GBase-X, SFP+ socket

Features

- Supports Layer 3 routing, RIP and static routing function
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IPv6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- SFP socket support DDM function
- Multiple notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- 19 inches rack mountable design

Introduction

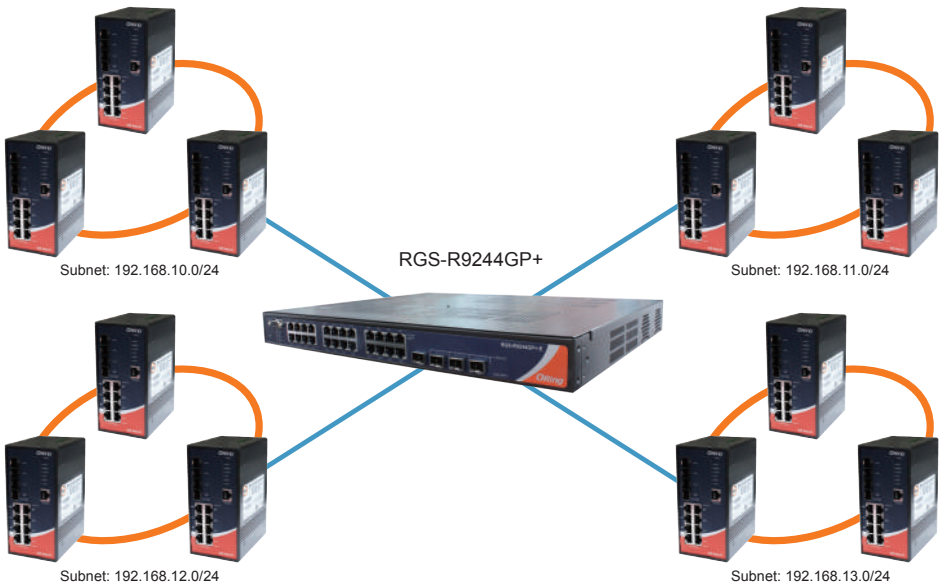
RGS-R9244GP+ series are Layer-3 Gigabit managed redundant ring Ethernet switch with 24x10/100/1000Base-T(X) ports and 4x1G/10GBase-X SFP+ ports. These switches support Layer-3 function like RIP and static routing. Also RGS-R9244GP+ series support Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) /Open-Ring/O-Chain/MRP*NOTE/Fast Recovery and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. RGS-R9244GP+ series support wide operating temperature from -20°C to 60°C. RGS-R9244GP+ series can also be managed centralized and convenient by Open-Vision as well as the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring :** Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound

***NOTE: This function is available by request only**

network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.

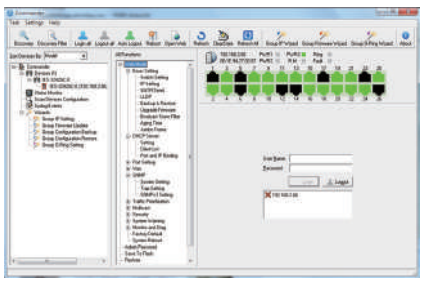
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management :** The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS :** The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function :** ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention :** The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP :** This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet :** This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



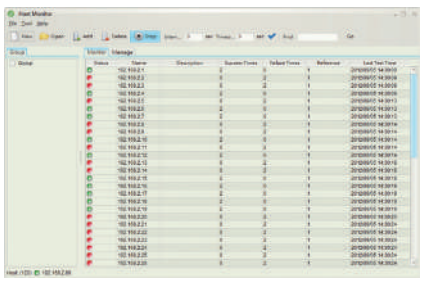
Network connection

Open-Vision

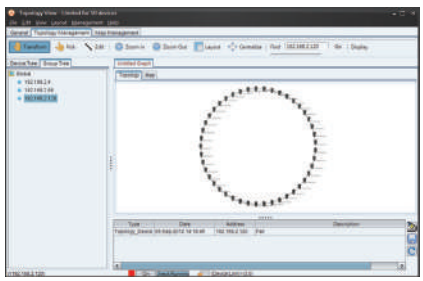
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



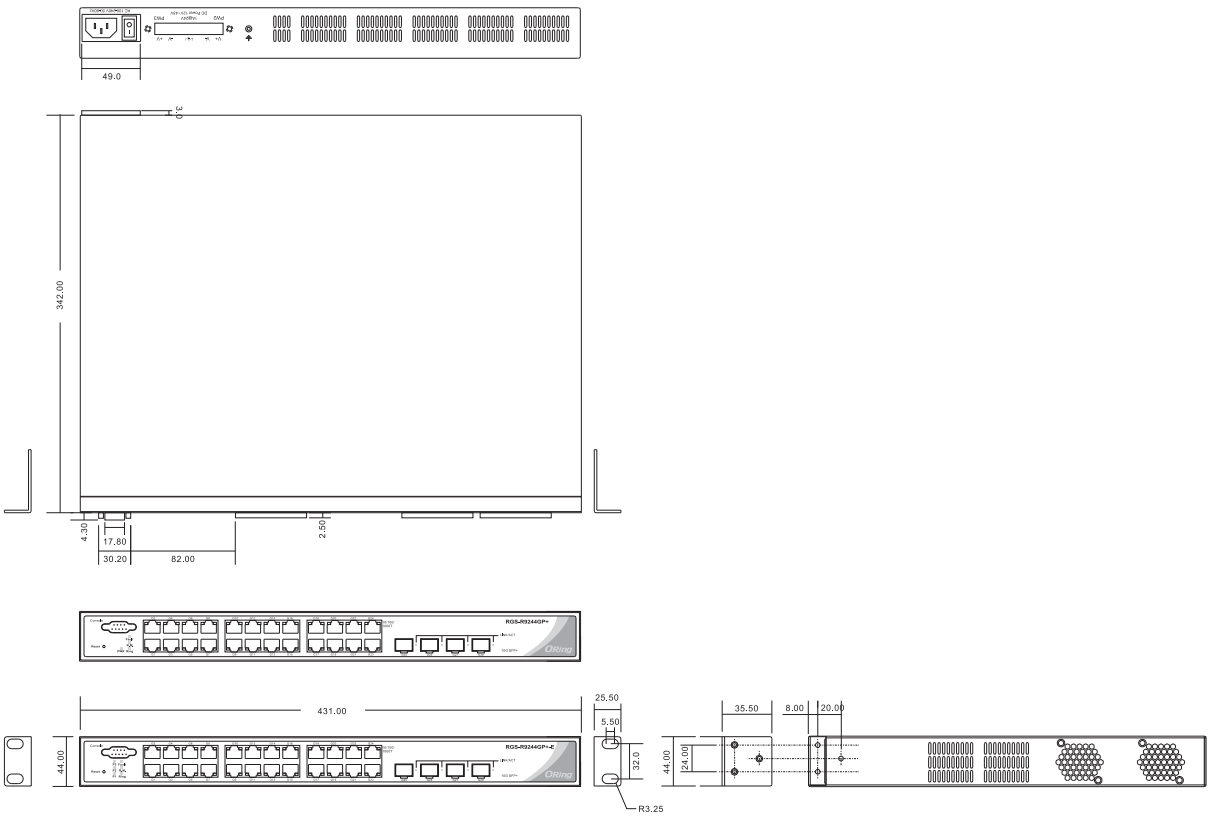
Host Monitor



Topology View

***NOTE: This function is available by request only**

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RGS-R9244GP+	RGS-R9244GP+-E
Physical Ports		
10/100/1000Base-T(X) with RJ45 Auto MDI/MDIX	24	
1G/10GBase-X with SFP+ port	4	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3ae for 10Gigabit Ethernet IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8k	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 128Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define	
Jumbo frame	Up to 9.6K Bytes	

Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) Single 802.1x and Multiple 802.1x MAC-based authentication QoS assignment Guest VLAN MAC address limit VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization IP source guard	
Software Features	Hardware routing, RIP and static routing IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client DHCP Relay Modbus TCP SMTP Client NTP server	
Network Redundancy	O-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible) Fast Recovery	
RS-232 Serial Console Port	RS-232 in DB-9 connector with console cable. 115200bps, 8, N, 1	
LED Indicators		
Power Indicator (PWR)	Green : Power indicator	
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking: Indicates that the Ring is broken.	
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred	
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act indicator. Dual color LED for speed indicator ~ Green for 1000Mbps / Amber for 100Mbps / Off-light for 10Mbps	
1G/10GBase-X SFP+ Port Indicator	Green for port Link/Act.	
Fault contact		
Relay	None	Present
Power		
Power Input	100 ~ 240VAC with power cord	100 ~ 240VAC with power cord, dual 36 ~ 72VDC power input
Power consumption (Typ.)	37.4W	37.4W
Overload current protection	Present	
Physical Characteristic		
Enclosure	19 inches rack mountable	
Dimension (W x D x H)	431 (W) x 342 (D) x 44 (H)mm (16.97 x 13.46 x 1.73 inch)	431 x 342 x 44mm (17 x 13.46 x 1.73 inch)
Weight (g)	4,597g	4,754g
MTBF(mean time between failures)		
Time	462,867hrs	371,822hrs
Environmental		

***NOTE: This function is available by request only**

Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-20 to 60°C (-4 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD) EN61000-4-4 (EFT), EN61000-4-6 (CS), EN61000-4-11 EN61000-4-3 (RS), EN61000-4-5 (Surge), EN61000-4-8,
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

RGS-R9 AA B CCC - DD

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type	Mode Type
Option	**- 24:** 24 ports	**- 4:** 4 ports	**-GC+:** 1G / 10GBase-X, SFP+ socket	**-E:** enhanced model with dual DC inputs and one AC input

	Model Name	Description
Available Model	RGS-R9244GP+_US	Industrial Layer-3 28-port managed Gigabit Ethernet switch with 24x10/100/1000Base-T(X) and 4x1G/10GBase-X, SFP+ socket, US power cord
	RGS-R9244GP+_EU	Industrial Layer-3 28-port managed Gigabit Ethernet switch with 24x10/100/1000Base-T(X) and 4x1G/10GBase-X, SFP+ socket, EU power cord
	RGS-R9244GP+_UK	Industrial Layer-3 28-port managed Gigabit Ethernet switch with 24x10/100/1000Base-T(X) and 4x1G/10GBase-X, SFP+ socket, UK power cord
	RGS-R9244GP+_JP	Industrial Layer-3 28-port managed Gigabit Ethernet switch with 24x10/100/1000Base-T(X) and 4x1G/10GBase-X, SFP+ socket, JP power cord
	RGS-R9244GP+-E_US	Industrial Layer-3 28-port managed Gigabit Ethernet switch with 24x10/100/1000Base-T(X) and 4x1G/10GBase-X, SFP+ socket, US power cord
	RGS-R9244GP+-E_EU	Industrial Layer-3 28-port managed Gigabit Ethernet switch with 24x10/100/1000Base-T(X) and 4x1G/10GBase-X, SFP+ socket, EU power cord
	RGS-R9244GP+-E_UK	Industrial Layer-3 28-port managed Gigabit Ethernet switch with 24x10/100/1000Base-T(X) and 4x1G/10GBase-X, SFP+ socket, UK power cord
	RGS-R9244GP+-E_JP	Industrial Layer-3 28-port managed Gigabit Ethernet switch with 24x10/100/1000Base-T(X) and 4x1G/10GBase-X, SFP+ socket, JP power cord

Packing List

- RGS-R9244GP+/-E x 1
- Rack-mount Kit x 1
- ORing Tool CD x 1
- Power Cable x 1
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DBU-01 : backup unit device
- SFP10G series : 1GMbps SFP optical transceiver
- SFP10G series : 10GMbps SFP optical transceiver

RGS-9168GCP Series

RGS-9168GCP Series

Industrial 24-port rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 8x100/1000Base-X, SFP socket

Features

- Support **O-Ring** (recovery time < 30ms) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and SNTP server
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL and 802.1x User Authentication for security
- Support 10K Bytes Jumbo Frame
- SFP socket support DDM function
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- 19 inches rack mountable design

R6 READY | Full Gigabit | O-Ring | -40~75°C Temperature | RoHS Lead Free | CE | FC

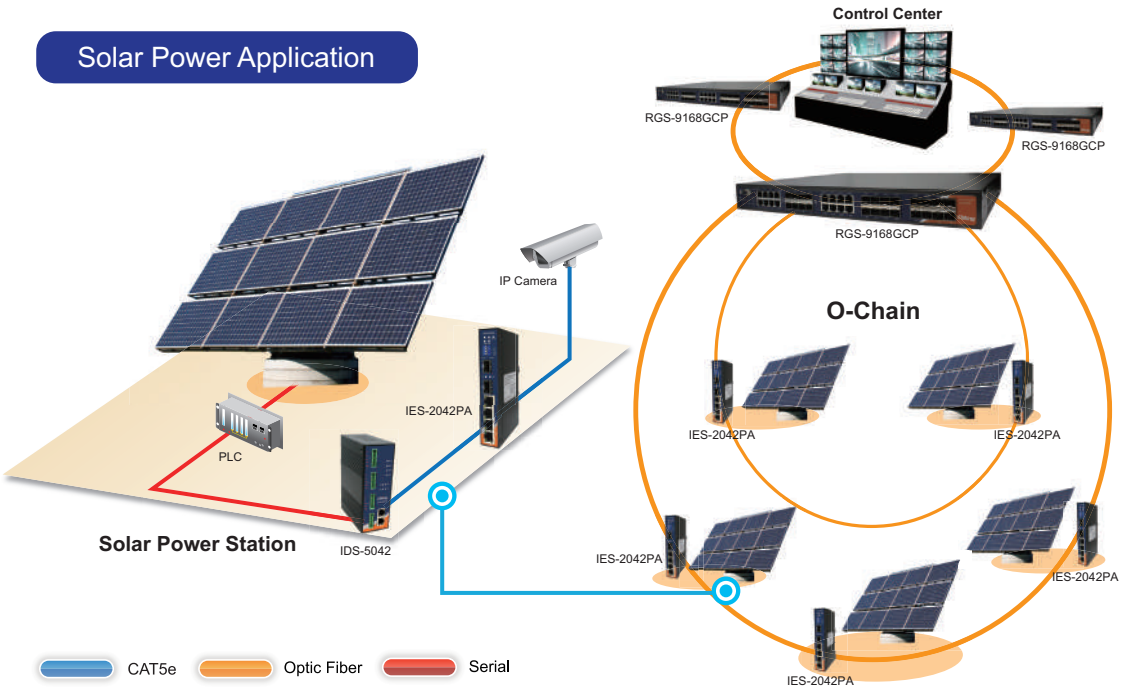
Introduction

RGS-9168GCP series are Gigabit managed redundant ring Ethernet switch with 16xGigabit combo ports and 8x100/1000Base-X, SFP socket. These switches support Ethernet Redundancy protocol, O-Ring (recovery time < 30ms) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And RGS-9168GCP series support wide operating temperature from -40°C to 75°C. RGS-9168GCP series can also be managed centralized and convenient by Open-Vision, as well as the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP***NOTE : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.

***NOTE: This function is available by request only**

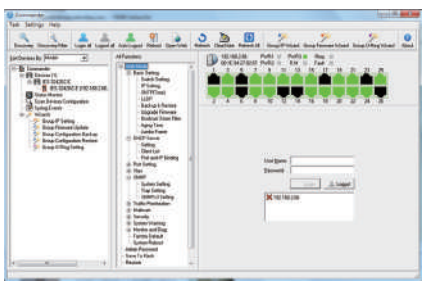
- **IP-based Bandwidth Management :** The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS :** The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function :** ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention :** The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP :** This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet :** This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



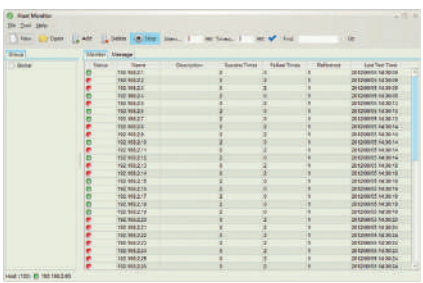
Network connection

Open-Vision

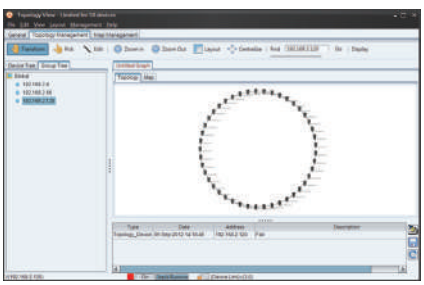
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

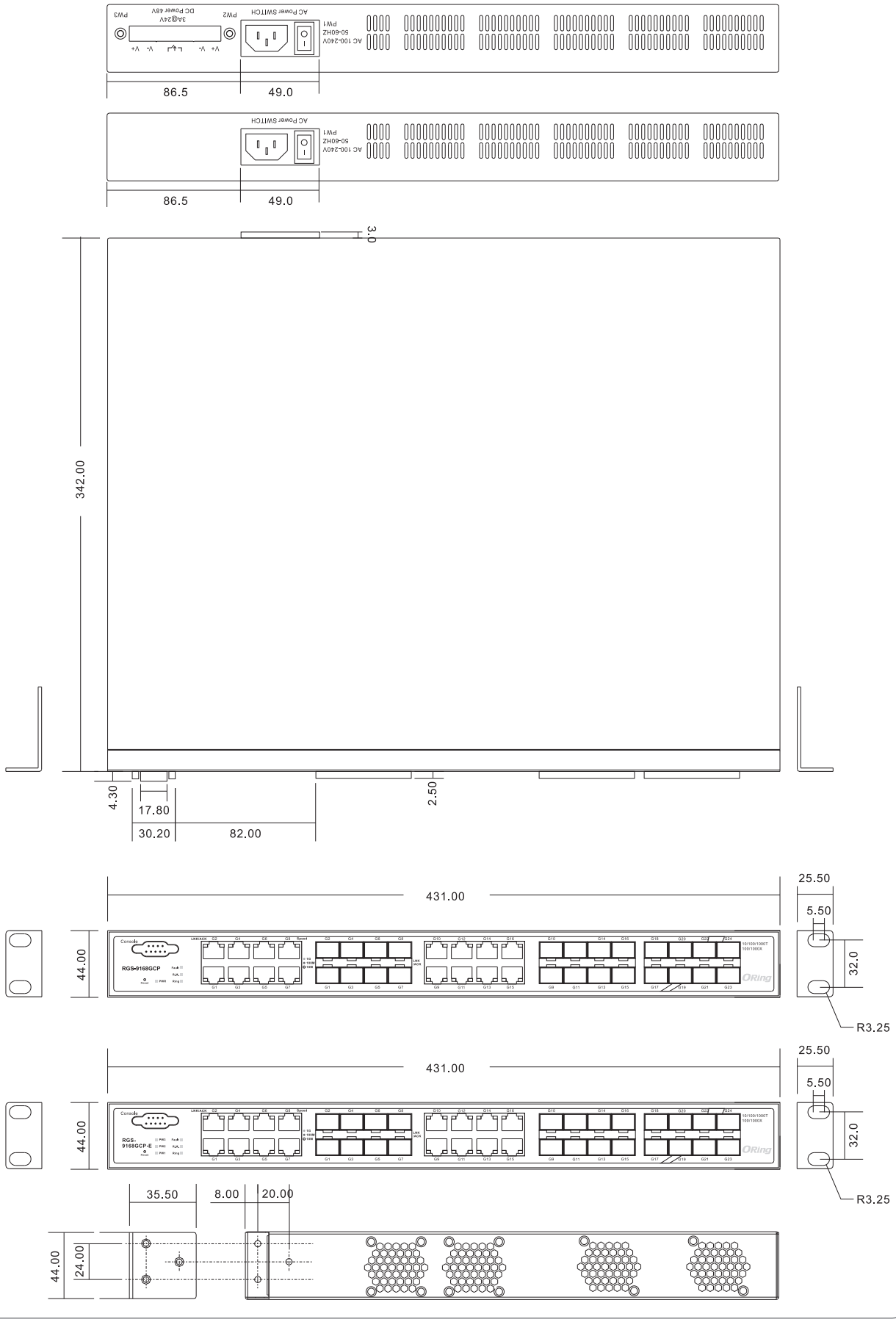


Host Monitor



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RGS-9168GCP	RGS-9168GCP-E
Physical Ports		
Gigabit Combo port with 10/100/1000Base-T(X) and 100/1000Base-X SFP ports	**16**	
100/1000Base-X with SFP port	**8**	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8k	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 128Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define	
Jumbo frame	Up to 10K Bytes	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) Single 802.1x and Multiple 802.1x MAC-based authentication MAC address limit VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization IP source guard	
Software Features	IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client DHCP Relay Modbus TCP SMTP Client SNTP server	
Network Redundancy	O-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)	
RS-232 Serial Console Port	RS-232 in DB-9 connector with console cable. 115200bps, 8, N, 1	

***NOTE: This function is available by request only**

LED indicators		
Power Indicator (PWR)	Green : Power indicator	Green LED x 3 : Power-1/2/3 indicator
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.	
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred	
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act indicator. Dual color LED for speed indicator ~ Green for 1000Mbps / Amber for 100Mbps / Off-light for 10Mbps	
1000Base-X SFP Port Indicator	Green for port Link/Act.	
Fault contact		
Relay	None	Relay output to carry capacity of 1A at 24VDC
Power		
Power Input	100 ~ 240VAC with power socket	100 ~ 240VAC with power socket and dual 48VDC (36 ~ 72VDC) at 6-pin terminal block
Power consumption (Typ.)	28.2W	28.2W
Overload current protection	NOT Present	Present with terminal block
Reverse Polarity Protection	Present	Present
Physical Characteristic		
Enclosure	19 inches rack mountable	
Dimension (W x D x H)	431 (W) x 342 (D) x 44 (H)mm (16.97 x 13.46 x 1.73 inch)	
Weight (g)	4117 g	4437 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	
MTBF	335,766 hrs	267,239 hrs

Ordering Information

RGS-9 AA B CCC - D

Code Definition	Gigabit Combo Port Number	Gigabit SFP Port Number	Additional Port Type	Additional Type
Option	**- 16:** 16 ports	**- 8:** 8 ports	**-GCP:** Gigabit Combo ports and Gigabit SFP ports	-E: enhanced model with dual DC inputs and Relay output

	Model Name	Description
Available Model	RGS-9168GCP_US	Industrial 24-port rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 8x100/1000Base-X, SFP socket, US power cord
	RGS-9168GCP_UK	Industrial 24-port rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 8x100/1000Base-X, SFP socket, UK power cord
	RGS-9168GCP_EU	Industrial 24-port rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 8x100/1000Base-X, SFP socket, EU power cord
	RGS-9168GCP_JP	Industrial 24-port rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 8x100/1000Base-X, SFP socket, JP power cord
	RGS-9168GCP-E_US	Industrial 24-port rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 8x100/1000Base-X, SFP socket, enhanced version, US power cord
	RGS-9168GCP-E_UK	Industrial 24-port rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 8x100/1000Base-X, SFP socket, enhanced version, UK power cord
	RGS-9168GCP-E_EU	Industrial 24-port rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 8x100/1000Base-X, SFP socket, enhanced version, EU power cord
	RGS-9168GCP-E_JP	Industrial 24-port rack mount managed Gigabit Ethernet switch with 16xGigabit combo ports and 8x100/1000Base-X, SFP socket, enhanced version, JP power cord

Packing List

- RGS-9168GCP / -E x 1
- Rack-mount Kit x 1
- ORing Tool CD x 1
- Power Cable x 1
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DR-120-48 : 48V/120Watts DIN-Rail power supply (Only for –E)
- SFP100 series : 100Mbps SFP optical transceiver
- SFP1G series : 1GMbps SFP optical transceiver
- DR-75-48 : 48V/75Watts DIN-Rail power supply (Only for –E)

RES-9242GC

RES-9242GC

Industrial 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xgigabit combo, SFP socket

Features

- Support **O-Ring** (recovery time < 10ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- SFP socket support DDM function
- Multiple notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- 19 inches rack mountable design

R6 READY | O-Ring | -40~75°C Temperature | Redundant PWR | RoHS Lead Free | CE | FC

Introduction

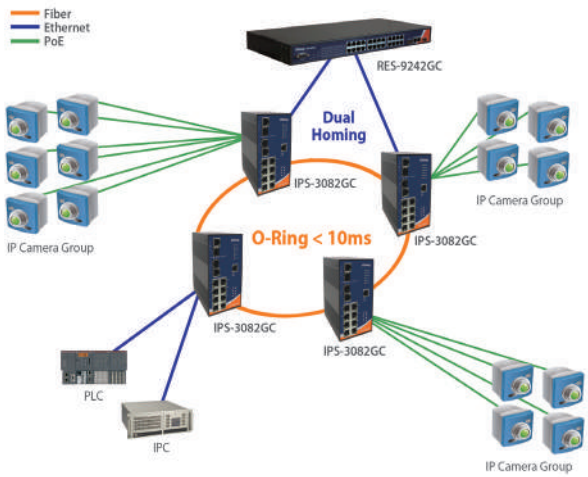
RES-9242GC is rack mount managed redundant ring Ethernet switch with 24x10/100Base-T(X) ports and 2xgigabit combo ports, SFP socket. RES-9242GC also support Ethernet Redundancy protocol, **O-Ring** (recovery time < 10ms over 250 units of connection) /Open-Ring/O-Chain/MRP*NOTE/Fast Recovery and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. RES-9242GC supported wide operating temperature from -40°C to 75°C. RES-9242GC can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 10 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.

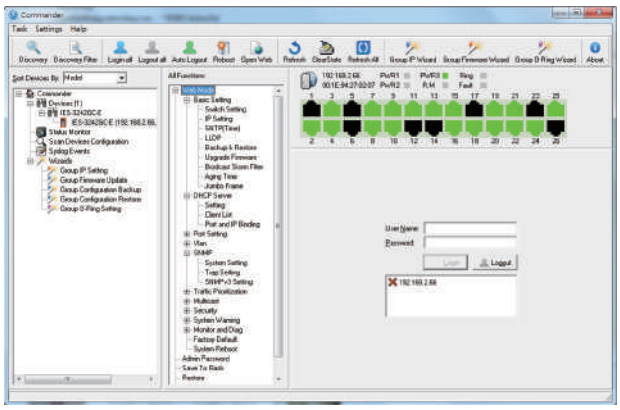
***NOTE: This function is available by request only**

- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

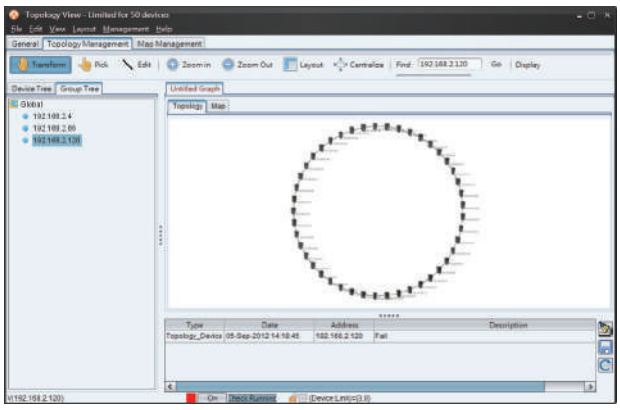
***NOTE: This function is available by request only**



Network connection

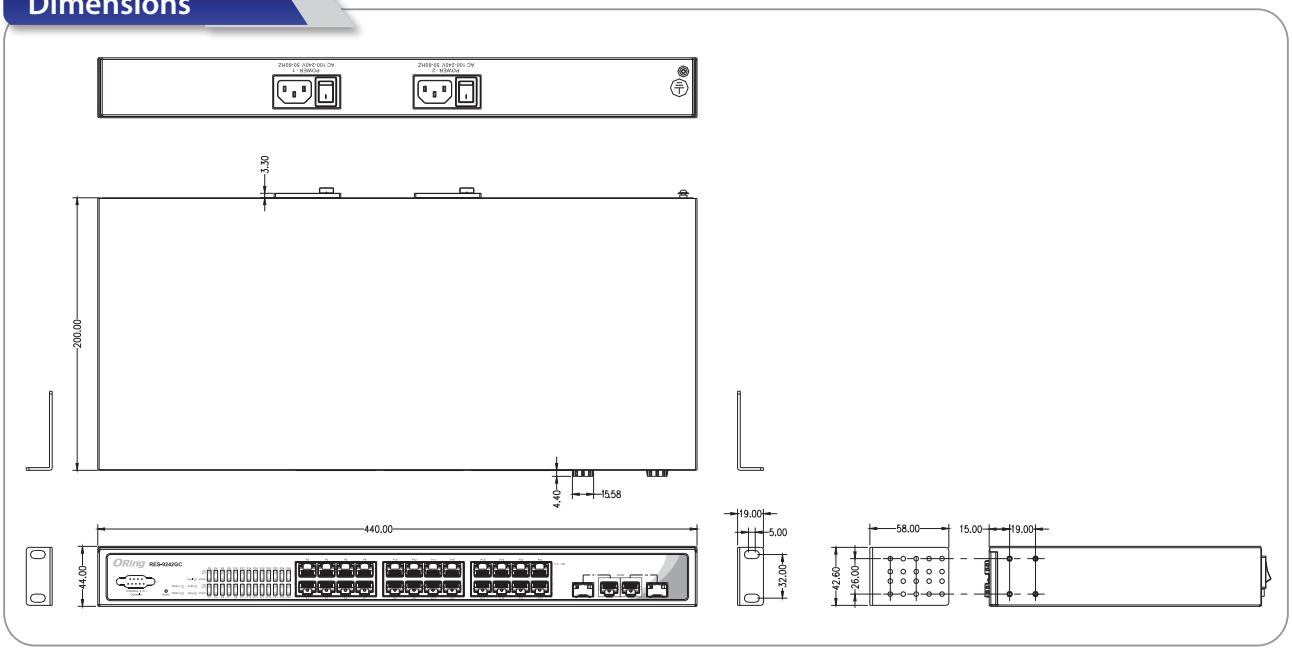


Commander



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RES-9242GC
Physical Ports	
10/100Base-T(X) with RJ45 Auto MDI/MDIX	24
10/100/1000Base-T(X) RJ45 and 100/1000Base-X SFP with combo port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 8.8Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) Single 802.1x and Multiple 802.1x MAC-based authentication QoS assignment MAC address limit TACACS+ VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization

Software Features	IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client DHCP Relay Modbus TCP SMTP Client NTP server
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible) Fast Recovery
RS-232 Serial Console Port	RS-232 in DB-9 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power Indicator	Green : Power indicator x 2
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100Base-T(X) RJ45 Port Indicator	Green for Link/Act indicator. Green for speed indicator ~ On for 100Mbps / Off for 10Mbps
10/100/1000Base-T(X) RJ45 Port With Combo Port Indicator	Green for Link/Act indicator. Green for speed indicator ~ On for 100/1000Mbps / Off for 10Mbps
100/1000Base-X SFP Port With Combo Port Indicator	Green for port Link/Act.
Power	
Power Inputs	Dual redundant 100 ~ 240VAC with power cord
Power consumption (Typ.)	15.2 watts
Overload current protection	Present
Physical Characteristic	
Enclosure	19 inches rack mountable
Dimension (W x D x H)	440 x 200 x 44 mm (17.32 x 7.87 x 1.73 inch)
Weight (g)	2695 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class B
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1 (compliant, certification pending)
MTBF	385,493 hours
Warranty	5 years

***NOTE: This function is available by request only**

Ordering Information

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 24:** 24 ports	**- 2:** 2 ports	**-GC**: Gigabit combo, SFP socket

	Model Name	Description
Available Model	RES-9242GC_US	Industrial 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xgigabit combo, SFP socket, US power cord
	RES-9242GC_UK	Industrial 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xgigabit combo, SFP socket, UK power cord
	RES-9242GC_EU	Industrial 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xgigabit combo, SFP socket, EU power cord
	RES-9242GC_JP	Industrial 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xgigabit combo, SFP socket, JP power cord

Packing List

- RES-9242GC x 1
- Rack-mount Kit x 1
- ORing Tool CD x 1
- Power Cable x 2
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DBU-01 : backup unit device
- SFP100 series : 100Mbps SFP optical transceiver
- SFP1G series : 1Gbps SFP optical transceiver

RES-P9242GCL Series

RES-P9242GCL Series

Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket

Features

- Designed for Power substation application and fully compliant with the IEC 61850-3 and IEEE 1613
- Support **Open-Ring** (recovery time < 30ms) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP*NOTE** (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock Synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and NTP server protocol
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL and 802.1x User Authentication for security
- SFP socket support DDM function
- Multiple notification for warning of unexpected event
- Support backup unit device DBU-01 for quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- LED in front and Line in back design
- 19 inches rack mountable design

Introduction

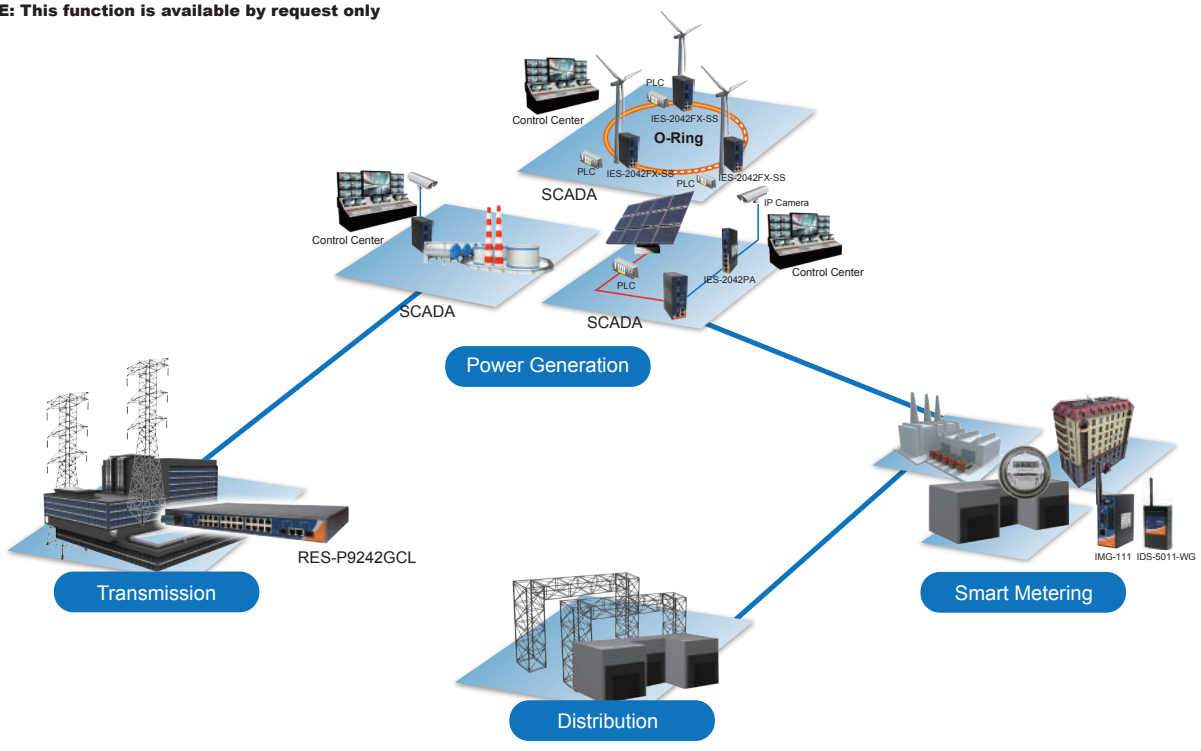
RES-P9242GCL series are 26-port rack mount managed redundant ring Ethernet switch with 24x10/100Base-T(X) and 2xGigabit Combo ports, SFP socket. These switches are designed for power substation application, and it is fully compliant with the requirement of IEC 61850-3 and IEEE 1613. These switches support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms), O-Chain, MRP*NOTE, Fast Recovery and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. RES-P9242GCL series can also be managed centralized and convenient by Open-Vision, as well as the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.

***NOTE: This function is available by request only**

- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **Application-Based QoS :** The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function :** ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention :** The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology :** The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP :** This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet :** This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

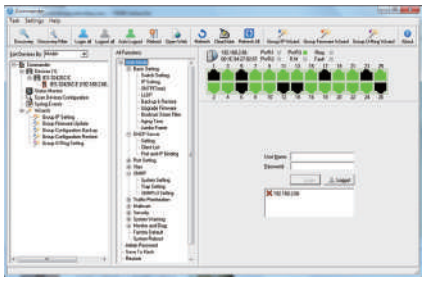
***NOTE: This function is available by request only**



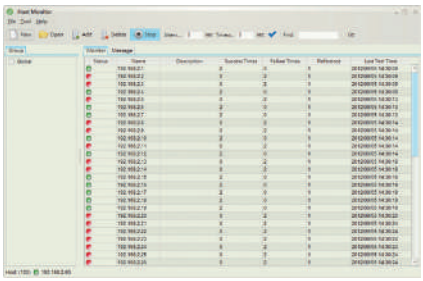
Network connection

Open-Vision

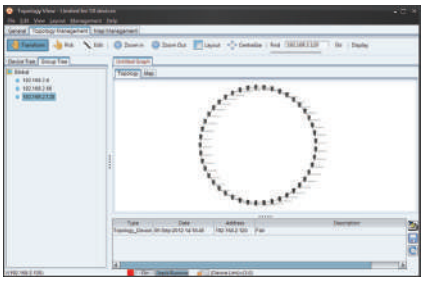
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

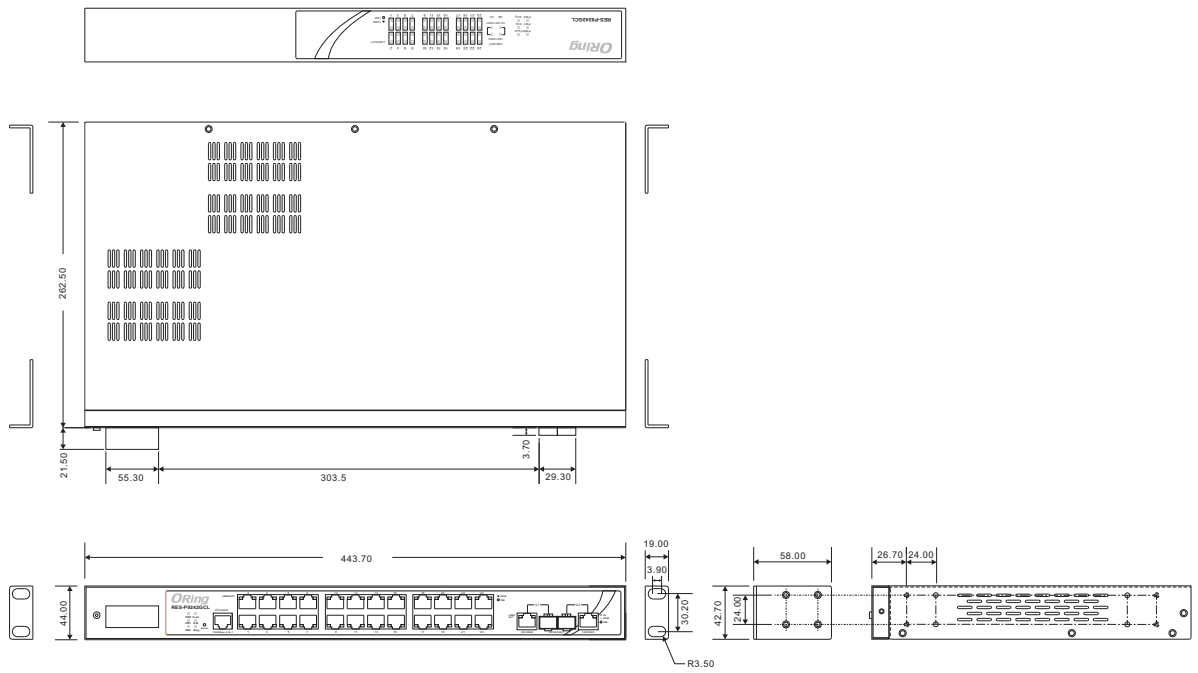


Host Monitor



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RES-P9242GCL-LV	RES-P9242GCL-HV
Physical Ports		
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	**24**	
Gigabit combo port with 10/100/1000Base-T(X) and 1000Base-X SFP	**2**	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1X for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8k	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 8.8Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define	

Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) MAC-based authentication (802.1x) Guest VLAN VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization IP source guard	
Software Features	IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay Modbus TCP SMTP Client NTP server	
Network Redundancy	O-Ring O-Chain MRP***NOTE** Fast Recovery MSTP (RSTP/STP compatible)	
RS-232 Serial Console Port	RS-232 in DB-9 connector with console cable. 115200bps, 8, N, 1	
LED indicators		
Power Indicator	Green : Power LED x 3	
Ring Master Indicator	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator	Green : Indicates that the system operating in O-Ring mode Green Blinking: Indicates that the Ring is broken.	
Fault Indicator	Amber : Indicate unexpected event occurred	
10/100Base-T(X) RJ45 port indicator	Green at left for port Link/Act. Amber at right for speed indicator (On for 100Mbps, Off for 10Mbps indicator)	
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps	
100/1000Base-X SFP Port Indicator	Green for port Link/Act.	
Fault contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Power Input	Dual 24/48VDC (24~72VDC) power inputs at terminal block	Dual 125~370VDC / 100~240VAC power inputs
Power consumption (Typ.)	19W	19.8W
Overload current protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristic		
Enclosure	19 inches rack mountable	
Dimension (W x D x H)	443.7(W) x 262.7(D) x 44(H) mm (17.46x10.34x1.73 inch)	431 x 342 x 44mm (17 x 13.46 x 1.73 inch)
Weight (g)	3,535g	4,050g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 85°C (-40 to 185°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B, IEC 61850/ IEEE1613	

***NOTE: This function is available by request only**

EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A	
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))	
Shock	IEC 60068-2-27	
Free Fall	IEC 60068-2-31	
Vibration	IEC 60068-2-6	
Safety	EN 60950-1	
Other	IEC 61850/ IEEE1613	
MTBF	297,924 hrs	262,968 hrs
Warranty	5 years	

Ordering Information

RES-P9 AA B CC L- DD

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type	Model Type
Option	**- 24:** 24 ports	**- 2:** 2 ports	**-GC**: Gigabit combo, SFP socket	**-LV** : Dual 24/48VDC (24~72VDC) power inputs **-HV** : Dual 125~370VDC/ 100~240VAC power inputs

	Model Name	Description
Available Model	RES-P9242GCL-LV	Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket, low-voltage power inputs
	RES-P9242GCL-HV_US	Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket, high-voltage power inputs, US power cord
	RES-P9242GCL-HV_UK	Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket, high-voltage power inputs, UK power cord
	RES-P9242GCL-HV_EU	Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket, high-voltage power inputs, EU power cord
	RES-P9242GCL-HV_JP	Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket, high-voltage power inputs, JP power cord

Packing List

- RES-P9242GCL-LV/HV x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1
- Rack-mount Kit x 1
- Power Cable (for HV model only) x 2
- Console Cable x 1

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100M series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DBU-01: Data backup unit device
- DR/SDR/DRP Series DIN-Rail power supply for LV model

RES-1242P

RES-1242P

Industrial 26-port rack mount unmanaged Ethernet switch with 24x10/100Base-T(X) and 2x100Base-FX, SFP socket

Features

- AC power input of AC socket
- Provide 24x10/100Base-T(X) and 2x100Base-FX SFP port
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store and forward transmission
- Supports flow control
- Rigid IP-30 housing design
- 19 inches rack mountable design

-40~70°C Temperature

RoHS Lead Free

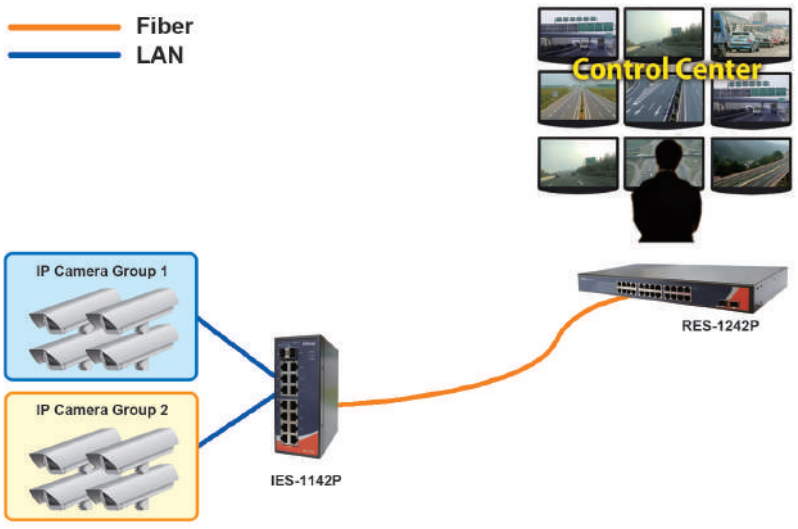
CE FC

Introduction

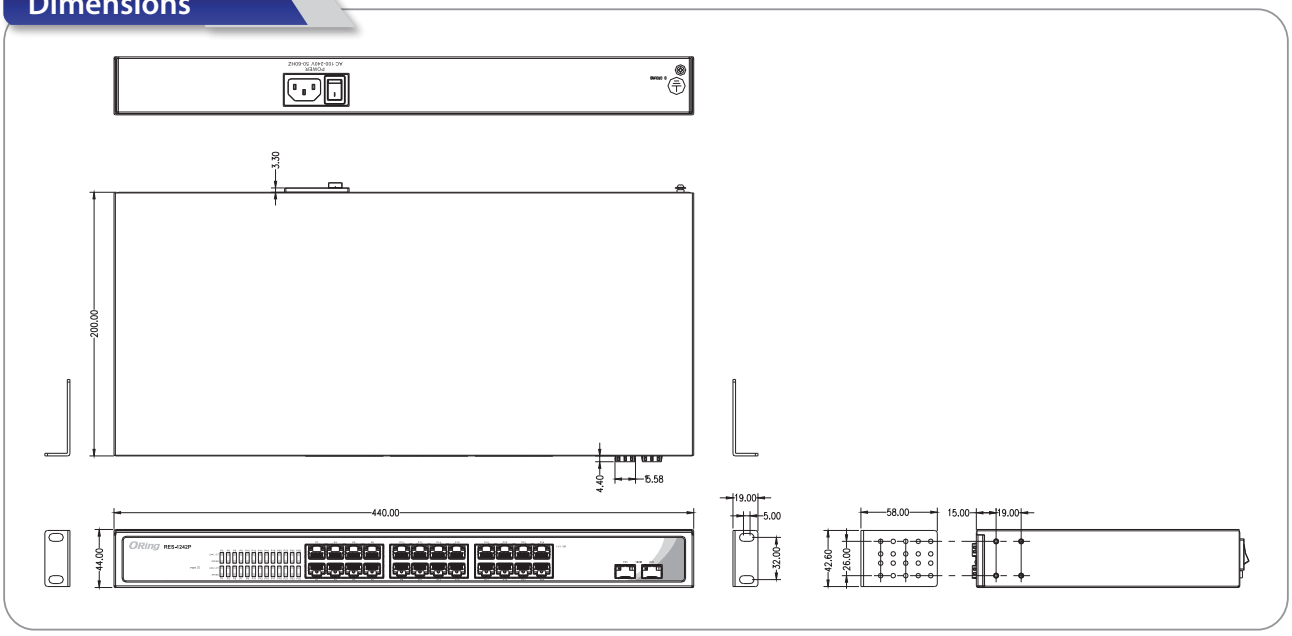
RES-1242P is a 19" rack mount unmanaged Ethernet switch with 24x10/100Base-T(X) and 2x100Base-FX in SFP ports. The wide operating temperature range from -40°C to 70°C can satisfy most of operating environments.

Practical Operation

RES-1242P can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches.



Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RES-1242P
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	24
100Base-FX SFP Ports	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control
MAC Table	4096
Processing	Store-and-Forward
LED Indicators	
Power indicator	Green : Power LED x 1
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for speed indicator – Amber for 100Mbps, Off-light for 10Mbps
100Base-FX SFP Port Indicator	Green for port Link/Act
Power	
Power Input	100 ~ 240VAC on AC socket
Power Consumption (Typ.)	15.4 watts max.
Overload Current Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	440 x 200 x 44 mm (17.32 x 7.87 x 1.73 inch)
Weight (g)	2450 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class B

EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF (Hours)	510,613
Warranty	5 years

Ordering Information

RES-1 AA B C

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 24:** 24 ports	**- 2:** 2 ports	**- P:** 100Base-FX in SFP port

	Model Name	Description
Available Model	RES-1242P_US	Industrial 26-port rack mount unmanaged Ethernet switch with 24x10/100Base-T(X) and 2x100Base-FX, SFP socket, US power cord
	RES-1242P_UK	Industrial 26-port rack mount unmanaged Ethernet switch with 24x10/100Base-T(X) and 2x100Base-FX, SFP socket, UK power cord
	RES-1242P_EU	Industrial 26-port rack mount unmanaged Ethernet switch with 24x10/100Base-T(X) and 2x100Base-FX, SFP socket, EU power cord
	RES-1242P_JP	Industrial 26-port rack mount unmanaged Ethernet switch with 24x10/100Base-T(X) and 2x100Base-FX, SFP socket, JP power cord

Packing List

- RES-1242P x 1
- Power cord x 1
- Quick Installation Guide x 1
- Rack-mount Kit x 1

Optional Accessories

- SFP100 series : 100Mbps SFP optical transceiver

IGS-9122GPM

IGS-9122GPM

EN50155 modular managed Gigabit Ethernet switch with 12x10/100/1000Base-T(X) and 100/1000Base-X, SFP socket, 3 module extender slots

Features

- Modular designed and Hot-swappable make network planning easier
- Support **O-Ring** (recovery time < 30ms over 250 units of Gigabit Ethernet and <10ms over 250 units of fast Ethernet) and MSTP (RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock Synchronization
- Support IPv6 new internet protocol version
- Support Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Support NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v1/v2/v3 (IGMP snooping support) and GMRP for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support port mirror function to monitor port data
- Support ACL and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Support dual power inputs for power redundancy
- Din-Rail enabled and fan-less design

Introduction

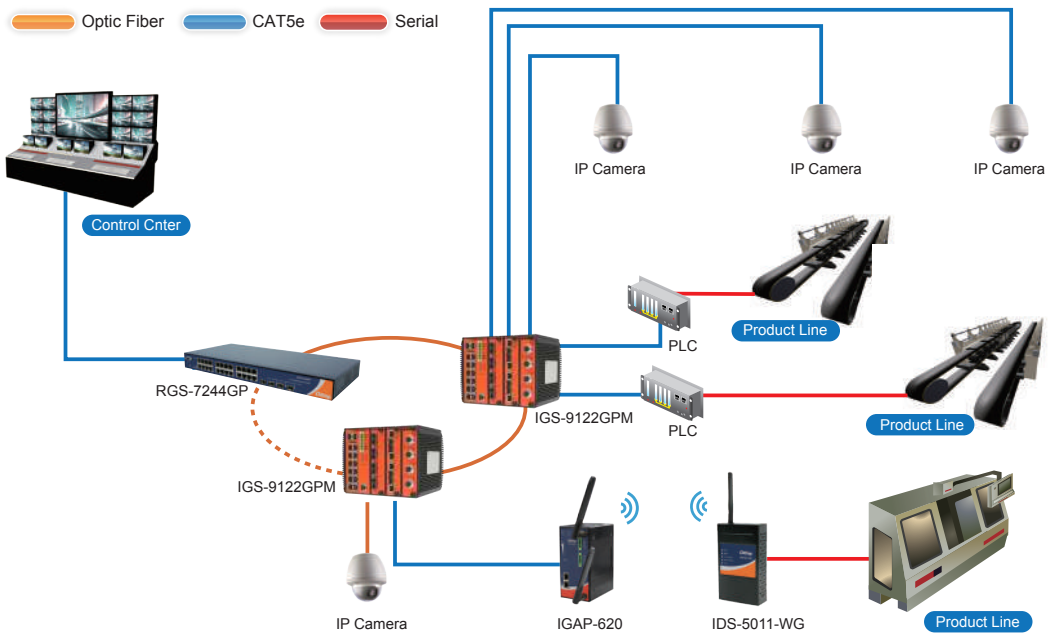
IGS-9122GPM is Din-Rail modular managed redundant ring Ethernet switch with 12x10/100/1000Base-T(X) and 2x100/1000Base-X SFP ports. Also, it supports 3 slots for install switch module to expander Ethernet ports. It is hot-swappable so there is no need to power off switch while replace the module. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection), O-Chain, MRP*NOTE, Fast Recovery and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40°C to 75°C. IGS-9122GPM can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet rolling stock application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 20 milliseconds and up to 250 nodes. The O-Ring

***NOTE: This function is available by request only**

redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.

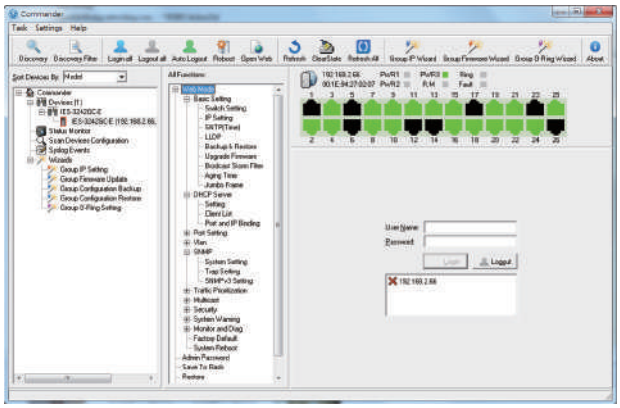
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modular Designed** : Modular designed can makes network planning easy and allow greater flexibility by letting you install other Ethernet/Optical fiber modular.



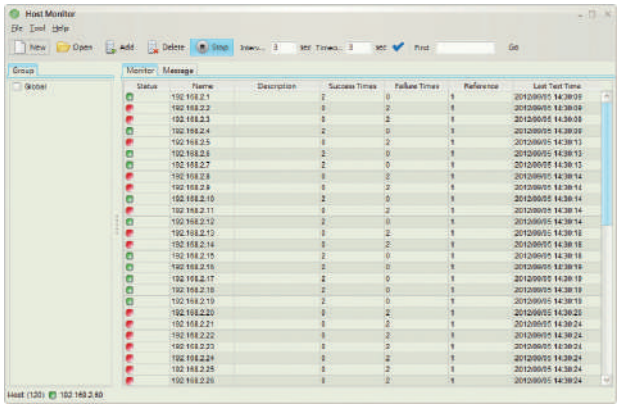
*NOTE: This function is available by request only

Open-Vision

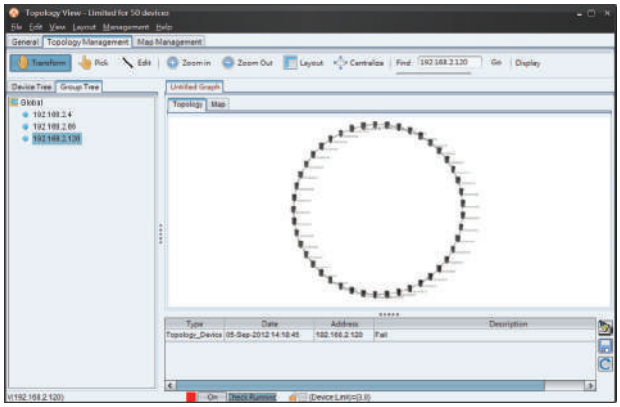
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

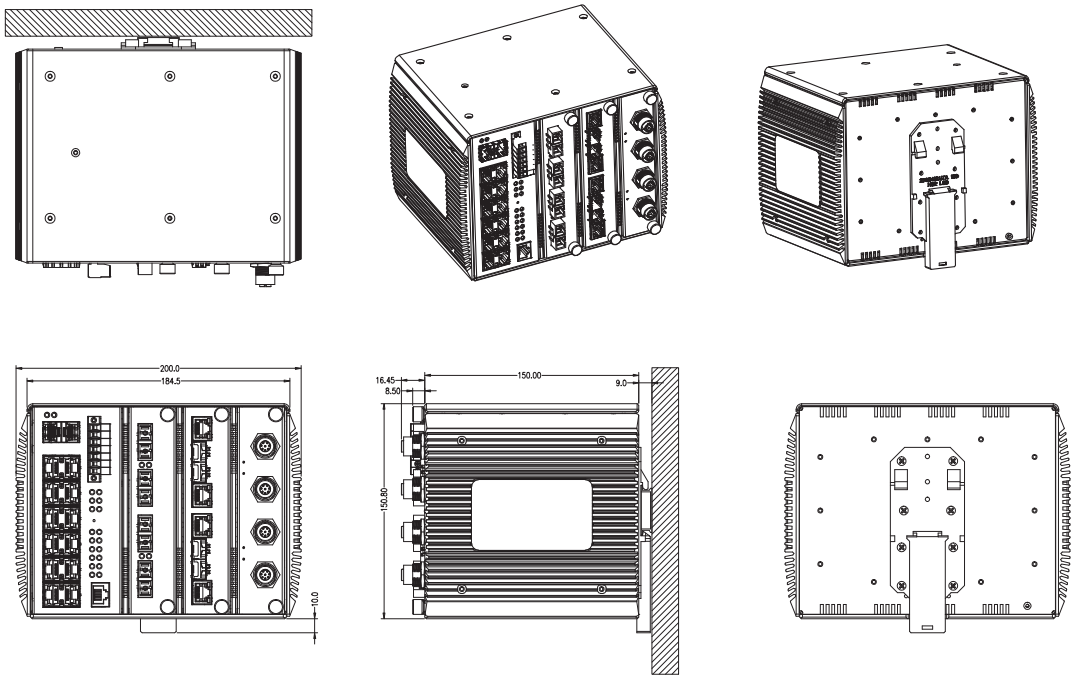


Host Monitor



Topology View

Dimensions



(Unit=mm)

Optional Switch Module

SWM-04GC-D
Industrial 4-port Gigabit Ethernet switch module with 4x1G combo ports.

Weight	412g
MTBF	3,948,727hrs

SWM-04GF-SS/MM-SC-D
Industrial 4-port Gigabit Ethernet switch module with 4x1000Base-X ports, SS/MM mode, SC connector.

Weight	407g
MTBF	426,972/333,547hrs

SWM-04FX-SS/MM-SC-D
Industrial 4-port Gigabit Ethernet switch module with 4x100Base-FX ports, SS/MM mode, SC connector.

Weight	404g
MTBF	316,663/517,083hrs

SWM-40GT-M12-D
Industrial 4-port Gigabit Ethernet switch module with 4x10/100/1000Base-T(X) ports, M12 connector.

Weight	462g
MTBF	628,407hrs

BSM-02X-D
Industrial bypass switch module, 4x100/1G/10GBase-X, LC connector.

Weight	TBD
MTBF	TBD

BSM-20GT-D
Industrial bypass switch module with 4x10/100/1000Base-T(X) ports

Weight	TBD
MTBF	TBD

BSM-20GT-M12-D
Industrial bypass switch module with 4x10/100/1000Base-T(X) ports, M12 connector.

Weight	TBD
MTBF	TBD

Specifications

ORing Switch Model	IGS-9122GPM
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	**12**
100/1000Base-X SFP Ports	**2**
Module Slot Number	**3 (support 4x1G combo / 4x1G Fiber / 4x100Mbps Fiber module)**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3ae for 10Gigabit Ethernet IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 52Gbps Max. Number of Available VLANs: 4095 VLAN ID Range: 1 to 4094 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes

Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) MAC-based authentication MAC address limit VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization IP source guard
Software Features	IEEE 1588v2 clock synchronization IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 20ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client DHCP Relay Modbus TCP SMTP Client NTP server
Network Redundancy	O-Ring O-Chain MRP***NOTE** Fast Recovery MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1 (support DBU-01 backup unit)
LED Indicators	
System Ready Indicator (PWR)	Green: Indicates that the system ready. The LED is blinking when the system is upgrading firmware.
Power Indicator (PWR1 / PWR2)	Green: Power LED x 2
Ring Master Indicator (R.M.)	Green: Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green: Indicates that the system operating in O-Ring mode Green Blinking: Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber: Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps
100/1000Base-X SFP Port Indicator	Green for Link/Act indicator
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant power input modular	Dual 12~48VDC power inputs at terminal block
Power consumption (Typ.)	40 Watts
Overload current protection	Present
Physical Characteristic	
Enclosure	IP-30
Weight (g)	3,365g
Dimension (W x D x H)	184 (W) x 155 (D) x 150 (H) mm (7.24x6.1x5.9 inch)
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing

***NOTE: This function is available by request only**

Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50121-4, EN50155(pending)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN 60950-1
Warranty	5 years
MTBF	540,456hrs

Ordering Information

IGS-9 AA B CC D

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type	Other Option
Option	**- 12:** 12 ports	**- 2:** 2 ports	**-GP:** Gigabit SFP ports	**-M:** Modular Design

	Model Name	Description
Available Model	IGS-9122GPM	Industrial modular managed Gigabit Ethernet switch with 12x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket, 3 module extender slots

Optional Slot Module

	Model Name	Description
Available Model	SWM-04GC-D	Industrial 4-port Gigabit Ethernet switch module with 4x1G combo ports.
	SWM-04GF-SS-SC-D	Industrial 4-port Gigabit Ethernet switch module with 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector.
	SWM-04GF-MM-SC-D	Industrial 4-port Gigabit Ethernet switch module with 4x1000Base-SX, multi-mode, 550m/850nm, SC connector.
	SWM-04FX-SS-SC-D	Industrial 4-port Ethernet switch module with 4x100Base-FX, single-mode, 30Km/1310nm, SC connector.
	SWM-04FX-MM-SC-D	Industrial 4-port Ethernet switch module with 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector.
	SWM-40GT-M12-D	Industrial 4-port Gigabit Ethernet switch module with 4x10/100/1000Base-T(X) ports, M12 connector.
	BSM-02X-D (under dev.)	Industrial bypass switch module, 4x100/1G/10GBase-X, LC connector.
	BSM-20GT-D (under dev.)	Industrial bypass switch module with 4x10/100/1000Base-T(X) ports.
	BSM-20GT-M12-D (under dev.)	Industrial bypass switch module with 4x10/100/1000Base-T(X) ports, M12 connector.

Packing List

- IGS-9122GPM x 1
- ORing Tool DVD x 1
- Quick Installation Guide x 1
- Din-Rail Kit x 1
- Console Cable x 1

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply

IGS-9844GPF(X) Series

IGS-9844GPF(X) Series

Industrial 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP socket and 4x 100Base-FX or 4x1000Base-X fiber ports

Features

- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock Synchronization
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Support IEEE 802.3az **Energy-Efficient Ethernet technology**
- Supports SMTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Supports backup unit device **DBU-01** to quickly configuration backup/restore

R6 READY | Full Gigabit | O-Ring | Redundant PWR | -40~75°C Temperature

RoHS Lead Free CE FC

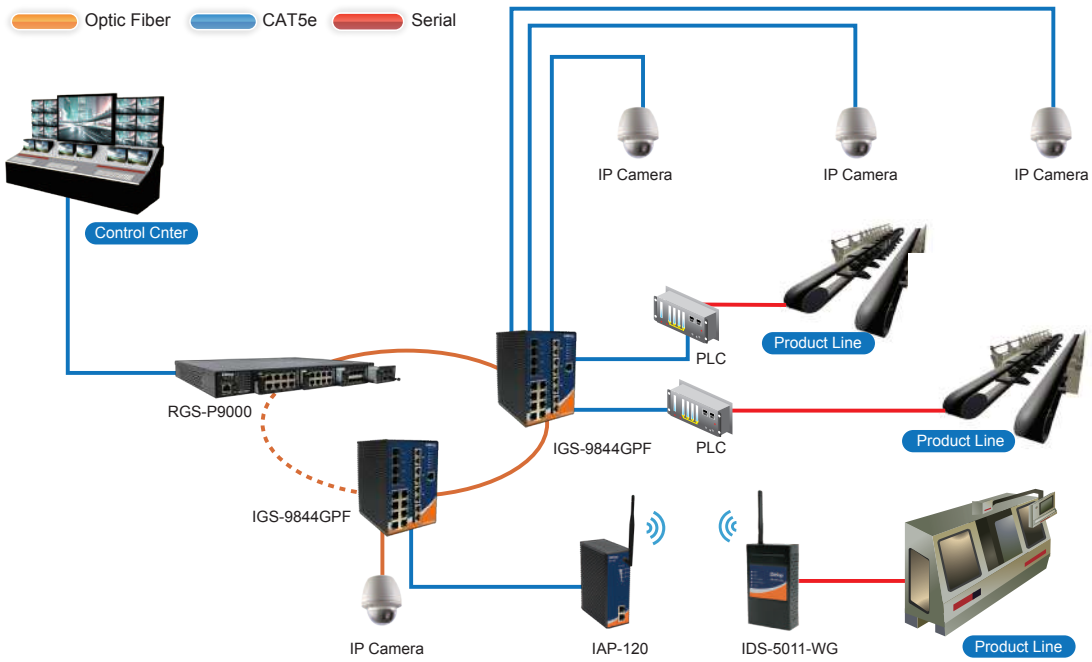
Introduction

IGS-9844GPF(X) series are managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP ports and 4x100Base-FX (IGS-9844GPFX series) or 4x1000Base-X (IGS-9844GPF series) optical fiber port with SC connector. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 to 75°C. IGS-9844GPF(X) series can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.

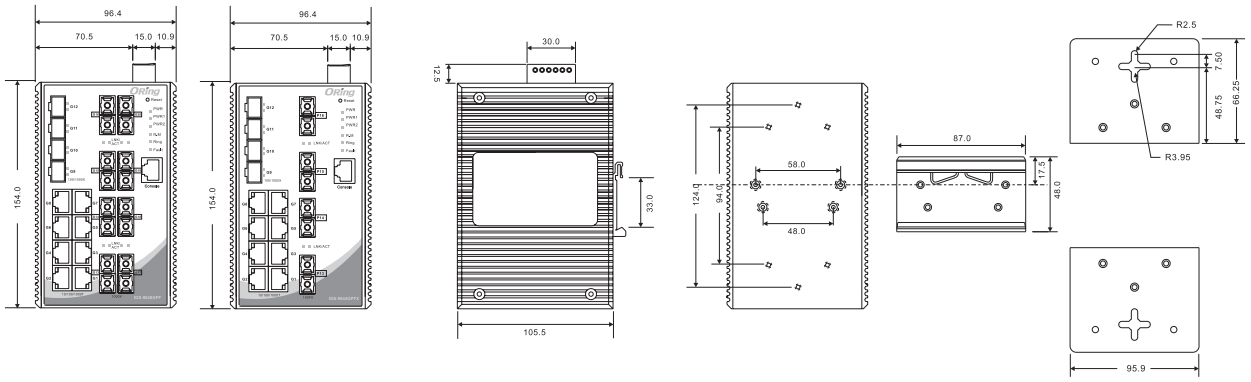
***NOTE: This function is available by request only**

- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



*NOTE: This function is available by request only

Dimensions



(Unit=mm)

Open-Vision

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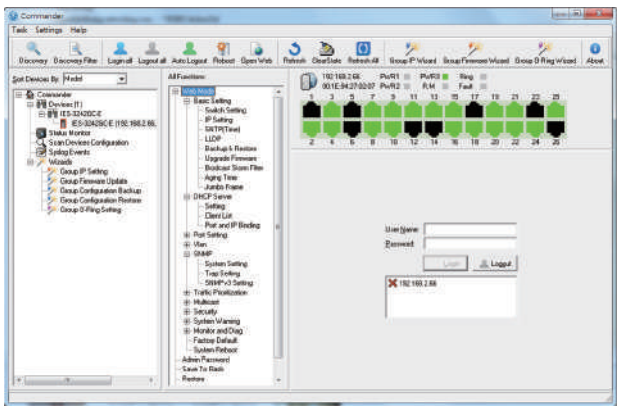
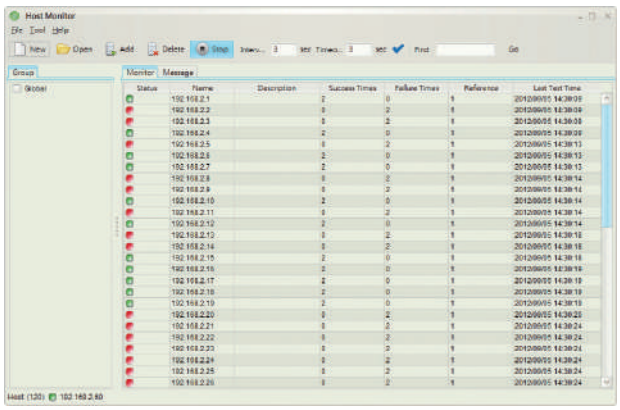
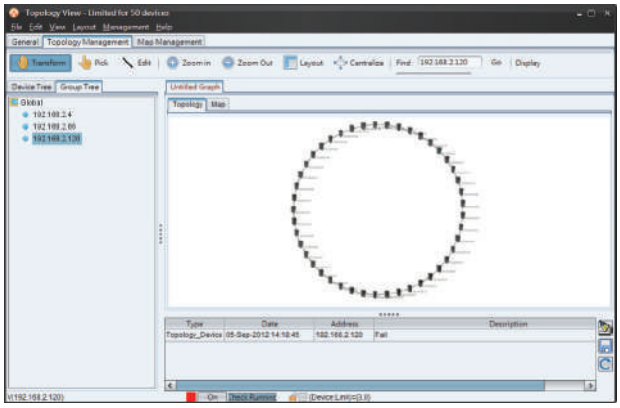


Commander



Host Monitor



Topology View

Specifications

ORing Switch Model		IGS-9844GPF-MM	IGS-9844GPFX-MM	IGS-9844GPF-SS	IGS-9844GPFX-SS
Physical Ports					
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX		8	8	8	8
100/1000Base-X with SFP port		4	4	4	4
Fiber Ports Specifications	Fiber Ports Number	8	8	8	8
	Fiber Ports Standard	1000Base-SX	100Base-FX	1000Base-LX	100Base-FX
	Fiber Mode	Multi-mode	Multi-mode	Single-mode	Single-mode
	Fiber Diameter (μm)	62.5/125 μm 50/125 μm	62.5/125 μm 50/125 μm	9/125 μm	9/125 μm
	Fiber Optical Connector	SC	SC	SC	SC
	Typical Distance (km)	0.55 km	2 km	10 km	30 km
	Wavelength (nm)	850 nm	1310 nm	1310 nm	1310 nm
	Max. Output Optical Power (dBm)	-4 dBm	-14 dBm	-3 dBm	-8 dBm
	Min. Output Optical Power (dBm)	-9.5 dBm	-23.5 dBm	-9.5 dBm	-15 dBm
	Max. Input Optical Power (Saturation)	0 dBm	0 dBm	-3 dBm	0 dBm
	Min. Input Optical Power (Sensitivity)	-18 dBm	-31 dBm	-20 dBm	-34 dBm
	Link Budget (dB)	8.5 dB	7.5 dB	10.5 dB	19 dB
Technology					
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.1p for COS (Class of Service) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1x for Authentication		IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1Q for VLAN Tagging IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table		8K			
Priority Queues		8			
Processing		Store-and-Forward			
Switch Properties		Switching latency: 7 us Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN Https / SSH enhance network security		Switching bandwidth: 32Gbps VLAN ID Range : 1 to 4094 Port rate limiting: User Define	
Jumbo frame		Up to 9.6K Bytes			
Security Features		Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security			
Software Features		STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP			
Network Redundancy		O-Ring Open-Ring O-Chain MRP*NOTE MSTP (RSTP/STP compatible)			
RS-232 Serial Console Port		RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1			
LED Indicators					
Power Indicator(PWR)		Green : Power LED x 2			
Ring Master Indicator (R.M.)		Green : Indicates that the system is operating in O-Ring Master mode			
O-Ring Indicator (Ring)		Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.			

***NOTE: This function is available by request only**

Fault Indicator(Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicato	Up Green LED for Link/Act indicator. Down dual color LED : Green for 1000Mbps indicator, Amber for 10/100Mbps indicator
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
100Base-FX or 1000Base-X Fiber Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48 VDC on 6-pin terminal block
Power Consumption (Typ.)	15 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	96.4 (W) x 105.5 (D) x 154 (H) mm (3.8 x 4.15 x 6.06 inch)
Weight (g)	1100 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5years

Ordering Information

IGS-9 A B C DD EE-FF-GG

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port 1 Number	Additional Port 2 Number	Additional Port 1 Type	Additional Port 2 Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 8:** 8 ports	**- 4:** 4 ports	**- 4:** 4 ports	**- GP:** 100/1000Base-X SFP **port**	**-F:** 1000Base-X fiber port **-FX:** 100Base-FX fiber port	**-MM:** Multi-mode **-SS:** Single-mode	**-SC:** SC connector

	Model Name	Description
Available Model	IGS-9844GPFX-MM-SC	Industrial 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP socket and 4x100Base-FX, multi-mode,2km/1310nm, SC connector
	IGS-9844GPFX-SS-SC	Industrial 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP socket and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector
	IGS-9844GPF-MM-SC	Industrial 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP socket and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector
	IGS-9844GPF-SS-SC	Industrial 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP socket and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector

Packing List

- IGS-9844GPF(X)
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- DBU-01 : Backup unit device

Ordering Information

IGS-9 A B C DD EE-FF-GG

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port 1 Number	Additional Port 2 Number	Additional Port 1 Type	Additional Port 2 Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 8:** 8 ports	**- 4:** 4 ports	**- 4:** 4 ports	**- GP:** 100/1000Base-X SFP **port**	**-F:** 1000Base-X fiber port **-FX:** 100Base-FX fiber port	**-MM:** Multi-mode **-SS:** Single-mode	**-SC:** SC connector

	Model Name	Description
Available Model	IGS-9844GPFX-MM-SC	Industrial 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP socket and 4x100Base-FX, multi-mode,2km/1310nm, SC connector
	IGS-9844GPFX-SS-SC	Industrial 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP socket and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector
	IGS-9844GPF-MM-SC	Industrial 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP socket and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector
	IGS-9844GPF-SS-SC	Industrial 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP socket and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector

Packing List

- IGS-9844GPF(X)
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply

IGS-9812GP

IGS-9812GP

Industrial 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket

Features

- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock Synchronization
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Supports SMTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Supports backup unit device **DBU-01** to quickly configuration backup/restore

R6 READY | Full Gigabit | O-Ring | Redundant PWR | -40~75°C Temperature | RoHS Lead Free | CE | FC

Introduction

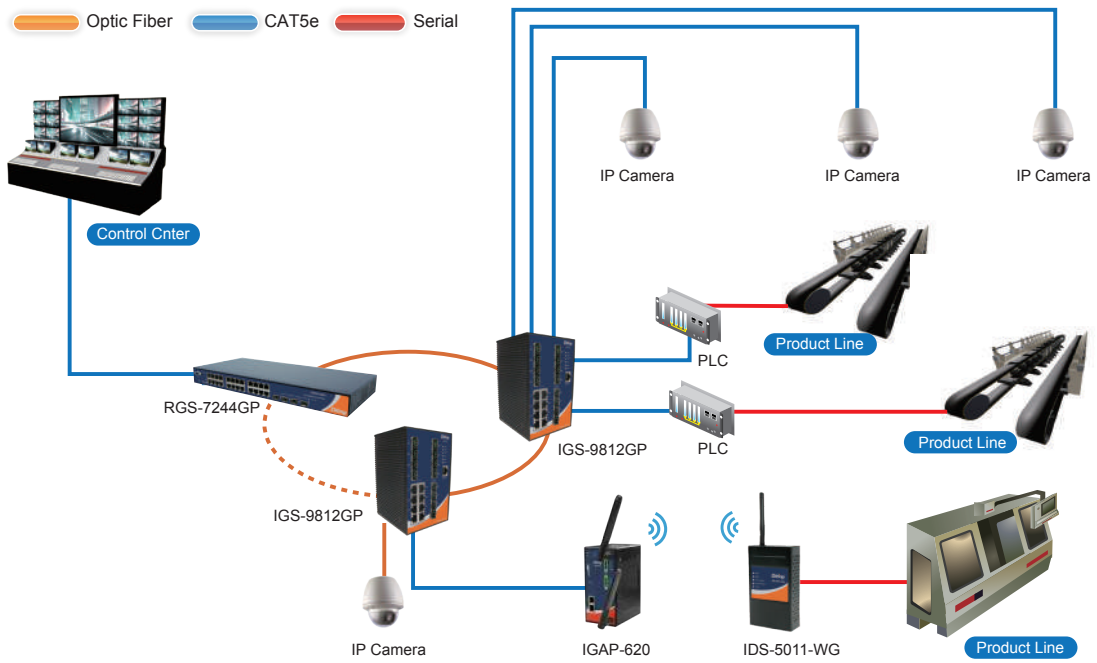
IGS-9812GP is managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X SFP ports. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 to 75°C. IGS-9812GP can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet power substation and rolling stock application

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.

***NOTE: This function is available by request only**

- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

***NOTE: This function is available by request only**



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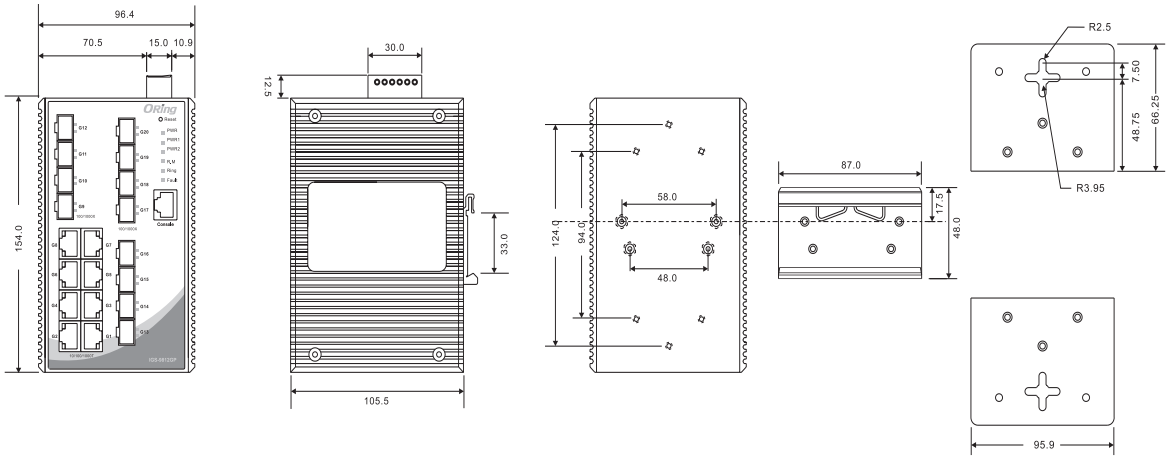
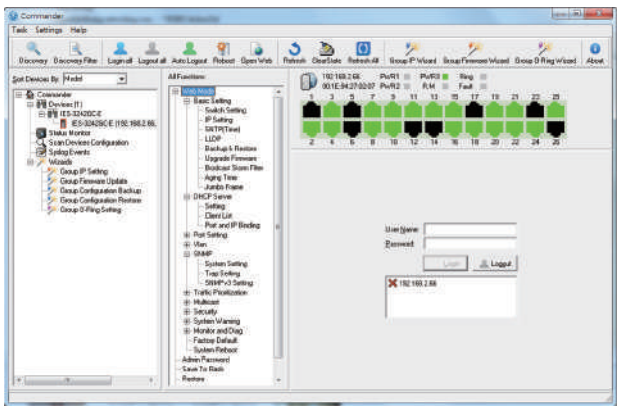


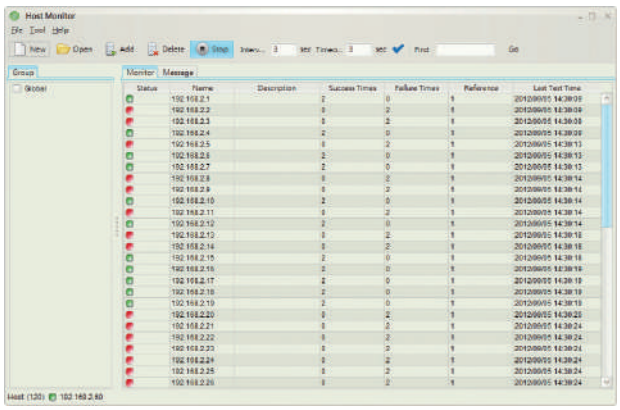
(Unit=mm)

Open-Vision

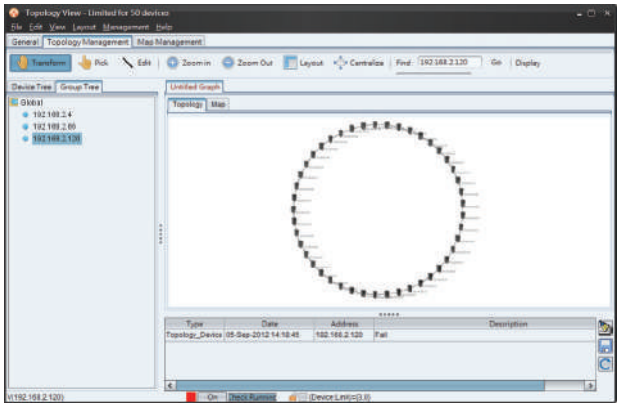
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor



Topology View

Specifications

ORing Switch Model	IGS-9812GP
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8
100/1000Base-X with SFP port	12
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8K
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 40Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define Https / SSH enhance network security
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power Indicator(PWR)	Green : Power LED x 2
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator(Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicator	Green for 1000Mbps Link/Act indicator. Amber for 10/100Mbps Link/Act indicator
100/1000Base-X SFP port Indicator	Green for port Link/Act.

***NOTE: This function is available by request only**

Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48 VDC on 6-pin terminal block
Power Consumption (Typ.)	16.8 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	96.4 (W) x 105.5 (D) x 154 (H) mm (3.8 x 4.15 x 6.06 inch)
Weight (g)	1210 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5years

Ordering Information

IGS-9 A BB CC

Code Definition	Gigabit Combo Port Number	Additional Port Number	Additional Port Type
Option	**- 8:** 8 ports	**- 12:** 12 ports	**-GP:** Gigabit SFP ports

Available Model	Model Name	Description
	IGS-9812GP	Industrial 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket

Packing List

- IGS-9812GP
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- DBU-01 : Backup unit device

IGS-9168GP

IGS-9168GP

Industrial 24-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) ports and 8x100/1000Base-X, SFP socket

Features

- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock Synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Support SMTP client and NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Support hardware watch dog function
- Included onboard buzzer for warning alarm
- Support loop guard to solve Ethernet loop issue
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

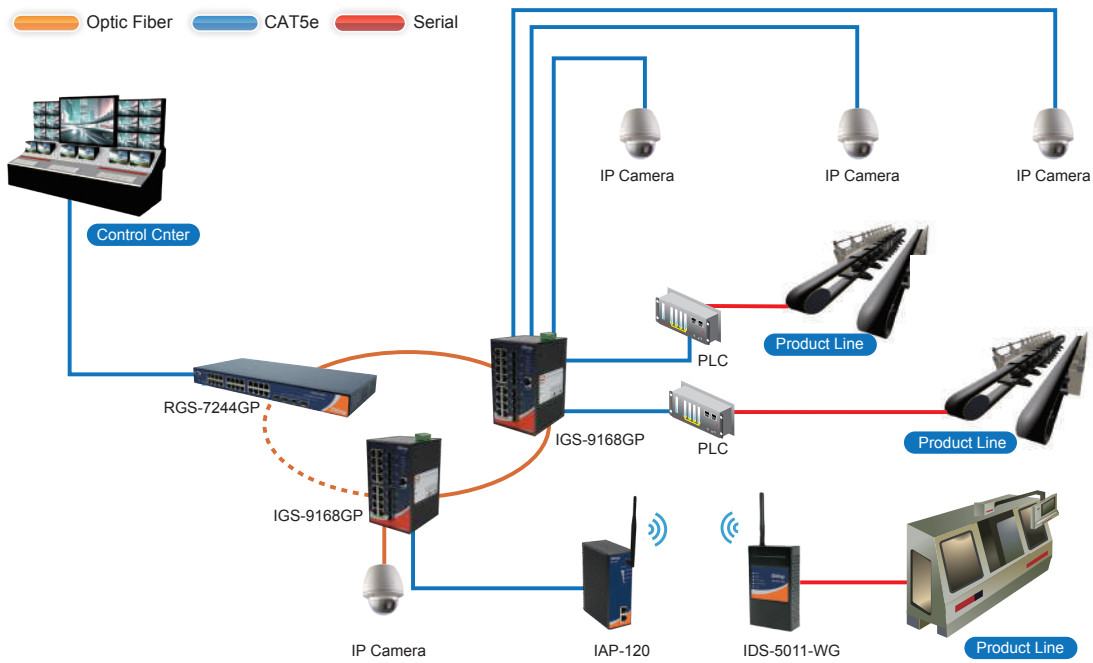
Introduction

IGS-9168GP is managed redundant ring Ethernet switch with 16x10/100/1000Base-T(X) ports and 8x100/1000Base-X SFP ports. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40°C to 75°C. IGS-9168GP can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.

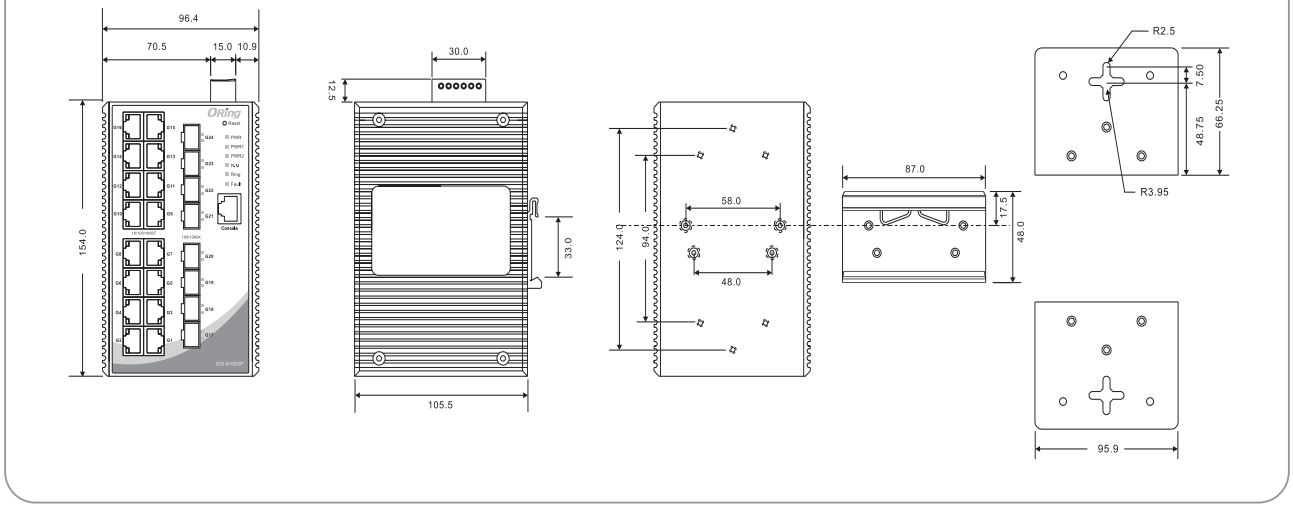
***NOTE: This function is available by request only**

- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



*NOTE: This function is available by request only

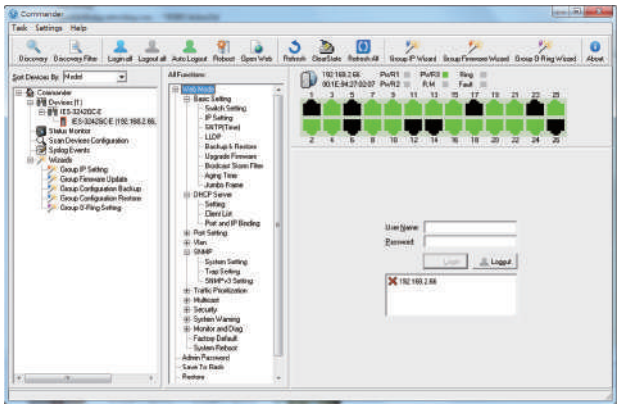
Dimensions



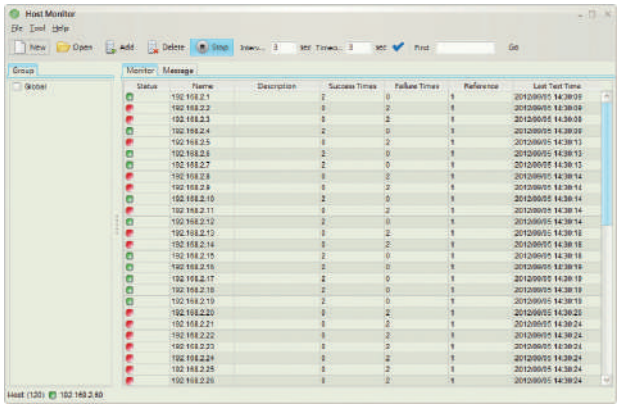
(Unit=mm)

Open-Vision

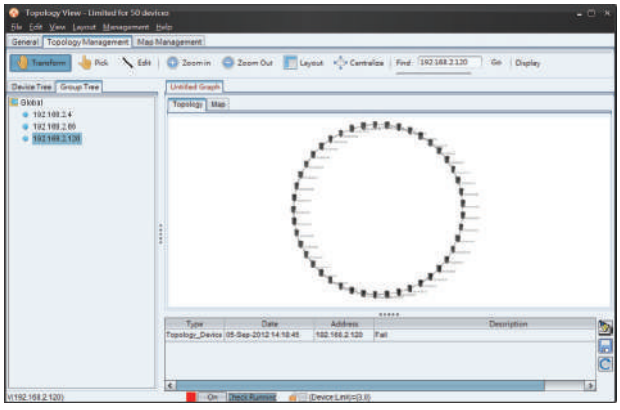
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor



Topology View

Specifications

ORing Switch Model	IGS-9168GP
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	16
100/1000Base-X with SFP port	8
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8K
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 48Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP server
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1 **(supported backup unit)**
LED Indicators	
Power Indicator(PWR)	Green : Power LED x 2
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator(Fault)	Amber : Indicate unexpected event occurred

***NOTE: This function is available by request only**

10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps
100/1000Base-X SFP port Indicator	Top green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block (Max. rating is 60VDC on Rev.2)
Power Consumption (Typ.)	20 Watts (Full loading)
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	96.4 (W) x 105.5 (D) x 154 (H) mm (3.8 x 4.15 x 6.06 inch)
Weight (g)	1265 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	507660 hours
Warranty	5years

Ordering Information

IGS-9 AA B CC

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 16:** 16 ports	**- 8:** 8 ports	**-GP:** Gigabit SFP ports

Available Model	Model Name	Description
	IGS-9168GP	Industrial 24-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) ports and 8x100/1000Base-X, SFP socket

Packing List

- IGS-9168GP x 1
- DIN-Rail Kit x 1
- ORing Tool CD x 1
- Wall-mount Kit x 2
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DR-75 series : 75 Watts DIN-Rail power supply
- DBU-01 : backup unit device

IGS-9164GF/FX Series

IGS-9164GF/FX Series

Industrial 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX or 1000Base-X fiber ports

Features

- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- Supports IEEE 1588v2 clock Synchronization
- Supports IPV6 new internet protocol version
- Supports Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Supports IEEE 802.3az **Energy-Efficient Ethernet** technology
- Supports SMTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Supports "DBU-01" backup unit for quickly configuration backup/restore
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

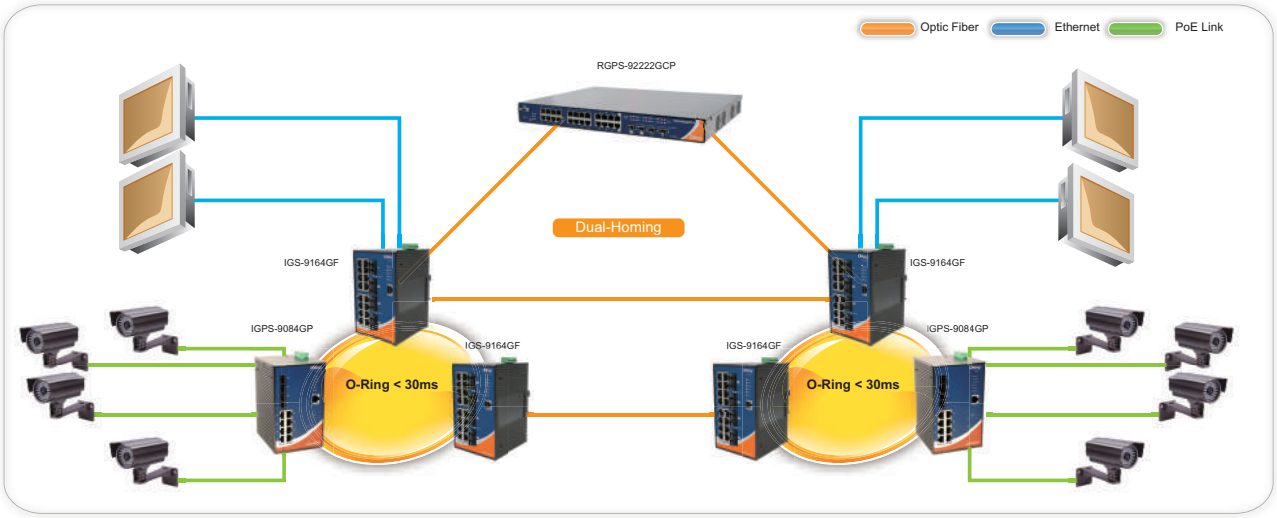
Introduction

IGS-9164GF/FX series are managed redundant ring Ethernet switch with 16x10/100/1000Base-T(X) ports and 4-port fixed optical fiber port. IGS-9164GF provided 4x1000Base-X fiber ports and IGS-9164FX provided 4x100Base-FX fiber ports. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) /Open-Ring/O-Chain/MRP*NOTE/Fast Recovery and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 to 75°C. IGS-9164GF/FX series can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.

***NOTE: This function is available by request only**

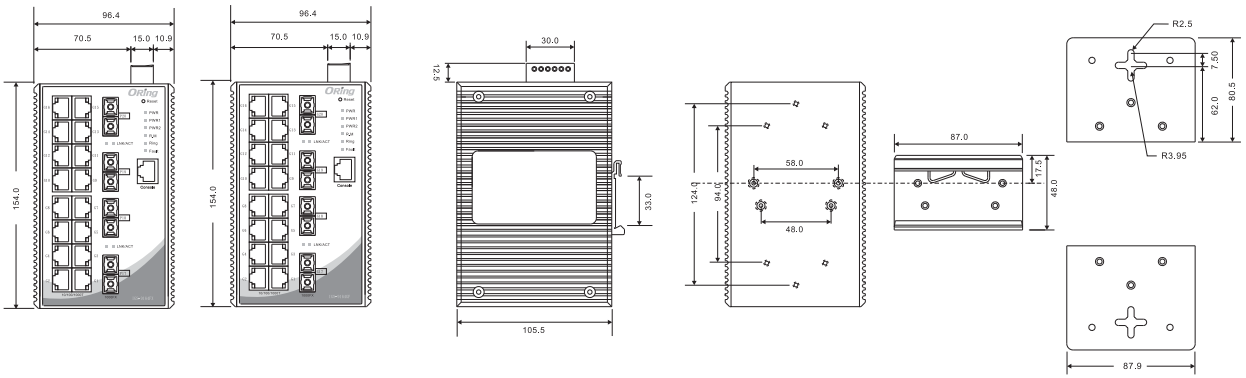
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



*NOTE: This function is available by request only

Dimensions

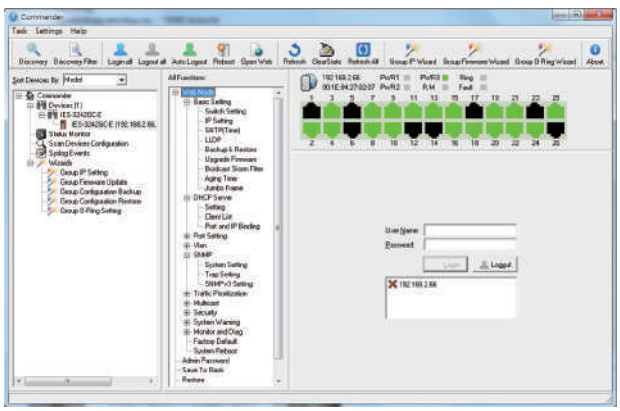
Dimension (Unit =mm)



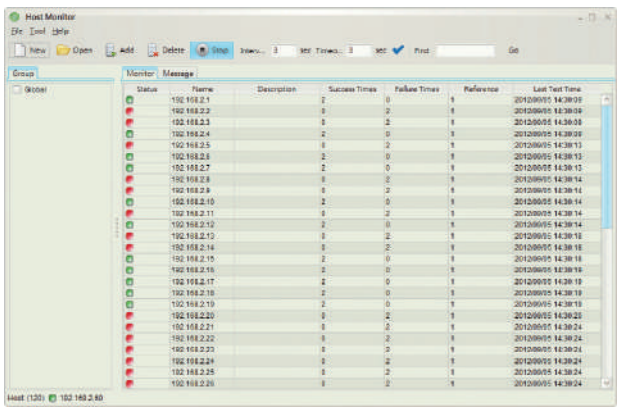
(Unit=mm)

Open-Vision

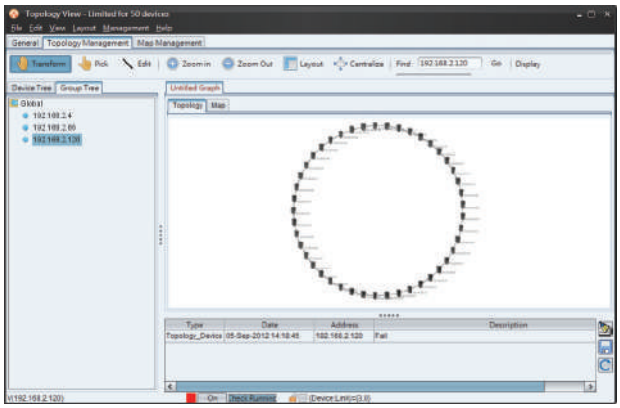
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor



Topology View

Specifications

ORing Switch Model		IGS-9164GF-MM-SC	IGS-9164GF-SS-SC	IGS-9164FX-MM-SC	IGS-9164FX-SS-SC
Physical Ports					
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX		16	16	16	16
Fiber Ports Specifications	Fiber Ports Number	4	4	4	4
	Fiber Ports Standard	1000Base-SX	100Base-LX	100Base-FX	100Base-FX
	Fiber Mode	Multi-mode	Single-mode	Multi-mode	Single-mode
	Fiber Diameter (μm)	62.5/125 μm 50/125 μm	9/125 μm	62.5/125 μm 50/125 μm	9/125 μm
	Fiber Optical Connector	SC	SC	SC	SC
	Typical Distance (km)	0.55 km	10 km	2 km	30 km
	Wavelength (nm)	850 nm	1310 nm	1310 nm	1310 nm
	Max. Output Optical Power (dBm)	-4 dBm	-3 dBm	-14 dBm	-8 dBm
	Min. Output Optical Power (dBm)	-9.5 dBm	-9.5 dBm	-23.5 dBm	-15 dBm
	Max. Input Optical Power (Saturation)	0 dBm	-3 dBm	0 dBm	0 dBm
	Min. Input Optical Power (Sensitivity)	-18 dBm	-20 dBm	-31 dBm	-34 dBm
	Link Budget (dB)	8.5 dB	10.5 dB	7.5 dB	19 dB
Technology					
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)			
MAC Table		8K			
Priority Queues		8			
Processing		Store-and-Forward			
Switch Properties		Switching latency: 7 us Switching bandwidth: 40Gbps Max. Number of Available VLANs : 4095 VLAN ID Range : 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define			
Jumbo frame		Up to 9.6K Bytes			
Security Features		Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security			
Software Features		STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP			

Network Redundancy	O-Ring Open-Ring O-Chain MRP*NOTE MSTP (RSTP/STP compatible)	
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1	
LED Indicators		
Power Indicator(PWR)	Green : Power LED x 3	
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.	
Fault Indicator(Fault)	Amber : Indicate unexpected event occurred	
10/100/1000Base-T(X) RJ45 Port Indicato	Up Green LED for Link/Act indicator. Down dual color LED : Green for 1000Mbps indicator, Amber for 10/100Mbps indicator	
1000Base-X Fiber Port Indicator (IGS-9164GF series model only)	Green for port Link/Act.	
100Base-FX Fiber Port Indicator (IGS-9164FX series model only	Green for port Link/Act.	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input Power	Dual DC inputs. 12~48 VDC on 6-pin terminal block	
Power Consumption (Typ.)	16.32 Watts	18.5 Watts
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	96.4 (W) x 105.5 (D) x 154 (H) mm (3.8 x 4.15 x 6.06 inch)	
Weight (g)	1243 g	1228 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5years	

***NOTE: This function is available by request only**

Ordering Information

IGS-9 AA B CC-DD-EE

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 16:** 16 ports	**- 4:** 4 ports	**-GF:** 1000Base-X port **-FX:** 100Base-FX port	**- MM:** Multi-mode **- SS:** Single-mode	**- SC:** SC connector

	Model Name	Description
Available Model	IGS-9164GF-MM-SC	Industrial 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector
	IGS-9164GF-SS-SC	Industrial 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector
	IGS-9164FX-MM-SC	Industrial 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector
	IGS-9164FX-SS-SC	Industrial 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector

Packing List

- IGS-9164GF/FX
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- DBU-01 : Backup unit device

IGS-9122GP

IGS-9122GP

Industrial 14-port managed Gigabit Ethernet switch with 12x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket

Features

- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock Synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Support SMTP client & NTP server
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Support hardware watch dog function
- Included onboard buzzer for warning alarm
- Support loop guard to solve Ethernet loop issue
- Support serial console backup unit to backup configuration
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Supports backup unit device **DBU-01** to quickly configuration backup/restore

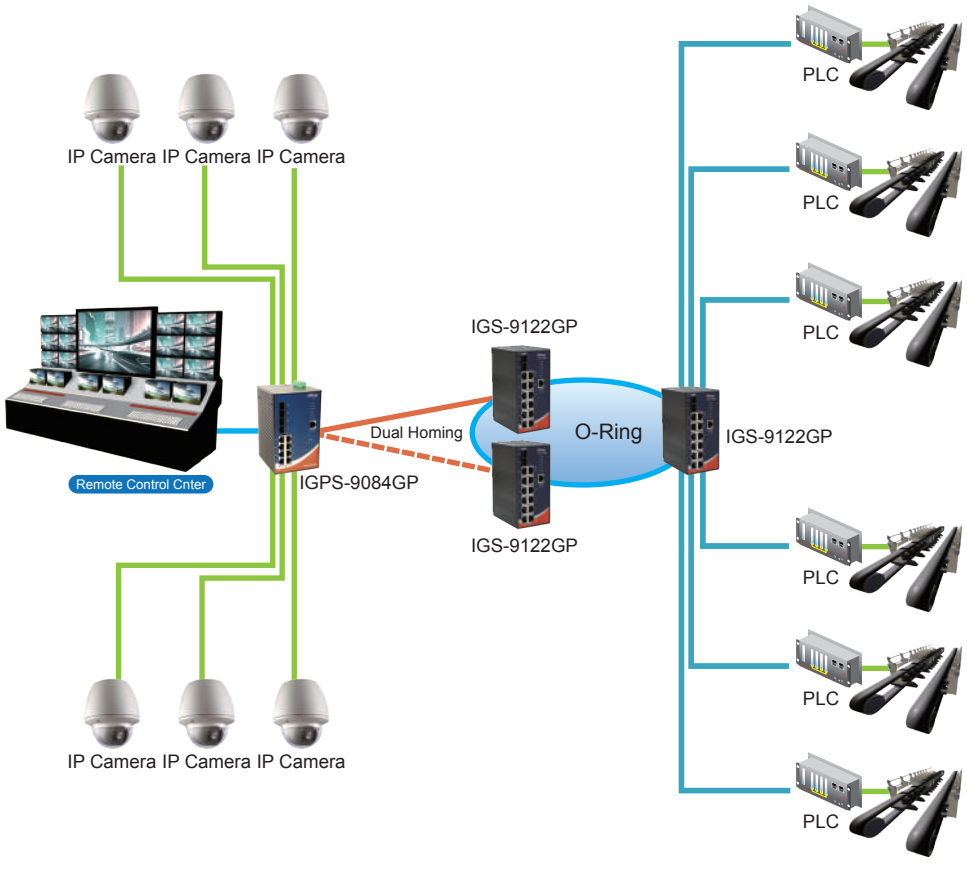
R6 READY | Full Gigabit | O-Ring | Redundant PWR | -40~75°C Temperature | RoHS Lead Free | CE | FC

Introduction

ORing's managed Ethernet switches are designed for industrial applications, such as rolling stock and vehicle applications. IGS-9122GP is managed redundant ring Ethernet switch with 12x10/100/1000Base-T(X) copper ports and 2x100/1000Base-X SFP ports. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) 、Open-Ring 、O-Chain 、MRP*NOTE and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40°C to 75°C. IGS-9122GP can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

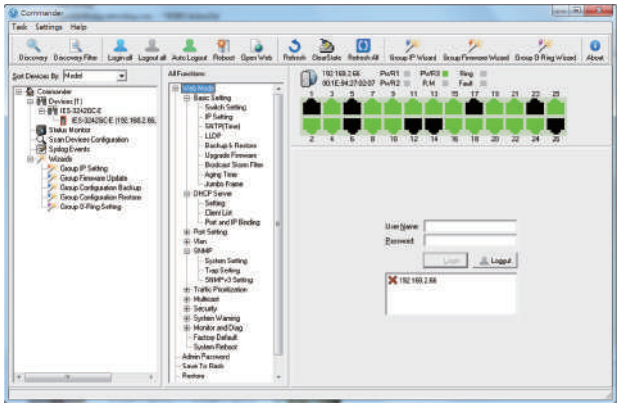
***NOTE: This function is available by request only**

- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring :** Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP***NOTE : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management :** The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS :** The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function :** ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention :** The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology :** The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP :** This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet :** This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

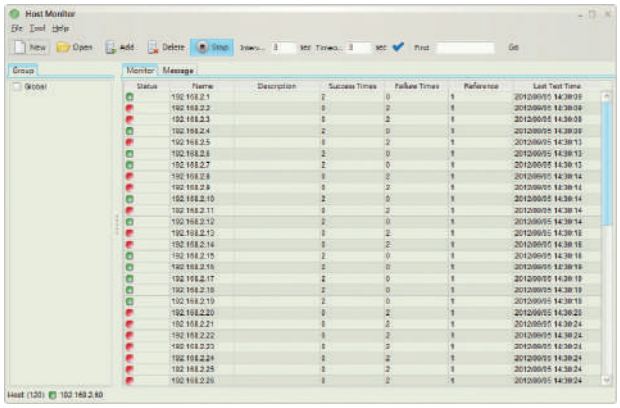


Open-Vision

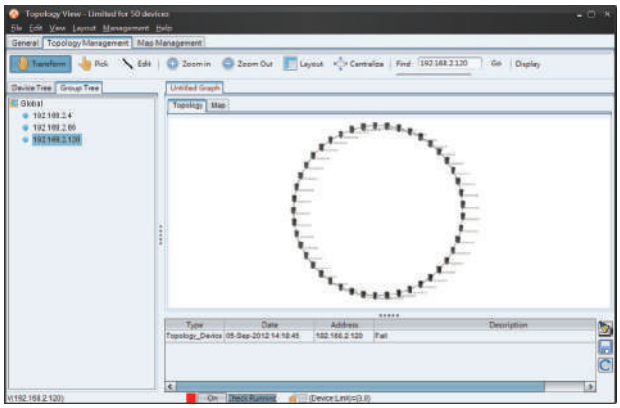
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision v3.0) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

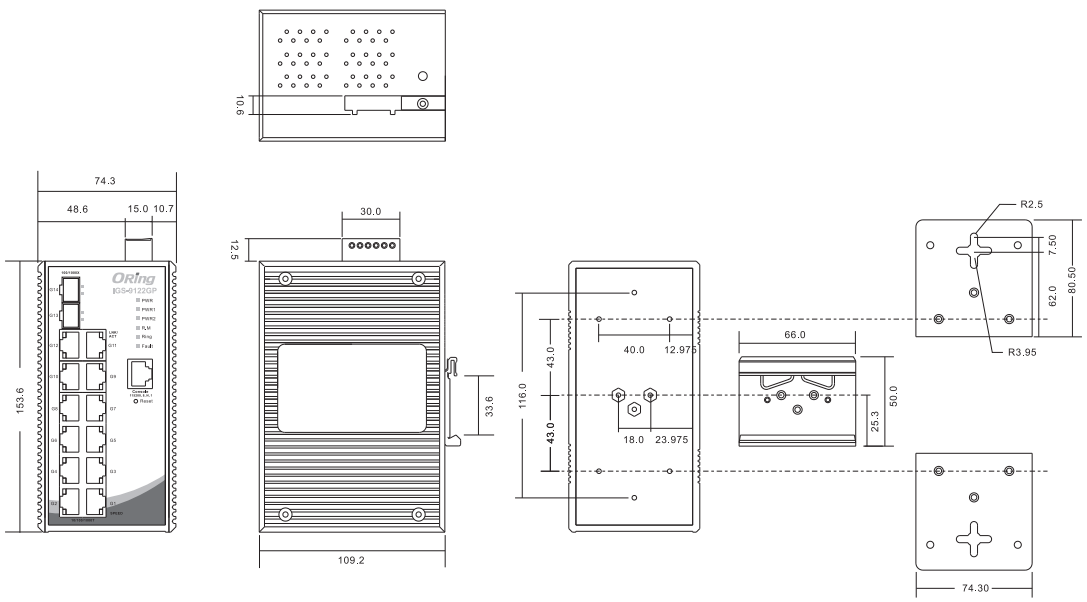


Host Monitor



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGS-9122GP
Physical Ports	
10/100/1000Base-T(X) in RJ45 Auto MDI/MDIX	**12**
100/1000Base-X with SFP port	**2**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 28Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP Server
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1 (support backup unit)
LED indicators	
Power Indicator (PWR)	Green : Power LED x 3
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred

***NOTE: This function is available by request only**

10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Dual color LED for speed indicator ~ Green for 1000Mbps / Amber for 100Mbps / off-light for 10Mbps
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 12~48VDC on 6-pin terminal block
Power consumption (Typ.)	12.67 Watts
Overload current protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	74.3 (W) x 109.2 (D) x 153.6 (H)mm (2.93 x 4.3 x 6.05 inch)
Weight (g)	1160 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IGS-9 AA B CC

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 12:** 12 ports	**- 2:** 2 ports	**-GP:** Gigabit SFP ports

Available Model	Model Name	Description
	IGS-9122GP	Industrial 14-port managed Gigabit Ethernet switch with 12x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket

Packing List

- IGS-9122GP x 1
- DIN-Rail Kit x 1
- Wall-mount Kit x 2
- ORing Tool CD x 1
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DBU-01 : Backup unit device

IGS-9084GP

IGS-9084GP

Industrial 12-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) and 4x100/1000Base-X, SFP socket

Features

- Designed for Railway application and fully compliant with the requirement of EN50155/EN50121-4 standard
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock Synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Support SMTP client and NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

R6 READY | EN50155 | Full Gigabit | O-Ring | Redundant PWR | -40~75°C Temperature

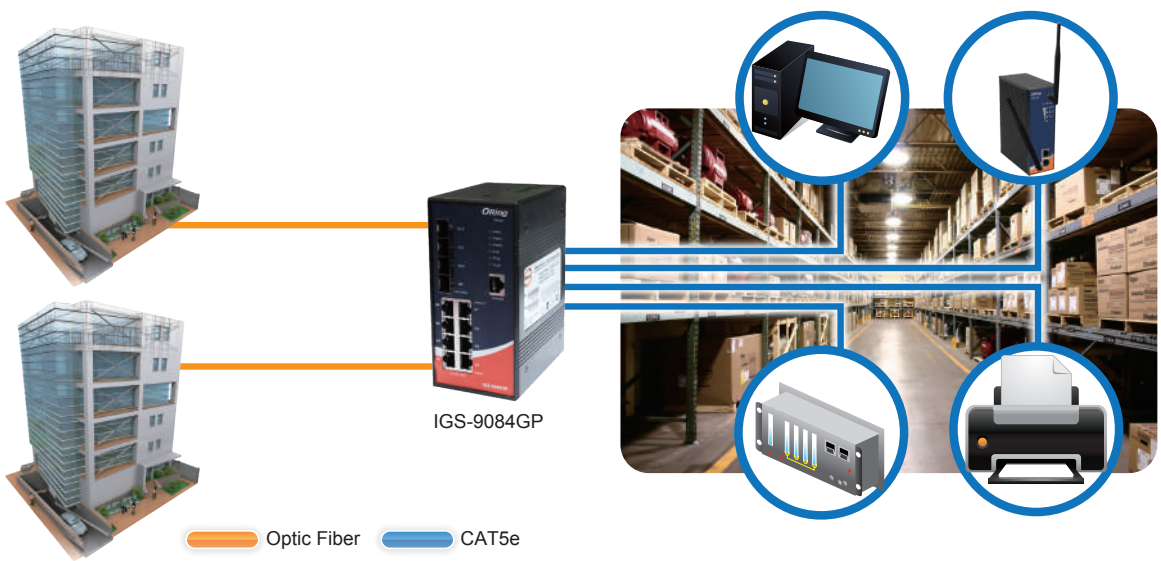
RoHS Lead Free | CE | FC

Introduction

IGS-9084GP is managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP ports. The switch is designed for Railway application and fully compliant with the requirement of EN50155/EN50121-4 standard. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40°C to 75°C. IGS-9084GP can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. In addition, with its rugged design for railway certification, i.e., EN50155/EN50121-4 standard, make IGS-9084GP to be solid and reliable for railway traffic communication and transportation application. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

***NOTE: This function is available by request only**

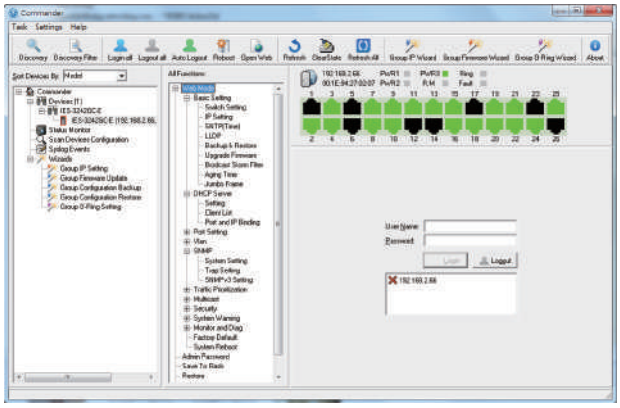
- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



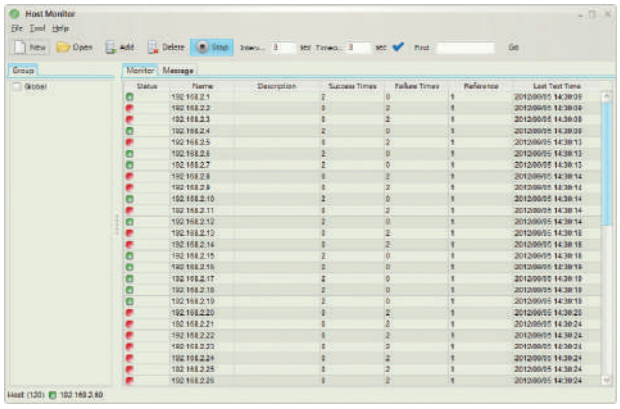
***NOTE: This function is available by request only**

Open-Vision

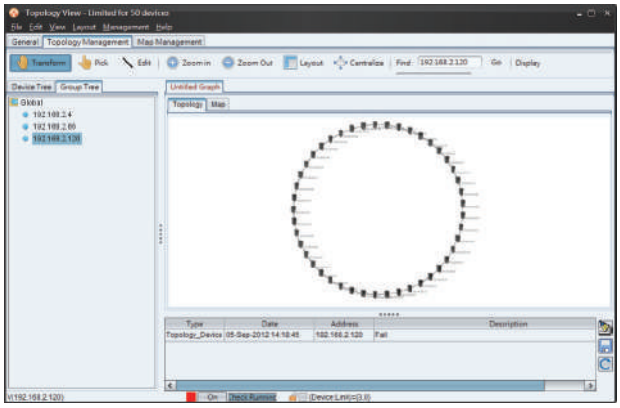
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision v3.0) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

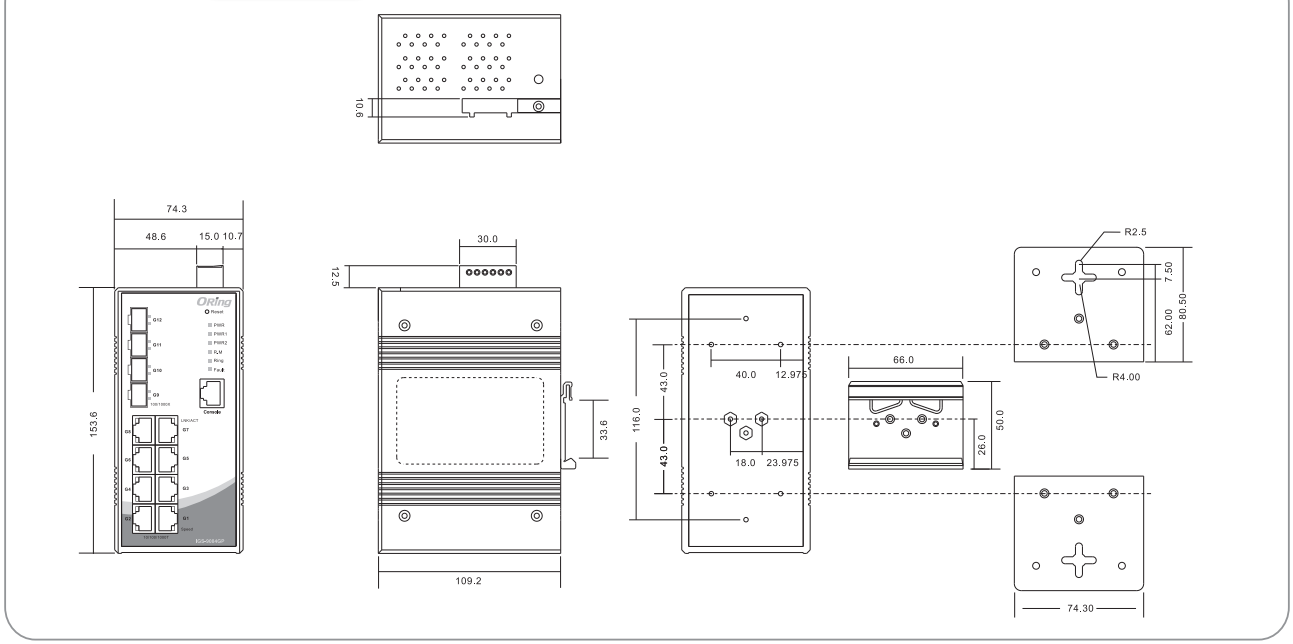


Host Monitor



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGS-9084GP Rev.2
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8
100/1000Base-X with SFP port	4
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8K
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 24Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP server
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ-45 connector with console cable. 115200bps, 8, N, 1
Switch LED indicators	
Power Indicator (PWR/1/2)	Green : Power LED x 3
R.M. indicator (R.M.)	Green : indicate system operated in O-Ring Master mode
Ring indicator (Ring)	Green : indicate system operated in O-Ring mode
Fault indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 port indicator	Green for Link/Act indicator. Amber for duplex indicator

***NOTE: This function is available by request only**

100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48 VDC on 6-pin terminal block (Max. Rating is 60VDC on Rev.2)
Power Consumption (Typ.)	12.5 Watts
Overload Current Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	74.3 (W) x 109.2 (D) x 153.6 (H) mm (2.93 x 4.3 x 6.05 inch) on Rev.2
Weight (g)	1070 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	EN 55032, EN 55024 (CE EMC), FCC Part 15 B, EN50121-1, EN 50121-3-2 (EN50155), EN 50121-4, EN 61000-6-2, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3
EMC	CISPR 32, EN 55032, FCC Part 15 B class A, C-Tick
CE/EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8(PFMF), IEC 61000-4-11(DIP)
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	EN 60950-1
Other	IEC 60945, EN 60945, EN 50155
MTBF	754727 hours
Warranty	5 years

Ordering Information

IGS-9 AA B CC

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 08:** 8 ports	**- 4:** 4 ports	**-GP:** Gigabit SFP ports

Available Model	Model Name	Description
	IGS-9084GP	Industrial 12-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) and 4x100/1000Base-X, SFP socket

Packing List

- IGS-9084GP x 1
- DIN-Rail Kit x 1
- ORing Tool CD x 1
- Wall-mount Kit x 2
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DR/SDR/DRP Series DIN-Rail power supply
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DBU-01 : Data backup unit device

IGS-9084GP-FB2 Series

IGS-9084GP-FB2 Series

Industrial 12-port managed Gigabit bypass Ethernet switch with 8x10/100/1000Base-T(X) and 4x100/1000Base-X, SFP socket, LC connector bypass

Features

- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock Synchronization
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Supports SMTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Support 100M/1G/10G optical bypass function of 2 port duplex or 4 port simplex fiber connection
- Bypass switching time < 10ms and throughput not affected and no extra delay
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Supports backup unit device **DBU-01** to quickly configuration backup/restore

Introduction

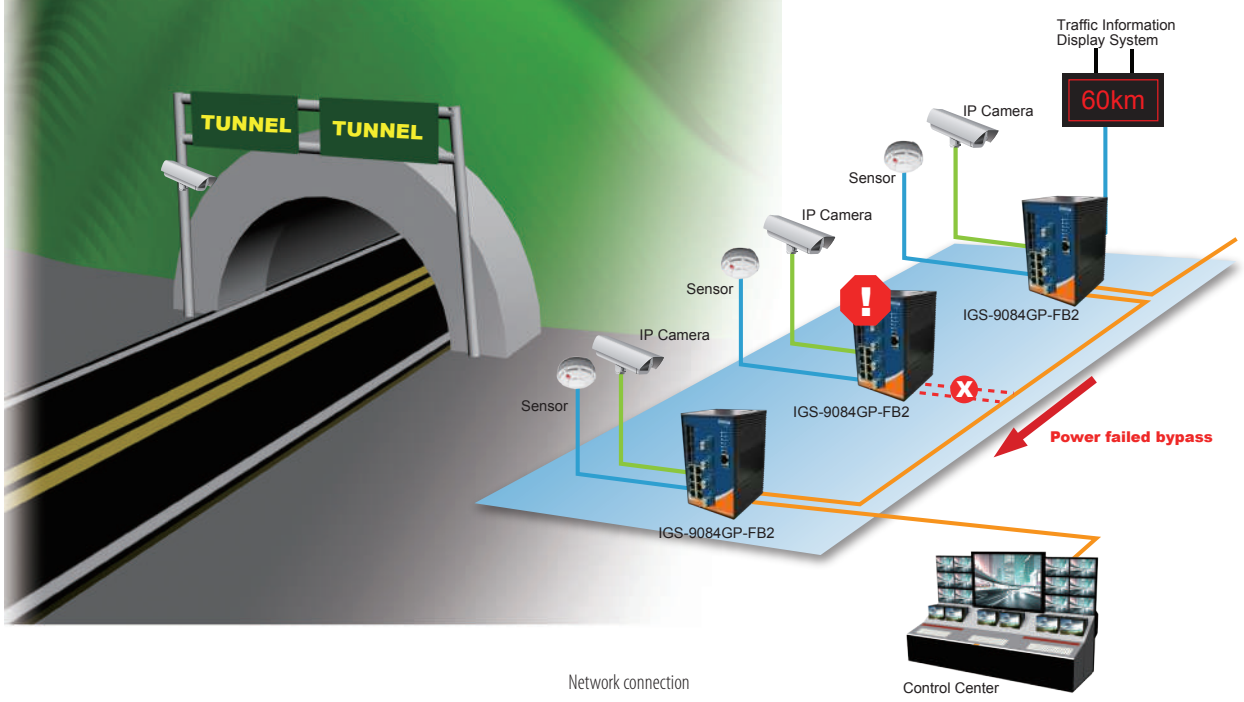
IGS-9084GP-FB2 Series is managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports and 4x100/1000Base-X SFP ports and provided 4xLC connector optical bypass function. These fiber optical bypass switch protect the network from failures and Network maintenance by ensuring network integrity during power loss. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 to 75°C. IGS-9084GP-FB2 Series can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

***NOTE: This function is available by request only**

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

***NOTE: This function is available by request only**

Tunnel Application



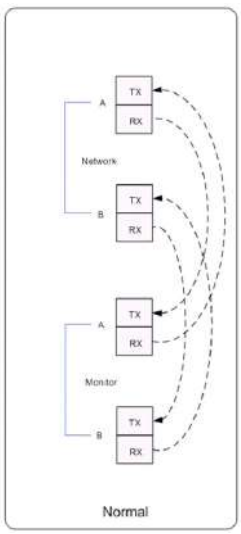
Optical Bypas Operation

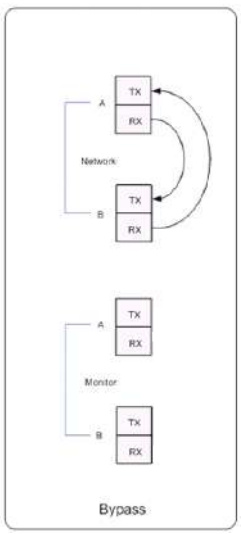
Normal mode:

The Bypass switch diver the data from the Network ports data to the Monitor ports

Bypass mode:

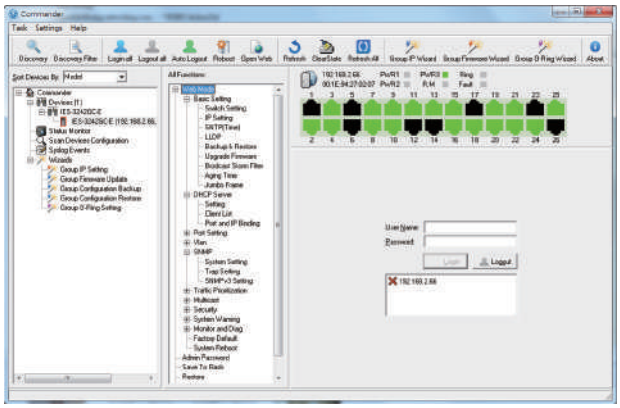
The Network data traffic routed directly to the other Network port. And the Monitor data traffic routed directly to the other Monitor port.



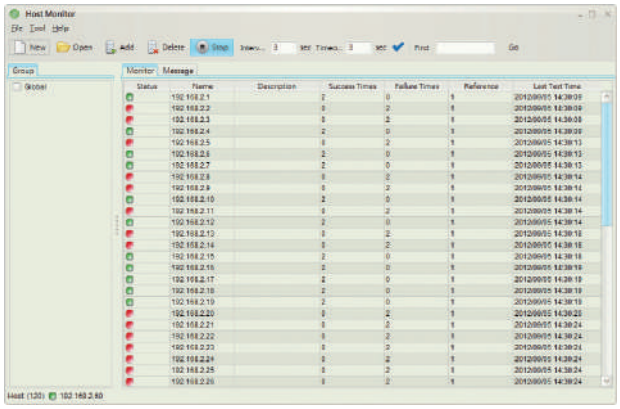


Open-Vision

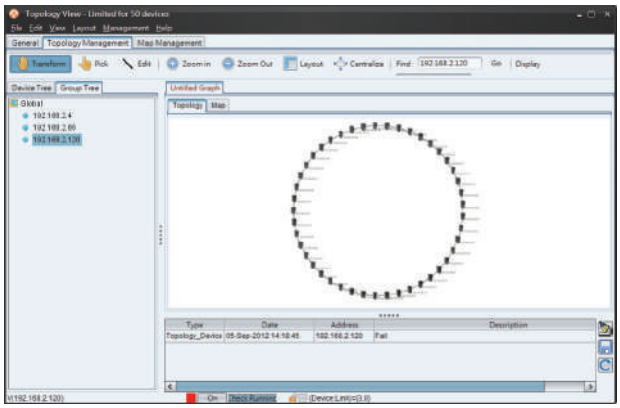
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

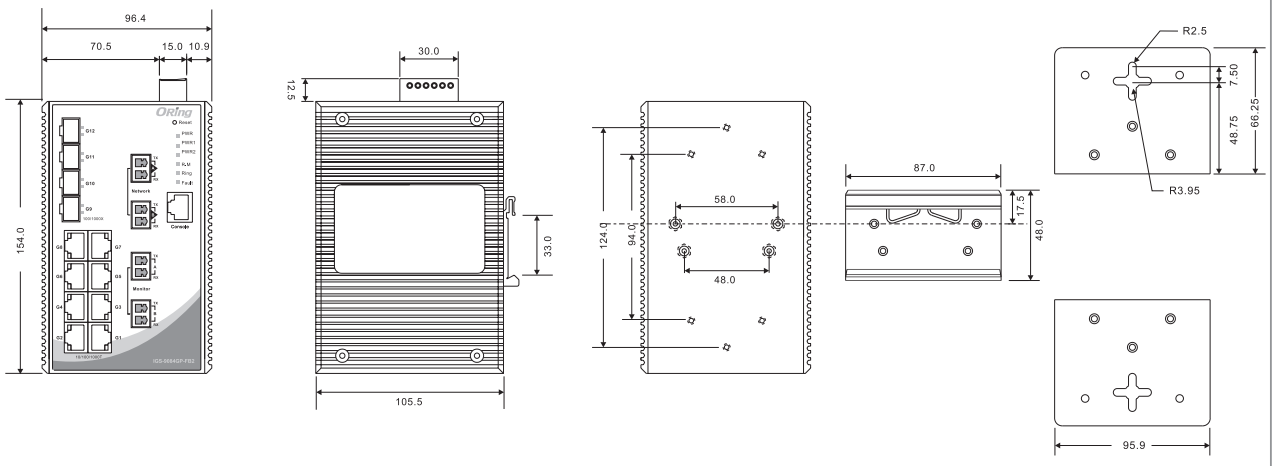


Host Monitor



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGS-9084GP-FB2-SS	IGS-9084GP-FB2-MM
Physical Ports		
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8	
100/1000Base-X SFP Port	4	
LC Bypass Port Type	Single-Mode	Multi-Mode
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8K	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency : 7 µs Switching bandwidth : 24Gbps Max. Number of Available VLANs : 4095 VLAN ID Range : 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define	
Jumbo frame	Up to 9.6K Bytes	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security	
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP	
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)	
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1	
Switch LED indicators		
Power Indicator (PWR/1/2)	Green : Power LED x 3	
R.M. indicator (R.M.)	Green : indicate system operated in O-Ring Master mode	
Ring indicator (Ring)	Green : indicate system operated in O-Ring mode	
Fault indicator (Fault)	Amber : Indicates unexpected event occurred	
10/100/1000Base-T(X) RJ45 port indicator	Green for Link/Act indicator. Amber for duplex indicator	

***NOTE: This function is available by request only**

100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48 VDC on 6-pin terminal block
Power Consumption (Typ.)	13 Watts
Overload Current Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	96.4 (W) x 105.5 (D) x 154 (H) mm(3.8 x 4.15 x 6.06 inch)
Weight (g)	1205 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IGS-9 AA B CC-FB2-DD-LC

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode
Option	**- 08:** 8 ports	**- 4:** 4 ports	**-GP:** Gigabit SFP ports	**-MM:** Multi-mode **-SS**: Single-mode

	Model Name	Description
Available Model	IGS-9084GP-FB2-MM-LC	Industrial 12-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) and 4x100/1000Base-X, SFP socket
	IGS-9084GP-FB2-SS-LC	Industrial 12-port managed Gigabit bypass Ethernet switch with 8x10/100/1000Base-T(X) and 4x100/1000Base-X, SFP socket, single-mode LC connector bypass

Packing List

- IGS-9084GP
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- DBU-01 : Data backup unit device

IGS-9042GP

IGS-9042GP

Industrial 6-port managed Gigabit Ethernet switch with 4x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket

Features

- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Supports IEEE 1588v2 clock synchronization
- Supports IPV6 new internet protocol version
- Supports Modbus TCP protocol
- Supports IEEE 802.3az E**nergy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Supports SMTP client and NTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Supports ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support **DBU-01** data backup unit device for quickly backup/restore configuration
- Supports LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

R6 READY | Full Gigabit | O-Ring | Redundant PWR | -40~75°C Temperature | RoHS Lead Free | CE | FC

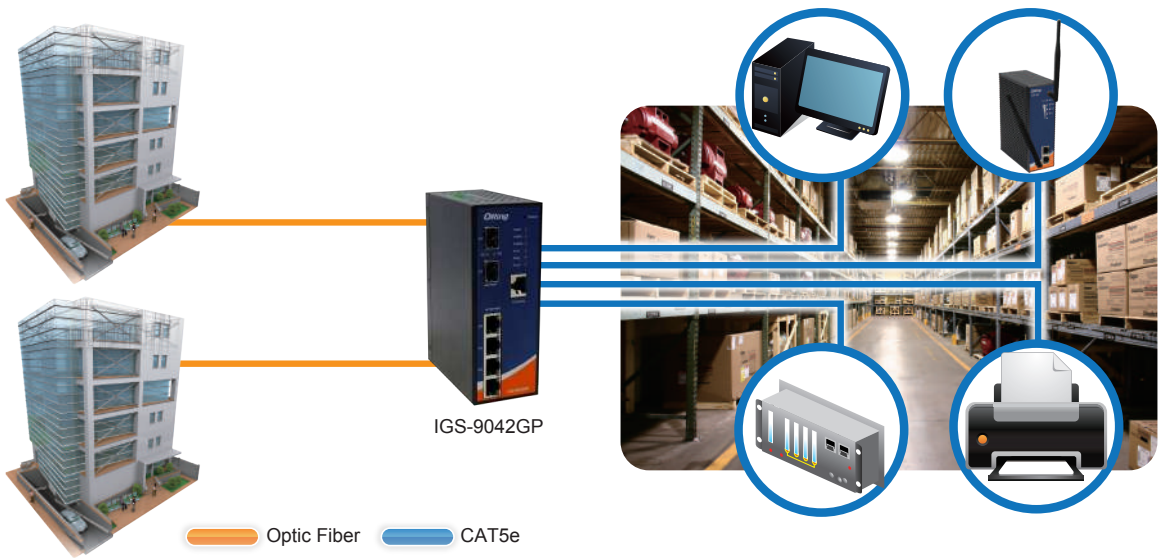
Introduction

IGS-9042GP is managed redundant ring Ethernet switches with 4x10/100/1000Base-T(X) ports and 2x100/1000Base-X SFP ports. The switch support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 °C to 75 °C. IGS-9042GP can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, these switches is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring :** Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.

***NOTE: This function is available by request only**

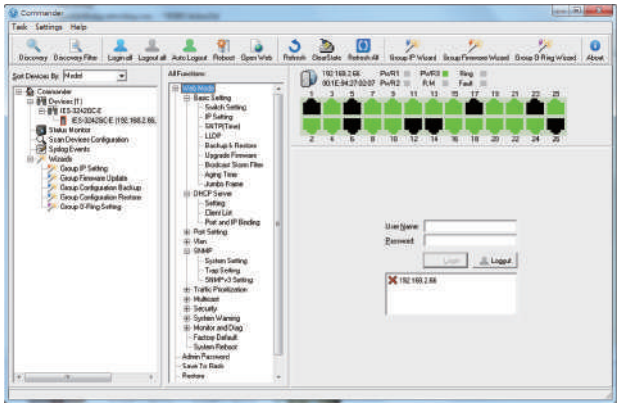
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management :** The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS :** The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function :** ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention :** The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology :** The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP :** This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet :** This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



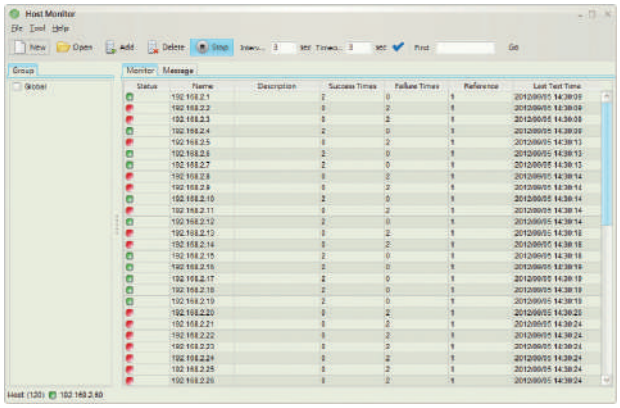
***NOTE: This function is available by request only**

Open-Vision

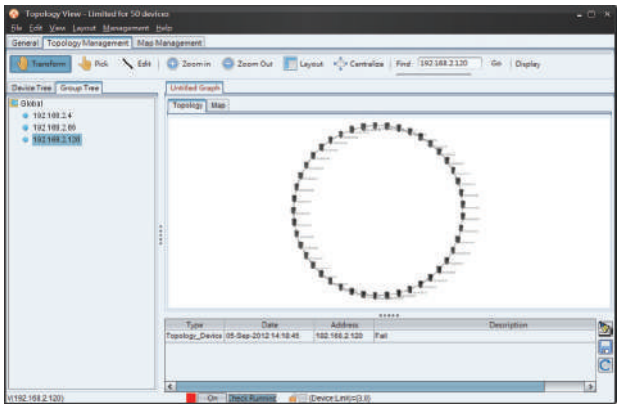
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision v3.0) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

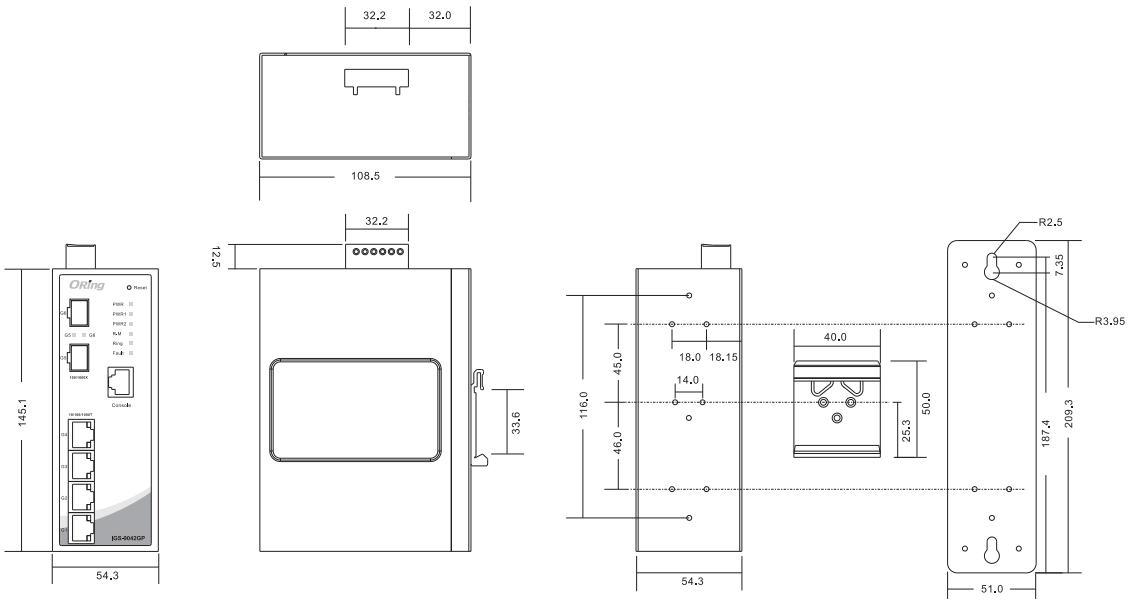


Host Monitor



Topology View

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGS-9042GP
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	4
100/1000Base-X with SFP port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8K
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 12Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP client
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED indicators	
Power Indicator (PWR)	Green : Power LED x 3
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred

***NOTE: This function is available by request only**

10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Dual color LED for speed indicator : Green for 1000Mbps / Amber for 100Mbps / Off-light for 10Mbps
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 12~48VDC on 6-pin terminal block
Power consumption (Typ.)	8 Watts
Overload current protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	54.3 (W) 108.5 (D) x 145.1 (H)mm
Weight (g)	803 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	849642 hrs
Warranty	5 years

***NOTE: HW version 3.0**

Ordering Information

IGS-9 AA B CC

Code Definition	10/100/1000Base-T(X) Port Number	100/1000Base-X SFP Port Number	Additional Port Type
Option	**- 04:** 4 ports	**- 2:** 2 ports	**-GP:** Gigabit SFP ports

	Model Name	Description
Available Model	IGS-9042GP	Industrial 6-port managed Gigabit Ethernet switch with 4x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket

Packing List

- IGS-9042GP x 1
- DIN-Rail Kit x 1
- ORing Tool CD x 1
- Wall-mount Kit x 2
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply

IGS-9080 Series

IGS-9080 Series

Industrial 8-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X)

Features

- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Supports standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Supports IEEE 1588v2 clock synchronization (-NP model is not supported)
- Supports IPV6 new internet protocol version
- Supports Modbus TCP protocol
- Supports IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Supports SMTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Supports ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Supports LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Supports backup unit device **DBU-01** to quickly configuration backup/restore

Introduction

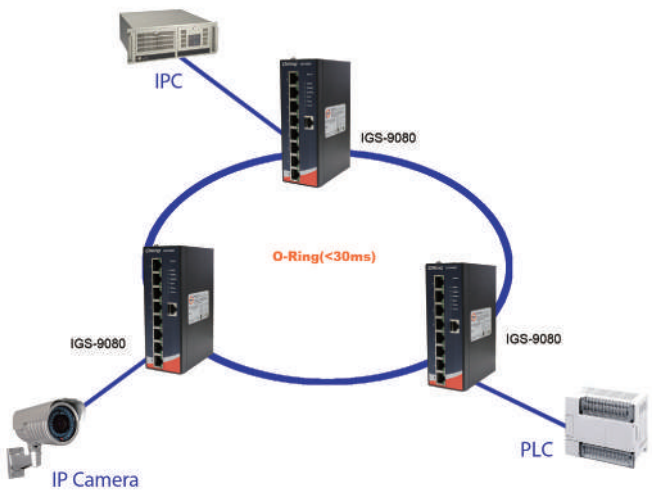
IGS-9080 series are managed redundant ring Ethernet switches with 8x10/100/1000Base-T(X) copper ports. These switches support Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 oC to 75°C. IGS-9080 series can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for highly-managed Ethernet application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r

  edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.

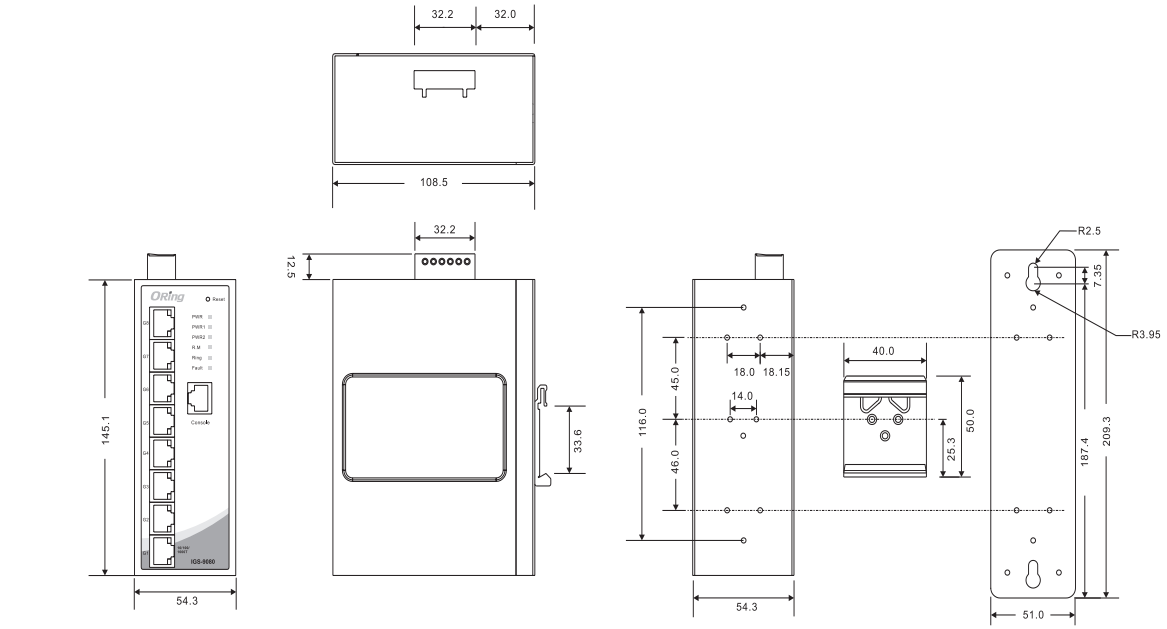
***NOTE: This function is available by request only**

- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



***NOTE: This function is available by request only**

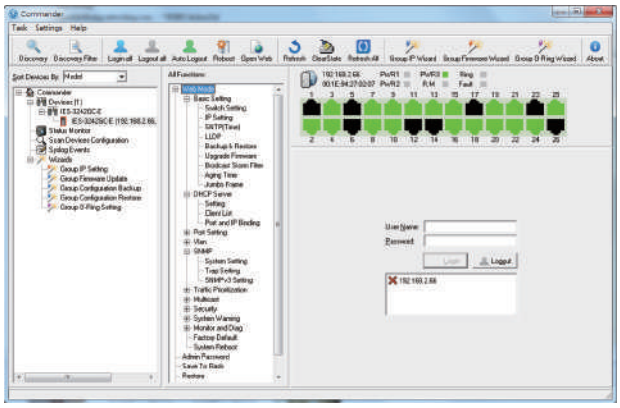
Dimensions



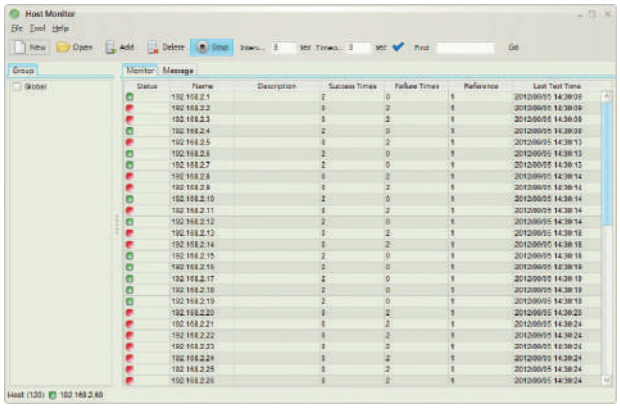
(Unit=mm)

Open-Vision

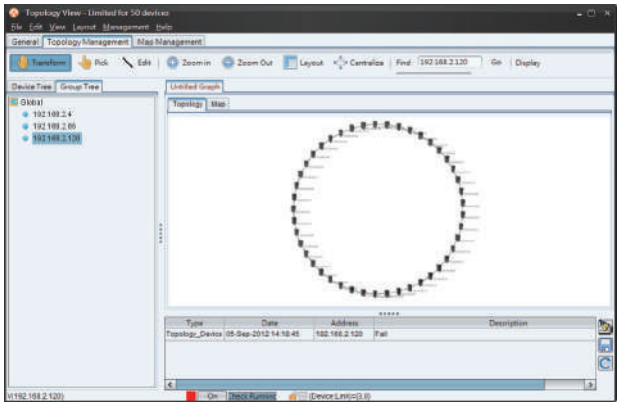
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor



Topology View

Specifications

ORing Switch Model	IGS-9080	IGS-9080-NP
Physical Ports		
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 1588v2 clock synchronization	
IEEE 1588v2 clock synchronization	supported	unsupported
MAC Table	8K	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 16Gbps Max. Number of Available VLANs : 4095 VLAN ID Range : 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define	
Jumbo frame	Up to 9.6K Bytes	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security	
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP	
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)	
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1	
LED Indicators		
Power Indicator(PWR)	Green : Power LED x 3	
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.	
Fault Indicator(Fault)	Amber : Indicate unexpected event occurred	
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act indicator. Dual color LED for speed indicator : Green (1000M) / Amber (100M) / Off-light (10M).	

***NOTE: This function is available by request only**

Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block	
Power Consumption (Typ.)	11 Watts	11 Watts
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	54.3(W)x106.1(D)x145.4(H) mm (2.13x4.18x5.72 inch.)	
Weight (g)	756 g	754 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5years	

Ordering Information

IGS-9AAB-CC-DDD

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	IEEE 1588v2 function
Option	**- 08:** 8 ports	**- 0:** 0 ports	**-NP:** unsupported IEEE 1588v2

	Model Name	Description
Available Model	IGS-9080	Industrial 8-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X)
	IGS-9080-NP	Industrial 8-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X)

Packing List

- IGS-9080 Series
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- DBU-01 : Backup unit device

IGS-3044GC

IGS-3044GC

Industrial 8-port managed Gigabit Ethernet switch with 4x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket

Features

- Fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 30ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support Modbus TCP protocol
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Supports **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Supports **DDM** (Digital Diagnostic Monitoring) function
- Supports LLDP (Link Layer Discovery Protocol)
- Support TACACS+ and 802.1x User Authentication for security
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Port lock to prevent access from unauthorized MAC address
- Windows utility **(Open-Vision)** support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- Supports eight Gigabit ports
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

R6 READY | Full Gigabit | O-Ring | Redundant PWR | -10~60°C Temperature

RoHS Lead Free

Introduction

IGS-3044GC is managed redundant ring Ethernet switch with 4x10/100/1000Base-T(X) and 4xGigabit Combo ports. With complete support of Ethernet redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection), **Open-Ring**, and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IGS-3044GC can be managed centralized and convenient by a powerful windows utility — **Open-Vision**. IGS-3044GC support new DDM (Digital Diagnostic Monitoring) function, which can monitor instantly the status of electrical voltage, current and temperature. The redundant DC power inputs guarantee a non-stop operation. The backup power input will take over immediately when the primary DC power input fails. IGS-3044GC provides relay outputs that can be set up to indicate events with urgency to notify or warn the technicians, so they can quickly respond to the message in priority. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

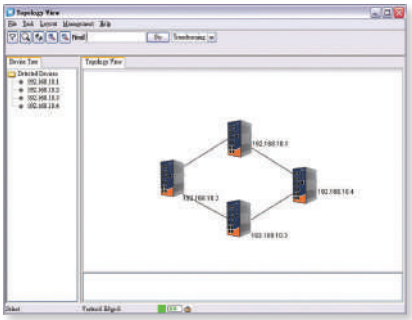
Open-Vision

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.

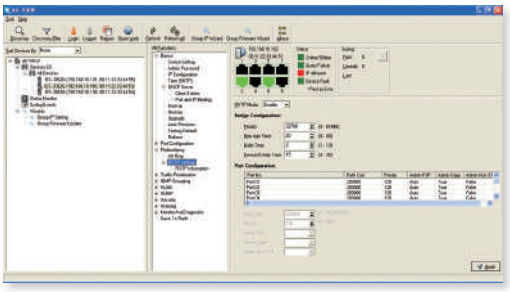
***NOTE: This function is available by request only**

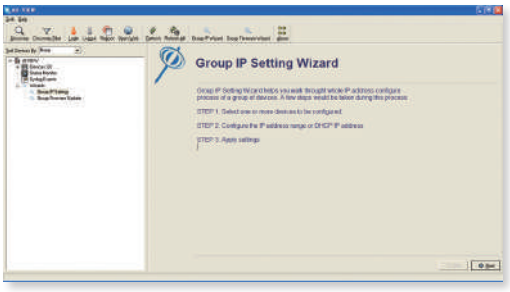
Network connection

DDM function



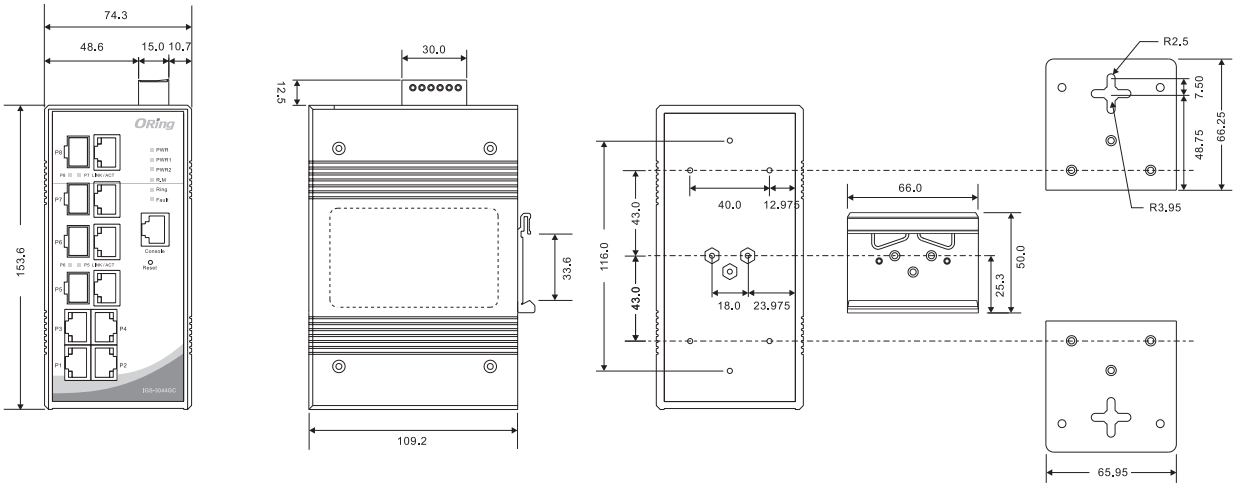
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGS-3044GC
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	4
Gigabit Combo Ports with 10/100/1000Base-T(X) and 100/1000Base-X SFP Port	4
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP(Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency : 7 µs Switching bandwidth : 16Gbps Max. Number of Available VLANs : 4096 IGMP multicast groups : 1024 Port rate limiting : User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronizing Function DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring O-Chain Open-Ring STP MRP*NOTE RSTP:2004 MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power Indicator	Green : Power LED x 3
R.M. Indicator	Green : Indicates that the system is operating in O-Ring Master mode
Ring Indicator	Green : Indicates that the system is operating in O-Ring mode

***NOTE: This function is available by request only**

Fault Indicator	Amber : Indicates unexpected event occurred
10/100/1000Base-T(X) RJ45 port Indicator	Green for port Link/Act. Amber for 100Mbps indicator
100/1000Base-X SFP port Indicator	Green for port Link/Act.
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48 VDC on 6-pin terminal block
Power Consumption (Typ.)	22.8 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	74.3(W)x109.2(D)x153.6(H) mm (2.93x4.3x6.05 inch)
Weight (g)	1075g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	214,978
Warranty	5 years

Ordering Information

IGS-3 AA B CC

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 04:** 4 ports	**- 4:** 4 ports	**-GC :** Gigabit Combo Port

	Model Name	Description
Available Model	IGS-3044GC	Industrial 8-port managed Gigabit Ethernet switch with 4x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket

Packing List

- IGS-3044GC
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IGS-3032GC

IGS-3032GC

Industrial 5-port managed Gigabit Ethernet switch with 3x10/100/1000Base-T(X) and 2xGigabit combo ports, SFP socket

Features

- Designed for Railway application and fully compliant with the requirement of EN50155 standard
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 30ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP/MSTP supported
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Support Modbus/TCP protocol
- Support jumbo frame up to 9KBytes
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, and Console (CLI) configurations
- Supports jumbo frame up to 9KBytes
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Support LLDP Protocol

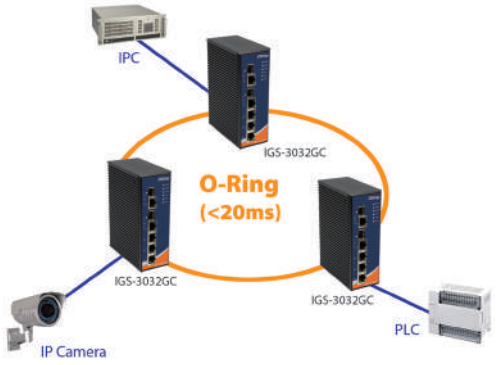
Introduction

IGS-3032GC is a full gigabit managed Redundant Ring Ethernet switch with 3x10/100/1000Base-T(X) and 2xGigabit combo ports. The switch is designed for Railway application and fully compliant with the requirement of EN50155 standard. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE and MSTP/RSTP/STP (IEEE 802.1 s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. IGS-3032GC can be managed centralized and convenient by a powerful windows utility – Open-Vision. The redundant DC power inputs guarantee a non-stop operation. The backup power input will take over immediately when the primary DC power input fails. IGS-3032GC provides relay outputs that can be set up to indicate events with urgency to notify or warn the technicians, so they can quickly respond to the message in priority. In addition, with it's rugged design for railway certification, i.e., EN50155 standard, make IGS-3032GC to be solid and reliable for railway traffic communication and transportation application. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet railway application.

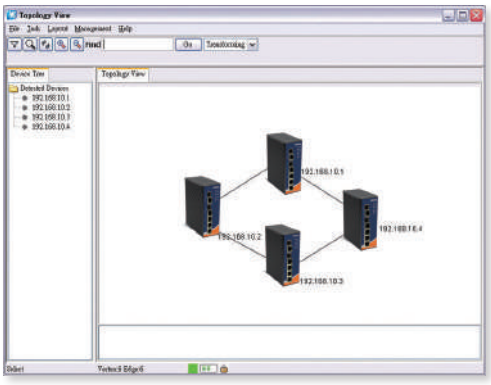
***NOTE: This function is available by request only**

Open-Vision

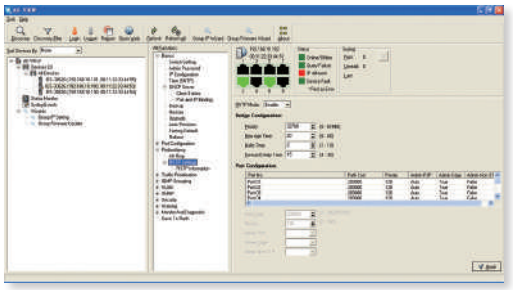
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.

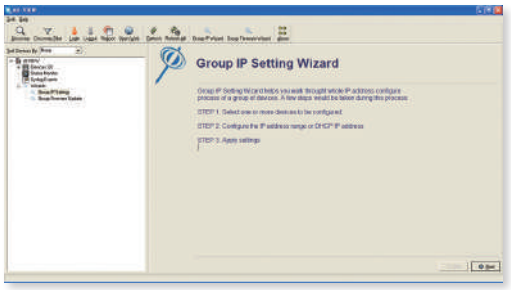


Network connection



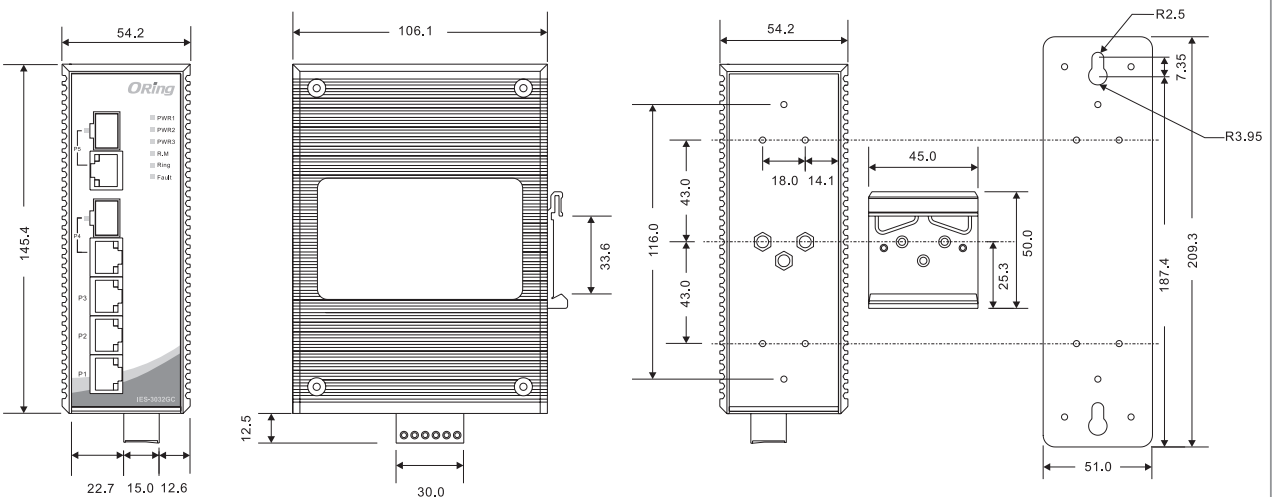
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGS-3032GC
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	3
Gigabit Combo Ports with 10/100/1000Base-T(X) and 100/1000Base-X SFP Port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP(Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Jumbo Frame	Up to 9 kbytes
Switch Properties	Switching latency : 7 µs Switching bandwidth : 10 Gbps Max. Number of Available VLANs : 4096 IGMP multicast groups : 1024 Port rate limiting : User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP v2/v3 (IGMP Snooping support) for multicast filtering Port configuration, status, statistics, monitoring, security PTP Client (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** STP / RSTP / MSTP
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power indicator	Green : Power LED x 3
R.M. indicator	Green : Indicates that the system is operating in O-Ring Master mode
Ring indicator	Green : Indicates that the system is operating in O-Ring mode
Fault indicator	Amber : Indicates unexpected event occurred

***NOTE: This function is available by request only**

10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for 100Mbps indicator
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Triple DC inputs: +12 ~ +48VDC or -12 ~ -48VDC on 7-pin terminal block, 12 ~ 45VDC on power jack
Power Consumption (Typ.)	10 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristics	
Enclosure	IP-30
Dimension (W x D x H)	54.2(W)x106.1(D)x145.4(H) mm (2.13x4.18x5.72 inch.)
Weight (g)	820g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	C CE EMC (EN 55024, EN 55032), FCC Part 15B, EN 50155(EN 50121-1, EN 50121-3-2)
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Other	EN 50155 (IEC 61373)
MTBF	601791.9803 hrs
Warranty	5 years

Ordering Information

IGS-3 AA B CC

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 03 :** 3 ports	**- 2 :** 2 ports	**-GC :** Gigabit Combo port

Available Model	Model Name	Description
	IGS-3032GC	Industrial 5-port managed Gigabit Ethernet switch with 3x10/100/1000Base-T(X) and 2xGigabit combo ports, SFP socket

Packing List

- IGS-3032GC x 1
- DIN-Rail Kit x 1
- ORing Tool CD x 1
- Wall-mount Kit x 1
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver

IGS-1082GP

IGS-1082GP

Industrial 10-port unmanaged Gigabit Ethernet switch with 8x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket

Features

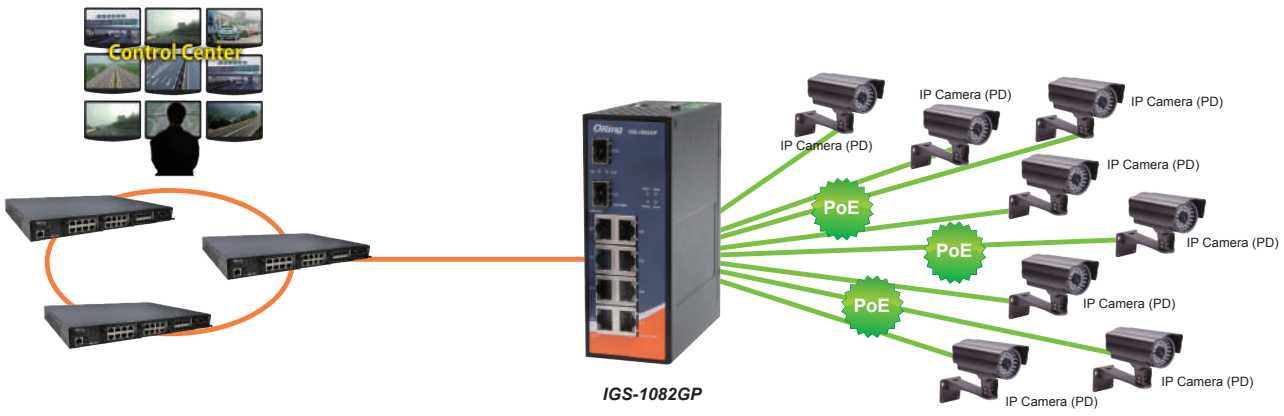
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Support up to **9.6K** Bytes Jumbo Frame
- Support up to **4Mbit** Packet buffer
- Support wide range power input **12~48VDC**
- Provide DIP-switch to setting SFP speed
- Provided relay output for power failed warning system
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

IGS-1082GP is full Gigabit unmanaged Ethernet switch with 8x10/100/1000Base-T(X) copper ports and 2x100/1000Base-X SFP ports. The switch support wide operating temperature from -40 oC to 75 oC for harsh environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-unmanaged Ethernet application.

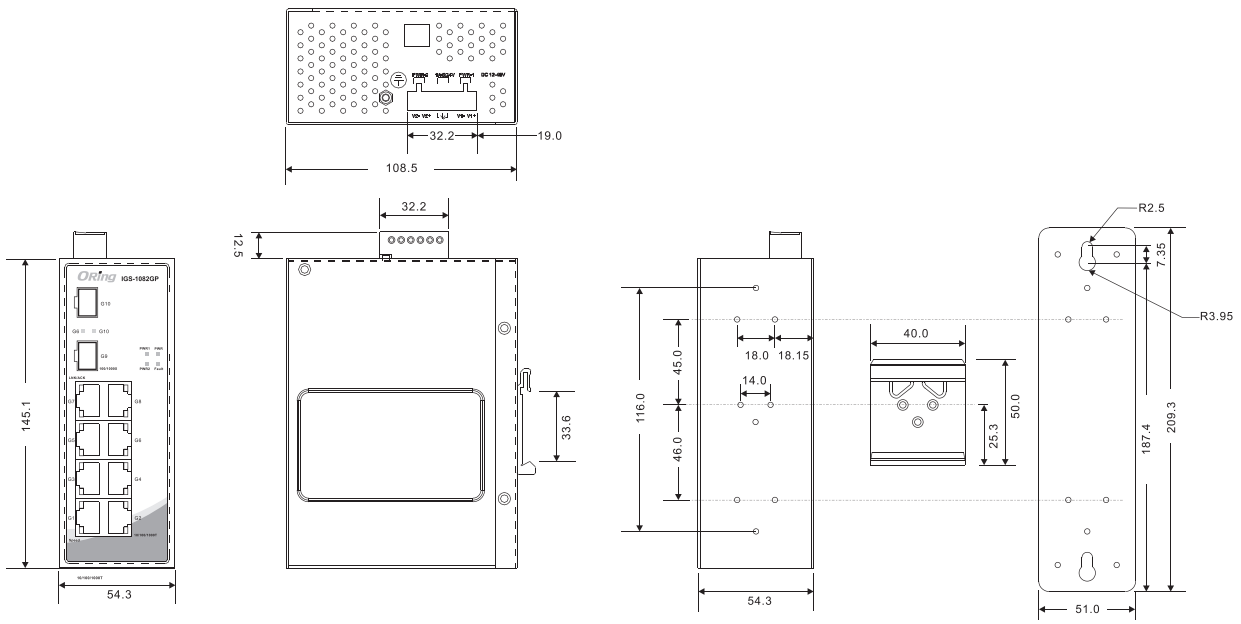
Practical Operation

IGS-1082GP can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Ethernet Connection

Dimension



(Unit=mm)

Specifications

ORing Switch Model	IGS-1082GP
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	**8**
100/1000Base-X with SFP port	**2**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control
MAC Table	8K
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 20Gbps
Jumbo frame	Up to 9.6K Bytes
Packet buffer	4Mbit
LED Indicators	
Power Indicator (PWR)	Green : Power LED x 3
Fault Indicator (Fault)	Amber : Indicate power failed even warning
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Dual color LED for speed indicator ~ Green for 1000Mbps / Amber for 100Mbps / off-light for 10Mbps
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
DIP Switch	
DIP-Switch 1	Power-2 failed warning : (ON) enable, (OFF) disable
DIP-Switch 2	Power-1 failed warning : (ON) enable, (OFF) disable
DIP-Switch 3	DIP switch 3 and 4 (ON) : SFP speed setting to 100Mbps
DIP-Switch 4	DIP switch 3 and 4 (OFF) : SFP speed setting to 1000Mbps(default)
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC

Power	
Redundant Input power	Dual DC inputs. 12 ~ 48VDC on 6-pin terminal block
Power consumption (Typ.)	10 Watts
Overload current protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	54.3(W) x 108.3(D) x 145.1(H) mm (2.13x4.26x5.71 inches.)
Weight (g)	837g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	722009hrs
Warranty	5 years

Ordering Information

IGS-1 AA B CC

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 08:** 8 ports	**- 2:** 2 ports	**- GP:** Gigabit SFP ports

Available Model	Model Name	Description
	IGS-1082GP	Industrial 10-port unmanaged Gigabit Ethernet switch with 8x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket

Packing List

- IGS-1082GP x 1
- Wall-mount Kit x 2
- Quick Installation Guide x 1
- DIN-Rail Kit x 1

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DR/SDR/DRP 48/24V Series Din rail power supply

IGS-1080A

IGS-1080A

Industrial 8-port slim type unmanaged Gigabit Ethernet switch with 8x10/100/1000Base-T(X)

Features

- Supports auto-negotiation and auto-MDI/MDI-X
- Supports Jumbo Frame up to 9K Bytes
- Relay output for carrying capacity of 1A at 24 VDC
- Supports store-and-forward transmission
- Supports flow control
- Hardware DIP switch for enabling/disabling the warning function
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Full Gigabit | Slim Type | Redundant PWR | -40~70°C Temperature

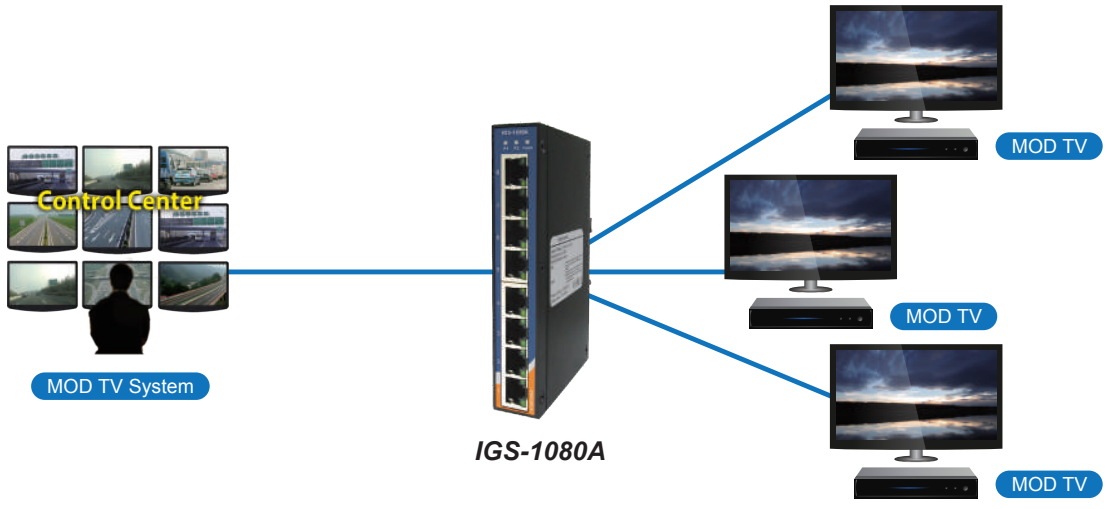
RoHS Lead Free | CE | FC

Introduction

IGS-1080A is the slim type unmanaged gigabit Ethernet switch with 8 x 10/100/1000Base-T(X) ports. IGS-1080A supports redundant power input, rigid IP-30 housing, plus DIP switches for enabling or disabling relay output alarm. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environments.

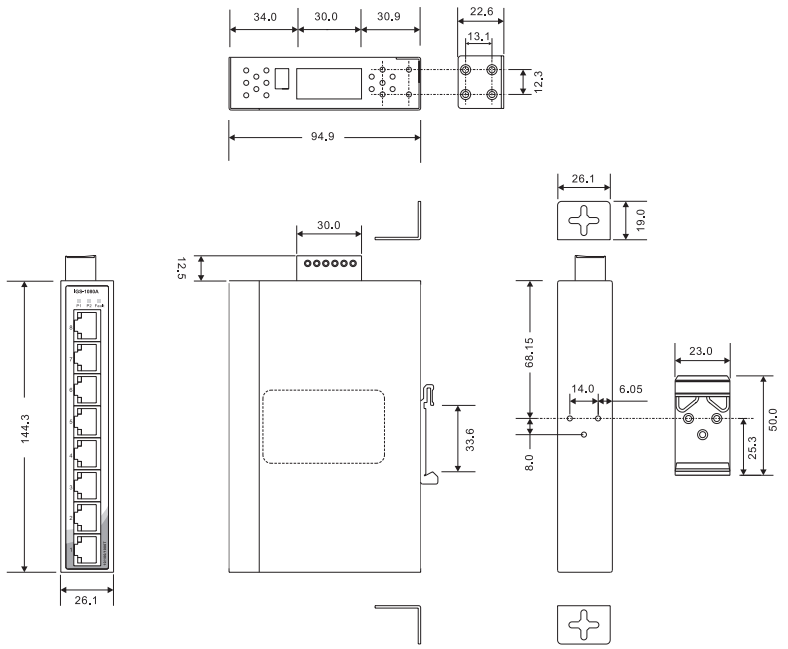
Practical Operation

IGS-1080A can be used in connecting several Ethernet devices such as Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGS-1080A
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control
MAC Table	4096 MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power Indicator	Green : Power LED x 2
Fault Indicator	Amber : Indicates PWR1 or PWR2 failure
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link / Act Amber for 100Mbps indicator
DIP Switch	
DIP-Switch 1	Power-1 failed warning : (ON) enable, (OFF) disable
DIP-Switch 2	Power-2 failed warning : (ON) enable, (OFF) disable
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48 VDC on 6-pin terminal block.
Power Consumption (Typ.)	5.5 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present

Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1(W) x 94.9(D) x 144.3(H) mm (1.03x3.74x5.68 inch.)
Weight (g)	375g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	CE EMC (EN55024,EN 55032), FCC Part 15 B
EMI	EN55032, CISPR 32, EN61000-3-2, EN61000-3-3, FCC Part 15 B class A
EMS	EN55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS), IEC/EN 61000-4-4 (EFT), IEC/EN61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8 (PFMF), IEC/EN 61000-4-11 (DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1 compliant
MTBF	875918.4026 hrs
Warranty	5 years

Ordering Information

IGS-1 AA B A

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 ports

Available Model	Model Name	Description
	IGS-1080A	Industrial 8-port slim type unmanaged Gigabit Ethernet switch with 8 x 10/100/1000Base-T(X)

Packing List

- IGS-1080A x 1
- Quick Installation Guide x 1
- Din-Rail Kit x 1
- Wall-Mount Kit x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply

IGS-1050A/1041GPA

IGS-1050A IGS-1041GPA

Industrial 5-port slim type unmanaged Gigabit Ethernet switch

Features

- Each unit supports 5 x 10/100/1000Base-T(X) ports or 4 x 10/100/1000Base-T(X) and 1 x 1000Base-X SFP ports
- Support Jumbo frame up to 9K Bytes
- Hardware DIP switch to enable/disable warning function
- Rigid IP-30 slim type housing design
- DIN-Rail and wall mounting enabled
- Relay output to carry capacity of 1A at 24 VDC

RoHS Lead Free CE FC

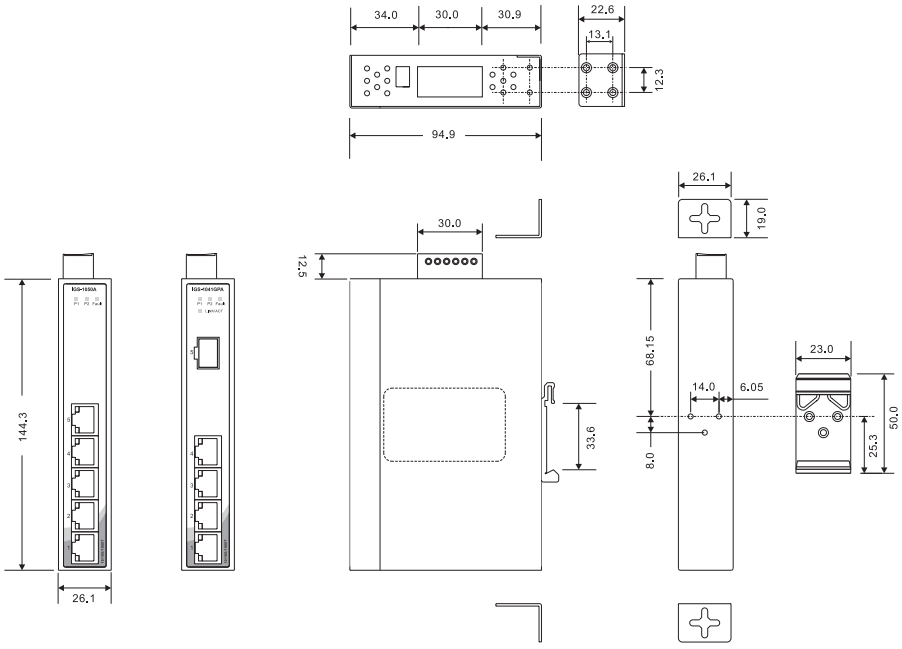
Introduction

IGS-1050A/IGS-1041GPA series are unmanaged gigabit Ethernet switches with 5 x 10/100/1000Base-T(X) ports or 4 x 10/100/1000Base-T(X) and 1 x 1000Base-X SFP ports. IGS-1050A/IGS-1041GPA series support redundant power inputs, rigid IP-30 housing and have DIP switches for enabling or disabling relay output alarm. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment.

Practical Operation

IGS-1050A/IGS-1041GPA can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGS-1050A	IGS-1041GPA
Physical Ports		
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	5	4
1000Base-X SFP Ports	-	1
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control	
MAC Table	1024 MAC addresses	
Processing	Store-and-Forward	
Jumbo Frame	9K	
LED Indicators		
Power Indicator	Green : Power LED x 2	
Fault Indicator	Amber : Indicates PWR1 or PWR2 failure occurred	
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link / Act Amber for 100Mbps indicator	
1000Base-X SFP Port Indicator	-	Green for port Link/Act
Fault contact		
Relay	Relay output to carry capacity of 1A at 24VDC	

Power		
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block.	
Power Consumption (Typ.)	5.5 Watts	
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	26.1(W) x 94.9(D) x 144.3(H) mm (1.03x3.74x5.68 inch.)	
Weight (g)	420g	403g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

IGS-1 AA B CC A

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 04:** 4 ports **- 05:** 5 ports	**- 0:** 0 ports **- 1:** 1 ports	**-GP:** 1000Base-X in SFP

	Model Name	Description
Available Model	IGS-1050A	Industrial 5-port slim type unmanaged Gigabit Ethernet switch with 5x10/100/1000Base-T(X)
	IGS-1041GPA	Industrial 5-port slim type unmanaged Gigabit Ethernet switch with 4x10/100/1000Base-T(X) and 1x1000Base-X, SFP socket

Packing List

- IGS-1050A / 1041GPA
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- SFP1G series, 1Gbps SFP optical transceiver (for IGS-1041GPA only)
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IGS-1042GPA

IGS-1042GPA

Industrial 6-port slim type unmanaged Gigabit Ethernet switch with 4x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket

Features

- IGS-1042GPA provide 4x10/100/1000Base-T(X) ports
- SFP port supports 100Base-FX and 1000Base-X speed
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store and forward transmission
- Supports flow control
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Full Gigabit | Slim Type | Redundant PWR | -40~70°C Temperature

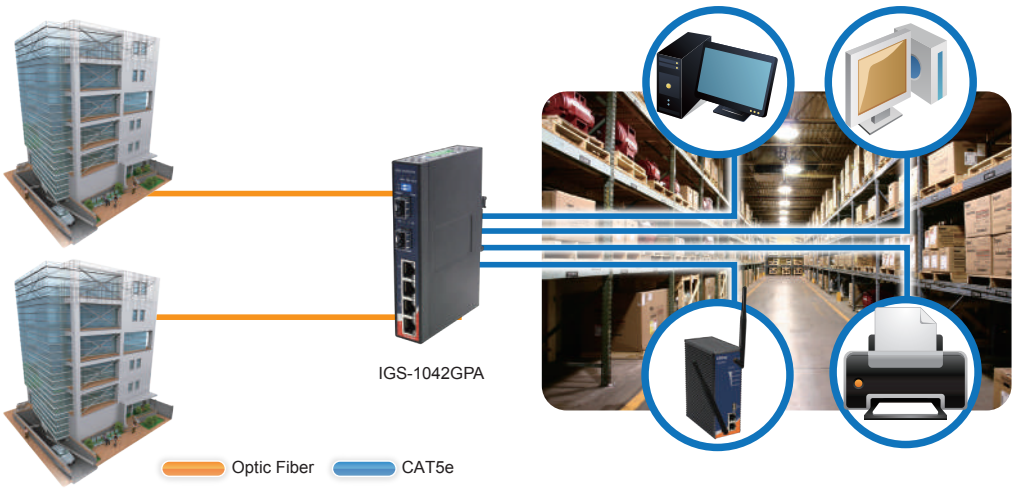
RoHS Lead Free

Introduction

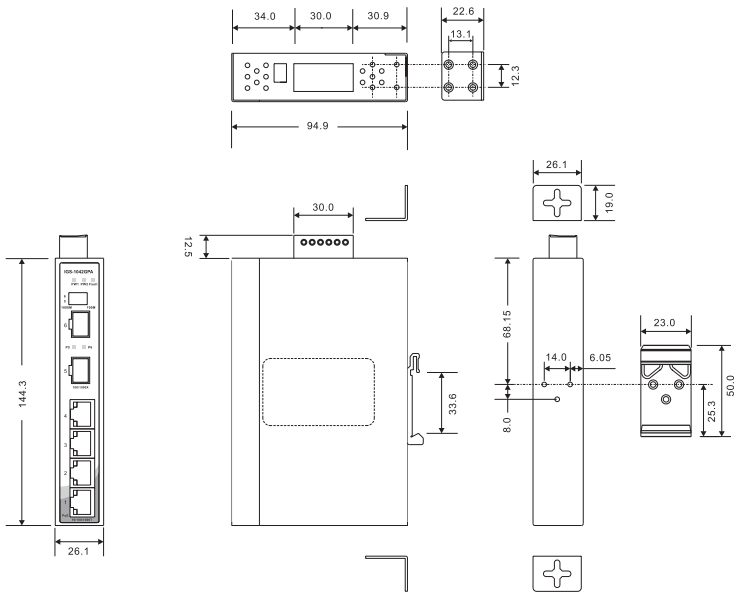
IGS-1042GPA is an unmanaged Ethernet switch, has 4x10/100/1000Base-T(X) ports and 2x100/1000Base-X SFP port. The SFP port optical network speed can be set by changing the settings of the DIP-Switch below. The wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for Ethernet application.

Practical Operation

IGS-1042GPA can be used in connecting several Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGS-1042GPA
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	4
100/1000Base-X SFP port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control
MAC Table	1K MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power Indicator	Green : Power LED x 2
Fault Indicator	Amber : Indicates PWR1 or PWR2 failure occurred
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link / Act Amber for 100Mbps indicator
100/1000Base-X SFP port indicator	Green for port Link/Act
SFP Speed DIP-Switch	
DIP-Switch 1/2	DIP-Switch 1 (ON) and DIP-Switch 2 (ON) : SFP speed setting to 100Mbps DIP-Switch 1 (OFF) and DIP-Switch 2 (OFF) : SFP speed setting to 1000Mbps

Relay Output DIP-Switch	
DIP-Switch 1	Power-1 failed warning : (ON) enable, (OFF) disable.
DIP-Switch 2	Power-2 failed warning : (ON) enable, (OFF) disable
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block.
Power Consumption (Typ.)	6.4 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1(W) x 94.9(D) x 144.3(H) mm (1.03x3.74x5.68 inch.)
Weight (g)	410g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IGS-1 AA B CC A

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 04:** 4 ports	**- 2:** 2 ports	**-GP:** 100/1000Base-X in SFP

	Model Name	Description
Available Model	IGS-1042GPA	Industrial 6-port slim type unmanaged Gigabit Ethernet switch with 4x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket

Packing List

- IGS-1042GPA
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply

IGS-150B

IGS-150B

Industrial 5-port mini type unmanaged Gigabit Ethernet switch with 5x10/100/1000Base-T(X)

Features

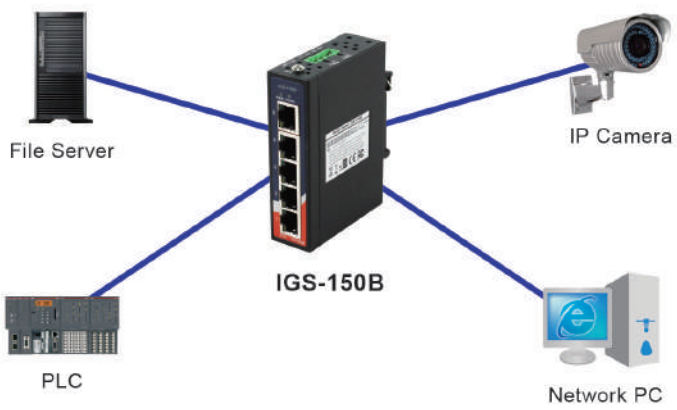
- Support auto-negotiation and auto-MDI/MDI-X
- Supports Jumbo Frame up to 9.6 K Bytes
- Support store and forward transmission
- Support flow control
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

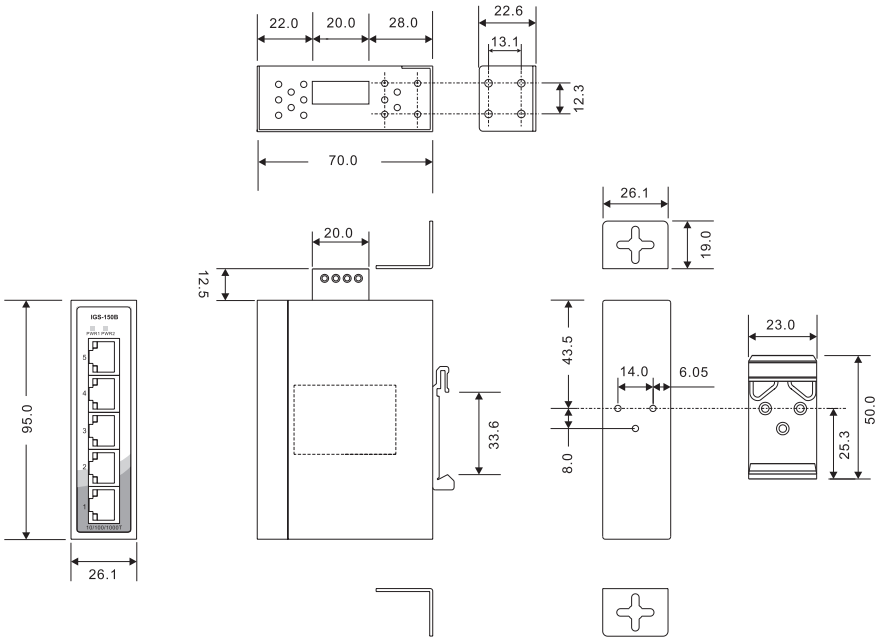
IGS-150B is a mini type unmanaged full gigabit Ethernet switch with 5 x 10/100/1000Base-T(X) ports. IGS-150B supports redundant power input and rigid mini size IP-30 housing. In addition, the wide operating temperature range from -40oC to 70oC can satisfy most of operating environment.

Practical Operation

IGS-150B can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGS-150B
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	5
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control
MAC Table	4096 MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power Indicator	Green : Power LED x 2
10/100/1000Base-T(X) RJ45 Port Indicator	Up Green LED for Link/Act indicator Down dual color LED for speed indicator : Green : 1000Mbps Amber : 100Mbps Off : 10Mbps
Power	
Redundant Input Power	Dual DC inputs. 12~48 VDC on 4-pin terminal block.
Power Consumption (Typ.)	3.2 Watts Max.
Overload Current Protection	Present
Reverse Polarity Protection	Present

Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1 (W) x 70 (D) x 95(H) mm (1.03 x 2.76 x 3.74 inch)
Weight (g)	222g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IGS-1 A B B

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number
Option	**- 5:** 5 ports	**- 0:** 0 ports

Available Model	Model Name	Description
	IGS-150B	Industrial 5-port mini type unmanaged Gigabit Ethernet switch with 5x10/100/1000Base-T(X)

Packing List

- IGS-150B
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply

IGS-R9812GP

IGS-R9812GP

Industrial Layer-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket

Features

- Supports Layer 3 routing, RIP and static routing function
- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Supports standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Supports IEEE 1588v2 clock synchronization
- Supports IPV6 new internet protocol version
- Supports Modbus TCP protocol
- Supports IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Supports SMTP client and NTP server protocol
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Supports ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Supports **backup unit device DBU-01** for quickly backup/restore configuration
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Supports LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

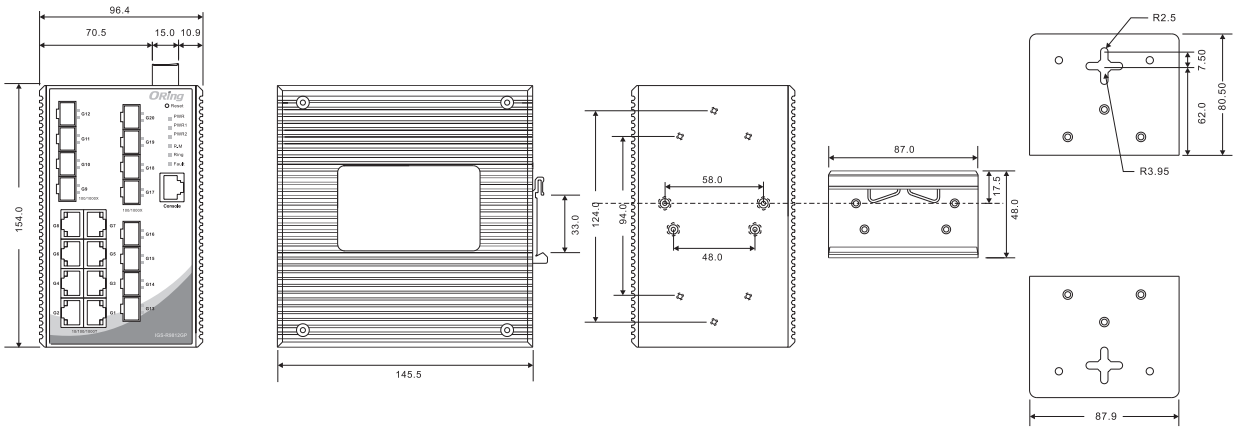
IGS-R9812GP is Layer-3 managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X SFP ports. The IGPS-R9812GP supports Layer-3 routing for better network performance on large-scale LANs into multiple subnets to support long-haul and EMI immunity communications. The hardware Layer-3 switch is optimized to transmit data as fast as Layer-2 switches. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 to 75 °C. IGS-R9812GP can also be managed centralized and convenient by Open-Vision, as well as the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet power substation and rolling stock application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.

***NOTE: This function is available by request only**

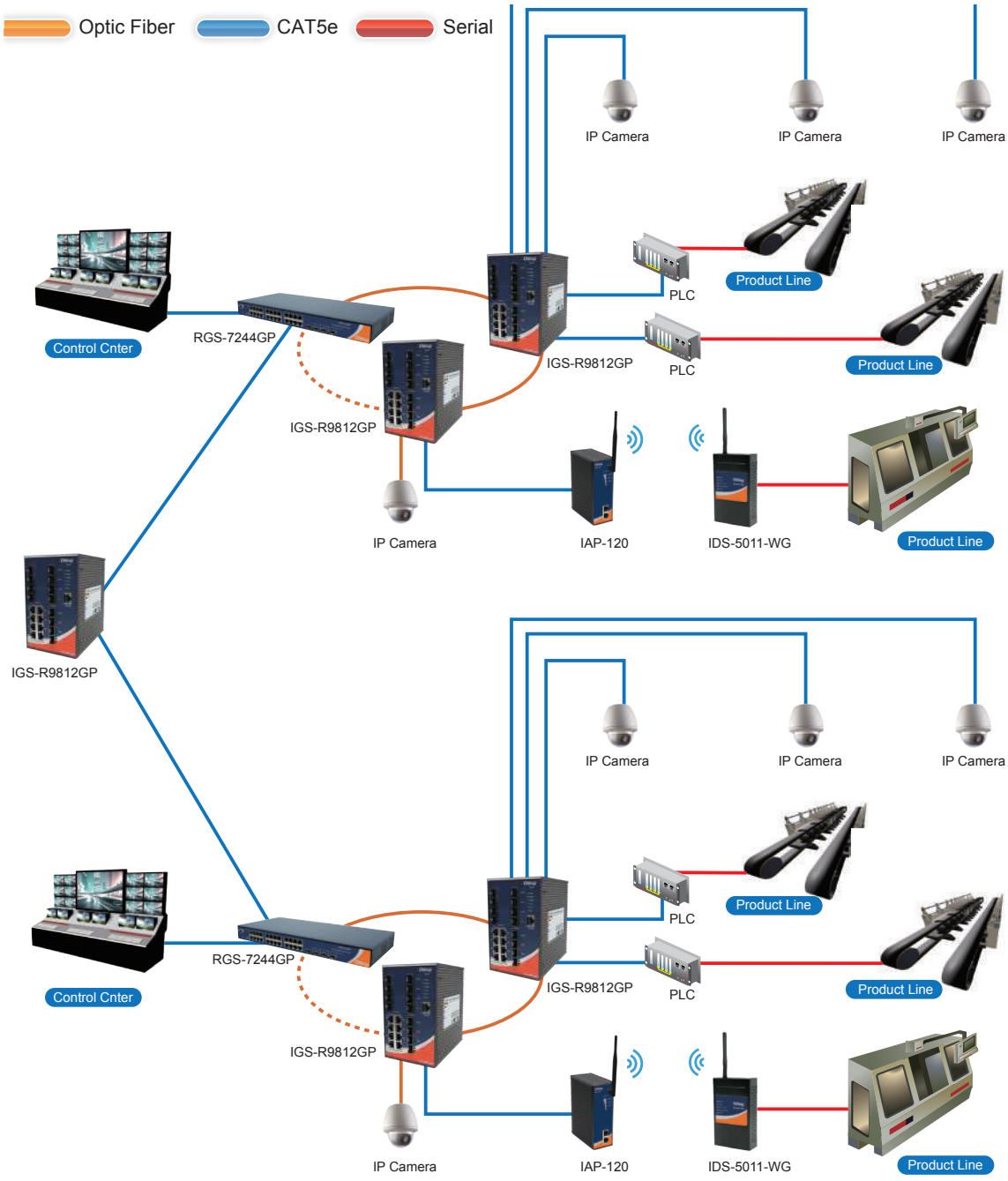
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

Dimensions



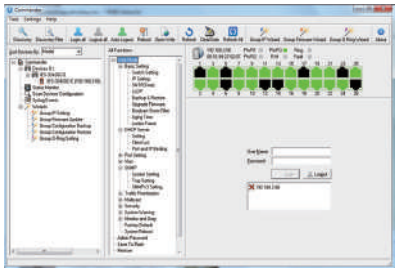
(Unit=mm)

***NOTE: This function is available by request only**

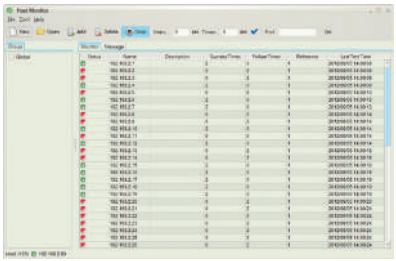


Open-Vision

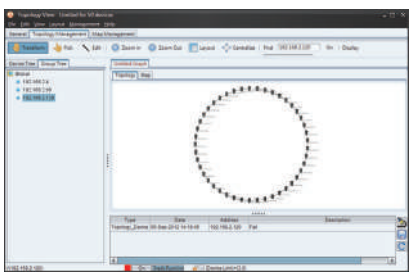
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor



Topology View

Specifications

ORing Switch Model	IGS-R9812GP
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8
100/1000Base-X with SFP port	12
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8K
Packet Buffer	32Mbits
Flash Memory	28Mbits
DRAM Size	1Gbits
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 40Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : 1 to 4094 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) Single 802.1x and Multiple 802.1x MAC-based authentication QoS assignment Guest VLAN MAC address limit TACACS+ VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Web and CLI authentication and authorization Authorization (15 levels) IP source guard Https / SSH enhance network security
Software Features	Hardware routing, RIP and static routing IEEE 1588v2 clock synchronization IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) RSTP/MSTP (IEEE 802.1w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging Voice VLAN IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/snooping DHCP Relay Modbus TCP ARP inspection SMTP Client NTP Server

Network Redundancy	O-Ring O-Chain MRP*NOTE Fast Recovery MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power Indicator(PWR)	Green : Power LED x 3
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator(Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act indicator Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps
100/1000Base-X SFP port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48 VDC on 6-pin terminal block
Power Consumption (Typ.)	23 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	96.4 x 145.5 x 154 mm (3.8 x 5.73 x 6.06 inch)
Weight (g)	1520 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5years

***NOTE: This function is available by request only**

Ordering Information

IGS-R9 A BB CC

Code Definition	10/100/1000Base-T(X) Port Number	100/1000Base-(F)X SFP Port Number	Additional Port Type
Option	**- 08:** 8 ports	**- 12:** 12 ports	**-GP:** Gigabit SFP ports

Available Model	Model Name	Description
	IGS-R9812GP	Industrial Layer-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) and 12x100/1000Base-X, SFP socket

Packing List

- IGS-R9812GP
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply

IGS-R9164GP+

Industrial Layer-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1G/10GBase-X, SFP+ socket

Features

- Support static routing and route redistribution for IPv4
- Support IPv4 routing protocols – static routing, RIP
- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) for Ethernet Redundancy
- O-Chain allow multiple redundant network rings
- Support standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- Supports IPv6 new internet protocol version
- Supports Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Supports IEEE 802.3az **Energy-Efficient Ethernet** technology
- Supports SMTP client and NTP server protocol
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Supports port mirror function to monitor port data
- Support ACL and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Rigid IP-30 housing design, DIN-Rail and wall mounting enabled

Introduction

IGS-R9164GP+ is Layer-3 20-port managed redundant ring Ethernet switches, that provided 16x10/100/1000Base-T(X) copper ports and provided 4x1G/10GBase-X with SFP+ socket. IGS-R9164GP+ supports static routing、RIP and VRRP basic layer-3 protocol. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection), O-Chain and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -20 oC to 60 oC. IGS-R9164GP+ also be managed centralized and convenient by very powerful windows utility – **"Open-Vision"** , as well as the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet power substation application.

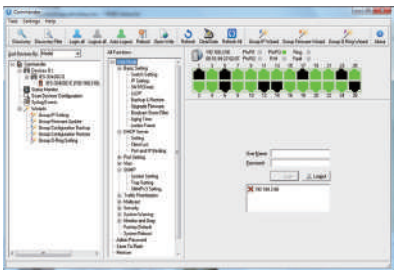
- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.

***NOTE: This function is available by request only**

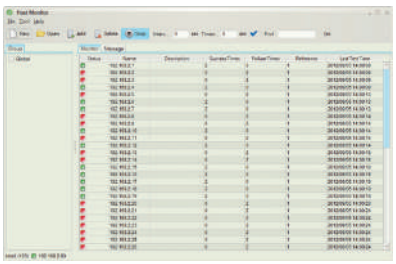
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management :** The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS :** The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function :** ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention :** The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP :** This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet :** This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

Open-Vision

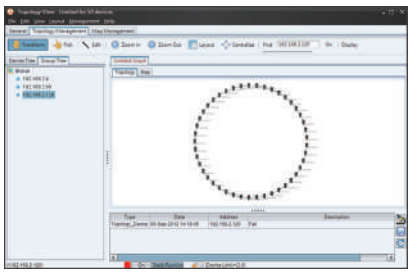
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

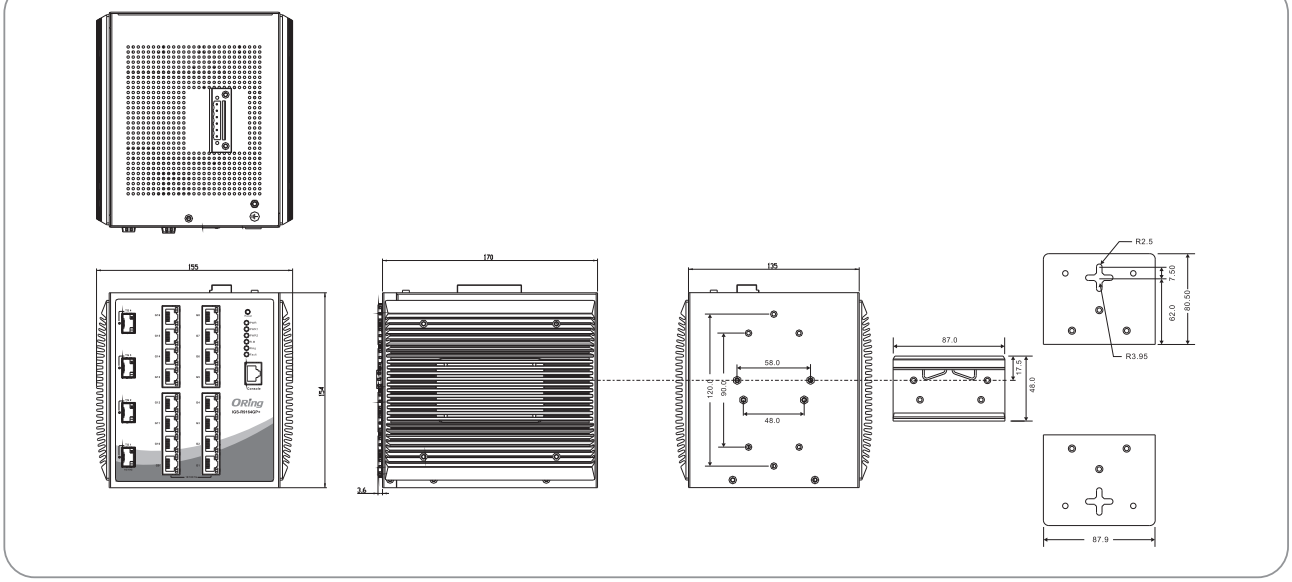


Host Monitor



Topology View

Dimensions



(Unit=mm)

***NOTE: This function is available by request only**

Specifications

ORing Switch Model	IGS-R9164GP+
Physical Ports	
10/100/1000Base-T(X) Ports with RJ45 Auto MDI/MDIX	**16**
1G/10Gbase-X with SFP+	**4**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3ae for 10Gigabit Ethernet IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	32k
Packet Buffer	32Mbits
Jumbo frame	Up to 9K Bytes
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 112Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) MAC-based authentication (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization IP source guard
Software Features	Hardware routing, RIP and static routing VRRP (Virtual Router Redundancy Protocol) IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay Modbus TCP SMTP Client NTP server
Network Redundancy	O-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ-45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
System Ready Indicator (PWR)	Green: Indicates that the system ready. The LED is blinking when the system is upgrading firmware
Power Indicator (PWR1 / PWR2)	Green: Power LED x 2
Ring Master Indicator (R.M.)	Green: Indicates that the system is operating in O-Ring Master mode

O-Ring Indicator (Ring)	Green: Indicates that the system operating in O-Ring mode Green Blinking: Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps
1G/10GBase-X SFP+ Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 3A at 30VDC
Power	
Redundant power input modular	Dual DC inputs. 12~48VDC (Max. rating : 60VDC) at terminal block
Power consumption (Typ.)	26 Watts
Overload current protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Weight (g)	2776 g
Dimension (W x D x H)	135 (W) x 154 (H) x 170 (D)mm
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-20 to 60°C (-4 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	EN 60950-1
MTBF	363,224 hrs
Warranty	5 years

***NOTE: This function is available by request only**

Ordering Information

IGS-R9 A BB CCC

Code Definition	10/100/1000Base-T(X) Port Number	100/1000Base-(F)X SFP Port Number	Additional Port Type
Option	**- 16:** 16 ports	**- 4:** 4 ports	**-GP:** 10Gigabit SFP+ port

Available Model	Model Name	Description
	IGS-R9164GP+	Industrial Layer-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1G/10GBase-X, SFP+ socket

Packing List

- IGS-R9164GP+ x 1
- DIN-Rail Kit x 1
- ORing Tool CD x 1
- Wall-mount Kit x 2
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP1G series : 1Gbps SFP optical transceiver
- SFP10G series : 10Gbps SFP optical transceiver
- DBU-01 : Data backup unit device
- DR/SDR/DRP Series DIN-Rail power supply

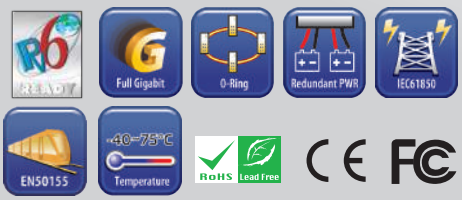
IGS-P9812GP Series

IGS-P9812GP Series

Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket

Features

- Designed for power substation / Railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Leading EN50155-compliant Ethernet switch for rolling stock application
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock Synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client & NTP server
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled



Introduction

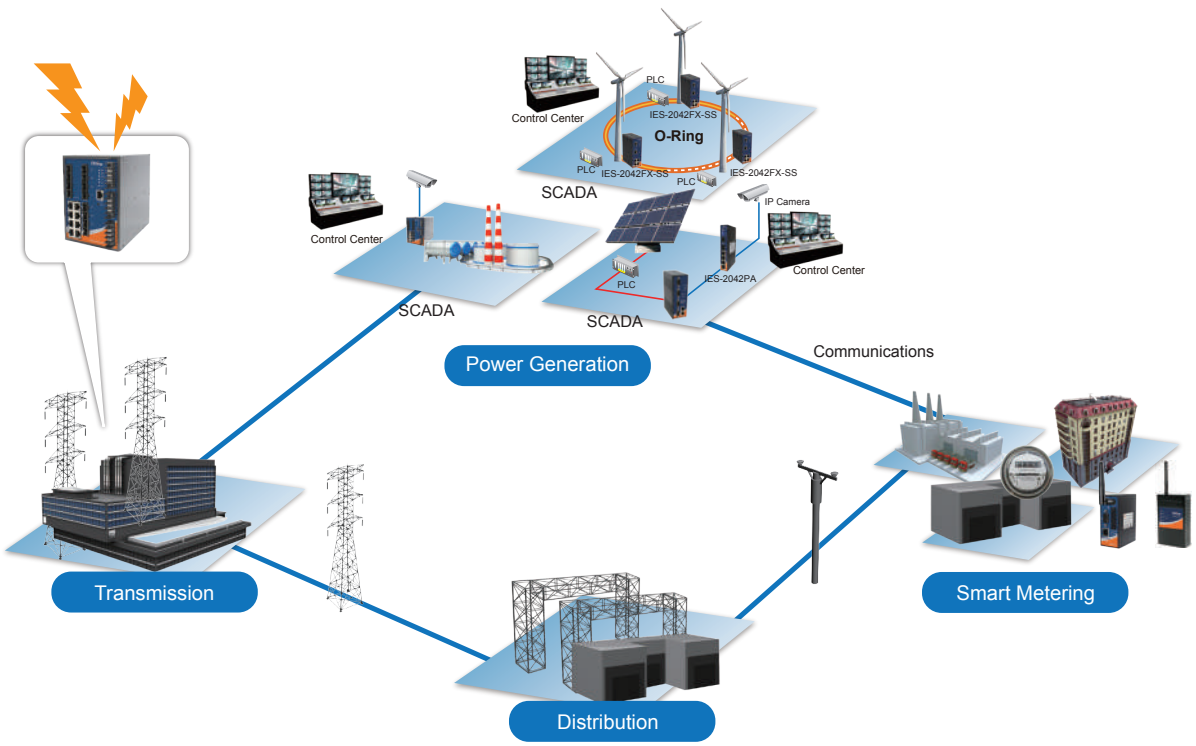
IGS-P9812GP is IEC 61850-3 managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X SFP ports. The switch is designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613. And the switch designed for the toughest and fully compliant with EN50155 requirement. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 oC to 75 oC. IGS-P9812GP can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet power substation and rolling stock application.

- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant

***NOTE: This function is available by request only**

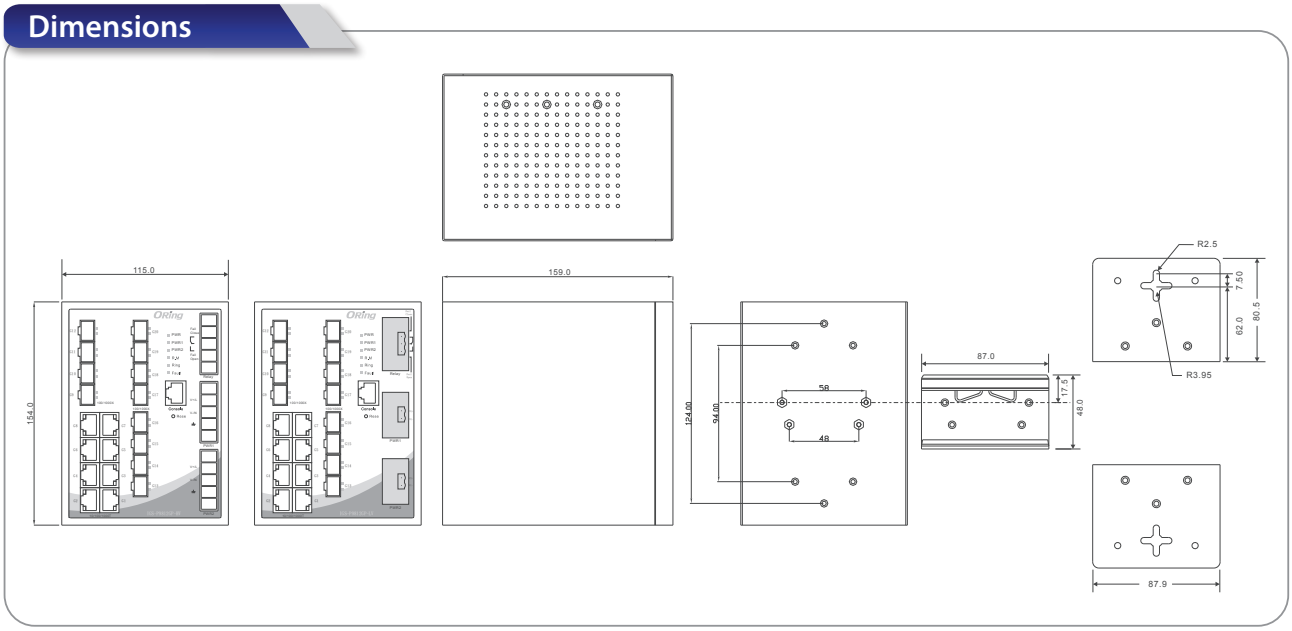
ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.

- **Open-Ring :** Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management :** The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS :** The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function :** ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention :** The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588 Technology :** The IEEE 1588 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP :** This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet :** This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



*NOTE: This function is available by request only

Dimensions



(Unit=mm)

Open-Vision

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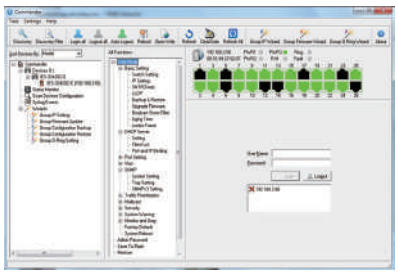
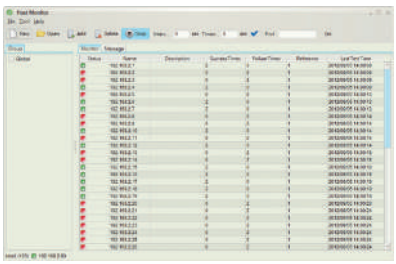
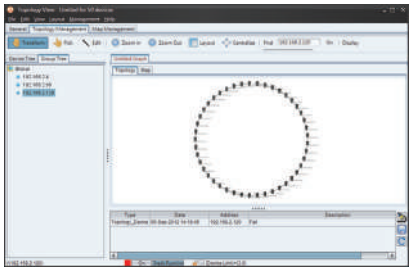


Commander



Host Monitor



Topology View

Specifications

ORing Switch Model	IGS-P9812GP-LV	IGS-P9812GP-HV
Physical Ports		
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8	
100/1000Base-X with SFP port	12	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8k	
Priority Queues	8	

Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 40Gbps Max. Number of Available VLANs: 4095 VLAN ID Range: VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define Https / SSH enhance network security	
Jumbo frame	Up to 9.6K Bytes	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security	
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping NTP Server SNMP v1/v2c/v3, MIB, RMON IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP server	
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** Fast Recovery MSTP (RSTP/STP compatible)	
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1	
LED indicators		
Power Indicator (PWR)	Green : Power LED x 3	
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.	
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred	
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act. Dual color LED for speed indicator: Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps	
100/1000Base-X SFP Port Indicator	Green for port Link/Act.	
Fault contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input power	Dual DC inputs. 12~48VDC on 6-pin terminal block	Dual power inputs. 85~264VAC / 88~373VDC on 6-pin terminal block
Power consumption (Typ.)	22 Watts	24 Watts
Overload current protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	115 (W) x 159 (D) x 154 (H)mm (4.53 x 6.26 x 6.06 inch)	
Weight (g)	1520 g	1870 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	

***NOTE: This function is available by request only**

Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
Power Automation	IEC 61850-3, IEEE 1613
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IGS-P9 A BB CC - DD

Code Definition	10/100/1000Base-T(X) Port Number	100/1000Base-(F)X SFP Port Number	Additional Port Type	Voltage Type
Option	**- 8:** 8 ports	**- 12:** 12 ports	**-GP:** Gigabit SFP ports	**-LV:** 12~48VDC power inputs model **-HV:** 85~264VAC / 88~373VDC power inputs model

	Model Name	Description
Available Model	IGS-P9812GP-LV	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, low-voltage power inputs
	IGS-P9812GP-HV_US	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, high-voltage power inputs, US power cord
	IGS-P9812GP-HV_UK	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, high-voltage power inputs, UK power cord
	IGS-P9812GP-HV_EU	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, high-voltage power inputs, EU power cord
	IGS-P9812GP-HV_JP	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, high-voltage power inputs, JP power cord

Packing List

- IGS-P9812GP x 1
- DIN-Rail Kit x 1
- ORing Tool CD x 1
- Wall-mount Kit x 2
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DBU-01 : backup unit device

IGS-P9164 Series

IGS-P9164 Series

Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch

Features

- Designed for power substation / Railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
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- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Support DBU-01 backup unit to quickly backup/restore configuration
- Multiple notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

IGS-P9164 series are IEC 61850-3 managed redundant ring Ethernet switches. These switches are designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613. **IGS-P9164GF** series are IEC 61850-3 managed redundant ring Ethernet switch with 16x10/100/1000Base-T(X) ports and 4x1000Base-X optical fiber port with SC connector. **IGS-P9164GFX** series are IEC 61850-3 managed redundant ring Ethernet switch with 16x10/100/1000Base-T(X) ports and 4x100Base-FX optical fiber port with SC connector. **IGS-P9164GC** series are IEC 61850-3 managed redundant ring Ethernet switch with 16x10/100/1000Base-T(X) ports and 4xGigabit combo ports with SFP socket. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 °C to 75 °C. IGS-P9164GF(X) series can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

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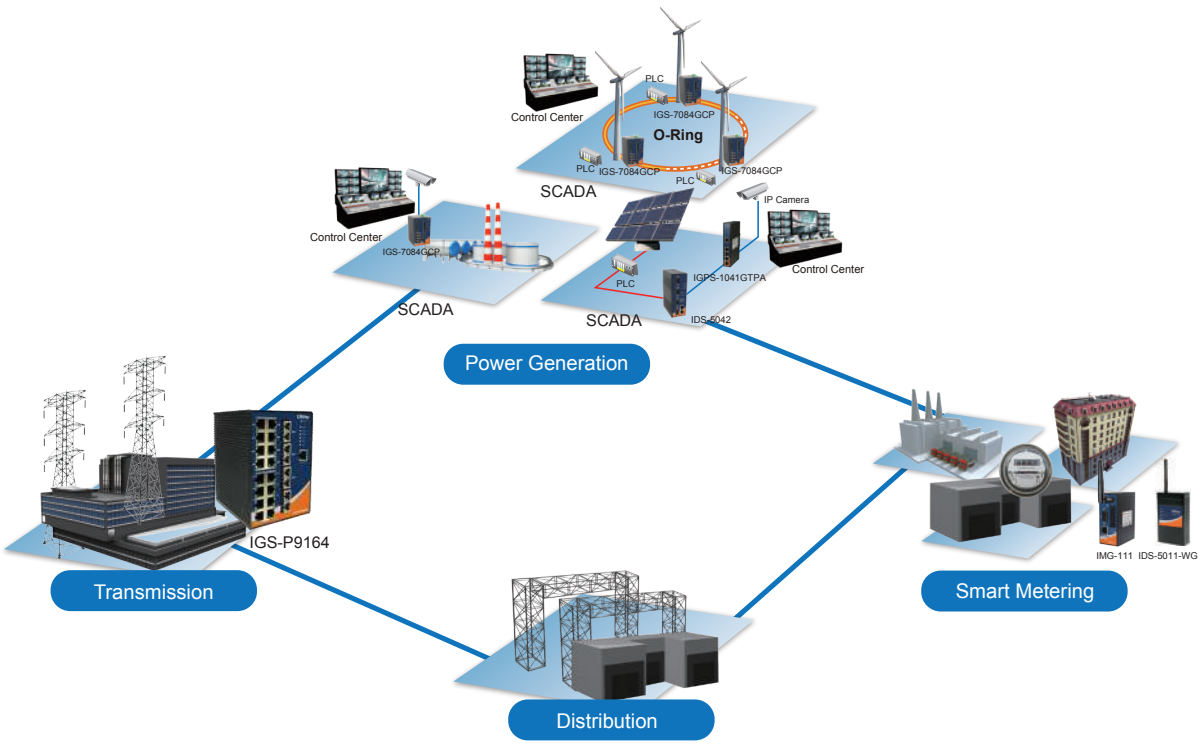
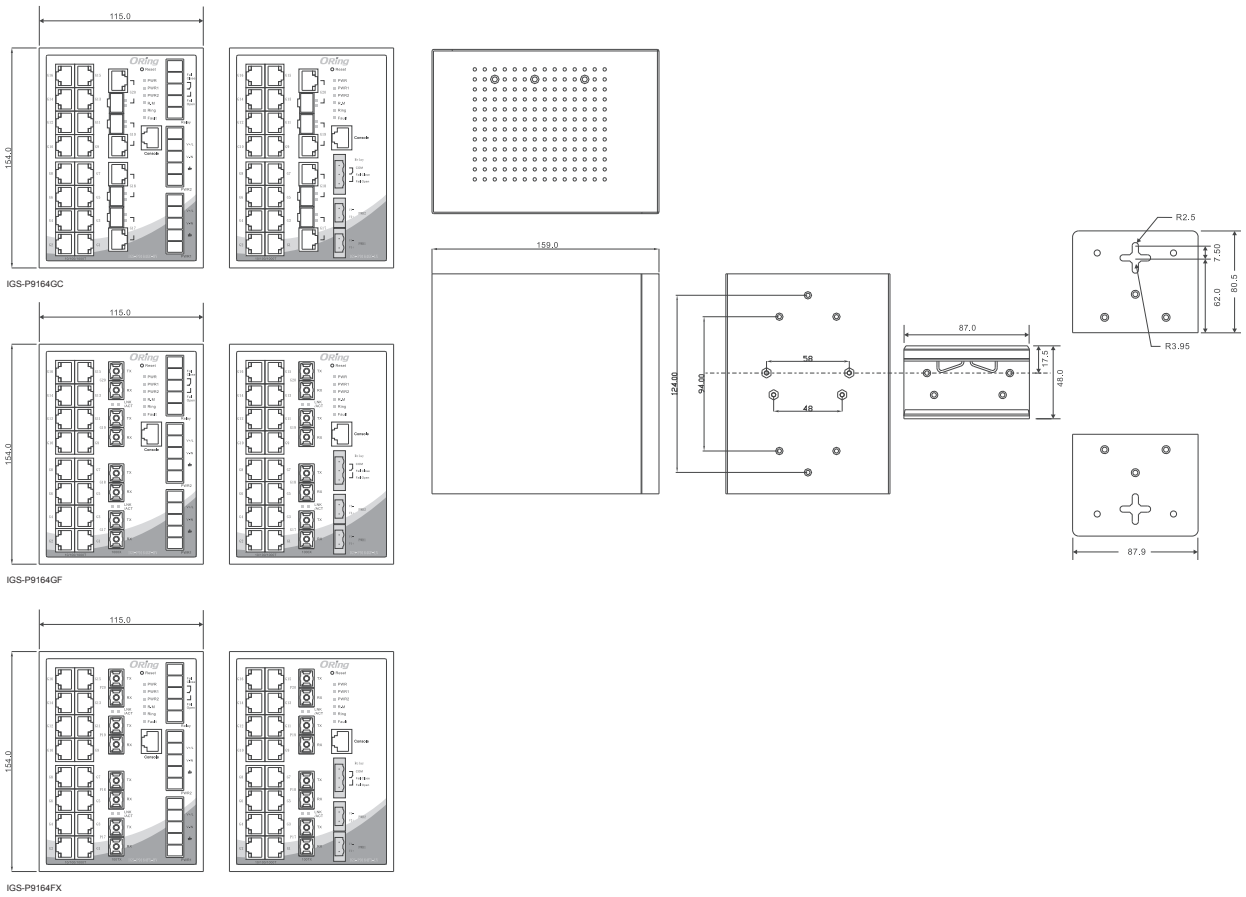
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588 Technology :** The IEEE 1588 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



*NOTE: This function is available by request only

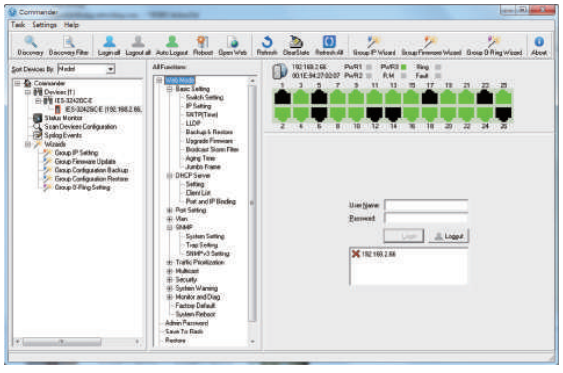
Dimensions



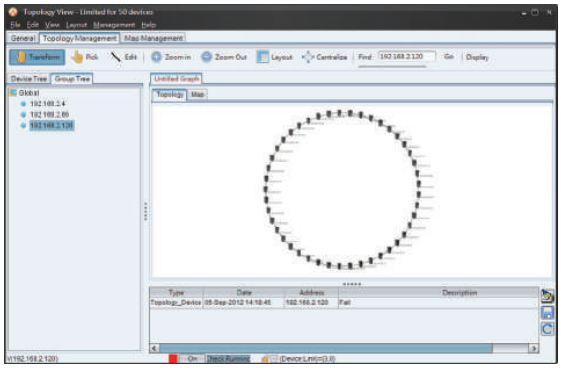
(Unit=mm)

Open-Vision

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Topology View

Specifications

ORing Switch Model		IGS-P9164GF-MM	IGS-P9164GFX-MM	IGS-P9164GF-SS	IGS-P9164GFX-SS	IGS-P9164GC
Physical Ports						
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX		16				
Gigabit Combo Port with 10/100/1000Base-T(X) and 100/1000Base-X SFP Port		-				4
Fiber Ports Specifications	Fiber Ports Number	4				-
	Fiber Ports Standard	1000Base-SX	100Base-FX	1000Base-LX	100Base-FX	-
	Fiber Mode	Multi-mode	Multi-mode	Single-mode	Single-mode	-
	Fiber Diameter (μm)	62.5/125 μm 50/125 μm	62.5/125 μm 50/125 μm	9/125 μm	9/125 μm	-
	Fiber Optical Connector	SC	SC	SC	SC	-
	Typical Distance (km)	0.55 km	2 km	10 km	30 km	-
	Wavelength (nm)	850 nm	1310 nm	1310 nm	1310 nm	-
	Max. Output Optical Power (dBm)	-4 dBm	-14 dBm	-3 dBm	-8 dBm	-
	Min. Output Optical Power (dBm)	-9.5 dBm	-23.5 dBm	-9.5 dBm	-15 dBm	-
	Max. Input Optical Power (Saturation)	0 dBm	0 dBm	-3 dBm	0 dBm	-
	Min. Input Optical Power (Sensitivity)	-18 dBm	-31 dBm	-20 dBm	-34 dBm	
	Link Budget (dB)	8.5 dB	7.5 dB	10.5 dB	19 dB	-
Technology						
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)				
MAC Table		8K				
Packet Buffer		4Mbits				
Priority Queues		8				
Processing		Store-and-Forward				
Switch Properties		Switching latency: 7 us Switching bandwidth: 40Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define				
Jumbo frame		Up to 9.6K Bytes				
Security Features		Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security				

Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP server				
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** Fast Recovery MSTP (RSTP/STP compatible)				
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1				
LED Indicators					
Power Indicator(PWR)	Green : Power LED x 3				
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode				
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.				
Fault Indicator(Fault)	Amber : Indicate unexpected event occurred				
10/100/1000Base-T(X) RJ45 Port Indicato	Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator				
1000Base-X Fiber Port Indicator	Green for port Link/Act.(for IGS-P9164GF series)				
100Base-FX Fiber Port Indicator	Green for port Link/Act.(for IGS-P9164GFX series)				
100/1000Base-X SFP Port Indicator	Green for port Link/Act. (for IGS-P9164GC series)				
Fault contact					
Relay	Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block				
Power					
Redundant Input Power	LV model : Dual power inputs. 12~48VDC on 2-pin terminal block HV model : Dual power inputs. 85~264VAC/88~373VDC on 3-pin terminal block				
Power Consumption (Typ.)	LV : 18Watts HV : 18.5Watts	LV : 21Watts HV : 20.7Watts	LV : 18Watts HV : 18.5Watts	LV : 21Watts HV : 19.3Watts	LV : 17Watts HV : 18Watts
Overload Current Protection	Present				
Reverse Polarity Protection	Present				
Physical Characteristics					
Enclosure	IP-30				
Dimensions (W x D x H)	115 (W) x 159 (D) x 154 (H)mm (4.53 x 6.3 x 6.06 inch)				
Weight (g)	LV Model : 1780 g HV Model : 2216 g	LV Model : 1769 g HV Model : 2205 g	LV Model : 1780 g HV Model : 2216 g	LV Model : 1769 g HV Model : 2205 g	LV Model : 1750 g HV Model : 2186 G
Environmental					
Storage Temperature	-40 to 85°C (-40 to 185°F)				
Operating Temperature	-40 to 75°C (-40 to 167°F)				
Operating Humidity	5% to 95% Non-condensing				
Regulatory approvals					
Power Automation	IEC 61850-3, IEEE 1613				
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)				
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11				

***NOTE: This function is available by request only**

Shock	IEC60068-2-27				
Free Fall	IEC60068-2-32				
Vibration	IEC60068-2-6				
Safety	EN60950-1				
MTBF	LV:204,467 HV:300,460	LV:236,923 HV:300,460	LV:224,681 HV:281,040	LV:196,356 HV:238,082	LV:299,365 HV:408,521
Warranty	5 years				

Ordering Information

IGS-P9 AABCC-FF-GG

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 16:** 16 ports	**- 4:** 4 ports	**- GF**: 1000Base-X optical fiber port **- FX**: 100Base-FX optical fiber port **- GC**: Gigabit combo port	**- MM**: Multi-mode **- SS**: Single-mode	**- SC**: SC connector

	Model Name	Description
Available Model	IGS-P9164FX-MM-SC-LV	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector, low-voltage power inputs
	IGS-P9164FX-SS-SC-LV	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, low-voltage power inputs
	IGS-P9164FX-MM-SC-HV_US	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, US power cord
	IGS-P9164FX-MM-SC-HV_UK	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, UK power cord
	IGS-P9164FX-MM-SC-HV_EU	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, EU power cord
	IGS-P9164FX-MM-SC-HV_JP	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, JP power cord
	IGS-P9164FX-SS-SC-HV_US	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, US power cord
	IGS-P9164FX-SS-SC-HV_UK	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, UK power cord
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	IGS-P9164FX-SS-SC-HV_JP	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, JP power cord
	IGS-P9164GF-MM-SC-LV	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, low-voltage power inputs
	IGS-P9164GF-SS-SC-LV	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, low-voltage power inputs
	IGS-P9164GF-MM-SC-HV_US	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, US power cord
	IGS-P9164GF-MM-SC-HV_UK	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord

	Model Name	Description
Available Model	IGS-P9164GF-MM-SC-HV_EU	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, EU power cord
	IGS-P9164GF-MM-SC-HV_JP	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, JP power cord
	IGS-P9164GF-SS-SC-HV_US	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, US power cord
	IGS-P9164GF-SS-SC-HV_UK	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, UK power cord
	IGS-P9164GF-SS-SC-HV_EU	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, EU power cord
	IGS-P9164GF-SS-SC-HV_JP	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, JP power cord
	IGS-P9164GC-LV	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, low-voltage power inputs
	IGS-P9164GC-HV_US	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, US power cord
	IGS-P9164GC-HV_UK	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, UK power cord
	IGS-P9164GC-HV_EU	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, EU power cord
	IGS-P9164GC-HV_JP	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, JP power cord

Packing List

- IGS-P9164GF(X) or GC x 1
- DIN-Rail Kit x 1
- AC power cord (for HV only)
- ORing Tool CD x 1
- Wall-mount Kit x 2
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DR-120 series : 120 Watts DIN-Rail power supply
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DBU-01 : backup unit device

IES-3240

IES-3240

Industrial 24-port managed Ethernet switch with 24x10/100Base-T(X)

Features

- Fastest Redundant Ethernet Ring : **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** supports the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support Modbus TCP protocol
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Supports **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Port lock to prevent access from unauthorized MAC address
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based interface,Telnet, and Console (CLI)
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Supports LLDP Protocol
- Support TACACS+ and 802.1x User Authentication for security

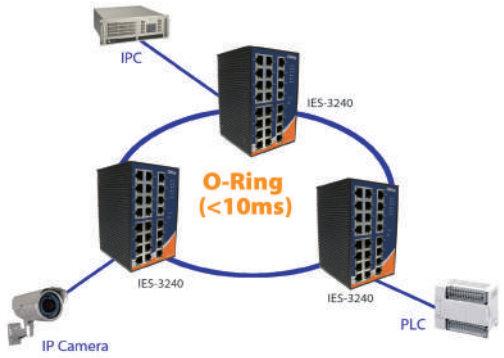
Introduction

IES-3240 is a managed Redundant Ring Ethernet switch with 24x10/100Base-T(X) ports. With complete support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring,and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. All function of IES-3240 can be managed centralized and convenient by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for highly-managed Ethernet application.

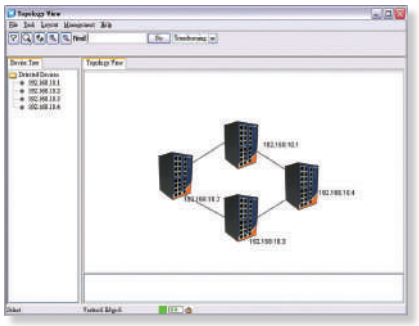
Open-Vision

IES-3240 is an intelligent switch. Different from other traditional redundant switches, IES-3240 provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches in the industrial network.

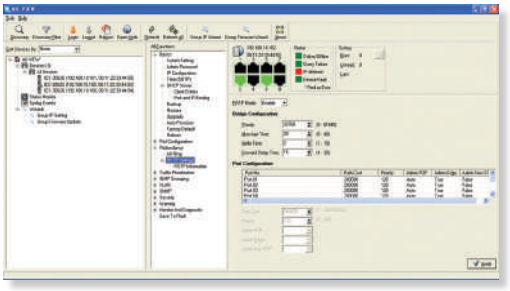
***NOTE: This function is available by request only**

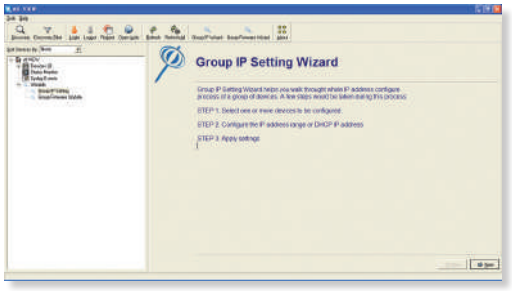


Network connection



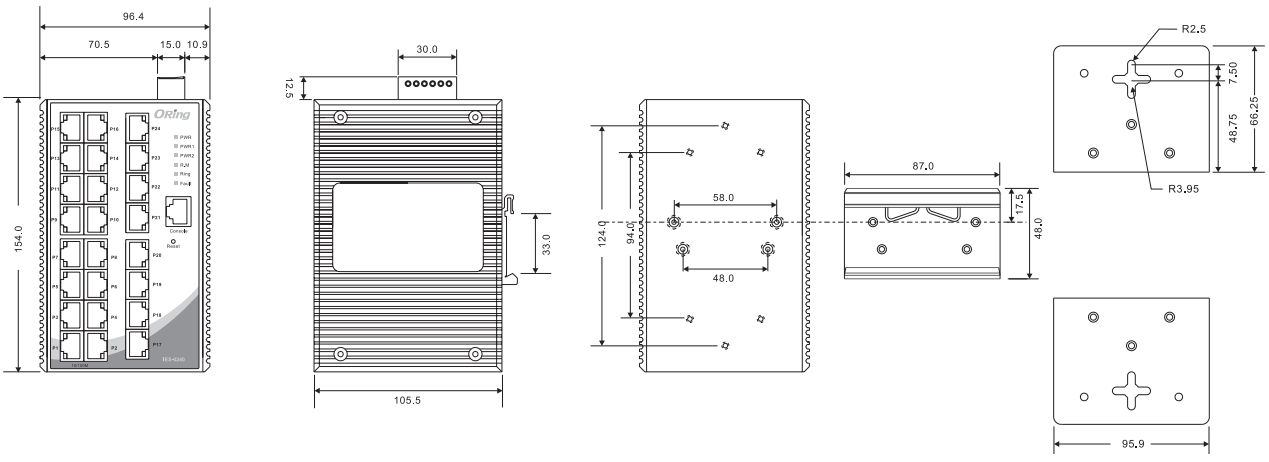
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-3240
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	24
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching bandwidth : 4.8 Gbps Max. Number of Available VLANs : 4096 IGMP multicast groups : 1024 Port rate limiting : User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring O-Chain Open-Ring STP MRP*NOTE RSTP:2004 MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power Indicator	Green : Power LED x 3
R.M. Indicator	Green : Indicates that the system is operating in O-Ring master mode
O-Ring indicator	Green : Indicates that the system is operating in O-Ring mode
Fault Indicator	Amber : Indicates unexpected event occurred
10/100Base-T(X) RJ45 port indicator	Green for port Link/Act. Amber for Duplex/Collision
Fault Contact	

***NOTE: This function is available by request only**

Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block
Power Consumption (Typ.)	9.6 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	96(W) x 109.2(D) x 153.6(H) mm (3.78 x 4.3 x 6.05 inch)
Weight (g)	1052 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IES-3 AA B

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 24 :** 24 ports	**- 0 :** 0 ports

Available Model	Model Name	Description
	IES-3240	Industrial 24-port managed Ethernet switch with 24x10/100Base-T(X)

Packing List

- IES-3240
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-3162GC

IES-3162GC

Industrial 18-port managed Ethernet switch with 16x10/100Base-T(X) and 2xGigabit combo ports, SFP socket

Features

- Fastest Redundant Ethernet Ring : **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** supports other vendors' ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support Modbus TCP protocol
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Supports **PTP** Client (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping for support) filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP V1/V2c/V3 support for secured network management
- RMON for traffic monitoring
- Supports LLDP protocol
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Port lock to prevent access from unauthorized MAC address
- Windows utility (**Open-Vision**) supporting centralized management and configurable by Web-based, Telnet, and Console (CLI)
- Supports two Gigabit combo ports
- Support TACACS+ and 802.1x User Authentication for security
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

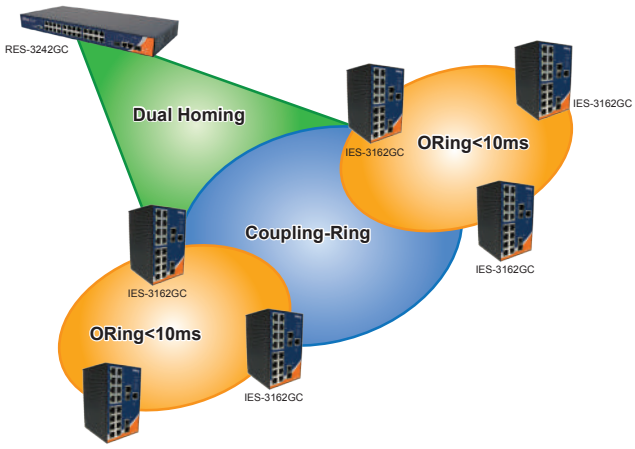
Introduction

IES-3162GC is the managed Redundant Ring Ethernet switch with 16x10/100Base-T(X) ports and 2xgigabit combo ports. With complete support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. All function of IES-3162GC can be managed centralized and convenient by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

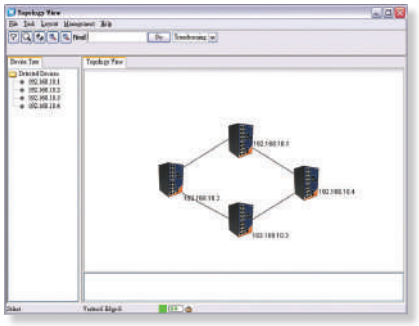
Open-Vision

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.

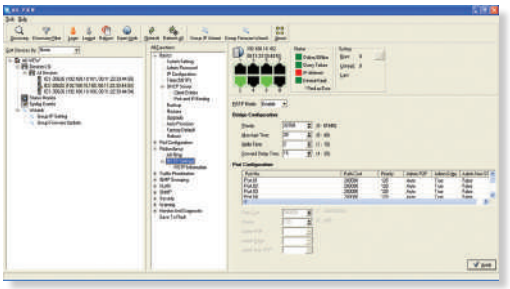
***NOTE: This function is available by request only**

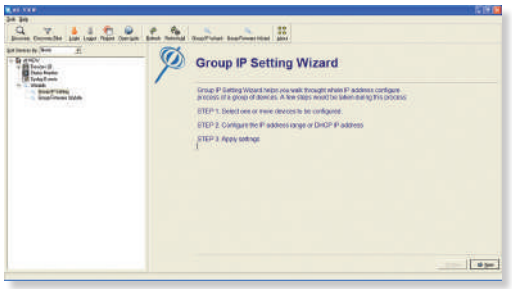


Network connection



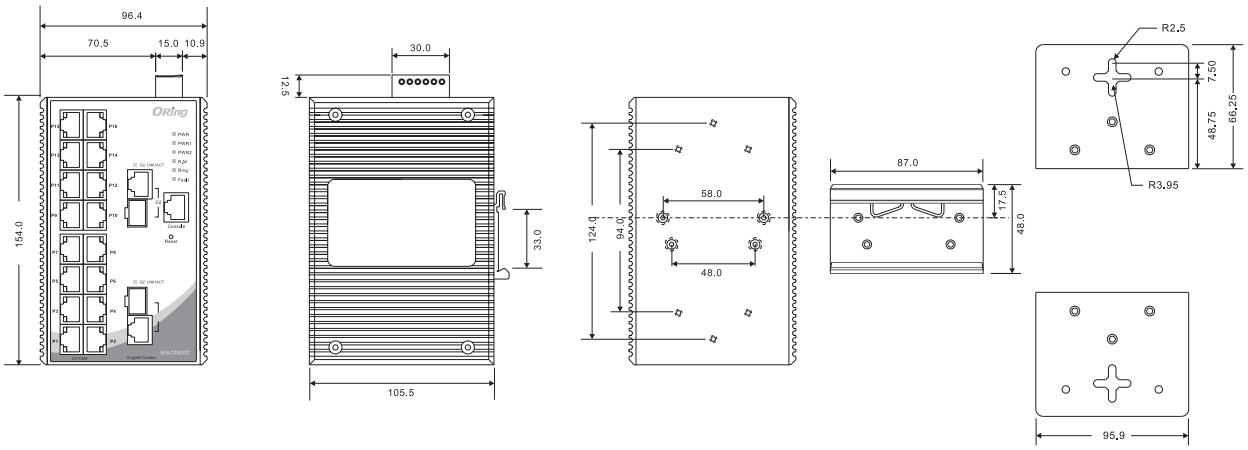
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-3162GC
Physical Ports	
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	16
Gigabit combo Port with 10/100/1000Base-T(X) and 100/1000Base-X SFP Port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-TX IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency : 9 µs Switching bandwidth : 7.2Gbps Max. Number of Available VLANs : 4096 IGMP multicast groups : 1024 Port rate limiting : User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP V1/V2c/V3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP v2/v3 (IGMP snooping support) for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring O-Chain Open-Ring STP MRP*NOTE RSTP:2004 MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power Indicator	Green : Power LED x 3
R.M. Indicator	Green : Indicates that the system is operating in O-Ring master mode
O-Ring Indicator	Green : Indicates that the system is operating in O-Ring mode

***NOTE: This function is available by request only**

Fault Indicator	Amber : Indicates unexpected event occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for 100Mbps indicator
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block
Power Consumption (Typ.)	12 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	96.4(W)x108.5(D)x154(H) mm (3.8 x 4.27 x 6.06 inch)
Weight (g)	1220 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IES-3 AA B CC

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 16 :** 16 ports	**- 2 :** 2 ports	**- GC :** Gigabit combo port

	Model Name	Description
Available Model	IES-3162GC	Industrial 18-port managed Ethernet switch with 16x10/100Base-T(X) and 2xGigabit combo ports, SFP socket

Packing List

- IES-3162GC
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-3160

IES-3160

Industrial 16-port managed Ethernet switch with 16x10/100Base-T(X)

Features

- Fastest Redundant Ethernet Ring : **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** supports the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP**[*NOTE] (Media Redundancy Protocol) function
- Support Modbus TCP protocol
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Supports **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Port lock to prevent access from unauthorized MAC address
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based interface,Telnet, and Console (CLI)
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Supports LLDP Protocol
- Support TACACS+ and 802.1x User Authentication for security

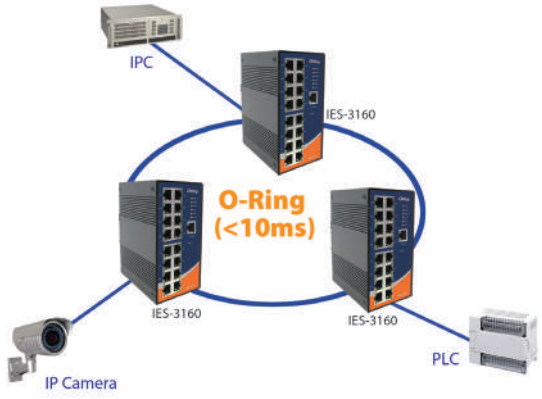
Introduction

IES-3160 is an managed Redundant Ring Ethernet switch with 16x10/100Base-T(X) ports. With complete support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. All function of IES-3160 can be managed centralized and convenient by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for highly-managed Ethernet application.

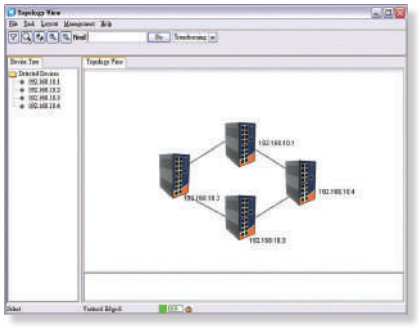
Open-Vision

IES-3160 is an intelligent switch. Different from other traditional redundant switches, IES-3160 provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches in the industrial network.

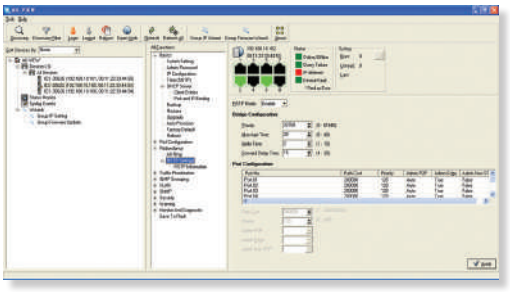
***NOTE: This function is available by request only**

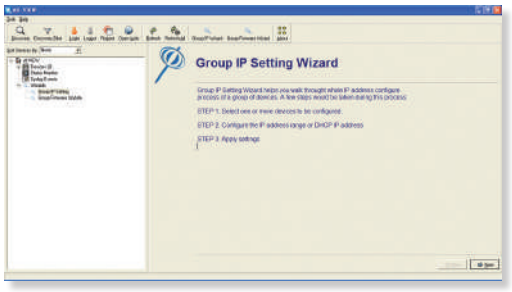


Network connection



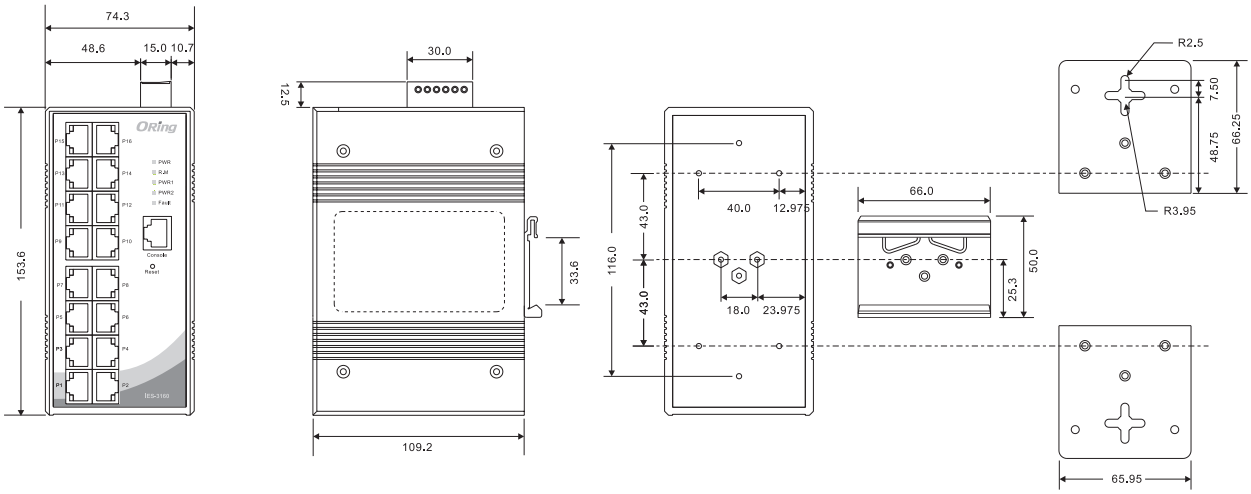
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-3160
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	16
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency : 9 µs Switching bandwidth : 3.2 Gbps Max. Number of Available VLANs : 4096 IGMP multicast groups: 1024 Port rate limiting : User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP V1/V2c/V3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP v2/v3 (IGMP snooping support) for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring O-Chain Open-Ring STP MRP***NOTE** RSTP:2004 MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power Indicator	Green : Power LED x 3
R.M. Indicator	Green : Indicates that the system is operating in Ring master mode
O-Ring indicator	Green : Indicates that the system is operating in O-Ring mode
Fault Indicator	Amber : Indicates unexpected event occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision

***NOTE: This function is available by request only**

Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block
Power Consumption (Typ.)	7.68 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93x4.3x6.05 inch)
Weight (g)	1060g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IES-3 AA B

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 16 :** 16 ports	**- 0 :** 0 port

Available Model	Model Name	Description
	IES-3160	Industrial 16-port managed Ethernet switch with 16x10/100Base-T(X)

Packing List

- IES-3160
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP device
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-3082GC

IES-3082GC

EN50155 10-port managed Ethernet switch with 8x10/100Base-T(X) and 2xGigabit combo ports, SFP socket

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus TCP protocol
- IGMP v2/v3 (IGMC snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support LLDP (Link Layer Discovery Protocol)
- Supports DDM (Digital Diagnostic Monitoring) function
- Support TACACS+ and 802.1x User Authentication for security
- Hardware watchdog support
- Operating temperature detect support

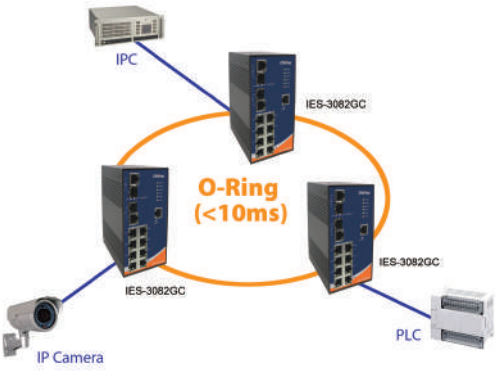
***NOTE: This function is available by request only**

Introduction

IES-3082GC is managed redundant ring Ethernet switch with 8x10/100Base-T(X) ports and 2xGigabit combo ports which is compliant with EN50155 request. The Ethernet switch is designed for industrial applications, such as rolling stock, vehicle, and railway applications. With completely support of Ethernet redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. IES-3082GC support new DDM (Digital Diagnostic Monitoring) function, which can monitor instantly the status of electronic voltage, current and temperature. IES-3082GC also provided machine operating temperature detects function, which can monitor operating temperature every time. IES-3082GC provided hardware watchdog function, which can keep machine working all the time. All function of IES-3082GC can be managed centralized by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

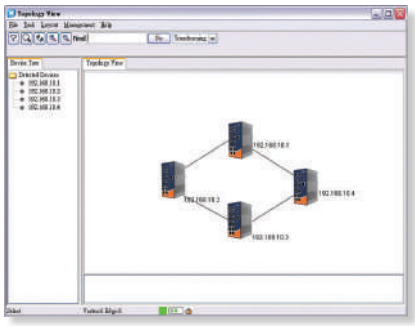
Open-Vision

ORing's switches are intelligent switches. Being different from other traditional redundant switches, ORing provides a set of Windows utility (**Open-Vision**) for user to manage and monitor all of industrial Ethernet switches on the industrial network

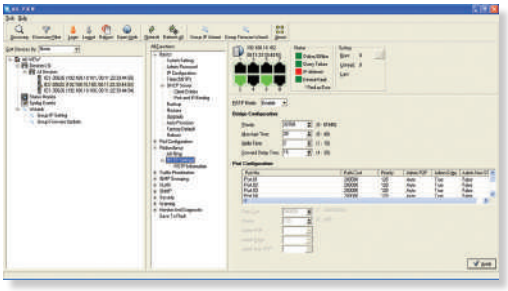


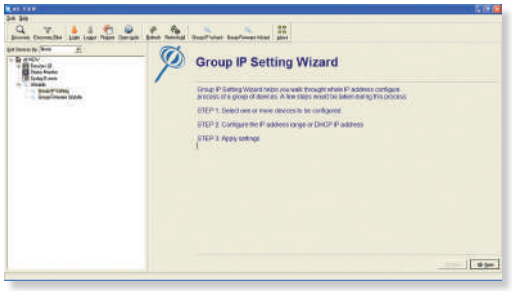
Network connection

DDM function



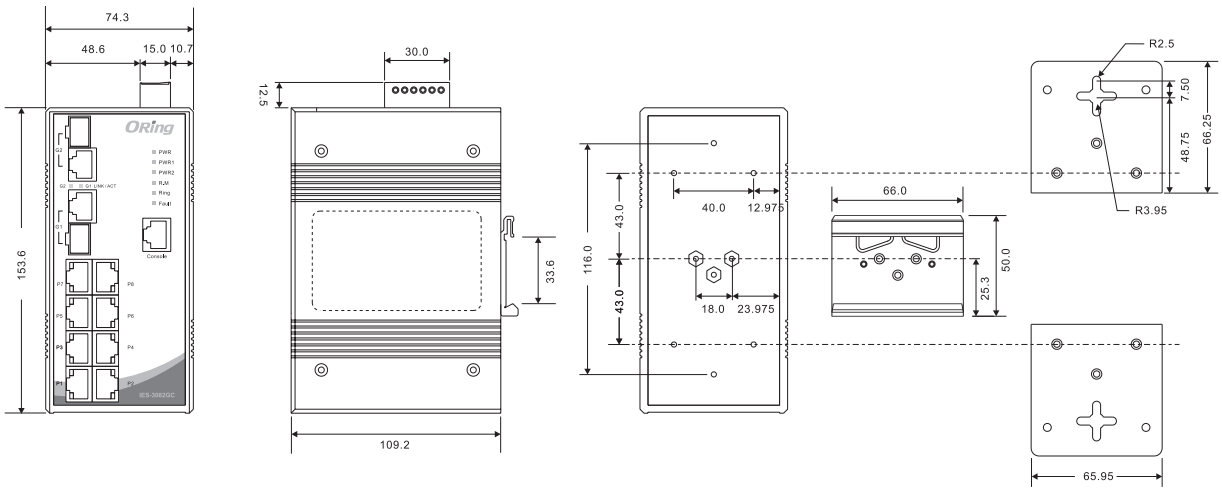
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-3082GC
Physical Ports	
10/100Base-T(X) Port in RJ45 Auto MDI/MDIX	8
Gigabit combo Port with 10/100/1000Base-T(X) and 100/1000Base-X SFP Port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP(Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency : 7 µs Switching bandwidth : 5.6Gbps Max. Number of Available VLANs : 4096 IGMP multicast groups : 1024 Port rate limiting : User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP v2/v3 (IGMP snooping support) for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain STP RSTP:2004 MSTP MRP***NOTE**
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
DDM Function	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power Indicator	Green : Power LED x 3
R.M. Indicator	Green : Indicates that the system is operating in O-Ring master mode
O-Ring Indicator	Green : Indicates that the system is operating in O-Ring mode
Fault Indicator	Amber : Indicates unexpected event occurred

***NOTE: This function is available by request only**

10/100Base-T(X) RJ45 port indicator	Green for port Link/Act. Amber for Duplex/Collision
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for 100Mbps indicator
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block
Power Consumption (Typ.)	8.5 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93x4.3x6.05 inch)
Weight (g)	1140g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN50121-4, EN55011)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IES-3 AA B CC

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 08 :** 8 ports	**- 2 :** 2 ports	**- GC :** Gigabit combo port

Available Model	Model Name	Description
	IES-3082GC	EN50155 10-port managed Ethernet switch with 8x10/100Base-T(X) and 2xGigabit combo ports, SFP socket

Packing List

- IES-3082GC
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply

IES-3082GP

IES-3082GP

Industrial 10-port managed Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X, SFP socket

Features

- Fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** supports the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- MSTP/RSTP:2004/STP(IEEE 802.1s/w/D)
- Support IPV6 new internet protocol version
- Supports **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility **(Open-Vision)** supports centralized management and configuration by Web-based ,Telnet, and Console (CLI)
- Supports two SFP slots for 100/1000Base-X SFP Fiber
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Supports LLDP Protocol
- Support TACACS+ and 802.1x User Authentication for security

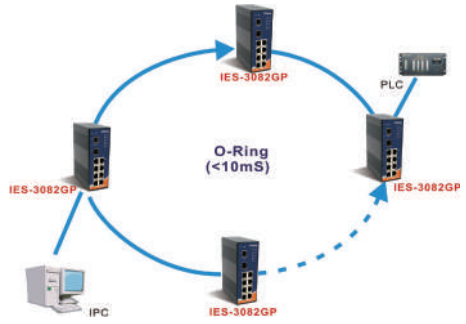
Introduction

IES-3082GP is managed Redundant Ring Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X SFP ports. With complete support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-RSTP and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IES-3082GP can be managed centralized and convenient by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for highly-managed and Fiber Ethernet application.

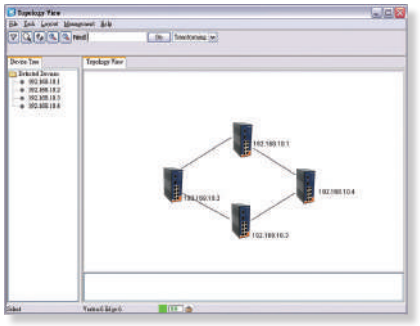
Open-Vision

ORing's switches are intelligent switches. Being different from other traditional redundant switches, ORing provides a set of Windows utility (**Open-Vision**) for users to manage and monitor all of industrial Ethernet switches on the industrial network.

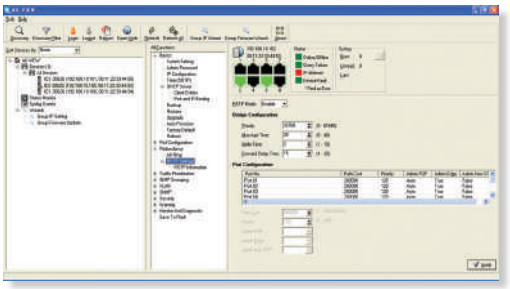
***NOTE: This function is available by request only**

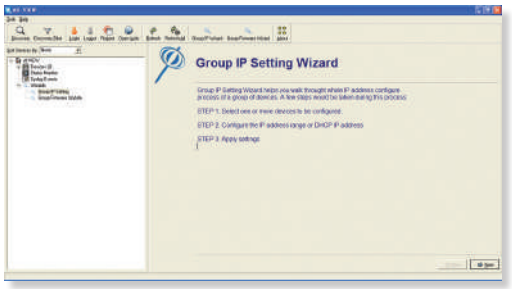


Network connection



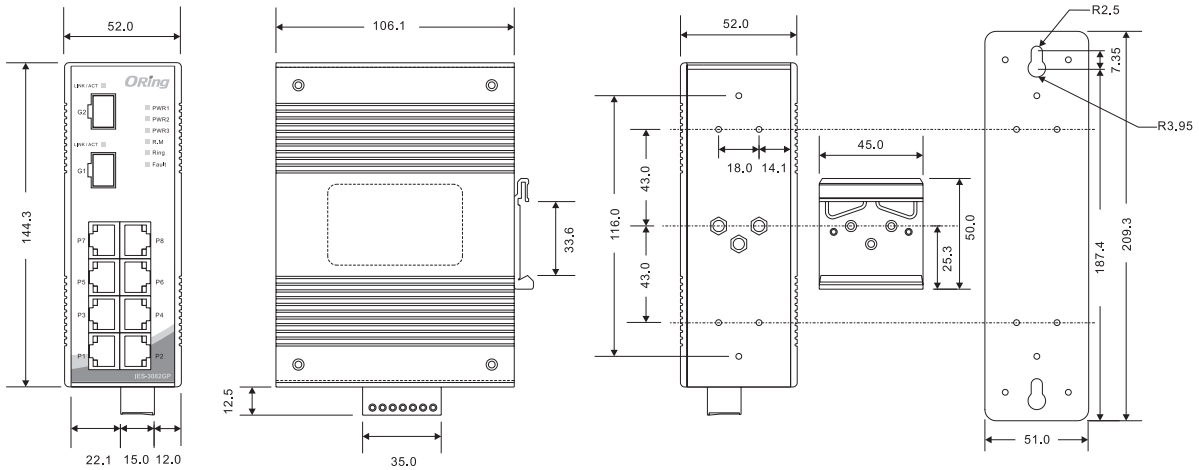
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-3082GP
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	8
100/1000Base-X SFP Port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP(Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1X for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency : 7 µs Switching bandwidth : 5.6Gbps Max. Number of Available VLANs : 4096 IGMP multicast groups : 1024 Port rate limiting : User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP v2/v3 (IGMP snooping support) for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain STP RSTP:2004 MSTP MRP***NOTE**
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. Baud rate setting: 9600bps, 8, N, 1
LED Indicators	
Power Indicator	Green : Power LED x 3
R.M. Indicator	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator	Green : Indicates that the system is operating in O-Ring mode
Fault Indicator	Amber : Indicates unexpected events occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision

***NOTE: This function is available by request only**

100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Triple DC inputs. 12~48VDC on 7-pin terminal block, 12~45VDC on power jack
Power Consumption (Typ.)	9 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	52(W)x106.1(D)x144.3(H) mm (2.05 x 4.18 x 5.68 inch.)
Weight (g)	730 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	339,851
Warranty	5 years

Ordering Information

IES-3 AA B CC

Code efinition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 8:** 8 ports	**- 2:** 2 ports	**- GP:** 100/1000Base-X SFP port

	Model Name	Description
Available Model	IES-3082GP	Industrial 10-port managed Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X, SFP socket

Packing List

- IES-3082GP
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- PAA-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, US plug
- PAE-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, EU plug
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-3080/3062 Series

IES-3080 IES-3062 Series

Industrial 8-port managed Ethernet switch

Features

- Fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** supports the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- Port lock to prevent access from unauthorized MAC address
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility **(Open-Vision)** support centralized management and configurable by Web-based ,Telnet, Console, CLI
- Complete combination of 10/100Base-T(X), 100Base-FX, 1000Base-T, 1000Base-SX, and 1000Base-LX ports
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

R6 READY | O-Ring | Redundant PWR | -40~70°C Temperature

RoHS Lead Free | c UL us E331061 | CE | FC

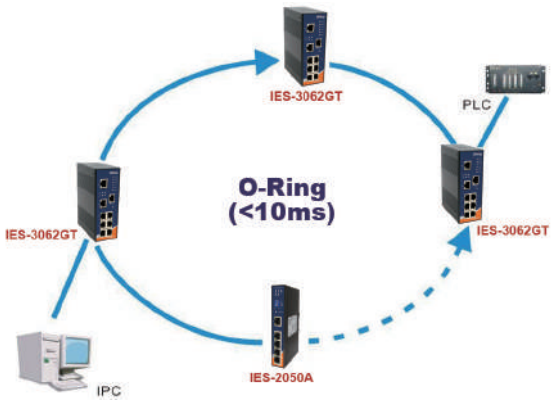
Introduction

IES-3080 / IES-3062 series are managed Redundant Ring Ethernet switches with 6x10/100Base-T(X) and 2x10/100Base-T(X), 100Base-FX, 1000Base-T, 1000Base-SX or 1000Base-LX ports. With complete support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-RSTP and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. IES-3080 / IES-3062 series can be managed centralized and convenient by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for highly-managed Fiber Ethernet application.

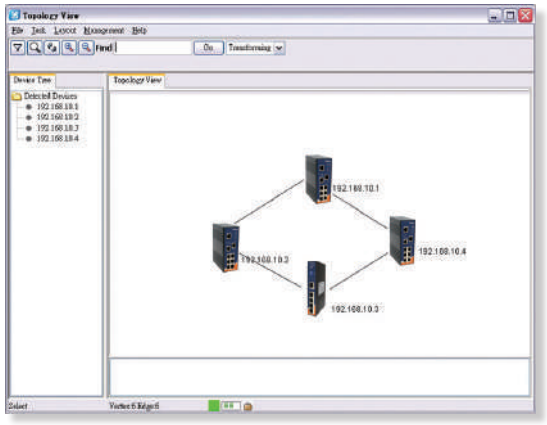
***NOTE: This function is available by request only**

Open-Vision

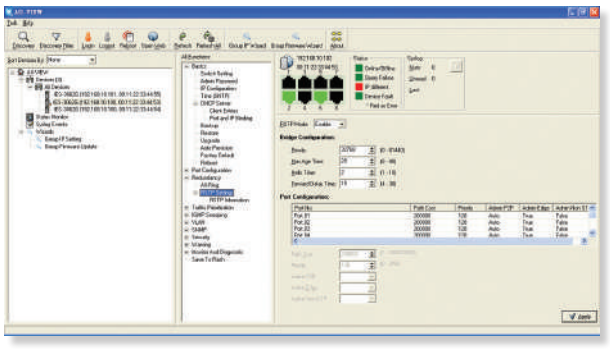
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility **(Open-Vision)** for user to manage and monitor all of industrial Ethernet switches on the industrial network.

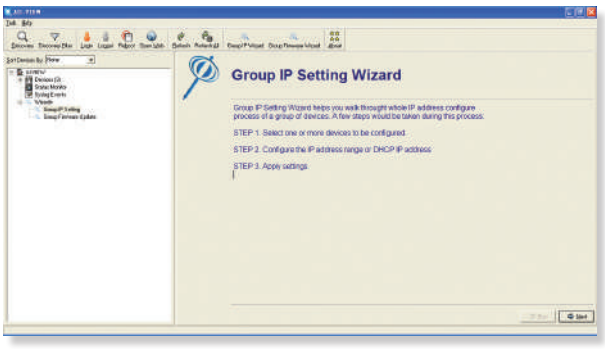


Network connection



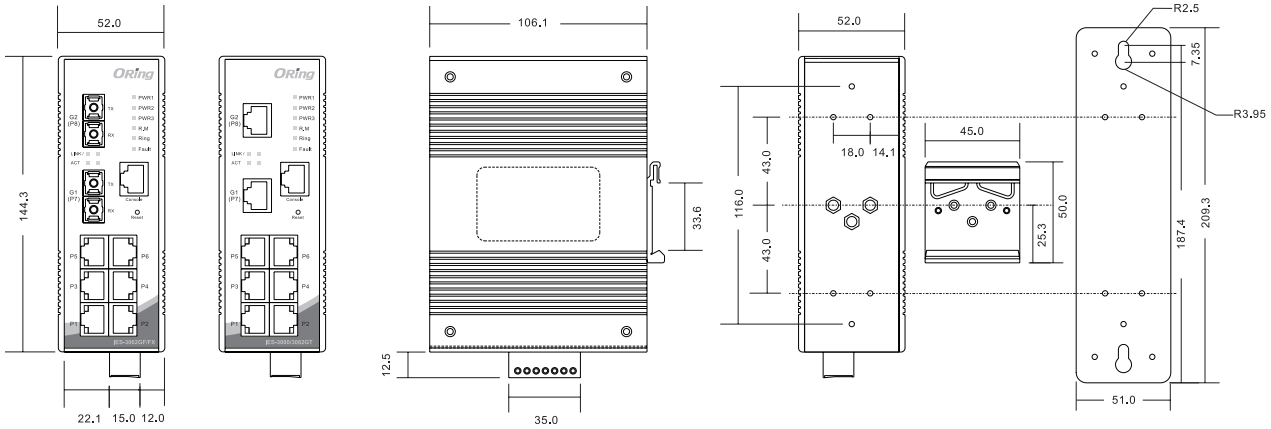
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model		IES-3080	IES-3062GT	IES-3062FX-MM	IES-3062FX-SS	IES-3062GF-MM	IES-3062GF-SS
Physical Ports							
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX		8	6	6	6	6	6
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX		-	2	-	-	-	-
Fiber Ports Specifications	Fiber Ports Number	-	-	2	2	2	2
	Fiber Ports Standard	-	-	100Base-FX	100Base-FX	1000Base-SX	1000Base-LX
	Fiber Mode	-	-	Multi-mode	Single-mode	Multi-mode	Single-mode
	Fiber Diameter (μm)	-	-	62.5/125 μm 50/125 μm	9/125 μm	62.5/125 μm 50/125 μm	9/125 μm
	Fiber Optical Connector	-	-	SC	SC	SC	SC
	Typical Distance (km)	-	-	2 km	30 km	0.55 km	10 km
	Wavelength (nm)	-	-	1310 nm	1310 nm	850 nm	1310 nm
	Max. Output Optical Power (dBm)	-	-	-14 dBm	-8 dBm	-4 dBm	-3 dBm
	Min. Output Optical Power (dBm)	-	-	-23.5 dBm	-15 dBm	-9.5 dBm	-9.5 dBm
	Max. Input Optical Power (Saturation)	-	-	0 dBm	0 dBm	0 dBm	-3 dBm
	Min. Input Optical Power (Sensitivity)	-	-	-31 dBm	-34 dBm	-18 dBm	-20 dBm
	Link Budget (dB)	-	-	7.5 dB	19 dB	8.5 dB	10.5 dB
Technology							
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.3x for Flow control IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication					
MAC Table		8192 MAC addresses					
Priority Queues		4					
Processing		Store-and-Forward					
Switch Properties		Switching latency : 7 μs Switching bandwidth : 5.2Gbps Max. Number of Available VLANs : 4096 IGMP multicast groups : 1024 Port rate limiting : User Define					
Security Feature		Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMPV1/V2c/V3 encrypted authentication and access security Https / SSH enhance network security					

Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP					
Network Redundancy	O-Ring Open-Ring O-Chain STP RSTP:2004 MSTP MRP***NOTE**					
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support					
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. Baud rate setting: 9600bps, 8, N, 1					
LED Indicators						
Power Indicator	Green : Power LED x 3					
R.M. Indicator	Green : Indicates that the system is operating in O-Ring Master mode					
O-Ring Indicator	Green : Indicates that the system is operating in O-Ring mode					
Fault Indicator	Amber : Indicates unexpected events occurred					
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision					
10/100/1000Base-T(X) / Fiber Port Indicator	Green for port Link/Act. Amber for 100Mbps indicator					
Fault contact						
Relay	Relay output to carry capacity of 1A at 24VDC					
Power						
Redundant Input Power	Triple DC inputs. 12~48VDC on 7-pin terminal block, 12~45VDC on power jack					
Power Consumption (Typ.)	5 Watts	8 Watts	9 Watts	9 Watts	7 Watts	7 Watts
Overload Current Protection	Present					
Reverse Polarity Protection	Present on terminal block					
Physical Characteristics						
Enclosure	IP-30					
Dimensions (W x D x H)	52(W)x106.1(D)x144.3(H) mm (2.05x4.18x5.68 inch.)					
Weight (g)	710 g	722 g	735 g	735 g	740 g	740 g
Environmental						
Storage Temperature	-40 to 85°C (-40 to 185°F)					
Operating Temperature	-40 to 70°C (-40 to 158°F)					
Operating Humidity	5% to 95% Non-condensing					
Regulatory Approvals						
EMI	FCC Part 15, CISPR (EN55022) class A					
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11					
Shock	IEC60068-2-27					
Free Fall	IEC60068-2-32					
Vibration	IEC60068-2-6					
Safety	EN60950-1, UL508(E331061)					
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	324,409	287,493	280,176	280,176	290,610	290,610
Warranty	5 years					

***NOTE: This function is available by request only**

Ordering Information

IES-3 AA B CC - DD - EE

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 08:** 8 ports **- 06:** 6 ports	**- 0:** 0 port **- 2:** 2 ports	**- GT:** 10/100/1000Base-T(X) **- FX:** 100Base-FX **- GF:** 1000Base-X	**- MM:** Multi-mode **- SS:** Single-mode	**- SC:** SC connector

	Model Name	Description
Available Model	IES-3080	Industrial 8-port managed Ethernet switch with 8x10/100Base-T(X)
	IES-3062GT	Industrial 8-port managed Ethernet switch with 6x10/100Base-T(X) and 2x10/100/1000Base-T(X)
	IES-3062FX-MM-SC	Industrial 8-port managed Ethernet switch with 6x10/100Base-T(X) and 2x100Base-FX, multi-mode, 2km/1310nm, SC connector
	IES-3062FX-SS-SC	Industrial 8-port managed Ethernet switch with 6x10/100Base-T(X) and 2x100Base-FX, single-mode, 30km/1310nm, SC connector
	IES-3062GF-MM-SC	Industrial 8-port managed Ethernet switch with 6x10/100Base-T(X) and 2x1000Base-SX, multi-mode, 550m/850nm, SC connector
	IES-3062GF-SS-SC	Industrial 8-port managed Ethernet switch with 6x10/100Base-T(X) and 2x1000Base-LX, single-mode, 10km/1310nm, SC connector

Packing List

- IES-3080 / 3062 series
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- PAA-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, US plug
- PAE-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, EU plug
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-3073GC

IES-3073GC

Industrial 10-port managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket

Features

- Fastest Redundant Ethernet Ring : **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** supports the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Supports **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Supports DDM (Digital Diagnostic Monitoring) function
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Port lock to prevent access from unauthorized MAC address
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- Supports 3 Gigabit combo ports
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Supports LLDP Protocol
- Support TACACS+ and 802.1x User Authentication for security

R6 READY | O-Ring | Redundant PWR | -40~70°C Temperature

RoHS Lead Free

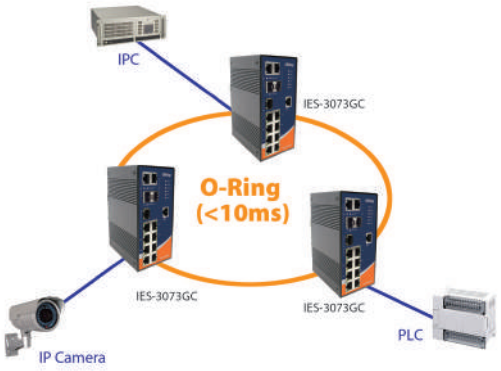
Introduction

IES-3073GC is managed Redundant Ring Ethernet switch with 7x10/100Base-T(X) ports and 3xGigabit combo ports. With complete support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-RSTP and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. All function of IES-3073GC can be managed centralized and convenient by a powerful windows utility — Open-Vision. IES-3073GC support new DDM (Digital Diagnostic Monitoring) function, which can monitor instantly the status of electrical voltage, current and temperature. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

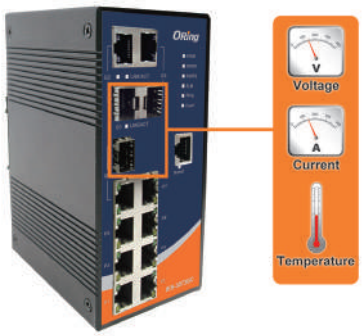
Open-Vision

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.

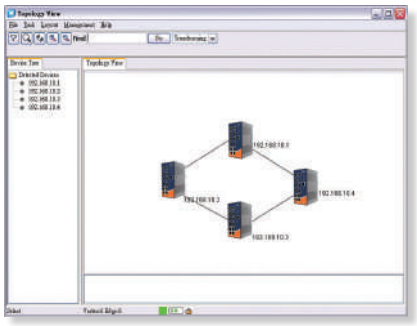
***NOTE: This function is available by request only**



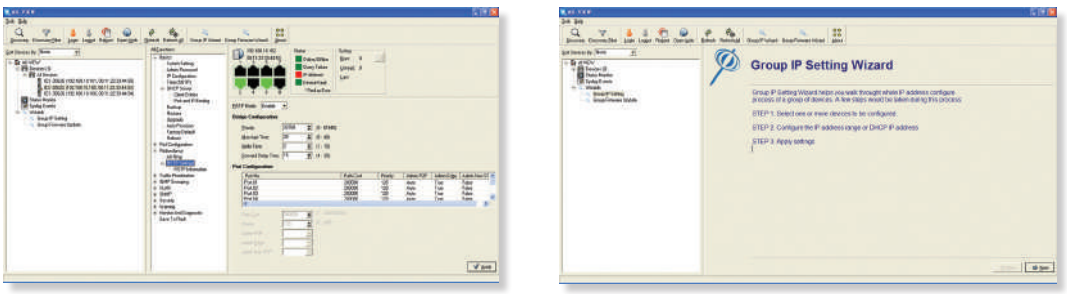
Network connection



DDM function

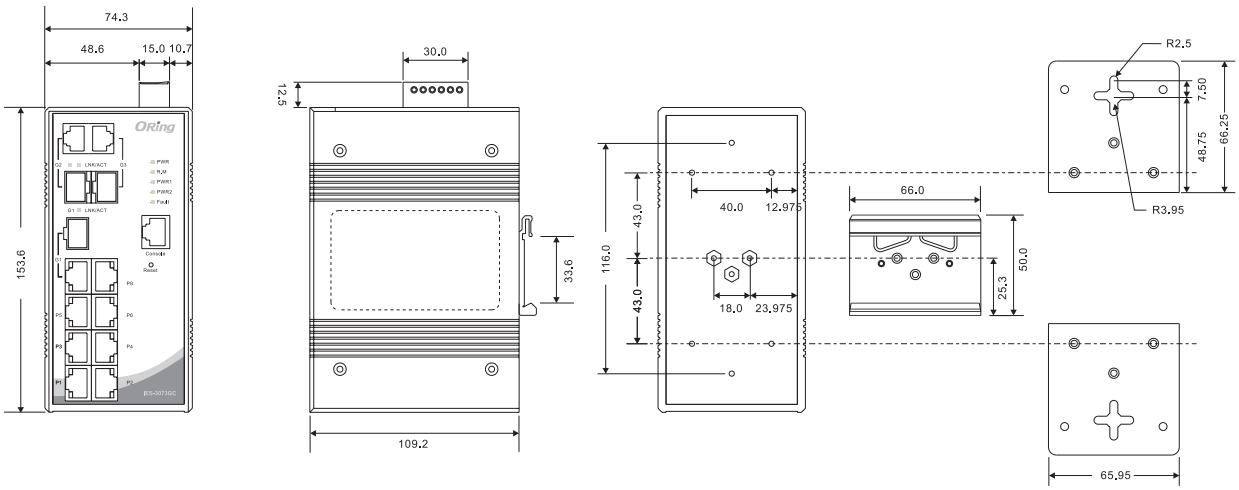


Topology View



Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-3073GC
Physical Ports	
10/100Base-T(X) Port in RJ45 Auto MDI/MDIX	7
Gigabit combo Port with 10/100/1000Base-T(X) and 100/1000Base-X SFP Port	3
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP(Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency : 7 µs Switching bandwidth : 7.4Gbps Max. Number of Available VLANs : 4096 IGMP multicast groups : 1024 Port rate limiting : User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP v2/v3 (IGMP snooping support) for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain STP RSTP:2004 MSTP MRP***NOTE**
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power Indicator	Green : Power LED x 3
R.M. Indicator	Green : Indicates that the system is operating in O-Ring master mode
O-Ring Indicator	Green : Indicates that the system is operating in O-Ring mode
Fault Indicator	Amber : Indicates unexpected event occurred

***NOTE: This function is available by request only**

10/100Base-T(X) RJ45 port indicator	Green for port Link/Act. Amber for Duplex/Collision
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for 100Mbps indicator
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block
Power Consumption (Typ.)	12 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93x4.3x6.05 inch)
Weight (g)	1045g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IES-3 AA B CC

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 07 :** 7 ports	**- 3 :** 3 ports	**- GC :** Gigabit combo port

	Model Name	Description
Available Model	IES-3073GC	Industrial 10-port managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket

Packing List

- IES-3073GC
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-P3073GC Series

IES-P3073GC Series

Industrial IEC 61850-3 10-port managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket

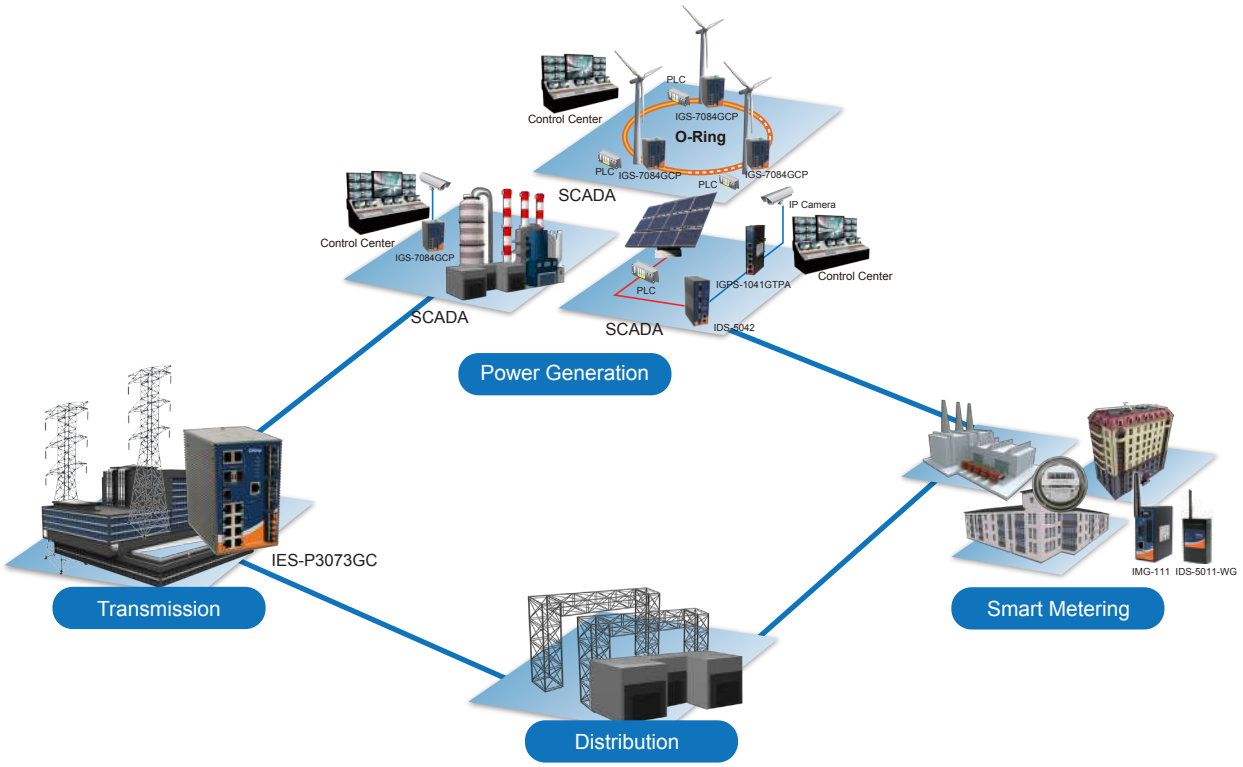
Features

- Designed for power substation / Railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus/TCP protocol
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Supports **DDM** (Digital Diagnostic Monitoring) function
- Support LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- Port lock to prevent access from unauthorized MAC address
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, Console(CLI)
- Support 3 Gigabit combo ports
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

***NOTE: This function is available by request only**

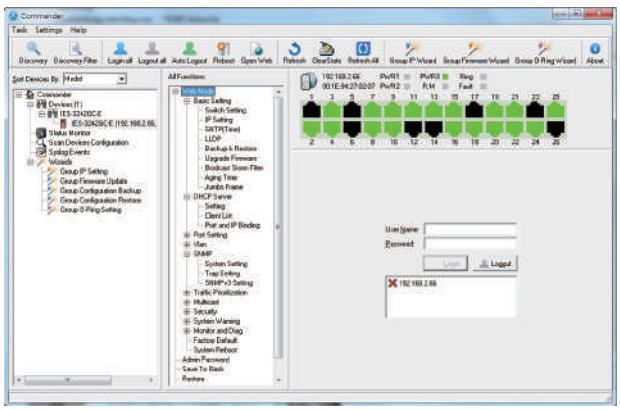
Introduction

IES-P3073GC series are IEC 61850-3 managed Redundant Ring Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports. These switches are designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613. And these switches designed for the toughest and fully compliant with EN50155 requirement. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain provided ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. All function of IES-P3073GC series can be managed centralized and convenient by a powerful windows utility — Open-Vision. IES-P3073GC series support new DDM (Digital Diagnostic Monitoring) function, which can monitor instantly the status of electrical voltage, current and temperature. In addition, the wide operating temperature range from -40 to 85°C can satisfy most of operating environment. Therefore, these switches are one of the most reliable choices for highly-managed Fiber Ethernet application.

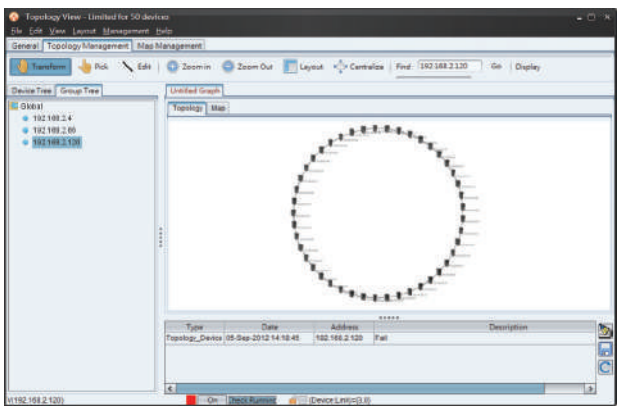


Open-Vision

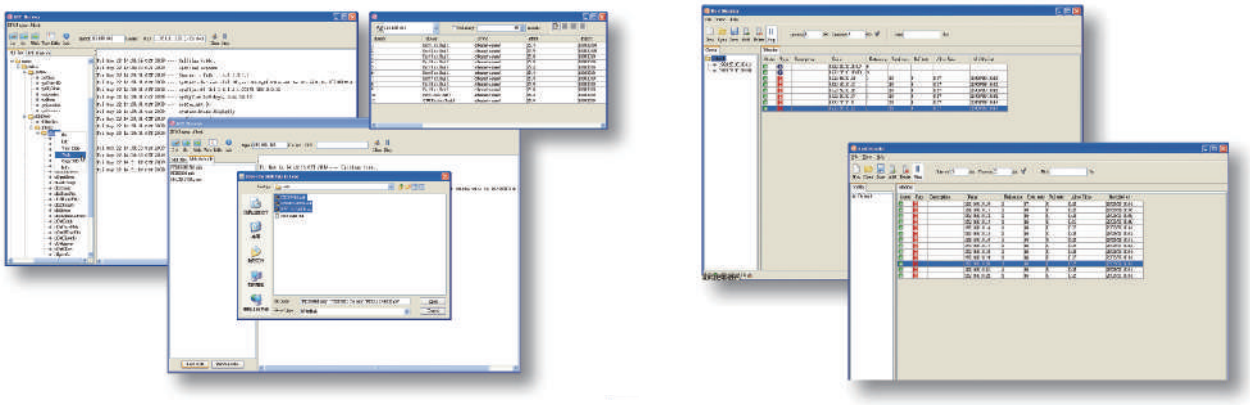
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



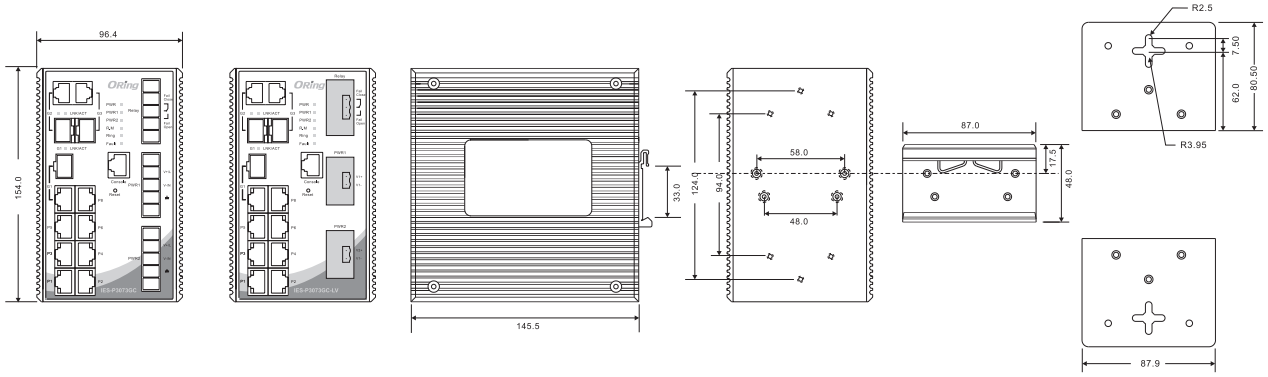
Topology View



Monitoring and Configuration interface

Dimensions

Dimension (Unit =mm)



(Unit=mm)

Specifications

ORing Switch Model	IES-P3073GC-LV	IES-P3073GC-HV
Physical Ports		
10/100Base-T(X) Port in RJ45 Auto MDI/MDIX	7	
Gigabit combo Ports with 10/100/1000Base-T(X) and 100/1000Base-X SFP Port	3	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protoco) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol)	
MAC Table	8192 MAC addresses	
Priority Queues	4	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 7.4Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define	
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security	

Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP	
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** STP / RSTP:2004 / MSTP	
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support	
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1	
LED Indicators		
Power Indicator	Green : Power LED x 3	
R.M. Indicator	Green : Indicates that the system is operating in O-Ring master mode	
Fault Indicator	Amber : Indicates unexpected event occurred	
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision	
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for 100Mbps indicator	
100/1000Base-X SFP Port Indicator	Green for port Link/Act.	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input Power	Dual power inputs. 12~48VDC on dual 2-pin terminal block	Dual power inputs. 85~264VAC/88~373VDC on dual 3-pin terminal block
Power Consumption (Typ.)	12 Watts	12 Watts
Overload Current Protection	Present	
Reverse Polarity Protection	Present on terminal block	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	96.4 (W) x 145.5 (D) x 154 (H)mm 3.8 (W) x 5.73 (D) x 6.06 (H)inch	96.4 (W) x 145.5 (D) x 154 (H)mm 3.8 (W) x 5.73 (D) x 6.06 (H)inch
Weight (g)	1415 g	1935g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 85°C (-40 to 185°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
Power Automation	IEC 61850-3, IEEE 1613	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

***NOTE: This function is available by request only**

Ordering Information

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 07 :** 7 ports	**- 3 :** 3 ports	**- GC :** Gigabit combo port

	Model Name	Description
Available Model	IES-P3073GC-LV	Industrial IEC 61850-3 10-port managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket, low-voltage power inputs
	IES-P3073GC-HV_US	Industrial IEC 61850-3 10-port managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket, high-voltage power inputs, US power cord
	IES-P3073GC-HV_UK	Industrial IEC 61850-3 10-port managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket, high-voltage power inputs, UK power cord
	IES-P3073GC-HV_EU	Industrial IEC 61850-3 10-port managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket, high-voltage power inputs, EU power cord

Packing List

- IES-P3073GC
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- Power Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply

IES-2060/IES-2042FX Series

IES-2060 IES-2042FX Series

Industrial 6-port lite-managed Ethernet switch

Features

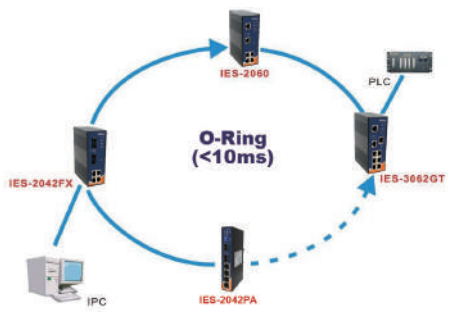
- Fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** supports other vendor's ring technology in open architecture
- **O-Chain** support the multiple redundant ring technology
- Multiple Redundant Ethernet technology RSTP/STP, O-Ring supported to protect your industrial network
- Provides **Fast recovery technology** for Ethernet multi-redundancy
- SNMP v1/v2c/v3 ,http server, telnet server support
- Supports LLDP protocol
- Configurable by Web-based and Windows utility **(Open-Vision)**
- Event notification through Syslog, Email, and SNMP trap
- Two 100Base-FX fiber ports support for long distance connection
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

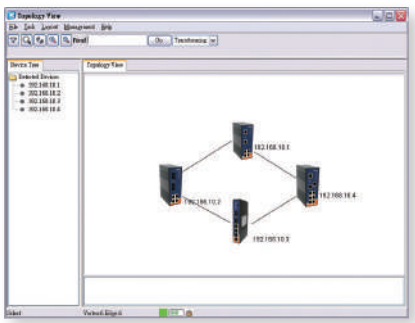
IES-2060/2042FX series are lite-Managed Redundant Ring Ethernet switches with 6x10/100Base-T(X) ports or 4x10/100Base-T(X) and 2x100Base-FX ports. With complete support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection) and Open-Ring, O-Chain and STP/RSTP(IEEE802.1w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IES-2060/2042FX series can be managed centralized and convenient by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. Therefore, these switch is one of the most reliable choice for easy managed Fiber Ethernet application.

Open-Vision

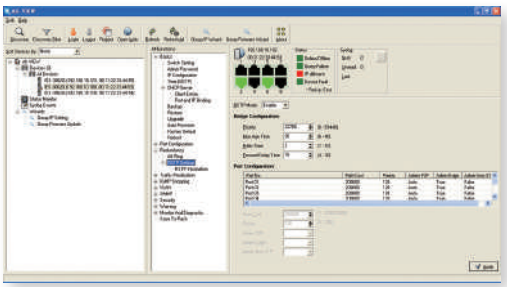
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility **(Open-Vision)** for user to manage and monitor all of industrial Ethernet switches on the industrial network.

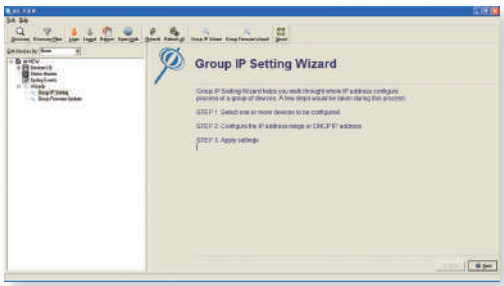


Network connection



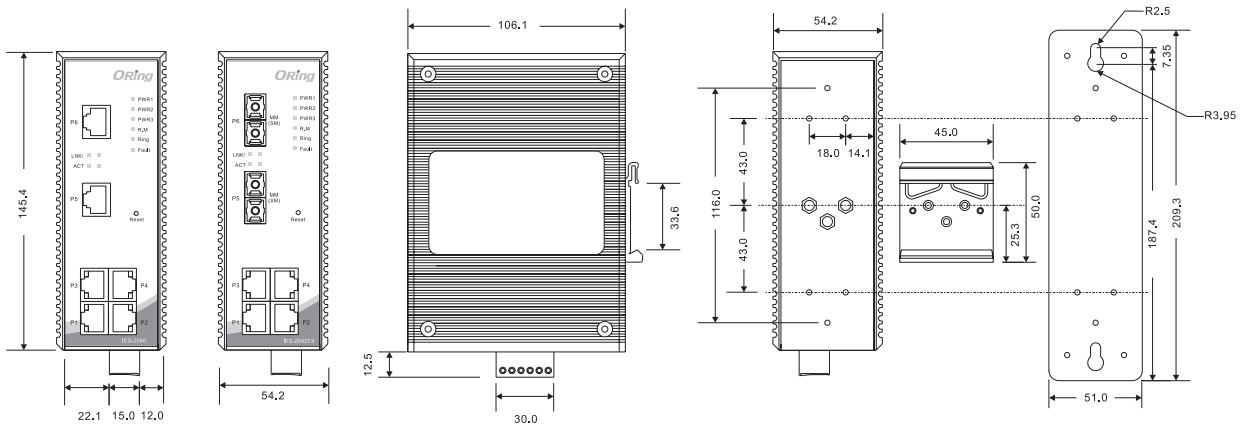
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model		IES-2060	IES-2042FX-MM-SC	IES-2042FX-SS-SC
Physical Ports				
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX		6	4	4
Fiber Ports Specifications	Fiber Ports Number	-	2	2
	Fiber Ports Standard	-	100Base-FX	100Base-FX
	Fiber Mode	-	Multi-mode	Single-mode
	Fiber Diameter (μm)	-	62.5/125 μm 50/125 μm	9/125 μm
	Fiber Optical Connector	-	SC	SC
	Typical Distance (km)	-	2 km	30 km
	Wavelength (nm)	-	1310 nm	1310 nm
	Max. Output Optical Power (dBm)	-	-14 dBm	-8 dBm
	Min. Output Optical Power (dBm)	-	-23.5 dBm	-15 dBm
	Max. Input Optical Power (Saturation)	-	0 dBm	0 dBm
	Min. Input Optical Power (Sensitivity)	-	-31 dBm	-34 dBm
	Link Budget (dB)	-	7.5 dB	19 dB

Technology			
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3x for Flow control IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)		
MAC Table	1024 MAC addresses		
Priority Queues	4		
Processing	Store-and-Forward		
Switch Properties	Switching bandwidth : 1.2Gbps VLAN : Port Based		
Security Features	Enable/disable ports VLAN to segregate and secure network traffic		
Software Features	STP/RSTP (IEEE 802.1D/w) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units DHCP Client Port base VLAN LLDP (Link Layer Discovery Protocol) Port configuration, status, statistics, monitoring, security SNMP v1/v2c/v3 and private MIB support		
Network Redundancy	O-Ring Open-Ring O-Chain Fast recovery STP RSTP		
LED Indicators			
Power Indicator	Green : Power LED x 3		
R.M. Indicator	Green : Indicates that the system is operating in O-Ring Master mode		
O-Ring Indicator	Green : Indicates that the system is operating in O-Ring mode		
Fault Indicator	Amber : Indicates unexpected events occurred		
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Link		
100 Base-FX Fiber Port Indicator	Green for port Link/Act. Amber for Link		
Fault contact			
Relay	Relay output to carry capacity of 1A at 24VDC		
Power			
Redundant Input Power	Triple DC inputs: 12 ~ 48 VDC on 7-pin terminal block, 12 ~ 45 VDC on power jack		
Power Consumption (Typ.)	5 Watts	7 Watts	7 Watts
Overload Current Protection	Present		
Reverse Polarity Protection	Present on terminal block		
Physical Characteristics			
Enclosure	IP-30		
Dimensions (W x D x H)	54.2(W) x 106.1(D) x 145.4(H) mm (2.13x4.18x5.72 inch.)		
Weight (g)	657 g	670 g	670 g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-40 to 70°C (-40 to 158°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory Approvals			
EMI	FCC Part 15, CISPR (EN55022) class A		
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11		
Shock	IEC60068-2-27		
Free Fall	IEC60068-2-32		
Vibration	IEC60068-2-6		
Safety	EN60950-1		
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	383,478	383,478	383,478
Warranty	5 years		

Ordering Information

IES-2 AA B CC - DD - EE

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 6:** 6 ports **- 4:** 4 ports	**- 0:** 0 port **- 2:** 2 ports	**- FX:** 100Base-FX	**- MM:** Multi-mode **- SS:** Single-mode	**- SC:** SC connector

	Model Name	Description
Available Model	IES-2060	Industrial 6-port lite-managed Ethernet switch with 6x10/100Base-T(X)
	IES-2042FX-MM-SC	Industrial 6-port lite-managed Ethernet switch with 4x10/100Base-T(X) and 2x100Base-FX, multi-mode, 2km/1310nm, SC connector
	IES-2042FX-SS-SC	Industrial 6-port lite-managed Ethernet switch with 4x10/100Base-T(X) and 2x100Base-FX, single-mode, 30km/1310nm, SC connector

Packing List

- IES-2060 / 2042FX series
- DIN-Rail Kit
- Wall-mount Kit
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- PAA-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, US plug
- PAE-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, EU plug
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power suppl

IES-2050A

IES-2050A

Industrial 5-port slim type lite-managed Ethernet switch with 5x10/100Base-T(X)

Features

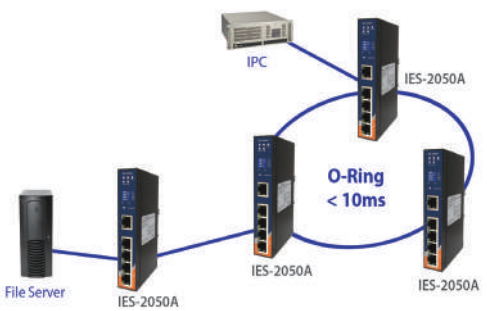
- Fastest Redundant Ethernet Ring : **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** supports the other vendor's ring technology in open architecture
- **O-Chain** support the multiple redundant ring technology
- Supports 5 ports 10/100Base-T(X)
- SNMP v1/v2c/v3 support for secured network management
- Web-based interface, telnet server, and Windows utility (Open-Vision) configuration
- Event notification through Syslog, Email, SNMP trap and relay.
- Provides Web / Windows Utility / DIP-Switch function to set Ring
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Supports LLDP Protocol

Introduction

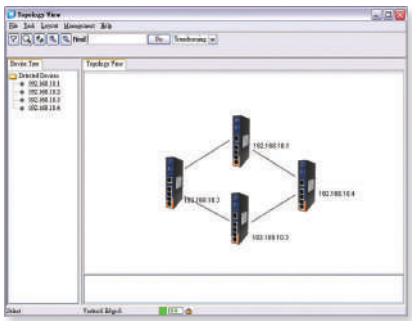
IES-2050A is a lite-managed Ethernet switch. With very compact size of housing, you can install IES-2050A easily. In addition, it also supports of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection) and Open-Ring, O-Chain and STP/RSTP(IEEE802.1w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IES-2050A provide the setting ability of Web-GUI and Windows Utility, also support the simple DIP-Switch setting function which offer great flexibility to set up the Ring. IES-2050A is with rigid IP-30 housing design and can operate under harsh environment. The feature of wide operating temperature range from -40 to 70°C can satisfy most requirement of operation.

Open-Vision

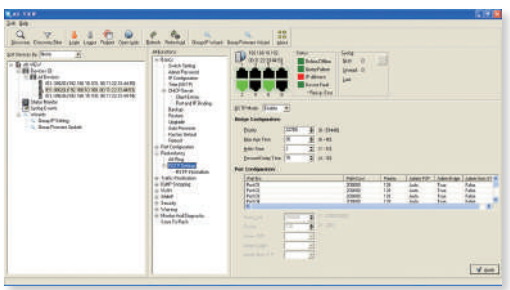
IES-2050A can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, O-Ring redundant technology is supported to guarantee a non-stop operation.

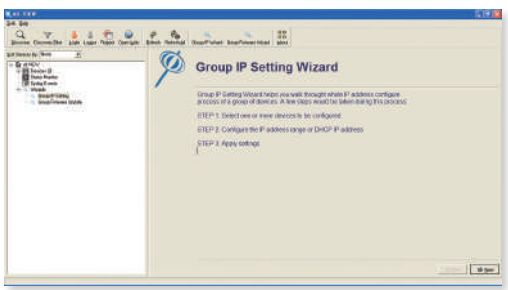


Connections of redundancy



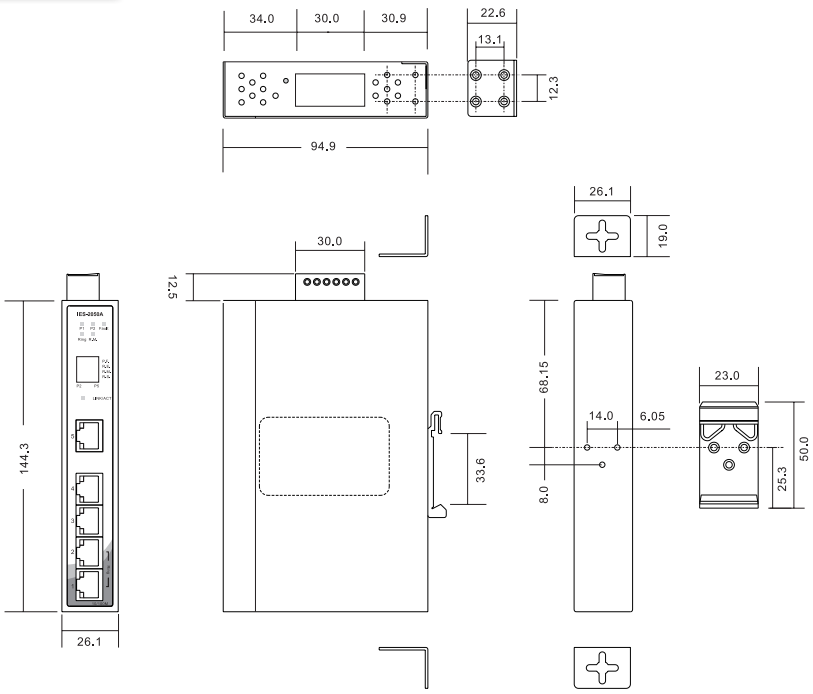
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-2050A
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	5
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	1024 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching bandwidth : 1.0Gbps VLAN : Port Based
Security Features	Enable/disable ports VLAN to segregate and secure network traffic
Software Features	STP/RSTP (IEEE 802.1D/w) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units DHCP Client Port base VLAN LLDP (Link Layer Discovery Protocol) Port configuration, status, statistics, monitoring, security SNMP v1/v2c/v3 and private MIB support
Network Redundancy	O-Ring Open-Ring O-Chain Fast recovery STP RSTP
DIP Switch Settings	
P.F.	When power fault enable relay warning system (On : Enable, Off : Disable function)
R.E.	Enable/Disable O-Ring function (On : Enable, Off : Disable)
R.M.	Enable/Disable Ring Master Mode (On : Enable, Off : Disable)
R.S.	O-Ring redundant port select (On : ring port set to port-1 and port-5, Off : ring port set to port-1 and port-2)

LED Indicators	
Power Indicator	Green LED x 2
R.M. Indicator	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator	Green : Indicates port operated in O-Ring mode
Fault Indicator	Amber : Indicates unexpected event occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Input Power	Dual 12~ 48 VDC power input on 6-pin terminal block
Power Consumption (Typ.)	4 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1 mm (W) x 95 mm(D) x 144.3 mm(H)
Weight (g)	395 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	322,412
Warranty	5 years

Ordering Information

IES-2 AA B A

Code efinition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 5:** 5 ports	**- 0:** 0 port

Available Model	Model Name	Description
	IES-2050A	Industrial 5-port slim type lite-managed Ethernet switch with 5x10/100Base-T(X)

Packing List

- IES-2050A
- DIN-Rail Kit
- Wall-mount Kit
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-2042PA

IES-2042PA

Industrial 6-port slim type lite-managed Ethernet switch with 4x10/100Base-T(X) and 2x100Base-FX, SFP socket

Features

- Fastest Redundant Ethernet Ring : **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** support the multiple redundant ring technology
- Supports 4 ports 10/100Base-T(X) and 2 ports 100Base-FX SFP Port
- SNMP v1/v2c/v3 ,http server, telnet server support
- Web-based interface,telnet server and Windows utility (**Open-Vision**) configuration
- Event notification through Syslog, Email, SNMP trap, and relay
- Provides Web / Windows Utility / DIP-Switch function to set Ring
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Supports LLDP Protocol

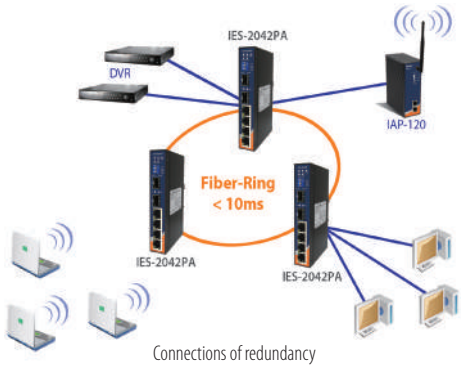
RoHS Lead Free CE FC

Introduction

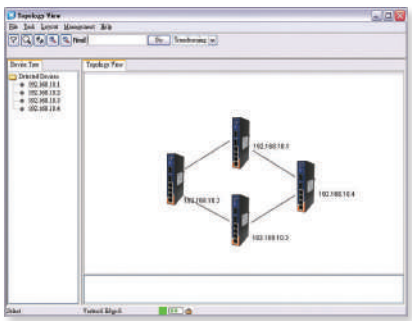
IES-2042PA is a Lite-Managed Redundant Ring Ethernet switch. With very compact size of housing, you can install IES-2042PA easily. In addition, it also supports of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection) and Open-Ring, O-Chain and STP/RSTP(IEEE802.1w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IES-2042PA provides the setting ability of Web-GUI and Windows Utility, also support the simple DIP-Switch setting function which offers great flexibility to set up the Ring. With it's rigid IP-30 housing design, it can operate under harsh environment. The feature of wide operating temperature range from -40 to 70°C can satisfy most requirement of operation.

Open-Vision

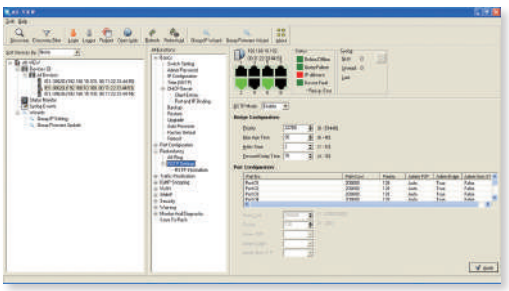
IES-2042PA can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, O-Ring redundant technology is supported to guarantee a non-stop operation.

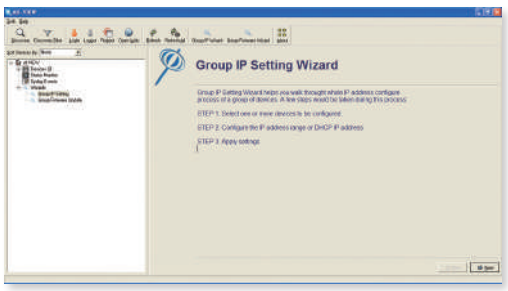


Connections of redundancy



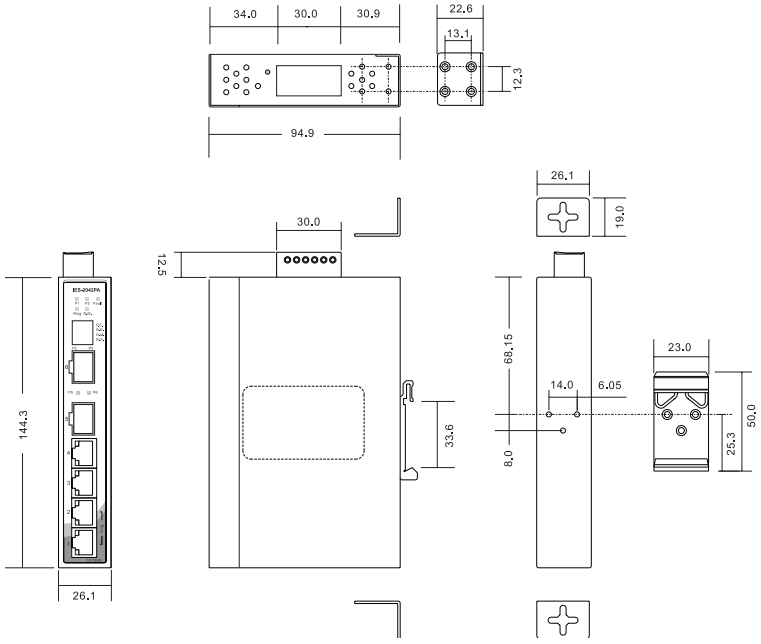
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-2042PA
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	4
100Base-FX SFP Ports	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3x for Flow control IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	1024 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching bandwidth : 1.2Gbps VLAN : Port Based
Security Features	Enable/disable ports VLAN to segregate and secure network traffic
Software Features	STP/RSTP (IEEE 802.1D/w) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units DHCP Client Port base VLAN LLDP (Link Layer Discovery Protocol) Port configuration, status, statistics, monitoring, security SNMP v1/v2c/v3 and private MIB support
Network Redundancy	O-Ring Open-Ring O-Chain Fast recovery STP RSTP
DIP-Switch Setting	
P.F.	When power fault enable relay warning system (On : Enable, Off : Disable function)
R.E.	Enable/Disable O-Ring function (On : Enable, Off : Disable)
R.M.	Enable/Disable Ring Master Mode (On : Enable, Off : Disable)
R.S.	O-Ring redundant port select (On : ring port set to port-5 and port-6, Off : ring port set to port-1 and port-2)

LED Indicators	
Power Indicator	Green LED x 2
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Link
100Base-FX SFP Port Indicator	Green for port Link/Act
R.M. Indicator	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator	Green : Indicates port operated in O-Ring mode
Fault Indicator	Amber : Indicates unexpected event occurred
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Input Power	Dual 12~48 VDC power input at 6-pin terminal block
Power Consumption (Typ.)	7 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1 mm (W) x 95 mm(D) x 144.3 mm(H)
Weight (g)	395 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	576,511
Warranty	5 years

Ordering Information

IES-2 AA B C A

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 04:** 4 ports	**- 2:** 2 port	**- P:** 100Base-FX SFP port

Available Model	Model Name	Description
	IES-2042PA	Industrial 6-port slim type lite-managed Ethernet switch with 4x10/100Base-T(X) and 2x100Base-FX, SFP socket

Packing List

- IES-2042PA
- DIN-Rail Kit
- Wall-mount Kit
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-1240

IES-1240

Industrial 24-port unmanaged Ethernet switch with 24x10/100Base-T(X)

Features

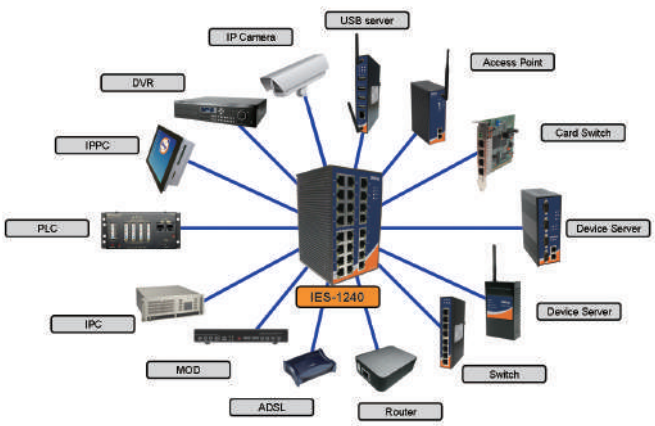
- RJ-45 ports support Auto MDI/MDI-X switching function
- Provides Store-and-Forward switching architecture
- Provides 4.8Gbps Back-plane (Switching Fabric)
- Warning system by relay output
- Rigid IP-30 housing design
- DIN-Rail and walll mounting enabled

Introduction

IES-1240 is the unmanaged Ethernet switch with 24x10/100Base-T(X) port. IES-1240 support redundant power inputs, relay output alarm, and surge protection. The wide operating temperature range from -40°C to 70°C can satisfy most of operating environments. Especially, IES-1240 features dual different redundant DC power inputs, two DC power inputs are on terminal block to avoid any unexpected fails on power on. Thus, IES-1240 could guarantee a non-stop operation. Therefore, the switch is one of the most reliable choice for highly-unmanaged Ethernet application.

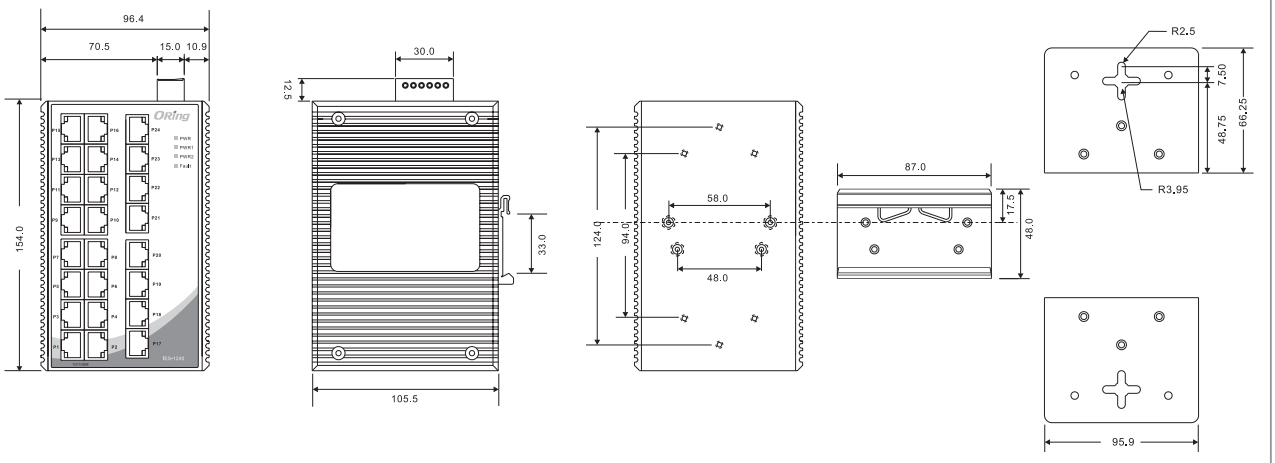
Practical Operation

IES-1240 is usually deployed for connecting several Ethernet devices, such like Ethernet I/O, IP-Camera, etc. The designs of rugged housing and wide operating temperature, range from -40 ~ 70 °C, makes IES-1240 reliably in any kinds of industrial applications.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-1240
Physical Ports	
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	24
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 9 µs Switching bandwidth: 4.8Gbps
LED Indicators	
Power Indicator	Green : Power LED x 3
Fault Indicator	Amber : Indicates power failure occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12 ~ 48VDC on 6-pin terminal block
Power Consumption (Typ.)	9.6 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block

Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	96.4(W)x108.5(D)x154(H) mm (3.8 x 4.27 x 6.06 inch)
Weight (g)	1052 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IES-1 AA B

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 24 :** 24 ports	**- 0 :** 0 ports

Available Model	Model Name	Description
	IES-1240	Industrial 24-port unmanaged Ethernet switch with 24x10/100Base-T(X)

Packing List

- IES-1240
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-1162GC

IES-1162GC

Industrial 18-port unmanaged Ethernet switch with 16x10/100Base-T(X) and 2xGigabit combo ports, SFP socket

Features

- Provides 16x10/100Base-T(X) and 2xGigabit Combo ports
- RJ-45 ports support Auto MDI/MDI-X switching function
- SFP supports 1000Base-X Mode
- Provides Store-and-Forward switching architecture
- Provides 7.2Gbps Back-plane (Switching Fabric)
- Supports 1M bits packet buffer
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Redundant PWR -40~70°C Temperature

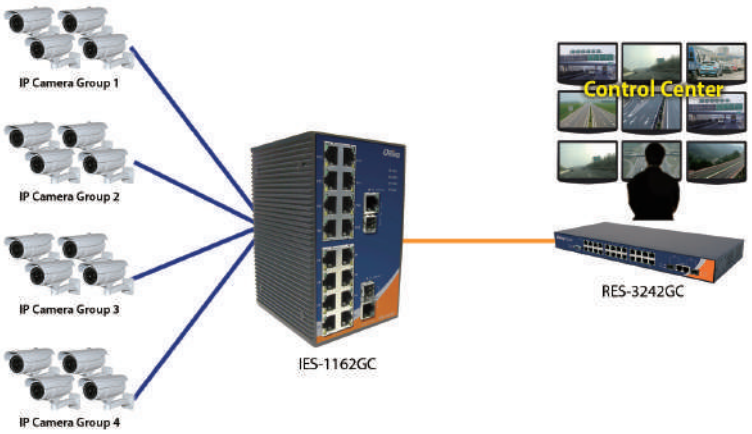
RoHS Lead Free CE FC

Introduction

IES-1162GC is the unmanaged Ethernet switch with 16x10/100Base-T(X) and 2xGigabit Combo port Ethernet Switch. IES-1162GC supports redundant power inputs, relay output alarm, and surge protection. The wide operating temperature, range from -40 to 70°C, can satisfy most of harsh operating environments.

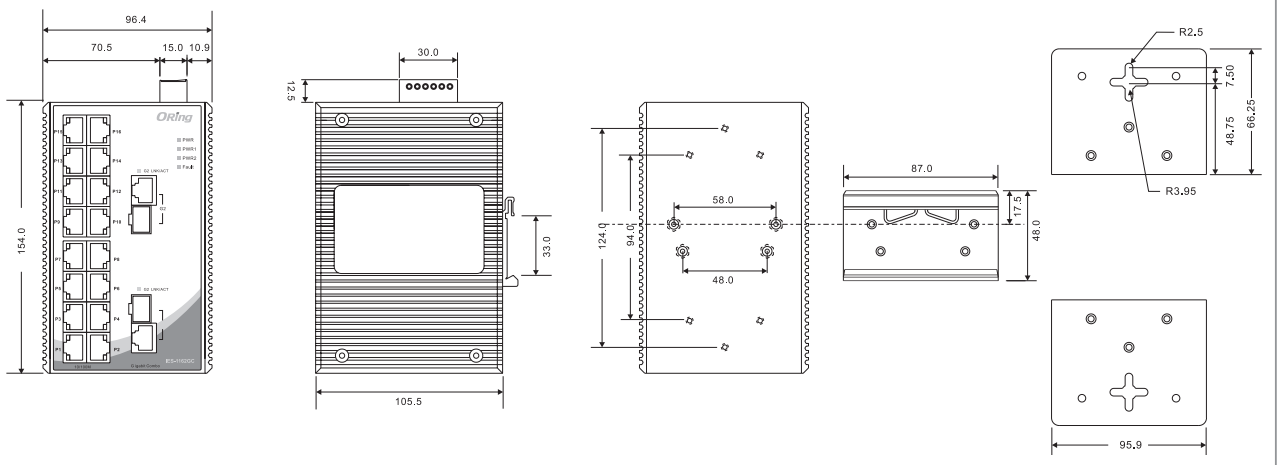
Practical Operation

IES-1162GC is usually deployed for connecting several kinds of Ethernet devices, such like Ethernet I/O, IP-camera, etc. The designs of rugged housing and wide operating temperature, range from -40~70°C, makes IES-1162GC reliably in any kinds of industrial applications. Especially, IES-1162GC features redundant DC power inputs on terminal block to avoid any unexpected fails on power. Thus, IES-1162GC could guarantee a non-stop operation.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-1162GC
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	16
Gigabit Combo Ports with 10/100/1000Base-T(X) and 1000Base-X SFP Port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency : 9 µs Switching bandwidth : 7.2Gbps
LED Indicators	
Power Indicator	Green : Power LED x 3
Fault Indicator	Amber : Indicates power failure occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act. Amber for 100Mbps indicator
1000Base-X Fiber Port Indicator	Green for port Link/Act.
Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block
Power Consumption (Typ.)	9 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block

Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	96.4(W)x108.5(D)x154(H) mm (3.8 x 4.27 x 6.06 inch)
Weight (g)	1010 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IES-1 **AA** **B** **CC**

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 16 :** 16 ports	**- 2 :** 2 ports	**- GC :** Gigabit combo port

Available Model	Model Name	Description
	IES-1162GC	Industrial 18-port unmanaged Ethernet switch with 16x10/100Base-T(X) and 2xGigabit combo ports, SFP socket

Packing List

- IES-1162GC
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-1160

IES-1160

Industrial 16-port unmanaged Ethernet switch with 16x10/100Base-T(X)

Features

- RJ-45 ports support Auto MDI/MDI-X switching function
- Provides Store-and-Forward switching architecture
- Provides 3.2Gbps Back-plane (Switching Fabric)
- Warning system by relay output
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Redundant PWR -40~70°C Temperature

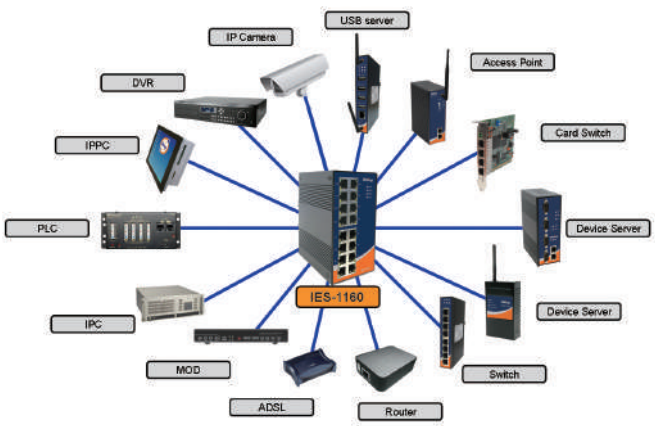
RoHS Lead Free

Introduction

IES-1160 is the unmanaged Ethernet switch with 16x10/100Base-T(X) port. IES-1160 support redundant power inputs, relay output alarm, and surge protection. The wide operating temperature range from -40°C to 70°C can satisfy most of operating environments. Especially, IES-1160 features dual different redundant DC power inputs, two DC power inputs are on terminal block to avoid any unexpected fails on power on. Thus, IES-1160 could guarantee a non-stop operation. Therefore, the switch is one of the most reliable choice for highly-unmanaged Ethernet application.

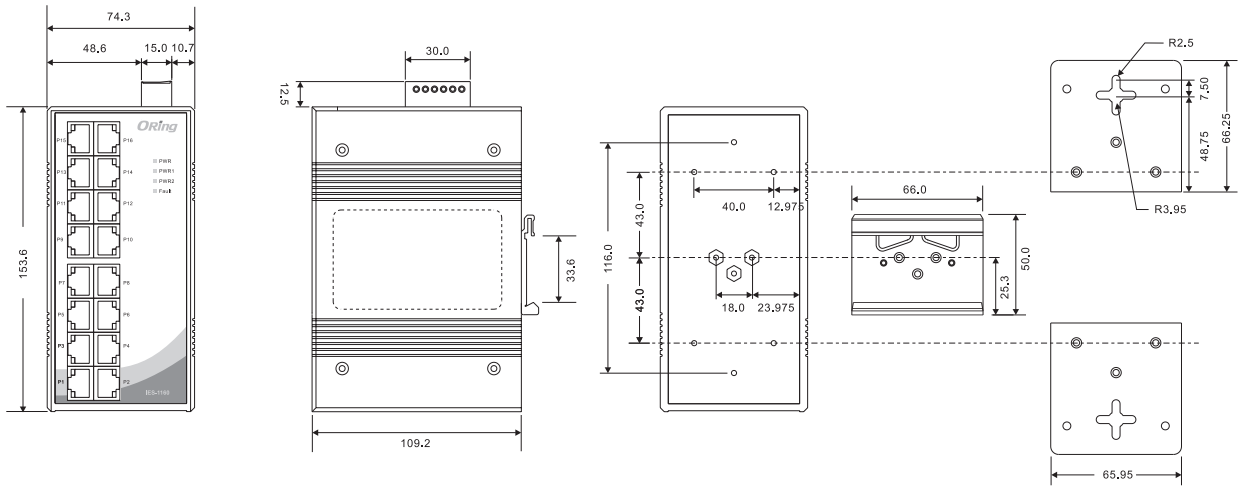
Practical Operation

IES-1160 is usually deployed for connecting several Ethernet devices, such like Ethernet I/O, IP-Camera, etc. The designs of rugged housing and wide operating temperature, range from -40 ~ 70°C, makes IES-1160 reliably in any kinds of industrial applications.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-1160
Physical Ports	
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	16
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 9 µs Switching bandwidth: 3.2Gbps
LED Indicators	
Power Indicator	Green : Power LED x 3
Fault Indicator	Amber : Indicates power failure occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12 ~ 48VDC on 6-pin terminal block
Power Consumption (Typ.)	9 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block

Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	74.3(W)x109.2(D)x153.6(H) mm (2.93 x 4.3 x 6.05 inch)
Weight (g)	1060 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	267,635
Warranty	5 years

Ordering Information

IES-1 AA B

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 16 :** 16 ports	**- 0 :** 0 ports

Available Model	Model Name	Description
	IES-1160	Industrial 16-port unmanaged Ethernet switch with 16x10/100Base-T(X)

Packing List

- IES-1160
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-1142P

IES-1142P

Industrial 16-port unmanaged Ethernet switch with 14x10/100Base-T(X) and 2x100Base-FX, SFP sock

Features

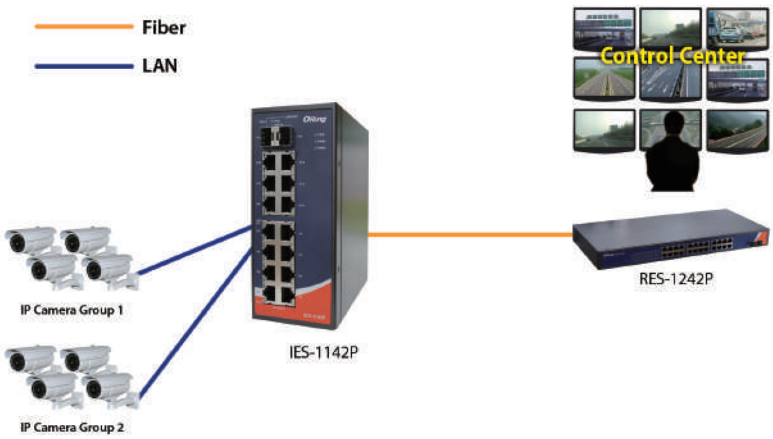
- Dual redundant DC power inputs of terminal block
- Provide 14x10/100Base-T(X) and 2x100Base-FX SFP ports
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Rigid IP-30 housing design
- DIN-Rail mounting enabled

Introduction

IES-1142P is a din-rail unmanaged Ethernet switch with 14x10/100Base-T(X) and 2x100Base-FX in SFP ports. IES-1142P supports redundant power inputs. The wide operating temperature range from -40°C to 70°C can satisfy most of operating environments.

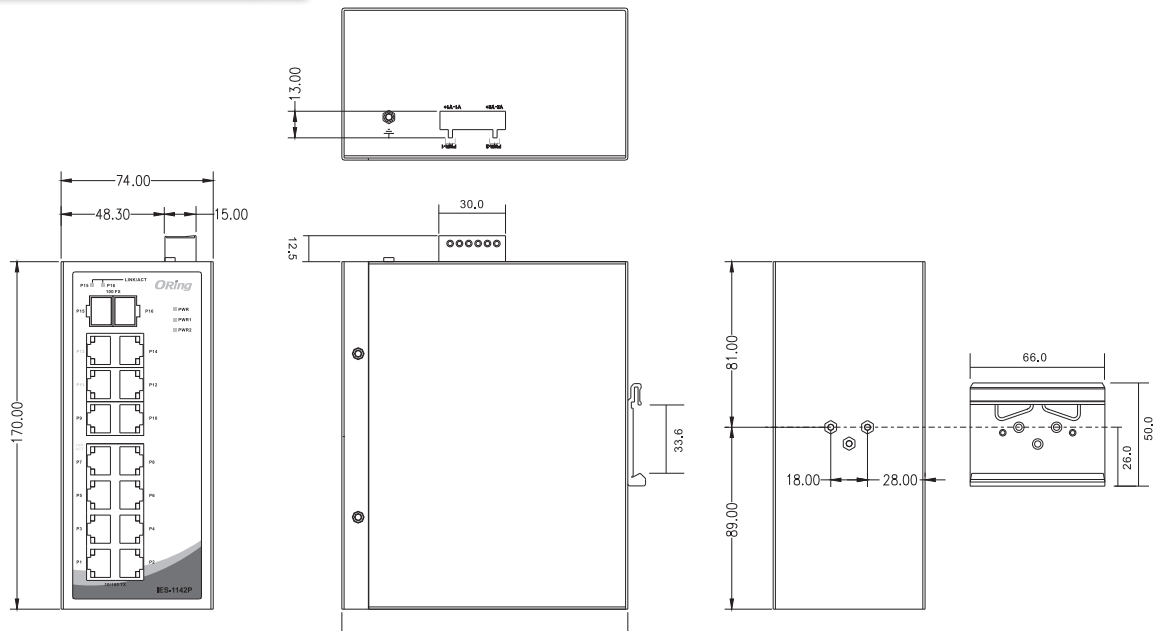
Practical Operation

IES-1142P can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are dual different power inputs to enhance its reliability to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-1142P
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	14
100Base-FX SFP Ports	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control
MAC Table	4096
Processing	Store-and-Forward
LED Indicators	
Power indicator	Green : Power LED x 3
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for speed indicator – Amber for 100Mbps, Off-light for 10Mbps
100Base-FX SFP Port Indicator	Green for port Link/Act
Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block
Power Consumption (Typ.)	10 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	74 x 140 x 170 mm (2.91 x 5.51 x 6.69 inch)
Weight (g)	1120 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)

Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF (Hours)	7198000.9498
Warranty	5 years

Ordering Information

IES-1 AA B C

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 14 :** 14 ports	**- 2 :** 2 ports	**- P :** 100Base-FX in SFP port

Available Model	Model Name	Description
	IES-1142P	Industrial 16-port unmanaged Ethernet switch with 14x10/100Base-T(X) and 2x100Base-FX, SFP socket

Packing List

- IES-1142P x 1
- Quick Installation Guide x 1
- DIN-Rail Kit x 1

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply

IES-1082GP

IES-1082GP

Industrial 10-port unmanaged Ethernet switch with 8x10/100Base-T(X) and 2x1000Base-X, SFP socket

Features

- Triple redundant DC power inputs of terminal block and power jack
- Provide 8x10/100Base-T(X) and 2x1000Base-X SFP ports
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store-and-forward transmission
- Supports flow control
- Warning system by relay output
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Redundant PWR

-40~70°C Temperature

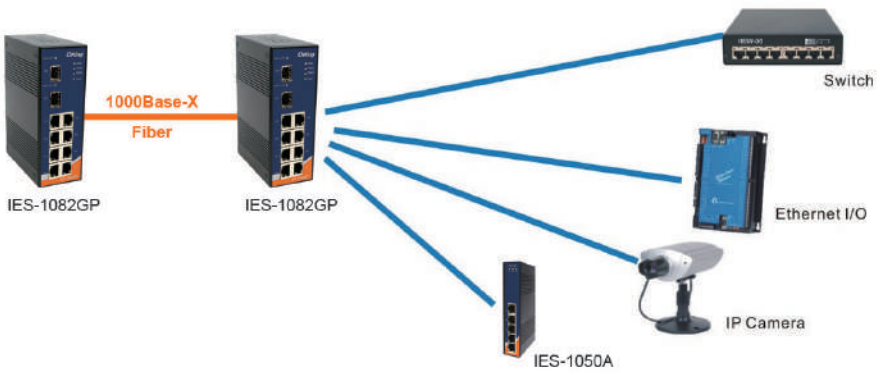
RoHS Lead Free

Introduction

IES-1082GP is an unmanaged Ethernet switches with 8x10/100Base-T(X) and 2x1000Base-X in SFP ports. IES-1082GP supports redundant power input, relay output alarm, and surge protection. The wide operating temperature range from -40° to 70°C can satisfy most of operating environments.

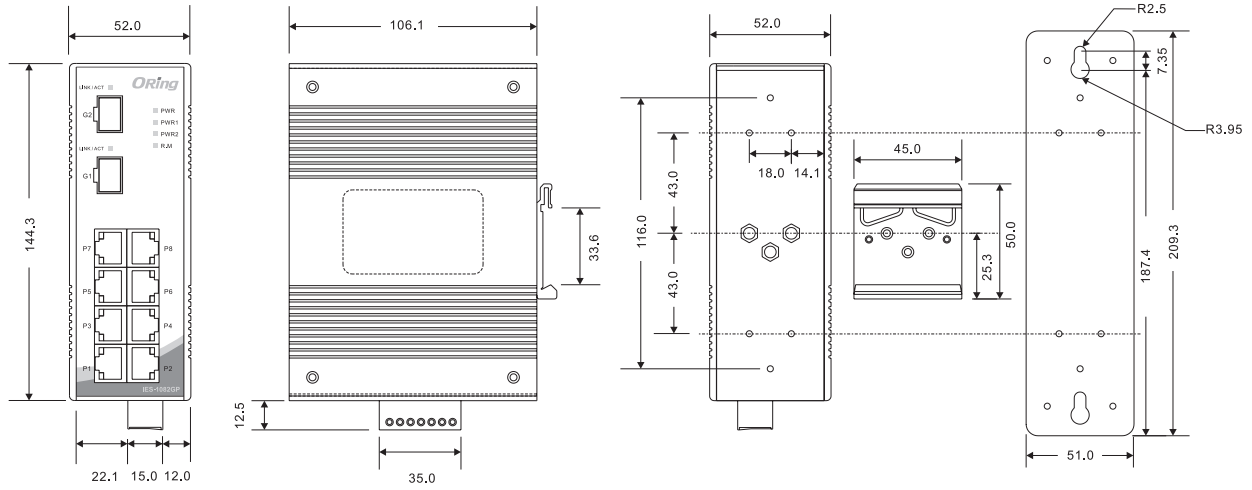
Practical Operation

IES-1082GP can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are three different power inputs to enhance its reliability, two supplied by terminal block, and one by power jack to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-1082GP
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	8
1000Base-X SFP ports	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control
MAC Table	8192 MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power Indicator	Green : Power LED x 3
Fault Indicator	Amber : Indicates PWR1 or PWR2 failure occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Triple DC inputs. 12~48VDC on 7-pin terminal block, 12~45VDC on power jack
Power Consumption (Typ.)	6 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block

Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	52(W)x106.1(D)x144.3(H) mm (2.05x4.18x5.68 inch.)
Weight (g)	678 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	367,361
Warranty	5 years

Ordering Information

IES-1 AA B CC

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 8:** 8 ports	**- 2:** 2 ports	**- GP:** 1000Base-X SFP port

Available Model	Model Name	Description
	IES-1082GP	Industrial 10-port unmanaged Ethernet switch with 8x10/100Base-T(X) and 2x1000Base-X, SFP socket

Packing List

- IES-1082GP
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- PAA-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, US plug
- PAE-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, EU plug

IES-1080/1062 Series

IES-1080 IES-1062 Series

Industrial 8-port unmanaged Ethernet switch

Features

- IES-1080 provide 8x10/100Base-T(X) ports
- IES-1062GT provide 6x10/100Base-T(X) and 2x10/100/1000Base-T(X) ports
- IES-1062FX series provide 6x10/100Base-T(X) and 2x100Base-FX fiber ports
- IES-1062GF series provide 6x10/100Base-T(X) and 2x1000Base-X fiber ports
- Triple redundant DC power inputs of terminal block and power jack
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forw ard transmission
- Support flow control
- Warning system by relay output
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Redundant PWR Temperature

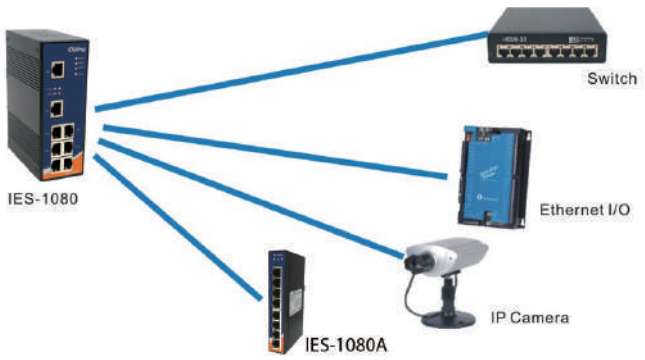
RoHS Lead Free E331061

Introduction

IES-1080/1062 series are unmanaged Ethernet switches with 6x10/100Base-T(X) and 2x100Base-FX, 10/100/1000Base-T(X), 1000Base-SX or 1000Base-LX ports. IES-1080/1062 series support redundant power input, relay output alarm, and surge protection. The wide operating temperature range from -40° to 70°C can satisfy most of operating environments.

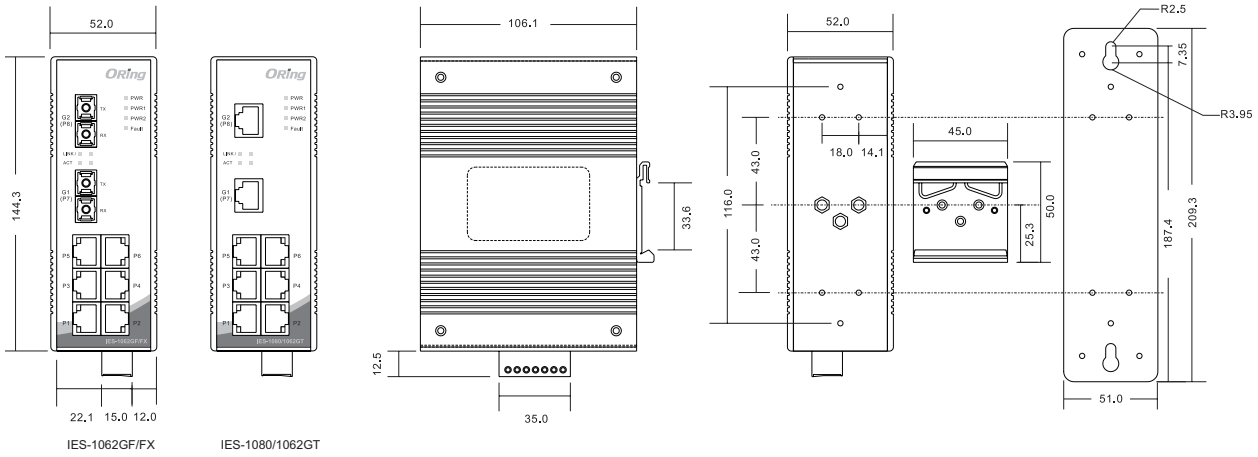
Practical Operation

IES-1080/1062 series can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are three different power inputs to enhance its reliability, two supplied by terminal block, and one by power jack to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model		IES-1080	IES -1062GT	IES-1062FX-MM-SC	IES -1062FX-SS-SC	IES -1062GF-MM-SC	IES -1062GF-SS-SC
Physical Ports							
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX		8	6	6	6	6	6
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX		-	2	-	-	-	-
Fiber Ports Specifications	Fiber Ports Number	-	-	2	2	2	2
	Fiber Ports Standard	-	-	100Base-FX	100Base-FX	1000Base-SX	1000Base-LX
	Fiber Mode	-	-	Multi-mode	Single-mode	Multi-mode	Single-mode
	Fiber Diameter (μm)	-	-	62.5/125 μm 50/125 μm	9/125 μm	62.5/125 μm 50/125 μm	9/125 μm
	Fiber Optical Connector	-	-	SC	SC	SC	SC
	Typical Distance (km)	-	-	2 km	30 km	0.55 km	10 km
	Wavelength (nm)	-	-	1310 nm	1310 nm	850 nm	1310 nm
	Max. Output Optical Power (dBm)	-	-	-14 dBm	-8 dBm	-4 dBm	-3 dBm
	Min. Output Optical Power (dBm)	-	-	-23.5 dBm	-15 dBm	-9.5 dBm	-9.5 dBm
	Max. Input Optical Power (Saturation)	-	-	0 dBm	0 dBm	0 dBm	-3 dBm
	Min. Input Optical Power (Sensitivity)	-	-	-31 dBm	-34 dBm	-18 dBm	-20 dBm
	Link Budget (dB)	-	-	7.5 dB	19 dB	8.5 dB	10.5 dB
Technology							

Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control					
MAC Table	8192 MAC addresses					
Processing	Store-and-Forward					
LED Indicators						
Power Indicator	Green : Power LED x 3					
Fault Indicator	Amber : Indicates PWR1 or PWR2 failure occurred					
10/100Base-FX RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision					
10/100/1000Base-T(X) / Fiber Port Indicator	Green for port Link/Act. Amber for Link					
Fault contact						
Relay	Relay output to carry capacity of 1A at 24VDC					
Power						
Redundant Input Power	Triple DC inputs. 12~48VDC on 7-pin terminal block, 12~45VDC on power jack					
Power Consumption (Typ.)	4 Watts	7 Watts	8 Watts	8 Watts	6 Watts	6 Watts
Overload Current Protection	Present					
Reverse Polarity Protection	Present on terminal block					
Physical Characteristics						
Enclosure	IP-30					
Dimensions (W x D x H)	52(W) x 106.1(D) x 144.3(H) mm (2.05x4.18x5.68 inch.)					
Weight (g)	666 g	677 g	680 g	680 g	685 g	685 g
Environmental						
Storage Temperature	-40 to 85°C (-40 to 185°F)					
Operating Temperature	-40 to 70°C (-40 to 158°F)					
Operating Humidity	5% to 95% Non-condensing					
Regulatory Approvals						
EMI	FCC Part 15, CISPR (EN55022) class A					
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11					
Shock	IEC60068-2-27					
Free Fall	IEC60068-2-32					
Vibration	IEC60068-2-6					
Safety	EN60950-1, UL508(E331061)					
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	431,222	368,351	354,989	354,989	370,965	370,965
Warranty	5 years					

Ordering Information

IES-1 AA B CC - DD - EE

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 08:** 8 ports **- 06:** 6 ports	**- 0:** 0 port **- 2:** 2 ports	**- GT:** 10/100/1000Base-T(X) **- FX:** 100Base-FX **- GF:** 1000Base-X	- **MM:** Multi-mode **- SS:** Single-mode	**- SC:** SC connector

	Model Name	Description
Available Model	IES-1080	Industrial 8-port unmanaged Ethernet switch with 8x10/100Base-T(X)
	IES-1062GT	Industrial 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x10/100/1000Base-T(X)
	IES-1062FX-MM-SC	Industrial 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x100Base-FX, multi-mode, 2km/1310nm, SC connector
	IES-1062FX-SS-SC	Industrial 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x100Base-FX, single-mode, 30km/1310nm, SC connector
	IES-1062GF-MM-SC	Industrial 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x1000Base-SX, multi-mode, 550m/850nm, SC connector
	IES-1062GF-SS-SC	Industrial 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x1000Base-LX, single-mode, 10km/1310nm, SC connector

Packing List

- IES-1080 / 1062 series
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- PAA-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, US plug
- PAE-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, EU plug
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

IES-1050A/1080A

IES-1050A IES-1080A

Industrial Slim Type 5/8-port unmanaged Ethernet switch

Features

- IES-1050A provides 5 x 10/100Base-T(X) ports
- IES-1080A provides 8 x 10/100Base-T(X) ports
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store-and-forward transmission
- Supports flow control
- Warning system by relay output
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Slim Type Redundant PWR -40~75°C Temperature

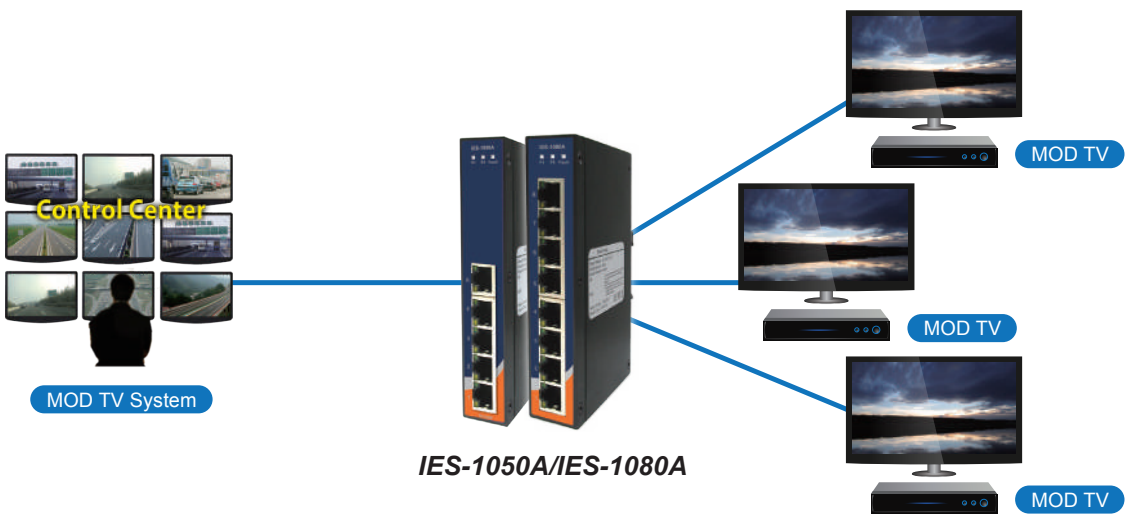
RoHS Lead Free CE FC

Introduction

IES-1050A/1080A is unmanaged Ethernet switches with 5 or 8 x 10/100Base-T(X) ports. IES-1050A/1080A support redundant power input, configurable relay output alarm and rigid IP-30 housing. In addition, the wide operating temperature range from -40°C to 75°C can satisfy most of operating environment.

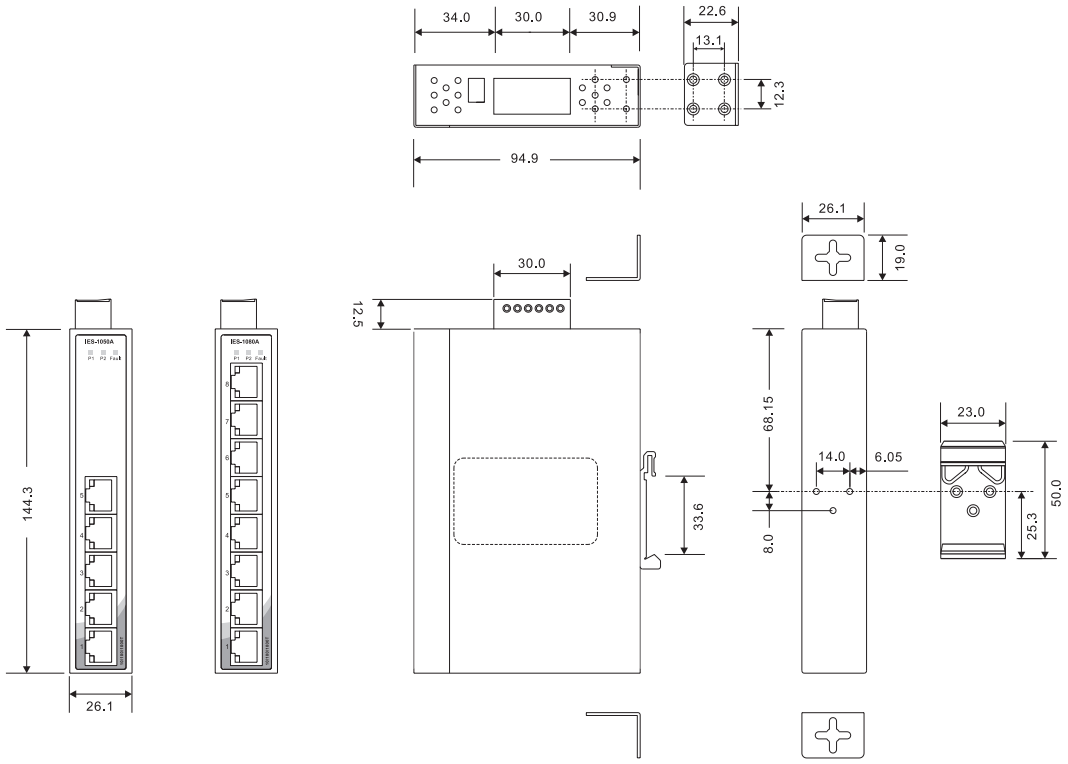
Practical Operation

IES-1050A/1080A can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-1080A	IES-1050A
Physical Ports		
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	8	5
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T, IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control	
MAC Table	1K MAC addresses	
Buffer Size	448K bits	
Processing	Store-and-Forward	
LED Indicators		
Power Indicator	Green : Power LED x 2	
Fault Indicator	Amber : Indicate PWR1 or PWR2 failure	
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block.	
Power Consumption (Typ.)	4 Watts	2 Watts
Overload Current Protection	Present	
Reverse Polarity Protection	Present	

Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	26.1(W) x 94.9(D) x 144.3(H) mm (1.03 x 3.74 x 5.68 inch.)	
Weight (g)	391g	382g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B	
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A	
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
MTBF	2439118 hrs	1555711hrs
Warranty	5 years	

Ordering Information

IES-1 AA B A

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 08:** 8 ports **- 05:** 5 ports	**- 0:** 0 port

	Model Name	Description
Available Model	IES-1080A	Industrial 8-port slim type unmanaged Ethernet switch with 8x10/100Base-T(X)
	IES-1050A	Industrial 5-port slim type unmanaged Ethernet switch with 5x10/100Base-T(X)

Packing List

- IES-1050A/1080A x 1
- Wall-mount Kit x 1
- Quick Installation Guide x 1
- DIN-Rail Kit x 1

Optional Accessories (Can be purchased separately)

- DR/SDR/DRP Series DIN-Rail power supply

IES-1050

IES-1050

Industrial 5-port Unmanaged Ethernet Switch

Features

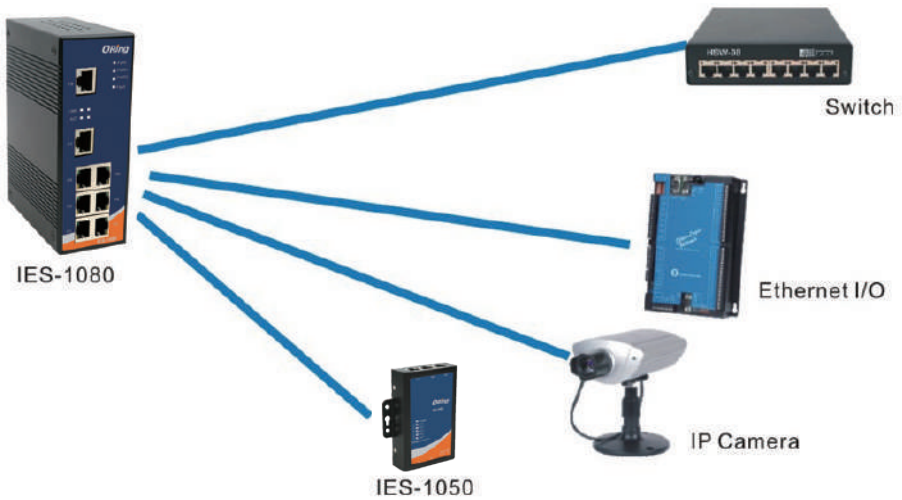
- Supports 5 ports 10/100Base-T(X)
- Rigid IP-30 housing design
- DIN-Rail and panel mounting enabled

Introduction

IES-1050 is unmanaged Ethernet switch with 5x10/100Base-T(X) ports. With very compact size of housing, you can install IES-1050 easily. In addition, IES-1050 is with rigid IP-30 housing design and can operate under harsh environment. and can satisfy most requirement of operation.

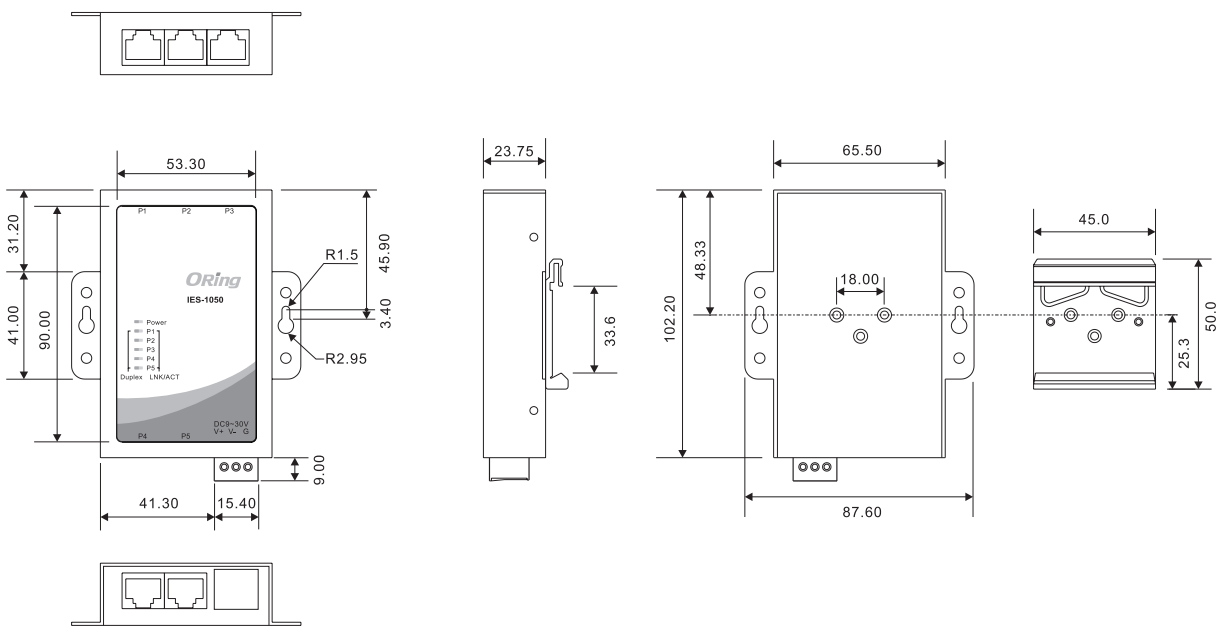
Practical Operation

IES-1050 can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, its compact size enables easily installation and minimize space requirement.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-1050
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	5
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T, IEEE 802.3u for 100Base-T(X) and 100Base-FX, IEEE 802.3x for Flow control
Processing	Store-and-Forward
LED Indicators	
Power / Ready Indicator	Green : Power LED x 1
10/100Base-T(X) RJ45 port Indicator	Green for port Link/Act. Amber for duplex indicator
Power	
Input Power	9 ~ 30 VDC voltage power input
Power Consumption (Typ.)	3W
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	87.6(W) x 23.75(D) x 102.2(H) mm (3.45x0.94x4.02 inch.)
Weight (g)	305 g

Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-10 to 60°C (14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

> Ordering Information

IES-1 AA B

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 05:** 5 ports	**- 0:** 0 port

Available Model	Model Name	Description
	IES-1050	Industrial 5-port Unmanaged Ethernet Switch with 5x10/100Base-T(X)

IES-1041FX / 1042FX Series

IES-1041FX Series IES-1042FX Series

Industrial slim type 5-port/6-port unmanaged Ethernet switch

Features

- IES-1041FX series provide 4x10/100Base-T(X) and 1x100Base-FX single/multi-mode fiber ports
- IES-1042FX series provide 4x10/100Base-T(X) and 2x100Base-FX single/multi-mode fiber ports
- Support auto-negotiation and auto-MDI/MDI-X
- Support store-and-forward transmission
- Support flow control
- Support surge protection technology
- Warning system by relay output
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Slim Type Redundant PWR -40~70°C Temperature

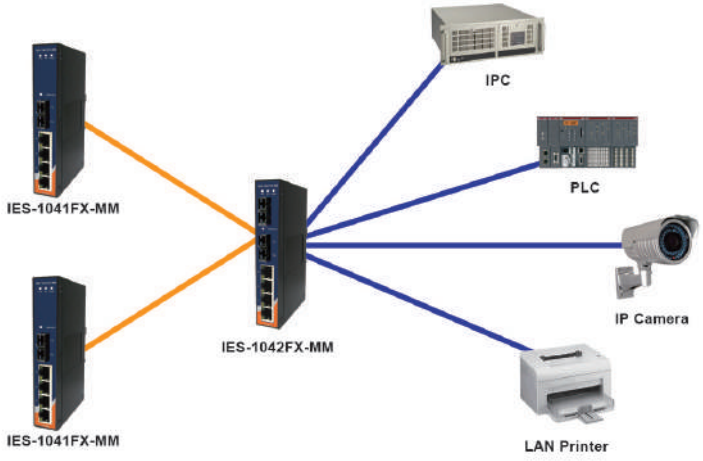
RoHS Lead Free

Introduction

IES-1041FX/1042FX series are unmanaged Ethernet switches with 4 x 10/100Base-T(X) and 100Base-FX ports. IES-1041FX/1042FX series support redundant power inputs, configurable relay output alarm and rigid IP-30 housing. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment.

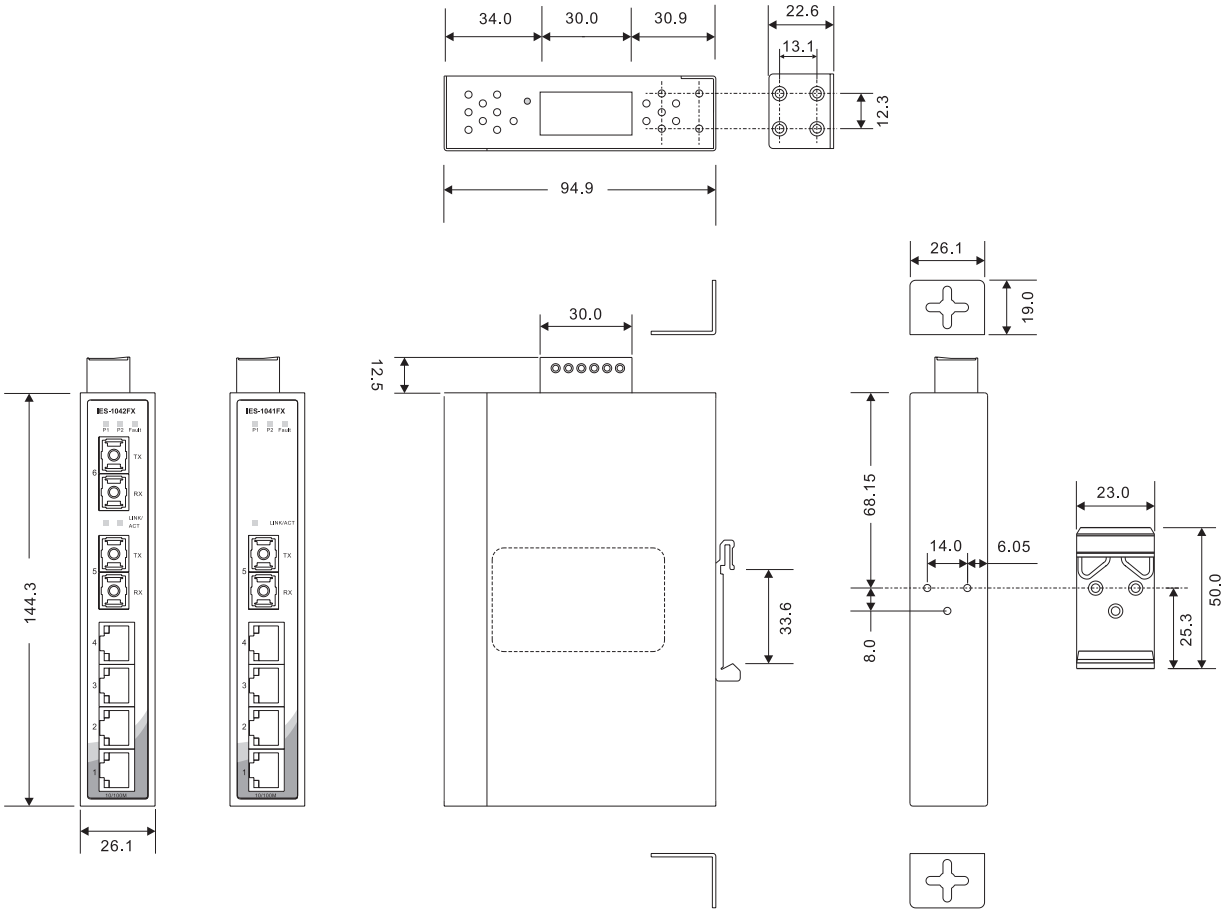
Practical Operation

IES-1041FX/1042FX series can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model		IES-1041FX-MM-SC	IES-1041FX-SS-SC	IES-1042FX-MM-SC	IES-1042FX-SS-SC
Physical Ports					
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX		4	4	4	4
Fiber Ports Specifications	Fiber Ports Number	1	1	2	2
	Fiber Ports Standard	100Base-FX	100Base-FX	100Base-FX	100Base-FX
	Fiber Mode	Multi-mode	Single-mode	Multi-mode	Single-mode
	Fiber Diameter (μm)	62.5/125 μm 50/125 μm	9/125 μm	62.5/125 μm 50/125 μm	9/125 μm
	Fiber Optical Connector	SC	SC	SC	SC
	Typical Distance (km)	2 km	30 km	2 km	30 km
	Wavelength (nm)	1310 nm	1310 nm	1310 nm	1310 nm
	Max. Output Optical Power (dBm)	-14 dBm	-8 dBm	-14 dBm	-8 dBm
	Min. Output Optical Power (dBm)	-23.5 dBm	-15 dBm	-23.5 dBm	-15 dBm
	Max. Input Optical Power (Saturation)	0 dBm	0 dBm	0 dBm	0 dBm
	Min. Input Optical Power (Sensitivity)	-31 dBm	-34 dBm	-31 dBm	-34 dBm
	Link Budget (dB)	7.5 dB	19 dB	7.5 dB	19 dB

Technology				
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3x for Flow control			
MAC Table	2048 MAC addresses			
Processing	Store-and-Forward			
LED Indicators				
Power Indicator	Green : Power LED x 2			
Fault Indicator	Amber : Indicates PWR1 or PWR2 failure occurred			
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision			
Fiber Port LED	Green for port Link/Act.			
Fault contact				
Relay	Relay output to carry capacity of 1A at 24VDC			
Power				
Redundant Input Power	Dual DC inputs: 12~48VDC on 6-pin terminal block			
Power Consumption (Typ.)	5 Watts		7 Watts	
Overload Current Protection	Present			
Reverse Polarity Protection	Present			
Physical Characteristics				
Enclosure	IP-30			
Dimensions (W x D x H)	26.1(W) x 94.9(D) x 144.3(H) mm (1.03 x 3.74 x 5.68 inch.)			
Weight (g)	378 g		382 g	
Environmental				
Storage Temperature	-40 to 85°C (-40 to 185°F)			
Operating Temperature	-40 to 70°C (-40 to 158°F)			
Operating Humidity	5% to 95% Non-condensing			
Regulatory Approvals				
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B			
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A			
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))			
Shock	IEC 60068-2-27			
Free Fall	IEC 60068-2-31			
Vibration	IEC 60068-2-6			
Safety	EN60950-1			
MTBF	1079578 hrs	1162696 hrs	712104 hrs	786255 hrs
Warranty	5 years		5 years	

Ordering Information

IES-1 AA B CC - DD - EE

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 04:** 4 ports	**- 1:** 1 port **- 2:** 2 ports	**- FX:** 100Base-FX	**- MM:** Multi-mode **- SS:** Single-mode	**- SC:** SC connector

	Model Name	Description
Available Model	IES-1041FX-MM-SC	Industrial 5-port slim type unmanaged Ethernet switch with 4x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector
	IES-1041FX-SS-SC	Industrial 5-port slim type unmanaged Ethernet switch with 4x10/100Base-T(X) and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector
	IES-1042FX-MM-SC	Industrial 6-port slim type unmanaged Ethernet switch with 4x10/100Base-T(X) and 2x100Base-FX, multi-mode, 2Km/1310nm, SC connector
	IES-1042FX-SS-SC	Industrial 6-port slim type unmanaged Ethernet switch with 4x10/100Base-T(X) and 2x100Base-FX, single-mode, 30Km/1310nm, SC connector

Packing List

- IES-1041FX/1042FX x 1
- Din-Rail Kit x 1
- Wall-mount Kit x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR/SDR/DRP Series Din-Rail power supply

IES-180B

IES-180B

Industrial 8-port mini type unmanaged Ethernet switch with 8x10/100Base-T(X)

Features

- Supports 8 ports 10/100 Base-T(X)
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store and forward transmission
- Supports flow control
- Compact size for easily installation
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Mini Type | Redundant PWR | -40~70°C Temperature

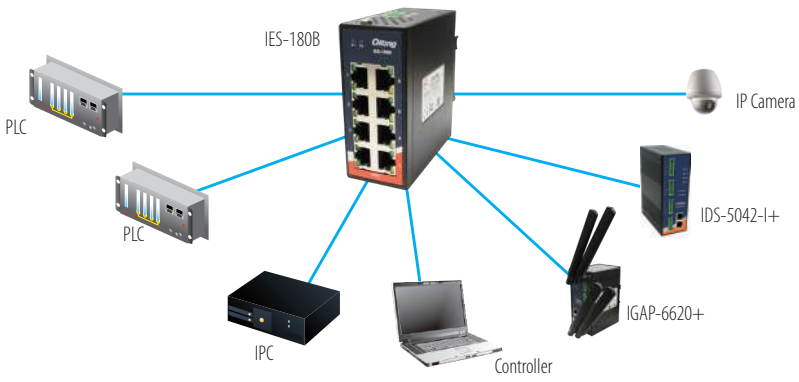
RoHS Lead Free

Introduction

IES-180B is unmanaged Ethernet switch with 8x10/100Base-T(X) ports. With very compact size of housing, you can install IES-180B easily. In addition, IES-180B is with rigid IP-30 housing design and can operate under harsh environment. The extended operating temperature range from -40 to 70°C is ready and can satisfy most requirement of operation.

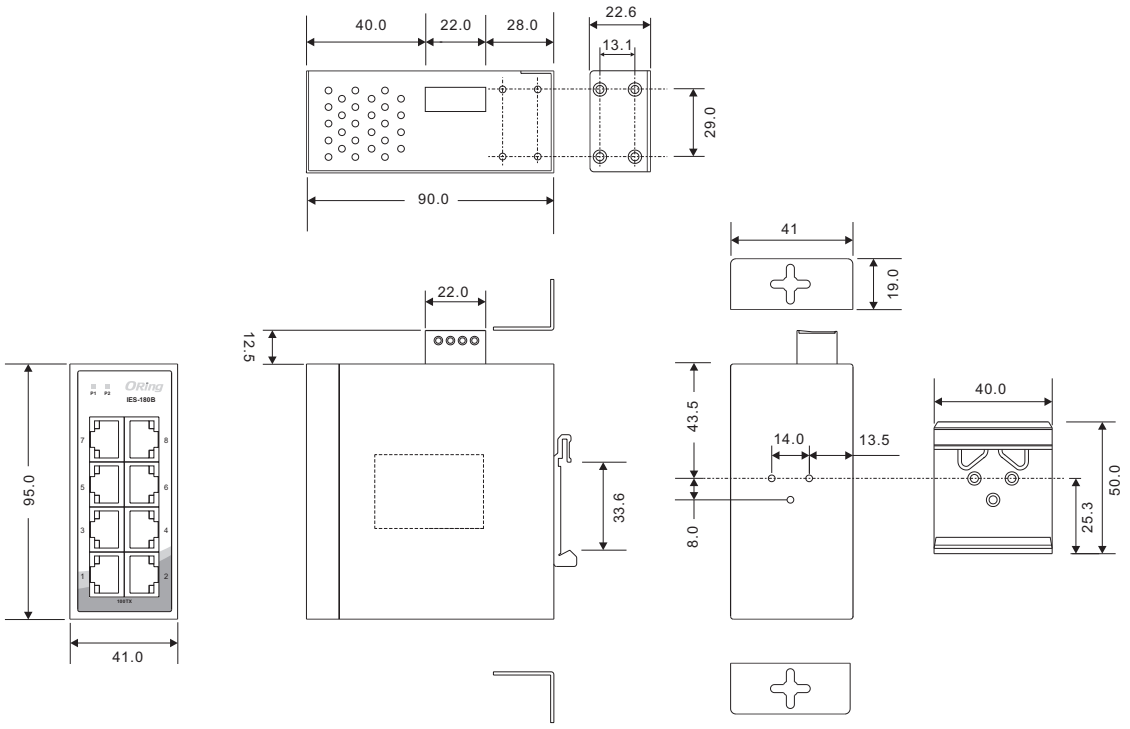
Practical Operation

IES-180B can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, its mini size enables easily installation and minimize space requirement



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-180B
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	8
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow con
MAC Table	2048 MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power indicator	Green : Power LED x 2
10/100Base-T(X) RJ45 port Indicator	Green for port Link/Act. Amber for Duplex/Collision
Power	
Input Power	Dual 12~48 VDC power input on 4-pin terminal block
Power Consumption (Typ.)	4 Watts
Overload Current Protection	Present

Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	41 (W) x 90 (D) x 95 (H)mm (1.61 x 3.54 x 3.74 inch)
Weight (g)	383 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IES-1 A B B

Code efinition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 8:** 8 ports	**- 0:** 0 port

Available Model	Model Name	Descripn
	IES-180B	Industrial 8-port mini type unmanaged Ethernet switch with 8x10/100Base-T(X)

Packing List

- IES-180B
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- PAA-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, US plug
- PAE-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, EU plug

IES-180-L

IES-180-L

Industrial 8-port unmanaged Ethernet switch with 8x10/100Base-T(X)

Features

- Support 8 ports 10/100 Base-T(X)
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Support broadcast storm protection
- Compact size for easily installation
- Support operating temperature from -20 to 60°C
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

-20~60°C Temperature

RoHS Lead Free

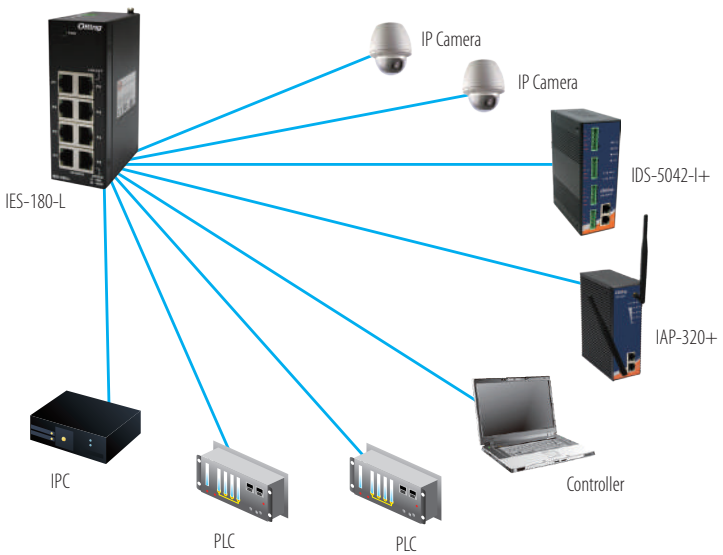
CE FC

Introduction

IES-180-L is unmanaged Ethernet switch with 8x10/100Base-T(X) ports. With very compact size of housing, you can install IES-180-L easily. In addition, IES-180-L is with rigid IP-30 housing design and can operate under harsh environment. The extended operating temperature range from -20°C to 60°C is ready and can satisfy most requirement of operation.

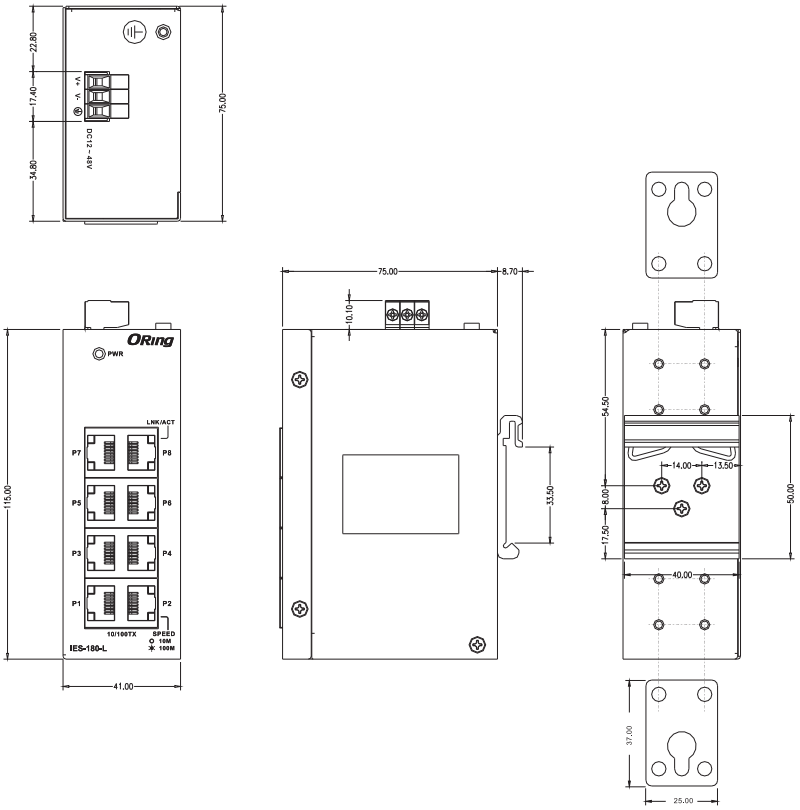
Practical Operation

IES-180-L can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, its mini size enables easily installation and minimize space requirement.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-180-L
Physical Ports	
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	8
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control
MAC Table	1024 MAC address
Packet Buffer	448Kbits
Processing	Store-and-Forward
LED indicators	
Power Indicator	Green : Power LED x 1
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for speed indicator – Amber for 100Mbps, off-light for 10Mbps
Power	
Power Input	10~30 VDC voltage power input on 3-pin terminal block
Power Consumption (Typ.)	1.65 watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	41 x 75 x 115 mm (1.61 x 2.95 x 4.53 inch)
Weight (g)	307 g

Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-20 to 60°C (-4 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IES-1 A B -L

Code efinition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 8:** 8 ports	**- 0:** 0 port

Available Model	Model Name	Descripn
	IES-180-L	Industrial 8-port unmanaged Ethernet switch with 8x10/100Base-T(X)

Packing List

- IES-180-L x 1
- Wall-mount Kit x 1
- Quick Installation Guide x 1
- Din-Rail Kit x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply

IES-162FX-L Series

IES-162FX-L Series

Industrial 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x100Base-FX

Features

- Support 6x10/100Base-T(X) and 2x100Base-FX single/multi-mode fiber ports
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Support broadcast storm protection
- Compact size for easily installation
- Support operating temperature from -20 to 60°C
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

-20~60°C Temperature

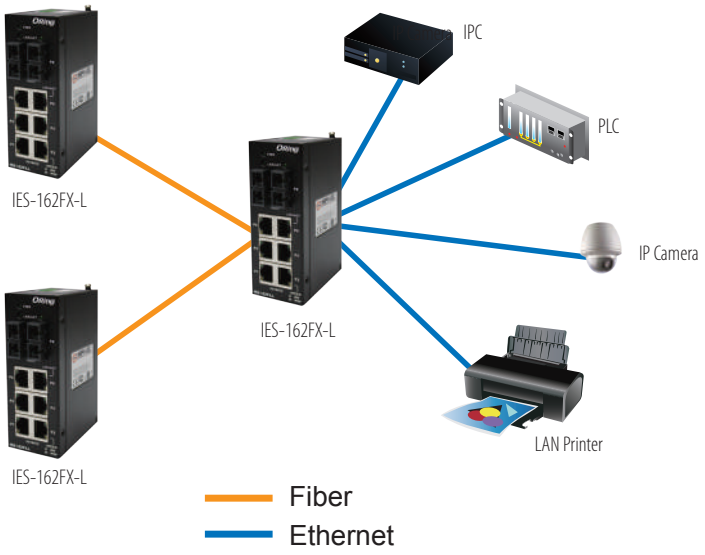
RoHS Lead Free

Introduction

IES-162FX-L series are unmanaged Ethernet switches with 6 x 10/100Base-T(X) and 2 x 100Base-FX ports. With very compact size of housing, you can install IES-162FX-L series easily. In addition, IES-162FX-L series are with rigid IP-30 housing design and can operate under harsh environment. The extended operating temperature range from -20 oC to 60oC is ready and can satisfy most requirement of operation.

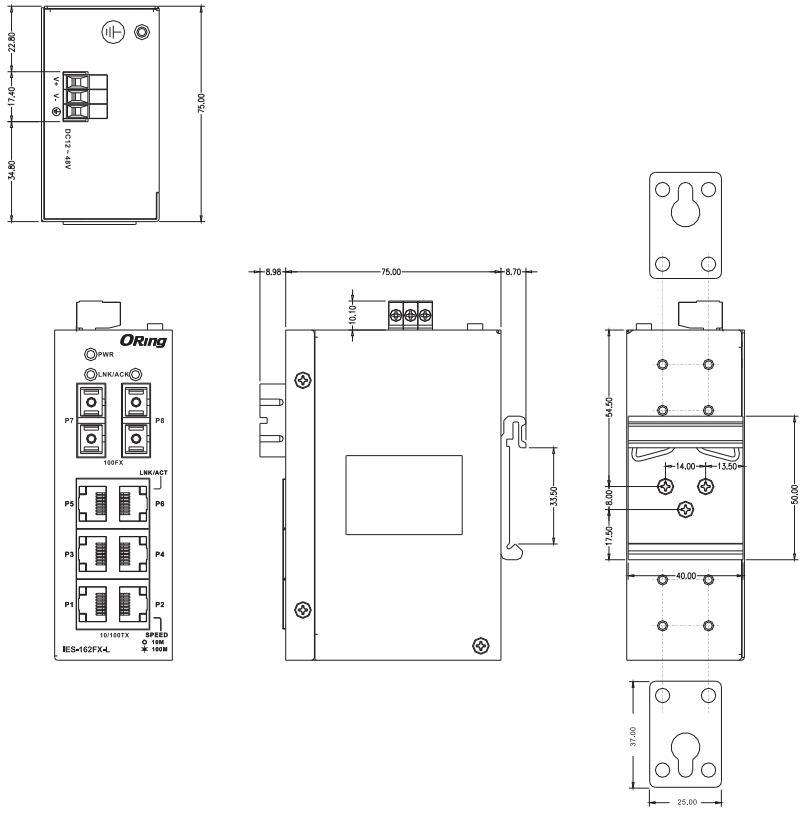
Practical Operation

IES-162FX-L series can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, its mini size enables easily installation and minimize space requirement.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model		IES-162FX-MM-SC-L	IES-162FX-SS-SC-L
Physical Ports			
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX		**6**	**6**
Fiber Ports Specification	Fiber Ports Number	**2**	**2**
	Fiber Ports standard	100Base-FX	100Base-FX
	Fiber Mode	Multi-mode	Single-mode
	Fiber Diameter (μm)	62.5/125 μm 50/125 μm	9/125 μm
	Fiber Optical Connector	SC	SC
	Typical Distance (Km)	2 Km	30 Km
	Wavelength (nm)	1310 nm	1310 nm
	Max. Output Optical Power (dbm)	-14 dbm	-8 dbm
	Min. Output Optical Power (dbm)	-23.5 dbm	-15 dbm
	Max. Input Optical Power(Saturation)	0 dbm	0 dbm
	Min. Input Optical Power(Sensitivity)	-31 dbm	-34 dbm
	Link Budget (db)	7.5 db	19 db
Technology			
Ethernet Standards		IEEE 802.3 for 10Base-T, IEEE 802.3u for 100Base-T(X) and 100Base-FX, IEEE 802.3x for Flow control	
MAC Table		1024 MAC addresses	
Packet Buffer		448Kbits	
Processing		Store-and-Forward	

LED indicators		
Power Indicator	Green : Power LED x 1	
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for speed indicator – Amber for 100Mbps, off-light for 10Mbps	
100Base-FX Fiber Port Indicator	Green for port Link/Act.	
Power		
Power Input	10~30VDC on 3-pin terminal block.	
Power Consumption (Typ.)	3.6 watts max.	3.6 watts max.
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	41 x 83.98 x 115 mm (1.61 x 3.31 x 4.53 inch)	
Weight (g)	328 g	328 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-20 to 60°C (-4 to 140°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

IES-1 A B CC - DD - EE -L

Code efinition	10/100Base-T(X) Port Number	Additional Port Type	Additional Port Number	Fiber Optical Mode	Fiber Optical Connector
Option	**- 6:** 6 ports	**- 2:** 2 ports	**- FX:** 100Base-FX	**- MM: Multi-mode** **- SS: Single-mode**	**- SC: SC connector**

	Model Name	Descripn
Available Model	IES-162FX-MM-SC-L	Industrial 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x100Base-FX, multi-mode, 2Km/1310nm, SC connector
	IES-162FX-SS-SC-L	Industrial 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x100Base-FX, single-mode, 30Km/1310nm, SC connector

Packing List

- IES-162FX-MM/SS-SC-L x 1
- Din-Rail Kit x 1
- Wall-mount Kit x 1
- Quick Installation Guide x 1

Optional Accessories

- DR-45 series : 45 Watts Din-Rail power supply
- DR-75 series : 75 Watts Din-Rail power supply
- DR-120 series : 120 Watts Din-Rail power supply

IES-150B

IES-150B

Industrial 5-port mini type unmanaged Ethernet switch with 5x10/100Base-T(X)

Features

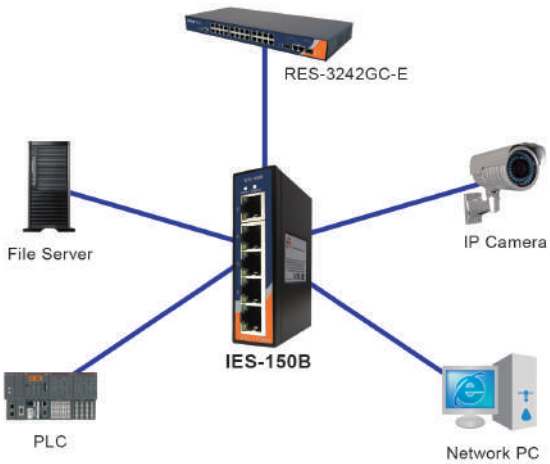
- Supports 5 ports 10/100 Base-T(X)
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store-and-forward transmission
- Supports flow control
- Compact size for easily installation
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

IES-150B is an unmanaged Ethernet switch with 5x10/100Base-T(X) ports. With very mini size of housing, you can install IES-150B easily. In addition, IES-150B is with rigid IP-30 housing design and can operate under harsh environment. The extended operating temperature range from -40 to 70°C is ready and can satisfy most requirement of operation.

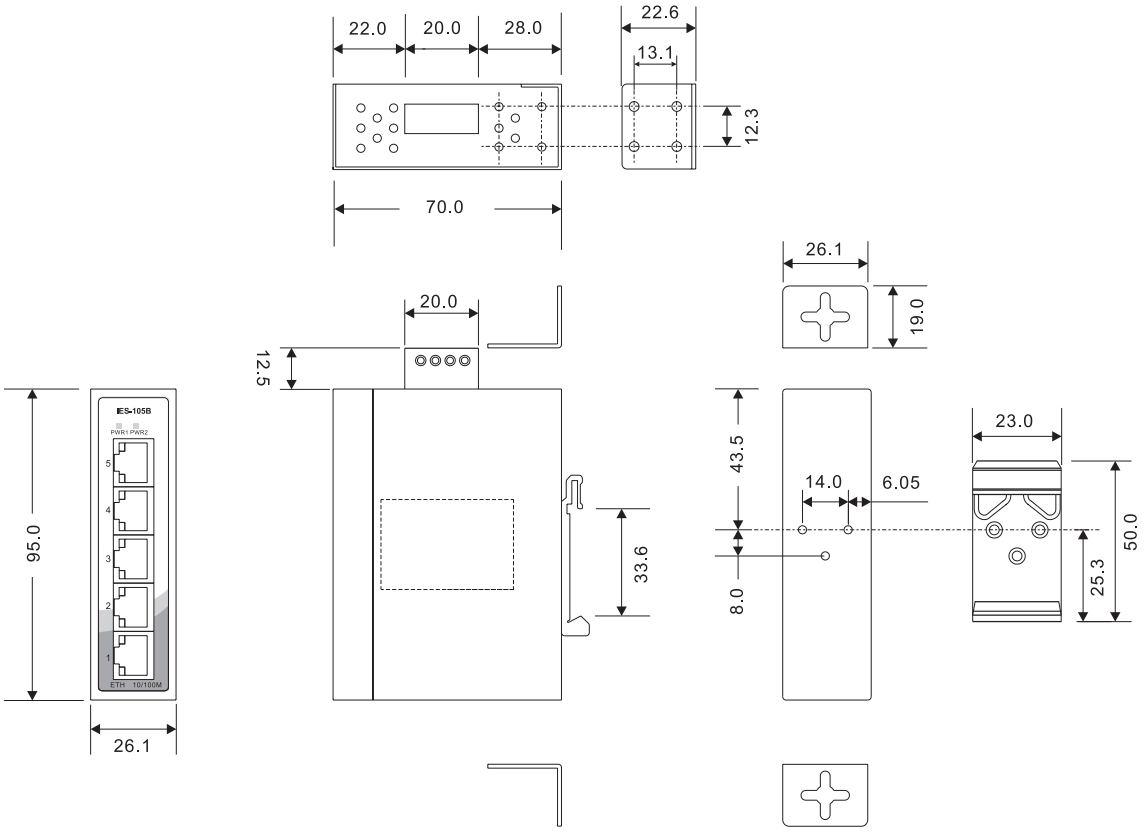
Practical Operation

IES-150B can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, its mini size enables easily installation and minimize space requirement.



Connections of Ethernet devices

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-150B
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	5
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control
MAC Table	2048 MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power indicator	Green : Power LED x 2
10/100Base-T(X) RJ45 port Indicator	Green for port Link/Act. Amber for Duplex/Collision
Power	
Input Power	Dual 12~48 VDC power input on 4-pin terminal block
Power Consumption (Typ.)	3 Watts
Overload Current Protection	Present

Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1 (W) x 70 (D) x 95 (H)mm (1.03 x 2.76 x 3.74 inch)
Weight (g)	205 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	UL 60950-1, CSA C22.2 No. 60950-1-07, EN 60950-1, IEC 60950-1
MTBF	2638236 hrs
Warranty	5 years

Ordering Information

IES-1 A B B

Code efinition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 5:** 5 ports	**- 0:** 0 port

Available Model	Model Name	Descripn
	IES-150B	Industrial 5-port mini type unmanaged Ethernet switch with 5x10/100Base-T(X)

Packing List

- IES-150B x 1
- Wall-mount Kit x 1
- Quick Installation Guide x 1
- Din-Rail Kit x 1

Optional Accessories (Can be purchased separately)

- PAE-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, EU plug
- PAA-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, US plug
- DR/SDR/DRP Series DIN-Rail power supply

IES-A3162GC

IES-A3162GC

Industrial C1D2/ATEX 18-port managed Ethernet switch with 16x10/100Base-T(X) and 2xGigabit combo ports, SFP socket

Features

- C1D2 and ATEX compliant for harsh industrial environments application
- World's fastest Redundant Ethernet Ring: O-Ring (recovery time < 10ms over 250 units of connection)
- Open-Ring support the other vendor's ring technology in open architecture
- O-Chain allow multiple redundant network rings
- Support standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Support IPv6 new internet protocol version
- Support PTP Client (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus/TCP protocol
- IGMP v2/v3 (IGMP snooping for support) filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP V1/V2c/V3 support for secured network management
- RMON for traffic monitoring
- Support LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Port lock to prevent access from unauthorized MAC address
- Windows utility (Open-Vision) support centralized management and configurable by Web-based ,Telnet, Console (CLI)
- Support two Gigabit combo ports
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

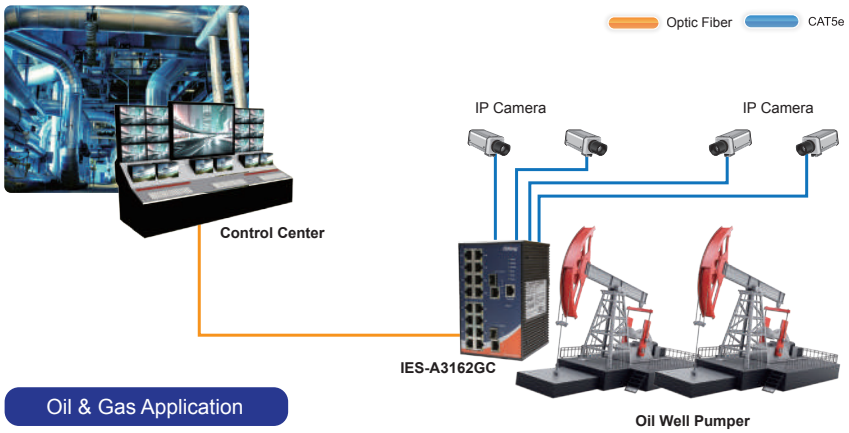
Introduction

IES-A3162GC is managed Redundant Ring Ethernet switch with 16x10/100Base-T(X) ports and 2xgigabit combo ports which is specifically designed for the C1D2/ATEX certified with hazardous locations requirement. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. All function of IES-A3162GC can be managed centralized and convenient by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet in hazardous location application.

***NOTE: This function is available by request only**

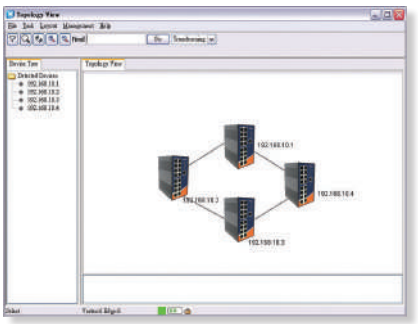
Open-Vision

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.

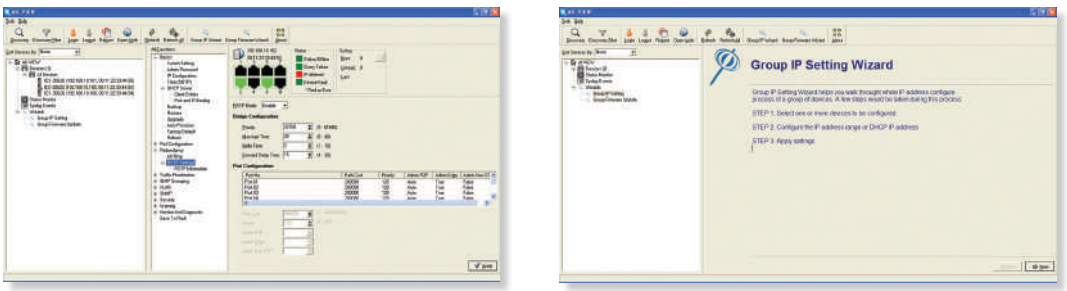


Oil & Gas Application

Network connection

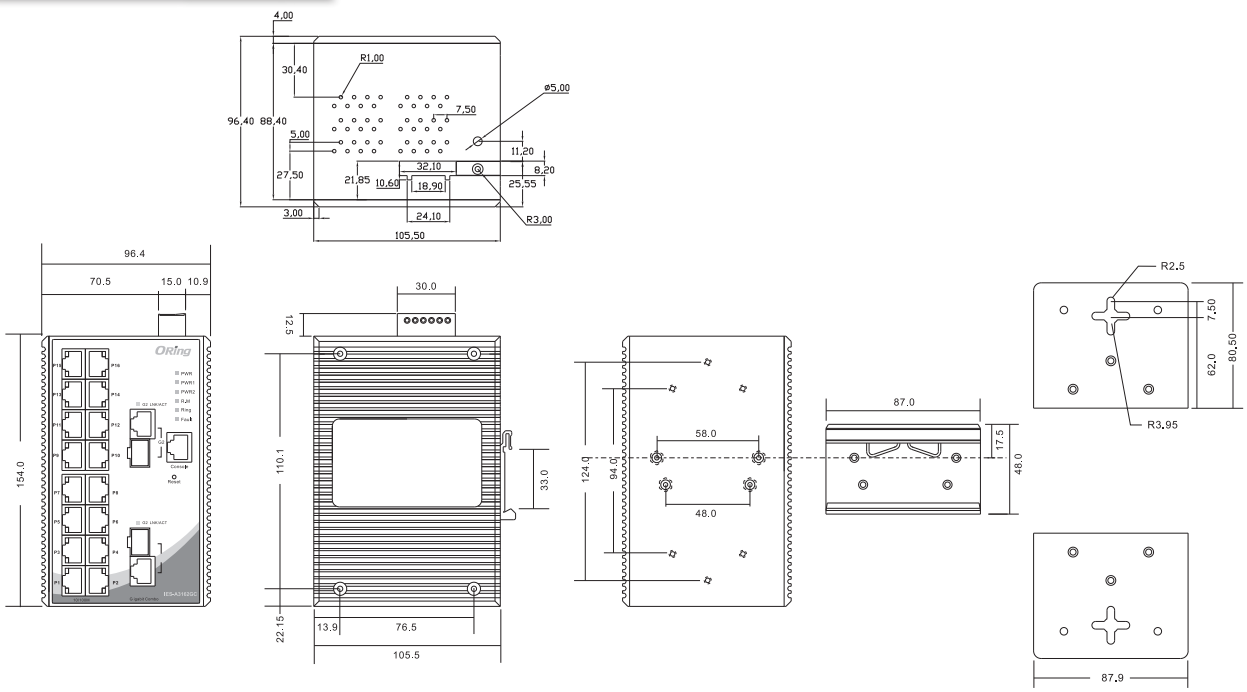


Topology View



Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-A3162GC
Physical Ports	
10/100 Base-T(X) Ports in RJ45	16
Auto MDI/MDIX	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 9 us Switching bandwidth: 7.2Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP V1/V2c/V3 encrypted authentication and access security HTTPS/SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support PTP Client (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** STP / RSTP:2004 / MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1
LED indicators	
Power indicator	Green : Power LED x 3
R.M. Indicator	Green : Indicate system operated in O-Ring master mode
O-Ring Indicator	Green : Indicate system operated in O-Ring mode
Fault Iindicator	Amber : Indicate unexpected event occurred
10/100Base-T(X) RJ45 port Indicator	Green for port Link/Act. Amber for Duplex/Collision

***NOTE: This function is available by request only**

10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for 100Mbps indicator
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12 ~ 48VDC on 6-pin terminal block
Power Consumption (Typ.)	12 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	96.4(W)x108.5(D)x154(H) mm (3.8 x 4.27 x 6.06 inch)
Weight (g)	1220g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	EN 55022, EN 55024(CE EMC), FCC, EN 61000-6-2, EN 61000-6-4,IEC 61000-3-2 ,IEC 61000-3-3
EMI	CISPR 22, EN 55011, FCC Part 15B Class A
EMS	EN 61000-4-2 (ESD), EN 61000-4-3 (RS), EN 61000-4-4 (EFT), EN 61000-4-5 (Surge), EN 61000-4-6 (CS),
EN 61000-4-8 (PFMF), EN 61000-4-11 (DIP)	-40 to 70°C (-40 to 158°F)
Shock	IEC60068-2-27
Free Fall	IEC 60068-2-31 (IEC 60068-2-32)
Vibration	IEC60068-2-6
Safety	EN60950-1, UL/cUL Class 1 Division 2 Group A/B/C/D, ATEX Class 1 Zone 2
Warranty	5 years

Ordering Information

IES-A3 AA B CC

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 16:** 16 ports	**- 2:** 2 ports	**- GC:** Gigabit combo port

Available Model	Model Name	Description
	IES-A3162GC	Industrial C1D2/ATEX 18-port managed Ethernet switch with 16x10/100Base-T(X) and 2xGigabit combo ports, SFP socket

Packing List

- IES-A3162GC x 1
- DIN-Rail Kit x 1
- ORing Tool CD x 1
- Wall-mount Kit x 2
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DR-75 series : 75 Watts DIN-Rail power supply

IES-A3080/IES-A3062 Series

IES-A3080 IES-A3062 Series

Industrial C1D2/ATEX 8-port managed Ethernet switch

Features

- C1D2 and ATEX compliant for harsh industrial environments application
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Supports Auto Negotiation Speed
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus/TCP protocol
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- Port lock to prevent access from unauthorized MAC address
- Event notification through Syslog, Email and SNMP trap
- Windows utility (Open-Vision) support centralized management and configurable by Web-based ,Telnet, Console(CLI)
- Completely combination of 10/100Base-T(X), 100Base-FX, 1000Base-T, 1000Base-SX, and 1000Base-LX ports
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

R6 READY | O-Ring | Redundant PWR | -40~70°C Temperature

Ex | RoHS Lead Free | cULus E331061 | CE | FC

Introduction

IES-A3080 / IES-A3062 series are managed Redundant Ring Ethernet switches with 6x10/100Base-T(X) and 2x10/100Base-T(X), 100Base-FX, 1000Base-T, 1000Base-SX or 1000Base-LX ports which is specifically designed for the C1D2/ATEX certified with hazardous locations requirement. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. IES-A3080 / IES-A3062 series can be managed centralized and convenient by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for highly-managed Fiber Ethernet in hazardous location application.

***NOTE: This function is available by request only**

Open-Vision

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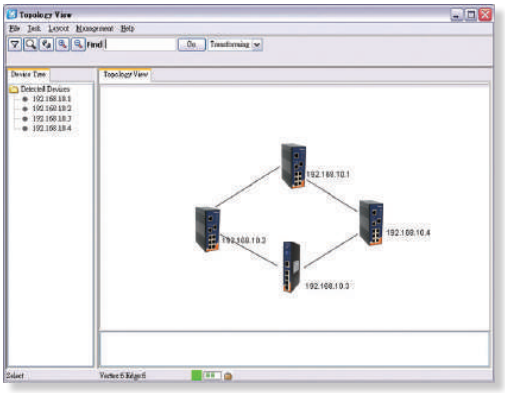
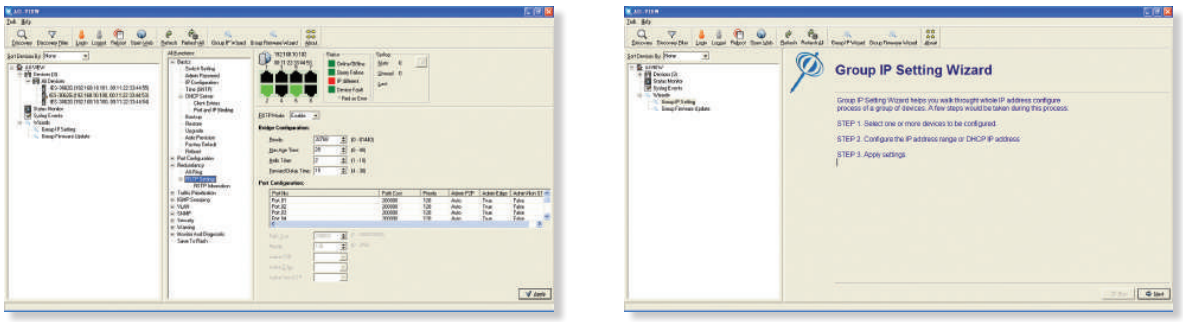
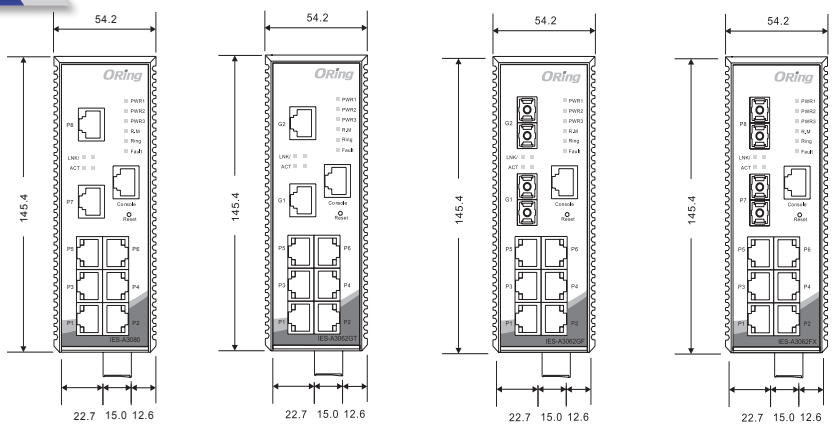


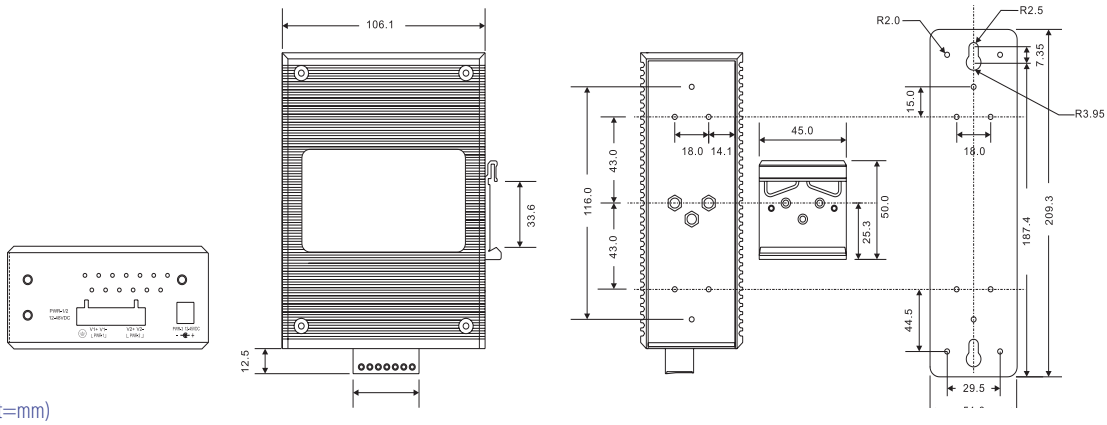
Topology View



Monitoring and Configuration interface

Dimensions





(Unit=mm)

Specifications

ORing Switch Model		IES-A3080	IES-A3062GT	IES-A3062FX-MM	IES-A3062FX-SS	IES-A3062GF-MM	IES-A3062GF-SS
Physical Ports							
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX		8	6	6	6	6	6
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX		-	2	-	-	-	-
Fiber Ports Specifications	Fiber Ports Number	-	-	2	2	2	2
	Fiber Ports Standard	-	-	100Base-FX	100Base-FX	1000Base-SX	1000Base-LX
	Fiber Mode	-	-	Multi-mode	Single-mode	Multi-mode	Single-mode
	Fiber Diameter (μm)	-	-	62.5/125 μm 50/125 μm	9/125 μm	62.5/125 μm 50/125 μm	9/125 μm
	Fiber Optical Connector	-	-	SC	SC	SC	SC
	Typical Distance (km)	-	-	2 km	30 km	0.55 km	10 km
	Wavelength (nm)	-	-	1310 nm	1310 nm	850 nm	1310 nm
	Max. Output Optical Power (dBm)	-	-	-14 dBm	-8 dBm	-4 dBm	-3 dBm
	Min. Output Optical Power (dBm)	-	-	-23.5 dBm	-15 dBm	-9.5 dBm	-9.5 dBm
	Max. Input Optical Power (Saturation)	-	-	0 dBm	0 dBm	0 dBm	-3 dBm
	Min. Input Optical Power (Sensitivity)	-	-	-31 dBm	-34 dBm	-18 dBm	-20 dBm
	Link Budget (dB)	-	-	7.5 dB	19 dB	8.5 dB	10.5 dB
Technology							
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.3x for Flow control IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP(Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication					
MAC Table		8192 MAC addresses					
Priority Queues		4					
Processing		Store-and-Forward					
Switch Properties		Switching latency : 7 μs Switching bandwidth : 5.2Gbps Max. Number of Available VLANs : 4096 IGMP multicast groups : 1024 Port rate limiting : User Define					
Security Feature		Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMPV1/V2c/V3 encrypted authentication and access security Https / SSH enhance network security					
Software Features		STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP					

Network Redundancy	O-Ring Open-Ring O-Chain MRP*NOTE STP / RSTP:2004 / MSTP					
Warning / Monitoring System	Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support					
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. Baud rate setting: 9600bps, 8, N, 1					
LED Indicators						
Power Indicator	Green : Power LED x 3					
R.M. Indicator	Green : Indicates that the system is operating in O-Ring Master mode					
O-Ring Indicator	Green : Indicates that the system is operating in O-Ring mode					
Fault Indicator	Amber : Indicates unexpected events occurred					
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision					
10/100/1000Base-T(X) / Fiber Port Indicator	Green for port Link/Act. Amber for Link					
Power						
Redundant Input Power	Triple DC inputs : Dual 12~48VDC on 7-pin terminal block One 12~48VDC on power jack (power jack cannot use in hazardous location application)					
Power Consumption (Typ.)	5 Watts	8 Watts	9 Watts	9 Watts	7 Watts	7 Watts
Overload Current Protection	Present					
Reverse Polarity Protection	Present on terminal block					
Physical Characteristics						
Enclosure	IP-30					
Dimensions (W x D x H)	52(W)x106.1(D)x144.3(H) mm (2.05x4.18x5.68 inch.)					
Weight (g)	710 g	722 g	735 g	735 g	740 g	740 g
Environmental						
Storage Temperature	-40 to 85°C (-40 to 185°F)					
Operating Temperature	-40 to 70°C (-40 to 158°F)					
Operating Humidity	5% to 95% Non-condensing					
Regulatory Approvals						
EMI	FCC Part 15, CISPR (EN55022) class A					
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11					
Shock	IEC60068-2-27					
Free Fall	IEC60068-2-32					
Vibration	IEC60068-2-6					
Safety	EN60950, UL508 (E331061), UL/cUL Class 1 Division 2 Group A/B/C/D, ATEX Class 1 Zone 2					
Warranty	5 years					

***NOTE: This function is available by request only**

Ordering Information

IES-A3 AA B CC - DD - EE

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 08:** 8 ports **- 06:** 6 ports	**- 0:** 0 port **- 2:** 2 ports	**- GT:** 10/100/1000Base-T(X) **- FX:** 100Base-FX **- GF:** 1000Base-X	**- MM:** Multi-mode **- SS:** Single-mode	**- SC:** SC connector

	Model Name	Description
Available Model	IES-A3080	Industrial C1D2/ATEX 8-port managed Ethernet switch with 8x10/100Base-T(X)
	IES-A3062GT	Industrial C1D2/ATEX 8-port managed Ethernet switch with 6x10/100Base-T(X) and 2x10/100/1000Base-T(X)
	IES-A3062FX-MM-SC	Industrial C1D2/ATEX 8-port managed Ethernet switch with 6x10/100Base-T(X) and 2x100Base-FX, multi-mode, 2Km/1310nm, SC connector
	IES-A3062FX-SS-SC	Industrial C1D2/ATEX 8-port managed Ethernet switch with 6x10/100Base-T(X) and 2x100Base-FX, single-mode, 30Km/1310nm, SC connector
	IES-A3062GF-MM-SC	Industrial C1D2/ATEX 8-port managed Ethernet switch with 6x10/100Base-T(X) and 2x1000Base-SX, multi-mode, 550m/850nm, SC connector
	IES-A3062GF-SS-SC	Industrial C1D2/ATEX 8-port managed Ethernet switch with 6x10/100Base-T(X) and 2x1000Base-LX, single-mode, 10Km/1310nm, SC connector

Packing List

- IES-A3080 / A3062 series
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- PAA-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, US plug
- PAE-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, EU plug

IES-A1080/A1062 Series

IES-A1080 IES-A1062 Series

Industrial C1D2/ATEX 8-port unmanaged Ethernet switch

Features

- C1D2 and ATEX compliant for harsh industrial environments application
- IES-A1080 provide 8x10/100Base-T(X) ports
- IES-A1062GT provide 6x10/100Base-T(X) and 2x10/100/1000Base-T(X) ports
- IES-A1062FX series provide 6x10/100Base-T(X) and 2x100Base-FX fiber ports
- IES-A1062GF series provide 6x10/100Base-T(X) and 2x1000Base-X fiber ports
- Triple redundant DC power inputs of terminal block and power jack
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Rigid IP-30 aluminum housing design
- DIN-Rail and wall mounting enabled

Redundant PWR -40~70°C Temperature

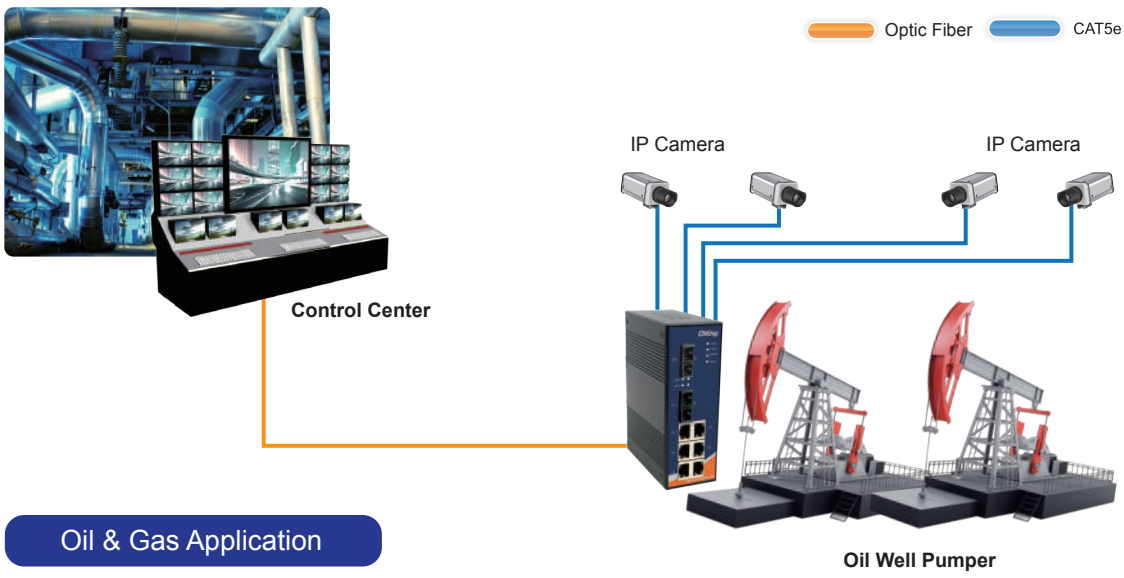
E331061

Introduction

IES-A1080/A1062 series are unmanaged Ethernet switches with 6x10/100Base-T(X) and 2x100Base-FX, 10/100/1000Base-T(X), 1000Base-SX or 1000Base-LX ports which is specifically designed for the C1D2/ATEX certified with hazardous locations requirement. IES-A1080/A1062 series support redundant power input and surge protection. The wide operating temperature range from -40 to 70°C and C1D2/ATEX certified can satisfy most of harsh or hazardous locations operating environments.

Practical Operation

IES-A1080/A1062 series can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are three different power inputs to enhance its reliability, two supplied by terminal block, and one by power jack to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.

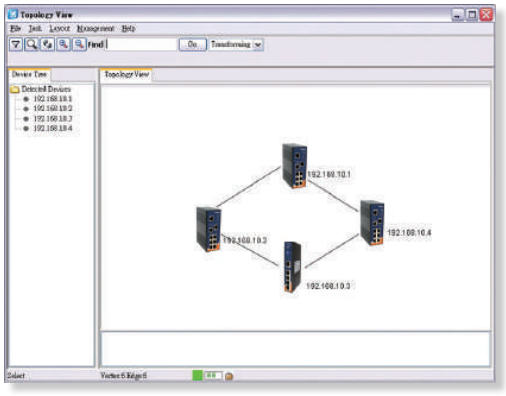


Oil & Gas Application

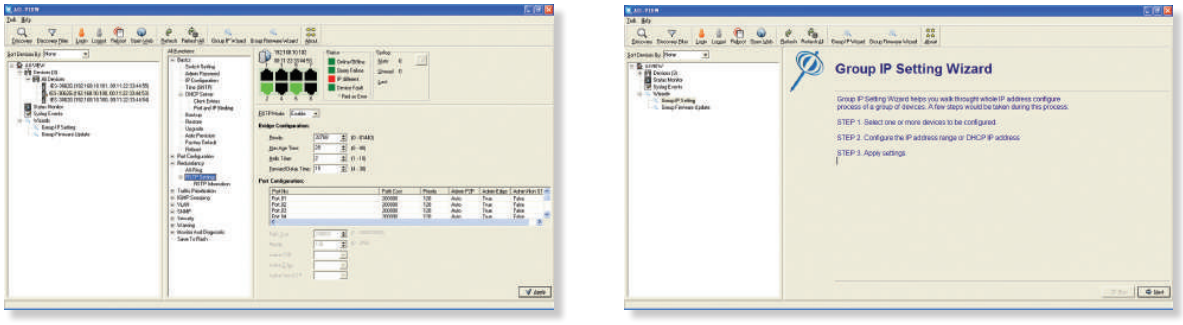
Connections of Ethernet devices

Open-Vision

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility **(Open-Vision)** for user to manage and monitor all of industrial Ethernet switches on the industrial network.

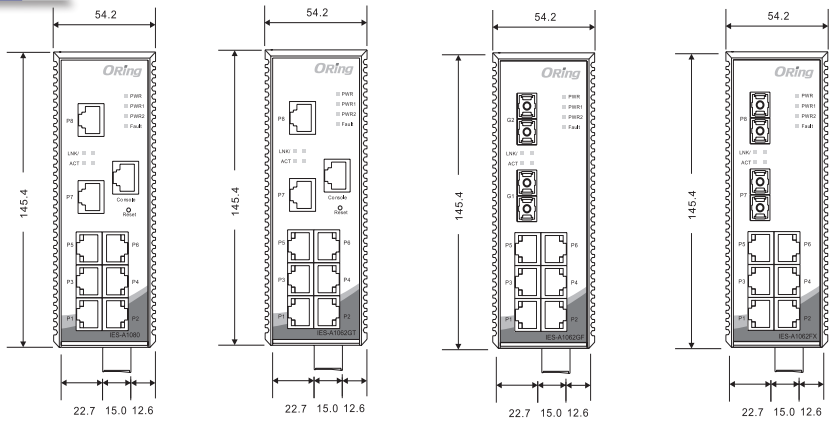


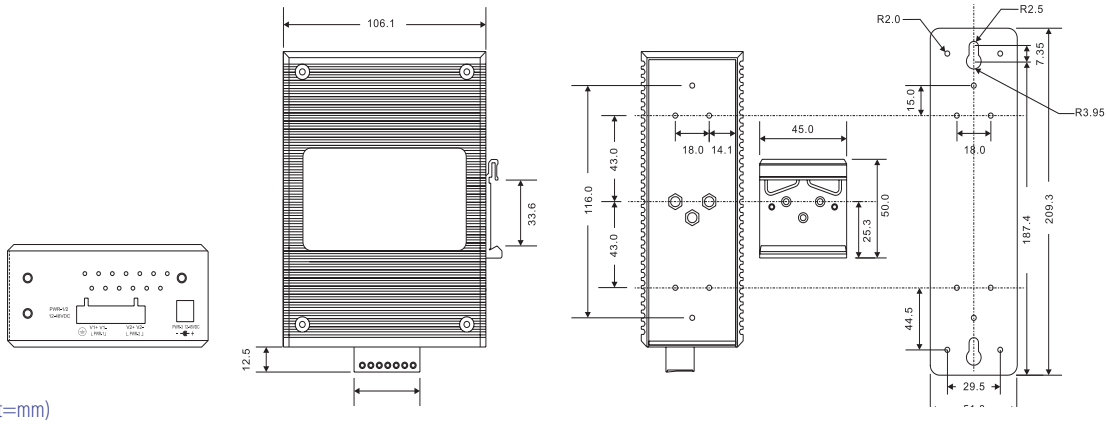
Topology View



Monitoring and Configuration interface

Dimensions





(Unit=mm)

Specifications

ORing Switch Model		IES-A1080	IES -A1062GT	IES-A1062FX-MM-SC	IES -A1062FX-SS-SC	IES -A1062GF-MM-SC	IES -1062GF-SS-SC
Physical Ports							
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX		8	6	6	6	6	6
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX		-	2	-	-	-	-
Fiber Ports Specifications	Fiber Ports Number	-	-	2	2	2	2
	Fiber Ports Standard	-	-	100Base-FX	100Base-FX	1000Base-SX	1000Base-LX
	Fiber Mode	-	-	Multi-mode	Single-mode	Multi-mode	Single-mode
	Fiber Diameter (μm)	-	-	62.5/125 μm 50/125 μm	9/125 μm	62.5/125 μm 50/125 μm	9/125 μm
	Fiber Optical Connector	-	-	SC	SC	SC	SC
	Typical Distance (km)	-	-	2 km	30 km	0.55 km	10 km
	Wavelength (nm)	-	-	1310 nm	1310 nm	850 nm	1310 nm
	Max. Output Optical Power (dBm)	-	-	-14 dBm	-8 dBm	-4 dBm	-3 dBm
	Min. Output Optical Power (dBm)	-	-	-23.5 dBm	-15 dBm	-9.5 dBm	-9.5 dBm
	Max. Input Optical Power (Saturation)	-	-	0 dBm	0 dBm	0 dBm	-3 dBm
	Min. Input Optical Power (Sensitivity)	-	-	-31 dBm	-34 dBm	-18 dBm	-20 dBm
	Link Budget (dB)	-	-	7.5 dB	19 dB	8.5 dB	10.5 dB
Technology							
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control					
MAC Table		8192 MAC addresses					
Processing		Store-and-Forward					
LED Indicators							
Power Indicator		Green : Power LED x 3					
Fault Indicator		Amber : Indicates PWR1 or PWR2 failure occurred					
10/100Base-FX RJ45 Port Indicator		Green for port Link/Act. Amber for Duplex/Collision					
10/100/1000Base-T(X) / Fiber Port Indicator		Green for port Link/Act. Amber for Link					
Power							
Redundant Input Power		Triple DC inputs : Dual 12~48VDC on 7-pin terminal block One 12~48VDC on power jack (power jack cannot use in hazardous location application)					
Power Consumption (Typ.)		4 Watts	7 Watts	8 Watts	8 Watts	6 Watts	6 Watts
Overload Current Protection		Present					
Reverse Polarity Protection		Present on terminal block					
Physical Characteristics							
Enclosure		IP-30					
Dimensions (W x D x H)		52(W) x 106.1(D) x 144.3(H) mm (2.05x4.18x5.68 inch.)					
Weight (g)		666 g	677 g	680 g	680 g	685 g	685 g

Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950, UL508 (E331061), UL/cUL Class 1 Division 2 Group A/B/C/D, ATEX Class 1 Zone 2
Warranty	5 years

Ordering Information

IES-A1 AA B CC - DD - EE

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 08:** 8 ports **- 06:** 6 ports	**- 0:** 0 port **- 2:** 2 ports	**- GT:** 10/100/1000Base-T(X) **- FX:** 100Base-FX **- GF:** 1000Base-X	- **MM:** Multi-mode **- SS:** Single-mode	**- SC:** SC connector

	Model Name	Description
Available Model	IES-A1080	Industrial C1D2/ATEX 8-port slim type unmanaged Ethernet switch with 8x10/100Base-T(X)
	IES-A1062GT	Industrial C1D2/ATEX 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x10/100/1000Base-T(X)
	IES-A1062FX-MM-SC	Industrial C1D2/ATEX 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x100Base-FX, multi-mode, 2Km/1310nm, SC connector
	IES-A1062FX-SS-SC	Industrial C1D2/ATEX 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x100Base-FX, single-mode, 30Km/1310nm, SC connector
	IES-A1062GF-MM-SC	Industrial C1D2/ATEX 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x1000Base-SX, multi-mode, 550m/850nm,SC connector
	IES-A1062GF-SS-SC	Industrial C1D2/ATEX 8-port unmanaged Ethernet switch with 6x10/100Base-T(X) and 2x1000Base-LX, single-mode, 10Km/1310nm, SC connector

Packing List

- IES-A1080 / A1062 series
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- PAA-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, US plug
- PAE-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, EU plug

RGPS-R9244GP+ Series

RGPS-R9244GP+ Series

Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket

Features

- Support Layer 3 static routing, RIP and VRRP function
- Support **O-Ring** (recovery time < 30ms) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- 24 port P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 Watts per port
- Support PoE on/off scheduled configuration
- Support PoE alive check and auto reboot fuction
- Support IPv6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and SNTP server protocol
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL and 802.1x User Authentication for security
- Support 10K Bytes Jumbo Frame
- SFP socket support DDM function
- Multiple notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- 19 inches rack mountable design

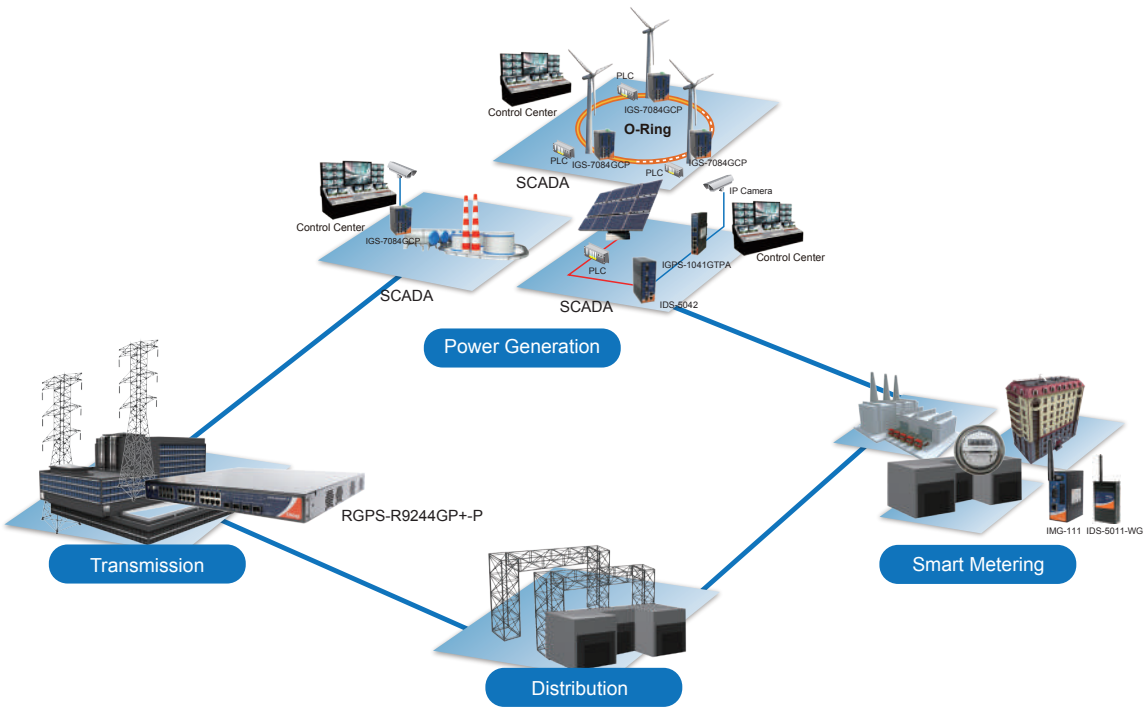
Introduction

RGPS-R9244GP+ series is Layer 3 Gigabit managed redundant ring PoE Ethernet switch with 24x10/100/1000Base-T(X) IEEE802.3at P.S.E. ports and 4x1G/10GBase-X SFP+ ports. The switch support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. RGPS-R9244GP+ series also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each RGPS-R9244GP+ series switch has 24x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. And RGPS-R9244GP+ series support wide operating temperature from -20℃ to 60℃. Besides the Web-based interface, Telnet and console (CLI) configuration, RGPS-R9244GP+ series can also be managed centralized and convenient by Open-Vision. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber PoE Ethernet application.

***NOTE: This function is available by request only**

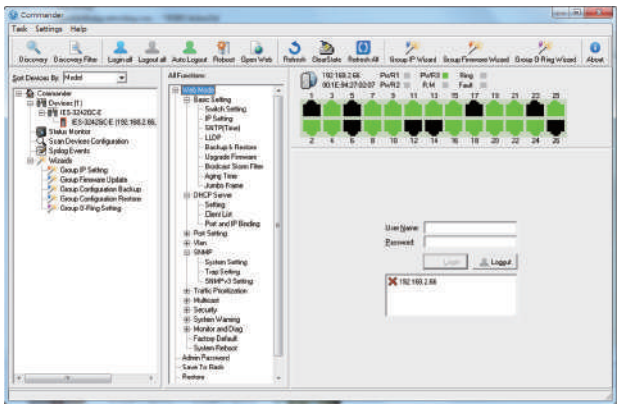
- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

***NOTE: This function is available by request only**

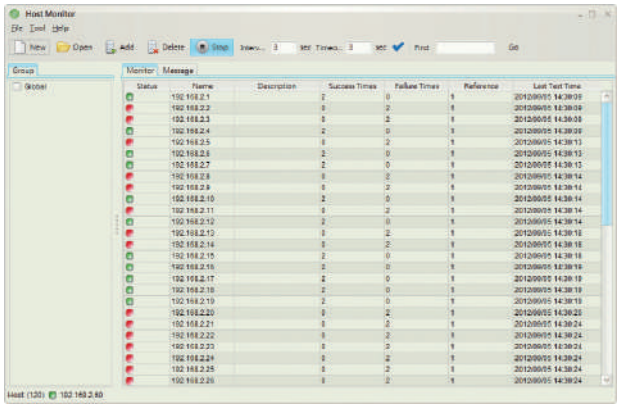


Open-Vision

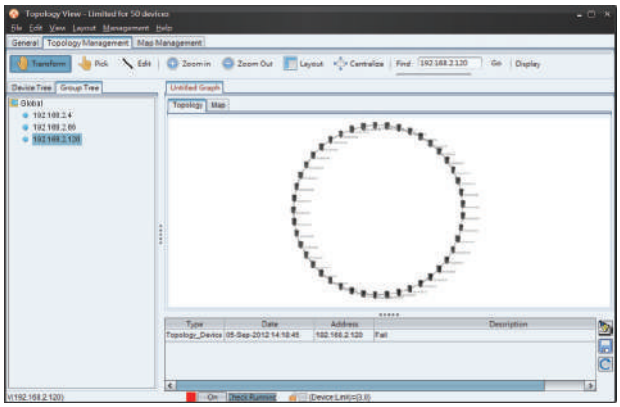
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor



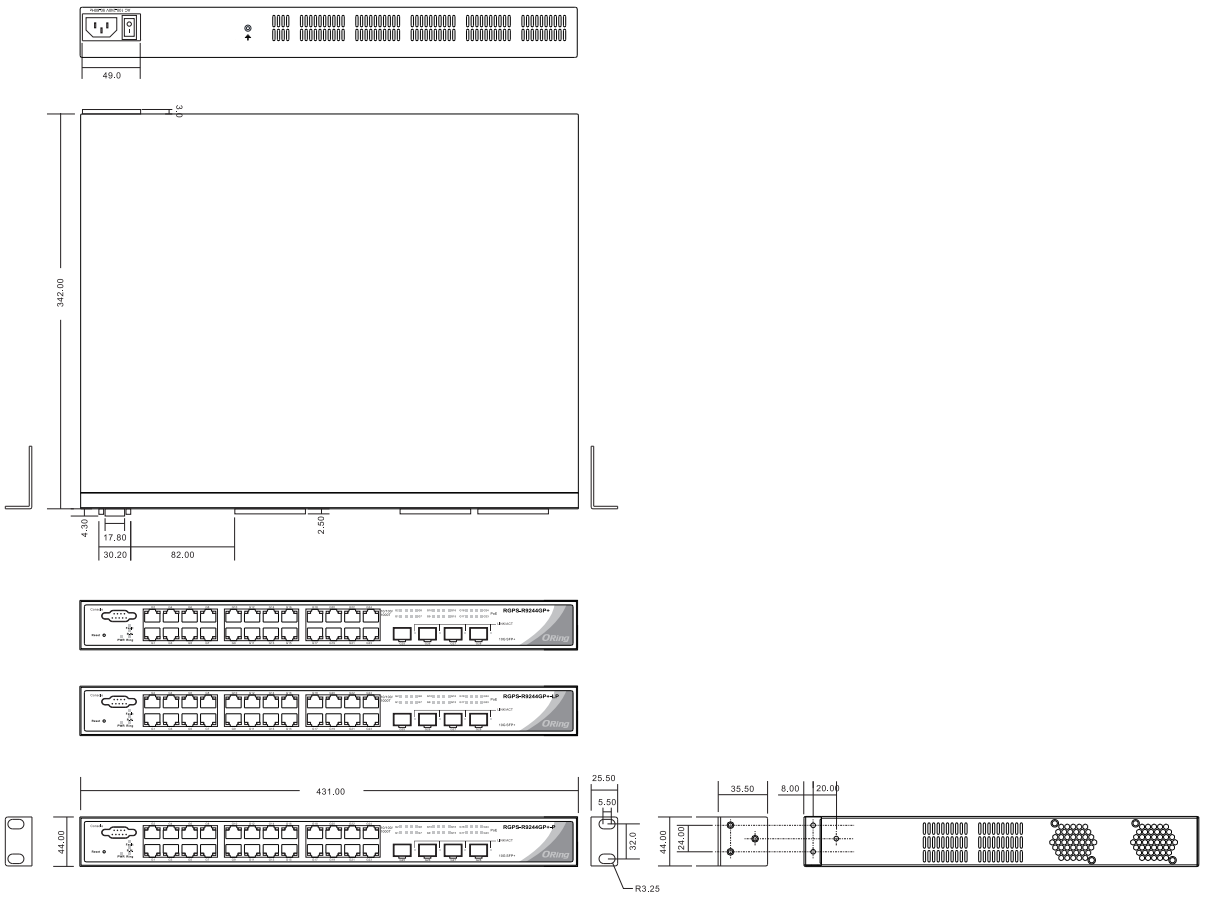
Topology View

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RGPS-R9244GP+-P	RGPS-R9244GP+-LP	RGPS-R9244GP+
Physical Ports			
10/100/1000Base-T(X) with P.S.E. Ports in RJ45 Auto MDI/MDIX	**24**		
1G/10GBase-X with SFP+ port	**4**		
Technology			
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3ae for 10Gigabit Ethernet IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)		
MAC Table	32k		
Packet Buffer	32Mbits		
Flash Memory	128Mbits		
DRAM Size	1Gbits		
Jumbo frame	Up to 10K Bytes		
Priority Queues	8		

Processing	Store-and-Forward		
Switch Properties	Switching latency: 7 us Switching bandwidth: 128Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define		
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) MAC-based authentication (802.1x) VLAN (802.1Q) to segregate and secure network traffic SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization IP source guard		
Software Features	IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/ Relay Modbus TCP SNTP server SMTP Client		
Network Redundancy	O-Ring O-Chain MRP***NOTE** Fast Recovery MSTP (RSTP/STP compatible)		
RS-232 Serial Console Port	RS-232 in DB-9 connector with console cable. 115200bps, 8, N, 1		
LED indicators			
Power Indicator (PWR)	Green: Power indicator		
Ring Master Indicator (R.M.)	Green: Indicates that the system is operating in O-Ring Master mode		
O-Ring Indicator (Ring)	Green: Indicates that the system operating in O-Ring mode Green Blinking: Indicates that the Ring is broken.		
Fault Indicator (Fault)	Amber: Indicate unexpected event occurred		
10/100/1000Base-T(X) RJ45 Port Indicator	Dual color LED for Link/Act/Speed indicator ~ Green (1G Link/Act) / Amber (10/100M Link/Act)		
1G/10GBase-X SFP+ Port Indicator	Green for port Link/Act.		
PoE Indicator	Green : PoE enabled LED x 24		
Fault contact			
Relay	None	None	Present
Power			
Power input	100~240VAC with AC socket	100~240VAC with AC socket	50~ 57VDC with terminal block
Power supply	1000 Watts	390 Watts	power supply not included
Power consumption (Typ.)	75 Watts (PoE output not included)	49 Watts	40 Watts
Max PoE output	720 Watts (-20°C~50°C) 320 Watts (50°C~60°C)	300Watts (-20°C~50°C) 240Watts (50°C~60°C)	720Watts
Overload current protection	Present		
Reverse Polarity Protection	Not Present		
Physical Characteristic			
Enclosure	19 inches rack mountable		
Dimension (W x D x H)	431 (W) x 342 (D) x 44 (H)mm (16.97 x 13.46 x 1.73 inch)		
Weight (g)	6,270 g	5,580 g	4,445 g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-20 to 60°C (-4 to 140°F)		
Operating Humidity	5% to 95% Non-condensing		

***NOTE: This function is available by request only**

Regulatory approvals			
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B		
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A		
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))		
Shock	IEC 60068-2-27		
Free Fall	IEC 60068-2-31		
Vibration	IEC 60068-2-6		
Safety	EN 60950-1		
MTBF	249,143 hrs	214,432 hrs	296,701 hrs
Warranty	5 years		

Ordering Information

RGPS-R9 AA B CCC - DD

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type	Power Supply Type
Option	**- 24:** 24 ports	**- 4:** 4 ports	**-GP+:** 1G / 10GBase-X, SFP+ socket	: without power supply **-P:** 1000 Watts power supply **-LP:** 450 Watts power supply

	Model Name	Description
Available Model	RGPS-R9244GP+-P_US	Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket, high watts power supply included, US power cord
	RGPS-R9244GP+-P_EU	Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket, high watts power supply included, EU power cord
	RGPS-R9244GP+-P_UK	Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket, high watts power supply included, UK power cord
	RGPS-R9244GP+-P_JP	Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket, high watts power supply included, JP power cord
	RGPS-R9244GP+-P_AU	Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket, high watts power supply included, AU power cord
	RGPS-R9244GP+-LP_US	Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket, low watts power supply included, US power cord
	RGPS-R9244GP+-LP_EU	Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket, low watts power supply included, EU power cord
	RGPS-R9244GP+-LP_UK	Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket, low watts power supply included, UK power cord
	RGPS-R9244GP+-LP_JP	Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket, low watts power supply included, JP power cord
	RGPS-R9244GP+-LP_AU	Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket, low watts power supply included, AU power cord
	RGPS-R9244GP+	Industrial Layer-3 28-port managed Gigabit PoE Ethernet switch with 24x10/100/1000Base-T(X) P.S.E. and 4x1G/10GBase-X, SFP+ socket

Packing List

- RGPS-R9244GP+/-P/-LP x 1
- Rack-mount Kit x 1
- ORing Tool CD x 1
- Power Cable x 1
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DBU-01 : backup unit device
- SFP1G series : 1GMbps SFP optical transceiver
- SFP10G series : 10GMbps SFP optical transceiver

RGPS-92222GCP-NP Series

RGPS-92222GCP-NP Series

Industrial 26-port managed Gigabit PoE Ethernet switch with 22x10/100/1000Base-T(X) P.S.E., 2xGigabit combo P.S.E. and 2x100/1000Base-X, SFP socket

Features

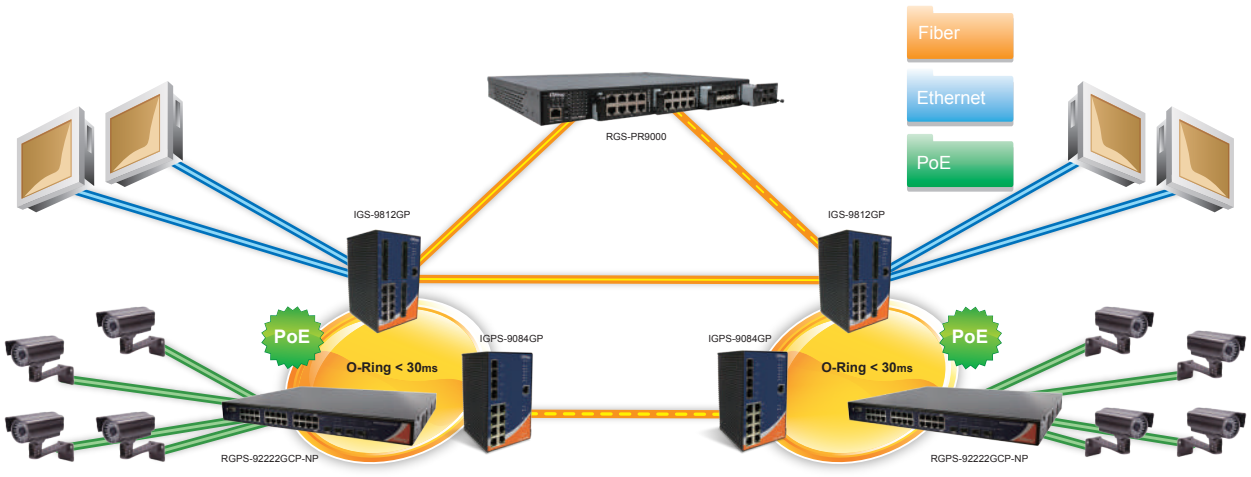
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- 24 port P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 Watts per port
- Support PoE on/off scheduled configuration
- Support PoE alive check and auto reboot fuction
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Support full/half-duplex transmission
- SFP socket support DDM function
- Multiple notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- 19 inches rack mountable design

Introduction

RGPS-92222GCP-NP series are Gigabit managed redundant ring PoE Ethernet switch with 22x10/100/1000Base-T(X) IEEE802.3at P.S.E. ports and 2xGigabit combo IEEE802.3at P.S.E. ports and 2x100/1000Base-X SFP ports. These switches support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. RGPS-92222GCP-NP series also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each RGPS-92222GCP-NP switch has (22+2) x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. RGPS-92222GCP-NP series can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber PoE Ethernet application.

***NOTE: This function is available by request only**

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

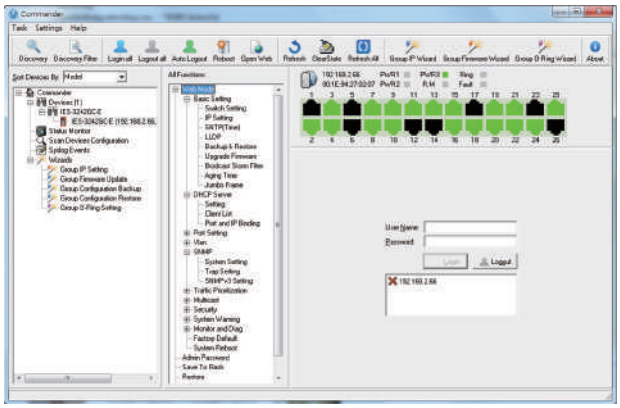


Network connection

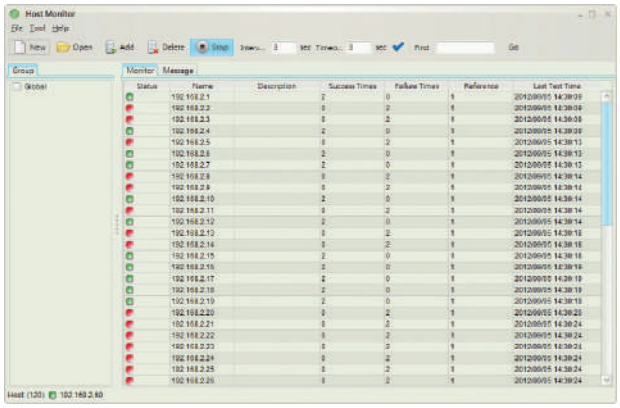
***NOTE: This function is available by request only**

Open-Vision

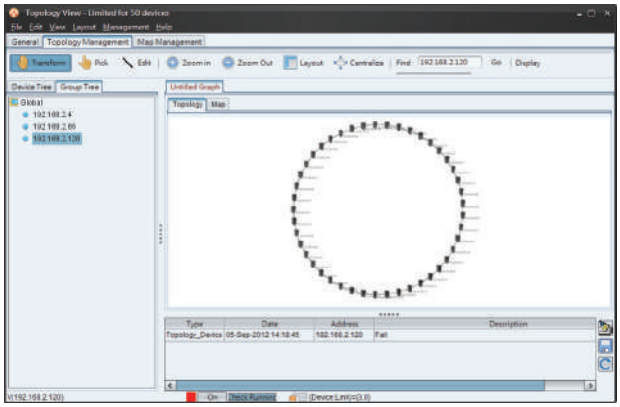
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor



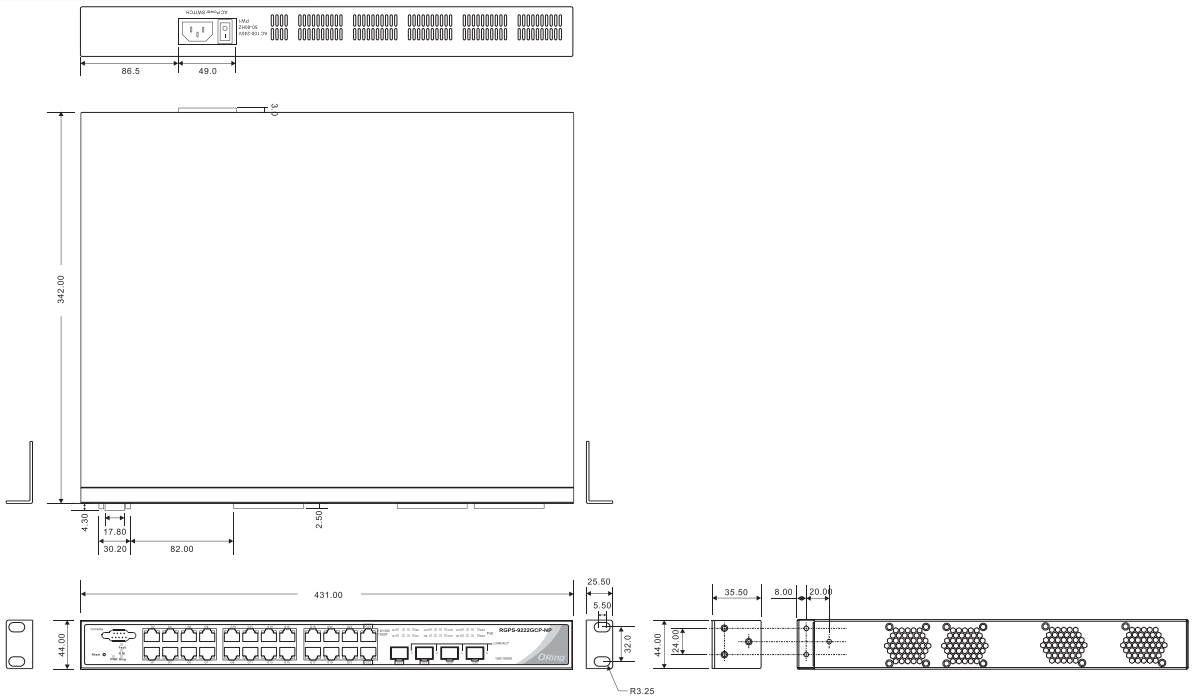
Topology View

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	RGPS-92222GCP-NP-LP	RGPS-92222GCP-NP-P	RGPS-92222GCP-NP
Physical Ports			
10/100/1000Base-T(X) with P.S.E. Ports in RJ45 Auto MDI/MDIX	22		
Gigabit Combo port with 10/100/1000Base-T(X)P.S.E. and 100/1000Base-X SFP ports	2		
100/1000Base-X with SFP port	2		
Technology			
Ethernet standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.) RGPS-92222GCP-NP-LP : Total power budget is 320Watts with maximum RGPS-92222GCP-NP-P : Total power budget is 720Watts with maximum RGPS-92222GCP-NP : Total power budget is 720Watts and based-on external power supply spec		
MAC table	8K		
Priority queues	8		
Processing	Store-and-Forward		
Switch properties	Switching latency: 7 us Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN	Switching bandwidth: 52Gbps VLAN ID Range : VID 1 to 4094 Port rate limiting: User Define	
Switch properties	Switching latency: 7 us Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN	Switching bandwidth: 52Gbps VLAN ID Range : VID 1 to 4094 Port rate limiting: User Define	
Jumbo frame	Up to 9.6K Bytes		

Security features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) Single 802.1x and Multiple 802.1x MAC-based authentication QoS assignment Guest VLAN MAC address limit TACACS+ VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization Authorization (15 levels) IP source guard		
Software features	IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client DHCP Relay Modbus TCP DNS client proxy SMTP Client NTP server		
Network redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)		
RS-232 Serial Console Port	RS-232 in DB-9 connector with console cable. 115200bps, 8, N, 1		
LED Indicators			
Power indicator (PWR)	Green : Power indicator		
Ring master indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode		
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.		
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred		
10/100/1000Base-T(X) RJ45 Port Indicator	Dual color LED for Speed/Link/Act indicator ~ Green : 1000Mbps Link/Act Amber : 10/100Mbps Link/Act		
100/1000Base-X SFP Port Indicator	Green for port Link/Act.		
PoE Indicator	Green : PoE enabled LED x 24		
Fault contact			
Relay	None		
Power			
Power Input	100~240VAC with power socket		50 ~ 57VDC with terminal block
Power supply	450 Watts power supply included (320W power budget)	1000 Watts power supply included (720W power budget)	Power supply not include
Power consumption (Typ.)	37 Watts (P.D. not included)	37 Watts (P.D. not included)	17 Watts (P.D. not included)
Overload current protection	Present		
Reverse Polarity Protection	Not Present		
Physical Characteristics			
Enclosure	19 inches rack-mountable		
Dimensions (W x D x H)	431 (W) x 342 (D) x 44 (H) mm (16.97 x 13.47 x 1.73 inch)		
Weight (g)	5000 g	5730 g	3982 g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		

***NOTE: This function is available by request only**

Operating Temperature	-40 to 60°C (-40 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

RGPS-9 AA B C DDD - EE

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Gigabit Combo Port with P.S.E. Number	Additional Port Number	Additional Port Type	Other Feature
Option	**- 22:** 22 ports	**- 2:** 2 ports	**- 2:** 2 ports	**-GCP:** Gigabit Combo ports and Gigabit SFP ports	**-NP:** None-PTP version

	Model Name	Description	Operating Temperature
Available Model	RGPS-92222GCP-NP-LP_US	Industrial 26-port managed Gigabit PoE Ethernet switch with 22x10/100/1000Base-T(X) P.S.E., 2xGigabit combo P.S.E. ports and 2x100/1000Base-X, SFP socket, low watts power supply included, US power cord	
	RGPS-92222GCP-NP-LP_EU	Industrial 26-port managed Gigabit PoE Ethernet switch with 22x10/100/1000Base-T(X) P.S.E., 2xGigabit combo P.S.E. ports and 2x100/1000Base-X, SFP socket, low watts power supply included, EU power cord	
	RGPS-92222GCP-NP-LP_UK	Industrial 26-port managed Gigabit PoE Ethernet switch with 22x10/100/1000Base-T(X) P.S.E., 2xGigabit combo P.S.E. ports and 2x100/1000Base-X, SFP socket, low watts power supply included, UK power cord	
	RGPS-92222GCP-NP-LP_JP	Industrial 26-port managed Gigabit PoE Ethernet switch with 22x10/100/1000Base-T(X) P.S.E., 2xGigabit combo P.S.E. ports and 2x100/1000Base-X, SFP socket, low watts power supply included, JP power cord	
	RGPS-92222GCP-NP-P_US	Industrial 26-port managed Gigabit PoE Ethernet switch with 22x10/100/1000Base-T(X) P.S.E., 2xGigabit combo P.S.E. ports and 2x100/1000Base-X, SFP socket, power supply included, US power cord	
	RGPS-92222GCP-NP-P_EU	IIndustrial 26-port managed Gigabit PoE Ethernet switch with 22x10/100/1000Base-T(X) P.S.E., 2xGigabit combo P.S.E. ports and 2x100/1000Base-X, SFP socket, power supply included, EU power cord	
	RGPS-92222GCP-NP-P_UK	IIndustrial 26-port managed Gigabit PoE Ethernet switch with 22x10/100/1000Base-T(X) P.S.E., 2xGigabit combo P.S.E. ports and 2x100/1000Base-X, SFP socket, power supply included, UK power cord	
	RGPS-92222GCP-NP-P_JP	IIndustrial 26-port managed Gigabit PoE Ethernet switch with 22x10/100/1000Base-T(X) P.S.E., 2xGigabit combo P.S.E. ports and 2x100/1000Base-X, SFP socket, power supply included, JP power cord	
	RGPS-92222GCP-NP	IIndustrial 26-port managed Gigabit PoE Ethernet switch with 22x10/100/1000Base-T(X) P.S.E., 2xGigabit combo P.S.E. ports and 2x100/1000Base-X, SFP socket	

Packing List

- RGPS-92222GCP-NP/LP/P x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1
- Rack-mount Kit x 1
- Power Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100M series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DBU-01 : backup unit device

RGPS-9084GP-P

RGPS-9084GP-P

Industrial 12-port rack mount managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x100/1000Base-X, SFP socket, power supply included

Features

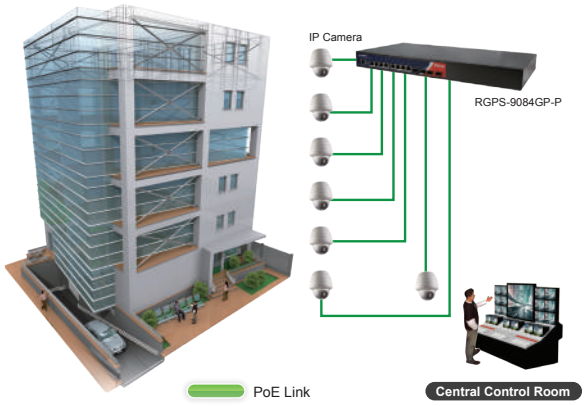
- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP*NOTE** (Media Redundancy Protocol) function
- Supports IEEE 802.3at compliant PoE 30Watts per port
- Supports PoE scheduled configuration and PoE alive check function
- Support **IEEE 1588v2** clock Synchronization
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Support IEEE 802.3az Energy-Efficient Ethernet technology
- Supports SMTP client and NTP server protocol
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Supports backup unit device **DBU-01** to quickly configuration backup/restore
- Support hardware watch dog function
- Support loop guard to solve Ethernet loop issue
- Rigid IP-30 housing design
- 19 inch rack mountable design

Introduction

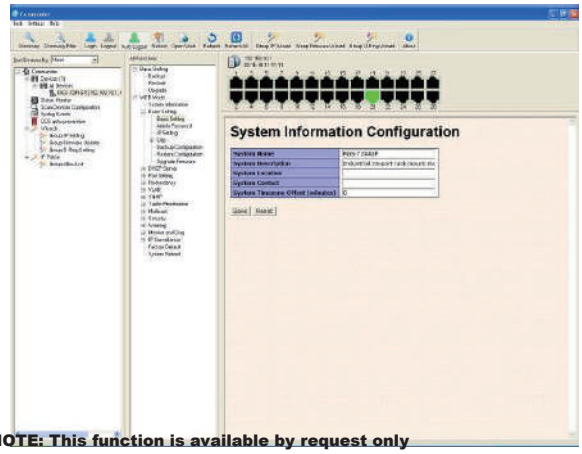
RGPS-9084GP-P is managed redundant ring PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x100/1000Base-X SFP ports. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) 、Open-Ring 、O-Chain 、Fast Recovery 、MRP*NOTE and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. RGPS-9084GP-P also support Power over Ethernet, a system to transmit electrical power up to **30 watts (-40 ~ 60°C provided total 240watts max., and 60 to 75°C provided total 120watts max.)**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each RGPS-9084GP-P switch has 8x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. And support wide operating temperature from -40°C to 75°C. RGPS-9084GP-P can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices and highly-managed Ethernet application.

***NOTE: This function is available by request only**

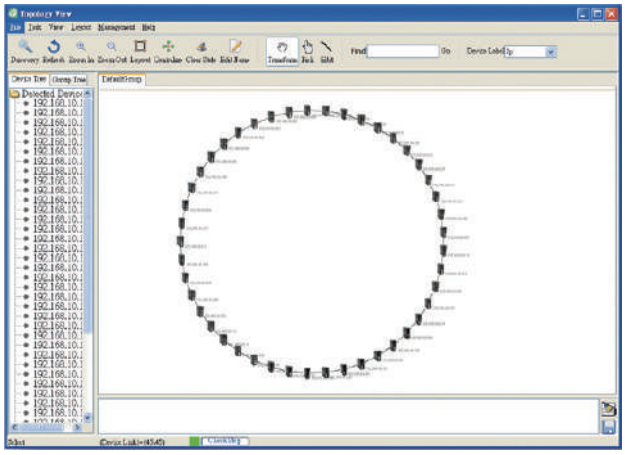
- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring :** Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP***NOTE : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management :** The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS :** The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function :** ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention :** The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology :** The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP :** This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet :** This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



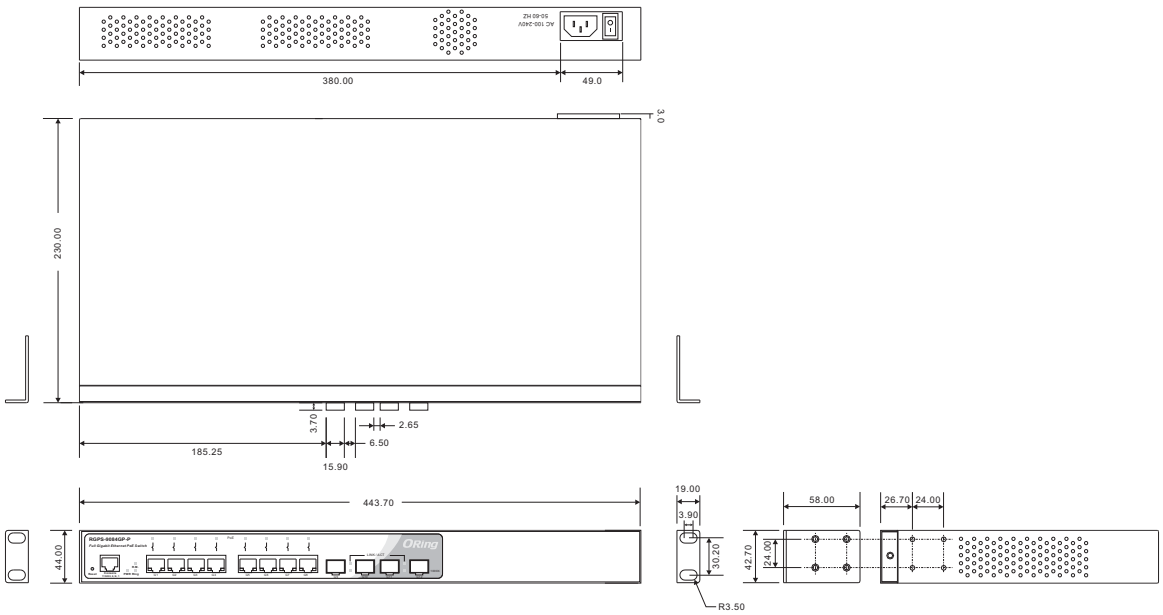
Open-Vision



*NOTE: This function is available by request only



Dimensions



(Unit=mm)

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Specifications

ORing Switch Model	RGPS-9084GP-P
Physical Ports	
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX with P.S.E	**8** **-40 ~ 60°C : provided total 240watts maximum, 60 ~ 75°C : provided total 120watts maximum**
100/1000Base-X SFP Port	**4**
Technology	
Ethernet Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at PoE specification
MAC Table	8k
Packet Buffer	4Mbits
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 24Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Jumbo frame	Up to 9.6K Bytes
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP server
Network Redundancy	O-Ring Open-Ring O-Chain Fast Recovery MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1 (support backup unit DBU-01)
LED Indicators	
Power indicator (PWR)	Green : Power indicator
Ring Master Indicator (R.M.)	Green : Indicate system operated in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicate system operated in O-Ring mode. Blinking to indicate Ring is broken.

***NOTE: This function is available by request only**

PoE indicator	Blue : PoE LED x 8
10/100/1000Base-T(X) RJ45 port indicator	Green for port Link/Act. Dual color LED for speed indicator ~ Green (1000Mbps) / Amber (100Mbps) / Off-light (10Mbps)
100/1000Base-X SFP port indicator	Green for port Link/Act.
Power	
Power Input	AC 100~240V/AC, 50~60Hz
Power Consumption (Type.)	260Watts (PoE output included)
Overload current protection	Present
Physical Characteristics	
Enclosure	19 inches rack mountable
Dimension (W x D x H)	443.7(W)x230(D)x44(H) mm (17.47 x 9.1 x 1.73inch)
Weight (g)	3730 g
Environmental	
Storage Temperature	-40 to 85oC (-40 to 185oF)
Operating Temperature	-40 to 75oC (-40 to 167oF)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Warranty	5 years

Ordering Information

RGPS-9AABCC - P

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 08:** 8 ports	**- 4:** 4 ports	**- GP:** 100/1000Base-X SFP ports

	Model Name	Description
Available Model	RGPS-9084GP-P_US	Industrial 12-port rack mount managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x100/1000Base-X, SFP socket, power supply included, US power cord
	RGPS-9084GP-P_EU	Industrial 12-port rack mount managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x100/1000Base-X, SFP socket, power supply included, EU power cord
	RGPS-9084GP-P_UK	Industrial 12-port rack mount managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x100/1000Base-X, SFP socket, power supply included, UK power cord
	RGPS-9084GP-P_JP	Industrial 12-port rack mount managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x100/1000Base-X, SFP socket, power supply included, JP power cord

Packing List

- RGPS-9084GP-P x 1
- Ring Tool CD x 1
- Quick Installation Guide x 1
- Rack-mount Kit x 1
- Power Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100M series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DBU-01 : backup unit device

IGPS-9842GTP Series

IGPS-9842GTP Series

Industrial 14-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Supports IEEE 802.3at compliant PoE with maximum 30Watts per port
- Support PoE on/off scheduled configuration
- Support PoE alive check and auto reboot fuction
- Advanced PoE power boost technology to support dual 24VDC power inputs
- Support IEEE 1588v2 clock Synchronization
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Support SMTP client and NTP server protocol
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Support hardware watch dog function
- Included onboard buzzer for warning alarm
- Support loop guard to solve Ethernet loop issue
- Support serial console backup unit to backup
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

EN50155 | Full Gigabit | P.S.E PUE | Redundant PWR | O-Ring | -40~75°C Temperature

R6 READY | RoHS Lead Free | CE | FC

Introduction

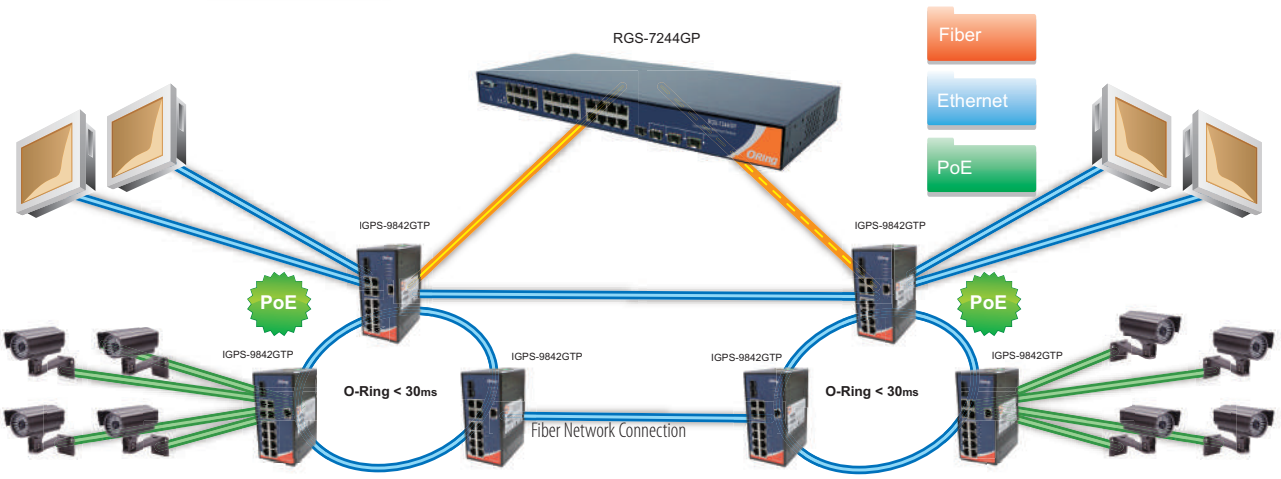
ORing's managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. IGPS-9842GTP is managed redundant ring PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x10/100/1000Base-T(X) copper ports and 2x100/1000Base-X SFP ports which is compliant with EN50155 request. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) Open-Ring, O-Chain, MRP*NOTE and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions

***NOTE: This function is available by request only**

with its fast recovery technology. IGPS-9842GTP also support Power over Ethernet, a system to transmit electrical power up to **30 watts (total 120watts max.)**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each IGPS-9842GTP switch has 8x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. And support wide operating temperature from -40 to 75°C. IGPS-9842GTP can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

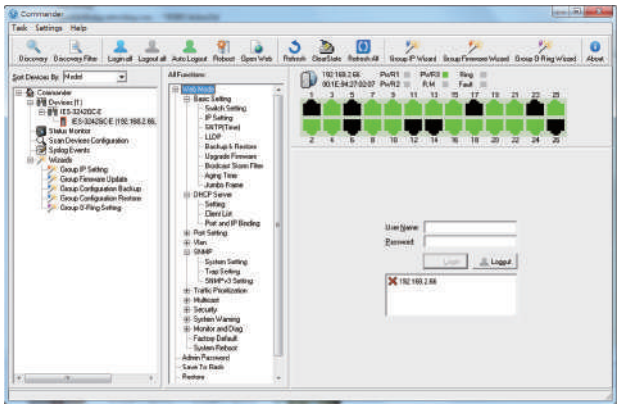
Practical Operation



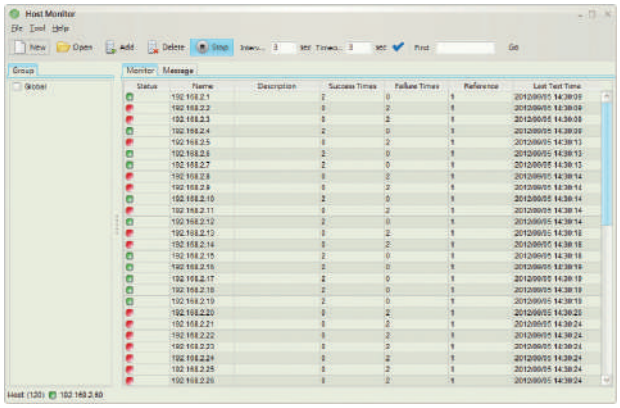
*NOTE: This function is available by request only

Open-Vision

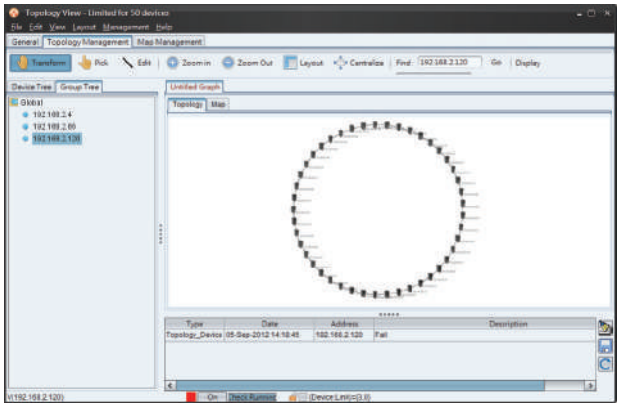
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor



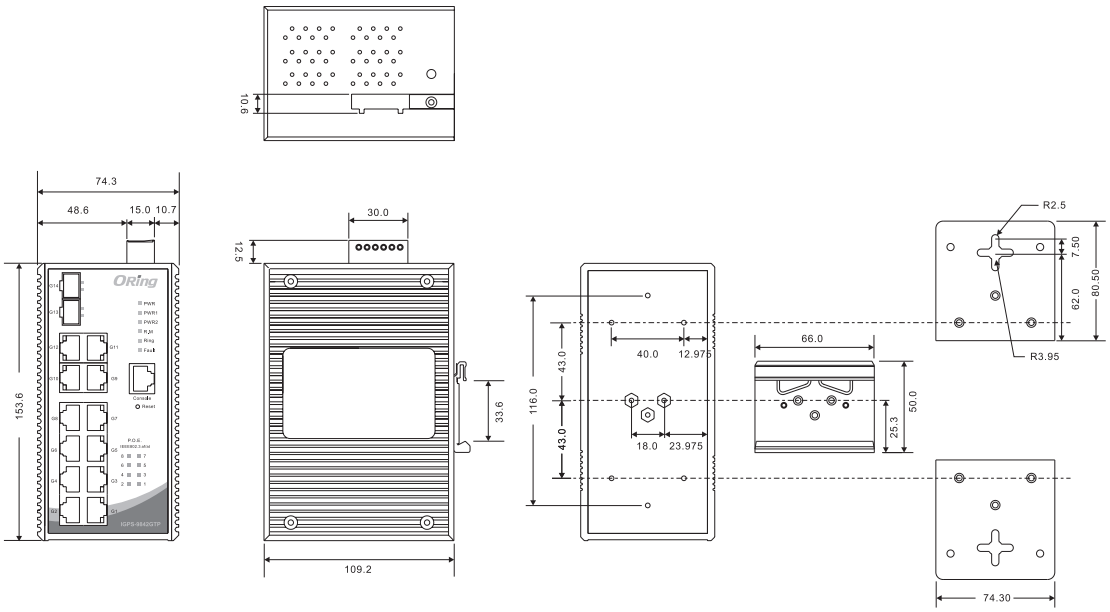
Topology View

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

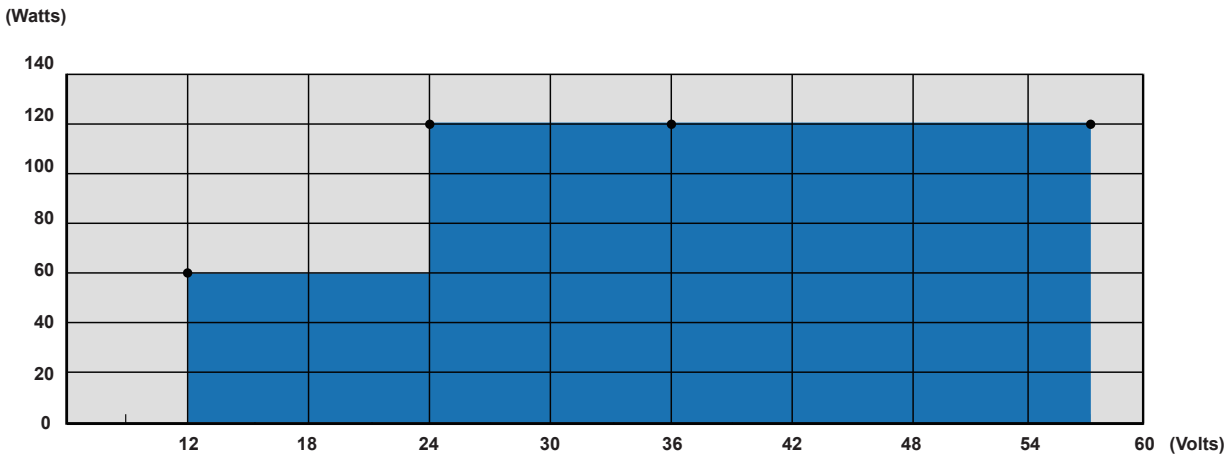
1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Dimensions



(Unit=mm)

Diagram of IGPS-9842GTP-24V PoE Output



Specifications

ORing Switch Model	IGPS-9842GTP	IGPS-9842GTP-24V
Physical Ports		
10/100/1000Base-T(X) with P.S.E. Ports in RJ45 Auto MDI/MDIX	8 (P.S.E. with IEEE 802.3at)	
10/100/1000Base-T(X) in RJ45 Auto MDI/MDIX	4	
100/1000Base-X with SFP port	2	

Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 28Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP server
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
100/1000Base-X SFP Port Indicator	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1 (**support backup unit**)
LED indicators	
Power Indicator (PWR)	Green : Power LED x 3
PoE Indicator	Green : PoE LED x 8
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) P.S.E. RJ45 Port Indicator (P1 ~ P8)	Dual color LED : Green for 1000Mbps Link/Act indicator. Amber for 10/100Mbps Link/Act indicator
10/100/1000Base-T(X) RJ45 Port Indicator (P9 ~ P12)	Green LED for Link/Act indicator. Dual color LED for speed indicator ~ Green (1000Mbps) / Amber (100Mbps) / Off-light (10Mbps)
Processing	Green for port Link/Act.
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	

***NOTE: This function is available by request only**

Redundant Input power	Dual DC inputs. 50 ~ 57VDC on 6-pin terminal block	Dual DC inputs. 12 ~ 57VDC on 6-pin terminal block
PoE Power Output	50 ~ 57VDC : total power budget is 240Watts with maximum 30Watts per port	12 ~ 24VDC : total power budget is 60Watts with maximum 30Watts per port. 24 ~ 57VDC : total power budget is 120Watts with maximum 30Watts per port
Power consumption (Typ.)	13.2 Watts (PoE loading not included)	
Overload current protection	Present	
Reverse Polarity Protection	Not Present	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	74.3 (W) x 109.2 (D) x 153.6 (H)mm (2.93 x 4.3 x 6.05 inch)	
Weight (g)	1270 g	
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMC	EN 55022, EN 55024(CE EMC), FCC Part 15 B, EN 50121-1, EN 50121-3-2(EN 50155), EN 61000-3-2, EN 61000-3-3	
EMI	CISPR 22, EN 55022, FCC Part 15 B class A	
EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8 (PFMF), IEC 61000-4-11 (DIP)	
Shock	IEC 60068-2-27	
Free Fall	IEC 60068-2-31	
Vibration	IEC 60068-2-6	
Safety	EN 60950-1	
Other	EN 50155	
MTBF	311,532 hrs	
Warranty	5 years	

Ordering Information

IGPS-9ABCDDD-24V

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	10/100/1000Base-T(X) Port Number	100/1000Base-(F)X SFP Port Number	Additional Port Type
Option	**- 8:** 8 ports	**- 4:** 4 ports	**-2**: 2 ports	**-GTP**: Gigabit copper and SFP ports

	Model Name	Description
Available Model	IGPS-9842GTP	Industrial 14-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket
	IGPS-9842GTP-24V	Industrial 14-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket, 24VDC power inputs

Packing List

- IGPS-9842GTP/-24V x 1
- DIN-Rail Kit x 1
- ORing Tool CD x 1
- Wall-mount Kit x 2
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DR-45 series : 45 Watts DIN-Rail power supply
- DR/SDR/DRP Series DIN-Rail power supply
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DBU-01 : backup unit device

IGPS-9084GP

IGPS-9084GP

Industrial 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x100/1000Base-X, SFP socket

Features

- Designed for Railway application and fully compliant with the requirement of EN50155/EN50121-4 standard
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- 8 port P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 Watts per port
- Support PoE on/off scheduled configuration
- Support PoE alive check and auto reboot fuction
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Syslog/SNMP Trap notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Web-based ,SNMP v1/v2c/v3, Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

EN50155 | Full Gigabit | P.S.E PUE | Redundant PWR | O-Ring | -40~75°C Temperature

R6 READY | RoHS Lead Free | CE | FC

*NOTE: This function is available by request only

Introduction

IGPS-9084GP is managed redundant ring PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x100/1000Base-X SFP ports. The switch support Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IGPS-9084GP also support Power over Ethernet, a system to transmit electrical power up to 30 watts, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each IGPS-9084GP switch has 8x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. And support wide operating temperature from -40 to 75° C. IGPS-9084GP can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
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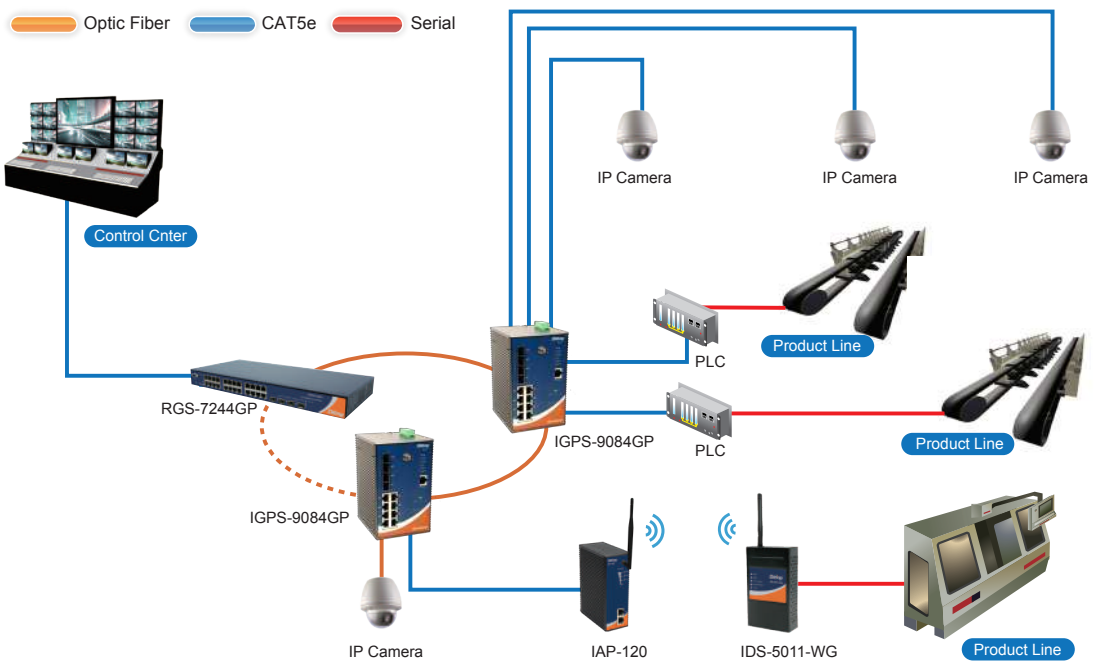
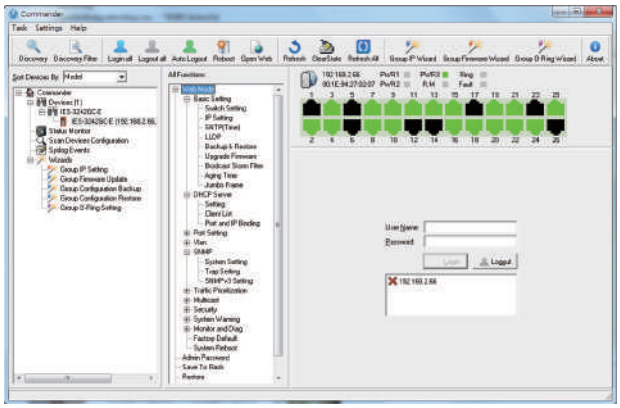
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



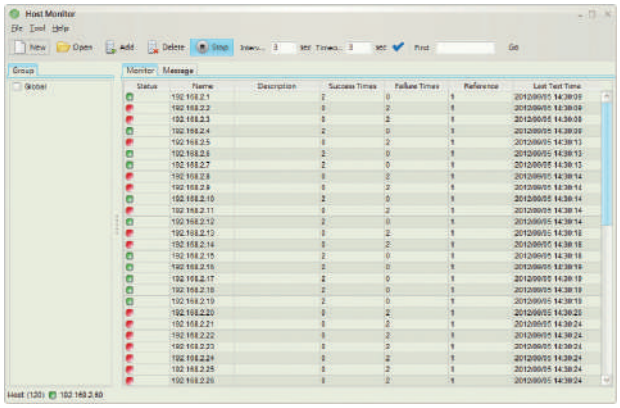
*NOTE: This function is available by request only

Open-Vision

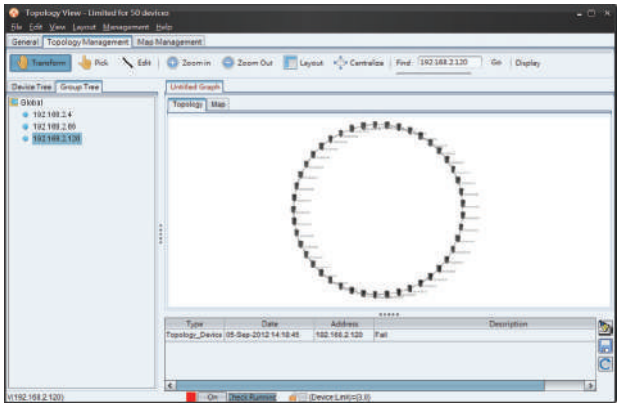
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

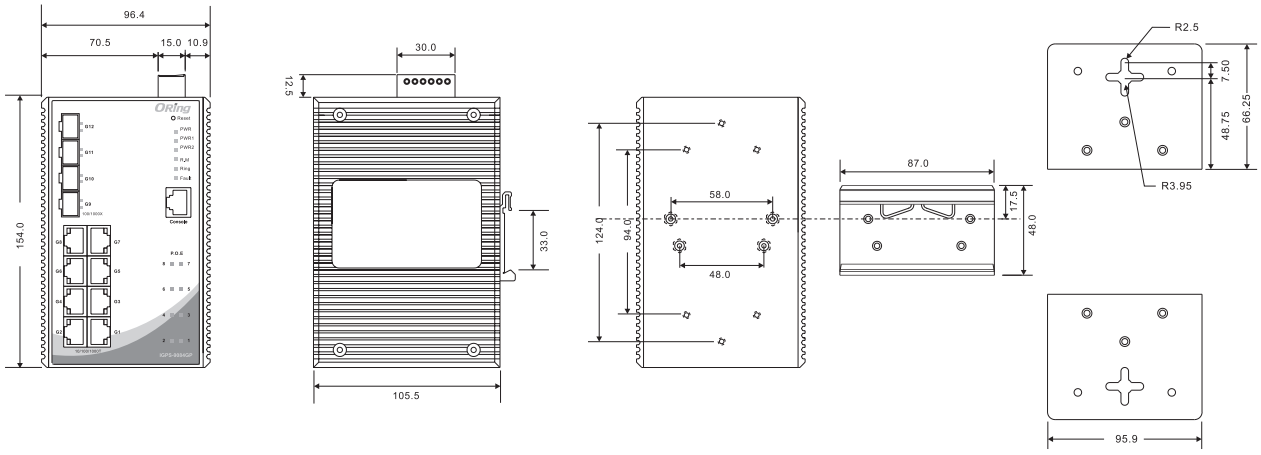


Host Monitor



Topology View

Dimensions



(Unit=mm)

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Specifications

ORing Switch Model	IGPS-9084GP
Physical Ports	
10/100/1000Base-T(X) with P.S.E. Ports in RJ45 Auto MDI/MDIX	**8**
100/1000Base-X with SFP port	**4**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
PoE Power Supply Type	Endspan mode
PoE Power Output	Per port 56V DC, 350mA. Max. 15.4 watts (IEEE 802.3af), Per Port 56V DC, 590mA. Max. 30 watts (IEEE 802.3at)
MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Share Data Buffer	4Mbit

Switch Properties	Switching latency: 7 us Switching bandwidth: 24Gbps Throughput (packet per second) : 14.8Mpps@64Bytes packet Max. Number of Available VLANs: 4096 VLAN ID Range : VID 0 to 4095 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP server
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED indicators	
Power Indicator (PWR)	Green : Power LED x 2
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicator	Dual color LED : Green for 1000Mbps Link/Act indicator. Amber for 10/100Mbps Link/Act indicator
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
PoE Indicator	Green : PoE enabled LED x 8
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Reset Function	
Reset Button	< 5 sec: System reboot, > 5 sec: Factory default
Power	
Redundant Input power	Dual DC inputs. 50~57VDC on 6-pin terminal block
Power consumption (Typ.)	13.2 Watts
Overload current protection	Present
Reverse Polarity Protection	Not Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	96.4 (W) x 105.5 (D) x 154 (H) mm (3.8 x 4.15 x 6.06 inches)
Weight (g)	1205 g

***NOTE: This function is available by request only**

Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	EN 55032, EN 55024(CE EMC), FCC Part 15 B, EN 50121-1, EN 50121-3-2 (EN 50155), EN 50121-4 EN 61000-6-2, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3
EMI	CISPR 32, EN 55032, FCC Part 15 B class A, C-Tick
EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8 (PFMF), IEC 61000-4-11 (DIP)
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	EN 60950-1
Other	IEC 60945, EN 60945, EN 50155
MTBF	670898 hrs
Warranty	5 years

Ordering Information

IGPS-9ABBCC

Code Definition	Gigabit P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 8:** 8 ports	**- 4:** 4 ports	**-GP**: Gigabit SFP ports

Available Model	Model Name	Description
	IGPS-9084GP	Industrial 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x100/1000Base-X, SFP socket

Packing List

- IGPS-9084GP x 1
- DIN-Rail Kit x 1
- ORing Tool CD x 1
- Wall-mount Kit x 2
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network
- Management Windows Utility Suit, 500 IP devices
- DBU-01 : backup unit device
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver

IGPS-9084GP-60W

IGPS-9084GP-60W

Industrial 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) 60Watts P.S.E. ports and 4x100/1000Base-X, SFP socket

Features

- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- 8 port Ultra P.S.E. fully compliant with IEEE802.3at standard, provide up to 60 Watts per port
- Support PoE on/off scheduled configuration
- Support PoE alive check and auto reboot fuction
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Full Gigabit | P.S.E PUE | Redundant PWR | O-Ring | -40~75°C Temperature

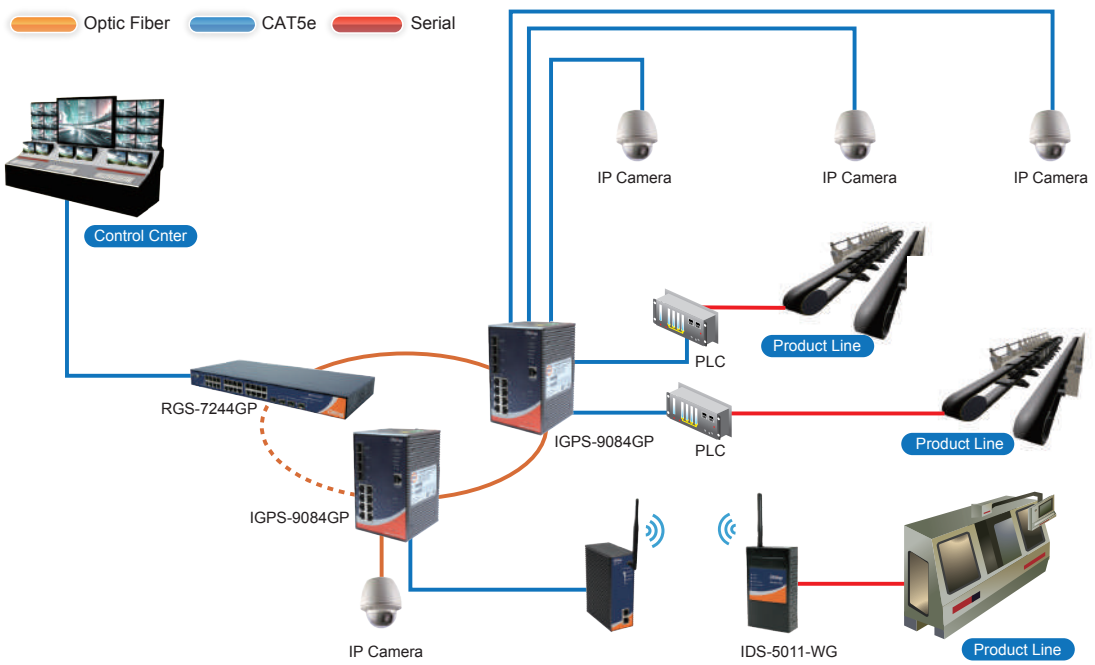
R6 READY | RoHS Lead Free | CE | FC

***NOTE: This function is available by request only**

Introduction

IGPS-9084GP-60W is managed redundant ring PoE Ethernet switch with 8x10/100/1000Base-T(X) 60Watts P.S.E. ports and 4x100/1000Base-X SFP ports. The switch support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IGPS-9084GP-60W also support Power over Ethernet, a system to transmit electrical power up to **60 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each IGPS-9084GP-60W switch has 8x10/100/1000Base-T(X) 60Watts P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. And support wide operating temperature from -40°C to 75°C. IGPS-9084GP-60W can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

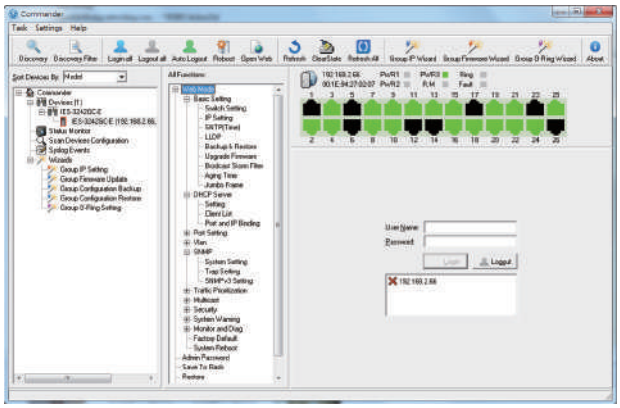
- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



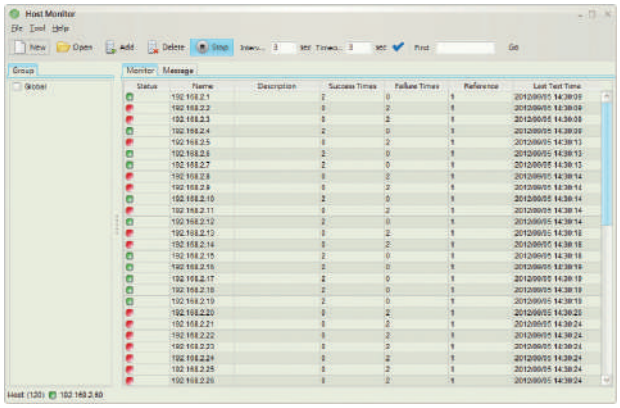
*NOTE: This function is available by request only

Open-Vision

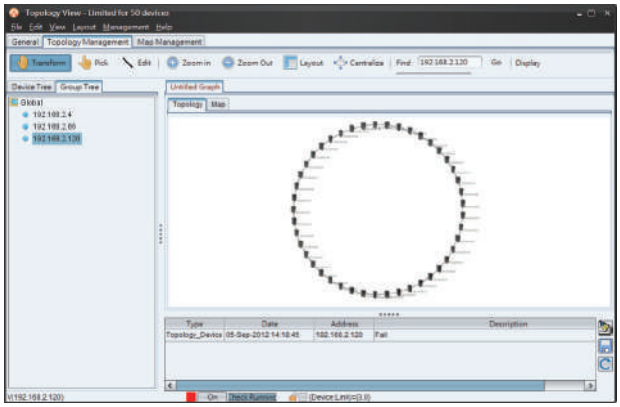
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

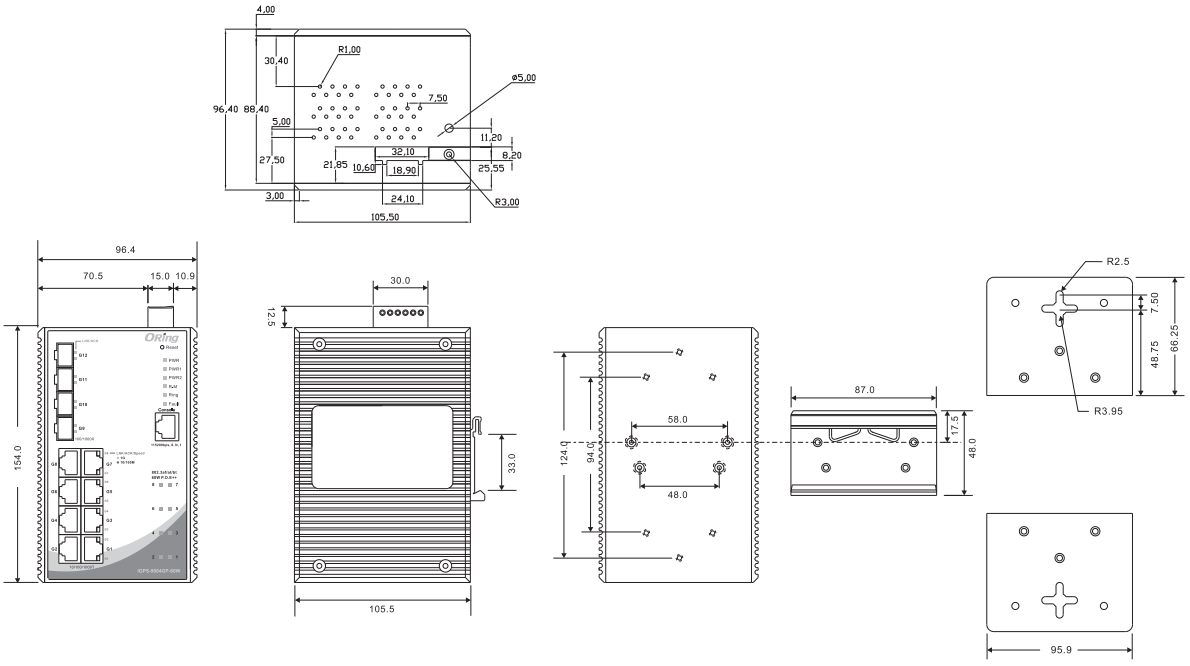


Host Monitor



Topology View

Dimensions



(Unit=mm)

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power Input +
#2	TD- with PoE Power Input +
#3	RD+ with PoE Power Input -
#4	N.C. with PoE Power Input +
#5	N.C. with PoE Power Input +
#6	RD- with PoE Power Input -
#7	N.C. with PoE Power Input -
#8	N.C. with PoE Power Input -

1000Base-T P.S.E. RJ-45 port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power Input +
#2	BI_DA- with PoE Power Input +
#3	BI_DB+ with PoE Power Input -
#4	BI_DC+ with PoE Power Input +
#5	BI_DC- with PoE Power Input +
#6	BI_DB- with PoE Power Input -
#7	BI_DD+ with PoE Power Input -
#8	BI_DD- with PoE Power Input -

Specifications

ORing Switch Model	IGPS-9084GP-60W
Physical Ports	
10/100/1000Base-T(X) with P.S.E. Ports in RJ45 Auto MDI/MDIX	**8**
100/1000Base-X with SFP port	**4**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at **PoE++** specification **(up to 60 Watts per port for P.S.E.)**
MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Buffer Size	4Mbit
Switch Properties	Switching latency: 7 us Switching bandwidth: 24Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security

Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP server
Network Redundancy	O-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED indicators	
Power Indicator (PWR)	Green : Power LED x 3
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicator	Dual color LED : Green for 1000Mbps Link/Act indicator. Amber for 10/100Mbps Link/Act indicator Up LED for left port indicator, Down LED for right port indicator
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
PoE Indicator	Green : PoE enabled LED x 8
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 50~57VDC on 6-pin terminal block
Power consumption (Typ.)	13 Watts
PoE budget	240 Watts
Overload current protection	Present
Reverse Polarity Protection	Not Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	96.4 (W) x 105.5 (D) x 154 (H) mm (3.8 x 4.15 x 6.06 inches)
Weight (g)	1290 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))
Shock	IEC 60068-2-27

***NOTE: This function is available by request only**

Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	EN 60950-1
MTBF	641990 hrs
Warranty	5 years

Ordering Information

IGPS-9ABBCC-60W

Code Definition	Gigabit P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 8:** 8 ports	**- 4:** 4 ports	**-GP**: Gigabit SFP ports

	Model Name	Description
Available Model	IGPS-9084GP-60W	Industrial 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) 60Watts P.S.E. ports and 4x100/1000Base-X, SFP socket

Packing List

- IGPS-9084GP-60W x 1
- DIN-Rail Kit x 1
- ORing Tool CD x 1
- Wall-mount Kit x 2
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DBU-01 : backup unit device
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver

IGPS-9080 Series

IGPS-9080 Series

Industrial 8-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E.

Features

- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- 8 port P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 Watts per port
- Support PoE on/off scheduled configuration
- Support PoE alive check and auto reboot fuction
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

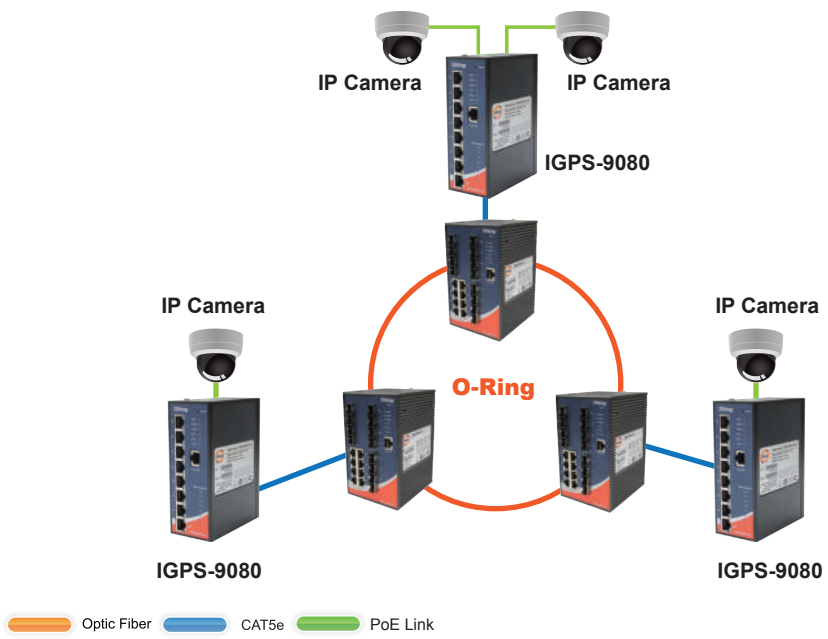
Full Gigabit · P.S.E PUE · Redundant PWR · O-Ring · -40~75°C Temperature · R6 READY · RoHS Lead Free · CE · FC

Introduction

IGPS-9080 series are managed redundant ring PoE Ethernet switches with 8x10/100/1000Base-T(X) P.S.E. ports. These switches support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IGPS-9080 series also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each IGPS-9080 series switch has 8x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. And support wide operating temperature from -40°C to 75°C. IGPS-9080 series can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for highly-managed Ethernet application.

***NOTE: This function is available by request only**

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



***NOTE: This function is available by request only**

Open-Vision

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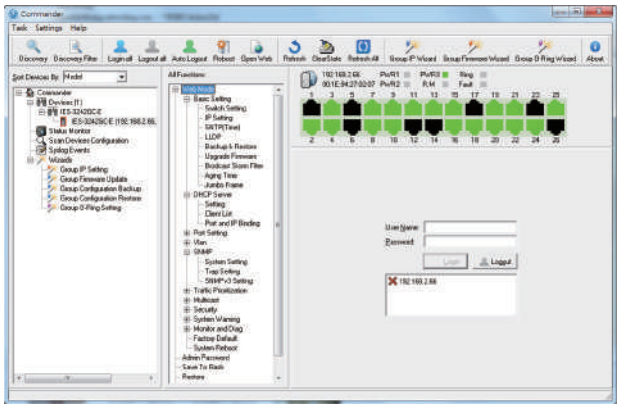
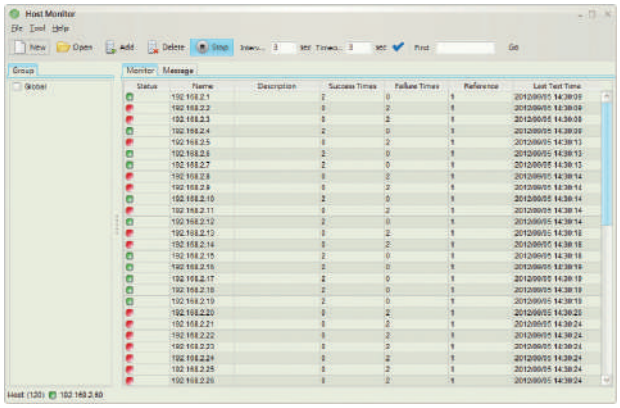
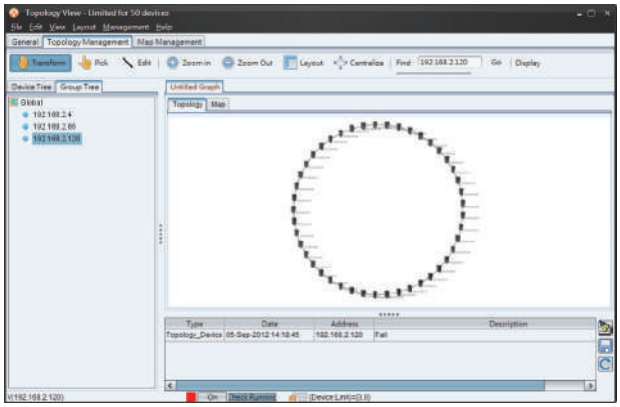


Commander

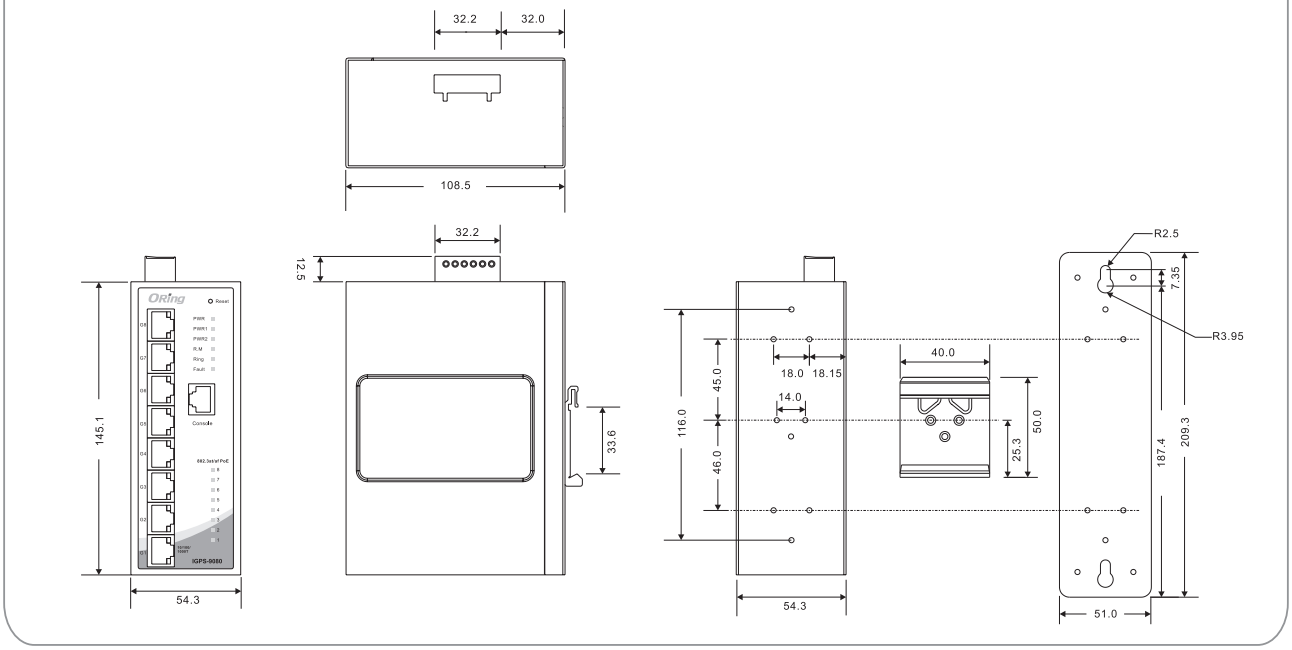


Host Monitor



Topology View

Dimensions



(Unit=mm)

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Specifications

ORing Switch Model	IGPS-9080	IGPS-9080-24V
Physical Ports		
10/100/1000Base-T(X) with P.S.E. Ports in RJ45 Auto MDI/MDIX	**8**	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 1588v2 clock synchronization IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)	
PoE Output Watts	240 Watts Max.	12 ~24VDC : 60Watts Max. 24 ~ 57VDC : 120Watts Max.
MAC Table	8k	
Priority Queues	8	
Processing	Store-and-Forward	
Buffer Size	4Mbit	
Switch Properties	Switching latency: 7 us Switching bandwidth: 16Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define	
Jumbo frame	Up to 9.6K Bytes	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security	

Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP server	
Network Redundancy	O-Ring O-Chain MRP*NOTE MSTP (RSTP/STP compatible)	
LED Indicators		
Power Indicator (PWR)	Green : Power LED x 3	
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.	
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred	
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Dual color LED for speed indicator : Green (1000M) / Amber (100M) / Off-light (10M).	
PoE Indicator	Green LED x 8	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input power	Dual DC inputs. 50~57VDC on 6-pin terminal block	Dual DC inputs. 12~57VDC on 6-pin terminal block
Power consumption (Typ.) (PoE output not included)	9 Watts	10 Watts
Overload current protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	54.3(W)x108.5(D)x145.1(H) mm (2.14x4.27x5.71 inch.)	
Weight (g)	665 g	678 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B	
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A	
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))	
Shock	IEC 60068-2-27	
Free Fall	IEC 60068-2-31	
Vibration	IEC 60068-2-6	
Safety	EN 60950-1	
MTBF	656591 hrs	673263 hrs
Warranty	5 years	

***NOTE: This function is available by request only**

Ordering Information

IGPS-9AAB-CCC

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Voltage supported type
Option	**- 08:** 8 ports	**- 0:** 0 ports	**-24V**: 24VDC power inputs supported

	Model Name	Description
Available Model	IGPS-9080	Industrial 8-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E.
	IGPS-9080-24V	Industrial 8-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., 24VDC power inputs

Packing List

- IGPS-9080 series x 1
- ORing Tools CD x 1
- Quick Installation Guide x 1
- DIN-Rail Kit x 1
- Wall-mount Kit x 2
- Console Cable x 1

IGPS-9042GP-24V

IGPS-9042GP-24V

Industrial 6-port managed Gigabit PoE Ethernet switch with 4x10/100/1000Base-T(X) P.S.E. ports and 2x100/1000Base-X, SFP socket, 24VDC power inputs

Features

- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- 4 port P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 Watts per port
- Support PoE scheduled configuration and PoE auto-ping check function
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and NTP server
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

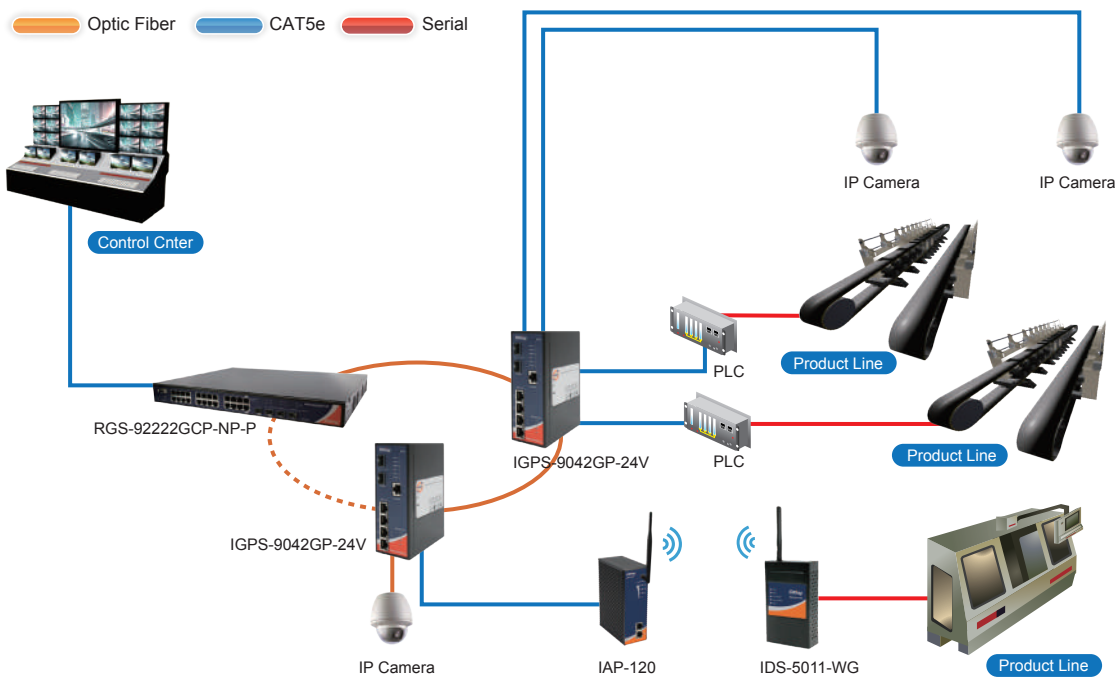
R6 READY | Full Gigabit | P.S.E PoE | O-Ring | Redundant PWR | -40~75°C Temperature | RoHS Lead Free | CE | FC

Introduction

IGPS-9042GP-24V is a managed redundant ring PoE Ethernet switch with 4x10/100/1000Base-T(X) IEEE 802.3at P.S.E. ports and 2x100/1000Base-X SFP ports. The switch support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IGPS-9042GP-24V also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each IGPS-9042GP-24V switch has 4x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. And support wide operating temperature from -40°C to 75°C. IGPS-9042GP-24V can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

***NOTE: This function is available by request only**

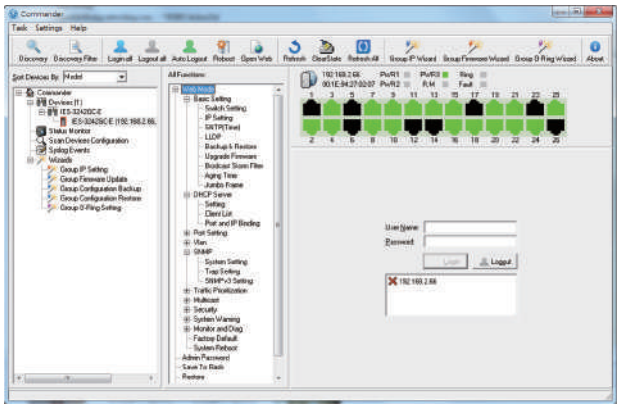
- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring :** Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management :** The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS :** The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function :** ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention :** The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology :** The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP :** This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet :** This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



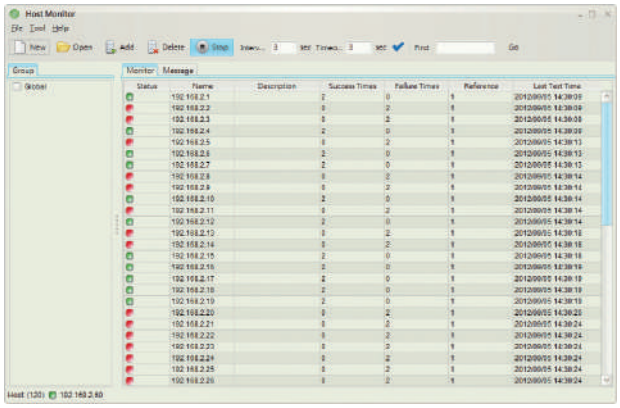
*NOTE: This function is available by request only

Open-Vision

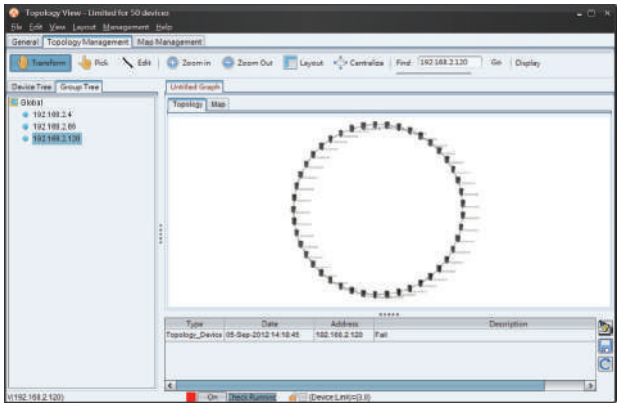
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

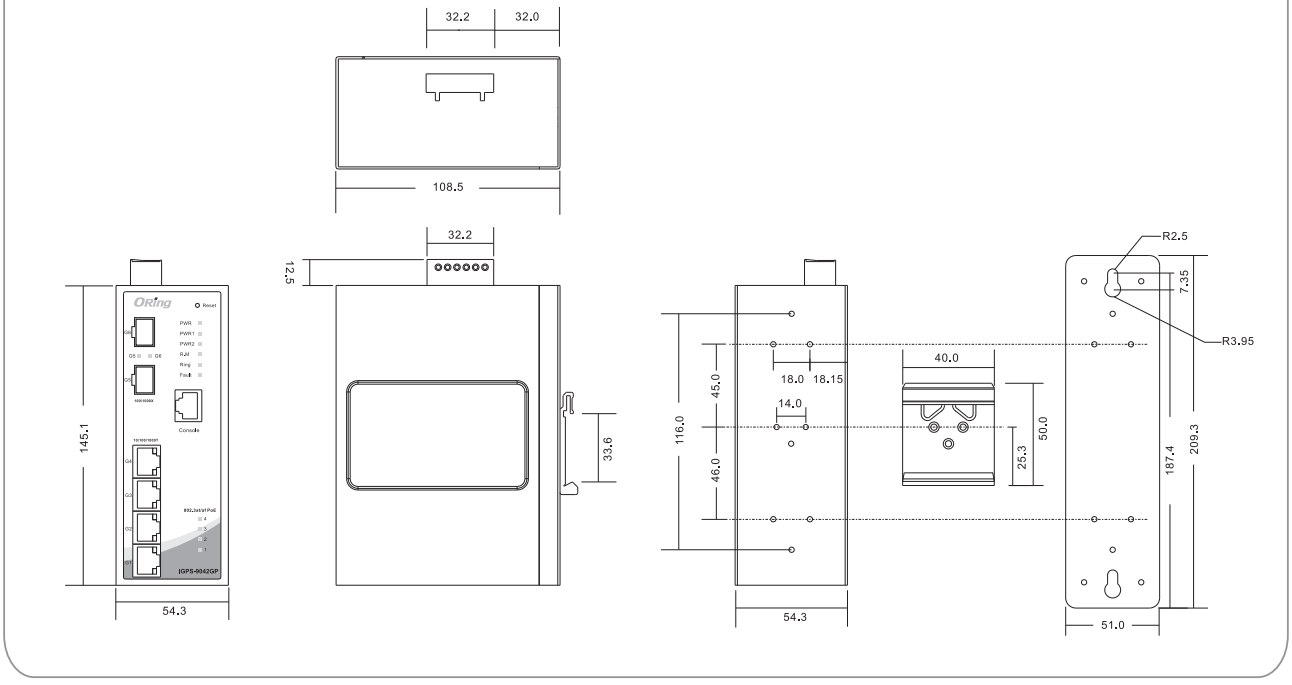


Host Monitor



Topology View

Dimensions



(Unit=mm)

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Specifications

ORing Switch Model	IGPS-9042GP-24V
Physical Ports	
10/100/1000Base-T(X) with P.S.E. Ports in RJ45 Auto MDI/MDIX	4
100/1000Base-X with SFP port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 1588v2 clock synchronization IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
PoE Output Watts	12 ~24VDC : 60Watts Max. 24 ~ 57VDC : 120Watts Max.
MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 12Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security

Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP server
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power Indicator (PWR)	Green : Power LED x 3
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 12~57VDC on 6-pin terminal block
Power consumption (Typ.)	9 Watts(power device not included)
Overload current protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	54.3 (W) 108.5 (D) x 145.1 (H)mm
Weight (g)	935 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	EN 55022, EN 55024(CE EMC), FCC Part 15 B, EN 61000-3-2, EN 61000-3-3
EMI	CISPR 22, EN 55022, FCC Part 15 B class A
EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge),IEC 61000-4-6 (CS), IEC 61000-4-8 (PFMF), IEC 61000-4-11 (DIP)
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-32
Vibration	IEC 60068-2-6
Safety	EN 60950-1

***NOTE: This function is available by request only**
Note : HW version 3.0

MTBF	244621 hrs
Warranty	5 years

Ordering Information

IGPS-9 AA B CC -24V

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	100/1000Base-X SFP Port Number	Additional Port Type
Option	**- 04:** 4 ports	**- 2:** 2 ports	**-GP**: Gigabit SFP ports

Available Model	Model Name	Description
	IGPS-9042GP-24V	Industrial 6-port managed Gigabit PoE Ethernet switch with 4x10/100/1000Base-T(X) P.S.E. ports and 2x100/1000Base-X, SFP socket, 24VDC power inputs

Packing List

- IGPS-9042GP-24V x 1
- DIN-Rail Kit x 1
- ORing Tool CD x 1
- Wall-mount Kit x 2
- ORing Tool CD x 1
- Wall-mount Kit x 2

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DBU-01 : Data backup unit device

IGPS-1411GTP-24V

IGPS-1411GTP-24V

Industrial 6-port unmanaged Gigabit PoE Ethernet switch with 4x10/100/1000Base-T(X) P.S.E., 1x10/100/1000Base-T(X) and 1x100/1000Base-X, SFP socket, 24VDC power inputs

Features

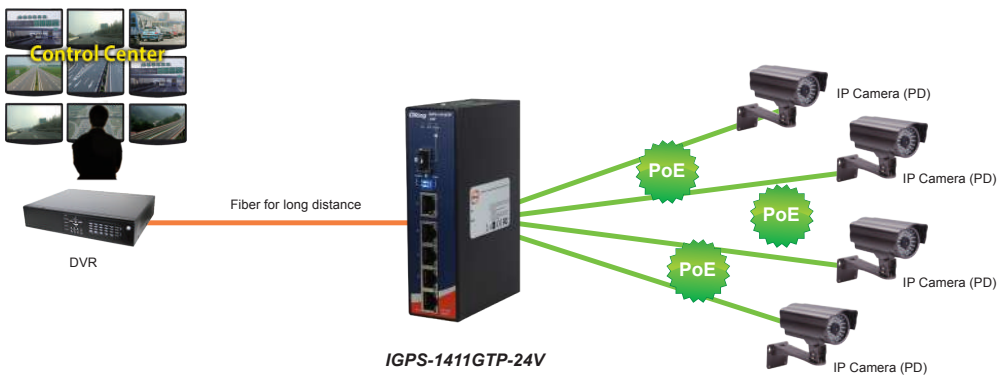
- IGPS-1411GTP-24V provide 4x10/100/1000Base-T(X) PoE (P.S.E.) ports
- Supports P.S.E. based on IEEE 802.3at standard up to 30 Watts per port
- Supports jumbo frame up to 10KBytes
- Support dual wide range 12~57VDC power inputs for power redundancy
- SFP port supports 100Base-FX and 1000Base-X speed
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store and forward transmission
- Supports flow control
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

IGPS-1411GTP-24V is an unmanaged PoE Ethernet switch with P.S.E. function. IGPS-1411GTP-24V supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IGPS-1411GTP-24V has 4x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports, 1 additional Gigabit port, and 1x100/1000Base-X SFP port. The SFP port optical network speed can be set by changing the settings of the DIP-Switch below. IGPS-1411GTP-24V supports wide range 12~57VDC power inputs and generates 50VDC P.S.E. power output per port. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. The wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for PoE Ethernet application.

Practical Operation

IGPS-1411GTP-24V can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



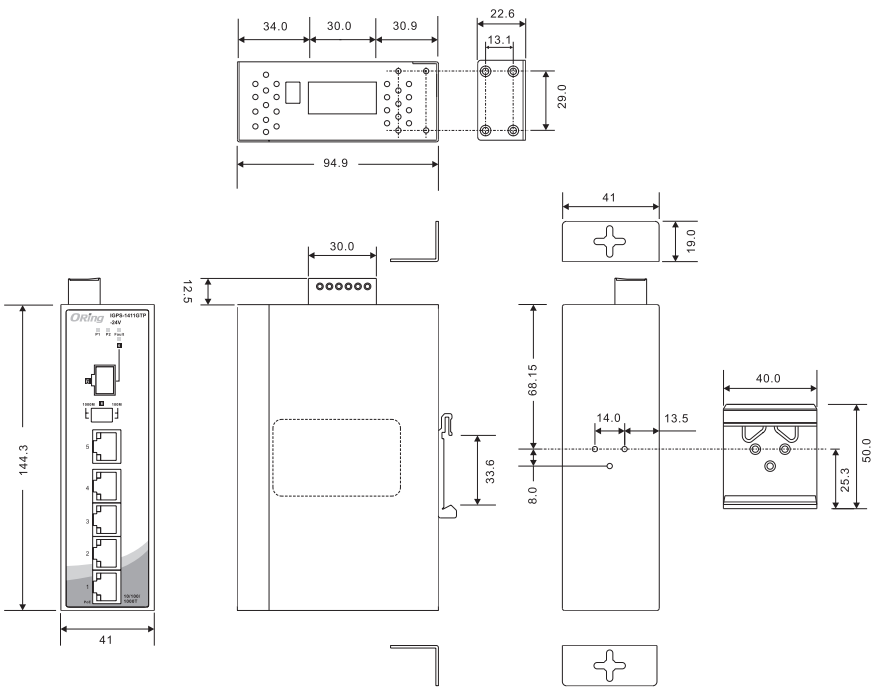
Connections of Ethernet devices

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGPS-1411GTP-24V
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 with P.S.E. Auto MDI/MDIX	4
10/100/1000Base-T(X) Port in RJ45 Auto MDI/MDIX	1
100/1000Base-X SFP port	1

Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
MAC Table	1K MAC addresses
Processing	Store-and-Forward
Jumbo Frame	Up to 10KBytes
LED Indicators	
Power Indicator	Green : Power LED x 2
Fault Indicator	Amber : Indicate PWR1 or PWR2 failure
10/100/1000Base-T(X) RJ45 port indicator and PoE Indicator (P1 ~ P4)	Green for port Link/Act. Green for power injected.
10/100/1000Base-T(X) RJ45 port Indicator (P5)	Green for port Link/Act. Amber for 100Mbps Indicator
100/1000Base-X SFP port indicator	Green for port Link/Act.
SFP Speed DIP-Switch	
DIP-Switch 1/2	DIP-Switch 1 (ON) and DIP-Switch 2 (ON) : SFP speed setting to 100Mbps DIP-Switch 1 (OFF) and DIP-Switch 2 (OFF) : SFP speed setting to 1000Mbps
Relay Output DIP-Switch	
DIP-Switch 1	Power-1 failed warning : (ON) enable, (OFF) disable
DIP-Switch 2	Power-2 failed warning : (ON) enable, (OFF) disable
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 12~57VDC on 6-pin terminal block.
Power consumption (Typ.)	7 Watts (power device not included)
PoE Power Budget	60Watts at 12VDC / 120Watts at 24~57VDC
Overload current protection	Present
Reverse polarity protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimension (W x D x H)	41 (W) x 94.9 (D) x 144.3(H) mm
Weight (g)	650 g
Environmental	
Storage temperature	-40 to 85°C (-40 to 185°F)
Operating temperature	-40 to 75°C (-40 to 167°F)
Operating humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	EN 55032, EN 55024(CE EMC), FCC Part 15 B, EN 61000-3-2, EN 61000-3-3
EMI	CISPR 32, EN 55032, FCC Part 15 B class A
EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8 (PFMF), IEC 61000-4-11 (DIP)
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	IEC 60950-1, UL 60950-1, EN 60950-1
MTBF	790220 hours
Warranty	5 years

Ordering Information

IGPS-1ABCGDE-24V

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional 1 Port Number	Additional 2 Port Number	Additional Port Type	Additional Port Type
Option	**- 4:** 4 ports	**- 1:** 1 port	**- 1:** 1 port	**- T:** 10/100/1000Base-T(X)	**- P:** 100/1000Base-X SFP

Available Model	Model Name	Description
	IGPS-1411GTP-24V	Industrial 6-port unmanaged Gigabit PoE Ethernet switch with 4x10/100/1000Base-T(X) P.S.E, 1x10/100/1000Base-T(X) and 1x100/1000Base-X, SFP socket, 24V power inputs

Packing List

- IGPS-1411GTP-24V
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- DR/SDR/DRP 48V Series Din-Rail power supply
- SFP 1G series : 1Gbps SFP optical transceiver

IGPS-1411GTPA

IGPS-1411GTPA

Industrial 6-port slim type unmanaged Gigabit PoE Ethernet switch with 4x10/100/1000Base-T(X) P.S.E., 1x10/100/1000Base-T(X) and 1x100/1000Base-X, SFP socket

Features

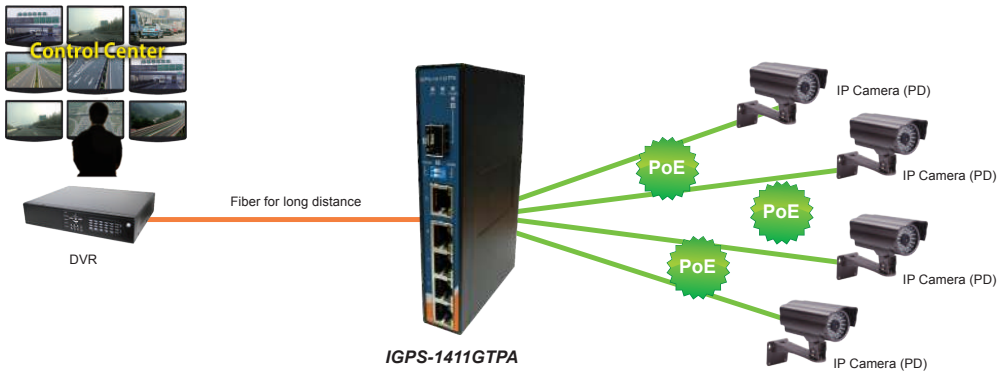
- IGPS-1411GTPA provide 4x10/100/1000Base-T(X) PoE (P.S.E.) ports
- Supports P.S.E. based on IEEE 802.3at standard up to 30 Watts per port
- SFP port supports 100Base-FX and 1000Base-X speed
- Supports jumbo frame up to 10KBytes
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store and forward transmission
- Supports flow control
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

IGPS-1411GTPA is an unmanaged PoE Ethernet switch with P.S.E. function. IGPS-1411GTPA supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IGPS-1411GTPA has 4x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports, 1 additional Gigabit port, and 1x100/1000Base-X SFP port. The SFP port optical network speed can be set by changing the settings of the DIP switch(es) below. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. The wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for PoE Ethernet application.

Practical Operation

IGPS-1411GTPA can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



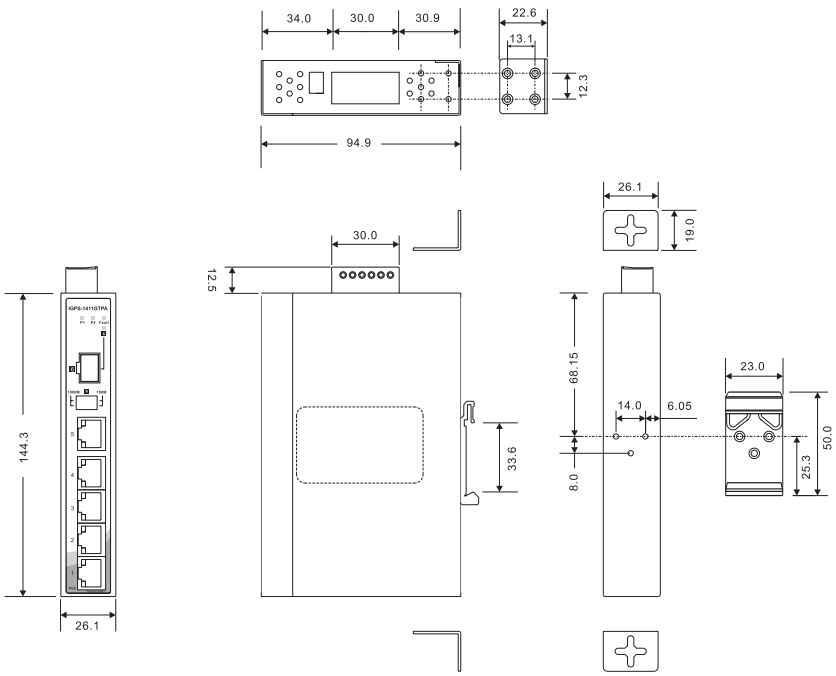
Connections of Ethernet devices

PoE Pin Assignment

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGPS-1411GTPA
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 with P.S.E. Auto MDI/MDIX	4
10/100/1000Base-T(X) Port in RJ45 Auto MDI/MDIX	1
100/1000Base-X	1

Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
MAC Table	1K MAC addresses
Processing	Store-and-Forward
Jumbo Frame	Up to 10KBytes
LED Indicators	
Power indicator	Green : Power LED x 2
Fault indicator	Amber : Indicate PWR1 or PWR2 failure
10/100/1000Base-T(X) RJ45 port indicator and PoE indicator (P1 ~ P4)	Green for port Link/Act. Green for power injected.
10/100/1000Base-T(X) RJ45 port indicator (P5)	Green for port Link/Act. Amber for 100Mbps indicator
100/1000Base-X SFP port indicator	Green for port Link/Act.
SFP Speed DIP-Switch	
DIP-Switch 1/2	DIP-Switch 1 (ON) and DIP-Switch 2 (ON) : SFP speed setting to 100Mbps DIP-Switch 1 (OFF) and DIP-Switch 2 (OFF) : SFP speed setting to 1000Mbps
DIP-Switch	
DIP-Switch 1	Power-1 failed warning : (ON) enable, (OFF) disable
DIP-Switch 2	Power-2 failed warning : (ON) enable, (OFF) disable
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 50~57VDC on 6-pin terminal block.
Power consumption (Typ.)	6.2 Watts (power device not included)
PoE Power budget	120W
Overload current protection	Present
Reverse polarity protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1 (W) x 94.9 (D) x 144.3(H) mm (1.03 x 3.74 x 5.68 inches)
Weight (g)	458 g
Environmental	
Storage temperature	-40 to 85°C (-40 to 185°F)
Operating temperature	-40 to 75°C (-40 to 167°F)
Operating humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	EN 55032, EN 55024(CE EMC), FCC Part 15 B, EN 61000-3-2, EN 61000-3-3
EMI	CISPR 32, EN 55032, FCC Part 15 B class A, C-Tick
EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8 (PFMF), IEC 61000-4-11 (DIP)
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	IEC 60950-1, UL 60950-1, EN 60950-1
Other	IEC 60945, EN 60945
MTBF	916635 hours
Warranty	5 years

Ordering Information

IGPS-1ABCGDEA

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional 1 Port Number	Additional 2 Port Number	Additional Port Type	Additional Port Type
Option	**- 04:** 4 ports	**- 1:** 1 port	**- 1:** 1 port	**- T:** 10/100/1000Base-T(X)	**- P:** 100/1000Base-X SFP

Available Model	Model Name	Description
	IGPS-1411GTPA	Industrial 6-port slim type unmanaged Gigabit PoE Ethernet switch with 4x10/100/1000Base-T(X) P.S.E., 1x10/100/1000Base-T(X) and 1x100/1000Base-X, SFP socket

Packing List

- IGPS-1411GTPA
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- DR/SDR/DRP 48V Series DIN-Rail power supply
- SFP 1G series : 1Gbps SFP optical transceiver

IGPS-1082GP Series

IGPS-1082GP Series

Industrial 10-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 2x100/1000Base-X, SFP socket

Features

- Support 8 ports IEEE 802.3at compliant PoE and total power budget is 120W with maximum 30W per port of 24V model
- Total power budget is 180Watts with maximum 30Watts per port of IGPS-1082GP model
- Support up to **9.6K** Bytes Jumbo Frame
- Support up to **4Mbit** Packet buffer
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Provided relay output for power failed warning system
- Provide DIP-switch to setting SFP speed
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

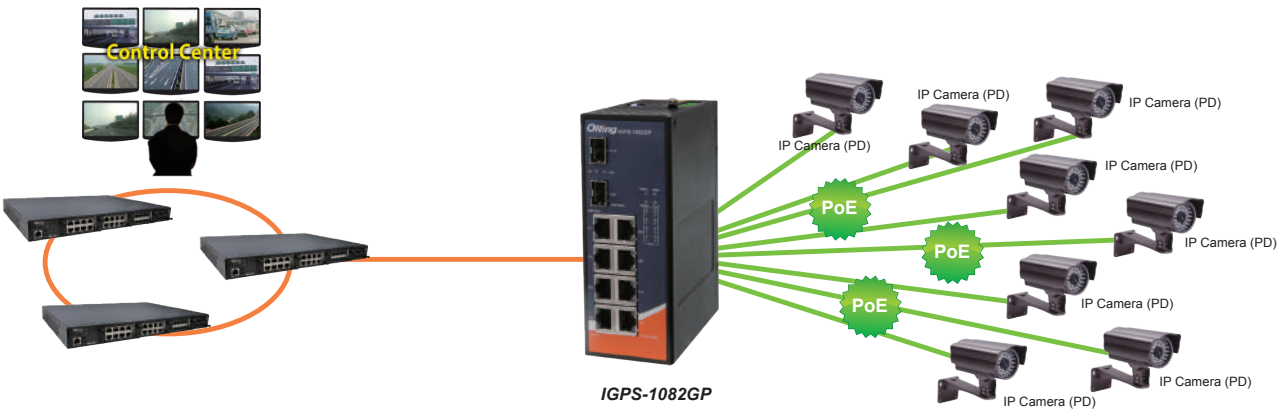
Full Gigabit | P.S.E PUE | Redundant PWR | -40~75°C Temperature | RoHS Lead Free | CE | FC

Introduction

IGPS-1082GP series is full Gigabit unmanaged PoE Ethernet switches with 8x10/100/1000Base-T(X) P.S.E. ports and 2x100/1000Base-X SFP ports. IGPS-1082GP series also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each IGPS-1082GP series switch has 8x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. And support wide operating temperature from -40°C to 75°C. Therefore, the switch is one of the most reliable choices for rolling stock and highly-unmanaged PoE Ethernet application.

Practical Operation

IGPS-1082GP can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



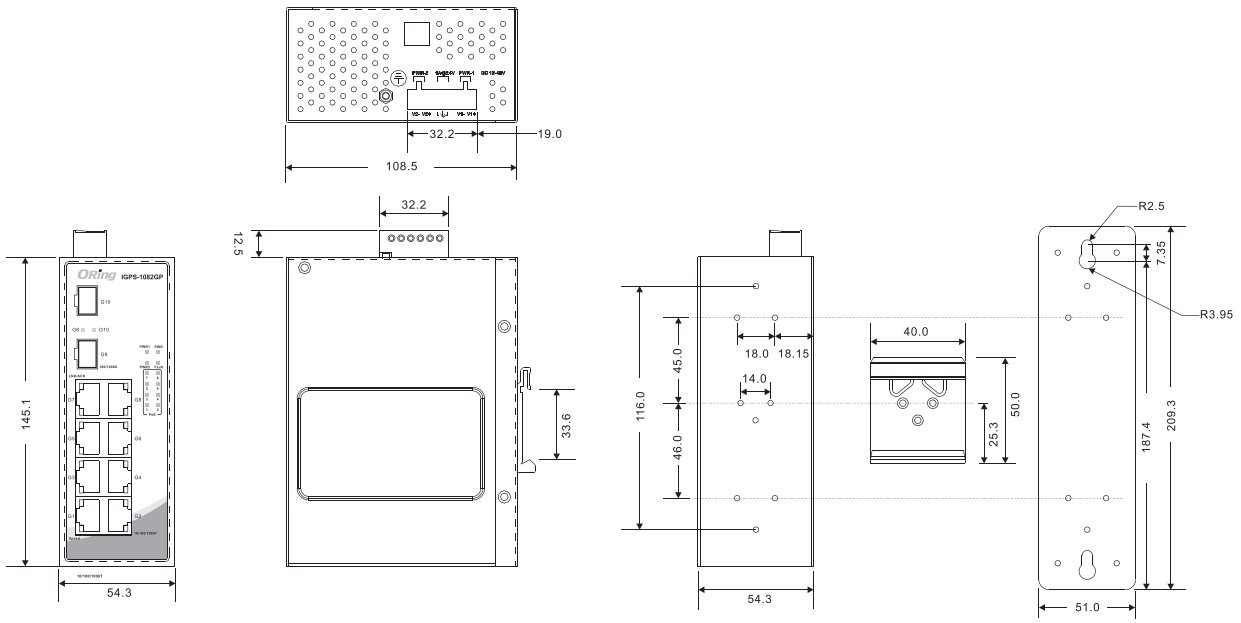
Ethernet Connection

PoE Pin Assignment

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Dimension



(Unit=mm)

Specifications

ORing Switch Model	IGPS-1082GP	IGPS-1082GP-24V
Physical Ports		
10/100/1000Base-T(X) with P.S.E. Ports in RJ45 Auto MDI/MDIX	**8 (P.S.E. with IEEE 802.3at)**	
100/1000Base-X with SFP port	**2**	
Physical Ports		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3af/at PoE specification	
MAC Table	8k	

Processing	Store-and-Forward	
Switch Properties	Switching latency: less than 7us Switching bandwidth: 20Gbps	
Jumbo frame	Up to 9.6K Bytes	
Packet buffer	4Mbit	
LED indicators		
Power Indicator (PWR)	Green : Power LED x 3	
Fault Indicator (Fault)	Amber : Indicate power failed even warning	
10/100/1000Base-T(X) RJ45 PoE Port Indicator	Green for Port Link/Act indicator Dual color LED for speed indicator: Green for 1000Mbps / Amber for 100Mbps / off-light for 10Mbps	
100/1000Base-X SFP Port Indicator	Green for port Link/Act.	
PoE Indicator	Green for PoE enable indicator.	
DIP Switch		
DIP-Switch 1	Power-2 failed warning : (ON) enable, (OFF) disable	
DIP-Switch 2	Power-1 failed warning : (ON) enable, (OFF) disable	
DIP-Switch 3	DIP switch 3 and 4 (ON) : SFP speed setting to 100Mbps	
DIP-Switch 4	DIP switch 3 and 4 (OFF) : SFP speed setting to 1000Mbps(default)	
Fault contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input power	Dual DC inputs. 50 ~ 57VDC on 6-pin terminal block	Dual DC inputs. 12 ~ 57VDC on 6-pin terminal block
Power consumption (Typ.)	11W	11W
PoE Power budget	180W	60W at 12~24VDC, 120W at 24~57VDC
Overload current protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	54.3(W) x 108.3(D) x 145.1(H) mm (2.13x4.26x5.71 inches.)	
Weight (g)	889g	916g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B	
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A	
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1 compliant	
MTBF	581633hrs	537330hrs
Warranty	5 years	

Ordering Information

IGPS-1 AA B CC - DDD

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	10/100/1000Base-T(X) P.S.E. Port Number
Option	**- 08:** 8 ports	**- 2:** 2 ports	**- GP:** Gigabit SFP ports	**- 24V:** 24VDC power inputs supported

	Model Name	Description
Available Model	IGPS-1082GP	Industrial 10-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 2x100/1000Base-X, SFP socket
	IGPS-1082GP-24V	Industrial 10-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 2x100/1000Base-X, SFP socket, 24VDC power inputs

Packing List

- IGPS-1082GP / -24V x 1
- Quick Installation Guide x 1
- DIN-Rail Kit x 1
- Wall-mount Kit x 2

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DR/SDR/DRP 48/24V Series Din rail power supply

IGPS-1080-24V

IGPS-1080-24V

Industrial 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., 24VDC power inputs

Features

- IGPS-1080-24V provide 8x10/100/1000Base-T(X) PoE (P.S.E.) ports
- Supports IEEE 802.3at compliant PoE and total power budget is 120Watts with maximum 30Watts per port
- Supports jumbo frame up to 9KBytes
- Support dual wide range 12~57VDC power inputs for power redundancy
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Full Gigabit | P.S.E | Redundant PWR | -40~75°C Temperature

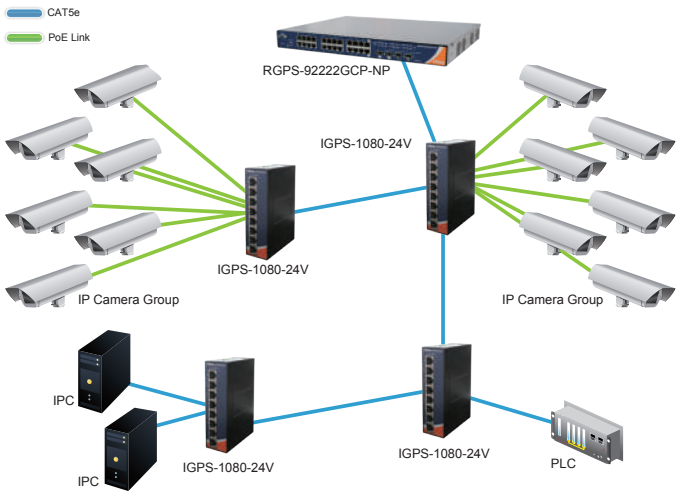
RoHS Lead Free

Introduction

IGPS-1080-24V is an unmanaged Gigabit PoE Ethernet switch with P.S.E. function. IGPS-1080-24V supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IGPS-1080-24V supports wide range 12~57VDC power inputs and generates 50VDC P.S.E. power output per port. IGPS-1080-24V PoE switch has 8X10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. The wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for PoE Ethernet application.

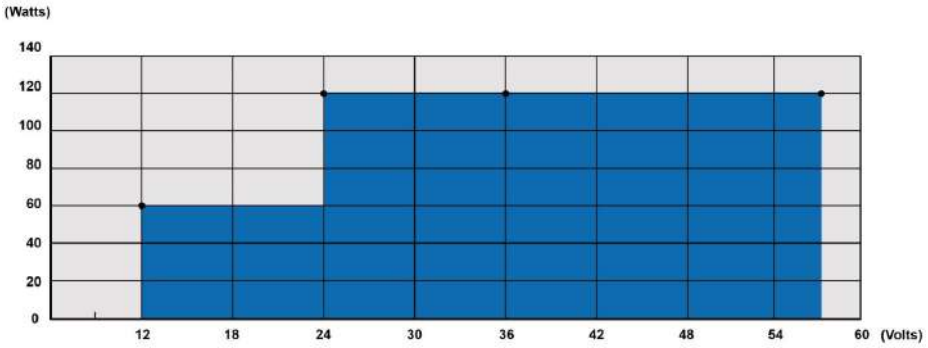
Practical Operation

IGPS-1080-24V can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.

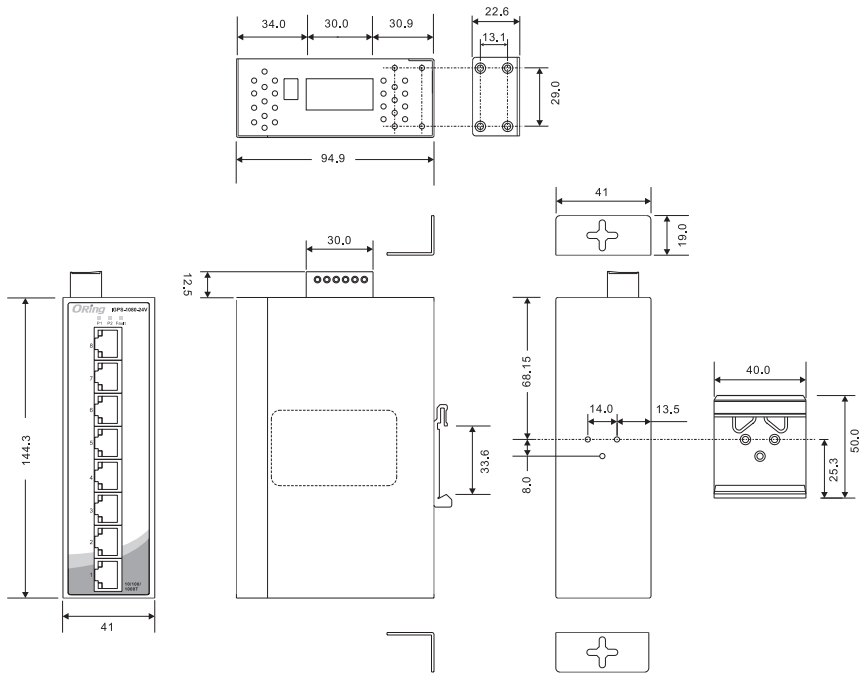


Connections of Ethernet devices

Diagram of PoE Output



Dimensions



(Unit=mm)

PoE Pin Assignment

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Specifications

ORing Switch Model	IGPS-1080-24V
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 with P.S.E.	**8**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3at compliant PoE specification (up to 30 Watts per port for P.S.E.) 12 ~ 24VDC : PoE output 60W Max. 24 ~ 57VDC : PoE output 120W Max.
MAC Table	4K MAC addresses
Processing	Store-and-Forward
Jumbo Frame	Up to 9KBytes
LED Indicators	
Power indicator	Green : Power LED x 2
Fault indicator	Amber : Indicate PWR1 or PWR2 failure
10/100/1000Base-T(X) RJ45 port indicator and PoE indicator	Green for port Link/Act at 1000Mbps / Amber for port Link/Act at 10/100Mbps Green for PoE power injected.
DIP-Switch	
DIP-Switch 1	Power-1 failed warning : (ON) enable, (OFF) disable
DIP-Switch 2	Power-2 failed warning : (ON) enable, (OFF) disable
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 12~57VDC on 6-pin terminal block.
PoE Power Budget	60 Watts (12~24VDC) / 120 Watts (24~57VDC)
Power consumption (Typ.)	6 Watts, (PoE output not included)
Overload current protection	Present
Reverse polarity protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	41 (W) x 94.9 (D) x 144.3(H) mm
Weight (g)	643 g
Environmental	
Storage temperature	-40 to 85°C (-40 to 185°F)
Operating temperature	-40 to 75°C (-40 to 167°F)
Operating humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	EN 55022, EN 55024(CE EMC), FCC Part 15 B, EN 61000-3-2, EN 61000-3-3
EMI	CISPR 22, EN 55022, FCC Part 15 B class A
EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8 (PFMF), IEC 61000-4-11 (DIP)
Shock	IEC 60068-2-27

Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	EN 60950-1
Other	IEC 60945, EN 60945, E-Mark
MTBF	699914 hours
Warranty	5 years

Ordering Information

IGPS-1 AA B -24V

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 ports

Available Model	Model Name	Description
	IGPS-1080-24V	Industrial 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., 24VDC power inputs

Packing List

- IGPS-1080-24V
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- DR/SDR/DRP Series DIN-Rail power supply
- SFP 1G series : 1Gbps SFP optical transceiver

IGPS-1080-24V-I

Industrial 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., 24VDC power inputs, Isolation version

Features

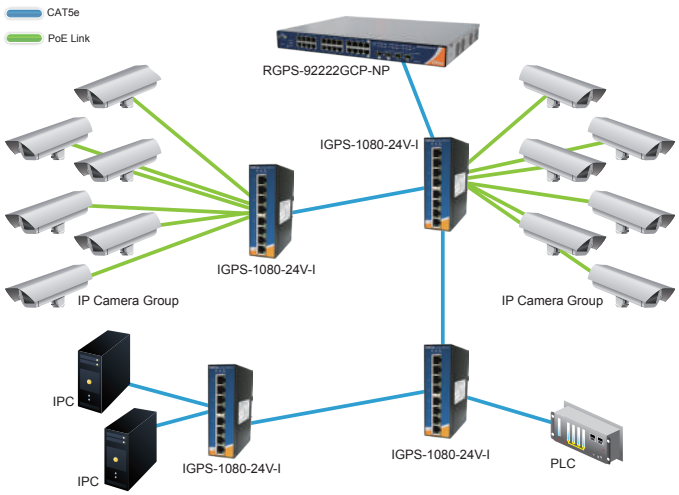
- IGPS-1080-24V-I provide 8x10/100/1000Base-T(X) PoE (P.S.E.) ports
- Supports IEEE 802.3at compliant PoE and total power budget is 120Watts with maximum 30Watts per port
- Supports Isolation protection
- Supports jumbo frame up to 9.6KBytes
- Supports dual 24VDC power inputs for power redundancy
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store and forward transmission
- Supports flow control
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

IGPS-1080-24V-I is an unmanaged Gigabit PoE Ethernet switch with P.S.E. function. IGPS-1080-24V-I supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IGPS-1080-24V-I support dual 24VDC power inputs and generates 50VDC P.S.E. power output per port. IGPS-1080-24V-I PoE switch has 8X10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. The wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for PoE Ethernet application.

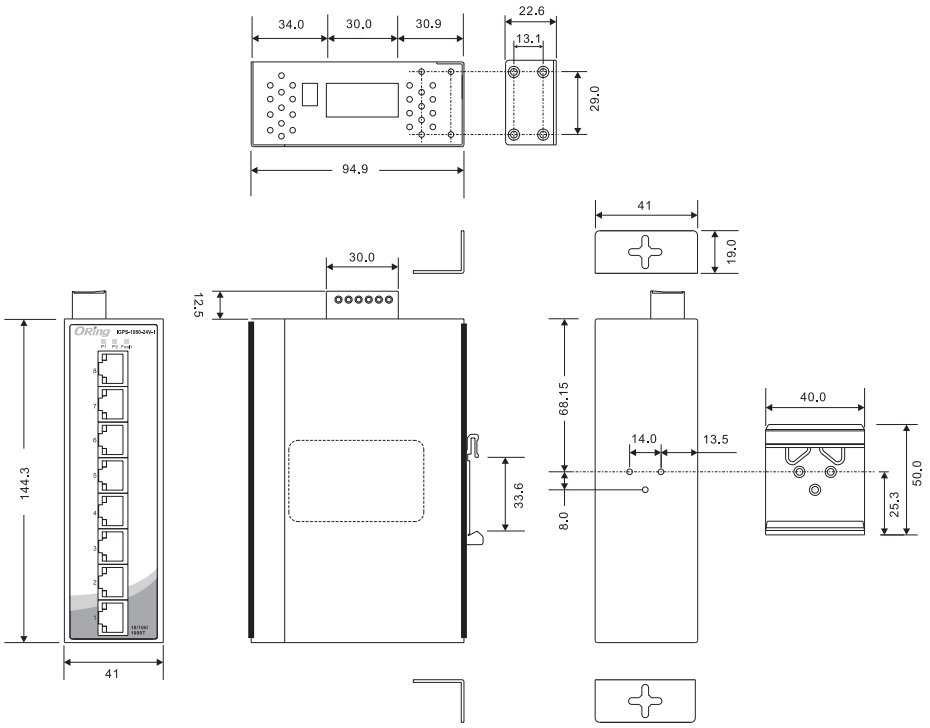
Practical Operation

IGPS-1080-24V-I can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Connections of Ethernet devices

Dimensions



(Unit=mm)

PoE Pin Assignment

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Specifications

ORing Switch Model	IGPS-1080-24V-I
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 With P.S.E.	8
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3at compliant PoE specification (up to 30 Watts per port for P.S.E.)
MAC Table	4K MAC addresses
Processing	Store-and-Forward
Jumbo Frame	Up to 9.6KBytes

LED Indicators	
Power indicator	Green : Power LED x 2
Fault indicator	Amber : Indicate PWR1 or PWR2 failure
10/100/1000Base-T(X) RJ45 port indicator and PoE indicator	Dual color LED for port Speed/Link/Act : Green for 1Gbps link/act, Amber for 10/100Mbps link/act Green for PoE power injected.
DIP-Switch	
DIP-Switch 1	Power-1 failed warning : (ON) enable, (OFF) disable
DIP-Switch 2	Power-2 failed warning : (ON) enable, (OFF) disable
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 24~36VDC on 6-pin terminal block.
PoE Power Budget	120 Watts
Power consumption (Typ.)	13 Watts
Overload current protection	Present
Reverse polarity protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	41 (W) x 94.9 (D) x 144.3(H) mm
Weight (g)	686 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	EN 55032, EN 55024(CE EMC), FCC Part 15 B, EN 61000-3-2, EN 61000-3-3
EMI	CISPR 32, EN 55032, FCC Part 15 B class A
EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8 (PFMF), IEC 61000-4-11(DIP)
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	EN 60950-1
MTBF	501008 hours
Warranty	5 years

Ordering Information

IGPS-1 AA B -24V-I

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 ports

Available Model	Model Name	Description
	IGPS-1080-24V-I	Industrial 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., 24VDC power inputs, Isolation version

Packing List

- IGPS-1080-24V-I x 1
- Din-Rail Kit x 1
- Wall-mount Kit x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR/SDR/DRP 48V DIN-Rail power supply

IGPS-1080A

IGPS-1080A

Industrial 8-port slim type unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E.

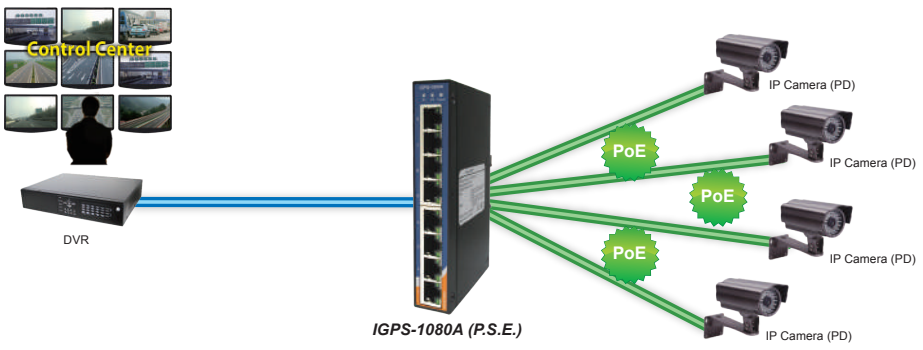
Features

- Provide 8x10/100/1000Base-T(X) PoE (P.S.E.) ports
- Support P.S.E. based on IEEE 802.3at standard up to 30 Watts per port
- Supports jumbo frame up to 9KBytes
- Support auto-negotiation and auto-MDI/MDI-X
- Support full/half-duplex transmission
- Support store and forward transmission
- Support flow control
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

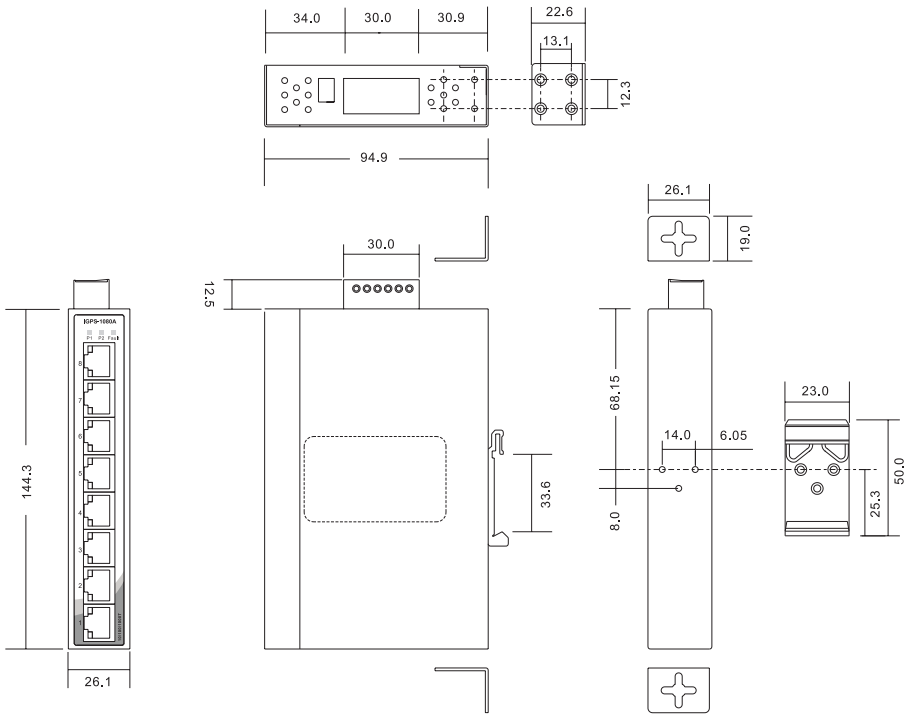
IGPS-1080A is unmanaged PoE Ethernet switch with P.S.E. function. IGPS-1080A supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IGPS-1080A switch has 8X10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. The wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for PoE Ethernet application.

Practical Operation



Connections of Ethernet devices

Dimensions



(Unit=mm)

PoE Pin Assignment

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Specifications

ORing Switch Model	IGPS-1080A
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 With P.S.E.	8
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T, IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
Switching Bandwidth	16Gbps
MAC Table	4K MAC addresses

Processing	Store-and-Forward
Jumbo Frame	Up to 9KBytes
LED Indicators	
Power indicator	Green : Power LED x 2
Fault indicator	Amber : Indicate PWR1 or PWR2 failure
10/100/1000Base-T(X) RJ45 port indicator and PoE indicator	Green for port Link/Act at 1000Mbps / Amber for port Link/Act at 10/100Mbps. Green for PoE power injected.
DIP-Switch	
DIP-Switch 1	Power-1 failed warning : (ON) enable, (OFF) disable
DIP-Switch 2	Power-2 failed warning : (ON) enable, (OFF) disable
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 50 ~ 57VDC on 6-pin terminal block.
PoE output power	180 Watts
Power consumption (Typ.)	6 Watts (PoE output not included)
Overload current protection	Present
Reverse polarity protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1 (W) x 94.9 (D) x 144.3(H) mm (1.03 x 3.74 x 5.68 inch)
Weight (g)	442 g
Environmental	
Storage temperature	-40 to 85°C (-40 to 185°F)
Operating temperature	-40 to 75°C (-40 to 167°F)
Operating humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	CE EMC (EN55024,EN 55032), FCC Part 15 B
EMI	EN55032, CISPR 32, EN61000-3-2, EN61000-3-3, FCC Part 15 B class A
EMS	EN55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS), IEC/EN 61000-4-4 (EFT), IEC/EN61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8 (PFMF), IEC/EN 61000-4-11 (DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	665276 hrs
Warranty	5 years

Ordering Information

IGPS-1 AA B A

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 ports

Available Model	Model Name	Description
	IGPS-1080A	Industrial 8-port slim type unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E.

Packing List

- IGPS-1080A x 1
- Quick Installation Guide x 1
- Din-Rail Kit x 1
- Wall-Mount Kit x 1

IGPS-1042GPA

IGPS-1042GPA

Industrial 6-port slim type unmanaged Gigabit PoE Ethernet switch with 4x10/100/1000Base-T(X) P.S.E. and 2x100/1000Base-X, SFP socket

Features

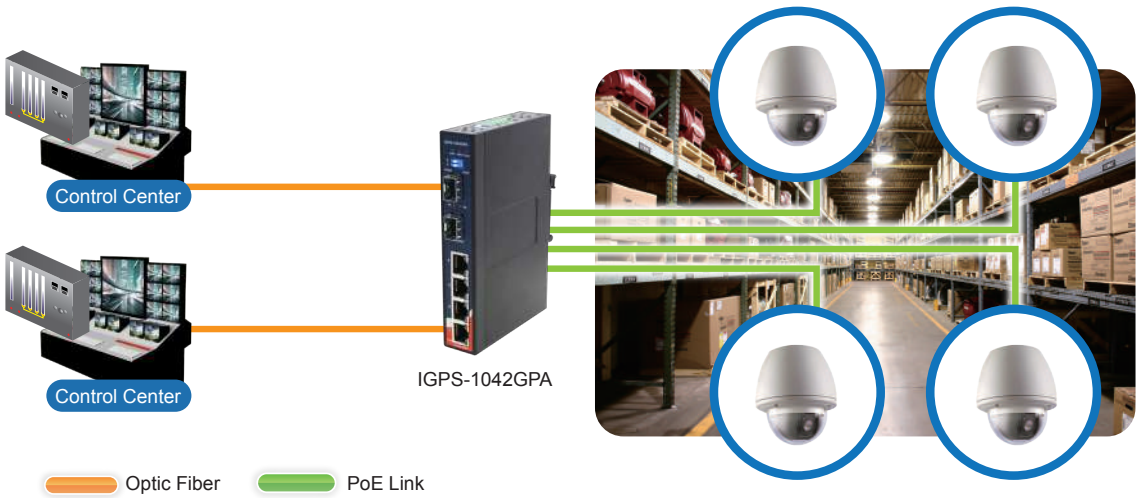
- IGPS-1042GPA provide 4x10/100/1000Base-T(X) PoE (P.S.E.) ports
- Supports P.S.E. based on IEEE 802.3at standard up to 30 Watts per port and total power budget 120 watts
- SFP port supports 100Base-FX and 1000Base-X speed
- Supports jumbo frame up to 10KBytes
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store and forward transmission
- Supports flow control
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

IGPS-1042GPA is an unmanaged PoE Ethernet switch with P.S.E. function. IGPS-1042GPA supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IGPS-1042GPA has 4x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports and 2x100/1000Base-X SFP port. The SFP port optical network speed can be set by changing the settings of the DIP-Switch below. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. The wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for PoE Ethernet application.

Practical Operation

IGPS-1042GPA can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



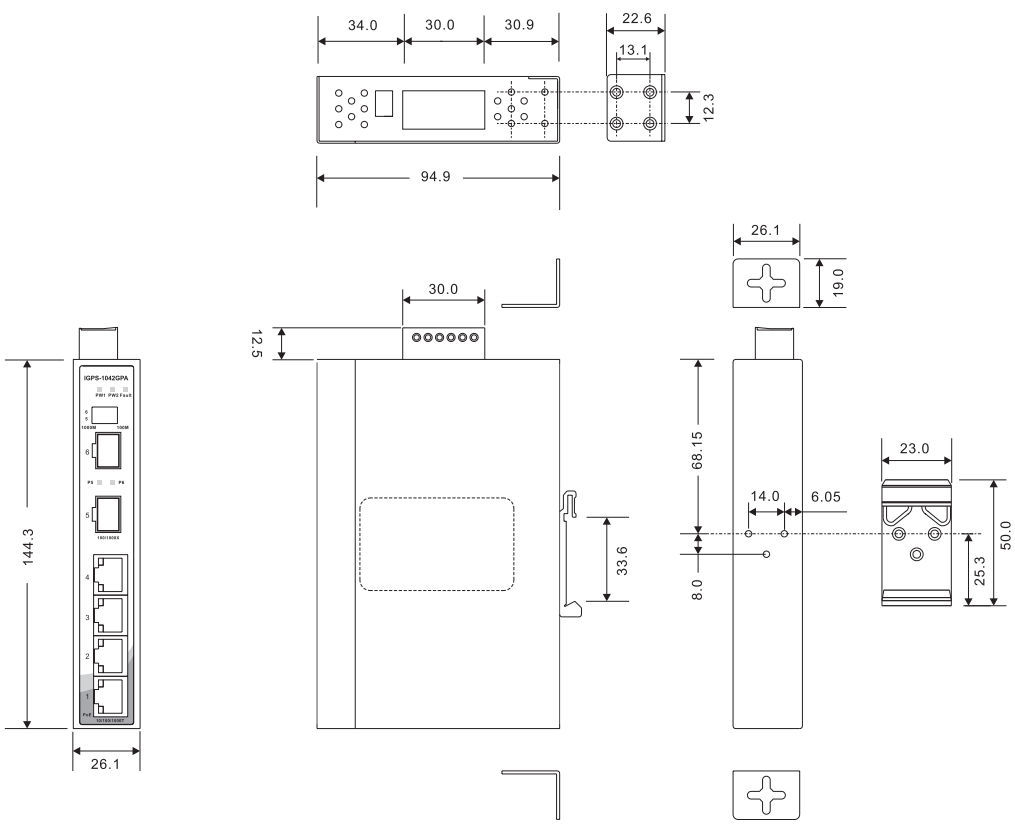
Connections of Ethernet devices

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGPS-1042GPA
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 with P.S.E. Auto MDI/MDIX	4
100/1000Base-X SFP port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
MAC Table	1K MAC addresses
Processing	Store-and-Forward
Jumbo Frame	Up to 10KBytes
LED Indicators	
Power indicator	Green : Power LED x 2
Fault indicator	Amber : Indicate PWR1 or PWR2 failure
10/100/1000Base-T(X) RJ45 port indicator and PoE indicator (P1 ~ P4)	Green for port Link/Act. Green for power injected.
100/1000Base-X SFP port indicator	Green for port Link/Act.
SFP Speed DIP-Switch	
DIP-Switch 1/2	DIP-Switch 1 (ON) and DIP-Switch 2 (ON) : SFP speed setting to 100Mbps DIP-Switch 1 (OFF) and DIP-Switch 2 (OFF) : SFP speed setting to 1000Mbps
DIP-Switch	
DIP-Switch 1	Power-1 failed warning : (ON) enable, (OFF) disable
DIP-Switch 2	Power-2 failed warning : (ON) enable, (OFF) disable
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs, 50-57VDC on 6-pin terminal block.
Power consumption (Typ.)	7 Watts (power device not included)
PoE Power Budget	120 Watts
Overload current protection	Present
Reverse polarity protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1 (W) x 94.9 (D) x 144.3(H) mm (1.03 x 3.74 x 5.68 inches)
Weight (g)	458 g
Environmental	
Storage temperature	-40 to 85°C (-40 to 185°F)
Operating temperature	-40 to 75°C (-40 to 167°F)
Operating humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	EN 55032, EN 55024(CE EMC), FCC Part 15 B, EN 550121-1,EN 50121-3-2(EN50155), EN 61000-3-2, EN 61000-3-3
EMI	CISPR 32, EN 55032, FCC Part 15 B class A ,C-Tick
EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8 (PFMF)

Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	IEC 60950-1, UL 60950-1, EN 60950-1
MTBF	910925 hours
Warranty	5 years

Ordering Information

IGPS-1 AA B CC A

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 4:** 4 ports	**- 2:** 2 port	**- GP:** 100/1000Base-X SFP

	Model Name	Description
Available Model	IGPS-1042GPA	Industrial 6-port slim type unmanaged Gigabit PoE Ethernet switch with 4x10/100/1000Base-T(X) P.S.E and 2x100/1000Base-X, SFP socket

Packing List

- IGPS-1042GPA
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- DR/SDR/DRP 48V series DIN-Rail power supply
- SFP 1G series : 1Gbps SFP optical transceiver

IGPS-1042GP-24V

IGPS-1042GP-24V

Industrial 6-port unmanaged Gigabit PoE Ethernet switch with 4x10/100/1000Base-T(X) P.S.E. and 2x100/1000Base-X, SFP socket, 24VDC power input

Features

- IGPS-1042GP-24V provide 4x10/100/1000Base-T(X) PoE (P.S.E.) ports
- Supports P.S.E. based on IEEE 802.3at standard up to 30 Watts per port and total power budget is 120Watts.
- Advanced PoE power boost technology to support dual 24VDC power inputs
- Supports Jumbo frame up to 10KBytes
- SFP port supports 100Base-FX and 1000Base-X speed
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store and forward transmission
- Supports flow control
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Full Gigabit | P.S.E. PoE IEEE802.3at | Redundant PWR | -40~75°C Temperature | RoHS Lead Free | CE | FC

Introduction

IGPS-1042GP-24V is an unmanaged PoE Ethernet switch with P.S.E. function. IGPS-1042GP-24V supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IGPS-1042GP-24V has 4x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports and 2x100/1000Base-X SFP port. The SFP port optical network speed can be set by changing the settings of the DIP-Switch below. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. The wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for PoE Ethernet application.

Practical Operation

IGPS-1042GP-24V can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.

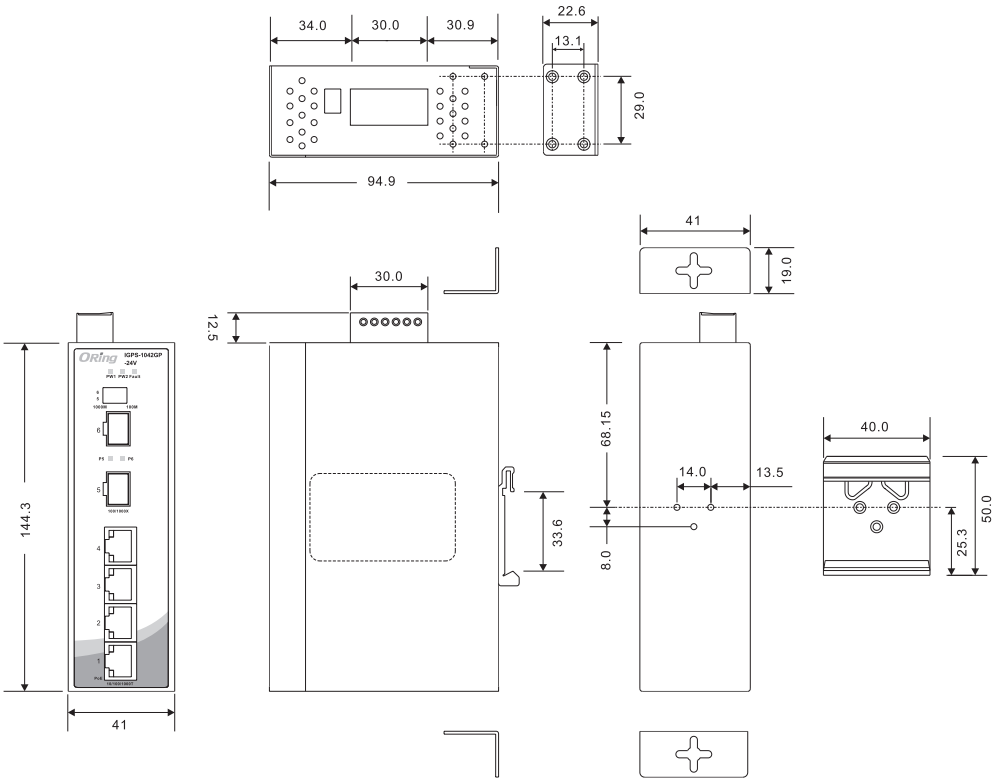
Connections of Ethernet devices

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGPS-1042GP-24V
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 with P.S.E. Auto MDI/MDIX	**4**
100/1000Base-X SFP port	**2**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
MAC Table	1K MAC addresses
Processing	Store-and-Forward
Jumbo Frame	Up to 10K Bytes
LED Indicators	
Power indicator	Green : Power LED x 2
Fault indicator	Amber : Indicate PWR1 or PWR2 failure
10/100/1000Base-T(X) RJ45 port indicator and PoE indicator (P1 ~ P4)	Green for port Link/Act. Green for power injected.
100/1000Base-X SFP port indicator	Green for port Link/Act.
SFP Speed DIP-Switch	
DIP-Switch 1/2	DIP-Switch 1 (ON) and DIP-Switch 2 (ON) : SFP speed setting to 100Mbps DIP-Switch 1 (OFF) and DIP-Switch 2 (OFF) : SFP speed setting to 1000Mbps
DIP-Switch	
DIP-Switch 1	Power-1 failed warning : (ON) enable, (OFF) disable
DIP-Switch 2	Power-2 failed warning : (ON) enable, (OFF) disable
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 12~57VDC on 6-pin terminal block.
PoE Power Budget	60Watts at 12VDC / 120Watts(24~57VDC)
Power consumption (Typ.)	7 Watts (power device not included)
Overload current protection	Present
Reverse polarity protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	41 (W) x 94.9 (D) x 144.3(H) mm (1.61 x 3.74 x 5.68 inches)
Weight (g)	650 g
Environmental	
Storage temperature	-40 to 85°C (-40 to 185°F)
Operating temperature	-40 to 75°C (-40 to 167°F)
Operating humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	EN 55032, EN 55024(CE EMC), FCC Part 15 B, EN 550121-1, EN 50121-3-2(EN50155), EN 61000-3-2, EN 61000-3-3
EMI	CISPR 32, EN 55032, FCC Part 15 B class A ,C-Tick

EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8 (PFMF), IEC 61000-4-11(DIP)
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	EN 60950-1
MTBF	833512 hours
Warranty	5 years

Ordering Information

IGPS-1 AA B CC -24V

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 4:** 4 ports	**- 2:** 2 port	**- GP:** 100/1000Base-X SFP

	Model Name	Description
Available Model	IGPS-1042GP-24V	Industrial 6-port unmanaged Gigabit PoE Ethernet switch with 4x10/100/1000Base-T(X) P.S.E and 2x100/1000Base-X, SFP socket, 24VDC power inputs

Packing List

- IGPS-1042GP-24V
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- DR/SDR/DRP 48V Series DIN-Rail power supply
- SFP 1G series : 1Gbps SFP optical transceiver

IGPS-R9084GP

IGPS-R9084GP

Industrial Layer-3 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x100/1000Base-X, SFP socket

Features

- Supports Layer 3 routing, RIP and static routing function
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- 8 port P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 Watts per port
- Support PoE scheduled configuration and PoE auto-ping check function
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az Energy-Efficient Ethernet technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Supports **backup unit device DBU-01** for quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

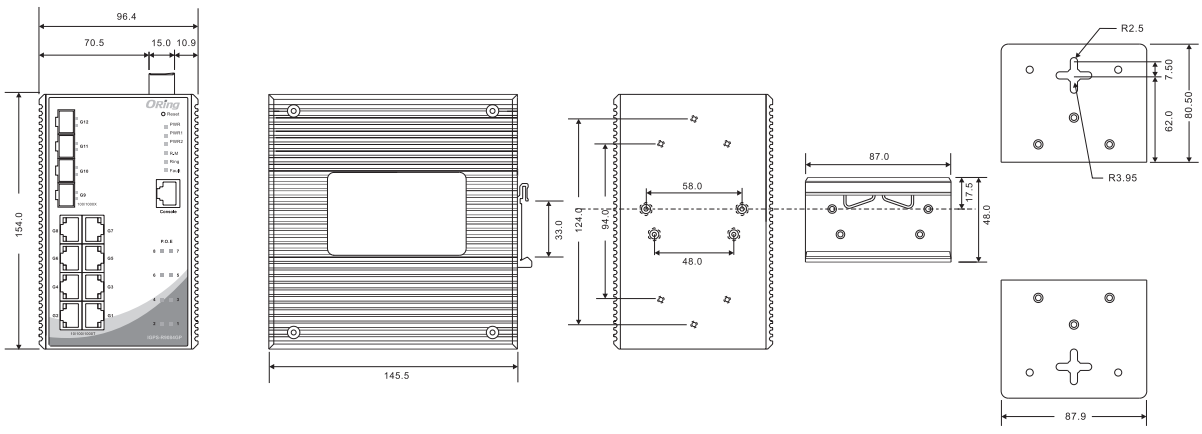
IGPS-R9084GP is Layer-3 managed redundant ring PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x100/1000Base-X SFP ports. The IGPS-R9084GP supports Layer-3 routing for better network performance on large-scale LANs into multiple subnets to support long-haul and EMI immunity communications. The hardware Layer-3 switch is optimized to transmit data as fast as Layer-2 switches. The switch support Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IGPS-R9084GP also support Power over Ethernet, a system to transmit electrical power up to 30 watts, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each IGPS-R9084GP switch has 8x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. And support wide operating temperature from -40 to 75°C. IGPS-R9084GP can also be managed centralized and convenient by Open-Vision, as well as the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.

***NOTE: This function is available by request only**

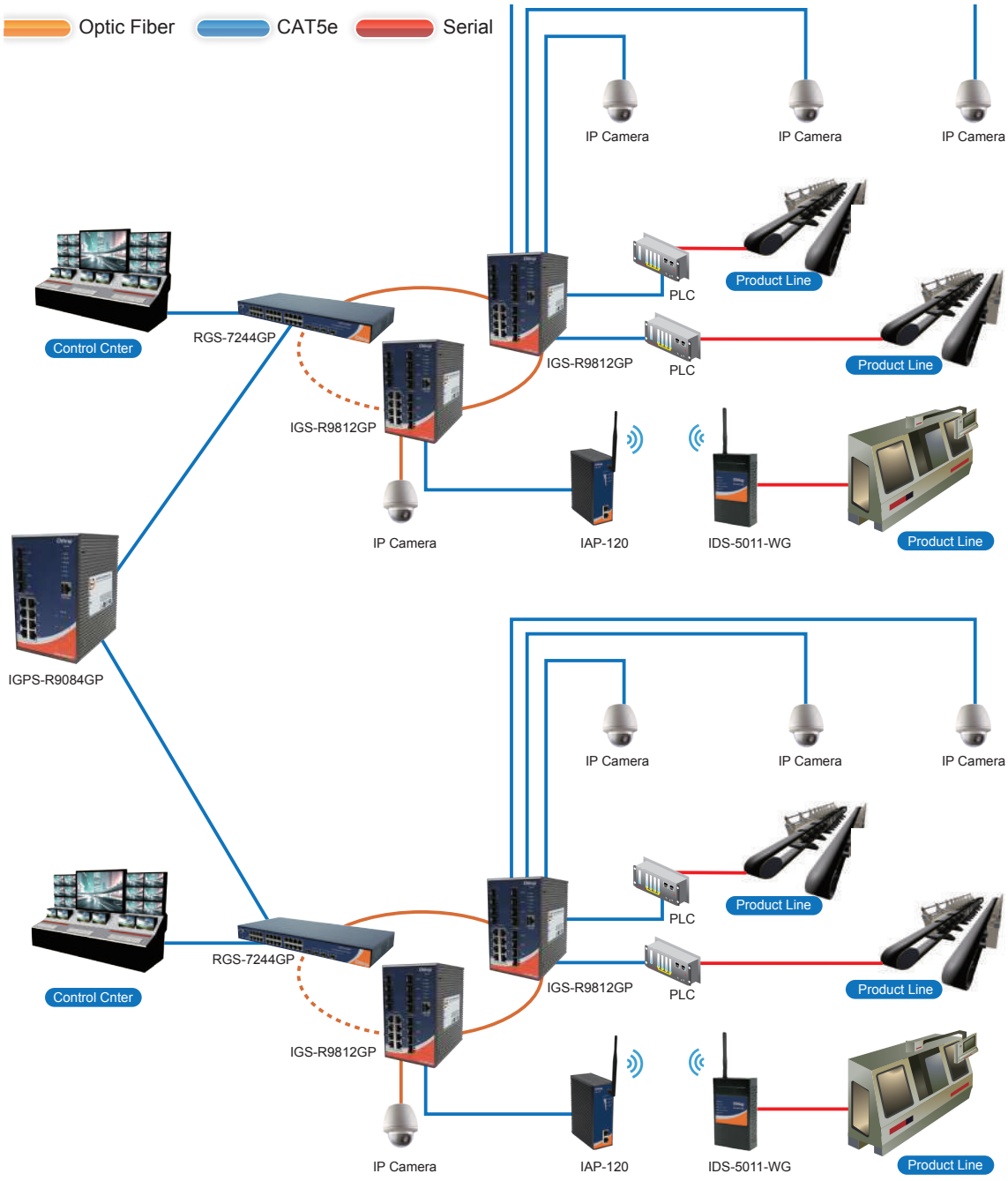
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

Dimensions



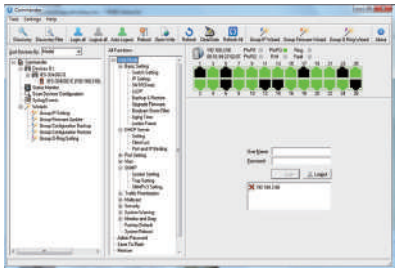
(Unit=mm)

***NOTE: This function is available by request only**

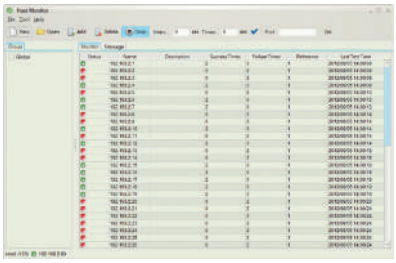


Open-Vision

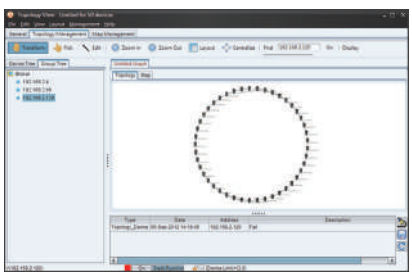
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor



Topology View

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Specifications

ORing Switch Model	IGPS-R9084GP
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8
100/1000Base-X with SFP port	4
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
MAC Table	8K
Packet Buffer	32Mbits
Flash Memorry	128Mbits
DRAM Size	1Gbits
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 µs Switching bandwidth: 24Gbps Max. Number of Available VLANs : 4095 VLAN ID Range : 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) Single 802.1x and Multiple 802.1x MAC-based authentication QoS assignment Guest VLAN MAC address limit TACACS+

Security Features	VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Web and CLI authentication and authorization Authorization (15 levels) IP source guard Https / SSH enhance network security
Software Features	Hardware routing, RIP and static routing IEEE 1588v2 clock synchronization IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) RSTP/MSTP (IEEE 802.1w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging Voice VLAN IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/snooping DHCP Relay Modbus TCP ARP inspection SMTP Client NTP Server
Network Redundancy	O-Ring O-Chain Fast Recovery MRP*NOTE MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power Indicator(PWR)	Green : Power LED x 3
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator(Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicator	Dual color LED : Green for 1000Mbps Link/Act indicator. Amber for 10/100Mbps Link/Act indicator
100/1000Base-X SFP port Indicator	Green for port Link/Act.
PoE Indicator	Green : PoE enabled LED x 8
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 50~57VDC on 6-pin terminal block
Power Consumption (Typ.)	19 Watts (PoE output not included)
Overload Current Protection	Present
Reverse Polarity Protection	Not Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	96.4 x 145.5 x 154 mm (3.8 x 5.73 x 6.06 inch)
Weight (g)	1560 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Warranty	5years

***NOTE: This function is available by request only**

Ordering Information

IGS-R9 AA B CC

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	100/1000Base-(F)X SFP Port Number	Additional Port Type
Option	**- 08:** 8 ports	**- 4:** 4 ports	**-GP:** Gigabit SFP ports

Available Model	Model Name	Description
	IGPS-R9084GP	Industrial Layer-3 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x100/1000Base-X, SFP socket

Packing List

- IGS-R9084GP
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver

IPS-3082GC-24V

IPS-3082GC-24V

Industrial 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2xGigabit combo ports, SFP socket, 24V power inputs

Features

- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- Support MRP*NOTE(IEC 62439-2) Ethernet redundant protocol
- STP/RSTP:2004/MSTP supported
- Supports IEEE 802.3af compliant PoE and total power budget is 120Watts with maximum 15.4Watts per port in -40°C ~ 70°C
- Provide **PoE power on delay** function, users can define delay time for PoE power supply
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMC snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support LLDP (Link Layer Discovery Protocol)
- Supports DDM (Digital Diagnostic Monitoring) function
- Support TACACS+ and 802.1x User Authentication for security
- Support dual wide range 24~36VDC power inputs for power redundancy
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Port lock to prevent access from unauthorized MAC address
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, Console (CLI)
- Support two Gigabit combo ports
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

R6 READY | P.S.E PUE | O-Ring | Redundant PWR | -40~70°C Temperature | RoHS Lead Free | CE | FC

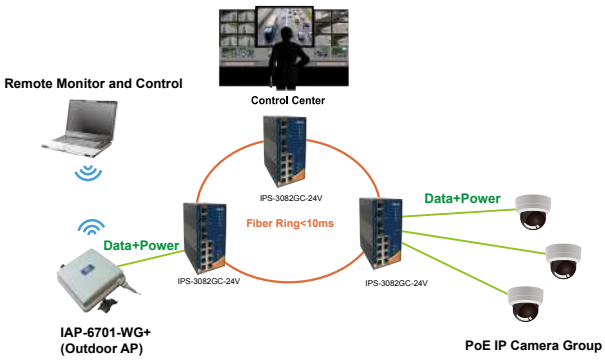
*NOTE: This function is available by request only

Introduction

IPS-3082GC-24V is managed redundant ring Ethernet switch with 8x10/100Base-T(X) ports with PoE (P.S.E.) function and 2xGigabit combo ports. With completely support of Ethernet redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IPS-3082GC-24V also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IPS-3082GC-24V supports wide range 24~36VDC power inputs and generates 48VDC P.S.E. power output per port. Each IPS-3082GC-24V switch has 8X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. IPS-3082GC-24V support new DDM (Digital Diagnostic Monitoring) function, which can monitor instantly the status of electronic voltage, current and temperature. All function of IPS-3082GC-24V can be managed centralized by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application with PoE function.

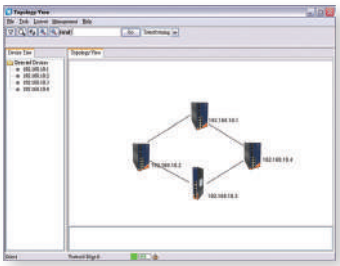
Open-Vision

ORing's switches are intelligent switches. Being different from other traditional redundant switches, ORing provides a set of Windows utility (**Open-Vision**) for user to manage and monitor all of industrial Ethernet switches on the industrial network.

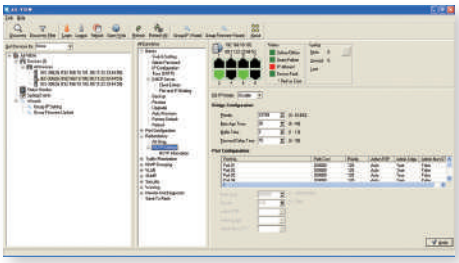


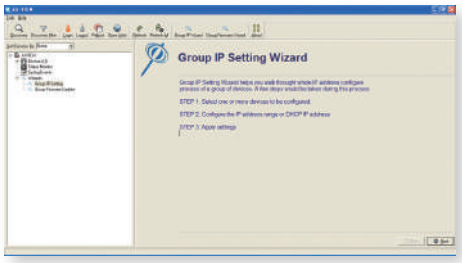
Network connection

DDM function



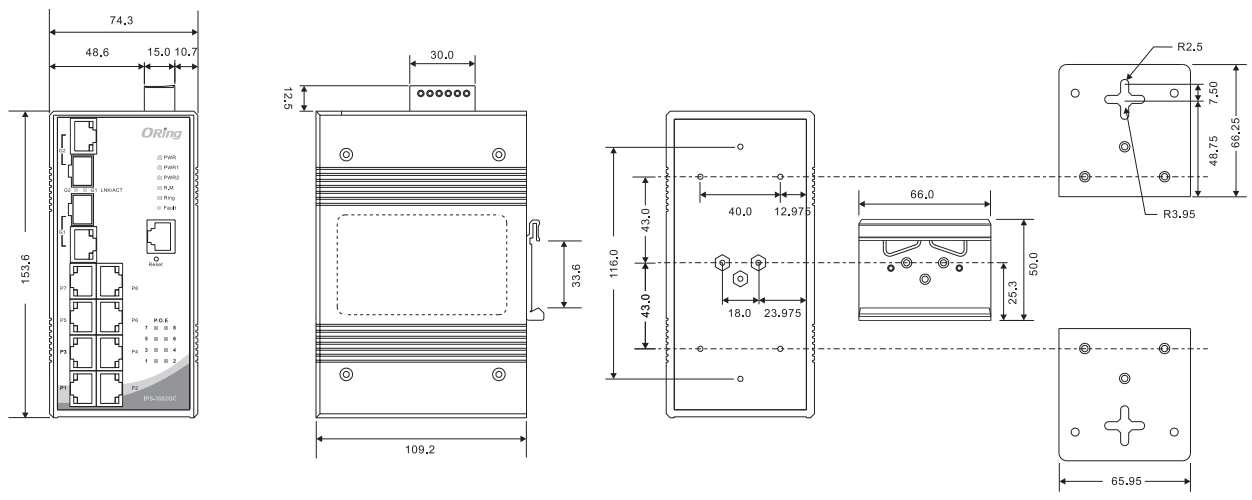
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

PoE Pin Definition

RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

Specifications

ORing Switch Model	IPS-3082GC-24V
Physical Ports	
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX with P.S.E.	8
Gigabit Combo Ports with 10/100/1000Base-T(X) and 100/1000Base-X SFP port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP(Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification (up to 15.4 Watts per port for P.S.E.)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 µs Switching bandwidth: 5.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Support ModbusTCP Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring STP RSTP :2004 MSTP MRP***NOTE**
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
DDM Function	Voltage / Current / Temperature
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power /PoE Indicator	Green : Power LED x 3, Green : PoE LED x 8

***NOTE: This function is available by request only**

O-Ring Indicator	Green : Indicate system operated in O-Ring mode
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode
Fault Indicator	Amber : Indicate unexpected event occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act. Amber for 100Mbps indicator
100/1000Base-X Fiber Port Indicator	Green for port Link/Act.
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 24 ~ 36VDC on 6-pin terminal block
Power Consumption (Typ.)	11.52Watts (power consumption of P.S.E. is not included)
Overload Current Protection	Present
Reverse Polarity Protection	**NOT Present**
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	74.3(W)x109.2(D)x153.6(H) mm (2.93 x 4.3 x 6.05 inch.)
Weight (g)	1260 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IPS-3 AA B CC -24V

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 08:** 8 ports	**- 2:** 2 ports	**- GC:** Gigabit combo with SFP

	Model Name	Description
Available Model	IPS-3082GC-24V	Industrial 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2xGigabit combo ports, SFP socket,24V power inputs

Packing List

- IPS-3082GC-24V
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP device
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-45-24 : 45 Watts@24VDC DIN-Rail power supply
- DR-75-24 : 75 Watts@24VDC DIN-Rail power supply
- DR-120-24 : 120 Watts@ee24VDC DIN-Rail power supply

IPS-3082GC-AT

IPS-3082GC-AT

Industrial 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2xGigabit combo ports, SFP socket

Features

- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- 8 ports P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 Watts per port
- Provide **PoE power on delay** function, users can define delay time for PoE power supply
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus/TCP protocol
- IGMP v2/v3 (IGMC snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support LLDP (Link Layer Discovery Protocol)
- Supports DDM (Digital Diagnostic Monitoring) function
- Support TACACS+ and 802.1x User Authentication for security
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Port lock to prevent access from unauthorized MAC address
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, Console (CLI)
- Support two Gigabit combo ports
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

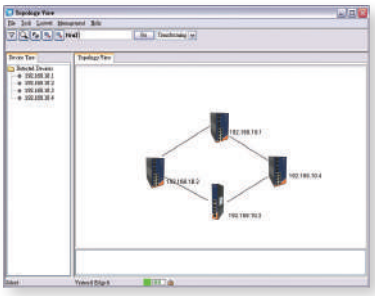
Introduction

IPS-3082GC-AT is managed redundant ring Ethernet switch with 8x10/100Base-T(X) ports with 30Watts PoE (P.S.E.) function and 2xGigabit combo ports. With completely support of Ethernet redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. IPS-3082GC-AT also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each IPS-3082GC-AT switch has 8X10/100Base-T(X) 30Watts P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. IPS-3082GC-AT support new DDM (Digital Diagnostic Monitoring) function, which can monitor instantly the status of electronic voltage, current and temperature. All function of IPS-3082GC-AT can be managed centralized by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application with PoE function.

***NOTE: This function is available by request only**

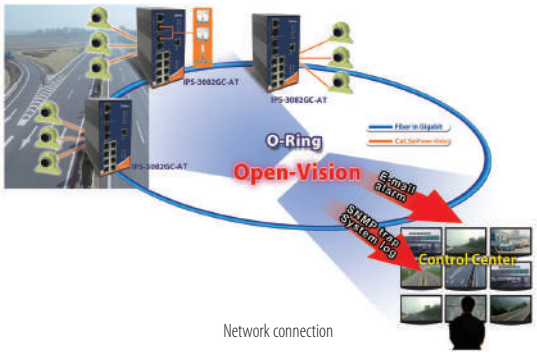
Open-Vision

ORing's switches are intelligent switches. Being different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.

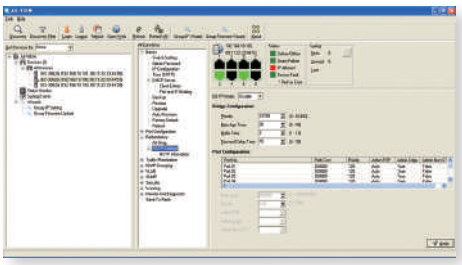


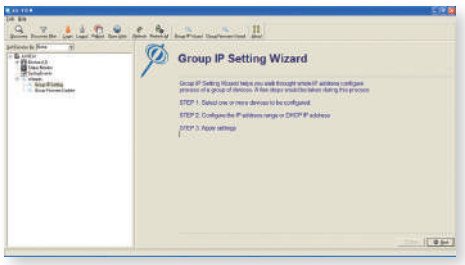
Topology View

DDM function



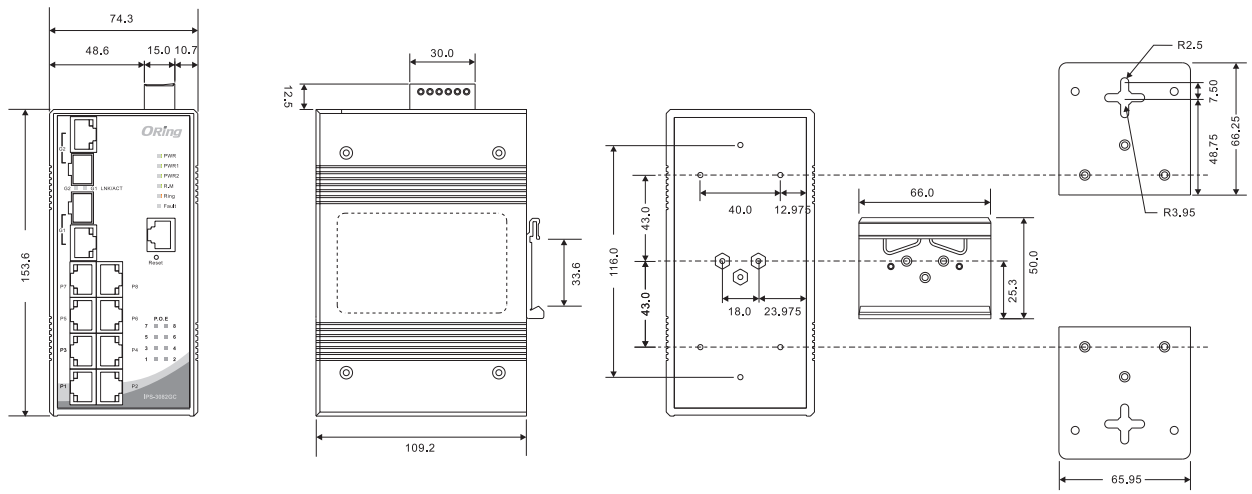
Network connection





Monitoring and Configuration interface

Dimensions



(Unit=mm)

PoE Pin Definition

RJ-45 Pin Definition	
Pin No.	**Description**
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

Specifications

ORing Switch Model	IPS-3082GC-AT
Physical Ports	
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX with P.S.E.	8
Gigabit Combo Ports with 10/100/1000Base-T(X) and 100/1000Base-X SFP port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 5.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain STP RSTP:2004 MSTP MRP*NOTE
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
DDM Function	Voltage / Current / Temperature
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power /PoE Indicator	Green : Power LED x 3, Green : PoE LED x 8
O-Ring Indicator	Green : Indicate system operated in O-Ring mode
R.M. Indicator	Green : Indicates that the system is operating in O-Ring mode

***NOTE: This function is available by request only**

Fault Indicator	Amber : Indicates unexpected event occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for 100Mbps indicator
100/1000Base-X / Fiber Port Indicator	Green for port Link/Act.
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 50 ~ 57VDC on 6-pin terminal block
Power Consumption (Typ.)	7.68 Watts (power consumption of P.S.E. is not included)
Overload Current Protection	Present
Reverse Polarity Protection	**NOT Present**
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	74.3(W)x109.2(D)x153.6(H) mm (2.93 x 4.3 x 6.05 inch.)
Weight (g)	1185 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IPS-3 AA B CC-AT

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 08:** 8 ports	**- 2:** 2 ports	**- GC:** Gigabit combo with SFP

Available Model	Model Name	Description
	IPS-3082GC-AT	Industrial 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2xGigabit combo ports, SFP socket

Packing List

- IPS-3082GC-AT
- DIN-Rail Kit
- Wall-mount Kit
- Console Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP device
- SFP100 series, 100Mbps SFP optical transceiver
- SFP1G series, 1Gbps SFP optical transceiver
- DR-75-48, 75W DIN-Rail power supply
- DR-120-48, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply

IPS-2042P

IPS-2042P

Industrial 6-port lite-managed PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 2x100Base-FX, SFP socket

Features

- Fastest Redundant Ethernet Ring : **O-Ring** (Recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** support the multiple redundant ring technology
- RSTP/STP (IEEE 802.1w/D)
- SNMP v1/v2c/v3 support for secured network management
- Configurable by Web-based and Windows utility **(Open-Vision)**
- Support LLDP (Link Layer Discovery Protocol)
- Event notification through Syslog, Email, and SNMP trap.
- Two 100Base-FX SFP port support for long distance connection
- 4 ports support P.S.E. based on IEEE 802.3af standard up to 25 Watts per port
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

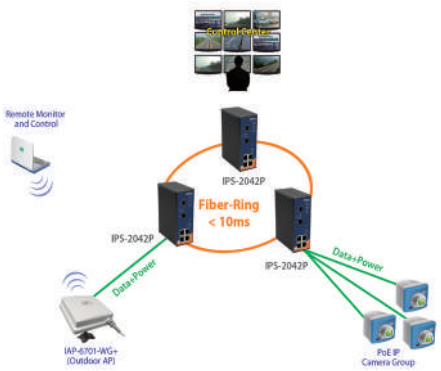
RoHS Lead Free CE FC

Introduction

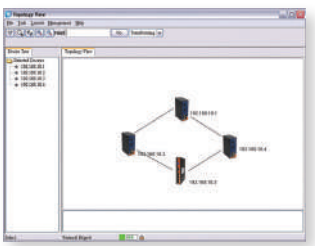
IPS-2042P is a lite-managed redundant ring PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. function and 2x100Base-FX SFP socket. IPS-2042P support Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IPS-2042P switch has 4X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. With complete support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection) and OOpen-Ring, O-Chain and STP/RSTP(IEEE802.1w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IPS-2042P can be managed centralized and convenient by a powerful windows utility — Open-Vision. The wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for easy managed and Fiber Ethernet application.

Open-Vision

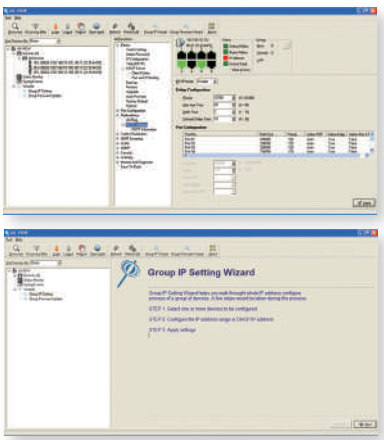
ORing's switches are intelligent switches. Being different from other traditional redundant switches, ORing provides a set of Windows utility (**Open-Vision**) for users to manage and monitor all of industrial Ethernet switches on the industrial networks.



Network connection

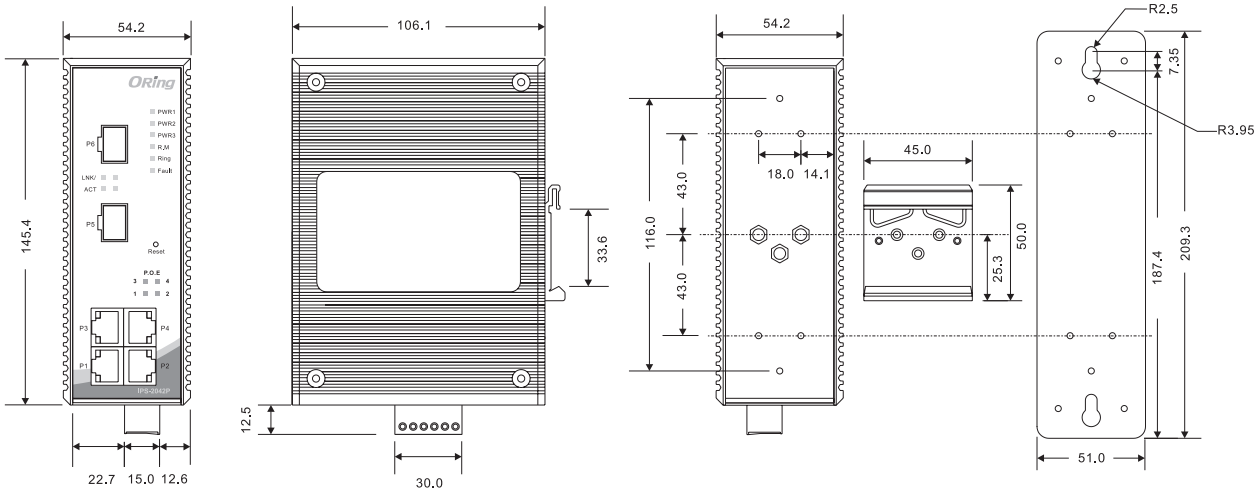


Topology View



Monitoring and Configuration interface

Dimensions



(Unit=mm)

PoE Pin Definition

RJ-45 Pin Definition	
Pin No.	Description
#1	TD+
#2	TD-
#3	RD+
#4	PoE Power input +

RJ-45 Pin Definition	
Pin No.	Description
#5	PoE Power input +
#6	RD-
#7	PoE Power input -
#8	PoE Power input -

Specifications

ORing Switch Model	IPS-2042P
Physical Ports	
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX with P.S.E.	4
100Base-FX SFP Ports	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100BaseTX and 100Base-FX IEEE 802.3x for Flow control IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification (up to 25 Watts per port for P.S.E.)
MAC Table	1024 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching bandwidth : 1.2Gbps VLAN : Port Based
Security Features	Enable/disable ports VLAN to segregate and secure network traffic SNMPv3 encrypted authentication and access security
Software Features	STP/RSTP (IEEE 802.1D/w) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units Open-Ring support the other vendor's ring technology in open architecture Port configuration, status, statistics, monitoring, security DHCP Client

Network Redundancy	O-Ring Open-Ring O-Chain Fast recovery STP RSTP
LED Indicators	
Power/PoE Indicator	Green : Power LED x 3. Green : PoE LED x 4
R.M. Indicator	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator	Green : Indicates that the system is operating in O-Ring mode
Fault Indicator	Amber : Indicates unexpected event occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Link
SFP Socket Indicator	Green for port Link/Act. Amber for Link
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Triple DC inputs. 2x48VDC on 7-pin terminal block , 1x48VDC on power jack
Power Consumption (Typ.)	7 Watts Max.
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	54.2(W) x 106.1(D) x 145.4(H) mm (2.13x4.18x5.72 inch.)
Weight (g)	700 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	301,901
Warranty	5 years

Ordering Information

IPS-2 AA B C

Code Definition	10/100Base-T(X) w/ PoE Port Number	Additional Port Number	Additional Port Type
Option	**- 4:** 4 ports	**- 2:** 2 ports	**- P:** 100Base-FX SFP socket

Available Model	Model Name	Description
	IPS-2042P	Industrial 6-port lite-managed PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 2x100Base-FX, SFP socket

Packing List

- IPS-2042P
- DIN-Rail Kit
- Wall-mount Kit
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- SFP100 series, 100Mbps SFP optical transceiver
- DR-75-48, 75W DIN-Rail power supply
- DR-120-48, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- PAA-482500, 48VDC/2500mA 120W Power Adapter with universal 100 to 240VAC input, US power cord
- PAE-482500, 48VDC/2500mA 120W Power Adapter with universal 100 to 240VAC input, EU power cord

IPS-2042TX/IPS-2042FX Series

IPS-2042TX/
IPS-2042FX Series

Industrial 6-port lite-managed PoE Ethernet Switch

Features

- IPS-2042TX provides 4x10/100Base-T(X) P.S.E. and 2x10/100Base-T(X) ports
- IPS-2042FX series provide 4x10/100Base-T(X) P.S.E. and 2x100Base-FX single/multi mode fiber ports
- Fastest Redundant Ethernet Ring: **O-Ring** (Recovery time < 10ms over 250 units of connection)
- **Open-Ring** supports the other vendor's ring technology in open architecture
- **O-Chain** support the multiple redundant ring technology
- Provides **Fast recovery technology** for Ethernet multi-redundancy
- STP/RSTP supported
- SNMP v1/v2c/v3 support for secured network management
- Supports LLDP (Link Layer Discovery Protocol)
- Configurable by Web-based and Windows utility **(Open-Vision)**
- Event notification through Syslog, Email, and SNMP trap
- Two 100Base-FX fiber port support for long distance connection
- Four P.S.E. ports based on IEEE 802.3af standard – up to 25 Watts per port
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

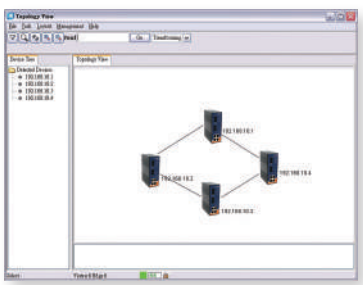
Introduction

IPS-2042TX/2042FX series are lite-managed redundant ring Ethernet switches with 4x10/100Base-T(X) ports with PoE P.S.E. function and 2x10/100Base-T(X) or 2x100Base-FX fiber ports. IPS series support Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each IPS switches has 4X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. With complete support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection) and Open-Ring, O-Chain and STP/RSTP(IEEE802.1w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. IPS-2042TX / 2042FX series can be managed centralized and convenient by a powerful windows utility — Open-Vision. The wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choice for easy managed and Fiber Ethernet application.

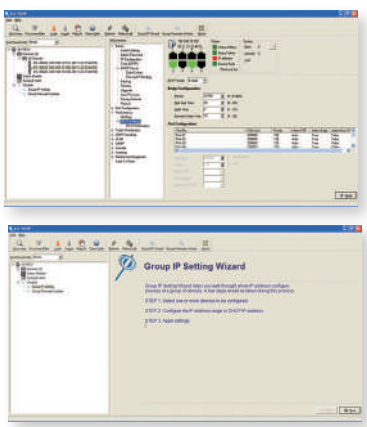
Open-Vision

ORing's switches are intelligent switches. Being different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.

Network connection

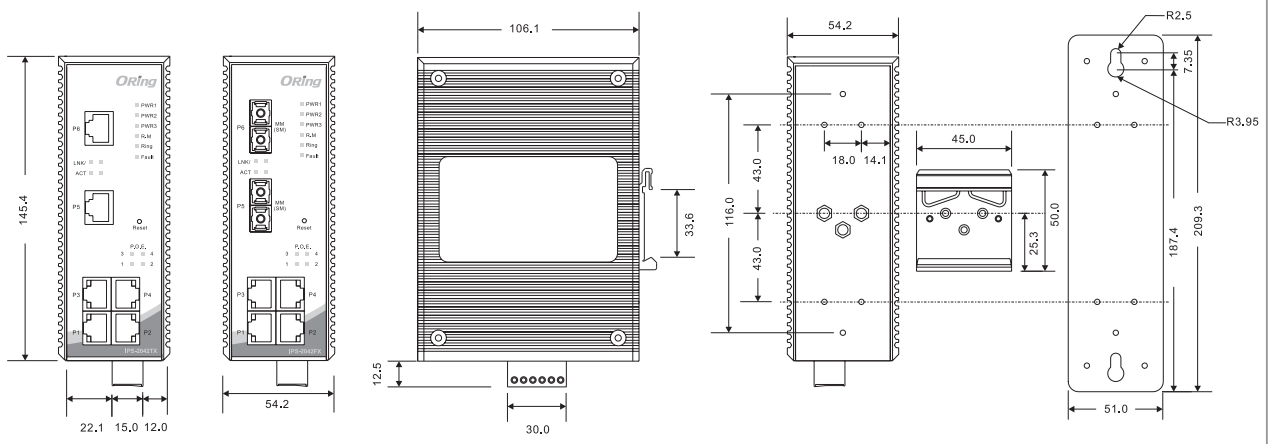


Topology View



Monitoring and Configuration interface

Dimensions



(Unit=mm)

PoE Pin Definition

RJ-45 Pin Definition	
Pin No.	Description
#1	TD+
#2	TD-
#3	RD+
#4	PoE Power input +

RJ-45 Pin Definition	
Pin No.	Description
#5	PoE Power input +
#6	RD-
#7	PoE Power input -
#8	PoE Power input -

Specifications

ORing Switch Model		IPS-2042TX	IPS-2042FX-MM-SC	IPS-2042FX-SS-SC
Physical Ports				
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX with P.S.E.		4	4	4
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX without P.S.E.		2	-	-
Fiber Ports Specifications	Fiber Ports Number	-	2	2
	Fiber Ports standard	-	100Base-FX	100Base-FX
	Fiber Mode	-	Multi-mode	Single-mode
	Fiber Diameter (μm)	-	62.5/125 μm 50/125 μm	9/125 μm
	Fiber Optical Connector	-	SC	SC
	Typical Distance (km)	-	2 km	30 km
	Wavelength (nm)	-	1310 nm	1310 nm
	Max. Output Optical Power (dBm)	-	-14 dBm	-8 dBm
	Min. Output Optical Power (dBm)	-	-23.5 dBm	-15 dBm
	Max. Input Optical Power (Saturation)	-	0 dBm	0 dBm
	Min. Input Optical Power (Sensitivity)	-	-31 dBm	-34 dBm
	Link Budget (dB)	-	7.5 dB	19 dB

Technology			
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3x for Flow control IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification (up to 25 Watts per port for P.S.E.)		
MAC Table	1024 MAC addresses		
Priority Queues	4		
Processing	Store-and-Forward		
Switch Properties	Switching bandwidth : 1.2Gbps VLAN : Port Based		
Security Features	Enable/disable ports VLAN to segregate and secure network traffic		
Software Features	STP/RSTP (IEEE 802.1D/w) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units Open-Ring support the other vendor's ring technology in open architecture Port configuration, status, statistics, monitoring, security DHCP Client		
Network Redundancy	O-Ring Open-Ring O-Chain Fast recovery STP RSTP		
LED Indicators			
Power Indicator	Green : Power LED x 3, Green : PoE LED x 4		
R.M. Indicator	Green : Indicates that the system is operating in O-Ring Master mode		
O-Ring Indicator	Green : Indicates that the system is operating in O-Ring mode		
Fault Indicator	Amber : Indicates unexpected event occurred		
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Link		
Fiber Port Indicator	Green for port Link/Act. Amber for Link		
Fault contact			
Relay	Relay output to carry capacity of 1A at 24VDC		
Power			
Redundant Input Power	Triple DC inputs. 2x48VDC on 7-pin terminal block , 1x48VDC on power jack		
Power Consumption (Typ.)	5 Watts	7 Watts	7 Watts
Overload Current Protection	Present		
Reverse Polarity Protection	Present on terminal block		
Physical Characteristics			
Enclosure	IP-30		
Dimensions (W x D x H)	54.2(W) x 106.1(D) x 145.4(H) mm (2.13x4.18x5.72 inch.)		
Weight (g)	696 g	709 g	709 g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-40 to 70°C (-40 to 158°F)		
Operating Humidity	5% to 95% Non-condensing		

Regulatory Approvals			
EMI	FCC Part 15, CISPR (EN55022) class A		
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11		
Shock	IEC60068-2-27		
Free Fall	IEC60068-2-32		
Vibration	IEC60068-2-6		
Safety	EN60950-1		
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25℃)	304,333	292,673	292,673
Warranty	5 years		

Ordering Information

IPS-2 AA B CC - DD - EE

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 04:** 4 ports	**- 2:** 2 ports	**- FX:** 100Base-FX **- TX:** 10/100Base-T(X)	**- MM:** Multi-mode **- SS:** Single-mode	**- SC:** SC connector

Available Model	Model Name	Description
	IPS-2042TX	Industrial 6-port lite-managed PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 2x10/100Base-T(X)
	IPS-2042FX-MM-SC	Industrial 6-port lite-managed PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 2x100Base-FX, multi-mode, 2km/1310nm, SC connector
	IPS-2042FX-SS-SC	Industrial 6-port lite-managed PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 2x100Base-FX, single-mode, 30km/1310nm, SC connector

Packing List

- IPS-204TX/2042FX
- DIN-Rail Kit
- Wall-mount Kit
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- DR-75-48, 75W DIN-Rail power supply
- DR-120-48, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- PAA-482500, 48VDC/2500mA 120W Power Adapter with universal 100 to 240VAC input, US power cord
- PAE-482500, 48VDC/2500mA 120W Power Adapter with universal 100 to 240VAC input, EU power cord

IPS-1080A

IPS-1080A

Industrial 8-port slim type unmanaged PoE Ethernet switch with 8x10/100Base-T(X) P.S.E.

Features

- Provide 8x10/100Base-T(X) PoE (P.S.E.) ports
- Supports IEEE 802.3at compliant PoE and total power budget is 180Watts with maximum 30Watts per port
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Warning system by relay output
- Slim type rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

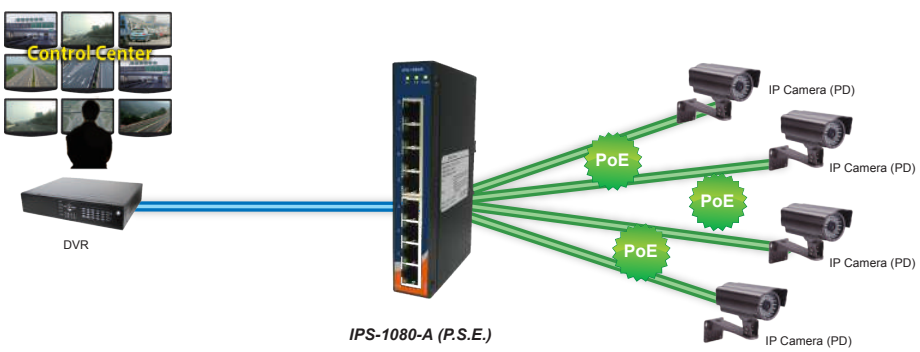
RoHS Lead Free CE FC

Introduction

IPS-1080A is slim type unmanaged PoE Ethernet switch with P.S.E. function. IPS-1080A supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IPS-1080A switch has 8X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. The wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for PoE Ethernet application.

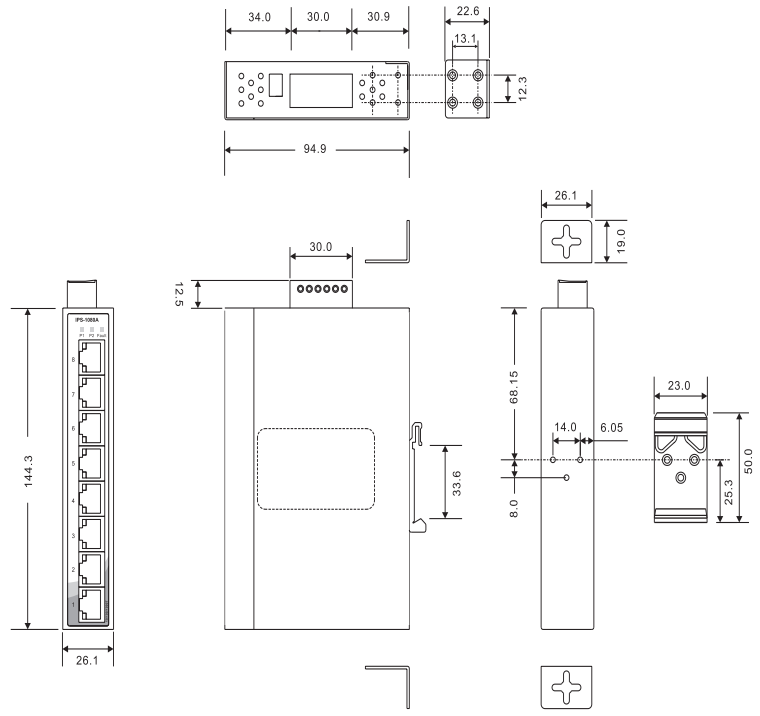
Practical Operation

IPS-1080A can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Connections of Ethernet devices

Dimensions



(Unit=mm)

PoE Pin Assignment

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

Specifications

ORing Switch Model	IPS-1080A
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX with P.S.E.	8
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3at PoE specification (total power budget is 180Watts with maximum 30Watts per port)

MAC Table	2048 MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power indicator	Green : Power LED x 2
Fault indicator	Amber : Indicates PWR1 or PWR2 failure occurred
10/100Base-T(X) RJ45 Port Indicator and PoE indicator	Green for port Link/Act. Green for PoE power injected.
DIP-Switch	
DIP-Switch 1	Power-1 failed warning : (ON) enable, (OFF) disable
DIP-Switch 2	Power-2 failed warning : (ON) enable, (OFF) disable
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 50~57VDC on 6-pin terminal block.
Power consumption (Typ.)	4.5 Watts (power consumption of P.S.E. is not included)
Overload current protection	Present
Reverse polarity protection	NOT Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1 (W) x 94.9 (D) x 144.3 (H) mm
Weight (g)	412 g
Environmental	
Storage temperature	-40 to 85°C (-40 to 185°F)
Operating temperature	-40 to 70°C (-40 to 158°F)
Operating humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IPS-1 AA B A

Code Definition	10/100 Base-T(X) P.S.E. Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 ports

Available Model	Model Name	Description
	IPS-1080A	Industrial 8-port slim type unmanaged PoE Ethernet switch with 8x10/100Base-T(X) P.S.E.

Packing List

- IPS-1080A
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-75-48 : 75 Watts@48VDC DIN-Rail power supply
- DR-120-48 : 120 Watts@48VDC DIN-Rail power supply
- SDR-240-48 : 240 Watts@48VDC DIN-Rail power supply
- SDR-480-48 : 480 Watts@48VDC DIN-Rail power supply

IPS-1080-24V

IPS-1080-24V

Industrial 8-port unmanaged PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., 24VDC power input

Features

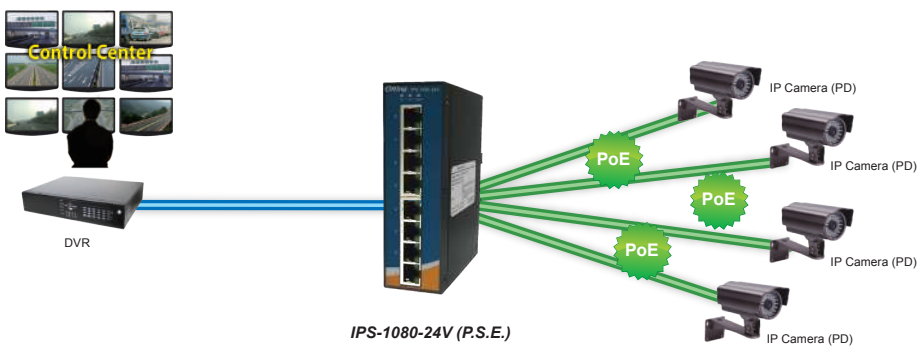
- Provide 8x10/100Base-T(X) PoE (P.S.E.) ports
- Supports IEEE 802.3at compliant PoE and total power budget is 120Watts with maximum 30Watts per port
- Advanced PoE power boost technology to support dual 24VDC power inputs
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Warning system by relay output
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

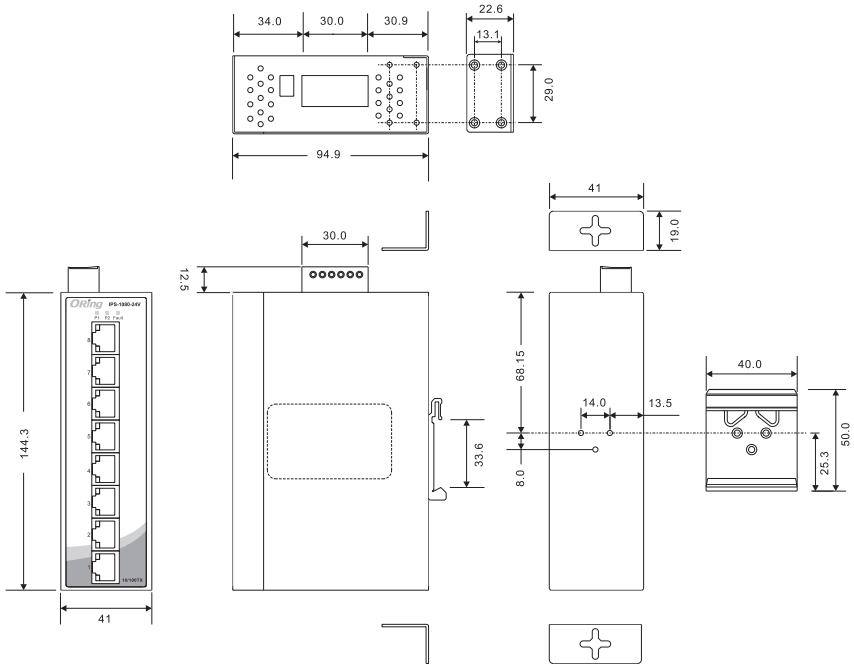
IPS-1080-24V is unmanaged PoE Ethernet switch with P.S.E. function. IPS-1080-24V supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IPS-1080-24V switch has 8X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. The wide operating temperature range from -40oC to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for PoE Ethernet application.

Practical Operation

IPS-1080-24V can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Dimensions



(Unit=mm)

PoE Pin Assignment

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

Specifications

ORing Switch Model	IPS-1080-24V
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX with P.S.E.	8
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3at PoE specification (total power budget is 120Watts with maximum 30Watts per port)

MAC Table	2048 MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power indicator	Green : Power LED x 2
Fault indicator	Amber : Indicate PWR1 or PWR2 failure
10/100Base-T(X) RJ45 Port Indicator and PoE indicator	Green for port Link/Act. Green for PoE power injected.
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input power	Dual DC inputs. 24~36VDC on 6-pin terminal block.
Power consumption (Typ.)	4.32 Watts (PoE output not included)
Overload current protection	Present
Reverse polarity protection	NOT Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	41 (W) x 94.9 (D) x 144.3(H) mm (1.61 x 3.74 x 5.68inch)
Weight (g)	555 g
Environmental	
Storage temperature	-40 to 85°C (-40 to 185°F)
Operating temperature	-40 to 70°C (-40 to 158°F)
Operating humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IPS-1 AA B -24V

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 ports

Available Model	Model Name	Description
	IPS-1080-24V	Industrial 8-port unmanaged PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., 24VDC power input

Packing List

- IPS-1080-24V
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45-24, 45 Watts DIN-Rail power supply
- DR-75-24, 75 Watts DIN-Rail power supply
- DR-120-24, 120 Watts DIN-Rail power supply

IPS-1042FA Series

IPS-1042FA Series

Industrial 6-port slim type unmanaged PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 2x100Base-FX

Features

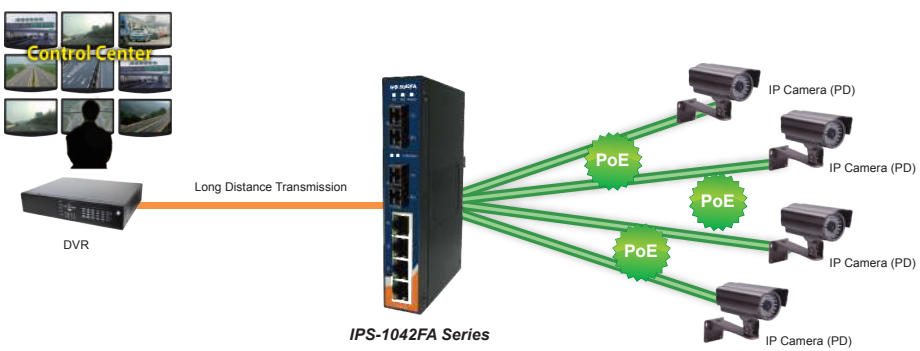
- IPS-1042FA series provide 4x10/100Base-T(X) PoE(P.S.E.) and 2x100Base-FX single/multi-mode fiber ports
- Supports IEEE 802.3at compliant 30Watts PoE per port
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Support surge protection technology
- Warning system by relay output
- Slim type rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Introduction

IPS-1042FA series are unmanaged PoE Ethernet switches with 4 x 10/100Base-T(X) P.S.E. and 2x100Base-FX ports. IPS-1042FA series supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IPS-1042FA series has 4X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. IPS-1042FA series support redundant power inputs, configurable relay output alarm and rigid IP-30 housing. In addition, the wide operating temperature range from -40 to 75°C can satisfy most of operating environment.

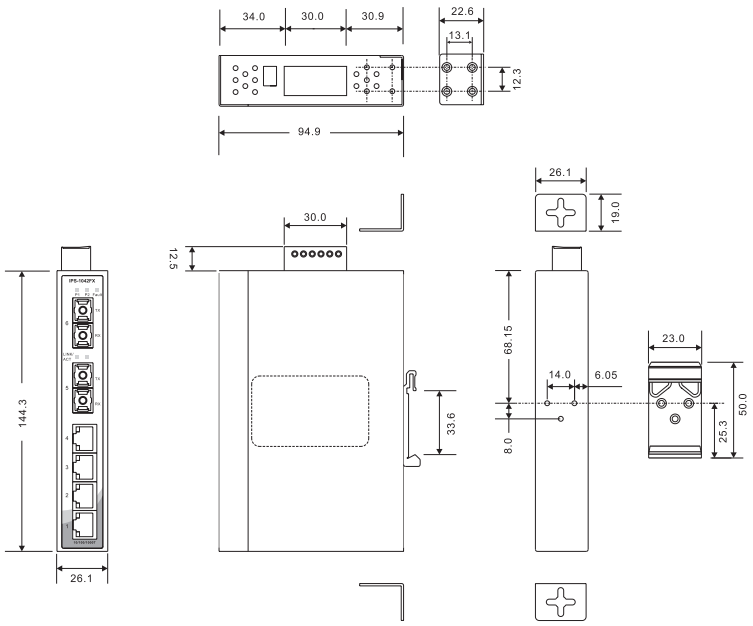
Practical Operation

IPS-1042FA series can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Connections of Ethernet devices

Dimensions



(Unit=mm)

PoE Pin Assignment

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

Specifications

ORing Switch Model		IPS-1042FA-MM-SC	IPS-1042FA-SS-SC
Physical Ports			
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX with P.S.E.		4	
Fiber Ports Specification	Fiber Ports Number	2	2
	Fiber Ports standard	100Base-FX	100Base-FX
	Fiber Mode	Multi-mode	Single-mode
	Fiber Diameter (μm)	62.5/125 μm & 50/125 μm	9/125 μm
	Fiber Optical Connector	SC	SC
	Typical Distance (Km)	2 Km	30 Km
	Wavelength (nm)	1310 nm	1310 nm
	Max. Output Optical Power (dbm)	-14 dbm	-8 dbm
	Min. Output Optical Power (dbm)	-23.5 dbm	-15 dbm
	Max. Input Optical Power(Saturation)	0 dbm	0 dbm
	Min. Input Optical Power(Sensitivity)	-31 dbm	-34 dbm
	Link Budget (db)	7.5 db	19 db

Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T, IEEE 802.3u for 100Base-T(X) and 100Base-FX, IEEE 802.3x for Flow control IEEE 802.3at PoE specification	
MAC Table	1K MAC addresses	
Processing	Store-and-Forward	
LED indicators		
Power Indicator	Green : Power LED x 2	
Fault Indicator	Amber : Indicate PWR1 or PWR2 failure	
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Green for PoE power injected.	
100Base-FX Fiber Port Indicator	Green for port Link/Act.	
Fault contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input Power	Dual DC inputs. 50~57VDC on 6-pin terminal block.	
Power Consumption (Typ.)	4 Watts (power consumption of P.S.E. is not included)	4 Watts (power consumption of P.S.E. is not included)
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	26.1(W) x 94.9(D) x 144.3(H) mm (1.03 x 3.74 x 5.68 inch.)	
Weight (g)	438 g	
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B	
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A	
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
MTBF	576828 hrs	624538 hrs
Warranty	5 years	

***NOTE: HW version 5.0**

Ordering Information

IPS-1 AA B CC -DD-EE

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 04:** 4 ports	**- 2:** 2 ports	**- FA:** 100 Base-FX	**- MM:** Multi-mode **- SS:** Single-mode	**- SC:** SC connector

	Model Name	Description
Available Model	IPS-1042FA-MM-SC	Industrial 6-port slim type unmanaged PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 2x100Base-FX, multi-mode, 2Km/1310nm, SC connector
	IPS-1042FA-SS-SC	Industrial 6-port slim type unmanaged PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 2x100Base-FX, single-mode, 30Km/1310nm, SC connector

Packing List

- IPS-1042FA x 1
- Din-Rail Kit x 1
- Quick Installation Guide x 1
- Wall-mount Kit x 1

Optional Accessories (Can be purchased separately)

- DR/SDR/DRP Series Din-Rail Power Supply

IPS-1042FX-24V Series

IPS-1042FX-24V Series

Industrial 6-port unmanaged PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 2x100Base-FX, 24VDC power input

Features

- IPS-1042FX-24V series provide 4x10/100Base-T(X) PoE (P.S.E.) and 2x100Base-FX single/multi-mode fiber ports
- Supports IEEE 802.3at compliant 30Watts PoE per port
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Support surge protection technology
- Warning system by relay output
- Slim type rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

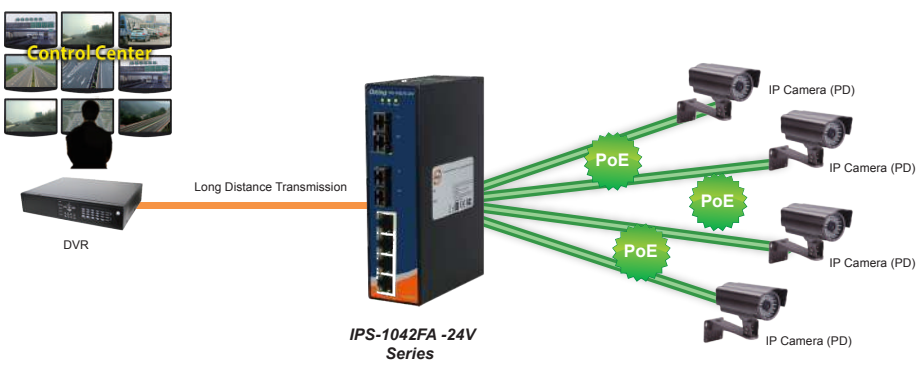
P.S.E PoE | Redundant PWR | -40~70°C Temperature | RoHS Lead Free | CE | FC

Introduction

IPS-1042FX-24V series are unmanaged PoE Ethernet switches with 4 x 10/100Base-T(X) P.S.E. and 2x100Base-FX ports. IPS-1042FX-24V series supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. IPS-1042FX-24V series has 4X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. IPS-1042FX-24V series support redundant power inputs, configurable relay output alarm and rigid IP-30 housing. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment.

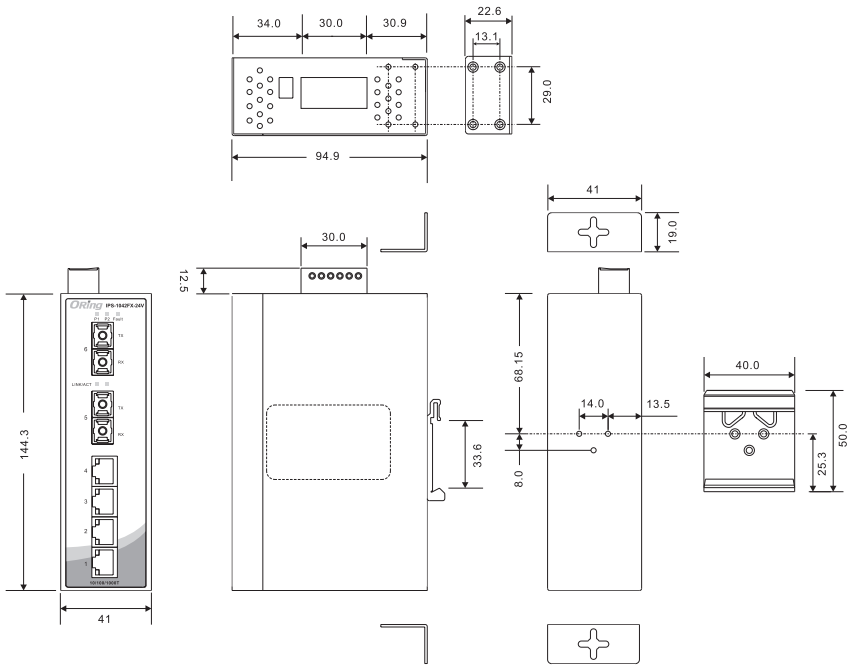
Practical Operation

IPS-1042FX-24V series can be used in connecting several Ethernet devices like Ethernet I/O, IP-Camera or other Ethernet switches. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Connections of Ethernet devices

Dimensions



(Unit=mm)

PoE Pin Assignment

10/100Base-T(X) P.S.E. RJ-45 Port	
RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

Specifications

ORing Switch Model		IIPS-1042FX-MM-SC-24V	IPS-1042FX-SS-SC-24V
Physical Ports			
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX with P.S.E.		4	4
Fiber Ports Specifications	Fiber Ports Number	2	2
	Fiber Ports standard	100Base-FX	100Base-FX
	Fiber Mode	Multi-mode	Single-mode
	Fiber Diameter (μm)	62.5/125 μm & 50/125 μm	9/125 μm
	Fiber Optical Connector	SC	SC
	Typical Distance (km)	2 km	30 km
	Wavelength (nm)	1310 nm	1310 nm

ORing Switch Model		IPS-1042FA-MM-SC	IPS-1042FA-SS-SC
Fiber Ports Specifications	Max. Output Optical Power (dBm)	-14 dBm	-8 dBm
	Min. Output Optical Power (dBm)	-23.5 dBm	-15 dBm
	Max. Input Optical Power (Saturation)	0 dBm	0 dBm
	Min. Input Optical Power(Sensitivity)	-31 dBm	-34 dBm
	Link Budget (dB)	7.5 dB	19 dB
Technology			
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-T(X) and 100Base-FX IEEE 802.3x for Flow control IEEE 802.3at PoE specification	
MAC Table		2048 MAC addresses	
Processing		Store-and-Forward	
LED Indicators			
Power Indicator		Green : Power LED x 2	
Fault Indicator		Amber : Indicate PWR1 or PWR2 failure	
10/100Base-T(X) RJ45 Port Indicator		Green for port Link/Act. Green for PoE power injected.	
100Base-FX Fiber Port Indicator		Green for port Link/Act.	
Fault contact			
Relay		Relay output to carry capacity of 1A at 24VDC	
Power			
Redundant Input Power		Dual DC inputs. 24~36VDC on 6-pin terminal block.	
Power Consumption (Typ.)		6.48 Watts (power consumption of P.S.E. is not included)	5.4 Watts (power consumption of P.S.E. is not included)
Overload Current Protection		Present	
Reverse Polarity Protection		NOT Present	
Physical Characteristics			
Enclosure		IP-30	
Dimensions (W x D x H)		41 (W) x 144.3 (H) x 94.9 (D) mm (1.61 x 5.68 x 3.74 inch)	
Weight (g)		530 g	
Environmental			
Storage Temperature		-40 to 85°C (-40 to 185°F)	
Operating Temperature		-40 to 70°C (-40 to 158°F)	
Operating Humidity		5% to 95% Non-condensing	
Regulatory Approvals			
EMI		FCC Part 15, CISPR (EN55022) class A	
EMS		EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock		IEC60068-2-27	
Free Fall		IEC60068-2-32	
Vibration		IEC60068-2-6	
Safety		EN60950-1	
Warranty		5 years	

Ordering Information

IPS-1 AA B CC -DD-EE -24V

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 04:** 4 ports	**- 2:** 2 ports	**- FA:** 100 Base-FX	**- MM:** Multi-mode **- SS:** Single-mode	**- SC:** SC connector

	Model Name	Description
Available Model	IPS-1042FX-MM-SC-24V	Industrial 6-port unmanaged PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 2x100Base-FX, multi-mode, 2Km/1310nm, SC connector, 24VDC power input
	IPS-1042FX-SS-SC-24V	Industrial 6-port unmanaged PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 2x100Base-FX, single-mode, 30Km/1310nm, SC connector, 24VDC power input

Packing List

- IPS-1042FX-MM/SS-24V
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45-24 : 45 Watts@24VDC DIN-Rail power supply
- DR-75-24 : 75 Watts@24VDC DIN-Rail power supply
- DR-120-24 : 120 Watts@24VDC DIN-Rail power supply

DGS-9812GP-AIO_S

DGS-9812GP-AIO_S

Industrial desktop type 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, LC connector bypass

Features

- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Provide two optical bypass function
- Support IEEE 1588v2 clock synchronization
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Supports SMTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- Supports backup unit device **DBU-01** to quickly configuration backup/restore

Introduction

DGS-9812GP-AIO_S is managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X SFP ports. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 to 75°C. DGS-9812GP-AIO_S includes 2 sets of bypass ports that protect the network from failures and Network maintenance

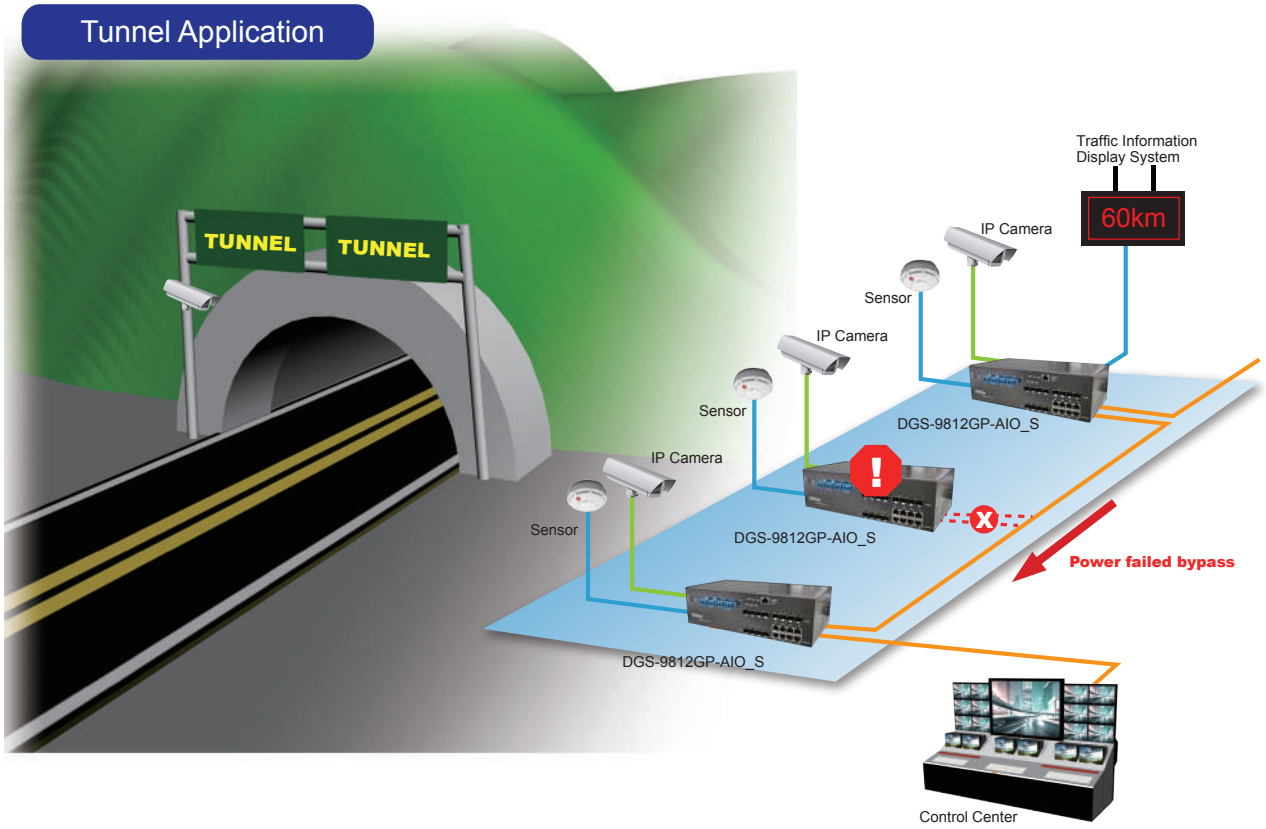
***NOTE: This function is available by request only**

by ensuring network integrity during power loss. DGS-9812GP-AIO_S can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet power substation and rolling stock application.

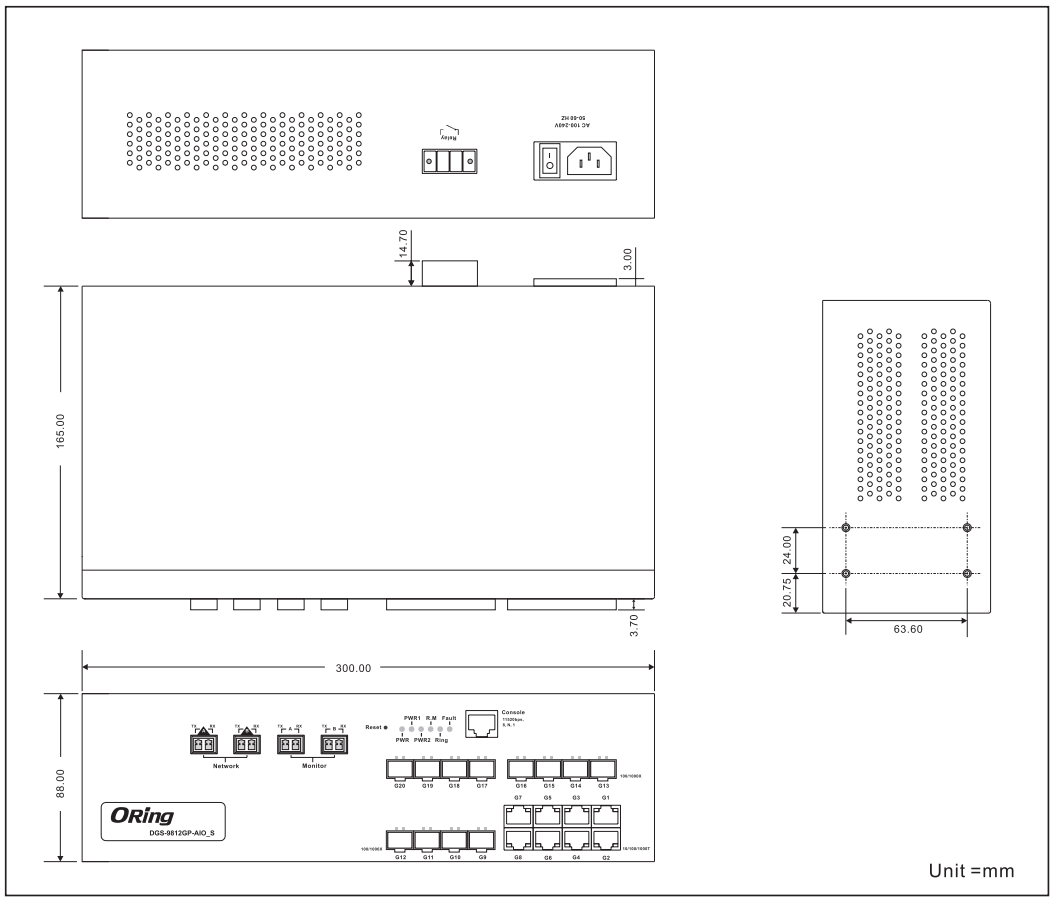
- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

***NOTE: This function is available by request only**

Tunnel Application



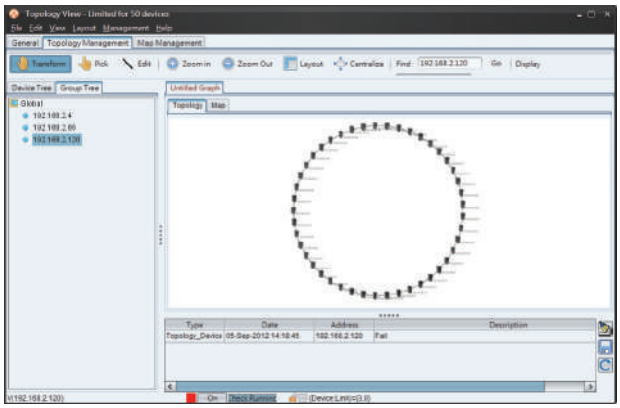
Dimensions



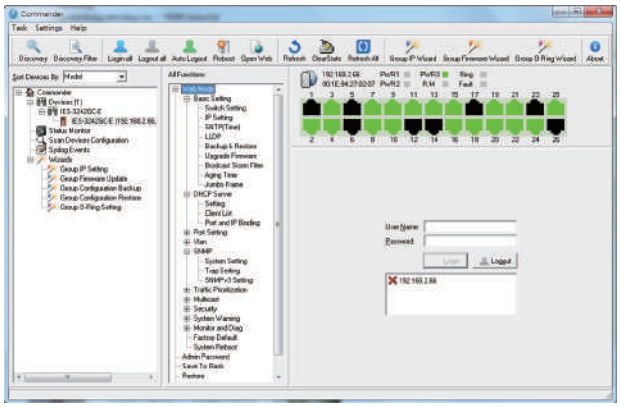
(Unit=mm)

Open-Vision

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Topology View



Commander

Specifications

ORing Switch Model	DGS-9812GP-SS-AIO_S	DGS-9812GP-MM-AIO_S
Physical Ports		
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8	
100/1000Base-X with SFP port	4	
LC Bypass Port Type	Single-Mode	Multi-Mode
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8k	
Priority Queues	4	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 40Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define Https / SSH enhance network security	
Jumbo frame	Up to 9.6K Bytes	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security	

Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP(STP / RSTP compatible)
RS-232 Serial Console Port	RS-232 in RJ-45 connector with console cable. 115200bps, 8, N, 1
Switch LED indicators	
Power Indicator	Green : Power LED x 3
R.M. Indicator	Green : indicate system operated in O-Ring Master mode
O-Ring Indicator	Green : indicate system operated in O-Ring mode
Fault Indicator	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 port indicator	Green for port Link/Act. Amber for Duplex/Collision
SFP Fiber port indicator	Green for port Link/Act
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual 100~240V AC power inputs in single power socket
Power Consumption (Typ.)	15 Watts
Overload Current Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	300 (W) x 165 (D) x 88 (H) mm(11.81 x 6.5 x 3.47 inch)
Weight (g)	2300g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

***NOTE: This function is available by request only**

Ordering Information

DGS-9 A BB CC-DD-AIO_S

Code Definition	10/100/1000Base-T(X) Port Number	100/1000Base-(F)X SFP Port Number	Additional Port Type	Fiber Optical Mode
Option	**- 8 :** 8 ports	**- 12 :** 12 ports	**- GP :** Gigabit SFP ports	**- MM :** multi-mode **- SS :** single-mode

	Model Name	Description
Available Model	DGS-9812GP-SS-AIO_S_US	Industrial desktop type 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, single-mode LC connector bypass, US power cord
	DGS-9812GP-SS-AIO_S_EU	Industrial desktop type 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, single-mode LC connector bypass, EU power cord
	DGS-9812GP-SS-AIO_S_UK	Industrial desktop type 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, single-mode LC connector bypass, UK power cord
	DGS-9812GP-SS-AIO_S_JP	Industrial desktop type 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, single-mode LC connector bypass, JP power cord
	DGS-9812GP-MM-AIO_S_US	Industrial desktop type 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, multi-mode LC connector bypass, US power cord
	DGS-9812GP-MM-AIO_S_EU	Industrial desktop type 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, multi-mode LC connector bypass, EU power cord
	DGS-9812GP-MM-AIO_S_UK	Industrial desktop type 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, multi-mode LC connector bypass, UK power cord
	DGS-9812GP-MM-AIO_S_JP	Industrial desktop type 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, multi-mode LC connector bypass, JP power cord

Packing List

- DGS-9812GP-AIO_S
- Console Cable
- Power Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP 1G series : 1Gbps SFP optical transceiver
- SFP 100 series : 100Mbps SFP optical transceiver
- DBU-01 : Backup unit device

DGS-R9812GP-AIO_S

DGS-R9812GP-AIO_S

Industrial desktop type Layer-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, LC connector bypass

Features

- Supports Layer 3 routing, RIPv2, OSPFv2, static routing function and multicast routing PIM-SM/PIM-DM
- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Provide two optical bypass function
- Support IEEE 1588v2 clock synchronization
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Supports SMTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design

Introduction

DGS-R9812GP-AIO_S is Layer-3 managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X SFP ports. The DGS-R9812GP-AIO_S supports Layer-3 routing for better network performance on large-scale LANs into multiple subnets to support long-haul and EMI immunity communications. The hardware Layer-3 switch is optimized to transmit data as fast as Layer-2 switches. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology.

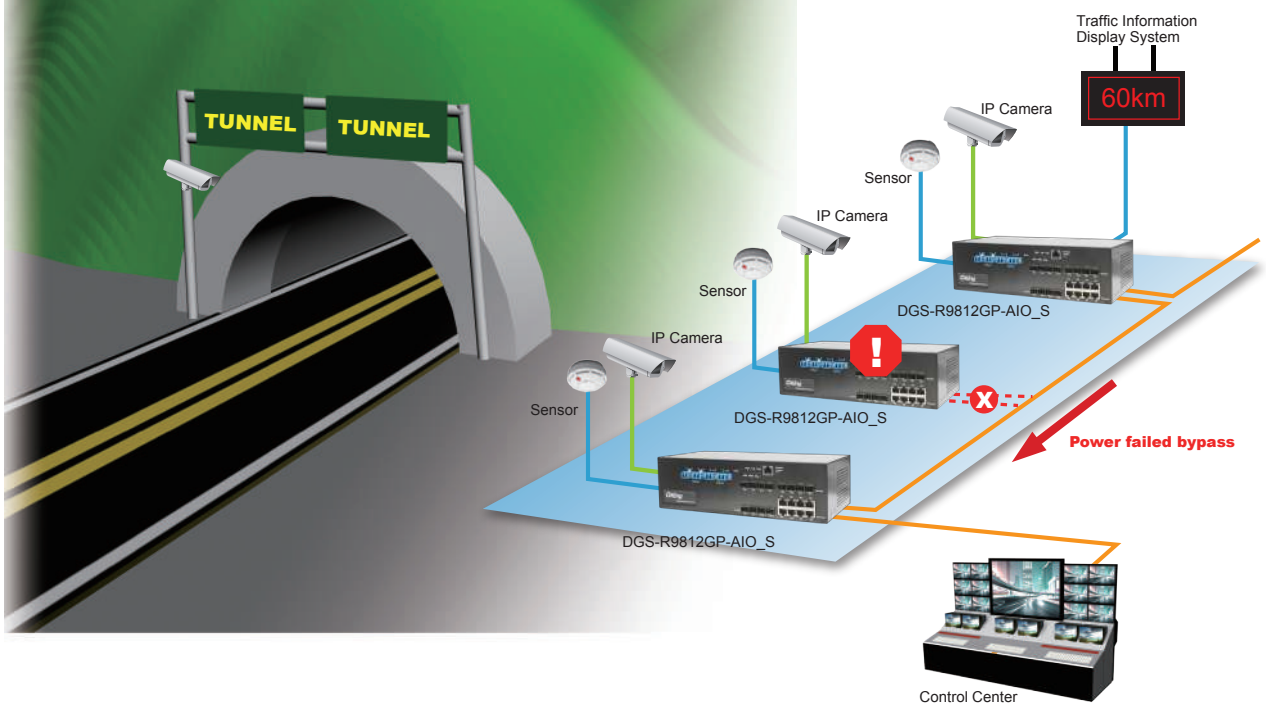
***NOTE: This function is available by request only**

And support wide operating temperature from -40 to 70°C. DGS-R9812GP-AIO_S includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. DGS-R9812GP-AIO_S can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet power substation and rolling stock application.

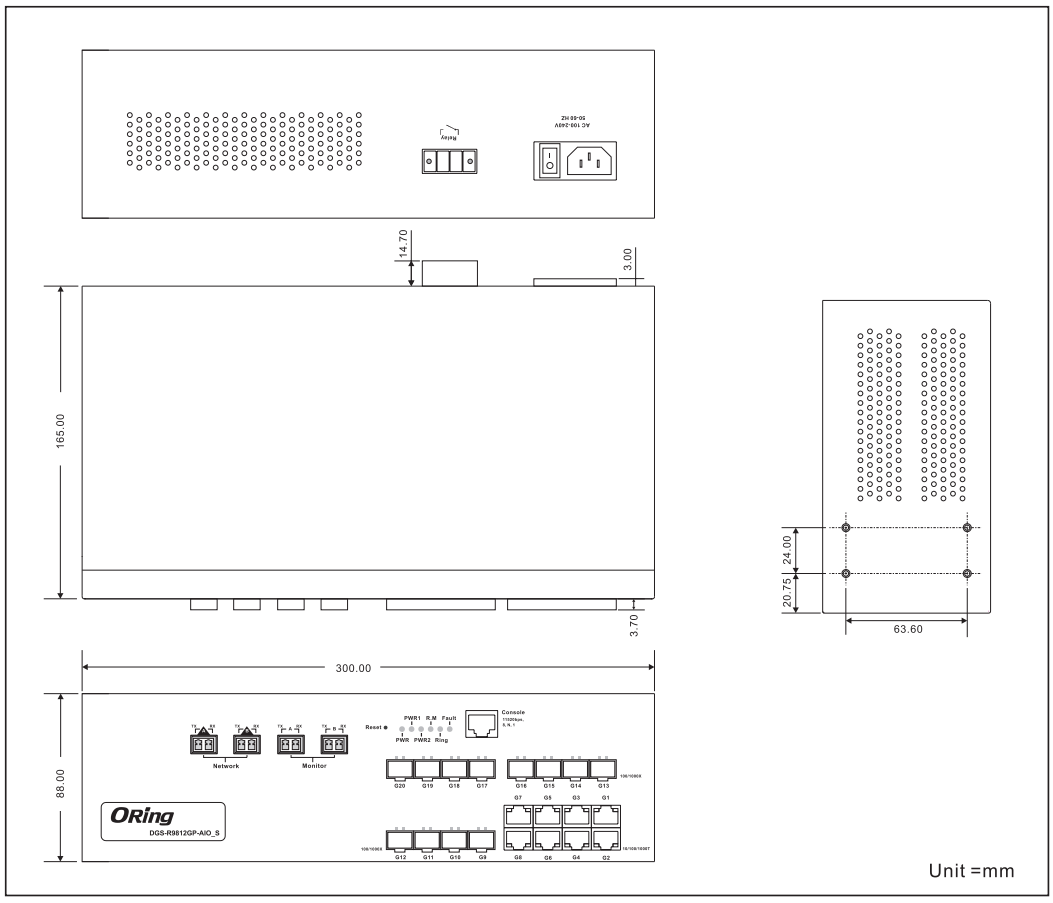
- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

***NOTE: This function is available by request only**

Tunnel Application



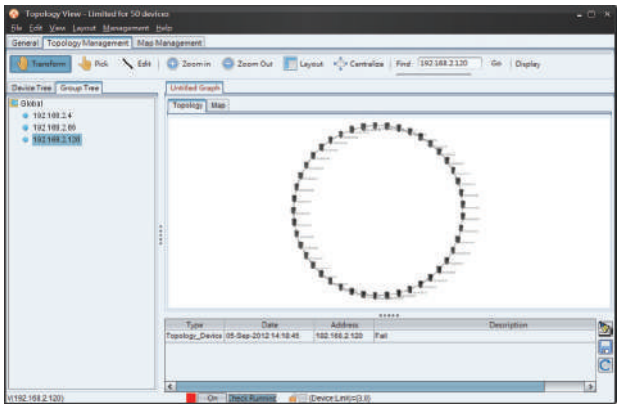
Dimensions



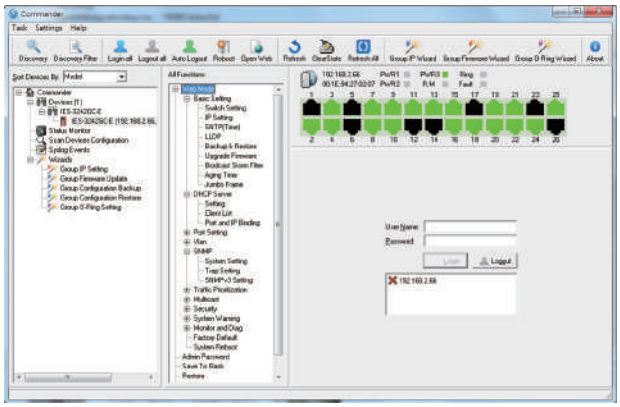
(Unit=mm)

Open-Vision

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Topology View



Commander

Specifications

ORing Switch Model	DGS-R9812GP-SS-AIO_S	DGS-R9812GP-MM-AIO_S
Physical Ports		
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8	
100/1000Base-X with SFP port	12	
LC Bypass Port Type	Single-Mode	Multi-Mode
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8k	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 40Gbps Max. Number of Available VLANs: 256 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define Https / SSH enhance network security	
Jumbo frame	Up to 9.6K Bytes	

Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) Single 802.1x and Multiple 802.1x MAC-based authentication QoS assignment Guest VLAN MAC address limit TACACS+ VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Web and CLI authentication and authorization Authorization (15 levels) IP source guard Https / SSH enhance network security
Software Features	Hardware routing, RIP and static routing IEEE 1588v2 clock synchronization IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) RSTP/MSTP (IEEE 802.1w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging Voice VLAN IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/snooping DHCP Relay Modbus TCP ARP inspection SMTP Client
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP(STP / RSTP compatible)
RS-232 Serial Console Port	RS-232 in RJ-45 connector with console cable. 115200bps, 8, N, 1
Switch LED indicators	
Power Indicator (PWR/1/2)	Green : Power LED x 3
R.M. indicator (R.M.)	Green : indicate system operated in O-Ring Master mode
Ring indicator (Ring)	Green : indicate system operated in O-Ring mode
Fault indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 port indicator	Green for Link/Act indicator Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps
SFP Fiber port indicator	Green for port Link/Act
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual 100~240V AC power inputs in single power socket
Power Consumption (Typ.)	16 Watts
Overload Current Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	300 (W) x 165 (D) x 88 (H) mm(11.81 x 6.5 x 3.47 inch)
Weight (g)	2410g

***NOTE: This function is available by request only**

Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

DGS-R9 A BB CC-DD-AIO_S

Code Definition	10/100/1000Base-T(X) Port Number	100/1000Base-(F)X SFP Port Number	Additional Port Type	Fiber Optical Mode
Option	**- 8 :** 8 ports	**- 12 :** 12 ports	**- GP :** Gigabit SFP ports	**- MM :** multi-mode **- SS :** single-mode

	Model Name	Description
Available Model	DGS-R9812GP-SS-AIO_S_US	Industrial desktop type Layer-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, single-mode LC connector bypass, US power cord
	DGS-R9812GP-SS-AIO_S_EU	Industrial desktop type Layer-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, single-mode LC connector bypass, EU power cord
	DGS-R9812GP-SS-AIO_S_UK	Industrial desktop type Layer-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, single-mode LC connector bypass, UK power cord
	DGS-R9812GP-SS-AIO_S_JP	Industrial desktop type Layer-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, single-mode LC connector bypass, JP power cord
	DGS-R9812GP-MM-AIO_S_US	Industrial desktop type Layer-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, multi-mode LC connector bypass, US power cord
	DGS-R9812GP-MM-AIO_S_EU	Industrial desktop type Layer-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, multi-mode LC connector bypass, EU power cord
	DGS-R9812GP-MM-AIO_S_UK	Industrial desktop type Layer-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, multi-mode LC connector bypass, UK power cord
	DGS-R9812GP-MM-AIO_S_JP	Industrial desktop type Layer-3 20-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) ports and 12x100/1000Base-X, SFP socket, multi-mode LC connector bypass, JP power cord

Packing List

- DGS-R9812GP-AIO_S
- Console Cable
- Power Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP 1G series : 1Gbps SFP optical transceiver
- SFP 100 series : 100Mbps SFP optical transceiver
- Rack-Mount Kit

DGS-9168GP-AIO_S

DGS-9168GP-AIO_S

Industrial desktop type 24-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 8x100/1000Base-X, SFP socket, LC connector bypass

Features

- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Provide two optical bypass function
- Support IEEE 1588v2 clock synchronization
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- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
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- Supports IP-based bandwidth management
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- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- Supports backup unit device **DBU-01** to quickly configuration backup/restore

Introduction

DGS-9168GP-AIO_S is managed redundant ring Ethernet switch with 16x10/100/1000Base-T(X) ports and 8x100/1000Base-X SFP ports. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) / Open-Ring / O-Chain / MRP*NOTE / Fast Recovery and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 to 75°C.

***NOTE: This function is available by request only**

DGS-9168GP-AIO_S includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. DGS-9168GP-AIO_S can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet power substation and rolling stock application. ance

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- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
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- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
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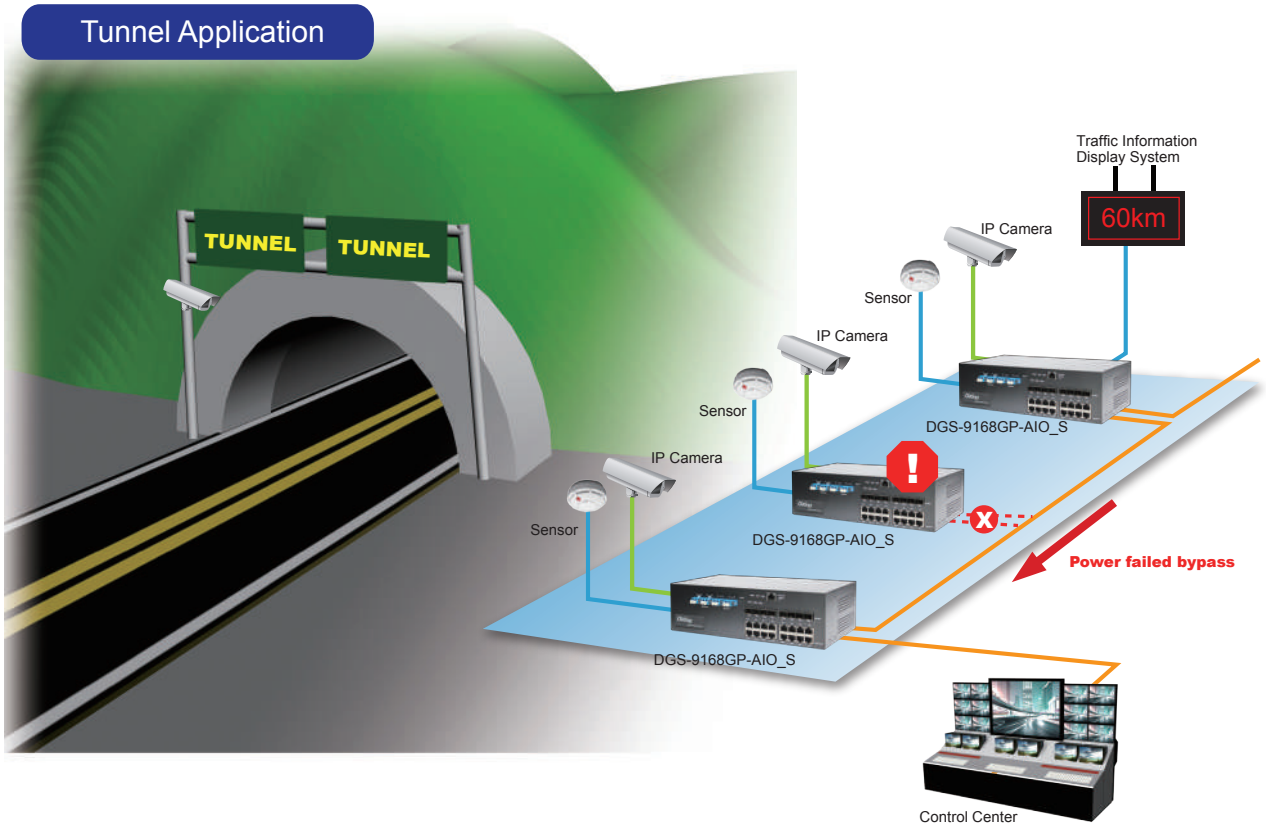
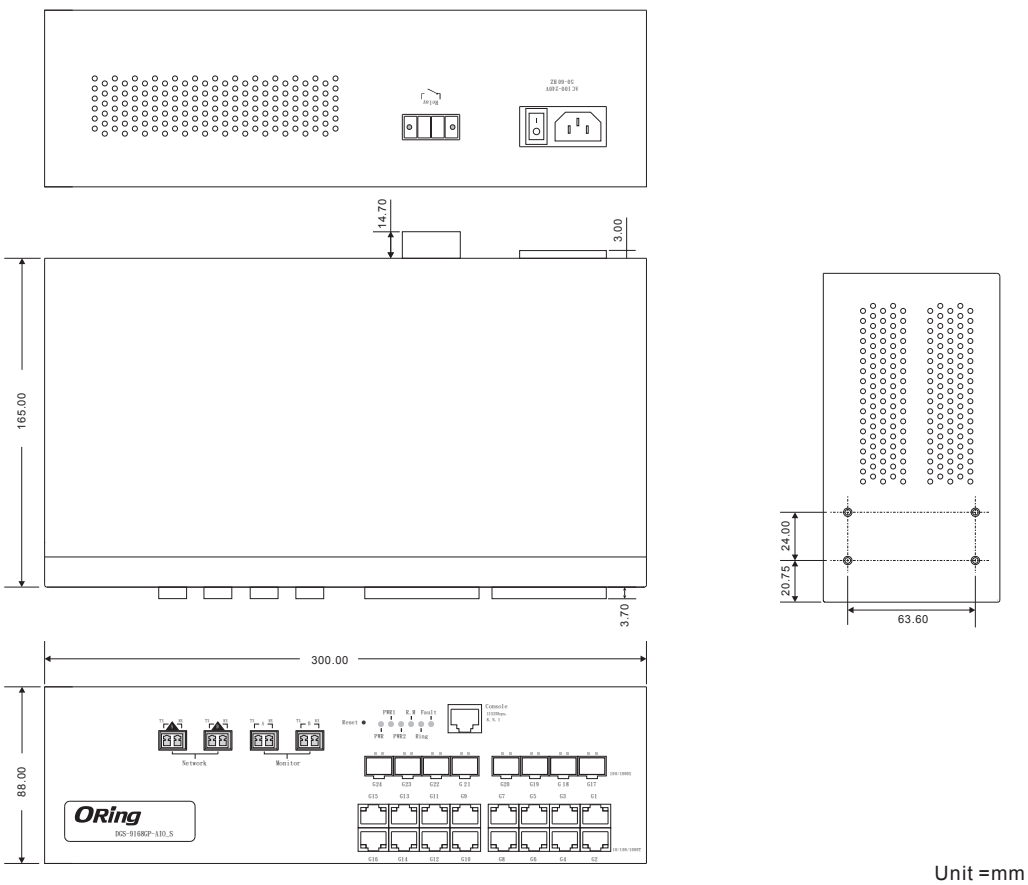
Tunnel Application



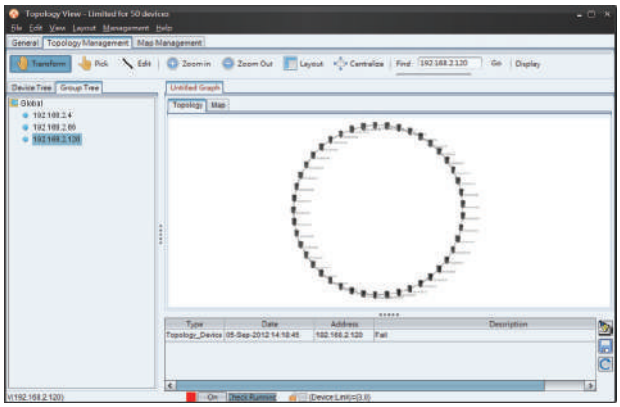
Dimensions



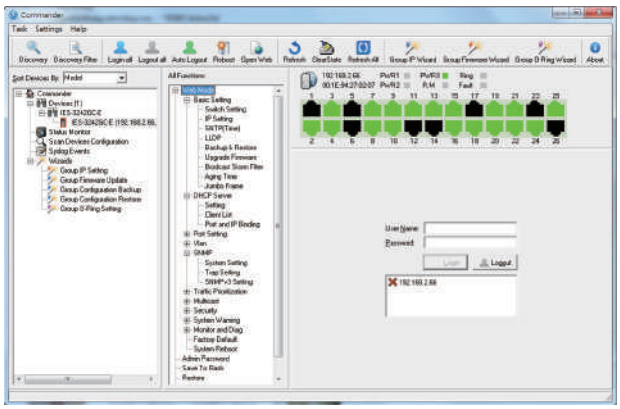
(Unit=mm)

Open-Vision

Open-Vision is a consummate Management Windows Utility with advanced technology and friendly, client- oriented interface. The end users can easily configure and set all of the managed switches in a local network simultaneously within one single step. The end users could be benefited from the powerful managed switch.



Topology View

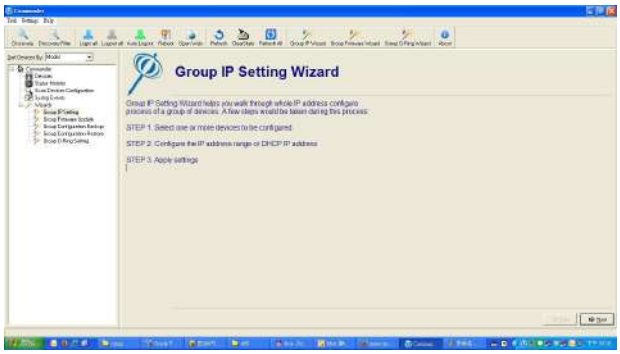


Commander

- **Powerful Wizards**:

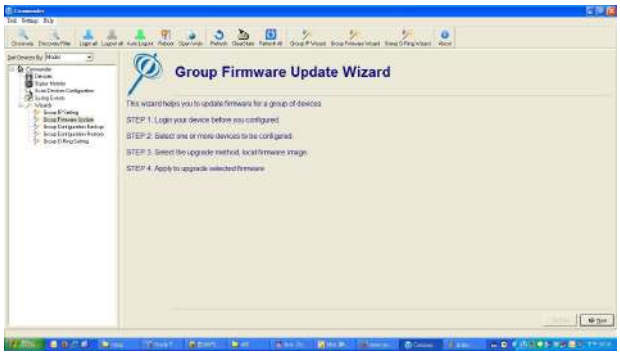
Group IP setting

After initial installation, IP address of all devices is default IP address. Group IP address can set increased IP address in certain range to all devices in a short time.



Group firmware upgrade

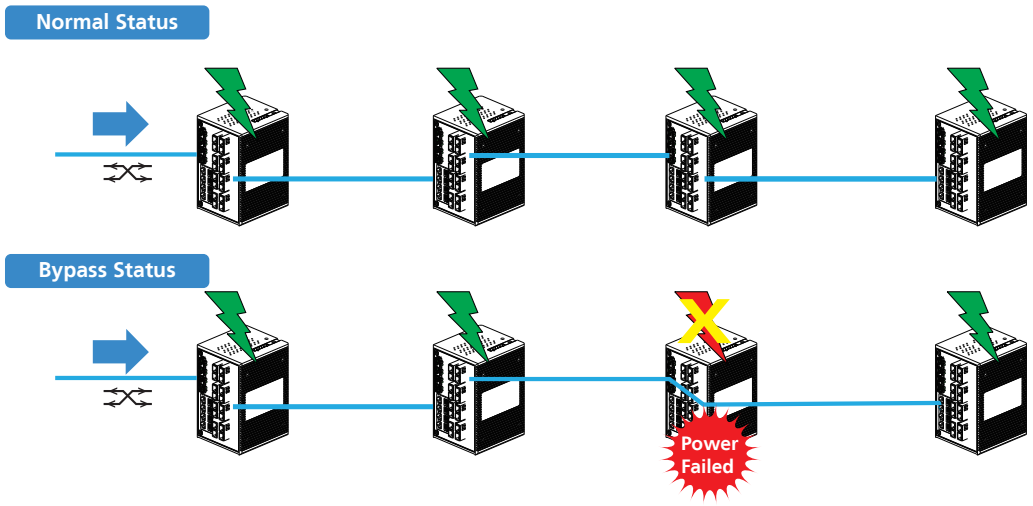
Wizard can upgrade new firmware to all devices selected by several simple steps.



Group redundant ring setting

Redundant ring is the most popular setting in the redundant switch. Wizard can configure redundant ring of all switches in several simple steps.

Bypass Technology



Specifications

ORing Switch Model	DGS-9168GP-SS-AIO_S	DGS-9168GP-MM-AIO_S
Physical Ports		
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	16	
100/1000Base-X with SFP port	8	
LC Bypass Port Type	Single-Mode	Multi-Mode
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8k	
Priority Queues	8	
Processing	Store-and-Forward	
Buffer Size	4Mbit	
Jumbo frame	Up to 9.6K Bytes	
Switch Properties	Switching latency: 7 us Switching bandwidth: 40Gbps Max. Number of Available VLANs: 4095 VLAN ID Range : 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define Https / SSH enhance network security	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security	

Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** Fast Recovery MSTP(STP / RSTP compatible)
RS-232 Serial Console Port	RS-232 in RJ-45 connector with console cable. 115200bps, 8, N, 1
Switch LED indicators	
Power Indicator (PWR/1/2)	Green : Power LED x 3
R.M. Indicator (R.M.)	Green : indicate system operated in O-Ring Master mode
O-Ring Indicator (Ring)	Green : indicate system operated in O-Ring mode
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 port indicator	Green for port Link/Act. Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps
SFP Fiber port indicator	Green for port Link/Act
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual 100~240V AC power inputs in single power socket
Power Consumption (Typ.)	25 Watts
Overload Current Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	300 (W) x 165 (D) x 88 (H) mm(11.81 x 6.5 x 3.47 inch)
Weight (g)	2326g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

***NOTE: This function is available by request only**

Ordering Information

DGS-9 AA B CC-DD-AIO_S

Code Definition	10/100/1000Base-T(X) Port Number	100/1000Base-(F)X SFP Port Number	Additional Port Type	Fiber Optical Mode
Option	**- 16 :** 16 ports	**- 8 :** 8 ports	**- GP :** Gigabit SFP ports	**- MM :** multi-mode **- SS :** single-mode

	Model Name	Description
Available Model	DGS-9168GP-SS-AIO_S_US	Industrial desktop type 24-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 8x100/1000Base-X, SFP socket, single-mode LC connector bypass, US power cord
	DGS-9168GP-SS-AIO_S_EU	Industrial desktop type 24-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 8x100/1000Base-X, SFP socket, single-mode LC connector bypass, EU power cord
	DGS-9168GP-SS-AIO_S_UK	Industrial desktop type 24-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 8x100/1000Base-X, SFP socket, single-mode LC connector bypass, UK power cord
	DGS-9168GP-SS-AIO_S_JP	Industrial desktop type 24-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 8x100/1000Base-X, SFP socket, single-mode LC connector bypass, JP power cord
	DGS-9168GP-MM-AIO_S_US	Industrial desktop type 24-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 8x100/1000Base-X, SFP socket, multi-mode LC connector bypass, US power cord
	DGS-9168GP-MM-AIO_S_EU	Industrial desktop type 24-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 8x100/1000Base-X, SFP socket, multi-mode LC connector bypass, EU power cord
	DGS-9168GP-MM-AIO_S_UK	Industrial desktop type 24-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 8x100/1000Base-X, SFP socket, multi-mode LC connector bypass, UK power cord
	DGS-9168GP-MM-AIO_S_JP	Industrial desktop type 24-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 8x100/1000Base-X, SFP socket, multi-mode LC connector bypass, JP power cord

Packing List

- DGS-9168GP-AIO
- Console Cable
- Power Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP 1G series : 1Gbps SFP optical transceiver
- SFP 100 series : 100Mbps SFP optical transceiver
- DBU-01 : Backup unit device

DES-3082GP-AIO_S Series

DES-3082GP-AIO_S Series

Industrial 10-port desktop managed bypass Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X, SFP socket, LC connector bypass

Features

- World's fastest Redundant Ethernet Ring: O-Ring (recovery time < 10ms over 250 units of connection)
- Open-Ring support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- MSTP/RSTP:2004/STP(IEEE 802.1s/w/D)
- Provide optical bypass function
- Support Modbus TCP protocol
- Support IPV6 new internet protocol version
- Support PTP Client (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Port lock to prevent access from unauthorized MAC address
- Windows utility (Open-Vision) support centralized management and configurable by Web-based ,Telnet, Console(CLI)
- Support two SFP connectors for 100/1000Base-X SFP Fiber
- Rigid IP-30 housing design
- Wall mounting enabled(optional)

R6 READY | O-Ring | Redundant PWR | -40~70°C Temperature

RoHS Lead Free CE FC

***NOTE: This function is available by request only**

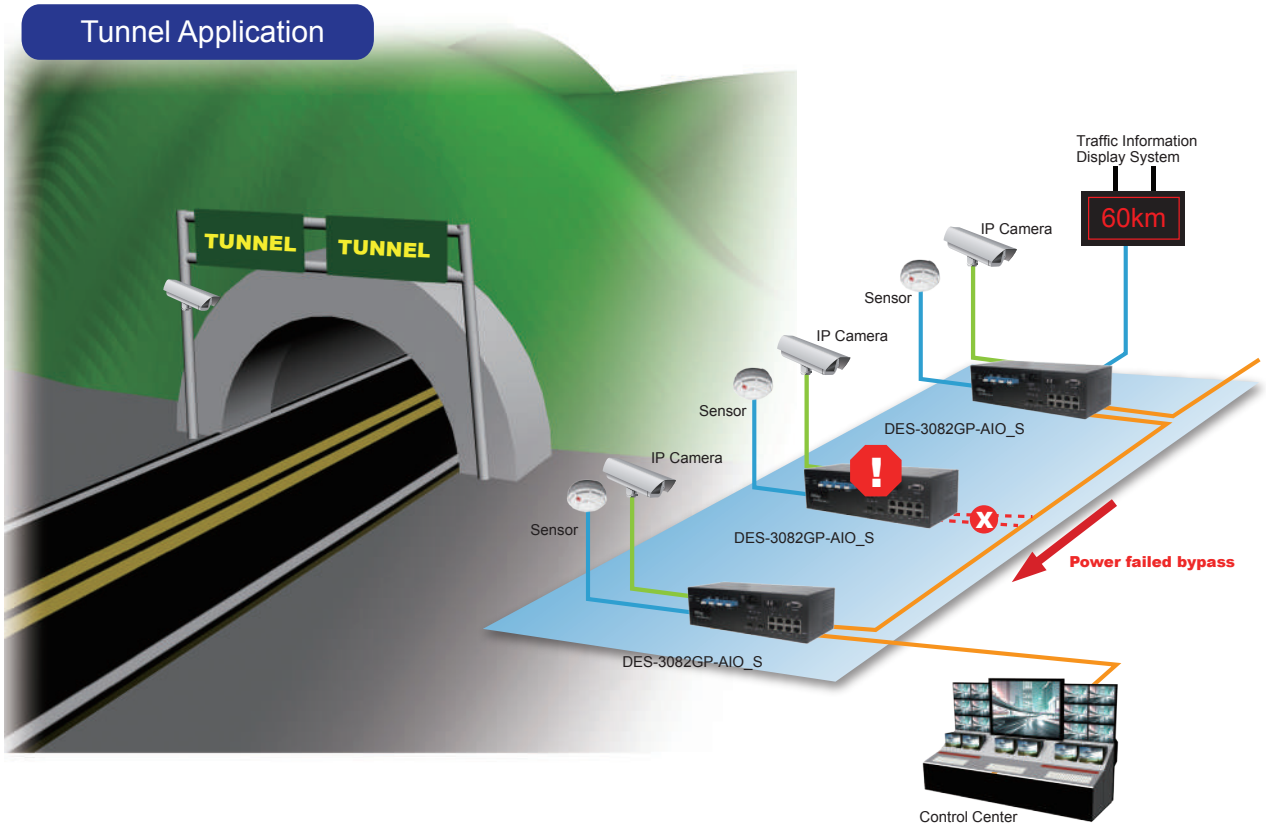
Introduction

DES-3082GP-AIO_S series are managed Redundant Ring Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X SFP ports. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. DES-3082GP-AIO_S series includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. DES-3082GP-AIO_S series can be managed centralized and convenient by a powerful windows utility -- Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for highly-managed Fiber Ethernet application.

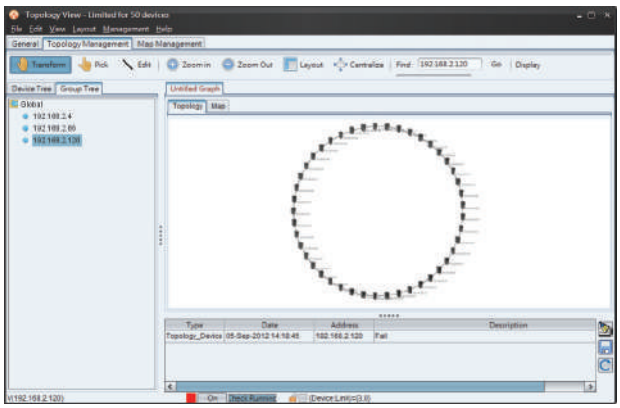
Open-Vision

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.

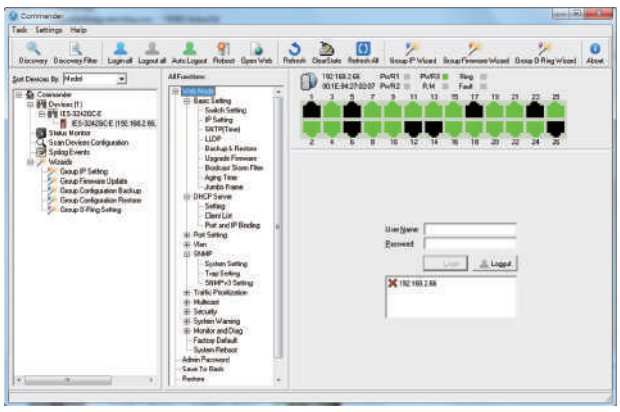
Tunnel Application



Network connection

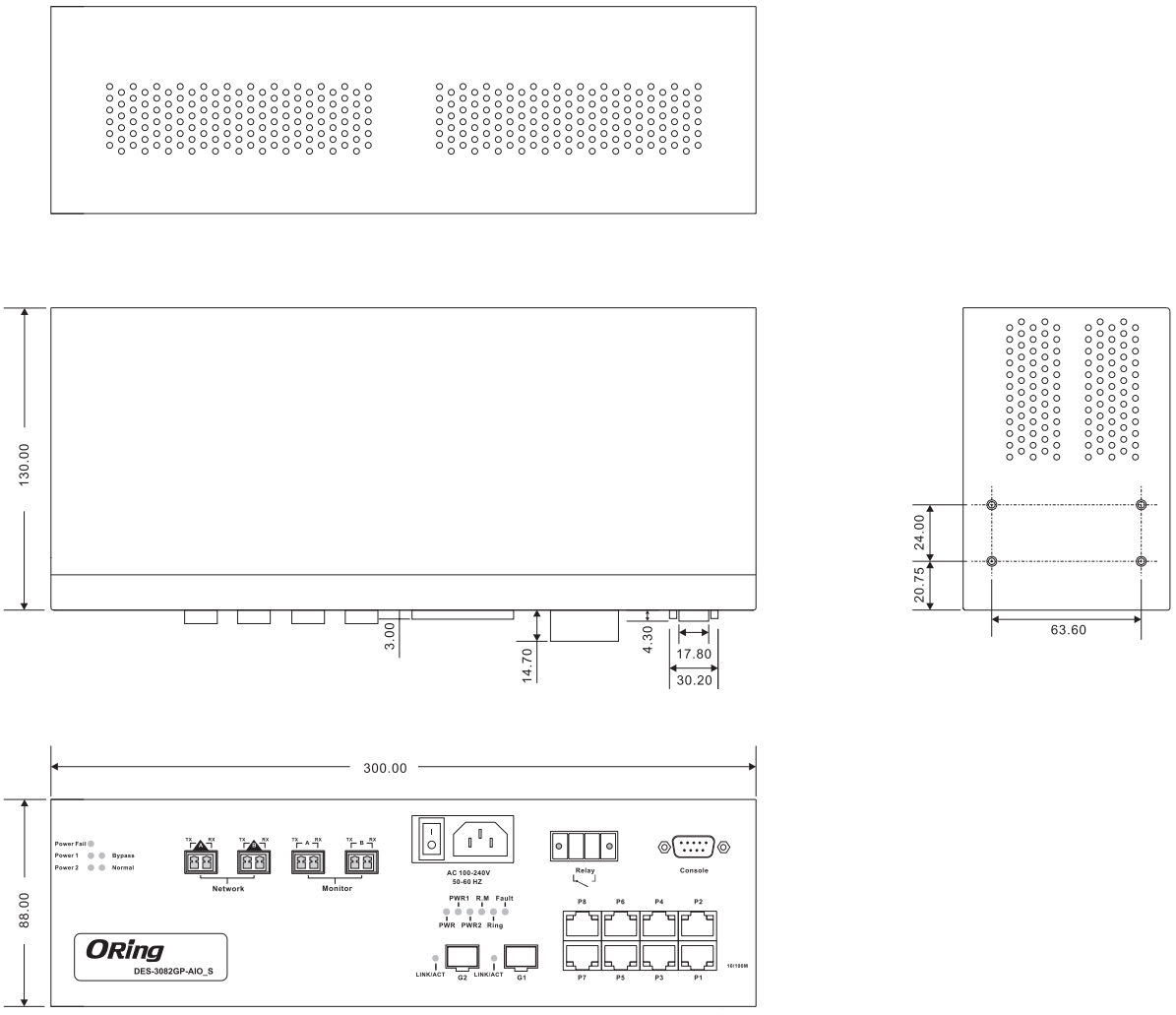


Topology View



Commander

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	DES-3082GP-SS-AIO_S	DES-3082GP-MM-AIO_S
Physical Ports		
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	8	
100/1000Base-X SFP Port	2	
LC Bypass Port Type	Single-Mode	Multi-Mode
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP(Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	

MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 5.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Ggiabit Combo Port with 10/100/1000Base-T(X) and 100/1000Base-X SFP ports Open-Ring O-Chain STP MRP***NOTE** RSTP:2004 MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
RS-232 Serial Console Port	RS-232 in DB9 Female connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power Indicator	Green : Power LED x 3
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode
O-Ring Indicator	Green : Indicate system operated in O-Ring mode
Fault Indicator	Amber : Indicate unexpected event occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual 100~240V AC power inputs in single power socket
Power Consumption (Typ.)	100VAC (24.2 Watts) / 240VDC (35.76 Watts)
Overload Current Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	300 (W) x 165 (D) x 88 (H) mm(11.18 x 6.5 x 3.47 inch)
Weight (g)	2350g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing

***NOTE: This function is available by request only**

Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

DES-3 AA B CC-DD-AIO_S

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type	Fiber Optical Mode
Option	**- 08 :** 8 ports	**- 2 :** 2 ports	**- GP :** Gigabit combo port100/1000Base-X SFP port	**- MM :** multi-mode **- SS :** single-mode

	Model Name	Description
Available Model	DES-3082GP-SS-AIO_S_US	Industrial 10-port desktop managed bypass Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X, SFP socket, single-mode LC connector bypass, US power cord
	DES-3082GP-SS-AIO_S_EU	Industrial 10-port desktop managed bypass Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X, SFP socket, single-mode LC connector bypass, EU power cord
	DES-3082GP-MM-AIO_S_US	Industrial 10-port desktop managed bypass Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X, SFP socket, multi-mode LC connector bypass, US power cord
	DES-3082GP-MM-AIO_S_EU	Industrial 10-port desktop managed bypass Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X, SFP socket, multi-mode LC connector bypass, EU power cord

Packing List

- DES-3082GP-AIO_S
- Power Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network
- Management Windows Utility Suit, 500 IP devices
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- Rack-Mount Kit (optional)

DES-3082GP-P

DES-3082GP-P

Industrial 10-port desktop managed Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X, SFP socket, power supply included

Features

- World's fastest Redundant Ethernet Ring: O-Ring (recovery time < 10ms over 250 units of connection)
- Open-Ring support the other vendor's ring technology in open architecture
- O-Chain allow multiple redundant network rings
- Support standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Support PTP Client (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus/TCP protocol
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support QoS (IEEE 802.1p and TOS/DiffServ) to increase determinism
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- Port lock to prevent access from unauthorized MAC address
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (Open-Vision) support centralized management and configurable by Web-based ,Telnet, Console(CLI)
- Rigid IP-30 housing design

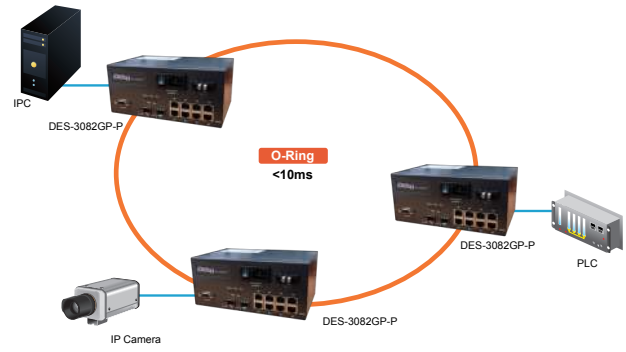
Introduction

DES-3082GP-P is desktop managed Redundant Ring Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X SFP ports. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. All function of DES-3082GP-P can be managed centralized and convenient by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for highly-managed Fiber Ethernet application.

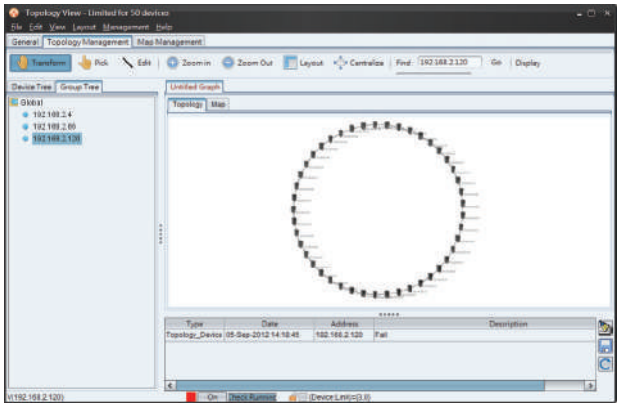
***NOTE: This function is available by request only**

Open-Vision

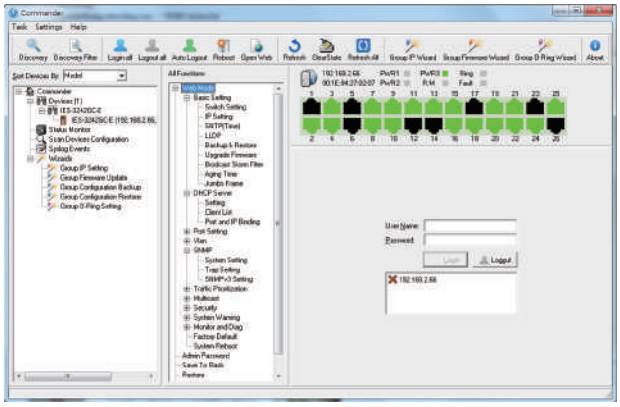
ORing's switches are intelligent switches. Different from other traditional redundant switches, Oring provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.

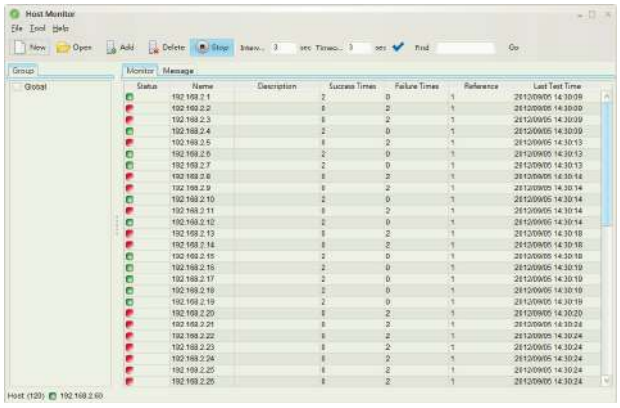


Network connection



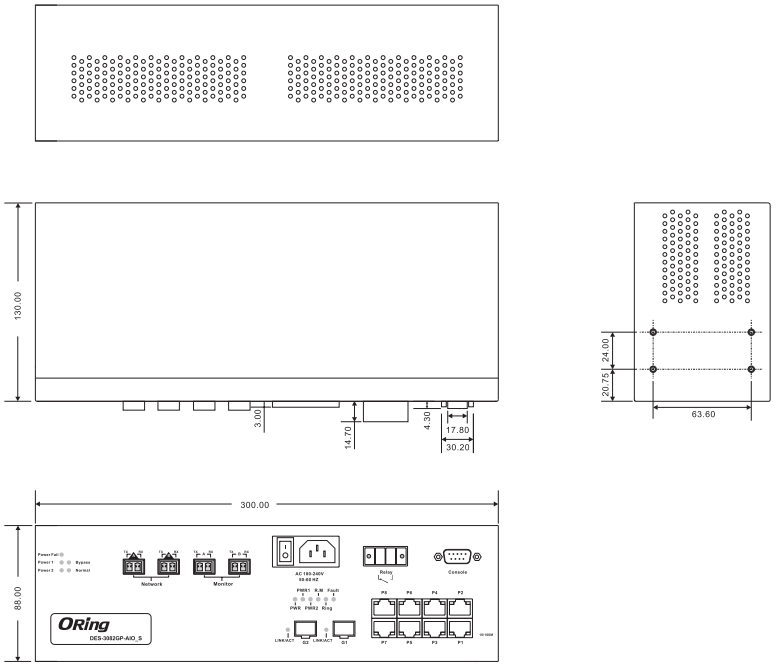
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	DES-3082GP-P
Physical Ports	
10/100 Base-T(X) Port in RJ45 Auto MDI/MDIX	8
100/1000Base-X SFP Port	2
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 5.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units Modbus/TCP supported QoS supported TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** STP/RSTP:2004/MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
RS-232 Serial Console Port	RS-232 in DB9 connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power Indicator	Green : Power LED x 1
Status Indicator (Status)	Green : Power LED x 1
R.M. Indicator (R.M)	Green : Indicate system operated in O-Ring master mode

***NOTE: This function is available by request only**

O-Ring Indicator (Ring)	Green : Indicate system operated in O-Ring mode
Fault Indicator (Fault)	Green for port Link/Act. Amber for Duplex/Collision
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	One 100~240VAC with power cord
Power Consumption (Typ.)	9 Watts
Overload Current Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	200 (W) x 130 (D) x 88(H) mm (7.87 x 5.12 x 3.46 inch)
Weight (g)	1385 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

DES-3 AA B CC-P

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 08 :** 8 ports	**- 2 :** 2 ports	**- GP :** 100/1000BaseX SFP port

	Model Name	Description
Available Model	DES-3082GP-P_US	Industrial 10-port desktop managed Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X, SFP socket, power supply included, US power cord
	DES-3082GP-P_EU	Industrial 10-port desktop managed Ethernet switch with 8x10/100Base-T(X) and 2x100/1000Base-X, SFP socket, power supply included, EU power cord

Packing List

- DES-3082GP-P
- Power Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP 1G series : 1Gbps SFP optical transceiver

DES-3073GC-P

DES-3073GC-P

Industrial 10-port desktop type managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket, power supply included

Features

- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus/TCP protocol
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support QoS (IEEE 802.1p and TOS/DiffServ) to increase determinism
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Supports **DDM** (Digital Diagnostic Monitoring) function
- Support TACACS+ and 802.1x User Authentication for security
- Support LLDP protocol
- Port lock to prevent access from unauthorized MAC address
- Event notification through Syslog, Email, SMTP trap, and Relay Output
- Windows utility (**Open-Vision**) support centralized management and configurable

  by Web-based ,Telnet, Console (CLI)
- Rigid IP-30 housing design

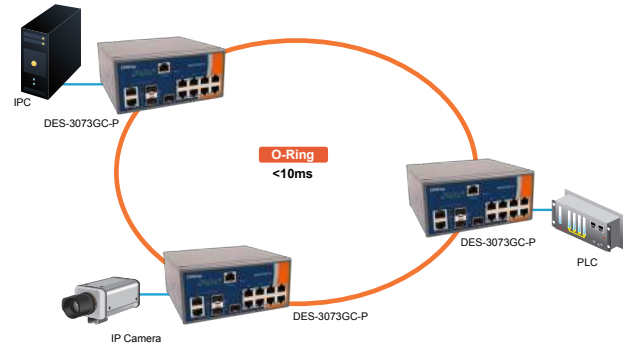
Introduction

DES-3073GC-P is desktop type managed Redundant Ring Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. All function of DES-3073GC-P can be managed centralized and convenient by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for highly-managed Fiber Ethernet application.

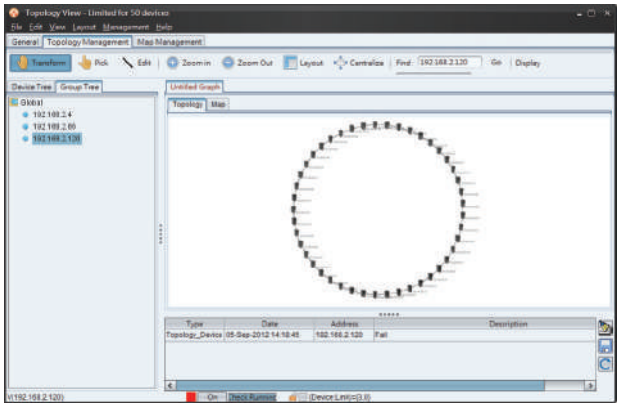
***NOTE: This function is available by request only**

Open-Vision

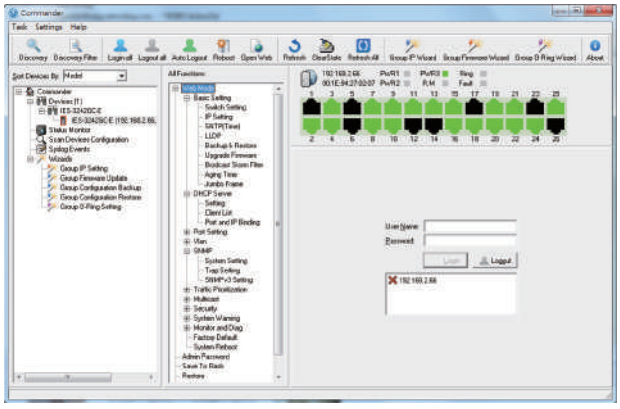
ORing's switches are intelligent switches. Different from other traditional redundant switches, Oring provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.

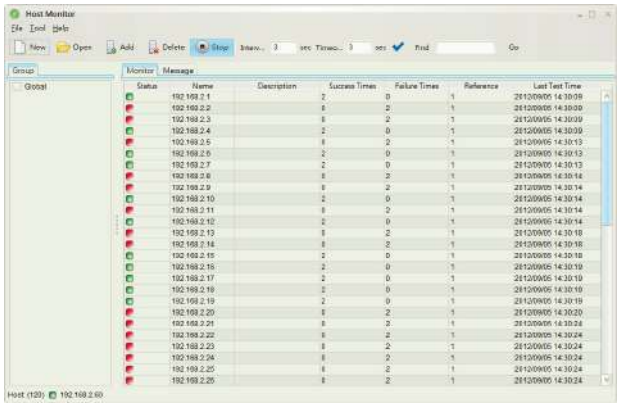


Network connection



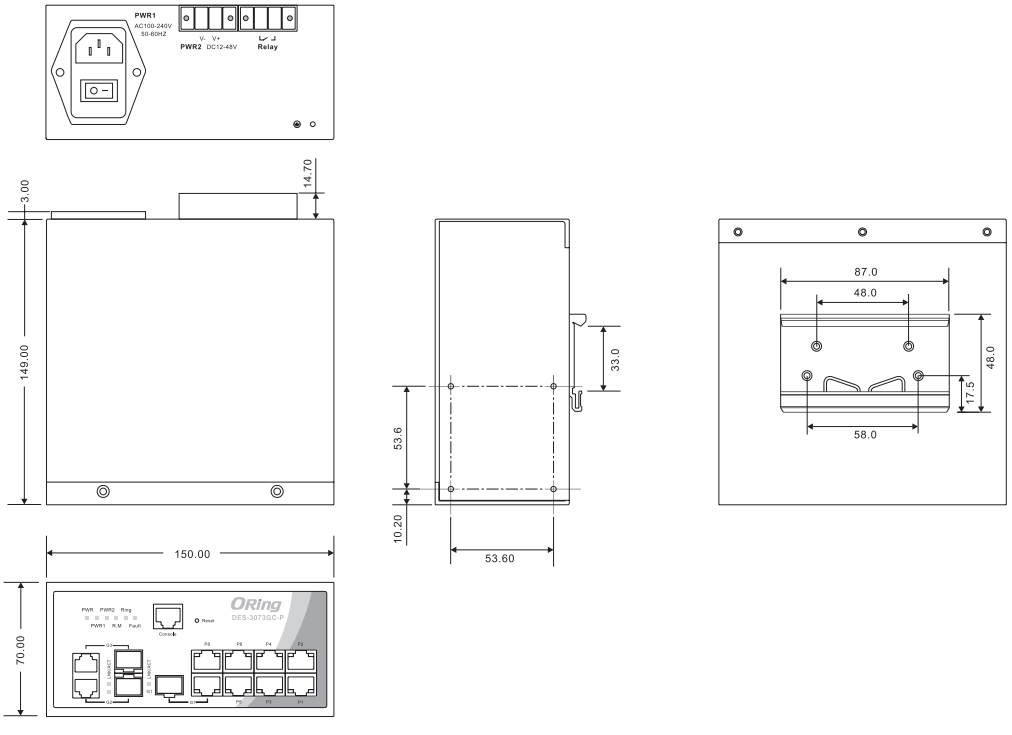
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	DES-3073GC-P
Physical Ports	
10/100 Base-T(X) Port in RJ45 Auto MDI/MDIX	7
Gigabit combo Ports with 10/100/1000Base-T(X) and 100/1000Base-X SFP Port	3
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 7.4Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units Modbus/TCP supported QoS supported TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** STP/RSTP:2004/MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
RS-232 Serial Console Port	RS-232 in DB9 connector with console cable. 9600bps, 8, N, 1
LED Indicators	
Power Indicator	Green : Power LED x 3
R.M. Indicator	Green : Indicate system operated in O-Ring master mode
O-Ring Indicator	Green : Indicate system operated in O-Ring mode

***NOTE: This function is available by request only**

Fault Indicator	Amber : Indicate unexpected event occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for 100Mbps indicator
100/1000Base-X SFP Port Indicator	Green for port Link/Act.
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	one 100~240VAC with power cord, one 12 ~ 48VDC power inputs at 2-pin terminal block
Power Consumption (Typ.)	12 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	150(W)x149(D)x70(H) mm (5.9 x 5.9 x 2.76 inch)
Weight (g)	1950 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

DES-3 AA B CC-P

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 07 :** 7 ports	**- 3 :** 3 ports	**- GC :** Gigabit combo port

	Model Name	Description
Available Model	DES-3073GC-P_US	Industrial 10-port desktop managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket, power supply included, US power cord
	DES-3073GC-P_EU	Industrial 10-port desktop managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket, power supply included, EU power cord
	DES-3073GC-P_UK	Industrial 10-port desktop managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket, power supply included, UK power cord
	DES-3073GC-P_JP	Industrial 10-port desktop managed Ethernet switch with 7x10/100Base-T(X) and 3xGigabit combo ports, SFP socket, power supply included, JP power cord

Packing List

- DES-3073GC-P
- AC Power Cable
- ORing Tool CD
- Console Cable
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- SFP100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply

IES-2050-M12

IES-2050-M12

Industrial 5-port lite-managed Ethernet switch with 5x10/100Base-T(X), M12 connector, IP-67 grade

Features

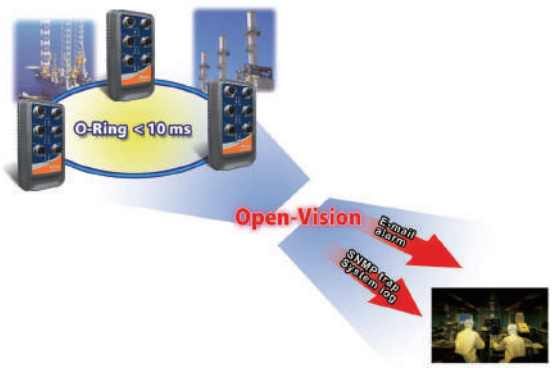
- Fastest Redundant Ethernet Ring : **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** support the multiple redundant ring technology
- Waterproof M12 connector (A-coding)
- Multiple Redundant Ethernet technology RSTP/STP, O-Ring supported to protect your industrial network
- SNMP v1/v2c/v3 support for secured network management
- Configurable by Web-based and Windows utility (**Open-Vision**)
- Supports 5 ports 10/100Base-T(X)
- Environmentally sealed by IP-67 grade protection and ultrarugged enclosure for toughest industrial usages
- Event notification through Syslog, Email, and SNMP trap
- DIN-Rail and wall mounting enabled
- Support LLDP Protocol

Introduction

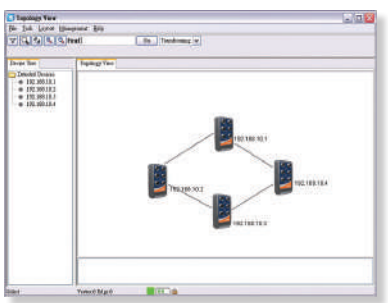
IES-2050-M12 is a waterproof lite-managed redundant ring Ethernet switch with 5x10/100Base-T(X) ports which is full compliant with IP-67 standard. With complete support of Ethernet redundancy protocol, Open-Ring, O-Chain and STP/RSTP(IEEE802.1w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technologies. It is specifically designed for the toughest industrial environments. In combination with its IP-67 design and the superb management functionalities. IES-2050-M12 is constructed of a rugged aluminum case and designed with IP-67 rated RJ45 Ethernet ports (M12 type connector), which provide a waterproof, and dust-tight connection. IES-2050-M12 can be managed centralized by a powerful windows utility — Open-Vision. In addition, the wide operating temperature, range from -40 to 70°C, can satisfy most of operating environment. The IES-2050-M12 can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network in outdoor. Therefore, IES-2050-M12 is one of the most reliable choices for industrial networking applications.

Open-Vision

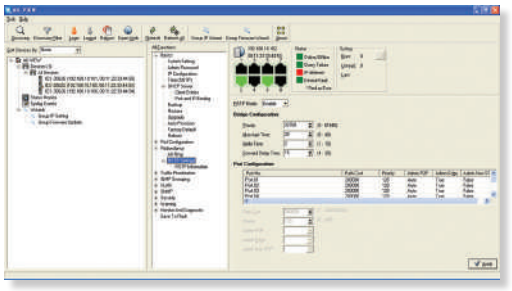
ORing's switches are intelligent switches. Being different from other traditional redundant switches, ORing provides a set of Windows utility (**Open-Vision**) for users to manage and monitor all of industrial Ethernet switches on the industrial network.

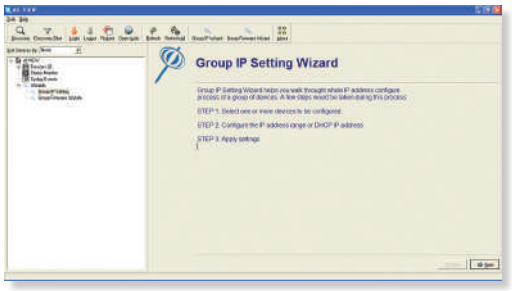


Network connection



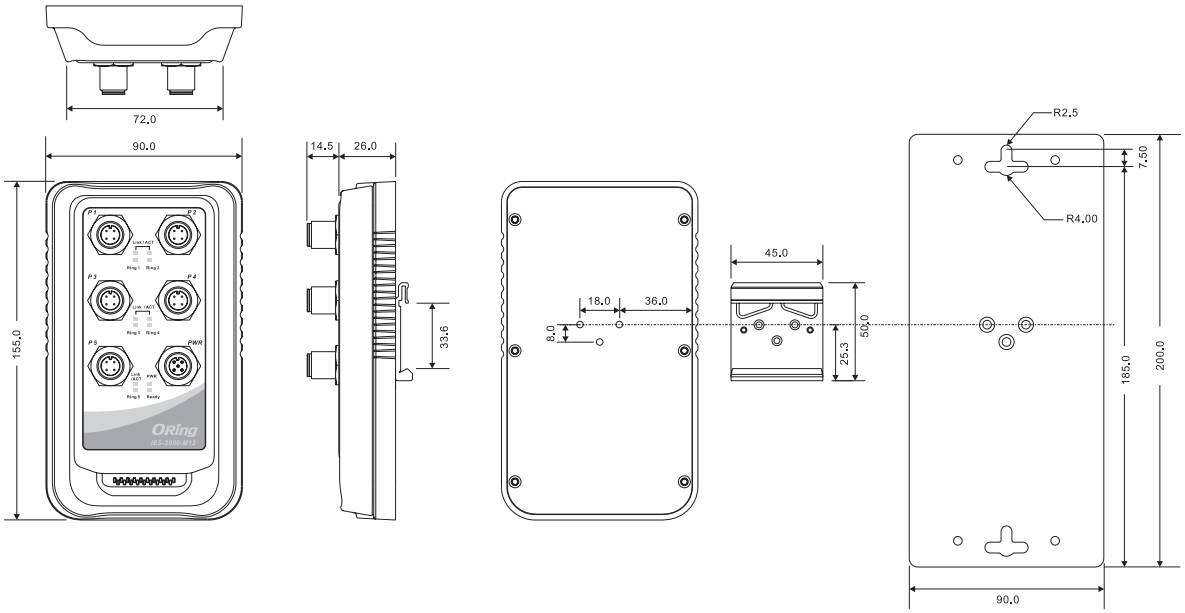
Topology View





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IES-2050-M12
Physical Ports	
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	5
Connector Type	M12 Waterproof (A-coding)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	2048 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching Dandwidth : 1.0Gbps VLAN: Port Based
Security Features	Enable/Disable ports VLAN to segregate and secure network traffic SNMPv3 encrypted authentication and access security
Software Features	STP/RSTP (IEEE 802.1D/w) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units Port configuration, status, statistics, monitoring, security

Network Redundancy	O-Ring Open-Ring O-Chain Fast recovery STP RSTP
LED Indicators	
Power Indicator	Green : Power LED x 1
Ready / Ring Master Indicator	Amber LED : Light on for system ready Light off for system faile
O-Ring Indicator	Amber : Indicate port operated in O-Ring mode (per port)
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. (per port)
Power	
Input Power	12~48 VDC power input
Connector Type	M12 Waterproof (A-coding)
Power Consumption (Typ.)	3 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-67
Dimensions (W x D x H)	90(W) x 40.5(D) x 155(H) mm (3.54x1.59x6.1 inch.)
Weight (g)	470 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	662,177
Warranty	5 years

Ordering Information

IES-2 AA B-M12

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 05:** 5 ports	**- 0:** 0 ports

	Model Name	Description
Available Model	IES-2050-M12	Industrial 5-port lite-managed Ethernet switch with 5x10/100Base-T(X), M12 connector, IP-67 grade

Packing List

- IES-2050-M12
- DIN-Rail Kit
- Wall-mount Kit
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful network management windows Utility Suite, 500 IP devices
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- M12C series, Cables with M12 connectors

CPGS-9160-M12-C

CPGS-9160-M12-C

3U CompactPCI EN50155 16-port managed Gigabit Ethernet Switch with 8x10/100/1000Base-T(X) in CompactPCI sockets, and 8x10/100/1000Base-T(X) in M12 connector

Features

- Leading EN50155 compliant Ethernet switch for rolling stock application
- Supports 3U and 16HP CompactPCI form factor and hot swapping
- PICMG 2.0 specification compatible
- Support 8x10/100/1000Base-T(X) ports on M12 ports
- Support Jumbo frame up to 9.6K Bytes
- Supports MSTP/RSTP/STP (IEEE 802.1s/w/D) for Ethernet Redundancy
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Supports SMTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- Supports SSH/Https security function
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3, RMON and 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- M12 connectors to guarantee reliable operation against environmental disturbances
- Multiple notification for warning of unexpected event
- Windows utility support centralized management and configurable by Web-based interface, Telnet and Console (CLI)
- Support LLDP Protocol
- Support hot-swappable technology

Full Gigabit EN50155 -40~70°C Temperature R6 READY RoHS Lead Free CE FC

Introduction

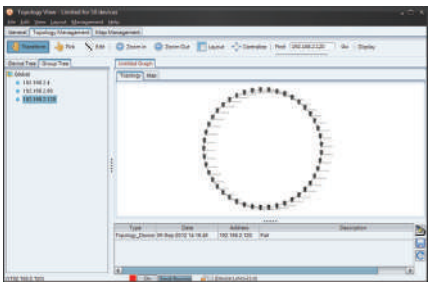
CPGS-9160-M12-C is CompactPCI managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports in CompactPCI socket and 8x10/100/1000Base-T(X) in M12 ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. CPGS-9160-M12-C supports wide operating temperature from -40°C to 70°C which can fulfill most of the requirement of operation environment. Except the Web-based interface, Telnet and console (CLI) configuration, CPGS-9160-M12-C can also be managed centralized and conveniently by Management Software. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.

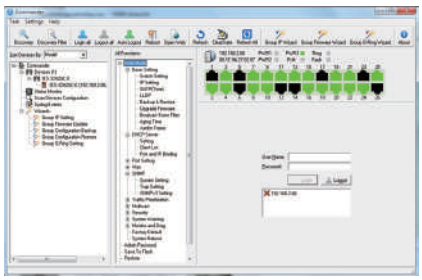
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

Open-Vision

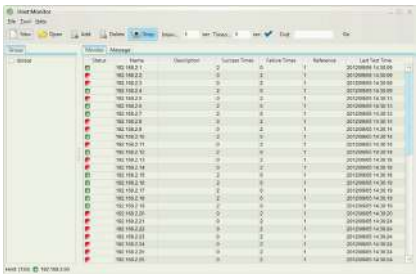
ORing's switches are intelligent switches. Different from other traditional redundant switches, Oring provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



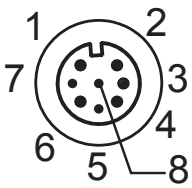
Host Momitor



Topology View

Pin Definition

PC (male) pin assignment	RS-232 with DB9 (female) pin assignment (RJ45 to DB9 cable)	RJ 45 pin assignment
Pin #2 RxD	Pin #2 TxD	Pin #2 TxD
Pin #3 TxD	Pin #3 RxD	Pin #3 RxD
Pin #5 GND	Pin #5 GND	Pin #5 GND



10/100Base-T(X)

PIN No.	Description
#6	TD+
#4	TD-
#5	RD+
#8	RD-

1000Base-T

PIN No.	Description
#1	BI_CD+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

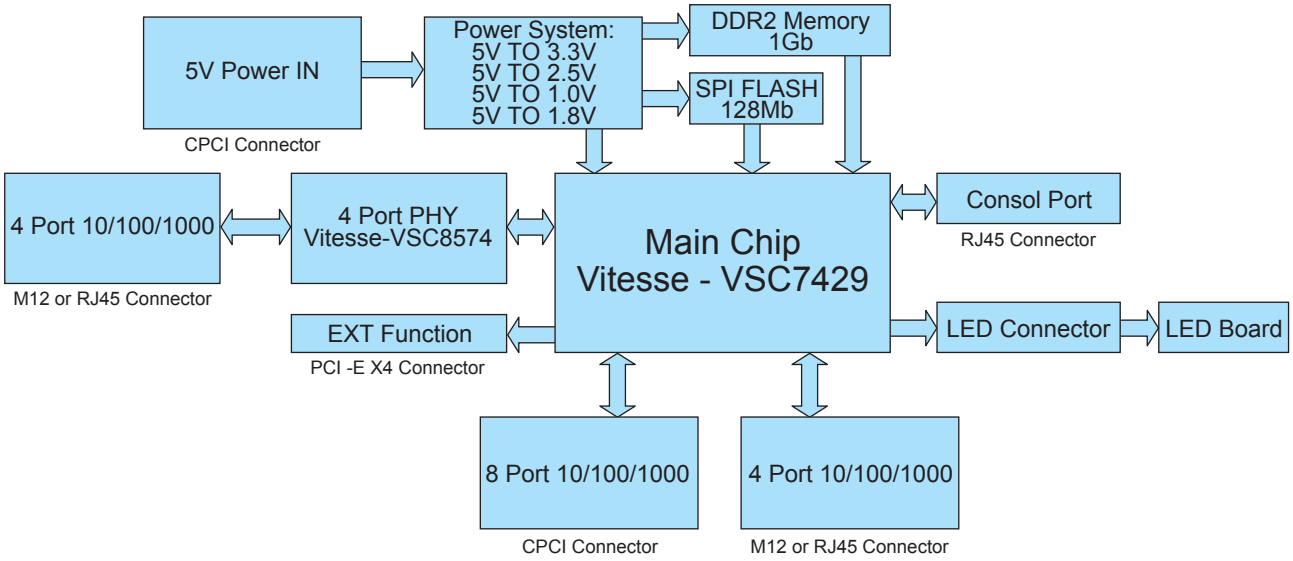
Backplane Pin Definition

Pin	Z	A	B	C	D	E	F	
25	GND	5V				5V	GND	
24	GND		5V				GND	
23	GND				5V		GND	
22	GND		GND				GND	
21	GND				GND		GND	
20	GND		GND				GND	
19	GND				GND		GND	
18	GND		GND				GND	
17	GND				GND		GND	
16	GND		GND				GND	
15	GND				GND		GND	
14	KEY AREA							J1
13								
12								
11	GND				GND		GND	
10	GND		GND				GND	
9	GND				GND		GND	
8	GND		GND				GND	
7	GND				GND		GND	
6	GND		GND				GND	
5	GND				GND		GND	
4	GND		HEALTHY#				GND	
3	GND				5V		GND	
2	GND		5V				GND	
1	GND	5V				5V	GND	

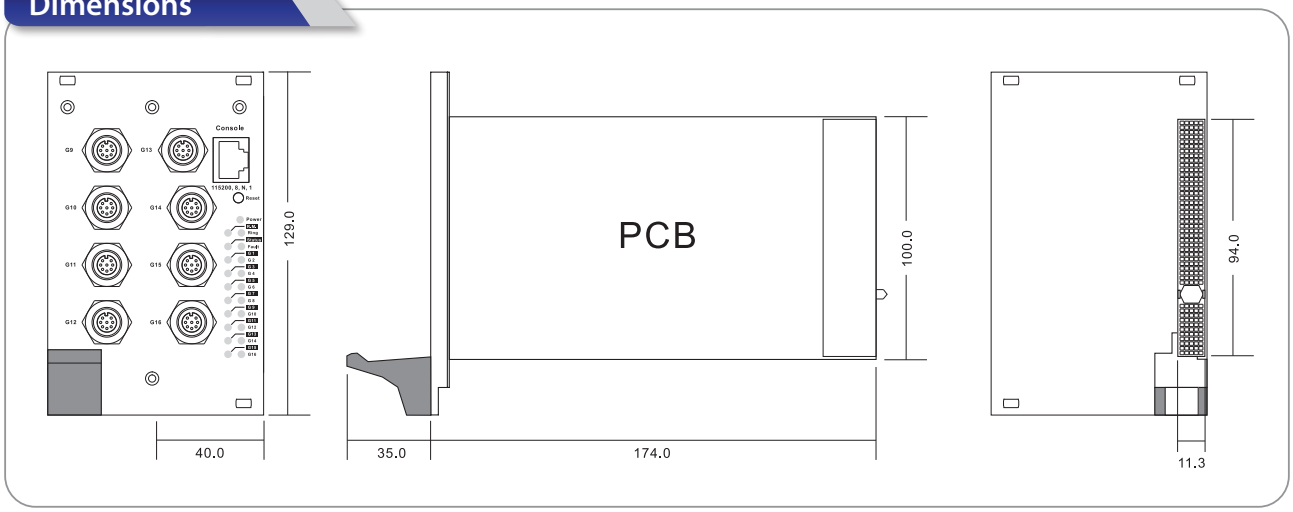
Pin	Z	A	B	C	D	E	F	
22	GND		STxD	GND		SRxD	GND	
21	GND			GND			GND	
20	GND	LED5_0	LED5_1	GND	LED7_0	LED7_1	GND	
19	GND	LED4_0	LED4_1	GND	LED6_0	LED6_1	GND	
18	GND	LED1_0	LED1_1	GND	LED3_0	LED4_1	GND	
17	GND	LED0_0	LED0_1	GND	LED2_0	LED2_1	GND	J2
16	GND	P7_A_P	P7_A_N	GND	P7_C_P	P7_C_N	GND	
15	GND	P7_B_P	P7_B_N	GND	P7_D_P	P7_D_N	GND	
14	GND	P6_A_P	P6_A_N	GND	P6_C_P	P6_C_N	GND	
13	GND	P6_B_P	P6_B_N	GND	P6_D_P	P6_D_N	GND	
12	GND	P5_A_P	P5_A_N	GND	P5_C_P	P5_C_N	GND	

11	GND	P5_B_P	P5_B_N	GND	P5_D_P	P5_D_N	GND	
10	GND	P4_A_P	P4_A_N	GND	P4_C_P	P4_C_N	GND	
9	GND	P4_B_P	P4_B_N	GND	P4_D_P	P4_D_N	GND	
8	GND	P3_A_P	P3_A_N	GND	P3_C_P	P3_C_N	GND	
7	GND	P3_B_P	P3_B_N	GND	P3_D_P	P3_D_N	GND	
6	GND	P2_A_P	P2_A_N	GND	P2_C_P	P2_C_N	GND	J2
5	GND	P2_B_P	P2_B_N	GND	P2_D_P	P2_D_N	GND	
4	GND	P1_A_P	P1_A_N	GND	P1_C_P	P1_C_N	GND	
3	GND	P1_B_P	P1_B_N	GND	P1_D_P	P1_D_N	GND	
2	GND	P0_A_P	P0_A_N	GND	P0_C_P	P0_C_N	GND	
1	GND	P0_B_P	P0_B_N	GND	P0_D_P	P0_D_N	GND	

Block Diagram



Dimensions



(Unit=mm)

Specifications

ORing Switch Model	CPGS-9160-M12-C
Physical Ports	
10/100/1000Base-T(X) Ports Auto MDI/MDIX	**16-port (8-port with CompactPCI interface, 8-port with M12 connector) (PICMG 2.0 compatible)**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 32Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	MSTP (STP / RSTP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power indicator (Power)	Green : Power LED x 1
Status Indicator (STA)	Green : Ethernet status indicator
R.M. indicator (R.M)	Green : indicate system operated in Ring Master mode
Ring indicator (Ring)	Green : indicate system operated in Ring mode
Fault indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) port indicator	Green for port Link/Act.
Power	
Power Input	CompactPCI bus powered (5VDC)
Power Consumption (Typ.)	21.5W
Overload Current Protection	Present

Physical Characteristic	
Dimension (W x D x H)	81.7 (W) x 209 (D) x 130.7 (H)mm
Weight (g)	563 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	EN 55022, EN 55024(CE EMC),EN 50121-4,EN 60945, FCC, EN 50121-3-2(EN50155,Pending), EN 61000-6-2, EN 61000-6-4,IEC 61000-3-2 ,IEC 61000-3-3
EMI	CISPR 22, EN 55011, FCC Part 15B Class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8 (PFMF) , EN61000-4-11 (DIP)
Shock	IEC 60068-2-27, IEC 61373(EN50155,Pending)
Free Fall	IEC 60068-2-31 (IEC 60068-2-32)
Vibration	IEC 60068-2-6, IEC 61373(EN50155,Pending)
Safety	EN60950-1
MTBF	549218 hours
Warranty	5 years

Ordering Information

CPGS-9 AA B –M12-C

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 16:** 16 ports	**- 0:** 0 ports

Available Model	Model Name	Description
	CPGS-9160-M12-C	3U CompactPCI EN50155 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) in CompactPCI socket, and 8x10/100/1000Base-T(X) in M12 connector

Packing List

- CPGS-9160-M12-C x 1
- Console Cable x 1
- Tool CD x 1
- Quick Installation Guide x 1

CPGS-9120-C

CPGS-9120-C

3U CompactPCI EN50155 12-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) in CompactPCI socket, and 4x10/100/1000Base-T(X) in RJ-45 connector

Features

- Leading EN50155 compliant Ethernet switch for rolling stock application
- Supports 3U and 8HP CompactPCI form factor and hot swapping
- PICMG 2.0 specification compatible
- Support 8x10/100/1000Base-T(X) ports on CompactPCI sockets and 4x10/100/1000Base-T(X) ports on copper ports
- Support Jumbo frame up to 9.6K Bytes
- Supports **O-Ring** (recovery time < 30ms over 250 units of connection), MSTP/RSTP/STP (IEEE 802.1s/w/D) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- Supports SSH/Https security function
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3, RMON and 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Multiple notification for warning of unexpected event
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based interface, Telnet and Console (CLI)
- Support LLDP Protocol
- Support hot-swappable technology

Full Gigabit | EN50155 | O-Ring | -40~70°C Temperature | R6 READY | RoHS Lead Free | CE | FC

Introduction

ORing's CompactPCI series Ethernet switches are designed for industrial applications, such as factory automation, vehicle, and railway applications. CPGS-9120-C is CompactPCI managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports in CompactPCI socket and 4x10/100/1000Base-T(X) copper ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. CPGS-9120-C supports wide operating temperature from -40 to 70 °C which can fulfill most of the requirement of operation environment. Except the Web-based interface, Telnet and console (CLI) configuration, CPGS-9120-C can also be managed centralized and conveniently by Open-Vision. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

***NOTE: This function is available by request only**

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
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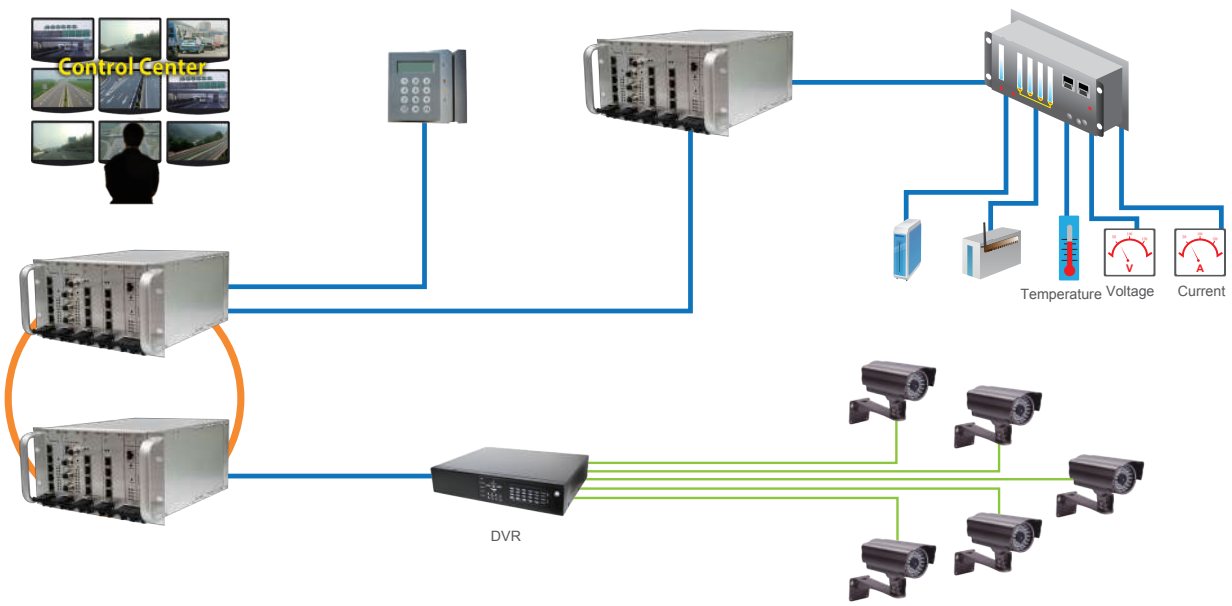
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



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Open-Vision

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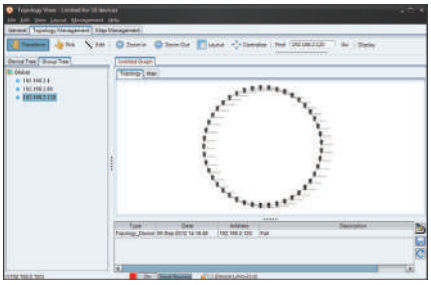
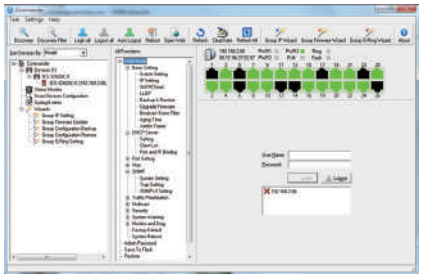
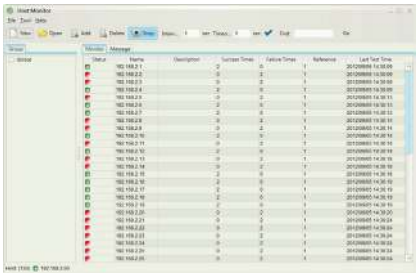


Commander



Host Momitor



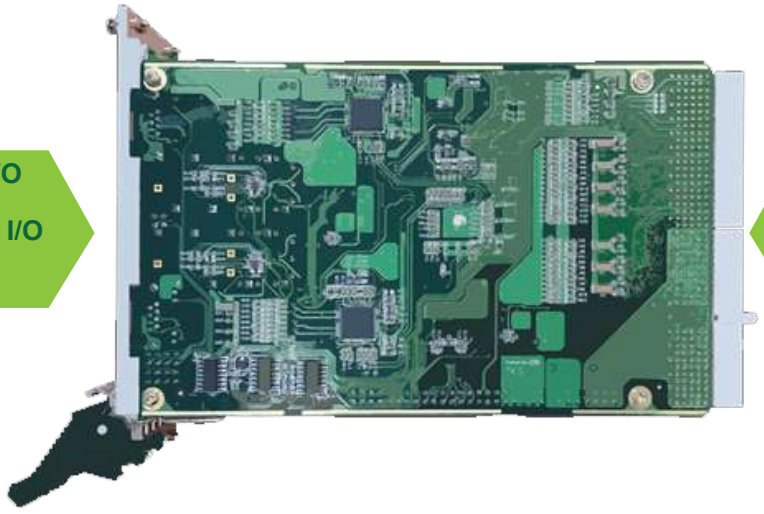
Topology View

I/O Functional

Console Pot I/O

4-Port Gigabit I/O

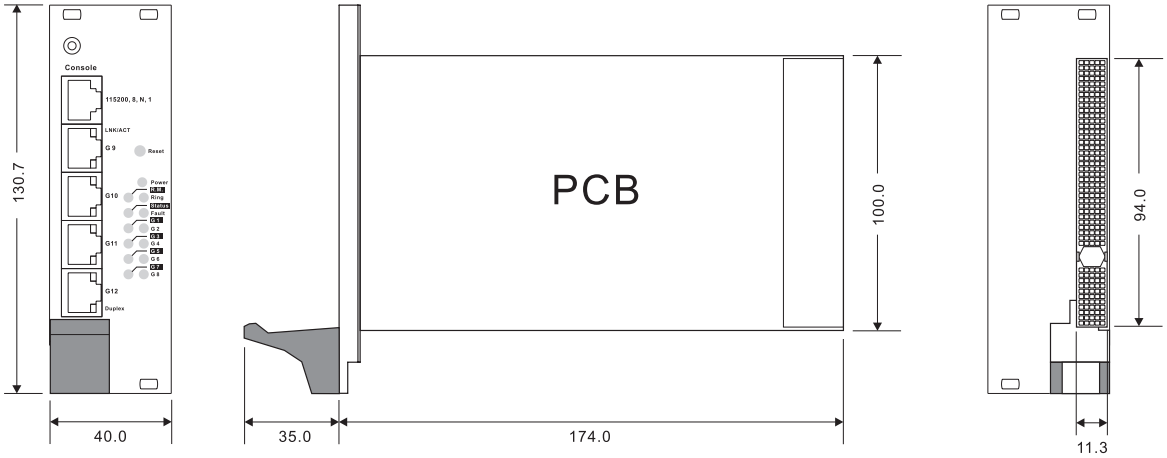
LED Indicator



8-Port Gigabit I/O

Power input

Dimensions



(Unit=mm)

Console Port Pin DeFinition

PC (male) pin assignment	RS-232 with DB9 (female) pin assignment (RJ45 to DB9 cable)	RJ 45 pin assignment
Pin #2 RxD	Pin #2 RxD	Pin #2 RxD
Pin #3 TxD	Pin #3 TxD	Pin #3 TxD
Pin #5 GND	Pin #5 GND	Pin #5 GND

Backplane Pin Definition

Pin	Z	A	B	C	D	E	F	
25	GND	5V			3.3V	5V	GND	
24	GND		5V				GND	
23	GND	3.3V			5V		GND	
22	GND		GND	3.3V			GND	
21	GND	3.3V			GND		GND	
20	GND		GND				GND	
19	GND	3.3V			GND		GND	
18	GND		GND	3.3V			GND	
17	GND	3.3V			GND		GND	
16	GND		GND				GND	
15	GND	3.3V			GND		GND	
14	KEY AREA							J1
13								
12								
11	GND				GND		GND	
10	GND		GND	3.3V			GND	
9	GND				GND		GND	
8	GND		GND				GND	
7	GND				GND		GND	
6	GND		GND	3.3V			GND	
5	GND				GND		GND	
4	GND		HEALTHY#				GND	
3	GND				5V		GND	
2	GND		5V				GND	
1	GND	5V	-12V		+12V	5V	GND	
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**	
22	GND		STxD	GND		SRxD	GND	
21	GND			GND			GND	
20	GND	LED5_0	LED5_1	GND	LED7_0	LED7_1	GND	J2
19	GND	LED4_0	LED4_1	GND	LED6_0	LED6_1	GND	
18	GND	LED1_0	LED1_1	GND	LED3_0	LED4_1	GND	

17	GND	LED0_0	LED0_1	GND	LED2_0	LED2_1	GND	
16	GND	P7_A_P	P7_A_N	GND	P7_C_P	P7_C_N	GND	
15	GND	P7_B_P	P7_B_N	GND	P7_D_P	P7_D_N	GND	
14	GND	P6_A_P	P6_A_N	GND	P6_C_P	P6_C_N	GND	
13	GND	P6_B_P	P6_B_N	GND	P6_D_P	P6_D_N	GND	
12	GND	P5_A_P	P5_A_N	GND	P5_C_P	P5_C_N	GND	
11	GND	P5_B_P	P5_B_N	GND	P5_D_P	P5_D_N	GND	
10	GND	P4_A_P	P4_A_N	GND	P4_C_P	P4_C_N	GND	
9	GND	P4_B_P	P4_B_N	GND	P4_D_P	P4_D_N	GND	J2
8	GND	P3_A_P	P3_A_N	GND	P3_C_P	P3_C_N	GND	
7	GND	P3_B_P	P3_B_N	GND	P3_D_P	P3_D_N	GND	
6	GND	P2_A_P	P2_A_N	GND	P2_C_P	P2_C_N	GND	
5	GND	P2_B_P	P2_B_N	GND	P2_D_P	P2_D_N	GND	
4	GND	P1_A_P	P1_A_N	GND	P1_C_P	P1_C_N	GND	
3	GND	P1_B_P	P1_B_N	GND	P1_D_P	P1_D_N	GND	
2	GND	P0_A_P	P0_A_N	GND	P0_C_P	P0_C_N	GND	
1	GND	P0_B_P	P0_B_N	GND	P0_D_P	P0_D_N	GND	
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**	

Specifications

ORing Switch Model	CPGS-9120-C
Physical Ports	
10/100/1000Base-T(X) Ports Auto MDI/MDIX	12-port (8-port with CompactPCI interface, 4-port with RJ-45 connector) (PICMG 2.0 compatible)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8K
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 24Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security

Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP*NOTE MSTP (STP / RSTP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power Indicator (Power)	Green : Power LED x 1
Status Indicator (STA)	Green : Ethernet status indicator
R.M. Indicator (R.M.)	Green : indicate system operated in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicate system operated in O-Ring mode
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) port indicator	Green for port Link/Act.
Power	
Power Input	CompactPCI bus powered (12VDC)
Power Consumption (Typ.)	7.5 Watts
Overload Current Protection	Present
Physical Characteristics	
Dimension (W x D x H)	40 (W) x 209 (D) x 130.7 (H)mm (1.58 x 8.23 x 5.15 inch)
Weight (g)	330g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

CPGS-9AAB-C

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	CompactPCI Version
Option	**- 12:** 12 ports	**- 0:** 0 ports	**- C:** PICMG 2.0 specification

Available Model	Model Name	Description
	CPGS-9120-C	3U CompactPCI EN50155 12-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) in CompactPCI socket, and 4x10/100/1000Base-T(X) in RJ-45 connector

Packing List

- CPGS-9120-C
- ORing Tool CD
- Quick Installation Guide
- Console Cable

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful network management windows Utility Suite, 500 IP devices

***NOTE: This function is available by request only**

CPGS-9120-M12-C

CPGS-9120-M12-C

3U CompactPCI EN50155 12-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) in CompactPCI sockets, and 4x10/100/1000Base-T(X) in M12 connector

Features

- Leading EN50155 compliant Ethernet switch for rolling stock application
- Supports 3U and 8HP CompactPCI form factor and hot swapping
- PICMG 2.0 specification compatible
- Support 8x10/100/1000Base-T(X) ports on CompactPCI sockets and 4x10/100/1000Base-T(X) M12 connector ports
- Support Jumbo frame up to 9.6K Bytes
- Supports **O-Ring** (recovery time < 30ms over 250 units of connection), MSTP/RSTP/STP (IEEE 802.1s/w/D) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
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- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
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- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Supports SMTP client
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- Supports application-based QoS management
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- Multiple notification for warning of unexpected event
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Full Gigabit | EN50155 | O-Ring | -40~70°C Temperature

R6 READY | RoHS Lead Free | CE | FC

Introduction

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Except the Web-based interface, Telnet and console (CLI) configuration, CPGS-9120-M12-C can also be managed centralized and conveniently by Open-Vision. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

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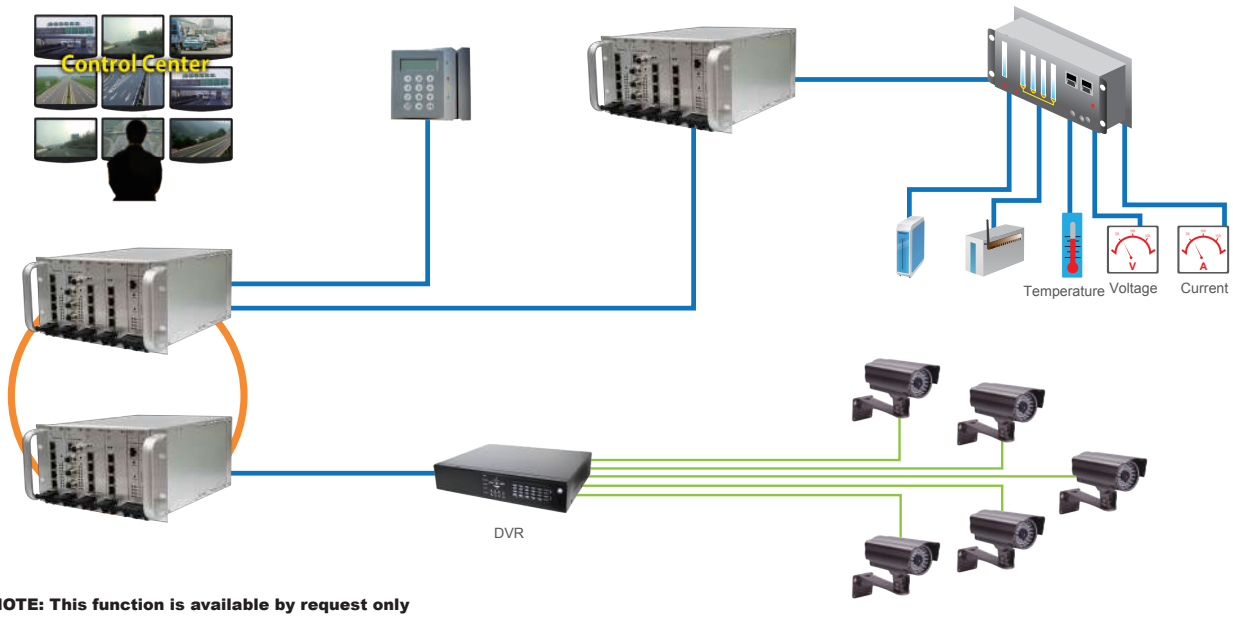

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Open-Vision

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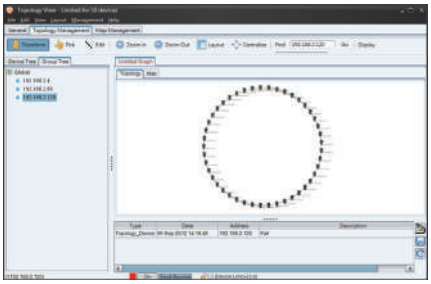
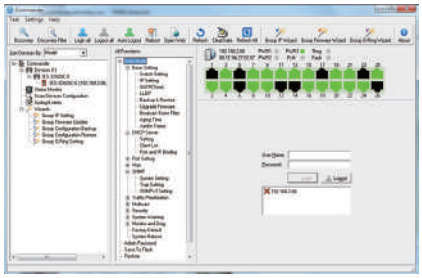
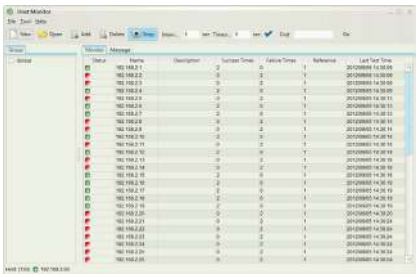


Commander



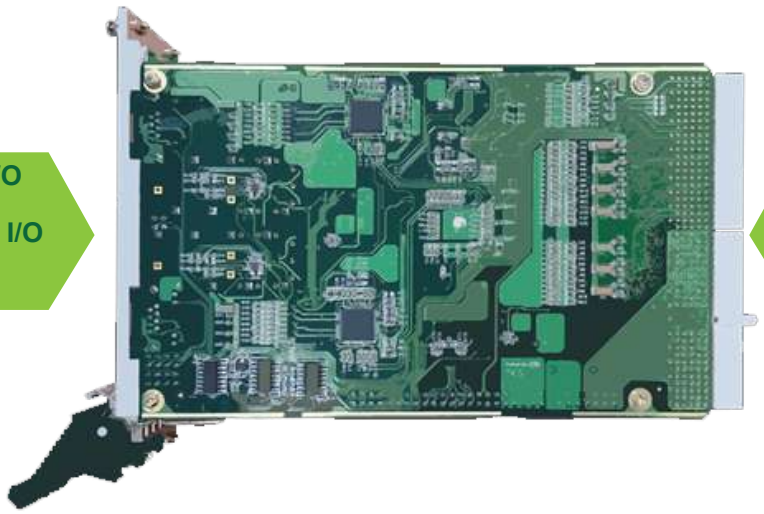
Host Momitor



Topology View

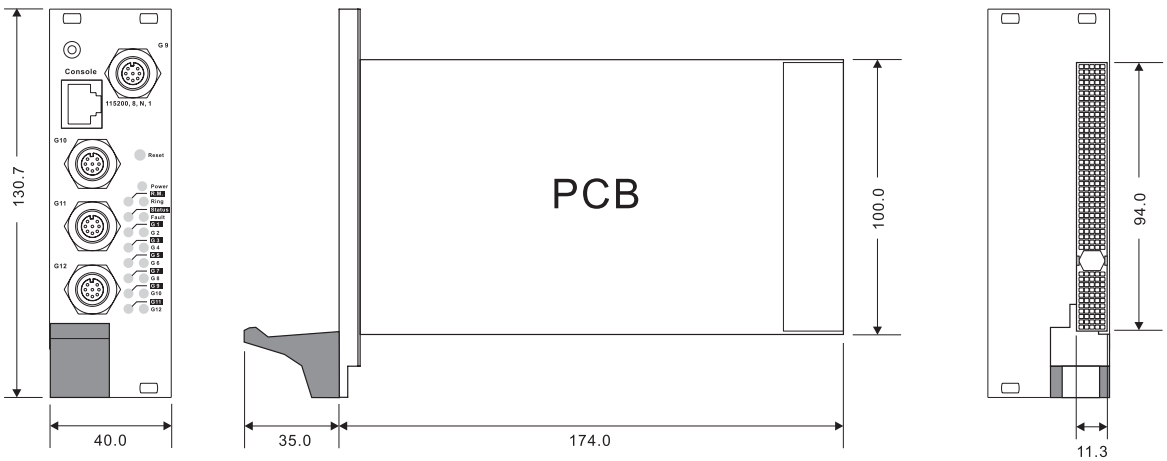
I/O Functional

Console Pot I/O
4-Port Gigabit I/O
LED Indicator



8-Port Gigabit I/O
Power input

Dimensions

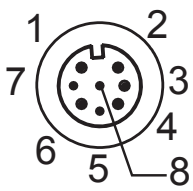


(Unit=mm)

Console Port Pin DeFinition

PC (male) pin assignment	RS-232 with DB9 (female) pin assignment (RJ45 to DB9 cable)	RJ 45 pin assignment
Pin #2 RxD	Pin #2 TxD	Pin #2 TxD
Pin #3 TxD	Pin #3 RxD	Pin #3 RxD
Pin #5 GND	Pin #5 GND	Pin #5 GND

M12/8P Pin Definition



10/100Base-T(X)

PIN No.	Description
#6	TD+
#4	TD-
#5	RD+
#8	RD-

1000Base-T

PIN No.	Description
#1	BI_CD+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

Backplane Pin Definition

Pin	Z	A	B	C	D	E	F	
25	GND	5V			3.3V	5V	GND	
24	GND		5V				GND	
23	GND	3.3V			5V		GND	
22	GND		GND	3.3V			GND	
21	GND	3.3V			GND		GND	
20	GND		GND				GND	
19	GND	3.3V			GND		GND	
18	GND		GND	3.3V			GND	
17	GND	3.3V			GND		GND	
16	GND		GND				GND	
15	GND	3.3V			GND		GND	
14	KEY AREA							J1
13								
12								
11	GND				GND		GND	
10	GND		GND	3.3V			GND	
9	GND				GND		GND	
8	GND		GND				GND	
7	GND				GND		GND	
6	GND		GND	3.3V			GND	
5	GND				GND		GND	

4	GND		HEALTHY#				GND	
3	GND				5V		GND	
2	GND		5V				GND	
1	GND	5V	-12V		+12V	5V	GND	
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**	
22	GND		STxD	GND		SRxD	GND	J2
21	GND			GND			GND	
20	GND	LED5_0	LED5_1	GND	LED7_0	LED7_1	GND	
19	GND	LED4_0	LED4_1	GND	LED6_0	LED6_1	GND	
18	GND	LED1_0	LED1_1	GND	LED3_0	LED4_1	GND	
17	GND	LED0_0	LED0_1	GND	LED2_0	LED2_1	GND	
16	GND	P7_A_P	P7_A_N	GND	P7_C_P	P7_C_N	GND	
15	GND	P7_B_P	P7_B_N	GND	P7_D_P	P7_D_N	GND	
14	GND	P6_A_P	P6_A_N	GND	P6_C_P	P6_C_N	GND	
13	GND	P6_B_P	P6_B_N	GND	P6_D_P	P6_D_N	GND	
12	GND	P5_A_P	P5_A_N	GND	P5_C_P	P5_C_N	GND	
11	GND	P5_B_P	P5_B_N	GND	P5_D_P	P5_D_N	GND	
10	GND	P4_A_P	P4_A_N	GND	P4_C_P	P4_C_N	GND	
9	GND	P4_B_P	P4_B_N	GND	P4_D_P	P4_D_N	GND	
8	GND	P3_A_P	P3_A_N	GND	P3_C_P	P3_C_N	GND	
7	GND	P3_B_P	P3_B_N	GND	P3_D_P	P3_D_N	GND	
6	GND	P2_A_P	P2_A_N	GND	P2_C_P	P2_C_N	GND	
5	GND	P2_B_P	P2_B_N	GND	P2_D_P	P2_D_N	GND	
4	GND	P1_A_P	P1_A_N	GND	P1_C_P	P1_C_N	GND	
3	GND	P1_B_P	P1_B_N	GND	P1_D_P	P1_D_N	GND	
2	GND	P0_A_P	P0_A_N	GND	P0_C_P	P0_C_N	GND	
1	GND	P0_B_P	P0_B_N	GND	P0_D_P	P0_D_N	GND	
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**	

Specifications

ORing Switch Model	CPGS-9120-M12-C
Physical Ports	
10/100/1000Base-T(X) Ports Auto MDI/MDIX	12-port (8-port with CompactPCI interface, 4-port with M12 A-coding connector) (PICMG 2.0 compatible)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)

MAC Table	8K
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 24Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP*NOTE MSTP (STP / RSTP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power Indicator (Power)	Green : Power LED x 1
Status Indicator (STA)	Green : Ethernet status indicator
R.M. Indicator (R.M.)	Green : indicate system operated in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicate system operated in O-Ring mode
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) port indicator	Green for port Link/Act.
Power	
Power Input	CompactPCI bus powered (12VDC)
Power Consumption (Typ.)	7.5 Watts
Overload Current Protection	Present
Physical Characteristics	
Dimension (W x D x H)	40 (W) x 209 (D) x 130.7 (H)mm (1.58 x 8.23 x 5.15 inch)
Weight (g)	340g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

***NOTE: This function is available by request only**

Ordering Information

CPGS-9 AA B- M12-C

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	CompactPCI Version
Option	**- 12:** 12 ports	**- 0:** 0 ports	**- C:** PICMG 2.0 specification

Available Model	Model Name	Description
	CPGS-9120-M12-C	3U CompactPCI EN50155 12-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) in CompactPCI sockets, and 4x10/100/1000Base-T(X) in M12 connector

Packing List

- CPGS-9120-M12-C
- ORing Tool CD
- Quick Installation Guide
- Console Cable

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful network management windows Utility Suite, 500 IP devices

CPGS-9080-C

CPGS-9080-C

3U CompactPCI EN50155 8-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) in CompactPCI socket

Features

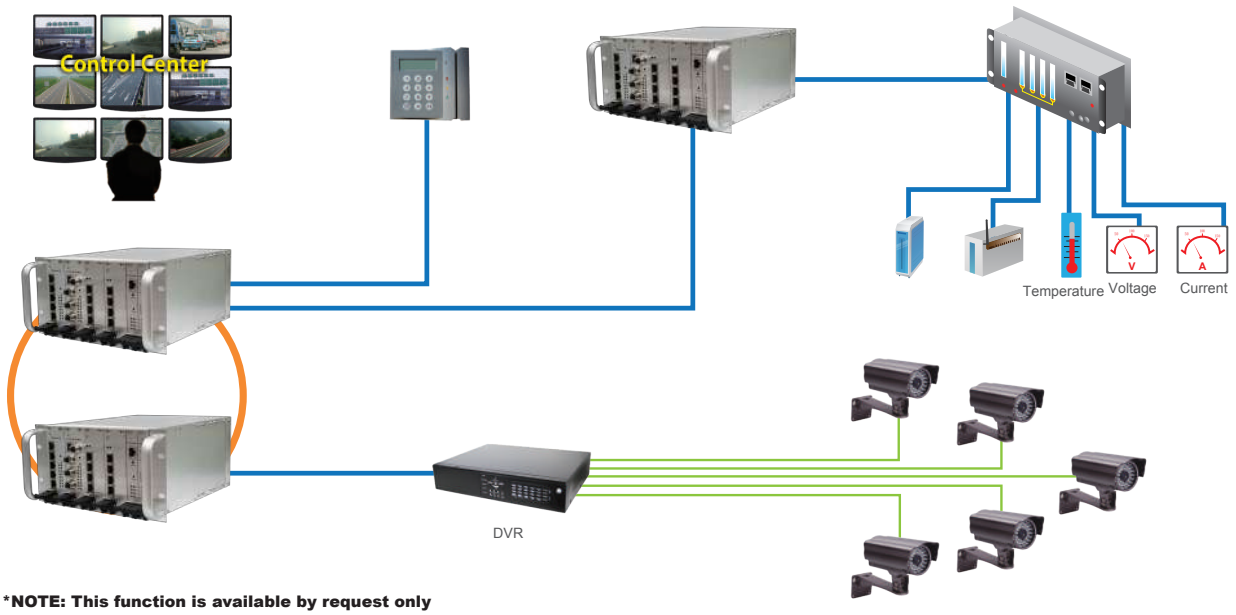
- Leading EN50155 compliant Ethernet switch for rolling stock application
- Supports 3U and 4HP CompactPCI form factor and hot swapping
- PICMG 2.0 specification compatible
- Support 8x10/100/1000Base-T(X) ports in CompactPCI sockets
- Support Jumbo frame up to 9.6K Bytes
- Supports **O-Ring** (recovery time < 30ms over 250 units of connection), MSTP/RSTP/STP (IEEE 802.1s/w/D) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Supports SMTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- Supports SSH/Https security function
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3, RMON and 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Multiple notification for warning of unexpected event
- Windows utility (Open-Vision) support centralized management and configurable by Web-based interface, Telnet and Console (CLI)
- Support LLDP Protocol
- Support hot-swappable technology

Introduction

ORing's CompactPCI series Ethernet switches are designed for industrial applications, such as factory automation, vehicle, and railway applications. CPGS-9080-C is CompactPCI managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports in CompactPCI socket which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. CPGS-9080-C supports wide operating temperature from -40 to 70 °C which can fulfill most of the requirement of operation environment. Except the Web-based interface, Telnet and console (CLI) configuration, CPGS-9080-C can also be managed centralized and conveniently by Open-Vision. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

***NOTE: This function is available by request only**

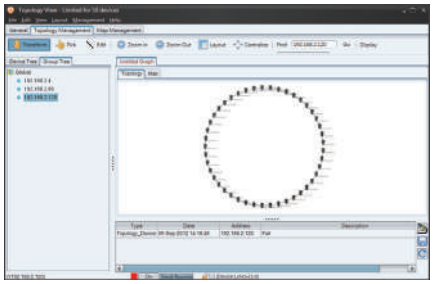
- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



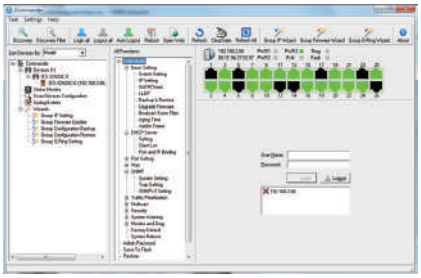
*NOTE: This function is available by request only

Open-Vision

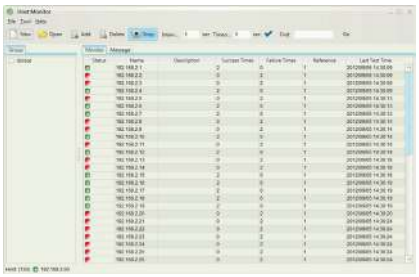
ORing's switches are intelligent switches. Different from other traditional redundant switches, Oring provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



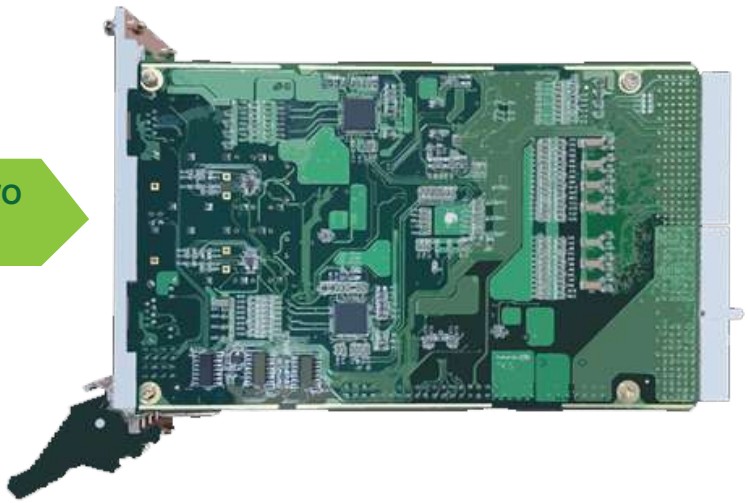
Host Momitor



Topology View

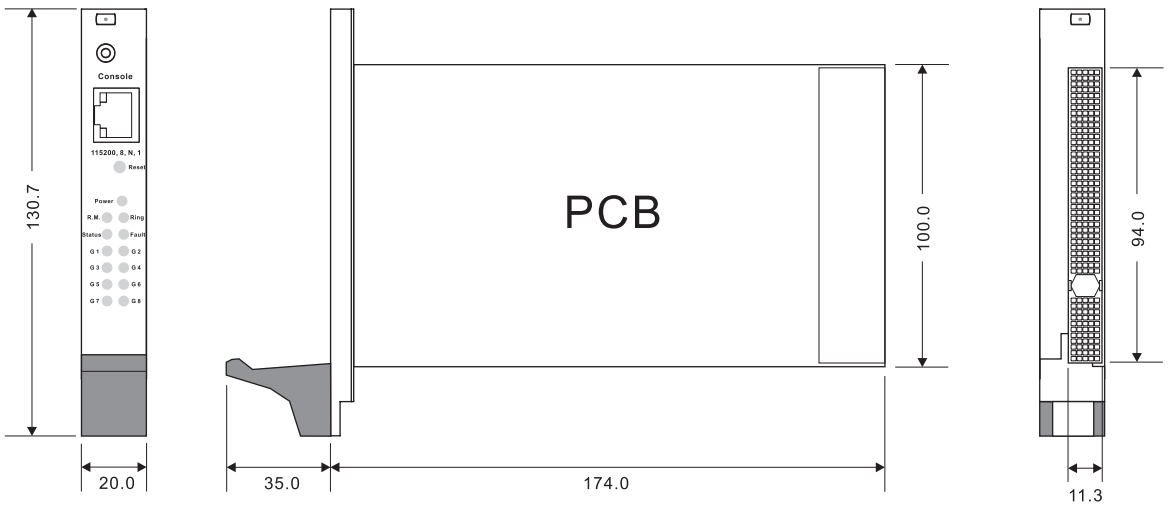
I/O Functional

Console Pot I/O
LED Indicator



8-Port Gigabit I/O
Power input

Dimensions



(Unit=mm)

Console Port Pin DeFinition

PC (male) pin assignment	RS-232 with DB9 (female) pin assignment (RJ45 to DB9 cable)	RJ 45 pin assignment
Pin #2 RxD	Pin #2 TxD	Pin #2 TxD
Pin #3 TxD	Pin #3 RxD	Pin #3 RxD
Pin #5 GND	Pin #5 GND	Pin #5 GND

Backplane Pin Definition

Pin	Z	A	B	C	D	E	F	
25	GND	5V			3.3V	5V	GND	
24	GND		5V				GND	
23	GND	3.3V			5V		GND	
22	GND		GND	3.3V			GND	J1
21	GND	3.3V			GND		GND	
20	GND		GND				GND	
19	GND	3.3V			GND		GND	
18	GND		GND	3.3V			GND	
17	GND	3.3V			GND		GND	
16	GND		GND				GND	
15	GND	3.3V			GND		GND	
14	KEY AREA							
13								
12								
11	GND				GND		GND	
10	GND		GND	3.3V			GND	
9	GND				GND		GND	
8	GND		GND				GND	
7	GND				GND		GND	
6	GND		GND	3.3V			GND	
5	GND				GND		GND	
4	GND		HEALTHY#				GND	
3	GND				5V		GND	
2	GND		5V				GND	
1	GND	5V	-12V		+12V	5V	GND	
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**	
22	GND		STxD	GND		SRxD	GND	J2
21	GND			GND			GND	
20	GND	LED5_0	LED5_1	GND	LED7_0	LED7_1	GND	
19	GND	LED4_0	LED4_1	GND	LED6_0	LED6_1	GND	
18	GND	LED1_0	LED1_1	GND	LED3_0	LED4_1	GND	

17	GND	LED0_0	LED0_1	GND	LED2_0	LED2_1	GND	
16	GND	P7_A_P	P7_A_N	GND	P7_C_P	P7_C_N	GND	
15	GND	P7_B_P	P7_B_N	GND	P7_D_P	P7_D_N	GND	
14	GND	P6_A_P	P6_A_N	GND	P6_C_P	P6_C_N	GND	
13	GND	P6_B_P	P6_B_N	GND	P6_D_P	P6_D_N	GND	
12	GND	P5_A_P	P5_A_N	GND	P5_C_P	P5_C_N	GND	
11	GND	P5_B_P	P5_B_N	GND	P5_D_P	P5_D_N	GND	
10	GND	P4_A_P	P4_A_N	GND	P4_C_P	P4_C_N	GND	
9	GND	P4_B_P	P4_B_N	GND	P4_D_P	P4_D_N	GND	J2
8	GND	P3_A_P	P3_A_N	GND	P3_C_P	P3_C_N	GND	
7	GND	P3_B_P	P3_B_N	GND	P3_D_P	P3_D_N	GND	
6	GND	P2_A_P	P2_A_N	GND	P2_C_P	P2_C_N	GND	
5	GND	P2_B_P	P2_B_N	GND	P2_D_P	P2_D_N	GND	
4	GND	P1_A_P	P1_A_N	GND	P1_C_P	P1_C_N	GND	
3	GND	P1_B_P	P1_B_N	GND	P1_D_P	P1_D_N	GND	
2	GND	P0_A_P	P0_A_N	GND	P0_C_P	P0_C_N	GND	
1	GND	P0_B_P	P0_B_N	GND	P0_D_P	P0_D_N	GND	
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**	

Specifications

ORing Switch Model	CPGS-9080-C
Physical Ports	
10/100/1000Base-T(X) Ports Auto MDI/MDIX	8-port with CompactPCI interface (PICMG 2.0 compatible)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8K
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 16Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security

Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP*NOTE MSTP (STP / RSTP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power Indicator (Power)	Green : Power LED x 1
Status Indicator (STA)	Green : Ethernet status indicator
R.M. Indicator (R.M.)	Green : indicate system operated in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicate system operated in O-Ring mode
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) port indicator	Green for port Link/Act.
Power	
Power Input	CompactPCI bus powered (12VDC)
Power Consumption (Typ.)	6.2 Watts
Overload Current Protection	Present
Physical Characteristics	
Dimension (W x D x H)	20 (W) x 209 (D) x 130.7 (H)mm (0.79 x 8.23 x 5.15 inch)
Weight (g)	224g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

CPGS-9AAB-C

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	CompactPCI Version
Option	**- 8:** 8 ports	**- 0:** 0 ports	**- C:** PICMG 2.0 specification

	Model Name	Description
Available Model	CPGS-9080-C	3U CompactPCI EN50155 8-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X)

Packing List

- CPGS-9080-C
- ORing Tool CD
- Quick Installation Guide
- Console Cable

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful network management windows Utility Suite, 500 IP devices

***NOTE: This function is available by request only**

CPGS-B9142ET-C

CPGS-B9142ET-C

3U CompactPCI EN50155 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) in CompactPCI sockets, and 6x10/100/1000Base-T(X) with 2 Extension Ports

Features

- Leading EN50155 compliant Ethernet switch for rolling stock application
- Supports 3U and 16HP CompactPCI form factor and hot swapping
- PICMG 2.0 specification compatible
- Support 6x10/100/1000Base-T(X) ports
- Support Jumbo frame up to 9.6K Bytes
- Supports MSTP/RSTP/STP (IEEE 802.1s/w/D) for Ethernet Redundancy
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Supports SMTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- Supports SSH/Https security function
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3, RMON and 802.1Q VLAN Network Management
- Multiple notification for warning of unexpected event
- Windows utility support centralized management and configurable by Web-based interface, Telnet and Console (CLI)
- Support LLDP Protocol
- Support hot-swappable technology

Full Gigabit | EN50155 | O-Ring | -40~70°C Temperature | R6 READY | RoHS Lead Free | CE | FC

Introduction

CPGS-B9142ET-C is CompactPCI managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports in CompactPCI socket and 6x10/100/1000Base-T(X) in RJ45 which is specifically designed for the toughest and fully compliant with EN50155 requirement. In addition, CPGS-B9142ET-C also includes 2 two-wire Ethernet extension ports for longer transmission distance with less cable cost. The switch support Ethernet Redundancy protocol, MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. CPGS-B9142ET-C supports wide operating temperature from -40°C to 70°C which can fulfill most of the requirement of operation environment. Except the Web-based interface, Telnet and console (CLI) configuration, CPGS-B9142ET-C can also be managed centralized and conveniently by Management Software. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

- **MRP***NOTE : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth

***NOTE: This function is available by request only**

for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.

- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
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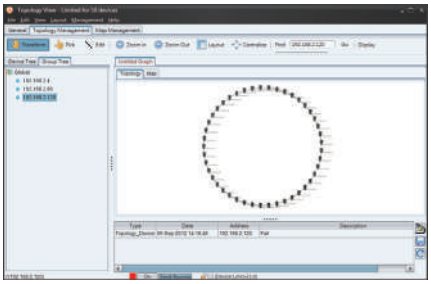
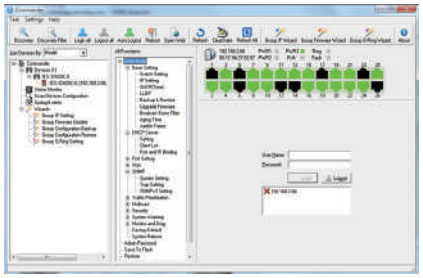
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

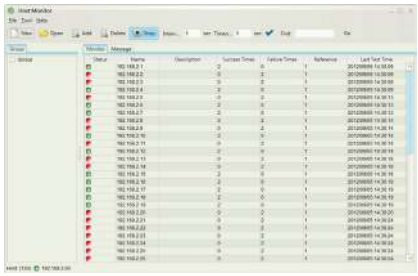
Management Software



Topology View



Commander



Host Momitor

Console Port Pin DeFinition

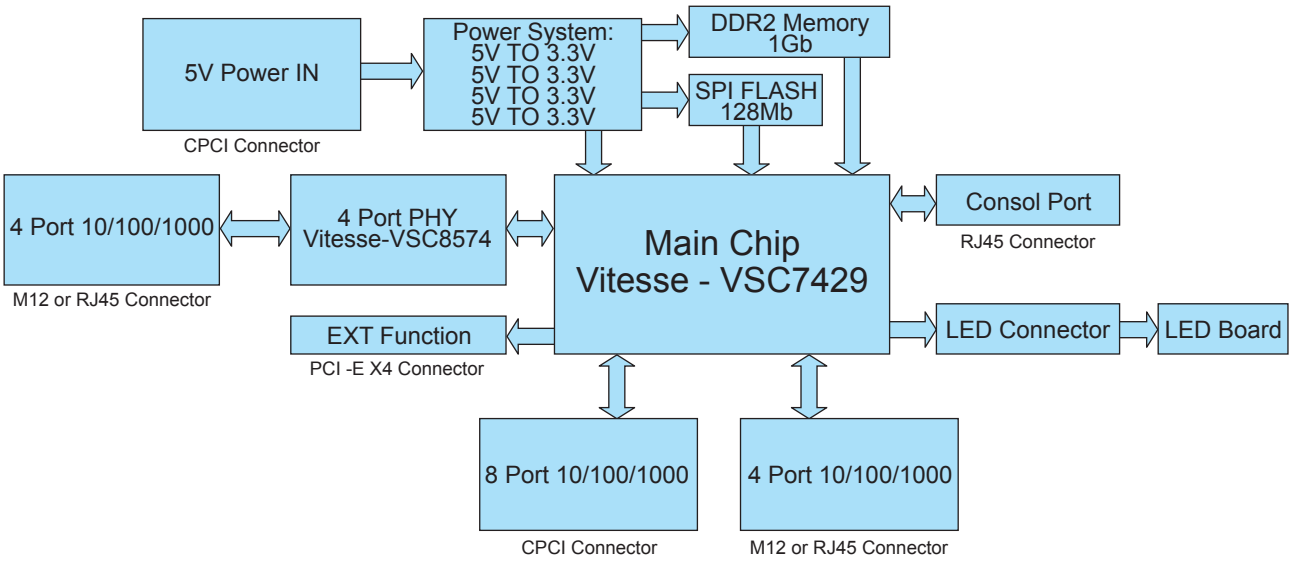
PC (male) pin assignment	RS-232 with DB9 (female) pin assignment (RJ45 to DB9 cable)	RJ 45 pin assignment
Pin #2 RxD	Pin #2 TxD	Pin #2 TxD
Pin #3 TxD	Pin #3 RxD	Pin #3 RxD
Pin #5 GND	Pin #5 GND	Pin #5 GND

Backplane Pin Definition

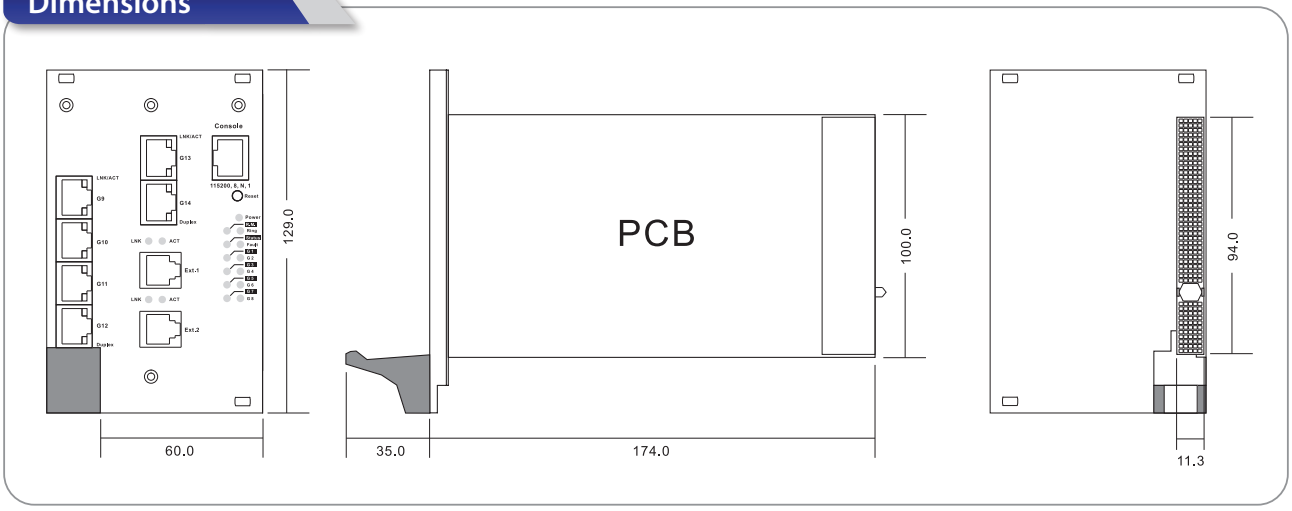
Pin	Z	A	B	C	D	E	F	
25	GND	5V				5V	GND	
24	GND		5V				GND	
23	GND				5V		GND	
22	GND		GND				GND	J1
21	GND						GND	
20	GND		GND				GND	
19	GND				GND		GND	

18	GND		GND				GND	J1
17	GND				GND		GND	
16	GND		GND				GND	
15	GND						GND	
14	KEY AREA							
13								
12								
11	GND				GND		GND	
10	GND		GND				GND	
9	GND				GND		GND	
8	GND		GND				GND	
7	GND				GND		GND	
6	GND		GND				GND	
5	GND				GND		GND	
4	GND		HEALTHY#				GND	
3	GND				5V		GND	
2	GND		5V				GND	
1	GND	5V				5V	GND	
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**	
22	GND						GND	J2
21	GND			GND			GND	
20	GND	LED5_0	LED5_1	GND	LED7_0	LED7_1	GND	
19	GND	LED4_0	LED4_1	GND	LED6_0	LED6_1	GND	
18	GND	LED1_0	LED1_1	GND	LED3_0	LED4_1	GND	
17	GND	LED0_0	LED0_1	GND	LED2_0	LED2_1	GND	
16	GND	P7_A_P	P7_A_N	GND	P7_C_P	P7_C_N	GND	
15	GND	P7_B_P	P7_B_N	GND	P7_D_P	P7_D_N	GND	
14	GND	P6_A_P	P6_A_N	GND	P6_C_P	P6_C_N	GND	
13	GND	P6_B_P	P6_B_N	GND	P6_D_P	P6_D_N	GND	
12	GND	P5_A_P	P5_A_N	GND	P5_C_P	P5_C_N	GND	
11	GND	P5_B_P	P5_B_N	GND	P5_D_P	P5_D_N	GND	
10	GND	P4_A_P	P4_A_N	GND	P4_C_P	P4_C_N	GND	
9	GND	P4_B_P	P4_B_N	GND	P4_D_P	P4_D_N	GND	
8	GND	P3_A_P	P3_A_N	GND	P3_C_P	P3_C_N	GND	
7	GND	P3_B_P	P3_B_N	GND	P3_D_P	P3_D_N	GND	
6	GND	P2_A_P	P2_A_N	GND	P2_C_P	P2_C_N	GND	
5	GND	P2_B_P	P2_B_N	GND	P2_D_P	P2_D_N	GND	
4	GND	P1_A_P	P1_A_N	GND	P1_C_P	P1_C_N	GND	
3	GND	P1_B_P	P1_B_N	GND	P1_D_P	P1_D_N	GND	
2	GND	P0_A_P	P0_A_N	GND	P0_C_P	P0_C_N	GND	
1	GND	P0_B_P	P0_B_N	GND	P0_D_P	P0_D_N	GND	

Block Diagram



Dimensions



(Unit=mm)

Specifications

ORing Switch Model	CPGS-B9142ET-C
Physical Ports	
10/100/1000Base-T(X) Ports Auto MDI/MDIX	**14-port (8-port with CompactPCI interface, 6-port with RJ45 connector) (PICMG 2.0 compatible)**
2-Wire Extension Ports	**2**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)

MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 28.4Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	O-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power indicator (Power)	Power indicator (Power)
Status Indicator (STA)	Status Indicator (STA)
R.M. indicator (R.M)	R.M. indicator (R.M)
Ring indicator (Ring)	Ring indicator (Ring)
Fault indicator (Fault)	Fault indicator (Fault)
10/100/1000Base-T(X) port indicator	10/100/1000Base-T(X) port indicator
Extension port indicator	Top Green for data transmission activity Bottom Green for port Link status
Power	
Power Input	CompactPCI bus powered (5VDC)
Power Consumption (Typ.)	21.5W
Overload Current Protection	Present
Physical Characteristic	
Dimension (W x D x H)	81.7 (W) x 209 (D) x 129.0 (H)mm
Weight (g)	469 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32

***NOTE: This function is available by request only**

Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

CPGS-B9 AA B ET -C

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 14:** 14 ports	**- 2:** 2 ports	**- ET:** Extension Port

Available Model	Model Name	Description
	CPGS-B9142ET-C	3U CompactPCI EN50155 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) in CompactPCI sockets, and 6x10/100/1000Base-T(X) with 2 Extension Ports

Packing List

- CPGS-B9142ET-C x 1
- Tool CD x 1
- Console Cable x 1
- Quick Installation Guide x 1

CPGS-B9142ET-M12-C

CPGS-B9142ET-M12-C

3U CompactPCI EN50155 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) in CompactPCI sockets, and 6x10/100/1000Base-T(X) in M12 connector with 2 Extension Ports

Features

- Leading EN50155 compliant Ethernet switch for rolling stock application
- Supports 3U and 16HP CompactPCI form factor and hot swapping
- PICMG 2.0 specification compatible
- Support 6x10/100/1000Base-T(X) ports on M12 ports
- Support Jumbo frame up to 9.6K Bytes
- Supports MSTP/RSTP/STP (IEEE 802.1s/w/D) for Ethernet Redundancy
- Support standard IEC 62439-2 **MRP**[*NOTE] (Media Redundancy Protocol) function
- Supports IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Supports SMTP client
- Supports IP-based bandwidth management
- Supports application-based QoS management
- Supports Device Binding security function
- Supports DOS/DDOS auto prevention
- Supports SSH/Https security function
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3, RMON and 802.1Q VLAN Network Management
- M12 connectors to guarantee reliable operation against environmental disturbances
- Multiple notification for warning of unexpected event
- Windows utility support centralized management and configurable by Web-based interface, Telnet and Console (CLI)
- Support LLDP Protocol
- Support hot-swappable technology

Introduction

CPGS-B9142ET-M12-C is CompactPCI managed redundant ring Ethernet switch with 8x10/100/1000Base-T(X) ports in CompactPCI socket and 6x10/100/1000Base-T(X) in M12 ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. In addition, CPGS-B9142ET-M12-C also includes 2 two-wire Ethernet extension ports for longer transmission distance with less cable cost. The switch support Ethernet Redundancy protocol, MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. CPGS-B9142ET-M12-C supports wide operating temperature from -40°C to 70°C which can fulfill most of the requirement of operation environment. Except the Web-based interface, Telnet and console (CLI) configuration, CPGS-B9142ET-M12-C can also be managed centralized and conveniently by Management Software. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

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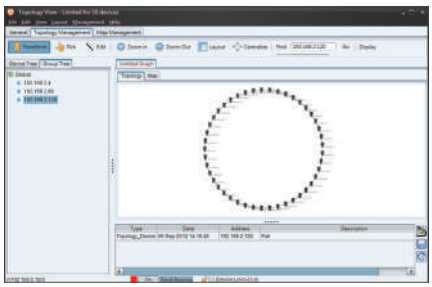
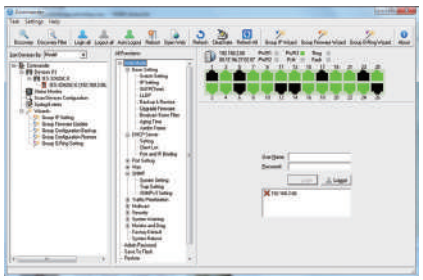
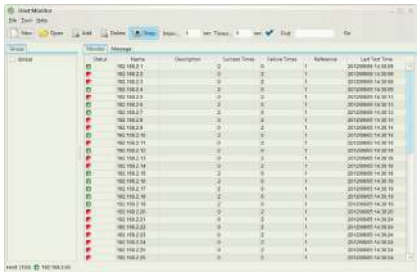
Management Software



Topology View



Commander



Host Momitor

Console Port Pin DeFinition

PC (male) pin assignment	RS-232 with DB9 (female) pin assignment (RJ45 to DB9 cable)	RJ 45 pin assignment
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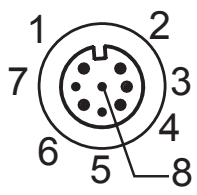
Pin #3 TxD	Pin #3 RxD	Pin #3 RxD
Pin #5 GND	Pin #5 GND	Pin #5 GND



10/100Base-T(X)

PIN No.	Description
#6	TD+
#4	TD-
#5	RD+
#8	RD-

1000Base-T

PIN No.	Description
#1	BI_CD+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

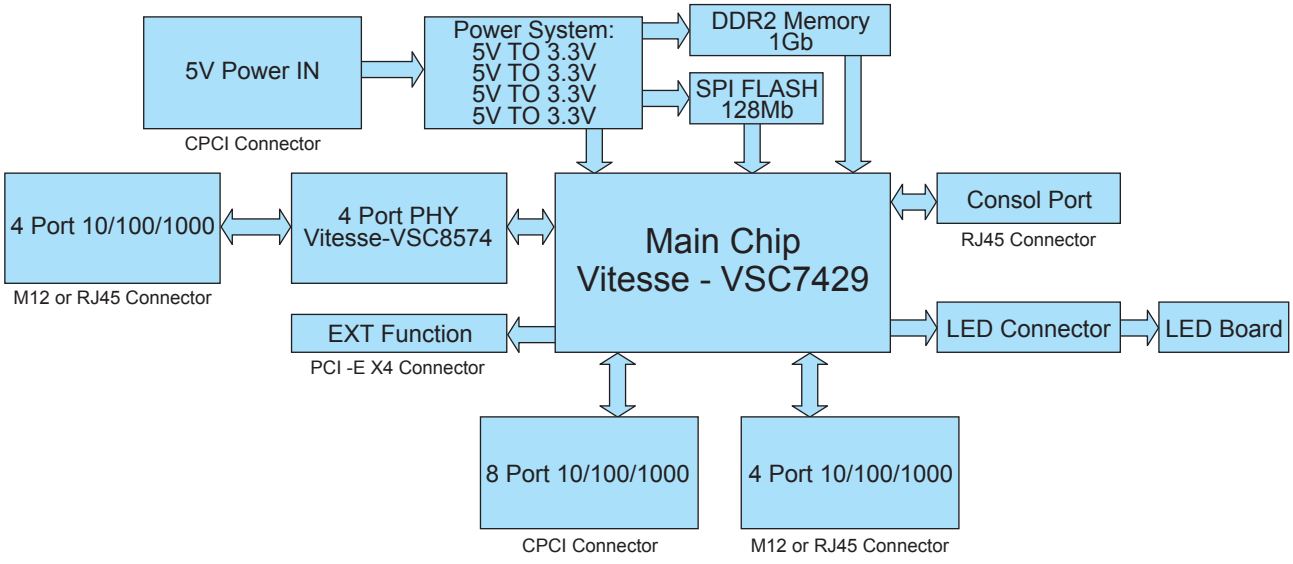
Backplane Pin Definition

Pin	Z	A	B	C	D	E	F	
25	GND	5V				5V	GND	
24	GND		5V				GND	
23	GND				5V		GND	
22	GND		GND				GND	
21	GND						GND	
20	GND		GND				GND	
19	GND				GND		GND	
18	GND		GND				GND	
17	GND				GND		GND	
16	GND		GND				GND	
15	GND						GND	
14	KEY AREA							J1
13								
12								
11	GND				GND		GND	
10	GND		GND				GND	
9	GND				GND		GND	
8	GND		GND				GND	
7	GND				GND		GND	
6	GND		GND				GND	
5	GND				GND		GND	
4	GND		HEALTHY#				GND	
3	GND				5V		GND	
2	GND		5V				GND	
1	GND	5V				5V	GND	

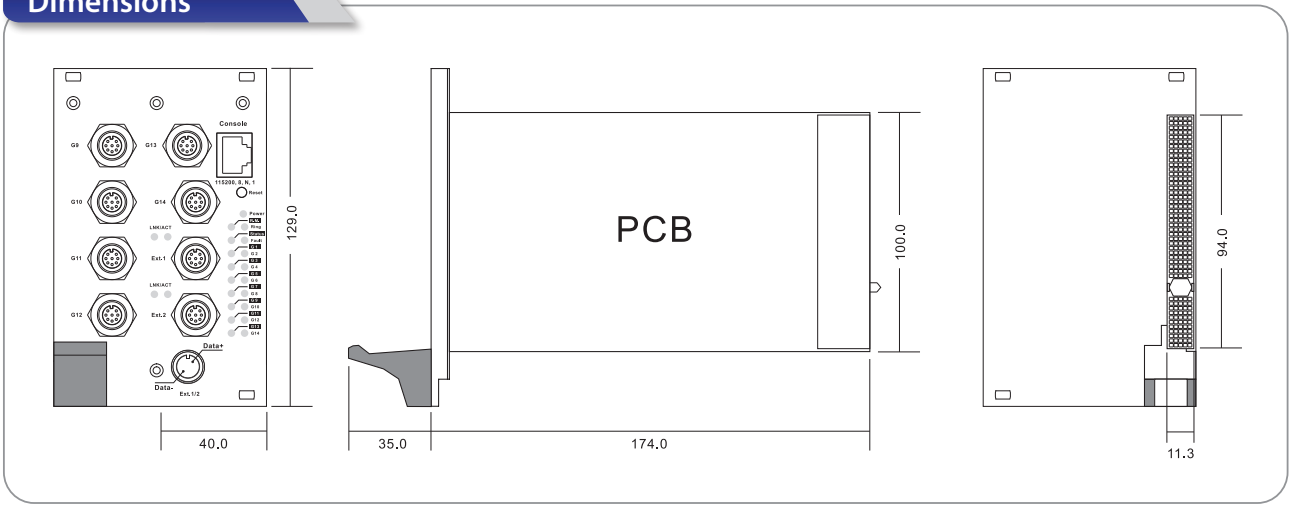
Pin	Z	A	B	C	D	E	F	
22	GND						GND	
21	GND			GND			GND	
20	GND	LED5_0	LED5_1	GND	LED7_0	LED7_1	GND	
19	GND	LED4_0	LED4_1	GND	LED6_0	LED6_1	GND	
18	GND	LED1_0	LED1_1	GND	LED3_0	LED4_1	GND	
17	GND	LED0_0	LED0_1	GND	LED2_0	LED2_1	GND	
16	GND	P7_A_P	P7_A_N	GND	P7_C_P	P7_C_N	GND	J2
15	GND	P7_B_P	P7_B_N	GND	P7_D_P	P7_D_N	GND	
14	GND	P6_A_P	P6_A_N	GND	P6_C_P	P6_C_N	GND	
13	GND	P6_B_P	P6_B_N	GND	P6_D_P	P6_D_N	GND	
12	GND	P5_A_P	P5_A_N	GND	P5_C_P	P5_C_N	GND	
11	GND	P5_B_P	P5_B_N	GND	P5_D_P	P5_D_N	GND	

10	GND	P4_A_P	P4_A_N	GND	P4_C_P	P4_C_N	GND	J2
9	GND	P4_B_P	P4_B_N	GND	P4_D_P	P4_D_N	GND	
8	GND	P3_A_P	P3_A_N	GND	P3_C_P	P3_C_N	GND	
7	GND	P3_B_P	P3_B_N	GND	P3_D_P	P3_D_N	GND	
6	GND	P2_A_P	P2_A_N	GND	P2_C_P	P2_C_N	GND	
5	GND	P2_B_P	P2_B_N	GND	P2_D_P	P2_D_N	GND	
4	GND	P1_A_P	P1_A_N	GND	P1_C_P	P1_C_N	GND	
3	GND	P1_B_P	P1_B_N	GND	P1_D_P	P1_D_N	GND	
2	GND	P0_A_P	P0_A_N	GND	P0_C_P	P0_C_N	GND	
1	GND	P0_B_P	P0_B_N	GND	P0_D_P	P0_D_N	GND	

Block Diagram



Dimensions



(Unit=mm)

Specifications

ORing Switch Model	CPGS-B9142ET-M12-C
Physical Ports	
10/100/1000Base-T(X) Ports Auto MDI/MDIX	**14 (8-port with CompactPCI interface, 6-port with M12 connector) (PICMG 2.0 compatible)**
2-Wire Extension Ports	**2**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 28.4Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	O-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power indicator (Power)	Green : Power LED x 1
Status Indicator (STA)	Green : Ethernet status indicator
R.M. indicator (R.M)	Green : indicate system operated in Ring Master mode
Ring indicator (Ring)	Green : indicate system operated in Ring mode
Fault indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) port indicator	Green for port Link/Act.
Extension port indicator	Top Green for data transmission activity Bottom Green for port Link status

***NOTE: This function is available by request only**

Power	
Power Input	CompactPCI bus powered (5VDC)
Power Consumption (Typ.)	21.5W
Overload Current Protection	Present
Physical Characteristic	
Dimension (W x D x H)	81.7 (W) x 209 (D) x 129.0 (H)mm
Weight (g)	563 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

CPGS-B9 AA B ET –M12-C

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 14:** 14 ports	**- 2:** 2 ports	**- ET:** Extension Port

Available Model	Model Name	Description
	CPGS-B9142ET-M12-C	3U CompactPCI EN50155 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) in CompactPCI sockets, and 6x10/100/1000Base-T(X) in M12 connector with 2 Extension Ports

Packing List

- CPGS-B9142ET-M12-C x 1
- Tool CD x 1
- Console Cable x 1
- Quick Installation Guide x 1

CPS-3080-C

CPS-3080-C

3U CompactPCI EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X)

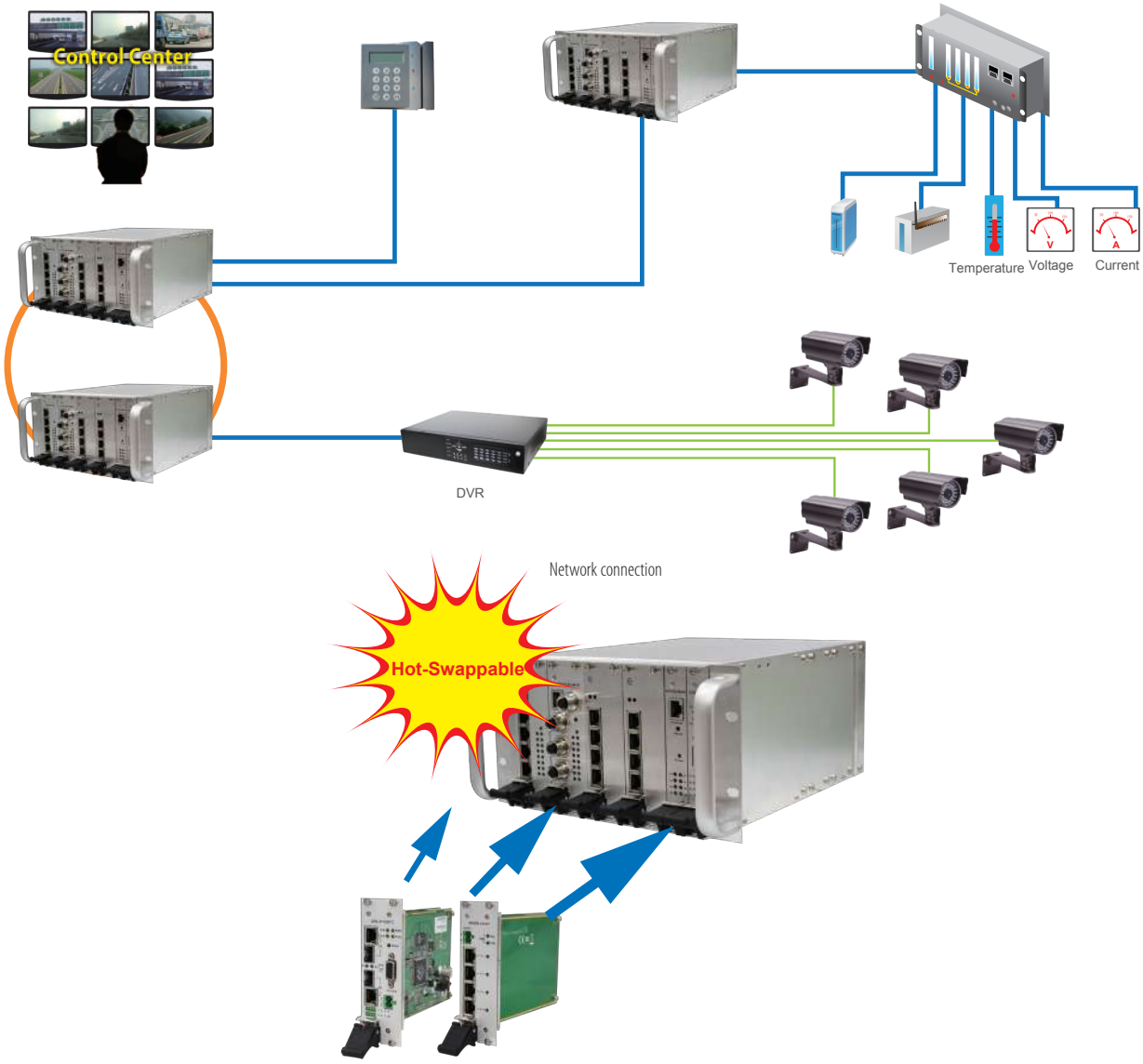
Features

- Leading EN50155 compliant Ethernet switch for rolling stock application
- Supports 3U and 4HP CompactPCI form factor and hot swapping
- PICMG 2.0 specification compatible
- Support 8x10/100Base-T(X) ports on CompactPCI sockets
- World's fastest Redundant Ethernet Ring: O-Ring (recovery time < 10ms over 250 units of connection)
- Open-Ring support the other vendor's ring technology in open architecture
- O-Chain allow multiple redundant network rings
- Support standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Supports Auto Negotiation Speed
- Support IPV6 new internet protocol version
- Support PTP Client (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus TCP protocol
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- Port lock to prevent access from unauthorized MAC address
- Event notification through Syslog, Email, SNMP trap
- Windows utility (Open-Vision) support centralized management and configurable by Web-based ,Telnet, Console(CLI)
- Completely combination of 10/100Base-T(X) ports

*NOTE: This function is available by request only

Introduction

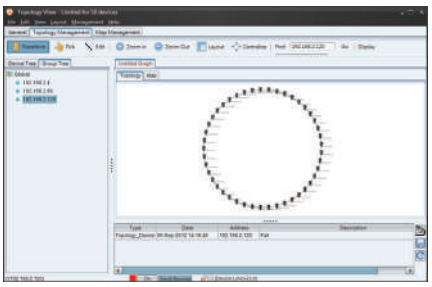
ORing's CompactPCI series Ethernet switches are designed for industrial applications, such as factory automation, vehicle, and railway applications. CPS-3080-C is a CompactPCI interface managed Redundant Ring Ethernet switch with 8x10/100Base-T(X) ports in CompactPCI socket which is specifically designed for the toughest and fully compliant with EN50155 requirement. . With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. CPS-3080-C supports wide operating temperature from -40 to 70 °C which can fulfill most of the requirement of operation environment. Except the Web-based interface, Telnet and console (CLI) configuration, CPS-3080-C can also be managed centralized and conveniently by Open-Vision. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.



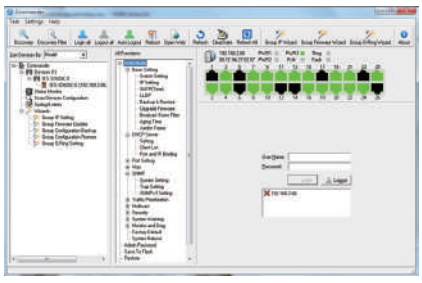
Hot-Swappable

Open-Vision

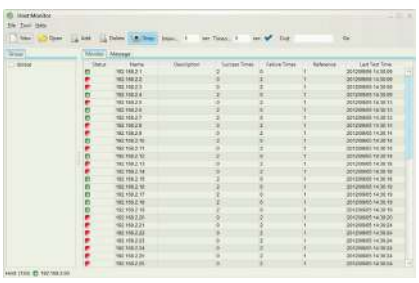
ORing's switches are intelligent switches. Different from other traditional redundant switches, Oring provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

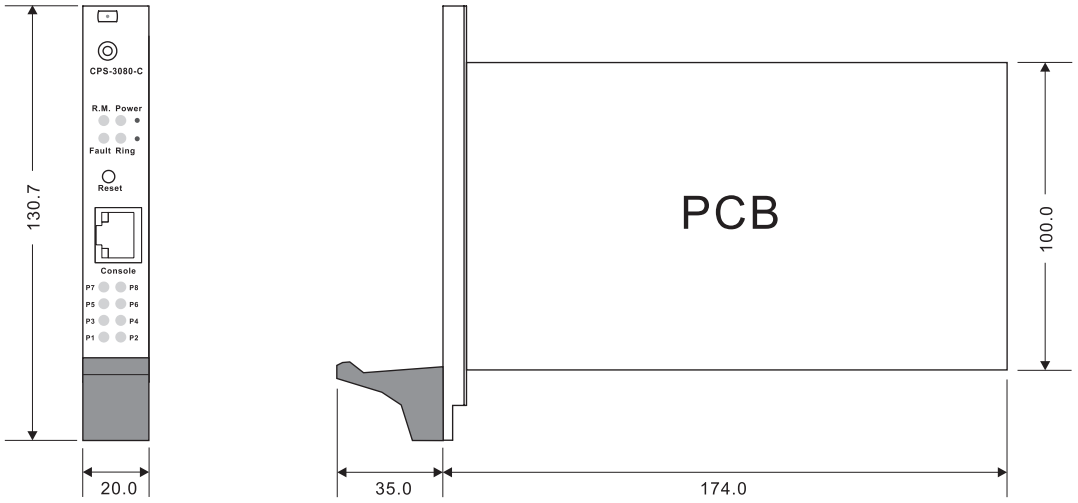


Host Momitor



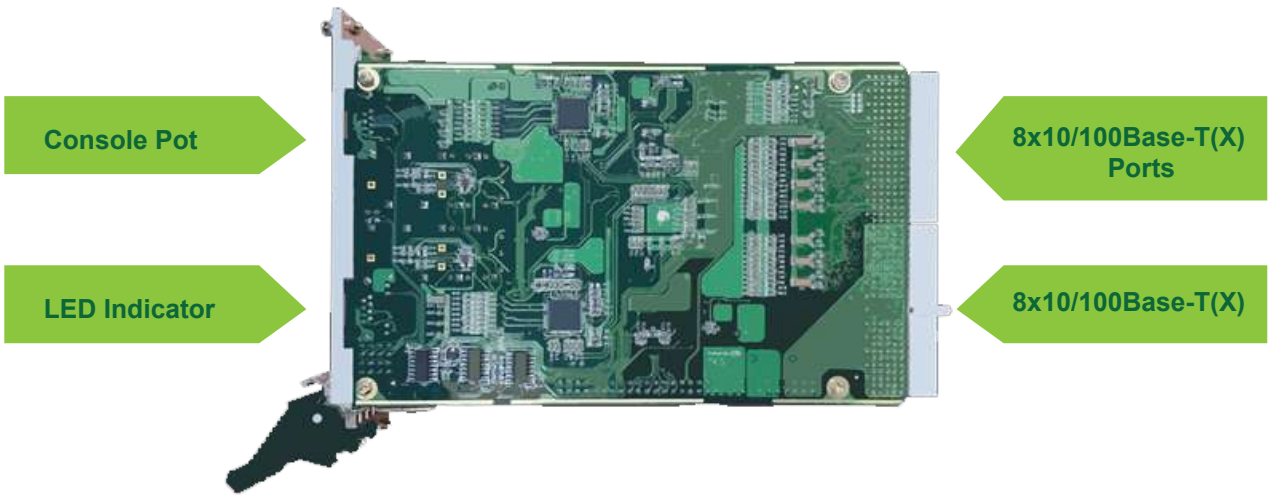
Topology View

Dimensions



(Unit=mm)

Functional Block



Console Port Pin DeFinition

PC (male) pin assignment	RS-232 with DB9 (female) pin assignment (RJ45 to DB9 cable)	RJ 45 pin assignment
Pin #2 RxD	Pin #2 RxD	Pin #2 RxD
Pin #3 TxD	Pin #3 TxD	Pin #3 TxD
Pin #5 GND	Pin #5 GND	Pin #5 GND

Backplane Pin Definition

Pin	Z	A	B	C	D	E	F	
22	GND	NC	STxD	NC	NC	SRxD	GND	J2/P2
21	GND	NC	NC	NC	NC	NC	GND	
20	GND	LED5_0	LED5_1	GND	LED7_0	LED7_1	GND	
19	GND	LED4_0	LED4_1	GND	LED6_0	LED6_1	GND	
18	GND	LED1_0	LED1_1	GND	LED3_0	LED3_1	GND	
17	GND	LED0_0	LED0_1	GND	LED62_0	LED2_1	GND	
16	GND	P8_RX+	P8_RX-	GND	NC	NC	GND	
15	GND	P8_TX+	P8_TX-	GND	NC	NC	GND	
14	GND	P7_RX+	P7_RX-	GND	NC	NC	GND	
13	GND	P7_TX+	P7_TX-	GND	NC	NC	GND	
12	GND	P6_RX+	P6_RX-	GND	NC	NC	GND	
11	GND	P6_TX+	P6_TX-	GND	NC	NC	GND	
10	GND	P5_RX+	P5_RX-	GND	NC	NC	GND	
9	GND	P5_TX+	P5_TX-	GND	NC	NC	GND	
8	GND	P4_RX+	P4_RX-	GND	NC	NC	GND	
7	GND	P4_TX+	P4_TX-	GND	NC	NC	GND	
6	GND	P3_RX+	P3_RX-	GND	NC	NC	GND	
5	GND	P3_TX+	P3_TX-	GND	NC	NC	GND	
4	GND	P2_RX+	P2_RX-	GND	NC	NC	GND	
3	GND	P2_TX+	P2_TX-	GND	NC	NC	GND	
2	GND	P1_RX+	P1_RX-	GND	NC	NC	GND	
1	GND	P1_TX+	P1_TX-	GND	NC	NC	GND	
25	GND	+5V	NC	NC	+3.3V	+5V	GND	J1/P1
24	GND	NC	+5V	5V(VIO)	NC	NC	GND	
23	GND	+3.3V	NC	NC	+5V	NC	GND	
22	GND	NC	GND	+3.3V	NC	NC	GND	
21	GND	+3.3V	NC	NC	NC	NC	GND	
20	GND	NC	GND	5V(VIO)	NC	NC	GND	
19	GND	+3.3V	NC	NC	GND	NC	GND	
18	GND	NC	GND	+3.3V	NC	NC	GND	
17	GND	+3.3V	NC	NC	GND	NC	GND	
16	GND	NC	GND	5V(VIO)	NC	NC	GND	
15	GND	+3.3V	NC	NC	GND	NC	GND	
14								
13								
12								
11	GND	NC	NC	NC	GND	NC	GND	J1/P1

10	GND	NC	GND	+3.3V	NC	NC	GND	J1/P1
9	GND	NC	GND	NC	GND	NC	GND	
8	GND	NC	GND	5V(VIO)	NC	NC	GND	
7	GND	NC	NC	NC	GND	NC	GND	
6	GND	NC	GND	+3.3V	NC	NC	GND	
5	GND	NC	NC	NC	GND	NC	GND	
4	GND	NC	NC	5V(VIO)	NC	NC	GND	
3	GND	NC	NC	NC	+5V	NC	GND	
2	GND	NC	+5V	NC	NC	NC	GND	
1	GND	+5V	-12V	NC	+12V	+5V	GND	
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**	

Specifications

ORing Switch Model	CPS-3080-C
Physical Ports	
10/100 Base-T(X) Ports Auto MDI/MDIX	8-port with CompactPCI Interface (PICMG 2.0 compatible)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.3x for Flow control IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 1.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMPV1/V2c/V3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP

Network Redundancy	O-Ring Open-Ring O-Chain MRP*NOTE STP/RSTP:2004/MSTP
Warning / Monitoring System	Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. Baud rate setting: 9600bps, 8, N, 1
LED Indicators	
Power Indicator (Power)	Green : Power LED x 1
R.M. Indicator (R.M.)	Green : Indicate system operated in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicate system operated in O-Ring mode
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100Base-T(X) Port Indicator	Green for port Link/Act.
Power	
Power Input	CompactPCI bus powered
Power Consumption (Typ.)	6 Watts
Overload Current Protection	Present
Physical Characteristics	
Dimension (W x D x H)	20 (W) x 187 (D) x 119.7 (H) mm (0.79 x 7.36 x 4.71 inch.)
Weight (g)	160g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

CPS-3 AA B-C

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	CompactPCI Version
Option	**- 08:** 8 ports	**- 0:** 0 ports	**- C:** PICMG 2.0 specification

	Model Name	Description
Available Model	CPS-3080-C	3U CompactPCI EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X)

Packing List

- CPS-3080-C
- ORing Tool CD
- Quick Installation Guide
- Console Cable

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful network management windows Utility Suite, 500 IP devices

***NOTE: This function is available by request only**

ICS-4040

ICS-4040

Industrial 4-port lite-managed PCI Ethernet switch card with 4x10/100Base-T(X)

Features

- Fastest Redundant Ethernet Ring : **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- Supports 4x10/100Base-T(X) ports
- Multiple Redundant Ethernet technology RSTP/STP, supported to protect your industrial network
- SNMP v1/v2/v3 support for secure network management
- Configurable by Web-based and Windows utility **(Open-Vision)**
- Event notification through Syslog, Email, and SNMP trap
- Complied with PCI Bus specification, Rev 2.2

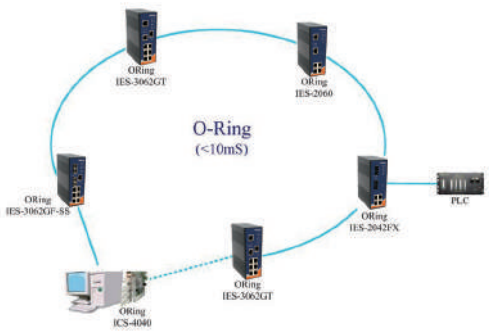
RoHS Lead Free CE FC

Introduction

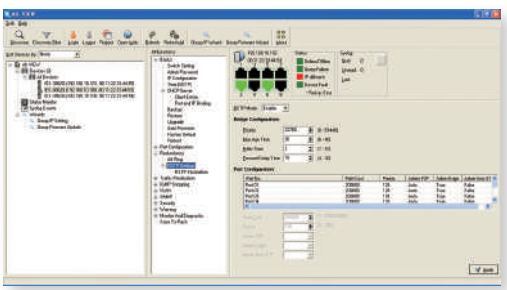
ICS-4040 is a lite-managed redundant ring Ethernet switch card with PCI-Bus and 4x10/100Base-T(X) ports. ICS-4040 could be installed on any IPC motherboard with PCI socket to make the IPC/embedded system able to communicate the other devices redundantly. Meanwhile, the network could feature Ethernet network redundancy by the fastest redundant ring protocol, O-Ring (recovery time < 10 ms over 250 units of connections) and the standard redundant protocols, RSTP/STP (IEEE 802.1w/D). Accordingly, the mission-critical communications could be protected from network any interruptions or malfunctions. Further, ICS-4040 features an external redundant DC power input. Hence, even if the IPC motherboard fails, the data transmission could bypass the failed IPC motherboard and the network will still work properly. Therefore, ICS-4040 is the best solution to IPC/embedded systems to feature Ethernet network redundancy.

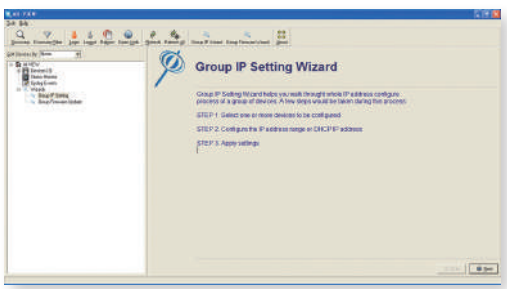
Open-Vision

ORing's switches are intelligent switches. Being different from other traditional redundant switches, ORing provides a set of Windows utility (**Open-Vision**) for users to manage and monitor all of industrial Ethernet switches on the industrial network.



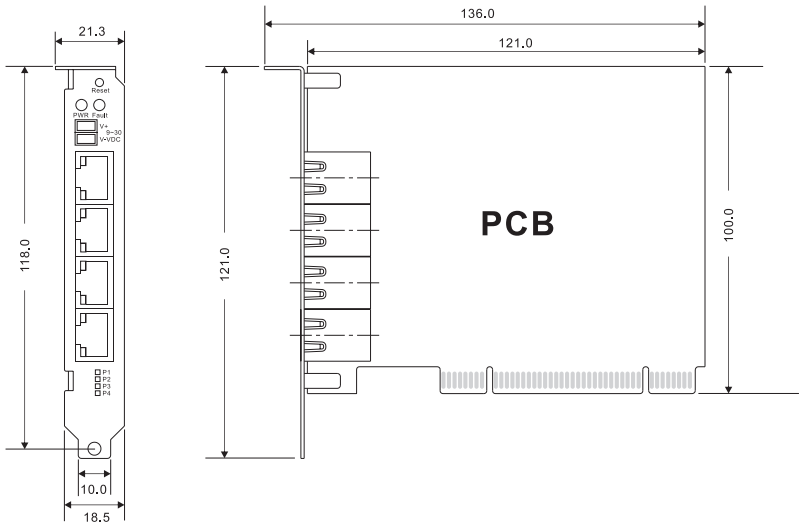
Network connection





Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	ICS-4040
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	4
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	2048 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching bandwidth : 1.0Gbps VLAN : Port Based
Security Features	Enable/disable ports VLAN to segregate and secure network traffic SNMPv3 encrypted authentication and access security
Software Features	STP/RSTP (IEEE 802.1D/w) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units Port configuration, status, statistics, monitoring, security DHCP Client
Network Redundancy	O-Ring Open-Ring STP RSTP Fast recovery
LED Indicators	
Power / Ready Indicator	Green : Ready LED x 1
Fault Indicator	Red : Indicates unexpected event occurred
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for O-Ring port indicator
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC (Optional)

Power	
Input Power	PCI bus-powered and external 9~30 VDC on 2-pin terminal block
Power Consumption (Typ.)	3.5 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristics	
Dimensions (W x D x H)	121(H) x 100(W) mm (4.76x3.94 inch.)
Weight (g)	100 g
Environmental	
Operating Temperature	-10 to 60°C (14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Warranty	3 years

Ordering Information

ICS-4 AA B

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 04:** 4 ports	**- 0:** 0 port

Available Model	Model Name	Description
	ICS-4040	Industrial 4-port lite-managed PCI Ethernet switch card with 4x10/100Base-T(X)

Packing List

- ICS-4040
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- DR-45 series, 45W DIN-Rail power supply
- DR-75-12/DR-75-24, 75W DIN-Rail power supply
- DR-120-12/DR-120-24, 120W DIN-Rail power supply

IGPCS-E140

IGPCS-E140

Industrial 4-port PCIe unmanaged Gigabit PoE Ethernet switch card with 4x10/100/1000Base-T(X) P.S.E.

Features

- Provide 4x10/100/1000Base-T(X) PoE (P.S.E.) ports
- Supports IEEE 802.3at compliant PoE and total power budget is 65Watts with maximum 30Watts per port
- PoE power sourced from 12VDC of ATX power
- Each LAN port supports both PoE and Non-PoE connections (Auto Detect & Classification)
- Supports PCIe x1 bus and compatible x4, x8 and x16 PCIe slots
- Compliant with PCIe Rev.1.1 Interface
- Supports 10K Bytes Jumbo Frame
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control

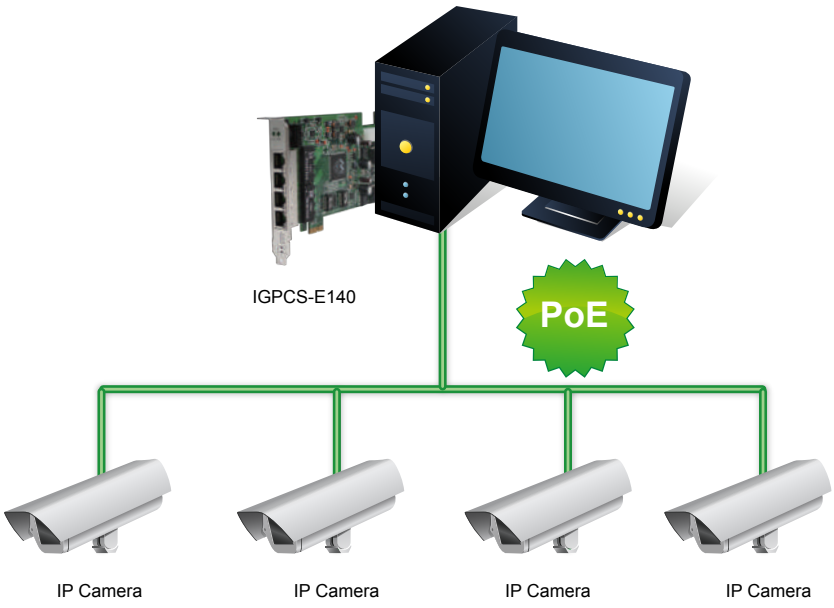
Full Gigabit | P.S.E. PoE IEEE802.3at | -10~60°C Temperature | RoHS Lead Free | CE | FC

Introduction

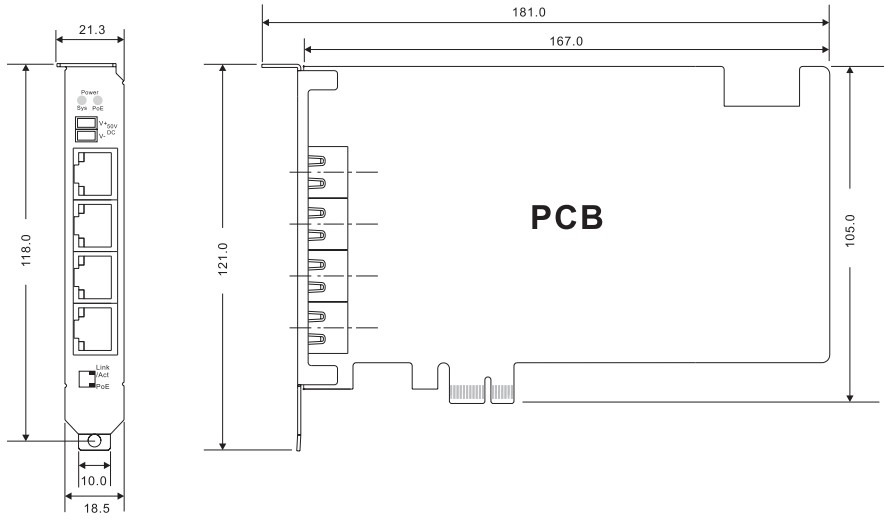
IGPCS-E140 is a PCI-Express unmanaged Gigabit PoE Ethernet switch card with P.S.E. function, IGPCS-E140 supports 4x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE port. IGPCS-E140 could be installed on any IPC motherboard with PCI-E socket to make the IPC/embedded system able to communication with other Ethernet devices. Therefore, IGPCS-E140 is the best solution to IPC/embedded system to feature Ethernet network.

Practical Operation

IGPCS-E140 can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices.



Dimensions



(Unit=mm)

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 port

RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 port

RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Specifications

ORing Switch Model	IGPCS-E140
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 With P.S.E.	4
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3at PoE specification (total power budget is 65Watts with maximum 30Watts per port)
MAC Table	8K MAC addresses
Priority Queues	4
Processing	Store-and-Forward

LED Indicators	
Power Indicator	Green : Power LED x 1
PoE Power Indicator	Green : PoE power LED x 1
10/100/1000Base-T(X) RJ45 port indicator and PoE indicator	Green for port Link/Act. Green for PoE power injected.
Power	
Input Power	PCIe bus-powered(for switch card system) / 12VDC of ATX power(for PoE)
Power Consumption (Typ.)	4.2 Watts (power device not included)
PoE output power	IEEE802.3at/af compliant, up to 30 Watts per port, totally 65 Watts maximum
Overload current protection	Present
Physical Characteristics	
Dimensions (W x D x H)	21.3 (W) x 178 (D) x 121 (H)mm(0.83 x 7x 4.76 inch)
Weight (g)	150 g
Environmental	
Operating Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-10 to 60°C (14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Operating System Supports	
Microsoft System	DOS / Win98 / WinMe / WinXP / Win2000 / WinServer2003 / Vista / WinServer 2008 / Win7 / Win8
Unix (Linux)	Linux for Kernel 3.x / 2.6.x / 2.4.x, FreeBSD for 7.x / 8.0, SCO OpenServer for 6 / UnixWare 7.1.x
Novell	Novell client for DOS (ODI driver) / Novell server driver (Support OS 5.x and 6.x)
Others	MacOS 10.4 / 10.5 / 10.6 / 10.7
Warranty	5 years

Ordering Information

IGPCS-E1 A B

Code Definition	10/100B/1000ase-T(X) Port Number with P.S.E.	Additional Port Number
Option	**- 4:** 4 ports	**- 0:** 0 port

Available Model	Model Name	Description
	IGPCS-E140	Industrial 4-port PCIe unmanaged Gigabit PoE Ethernet switch card with 4x10/100/1000Base-T(X) P.S.E.

Packing List

- IGPCS-E140
- Quick Installation Guide
- ORing Tool CD

IGCS-E140

IGCS-E140

Industrial 4-port PCIe unmanaged Gigabit Ethernet switch card with 4x10/100/1000Base-T(X)

Features

- Provide 4x10/100/1000Base-T(X) Ethernet ports
- Supports PCIe x1 bus and compatible x4, x8 and x16 PCIe slots
- Compliant with PCIe Rev.1.1 Interface
- Supports 10K Bytes Jumbo Frame
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control

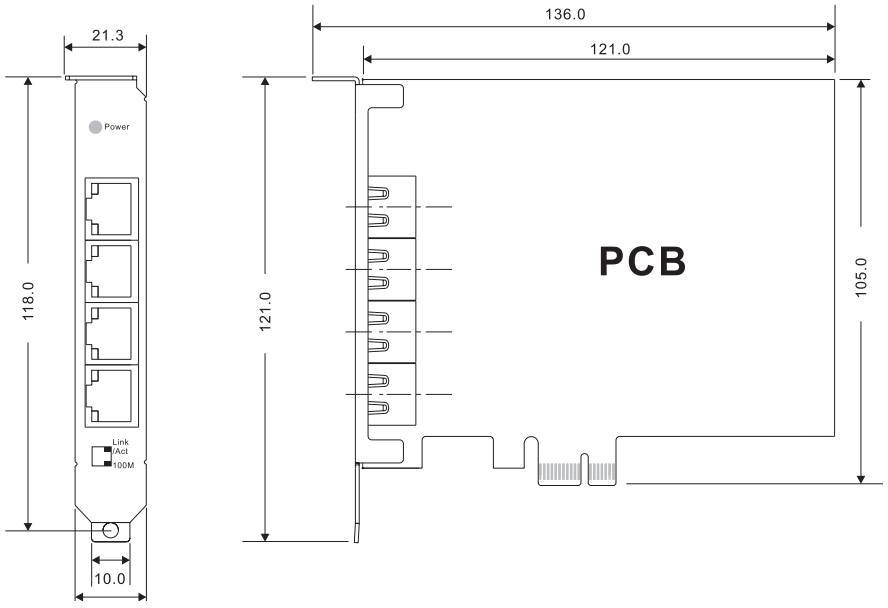
Introduction

IGCS-E140 is an PCI-Express unmanaged Gigabit Ethernet switch card. The Ethernet switch card is a high performance LAN controller. IGCS-E140 provided 4x10/100/1000Base-T(X) auto MDI/MDIX Ethernet ports. IGCS-E140 could be installed on any IPC motherboard with PCIe socket to make the IPC/embedded system able to communication with other Ethernet devices. The IGCS-E140's full bandwidth capability boasts a robust 1000Mbps capability through the PCI Express bus architecture. IGCS-E140 no need to purchase a new switch or broadband router because the auto-negotiation feature works with your existing switch, broadband router, or hub to provide the highest network speed available. The automatic full duplex capability further increases bandwidth and eliminates packet collisions by allowing data to flow in both directions at the same time. Therefore, IGCS-E140 is the best solution to IPC/embedded system to feature Ethernet network.

Practical Operation

IGCS-E140 can be used in connecting several Ethernet devices like IP-Camera or other Ethernet devices.

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGCS-E140
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45	4
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control
MAC Table	8K MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power indicator	Green : Power LED x 1
10/100/1000Base-T(X) RJ45 port indicator	Green for port Link/Act. Amber for 100Mbps indicator
Power	
Input Power	PCIe bus powered
Power Consumption (Typ.)	4.2 Watts
Overload current protection	Present
Physical Characteristics	
Dimensions (W x D x H)	21.3 (W) x 136 (D) x 121 (H) mm(0.83 x 5.35 x 4.76 inch)
Weight (g)	98 g
Environmental	
Operating Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-10 to 60°C (14 to 140°F)
Operating Humidity	5% to 95% Non-condensing

Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Operating System Supports	
Microsoft System	DOS / Win98 / WinMe / WinXP / Win2000 / WinServer2003 / Vista / WinServer 2008 / Win7 / Win8
Unix (Linux)	Linux for Kernel 3.x / 2.6.x / 2.4.x, FreeBSD for 7.x / 8.0, SCO OpenServer for 6 / UnixWare 7.1.x
Novell	Novell client for DOS (ODI driver) / Novell server driver (Support OS 5.x and 6.x)
Others	MacOS 10.4 / 10.5 / 10.6 / 10.7
Warranty	5 years

Ordering Information

IGCS-E1 A B

Code Definition	10/100B/1000ase-T(X) Port Number	Additional Port Number
Option	**- 4:** 4 ports	**- 0:** 0 port

Available Model	Model Name	Description
	IGCS-E140	Industrial 4-port PCIe unmanaged Gigabit Ethernet switch card with 4x10/100/1000Base-T(X)

Packing List

- IGCS-E140
- Quick Installation Guide
- ORing Tool CD

IGPCS-E131GP

IGPCS-E131GP

Industrial 4-port PCIe unmanaged Gigabit PoE Ethernet switch card with 3x10/100/1000Base-T(X) P.S.E. and 1x100/1000Base-X, SFP socket

Features

- Provide 3x10/100/1000Base-T(X) PoE (P.S.E.) ports
- Supports IEEE 802.3at compliant PoE and total power budget is 65Watts with maximum 30Watts per port
- PoE power sourced from 12VDC of ATX power
- Each LAN port supports both PoE and Non-PoE connections (Auto Detect & Classification)
- Supports PCIe x1 bus and compatible x4, x8 and x16 PCIe slots
- Compliant with PCIe Rev.1.1 Interface
- Supports 100Base-FX or 1000Base-X SFP port by DIP-switch
- Supports 10K Bytes Jumbo Frame
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control

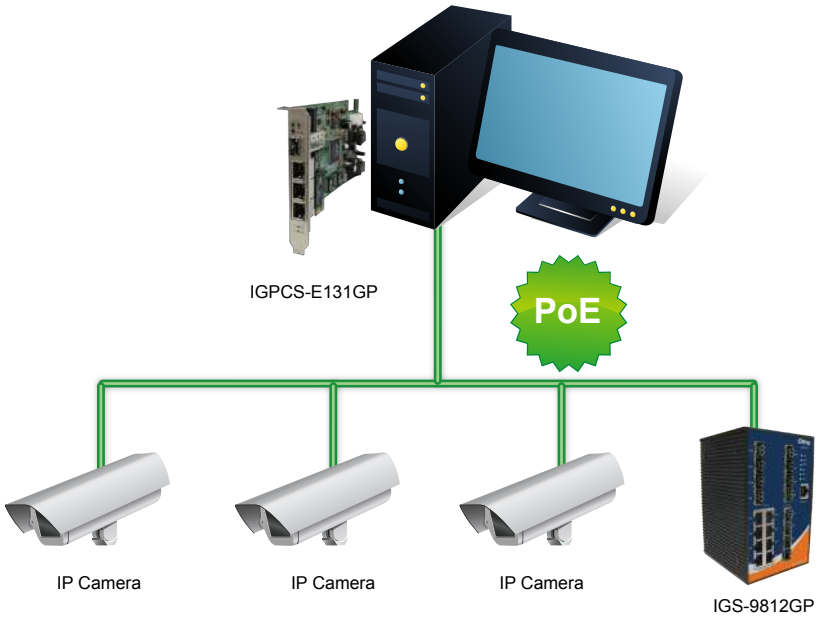
Full Gigabit | P.S.E. PoE IEEE802.3at | -10~60°C Temperature | RoHS Lead Free | CE | FC

Introduction

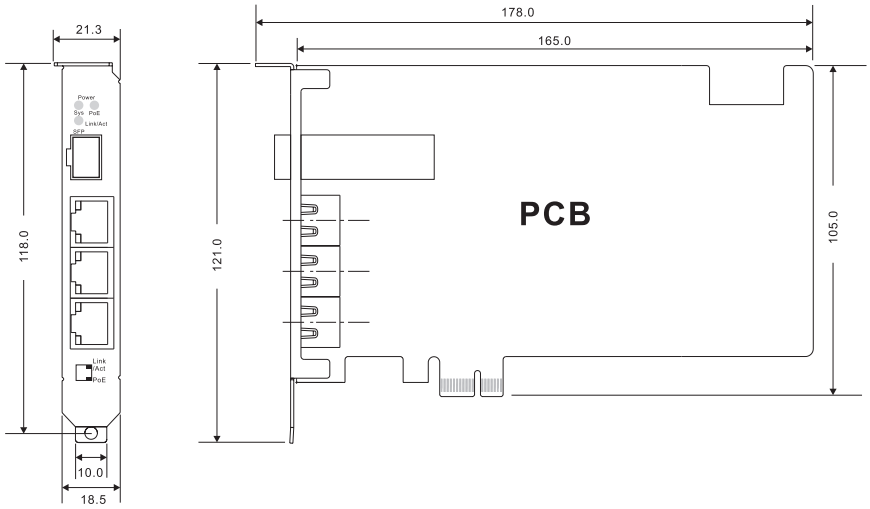
IGPCS-E131GP is a PCI-Express unmanaged Gigabit PoE Ethernet switch card with P.S.E. function, IGPCS-E131GP supports 3x10/100/1000Base-T(X) IEEE 802.3at P.S.E. (Power Sourcing Equipment) and 1x100/1000Base-X SFP ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE port. IGPCS-E131GP could be installed on any IPC motherboard with PCIe socket to make the IPC/embedded system able to communication with other Ethernet devices. Therefore, IGPCS-E131GP is the best solution to IPC/embedded system to feature Ethernet network.

Practical Operation

IGPCS-E131GP can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices.



Dimensions



(Unit=mm)

PoE Pin Definition

10/100Base-T(X) P.S.E. RJ-45 port

RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

1000Base-T P.S.E. RJ-45 port

RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

Specifications

ORing Switch Model	IGPCS-E131GP
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 With P.S.E.	3
100/1000Base-X SFP port	1 S1 DIP-switch for SFP speed setting (ON : 100Base-FX SFP, OFF : 1000Base-X SFP)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T, IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3at PoE specification (total power budget is 65Watts with maximum 30Watts per port)
MAC Table	8K MAC addresses
Processing	Store-and-Forward

LED Indicators	
Power Indicator	Green : Power LED x 1
PoE Power Indicator	Green : PoE power LED x 1
100/1000Base-X SFP port indicator	Green for port Link/Act.
10/100/1000Base-T(X) RJ45 port indicator and PoE indicator	Green for port Link/Act. Green for PoE power injected.
Power	
Input Power	PCIe bus-powered(for switch card system)
PoE Input Power	12VDC of ATX power
Power Consumption (Typ.)	4 Watts (power device not included)
PoE output power	IEEE802.3at/af compliant, up to 30 Watts per port, totally 65 Watts maximum
Overload current protection	Present
Physical Characteristics	
Dimensions (W x D x H)	21.3 (W) x 178 (D) x 121 (H)mm (0.83 x 7 x 4.76 inch)
Weight (g)	160 g
Environmental	
Operating Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-10 to 60°C (14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Operating System Supports	
Microsoft System	DOS / Win98 / WinMe / WinXP / Win2000 / WinServer2003 / Vista / WinServer 2008 / Win7 / Win8
Unix (Linux)	Linux for Kernel 3.x / 2.6.x / 2.4.x, FreeBSD for 7.x / 8.0, SCO OpenServer for 6 / UnixWare 7.1.x
Novell	Novell client for DOS (ODI driver) / Novell server driver (Support OS 5.x and 6.x)
Others	MacOS 10.4 / 10.5 / 10.6 / 10.7
Warranty	5 years

Ordering Information

IGPCS-E1 A B CC

Code Definition	10/100B/1000ase-T(X) Port Number with P.S.E.	Additional Port Number	Additional Port Type
Option	**- 3:** 3 ports	**- 1:** 1 port	**- GP:** 100/1000Base-X SFP port

	Model Name	Description
Available Model	IGPCS-E131GP	Industrial 4-port PCIe unmanaged Gigabit PoE Ethernet switch card with 3x10/100/1000Base-T(X) P.S.E. and 1x100/1000Base-X, SFP socket

Packing List

- IGPCS-E131GP
- Quick Installation Guide
- ORing Tool CD

IGCS-E131GP

IGCS-E131GP

Industrial 4-port PCIe unmanaged Gigabit Ethernet switch card with 3x10/100/1000Base-T(X) and 1x100/1000Base-X, SFP socket

Features

- Provide 3x10/100/1000Base-T(X) ports
- Supports PCIe x1 bus and compatible x4, x8 and x16 PCIe slots
- Compliant with PCIe Rev.1.1 Interface
- Supports 100Base-FX or 1000Base-X SFP port by DIP-switch
- Supports 10K Bytes Jumbo Frame
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control

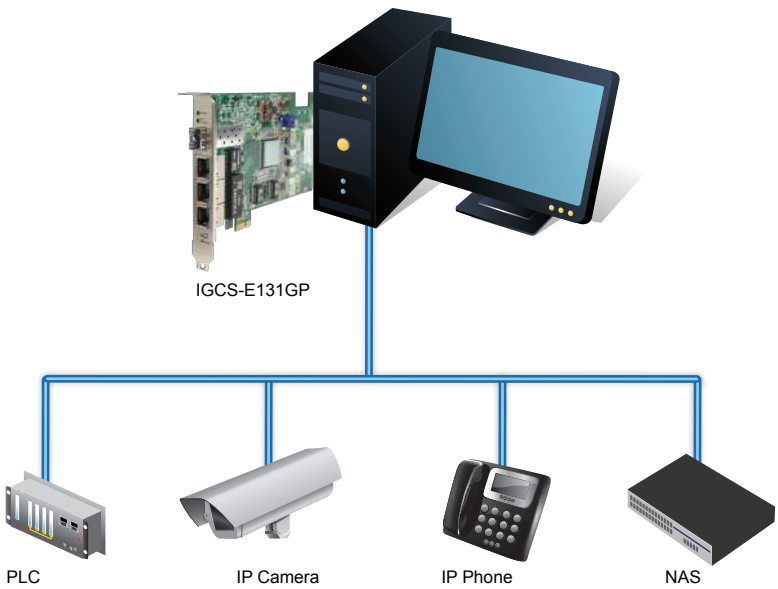
Full Gigabit -10~60°C Temperature RoHS Lead Free

Introduction

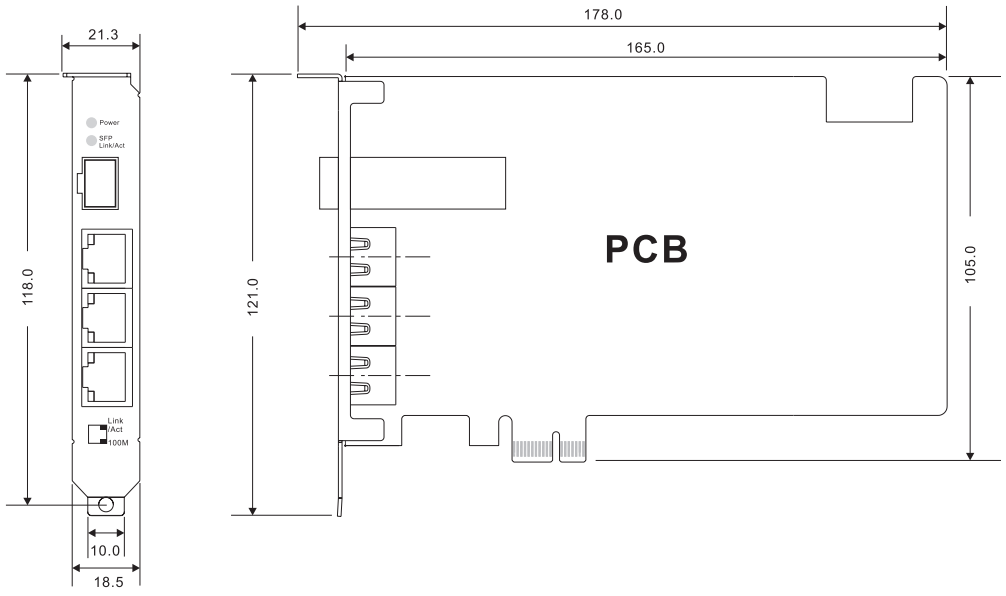
IGCS-E131GP is a PCI-Express unmanaged Gigabit Ethernet switch card. IGCS-E131GP is a high performance LAN controller which provides 3x10/100/1000Base-T(X) auto MDI/MDIX Ethernet ports and 1x100/1000Base-X SFP ports. IGCS-E131GP could be installed on any IPC motherboard with PCIe socket to make the IPC/embedded system able to communicate with other Ethernet devices. The IGCS-E131GP's full bandwidth capability boasts a robust 1000Mbps capability through the PCI Express bus architecture. IGCS-E131GP no need to purchase a new switch or broadband router because the auto-negotiation feature works with your existing switch, broadband router, or hub to provide the highest network speed available. The automatic full duplex capability further increases bandwidth and eliminates packet collisions by allowing data to flow in both directions at the same time. Therefore, IGCS-E131GP is the best solution to IPC/embedded system to feature Ethernet network.

Practical Operation

IGPCS-E131GP can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices.



Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IGCS-E131GP
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45	3
100/1000Base-X SFP port	1 S1 dip-switch for SFP speed setting (ON : 100Base-FX SFP, OFF : 1000Base-X SFP)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T, IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control
MAC Table	8K MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power indicator	Green : Power LED x 1
100/1000Base-X SFP port indicator	Green for port Link/Act.
10/100/1000Base-T(X) RJ45 port indicator	Green for port Link/Act.
Power	
Input Power	PCIe bus-powered(for switch card system)
PoE Input Power	12VDC of ATX power
Power Consumption (Typ.)	4.2 Watts
Overload current protection	Present
Physical Characteristics	
Dimensions (W x D x H)	21.3 (W) x 178 (D) x 121 (H)mm (0.83 x 7 x 4.76 inch)
Weight (g)	120 g

Environmental	
Operating Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-10 to 60°C (14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Operating System Supports	
Microsoft System	DOS / Win98 / WinMe / WinXP / Win2000 / WinServer2003 / Vista / WinServer 2008 / Win7 / Win8
Unix (Linux)	Linux for Kernel 3.x / 2.6.x / 2.4.x, FreeBSD for 7.x / 8.0, SCO OpenServer for 6 / UnixWare 7.1.x
Novell	Novell client for DOS (ODI driver) / Novell server driver (Support OS 5.x and 6.x)
Others	MacOS 10.4 / 10.5 / 10.6 / 10.7
Warranty	5 years

Ordering Information

IGCS-E1 A B CC

Code Definition	10/100B/1000ase-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 3:** 3 ports	**- 1:** 1 port	**- GP:** 100/1000Base-X SFP port

Available Model	Model Name	Description
	IGCS-E131GP	Industrial 4-port PCIe unmanaged Gigabit Ethernet switch card with 3x10/100/1000Base-T(X) and 1x100/1000Base-X, SFP socket

Packing List

- IGCS-E131GP
- Quick Installation Guide
- ORing Tool CD

TES-3162GT-M12-BP1

TES-3162GT-M12-BP1

EN50155 18-port managed Ethernet switch with 16x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** support applications with multiple redundant rings topology
- Support standard IEC 62439 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP/MSTP supported
- Support PTP Client (Precision Time Protocol) clock synchronization
- Support Modbus TCP protocol
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support VLAN and LLDP protocol
- Support TTDP
- DHCP assign each Equipment IP by each Port
- Provided Relay bypass function with two gigabit ports
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (Open-Vision) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

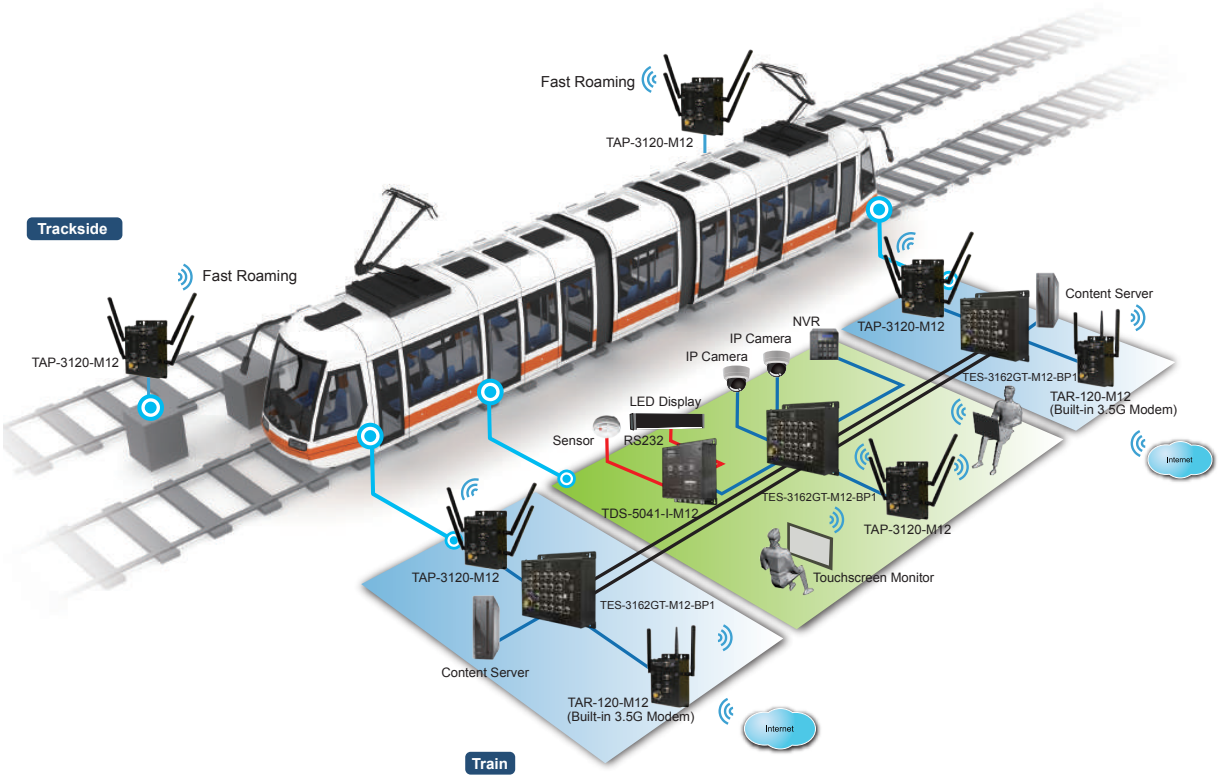
Introduction

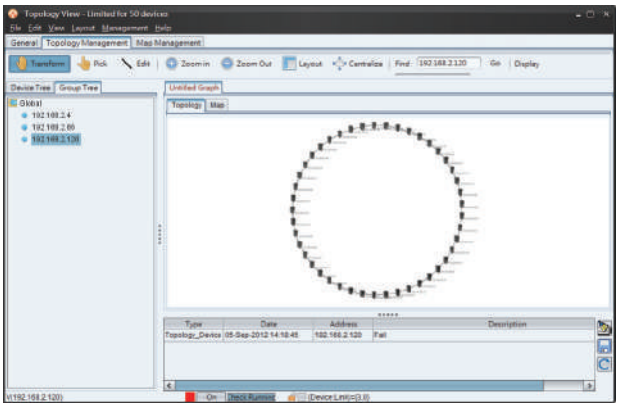
ORing's Transporter™ series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TES-3162GT-M12-BP1 is a managed Redundant Ring Ethernet switch with 16x10/100Base-T(X) and 2x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain and MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. And O-Chain technology is supported which can applied for multiple redundant Ethernet rings. Each TES-3162GT-M12-BP1 switch has 16X10/100Base-T(X) ports. TES-3162GT-M12-BP1 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TES-3162GT-M12-BP1 can be managed centralized and convenient by a powerful windows utility ~ Open-Vision. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

***NOTE: This function is available by request only**

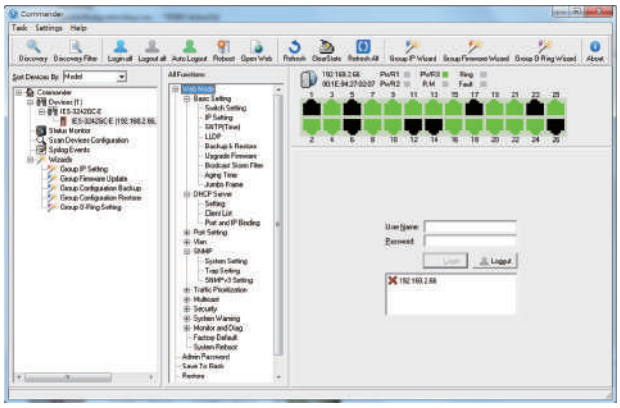
Open-Vision

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



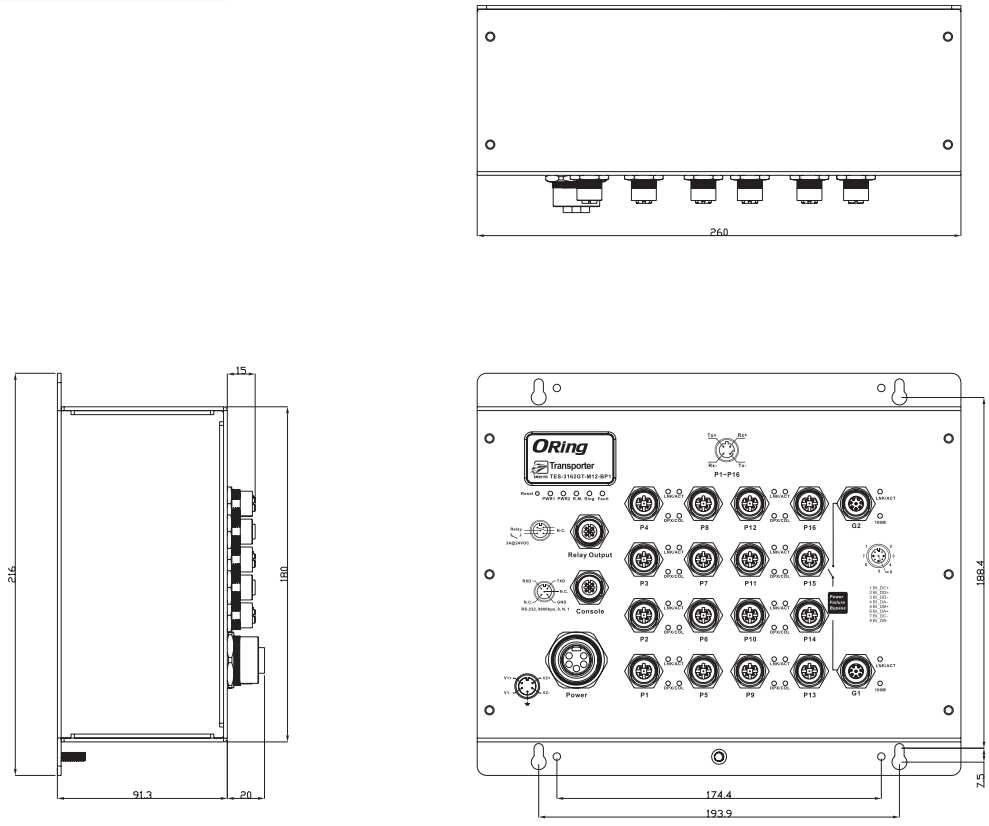


Topology View



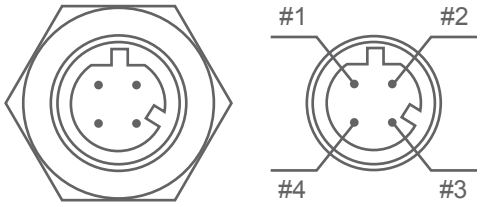
Monitoring and Configuration interface

Dimensions

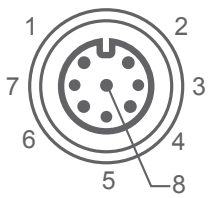


(Unit=mm)

PoE Pin Definition



10/100Base-T(X) M12 port	
M12 D-coding Pin Definition	
Pin No.	Description
#1	TX+
#2	RX+
#3	TX-
#4	RX-



10/100/1000Base-T(X) M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

Specifications

ORing Switch Model	TES-3162GT-M12-BP1
Physical Ports	
10/100Base-T(X) Ports in M12 Auto MDI/MDIX	**16 x M12 connector (4-pin D-coding)**
10/100/1000Base-T(X) ports in M12	**2 x M12 connector (8-pin A-coding)**
RS-232 Serial Console Port	RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 7.2Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP Support TTDP (Train Topology Discovery Protocol)
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** STP RSTP MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
LED Indicators	
Power Indicator	Green : Power LED x 2
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode
O-Ring Indicator	Green : Indicate system operated in O-Ring mode

***NOTE: This function is available by request only**

Fault Indicator	Amber : Indicate unexpected event occurred
10/100Base-T(X) M12 Port Indicator	Green for port Link/Act. Amber for Collision/Duplex indicator.
10/100/1000Base-T(X) M12 Port Indicator	Green for Link/Act. Amber for 100Mbps indicator
Fault contact	
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)
Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 5-pin M23 connector
Power Consumption (Typ.)	12.48 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-40
Dimension (W x D x H)	260 (W) x 91.3 (D) x216 (H) mm
Weight (g)	2020
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Environmental	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B, EN 50155(pending)
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Other	EN 50155(IEC 61373) (pending)
MTBF	280039 hrs
Warranty	5 years

Ordering Information

TES-3 AA B CC –M12– DDD

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Number	Additional Port Number
Option	**- 16:** 16 ports	**- 2:** 2 ports	**- GT:** 10/100/1000Base-T(X) port	**- BP1:** 1xbypass function included

Available Model	Model Name	Description
	TES-3162GT-M12-BP1	EN50155 18-port managed Ethernet switch with 16x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included

Packing List

- TES-3162GT-M12-BP1 x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows utility Suit, 500 IP devices
- M12C : M12 cable accessories
- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply

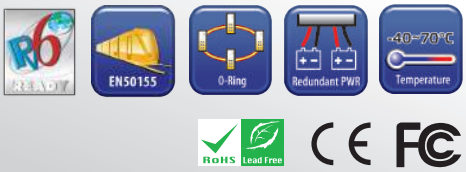
TES-3082GT-M12-BP1

TES-3082GT-M12-BP1

EN50155 10-port managed Ethernet switch with 8x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support VLAN and LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- DHCP assign each Equipment IP by each Port
- Provided Relay bypass function with two gigabit ports
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

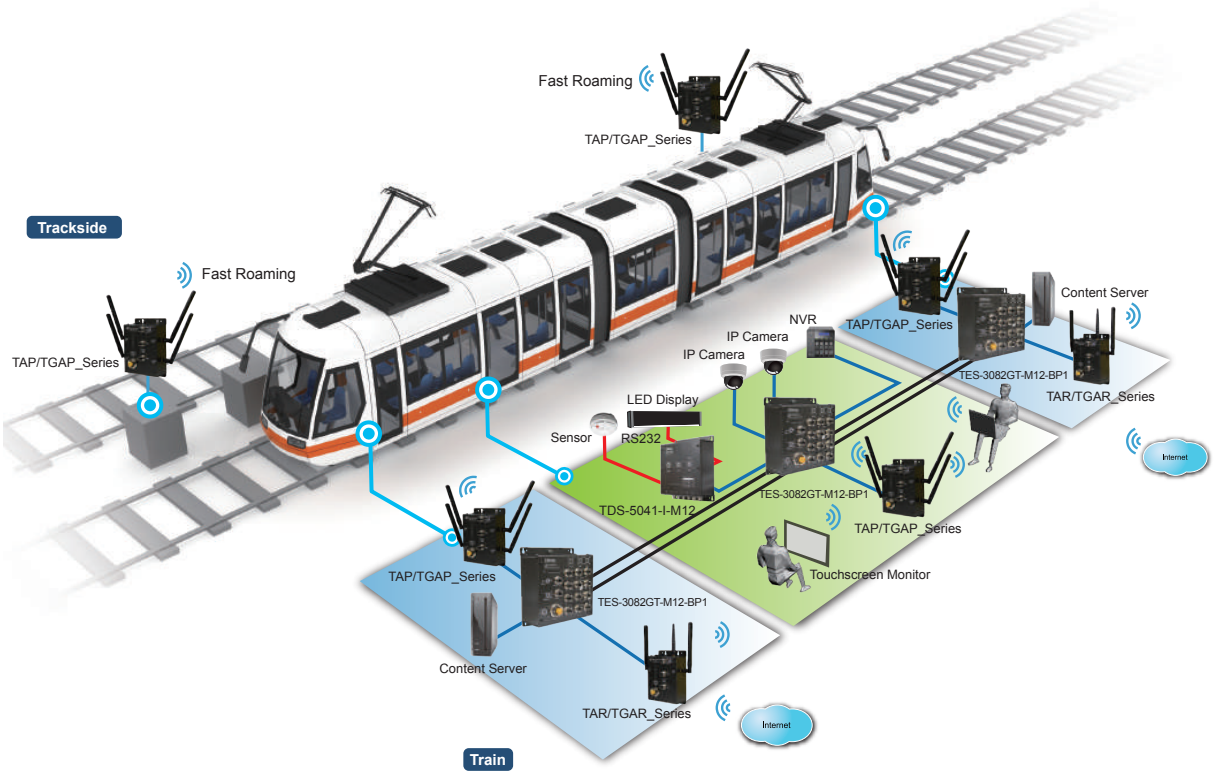


Introduction

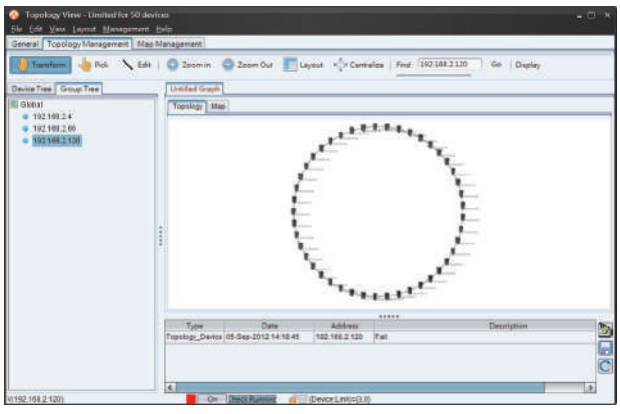
ORing's Transporter™ series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TES-3082GT-M12-BP1 is a managed Redundant Ring Ethernet switch with 8x10/100Base-T(X) and 2x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. TES-3082GT-M12-BP1 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TES-3082GT-M12-BP1 can be managed centralized and convenient by a powerful windows utility ~ Open-Vision. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

Open-Vision

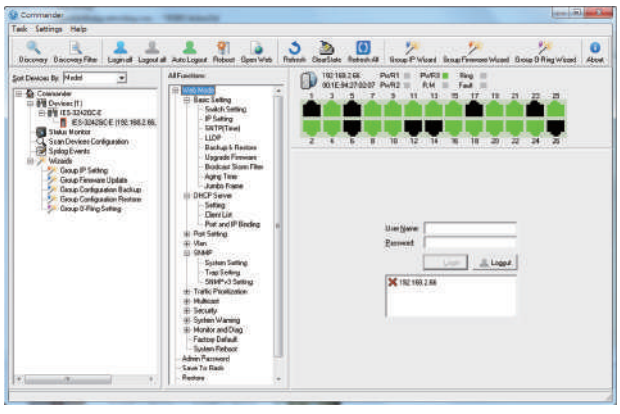
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Network connection

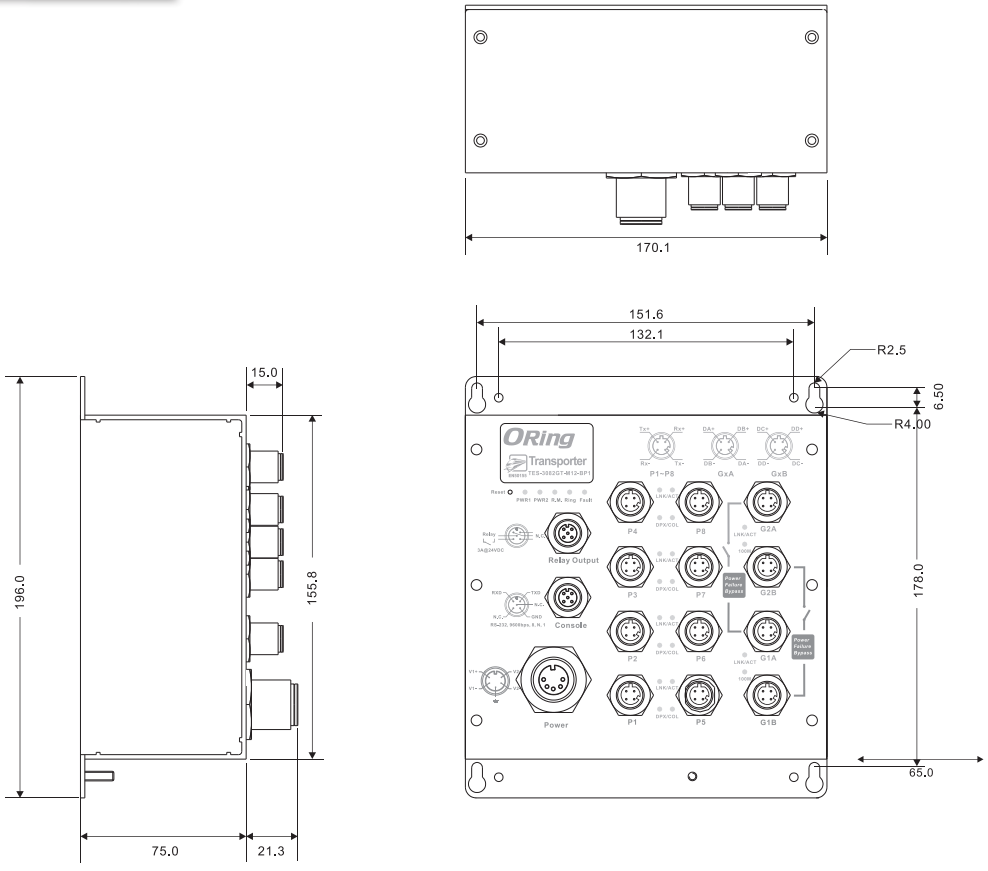


Topology View



Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	TES-3082GT-M12-BP1
Physical Ports	
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX	8 x M12 connector (4-pin D-coding)
10/100/1000Base-T(X) ports in M12	2 x (combinig 2 x M12 connectors 4-pin D-coding for 1 Gigabit port)
RS-232 Serial Console Port	RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward

Switch Properties	Switching latency: 7 us Switching bandwidth: 5.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support PTP Client (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP*NOTE STP/RSTP:2004/MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
LED Indicators	
Power Indicator	Green : Power LED x 2
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode
O-Ring Indicator	Green : Indicate system operated in O-Ring mode
Fault Indicator	Amber : Indicate unexpected event occurred
10/100Base-T(X) M12 Port Indicator	Green for port Link/Act. Amber for Collision/Duplex indicator.
10/100/1000Base-T(X) M12 Port Indicator	Green for Link/Act. Amber for 100Mbps indicator
Fault contact	
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)
Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 5-pin M23 connector
Power Consumption (Typ.)	11 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-40
Dimension (W x D x H)	170 (W) x 75 (D) x196 (H) mm
Weight (g)	1338 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Environmental	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11

***NOTE: This function is available by request only**

Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

TES-3 AA B CC – M12 – BP1

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type
Option	**- 08:** 8 ports	**- 2:** 2 port	**- GT:** 10/100/1000Base-T(X) port

	Model Name	Description
Available Model	TES-3082GT-M12-BP1	EN50155 10-port managed Ethernet switch with 8x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included

Packing List

- TES-3082GT-M12-BP1 x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows utility Suit, 500 IP devices
- DR-120 series : 120 Watts DIN-Rail power supply
- M12C : M12 cable accessories
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- Console cable

TES-3080-M12

TES-3080-M12

Industrial EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X), M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** supports the other vendor's ring technology in open architecture
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Supports **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Supports LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- Port lock to prevent access from unauthorized MAC address
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (**Open-Vision**) supports centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

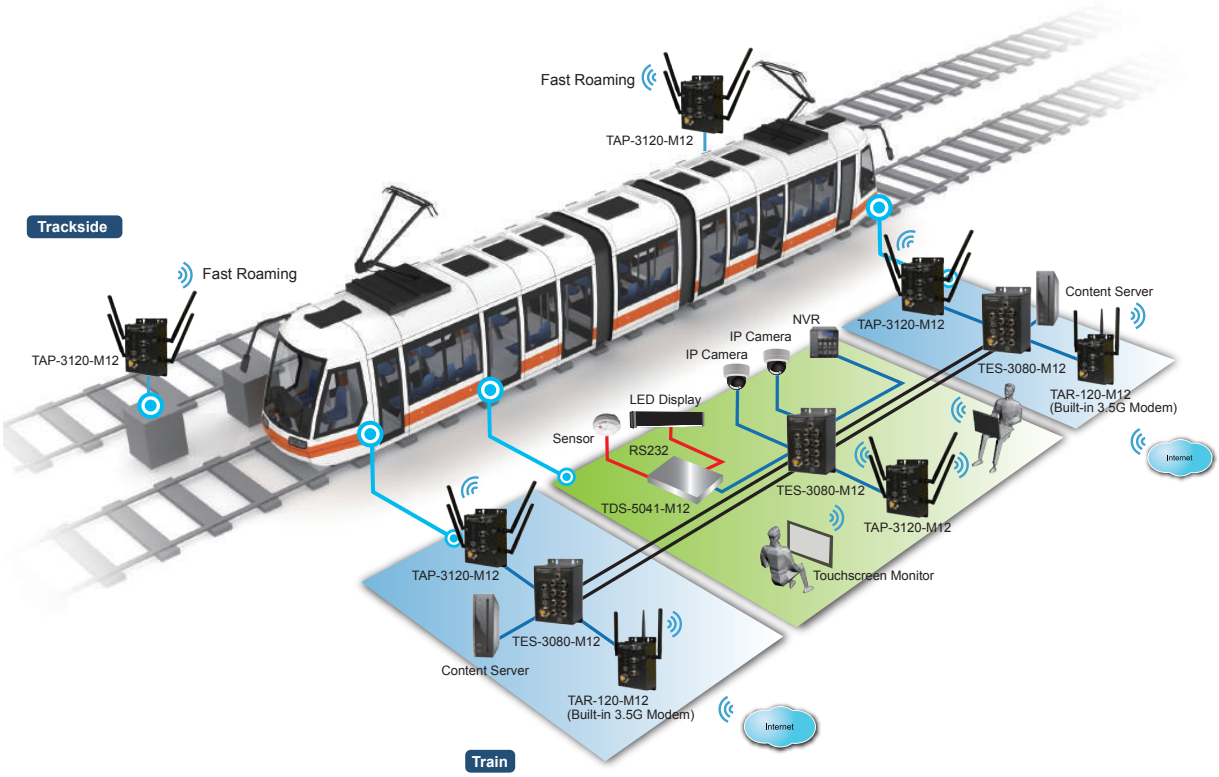
RoHS Lead Free CE FC

Introduction

ORing's Transporter series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TES-3080-M12 is the managed Redundant Ring Ethernet switch with 8x10/100Base-T(X) ports which is compliant with EN50155 standard. With complete support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 10ms over 250 units of connection), **Open-Ring**, and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology.

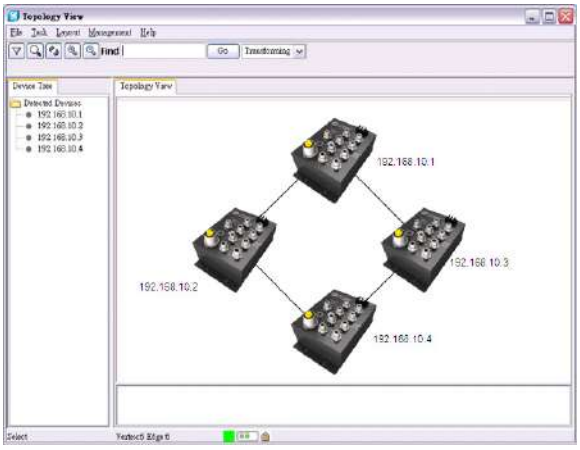
TES-3080-M12 EN50155 Ethernet Switch is specifically designed for the toughest industrial environments. It uses M12 connectors to ensure tight and robust connections, plus it guarantees reliable operation against environmental disturbances, such as vibration and shock. Additionally, the **Open-Ring** technology is also supported which can applied for other vendor's proprietary ring. Network management on TES-3080-M12 is centralized and convenient via the powerful windows utility ~ **Open-Vision**. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environments. Therefore, the TES-3080-M12 Ethernet switch is one of the most reliable choices for rolling stock and highly-managed Ethernet applications.

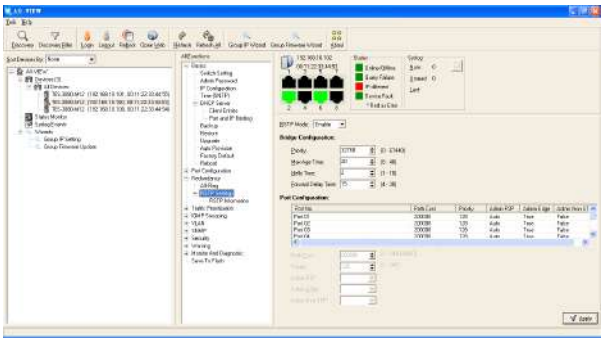
Practical Operation



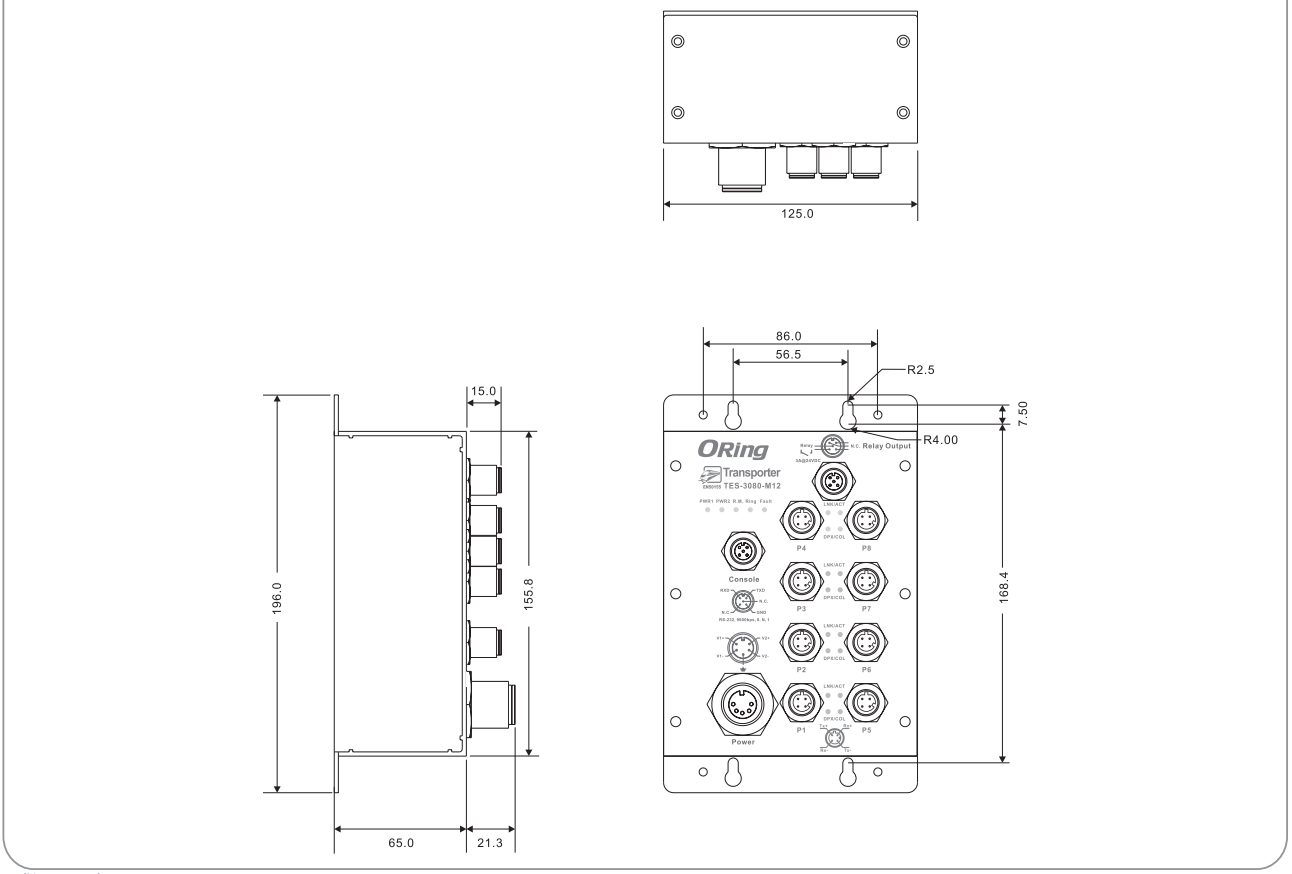
Open-Vision

ORing's switches are intelligent switches. Being different from other traditional redundant switches, ORing provides a set of Windows utility (**Open-Vision**) for users to manage and monitor all of industrial Ethernet switches on the industrial network.





Dimensions



(Unit=mm)

Specifications

ORing Switch Model	TES-3080-M12
Physical Ports	
10/100 Base-T(X) Ports in M12 (D-coding) Auto MDI/MDIX	8 x M12 connector (D-coding)
RS-232 Serial Console Port	RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 µs Switching bandwidth: 1.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define

Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Supports **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain STP RSTP:2004 MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
LED Indicators	
Power Indicator	Green : Power LED x 2
R.M. Indicator	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator	Green : Indicates that the system is operating in O-Ring mode
Fault Indicator	Amber : Indicates unexpected event occurred
10/100Base-T(X) M12 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
Fault Contact	
Relay	Relay output to carry capacity of 3A at 24VDC(M12 connector with A-coding)
Power	
Redundant Input Power	Dual 12~48VDC on 5-pin M23 connector
Power Consumption (Typ.)	5 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	125 (W) x 65 (D) x 196 (H)mm (4.92 x 2.56 x 7.72 inch)
Weight (g)	896 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing

Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6, EN61373
Safety	EN60950-1
Warranty	5 years

Ordering Information

TES-3 AA B -M12

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 port

Available Model	Model Name	Description
	TES-3080-M12	EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X), M12 connector

Packing List

- TES-3080-M12
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- M12C : M12 cable accessories

TES-3080-M12-BP2 Series

TES-3080-M12-BP2 Series

EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X), M12 connector and 2xbypass included

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** supports the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Supports **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus/TCP protocol
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Supports LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- Port lock to prevent access from unauthorized MAC address
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (**Open-Vision**) supports centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Built-in 2 sets of bypass ports
- Wall mounting enabled

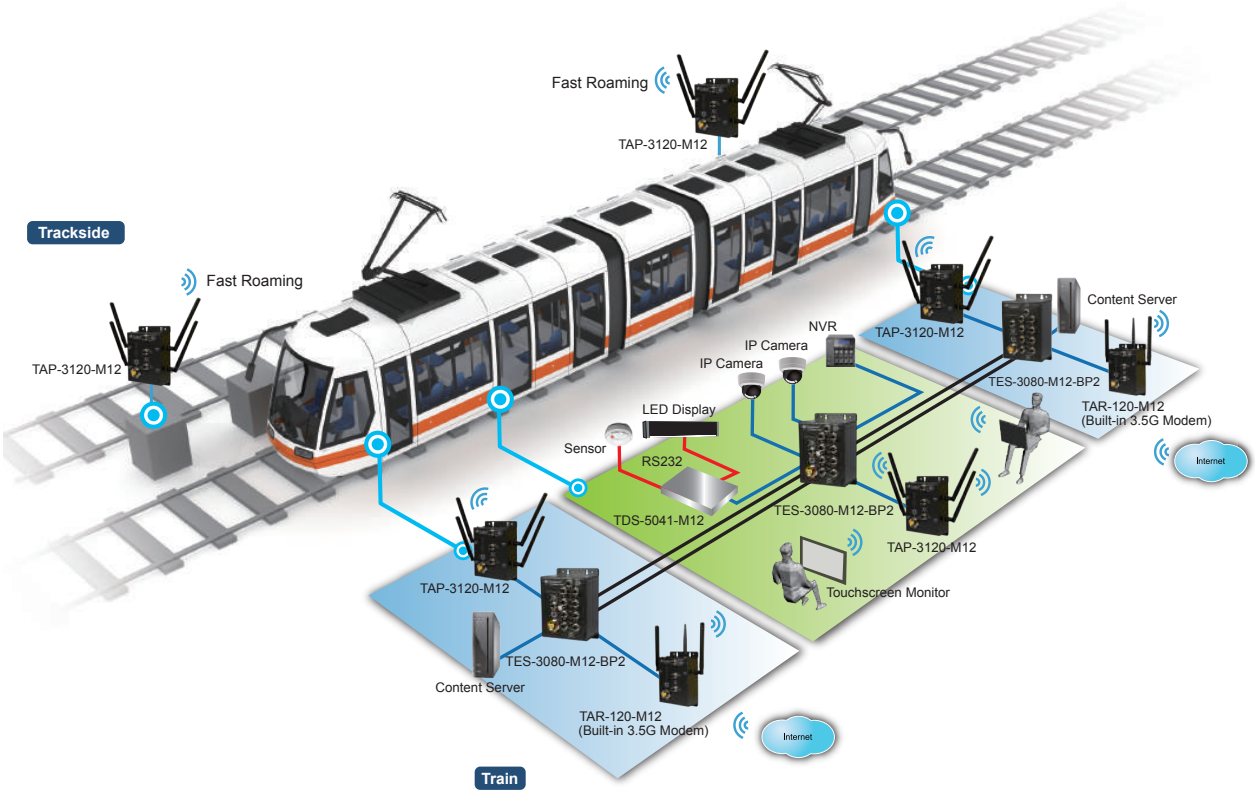
RoHS Lead Free CE FC

Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications such as rolling stock, vehicle, and railway. The TES-3080-M12-BP2, which is compliant with the EN50155 standard, is a managed Redundant Ring Ethernet switch with 8x10/100Base-T(X) ports (4 of these ports also double as 2 sets of bypass ports). With complete support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. TES-3080-M12-BP2 EN50155 Ethernet switch uses M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TES-3080-M12-BP2 includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. TES-3080-M12-BP2 can be managed centralized and convenient by a powerful windows utility ~ Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

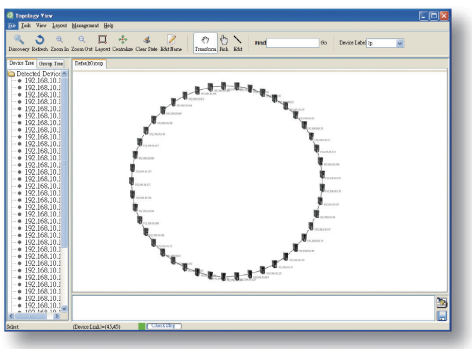
***NOTE: This function is available by request only**

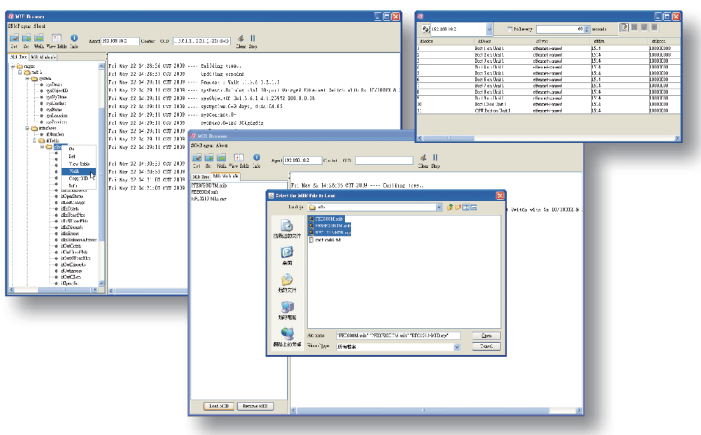
Practical Operation



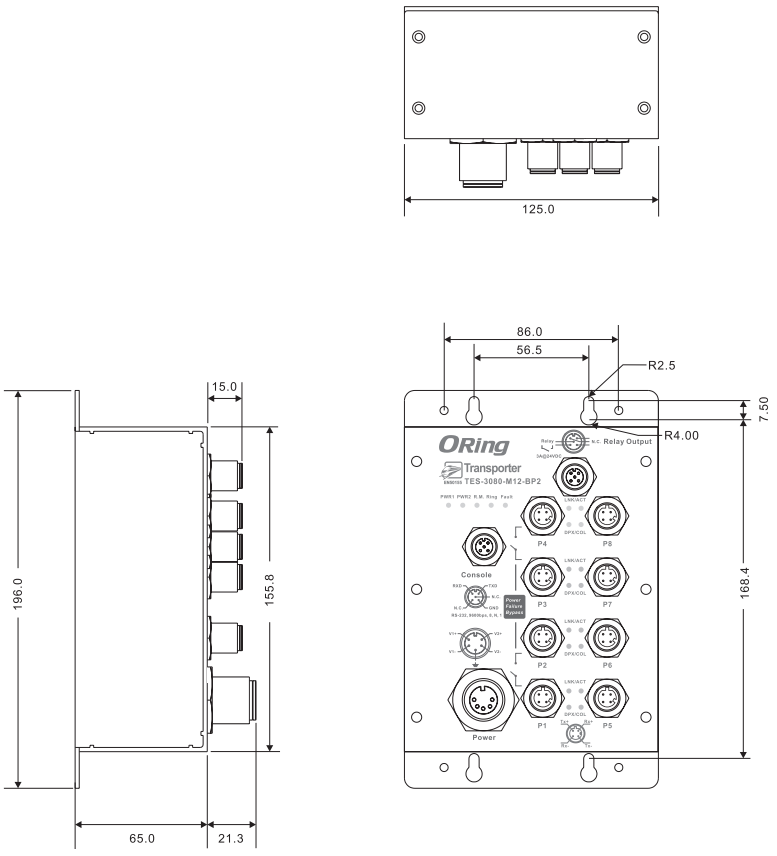
Open-Vision

ORing's switches are intelligent switches. Being different from other traditional redundant switches, ORing's managed and lite-managed switches feature a set of Windows utility (Open-Vision) for the user to manage and monitor all of industrial Ethernet switches on the industrial network.



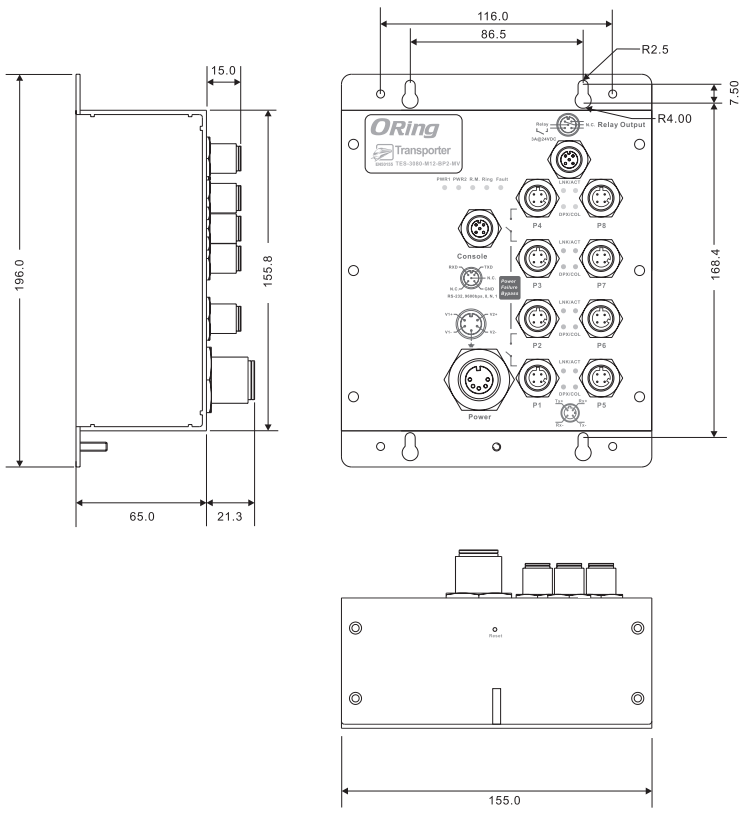


Dimensions



TES-3080-M12-BP2

Dimensions



TES-3080-M12-BP2-MV/HV

Specifications

ORing Switch Model	TES-3080-M12-BP2	TES-3080-M12-BP2-MV	TES-3080-M12-BP2-HV
Physical Ports			
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX	8 x M12 connector (D-coding)		
RS-232 Serial Console Port	RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1		
Technology			
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)		
MAC Table	8192 MAC addresses		
Priority Queues	4		
Processing	Store-and-Forward		
Switch Properties	Switching latency: 7 µs Switching bandwidth: 1.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define		
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security		
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP		
Network Redundancy	O-Ring Open-Ring O-Chain STP RSTP:2004 MSTP		
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support		
LED Indicators			
Power Indicator	Green : Power LED x 2		
R.M. Indicator	Green : Indicates that the system is operating in O-Ring Master mode		
O-Ring Indicator	Green : Indicates that the system is operating in O-Ring mode		
Fault Indicator	Amber : Indicates unexpected event occurred		
10/100Base-T(X) M12 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision		

Fault Contact			
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (A-coding)		
Power			
Redundant Input Power	Dual 12~48VDC on 5-pin M23 connector	Dual 72~144VDC on 5-pin M23 connector	Dual 88~373VDC / 85~264VAC on 5-pin M23 connector
Power Consumption (Typ.)	5 Watts		
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristics			
Enclosure	IP-40		
Dimensions (W x D x H)	125 (W) x 65 (D) x 196 (H)mm (4.92 x 2.56 x 7.72 inch)	155 (W) x 65 (D) x 196 (H)	155 (W) x 65 (D) x 196 (H)
Weight (g)	894 g	1304 g	1304 g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-40 to 70°C (-40 to 158°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory Approvals			
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)		
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11		
Shock	IEC60068-2-27, EN61373		
Free Fall	IEC60068-2-32		
Vibration	IEC60068-2-6, EN61373		
Safety	EN60950-1		
Warranty	5 years		

Ordering Information

TES-3 AA B -M12-BP2-CC

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Power Input Type
Option	**- 08:** 8 ports	**- 0:** 0 port	- **MV**: middle-voltage power input - **HV**: high-voltage power input

	Model Name	Description
Available Model	TES-3080-M12-BP2	EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X), M12 connector and 2xbypass included
	TES-3080-M12-BP2-MV	EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X), M12 connector and 2xbypass included, middle-voltage power input
	TES-3080-M12-BP2-HV	EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X), M12 connector and 2xbypass included, high-voltage power input

Packing List

- TES-3080-M12-BP2
- ORing Tool CD
- Quick Installation Guide
- Console Cable

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows utility Suit, 500 IP devices
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- M12C : M12 cable accessories

TES-1080-M12

TES-1080-M12

EN50155 8-port unmanaged Ethernet switch with 8x10/100Base-T(X), M12 connector

Features

- Industry-leading EN50155-compliant Ethernet switch for railway applications
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store-and-forward transmission
- Supports flow control
- Warning system by relay output
- Ultra-rugged enclosure for toughest industrial usages
- M12 connectors to guarantee reliable operation against environmental disturbances
- Dual wide-range power inputs on the M23 connector: 12~48VDC
- Wall mounting enabled

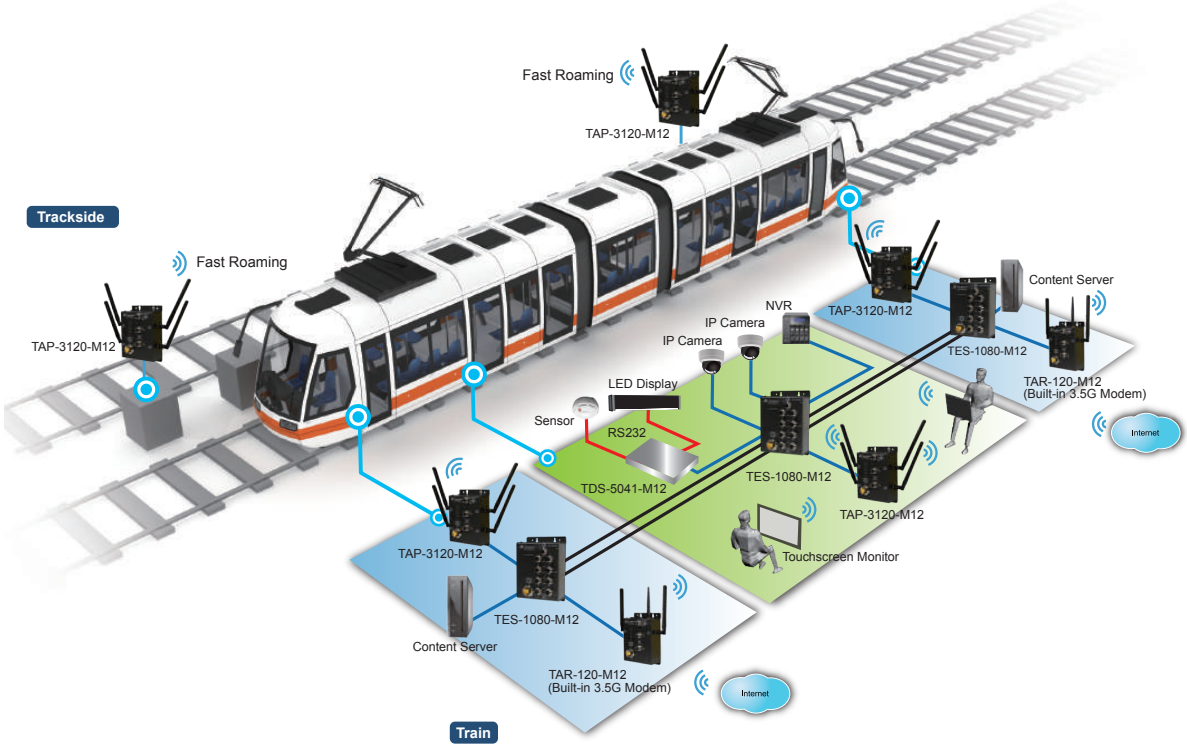
EN50155 Redundant PWR -40~70°C Temperature

RoHS Lead Free CE FC

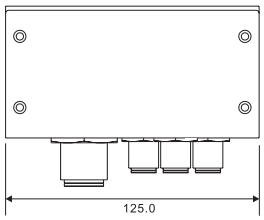
Introduction

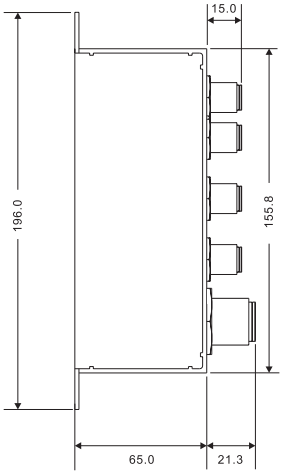
ORing's Transporter™ series Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TES-1080-M12 is an unmanaged Ethernet switch with 8x10/100Base-T(X) ports with EN50155 certification.TES-1080-M12 rugged IP-40 aluminum enclosure. All Ethernet ports on TES-1080-M12 are implemented with M12 connectors to ensure dust-tight connection,and to guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of tough operating environments. Therefore, the switch is one of the most reliable choices for rolling stock Ethernet application.

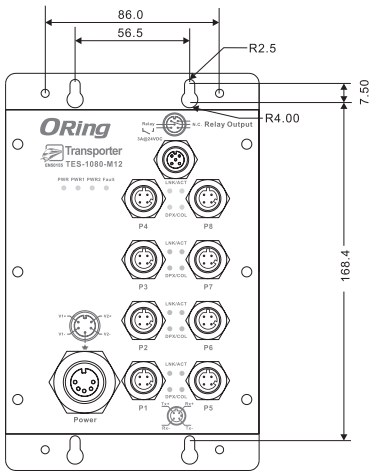
Practical Operation



Dimensions







(Unit=mm)

Specifications

ORing Switch Model	TES-1080-M12
Physical Ports	
10/100 Base-T(X) Ports in M12 (D-coding) Auto MDI/MDIX	8 x M12 connector (D-coding)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control
MAC Table	8192 MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power Indicator	Green : Power LED x 2
Fault Indicator	Amber : Indicate power failure event
10/100Base-T(X) M12 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
Fault Contact	
Relay	Relay output to carry capacity of 3A at 24VDC (M12 connector with A-coding)
Power	
Redundant Input Power	Dual 12~48VDC on M23 connector
Power Consumption (Typ.)	5 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-40
Dimensions (W x D x H)	125 (W) x 65 (D) x 196 (H)mm (4.92 x 2.56 x 7.72 inch)
Weight (g)	831 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-9, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6, EN61373
Safety	EN60950-1
Warranty	5 years

Ordering Information

TES-1 AA B -M12

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 port

Available Model	Model Name	Description
	TES-1080-M12	EN50155 8-port unmanaged Ethernet switch with 8x10/100Base-T(X), M12 connector

Packing List

- TES-1080-M12
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- M12C : M12 cable accessories

TES-1080-M12-BP2

TES-1080-M12-BP2

EN50155 8-port unmanaged Ethernet switch with 8x10/100Base-T(X), M12 connector and 2xbypass included

Features

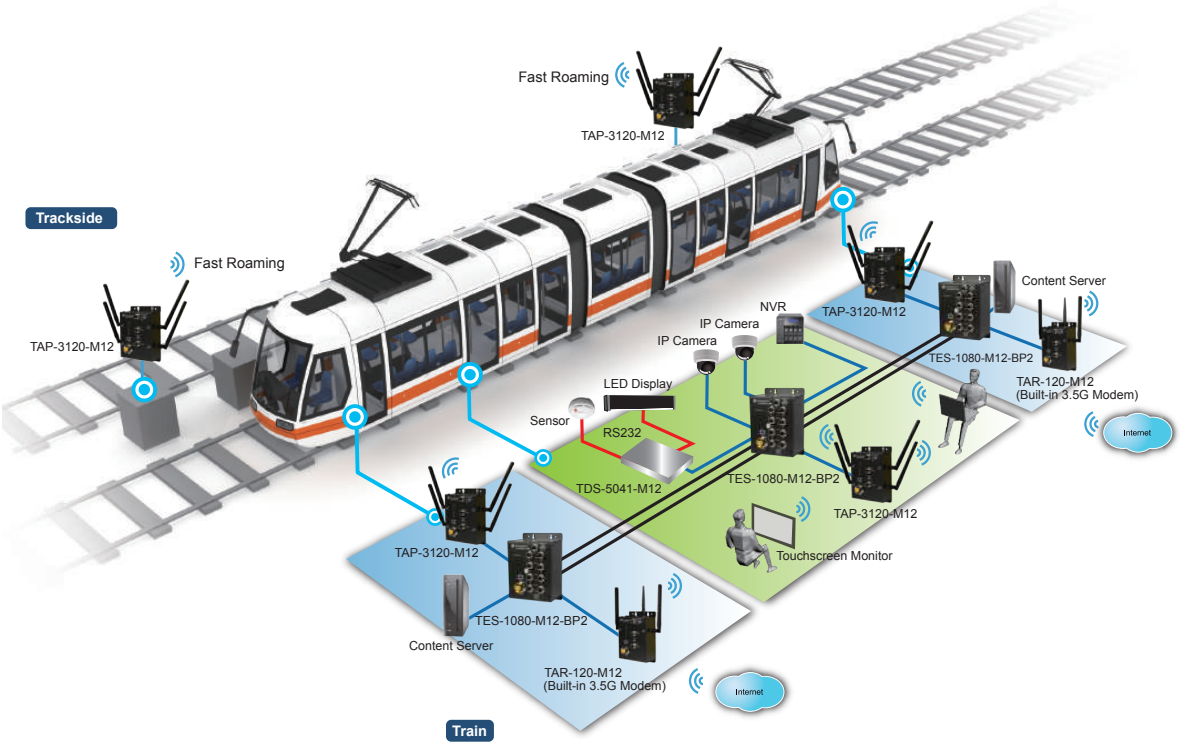
- Leading EN50155-compliant Ethernet switch for rolling stock applications
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store-and-forward transmission
- Supports flow control
- Built-in 2 sets of bypass ports
- Warning system by relay output
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

EN50155 Redundant PWR -40~70°C Temperature RoHS Lead Free CE FC

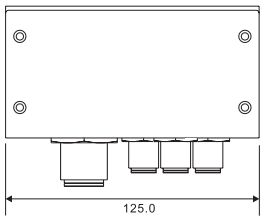
Introduction

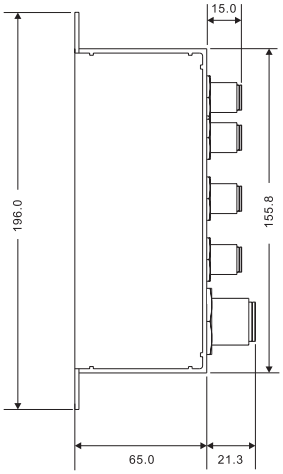
ORing's Transporter series Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway. The TES-1080-M12-BP2, which is compliant with the EN50155 standard, is an unmanaged Ethernet switch with 8x10/100Base-T(X) ports (4 of these ports also double as 2 sets of bypass ports). TES-1080-M12-BP2 is constructed of a rugged aluminum case and designed with Ethernet ports (M12 type connector), which provide a dust-tight connection. TES-1080-M12-BP2 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TES-1080-M12-BP2 includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. Each set of these bypass ports includes Network ports and Monitor ports. The Network ports are used for connection to main-network connections and provide protection mechanism, and the Monitor ports are used for down-linking local networking device. When the power is on, the operating mode of the Bypass ports is set to Normal, and the local networking device is connected with main-network. When power failure occurs, the Bypass ports are swiftly set to bypass mode to isolate the main-network from the local networking device. In addition, the wide operating temperature range from -40 ~ 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock Ethernet application.

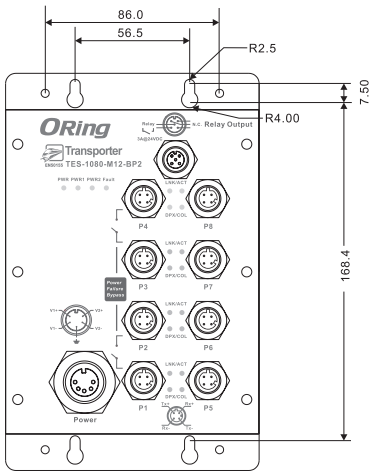
Practical Operation



Dimensions







(Unit=mm)

Specifications

ORing Switch Model	TES-1080-M12-BP2
Physical Ports	
10/100 Base-T(X) Ports in M12 (D-coding) Auto MDI/MDIX	8 x M12 connector (D-coding)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control
MAC Table	8192 MAC addresses
Processing	Store-and-Forward
LED Indicators	
Power Indicator	Green : Power LED x 2
Fault Indicator	Amber : Indicate power failure event
10/100Base-T(X) M12 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
Fault Contact	
Relay	Relay output to carry capacity of 3A at 24VDC (M12 connector with A-coding)
Power	
Redundant Input Power	Dual 12~48VDC on M23 connector
Power Consumption (Typ.)	5 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-40
Dimensions (W x D x H)	125 (W) x 65 (D) x 196 (H)mm (4.92 x 2.56 x 7.72 inch)
Weight (g)	845 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-9, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6, EN61373
Safety	EN60950-1
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	77,444
Warranty	5 years

Ordering Information

TES-1 AA B -M12-BP2

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 port

Available Model	Model Name	Description
	TES-1080-M12-BP2	EN50155 8-port unmanaged Ethernet switch with 8x10/100Base-T(X), M12 connector and 2xbypass included

Packing List

- TES-1080-M12-BP2
- Quick Installation Guide

Optional Accessories

- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- M12C : M12 cable accessories

TES-250-M12

TES-250-M12

EN50155 5-port lite-managed Ethernet switch with 5x10/100Base-T(X), M12 connector

Features

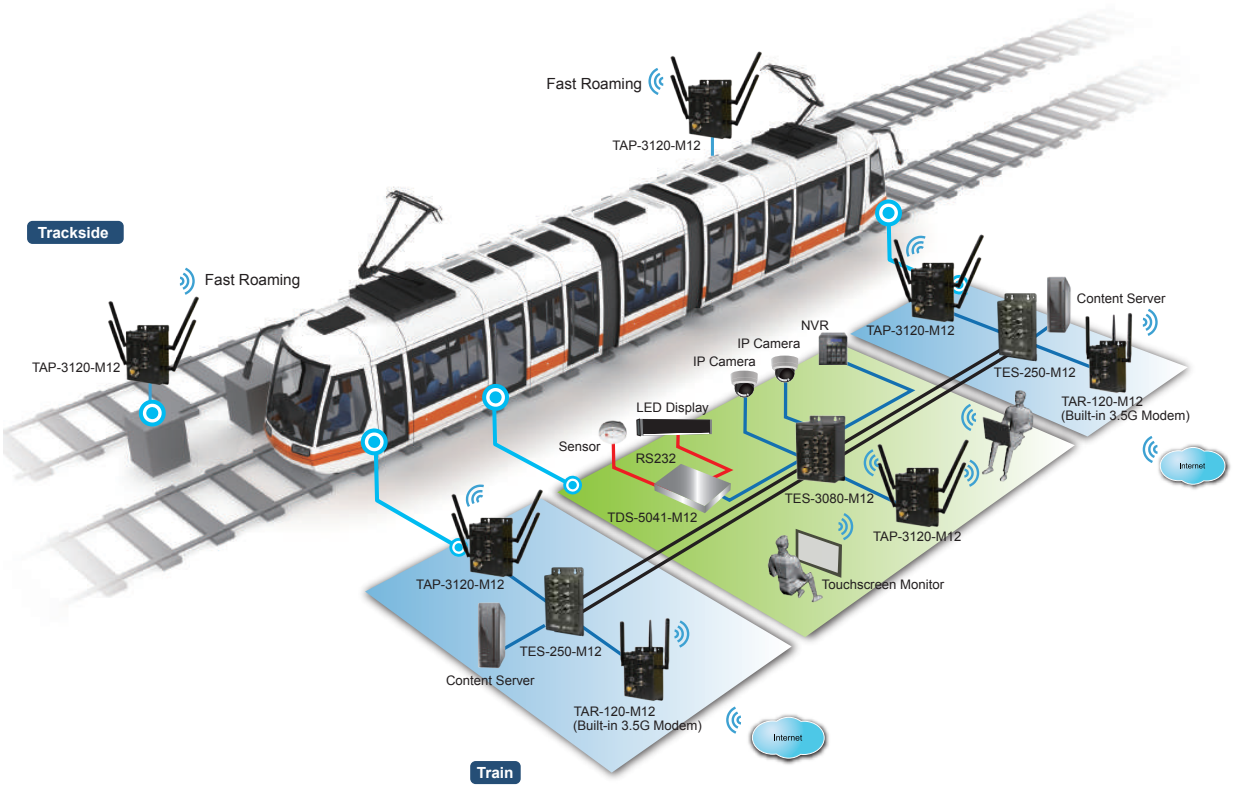
- Leading EN50155-compliant Ethernet switch for rolling stock application
- Fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** support the multiple redundant ring technology
- Provides **Fast recovery technology** for Ethernet multi-redundancy
- Supports STP/RSTP standard redundant protocol
- SNMP v1/v2c/v3 support for secured network management
- Supports LLDP protocol
- Configurable by Web-based interface and Windows utility (Open-Vision)
- Event notification through Syslog, Email, and SNMP trap
- Ultra-rugged enclosure M12 connector for toughest industrial usages
- Wall mounting enabled

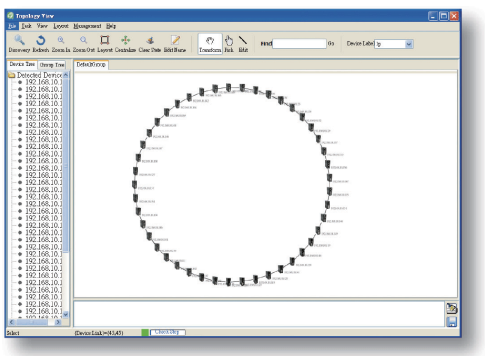
Introduction

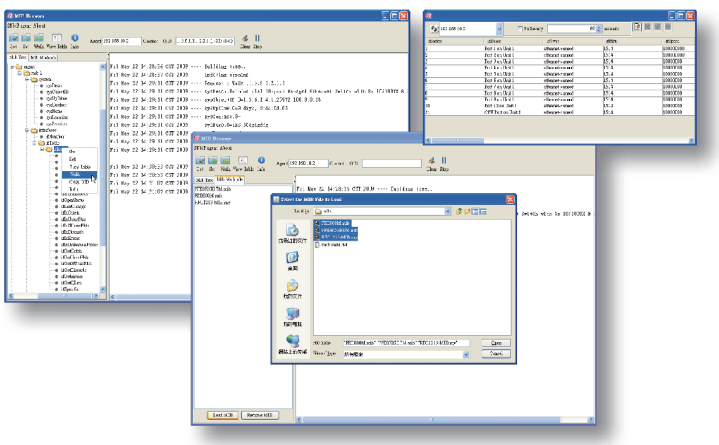
ORing's Transporter series Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TES-250-M12 is a lite-managed redundant ring Ethernet switch with 10/100Base-T(X) ports which is compliant with EN50155 request. With complete support of Ethernet redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain and STP/RSTP(IEEE802.1w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technologies. It is specifically designed for the toughest industrial environments. TES-250-M12 EN50155 Ethernet switch uses M12 connectors to ensure tight, robust connections and guarantees reliable operation against environmental disturbances, such as vibration and shock. TES-250-M12 can be managed centralized by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40~70°C can satisfy most of operating environment. The TES-250-M12 can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet applications.

Open-Vision

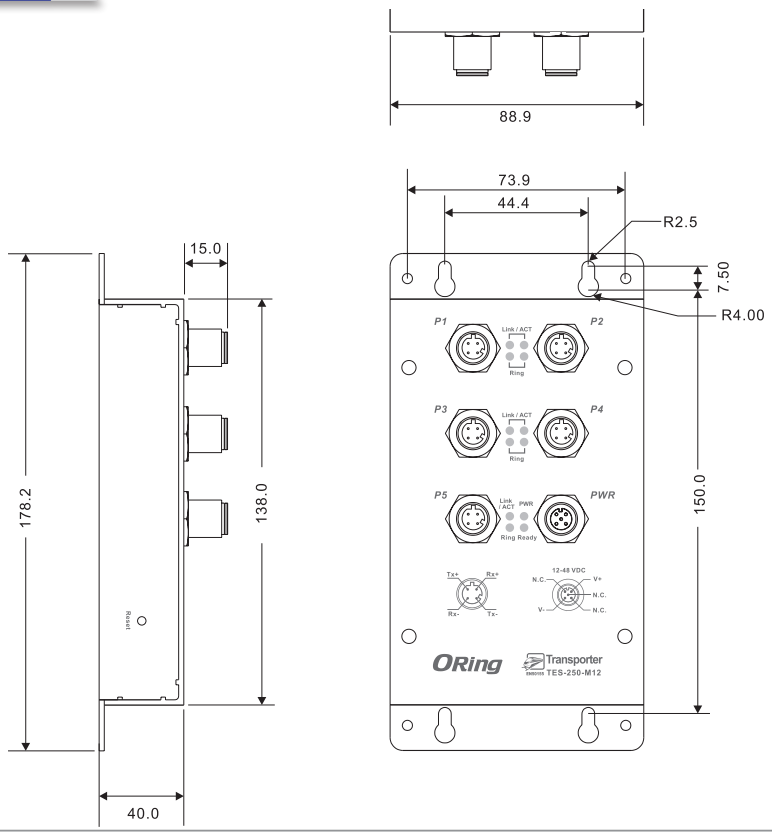
ORing's switches are intelligent switches. Being different from other traditional redundant switches, ORing's managed and lite-managed switches feature a set of Windows utility (Open-Vision) for the user to manage and monitor all of industrial Ethernet switches on the industrial network.







Dimensions



Specifications

ORing Switch Model	TES-250-M12
Physical Ports	
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX	5 x M12 connector (D-coding)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	1024 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching bandwidth: 1.0Gbps VLAN: Port Based
Security Features	Enable/Disable ports VLAN to segregate and secure network traffic SNMP v3 encrypted authentication and access security
Software Features	STP/RSTP (IEEE 802.1D/w) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units Port configuration, status, statistics, monitoring, security
Network Redundancy	O-Ring Open-Ring O-Chain Fast recovery STP
LED Indicators	
Power Indicator	Green : Power LED x 1

Ring Master Indicator	Green : Indicate system operated in O-Ring Master mode
O-Ring Indicator	Amber : Indicate port operated in O-Ring mode (per port)
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. (per port)
Power	
Input Power	12~ 48 VDC power input in 5-pin M12 connector (A-coding)
Power Consumption (Typ.)	3 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-40
Dimensions (W x D x H)	88.9 (W) x 40 (D) x 178.2 (H)mm(3.5 x 1.57 x 7 inch)
Weight (g)	375g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6, EN61373
Safety	EN60950-1
Warranty	5 years

Ordering Information

TES-2 A B -M12

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 5:** 5 ports	**- 0:** 0 port

	Model Name	Description
Available Model	TES-250-M12	EN50155 5-port lite-managed Ethernet switch with 5x10/100Base-T(X), M12 connector

Packing List

- TES-250-M12
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- M12C series cables with M12 connectors

TES-150-M12

TES-150-M12

EN50155 5-port unmanaged Ethernet switch with 5x10/100Base-T(X), M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock applications
- Supports 5 ports 10/100 Base-T(X)
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store-and-forward transmission
- Supports flow control
- Ultra-rugged enclosure with M12 connectors for toughest industrial usages
- Wall mounting enabled

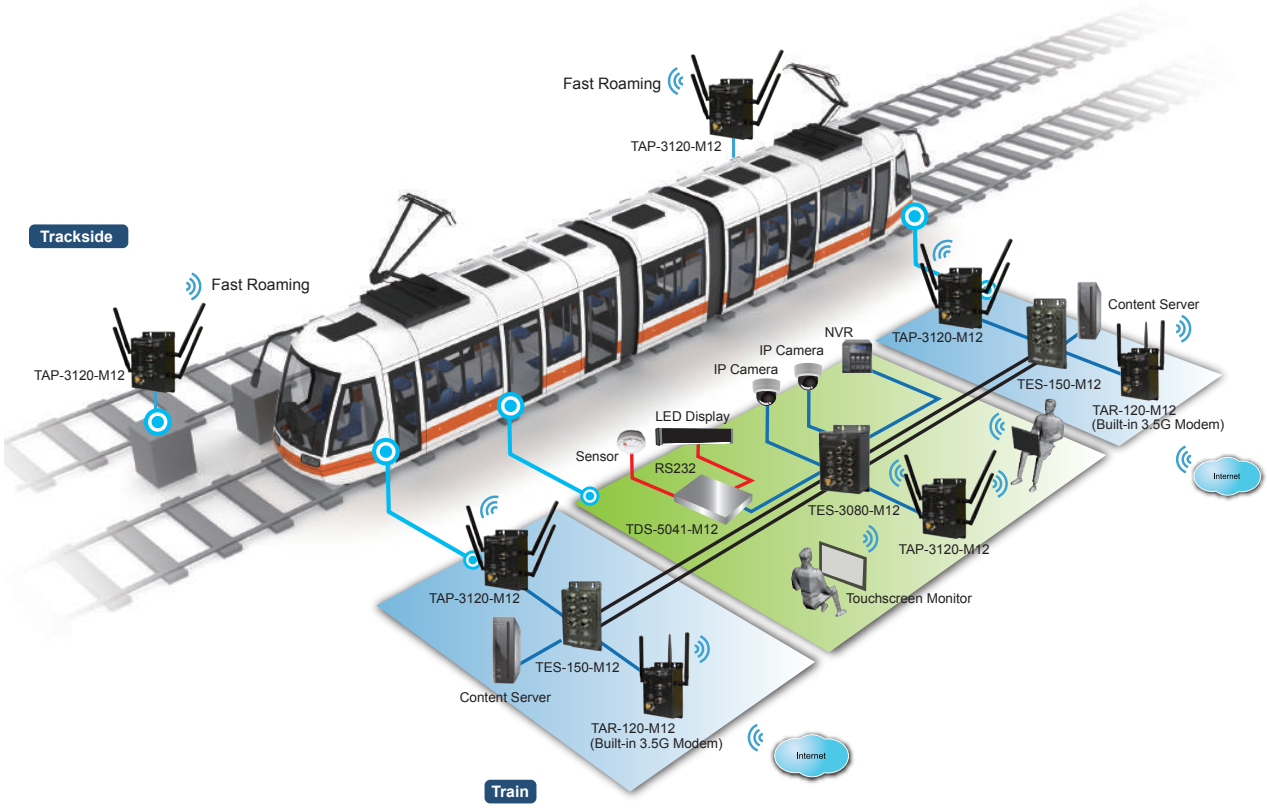
EN50155 -40~70°C Temperature RoHS Lead Free CE FC

Introduction

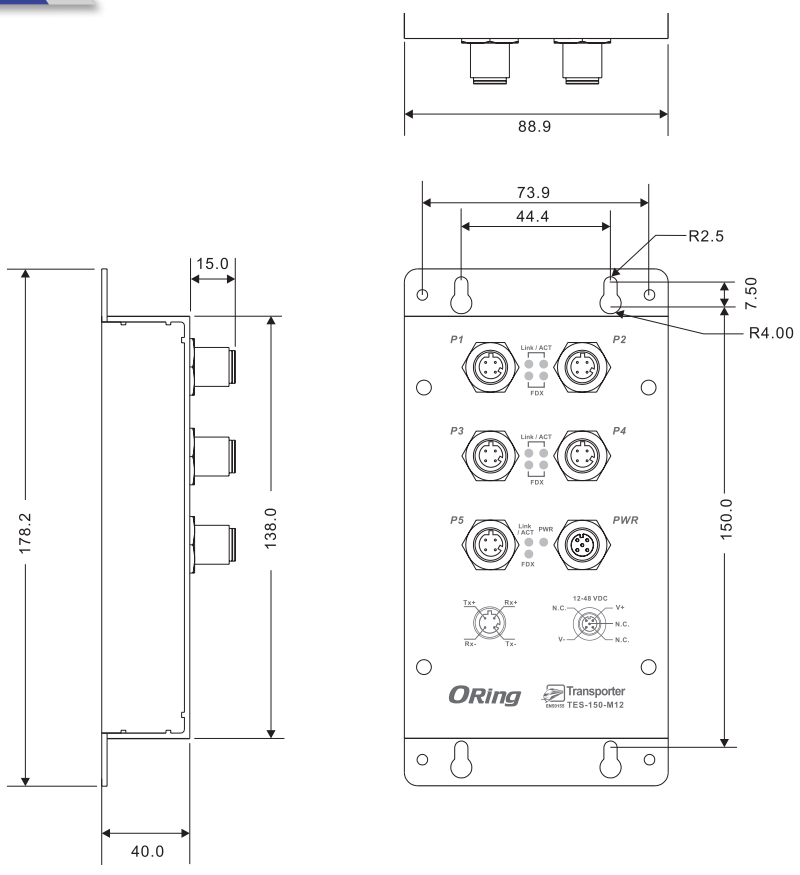
ORing's Transporter series Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TES-150-M12 is an unmanaged Ethernet switch with 5x10/100Base-T(X) ports which is compliant with EN50155 standard. It is specifically designed for the toughest industrial environments. TES-150-M12 EN50155 Ethernet switch uses M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, the wide operating temperature range from -40~70°C can satisfy most of operating environments. The TES-150-M12 can be easily adopted in almost all kinds of applications and can provides the most rugged solutions for your network. Therefore, the switch is one of the most reliable choices for rolling stock Ethernet applications.

Practical Operation

TES-150-M12 can be used in connecting several Ethernet devices which need to operated under harsh environment requirement. The designs of rugged housing and wide operating temperature range from -40~70°C makes TES-150-M12 reliably in any kinds of transporter applications.


Fast Roaming
TAP-3120-M12
Trackside
Fast Roaming
TAP-3120-M12
Content Server
NVR
IP Camera
IP Camera
TAP-3120-M12
TES-150-M12
TAR-120-M12
(Built-in 3.5G Modem)
LED Display
Sensor
RS232
Internet
TES-3080-M12
TDS-5041-M12
TAP-3120-M12
Touchscreen Monitor
TAP-3120-M12
TES-150-M12
Content Server
TAR-120-M12
(Built-in 3.5G Modem)
Internet
Train

Dimensions


88.9
73.9
44.4
R2.5
7.50
R4.00
15.0
178.2
138.0
150.0
40.0
P1
P2
P3
P4
P5
PWR
ORing
Transporter
TES-150-M12

Specifications

ORing Switch Model	TES-150-M12
Physical Ports	
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX	5 x M12 connector (D-coding)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control
Processing	Store-and-Forward
LED Indicators	
Power Indicator	Green : Power LED x 1
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for duplex indicator
Power	
Input Power	12 ~ 48 VDC voltage power input in M12 connector (A-coding)
Power Consumption (Typ.)	3 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-40
Dimensions (W x D x H)	88.9 (W) x 40 (D) x 178.2 (H)mm(3.5 x 1.57 x 7 inch)
Weight (g)	360 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6, EN61373
Safety	EN60950-1
Warranty	5 years

Ordering Information

TES-1 A B -M12

Code Definition	10/100Base-T(X) Port Number	Additional Port Number
Option	**- 5:** 5 ports	**- 0:** 0 port

	Model Name	Description
Available Model	TES-150-M12	EN50155 5-port unmanaged Ethernet switch with 5x10/100Base-T(X), M12 connector

Packing List

- TES-150-M12
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- M12C series cables with M12 connectors

TGS-9200-M12 Series

TGS-9200-M12 Series

EN50155 20-port managed Gigabit Ethernet switch with 20x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Provided 2xRelay bypass function with four gigabit ports (-BP2 model)
- Wall mounting enabled

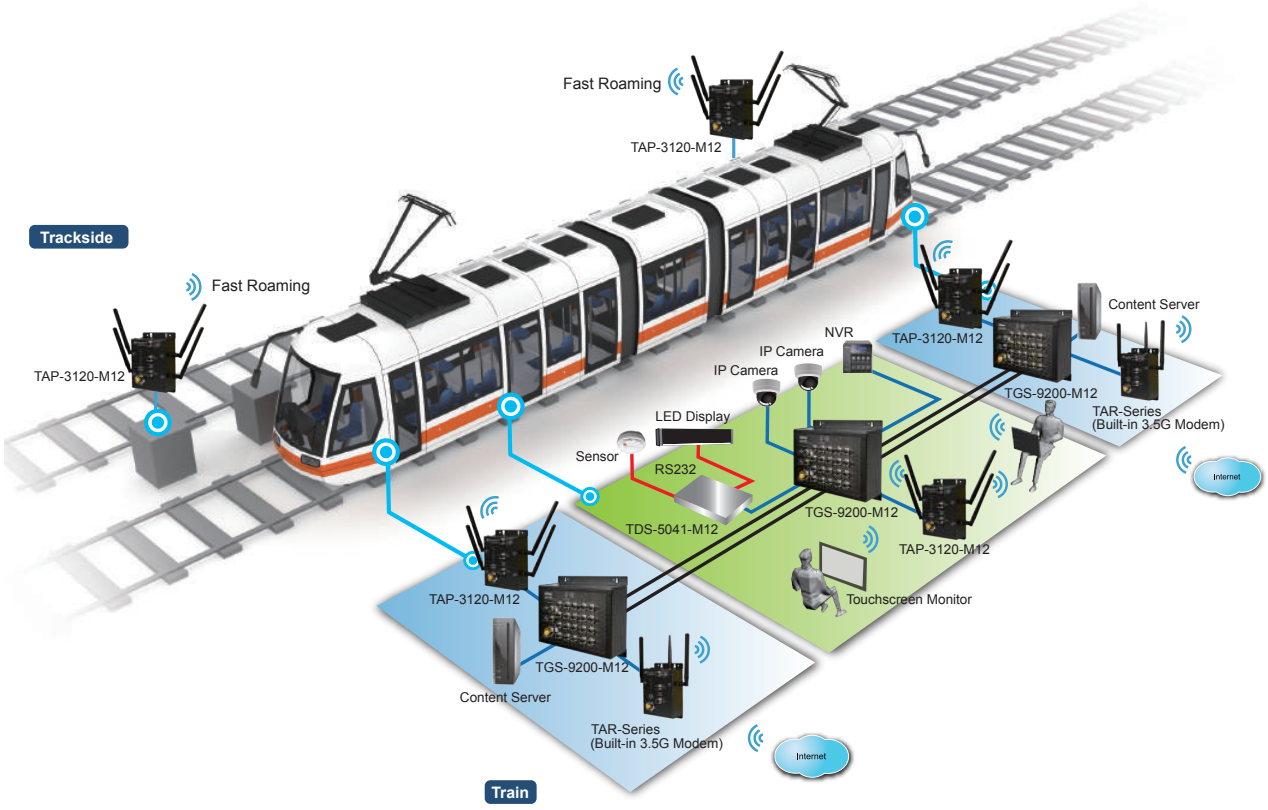
Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TGS-9200-M12 is managed Redundant Ring Ethernet switch with 20x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE and MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. TGS-9200-M12-BP2 includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. And support wide operating temperature from -40 to 70°C. TGS-9200-M12 can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for EN50155 highly-managed Ethernet application.

***NOTE: This function is available by request only**

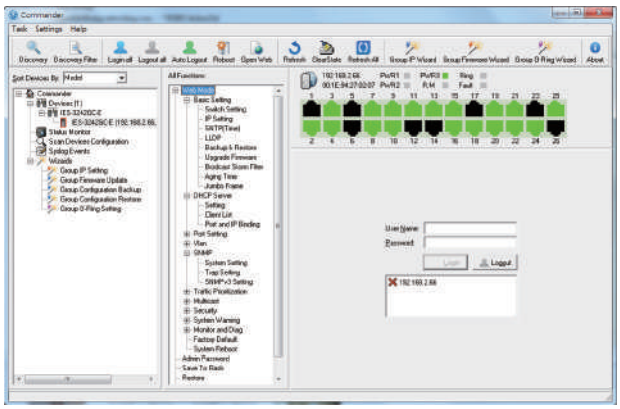
- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

***NOTE: This function is available by request only**

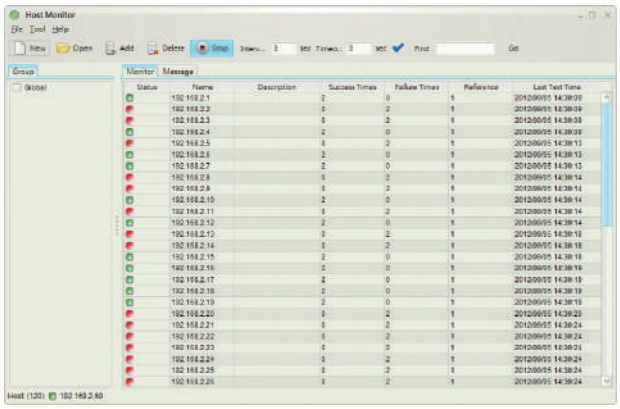


Open-Vision

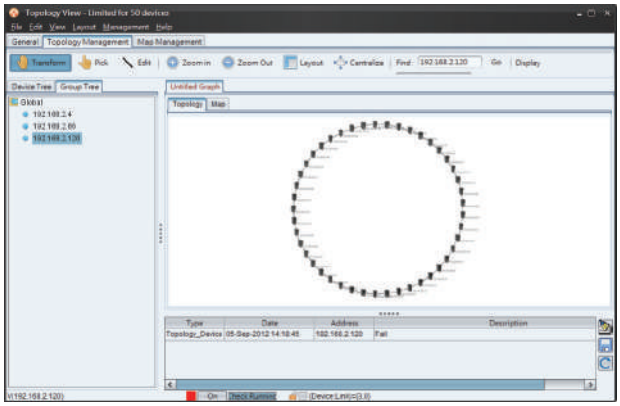
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor



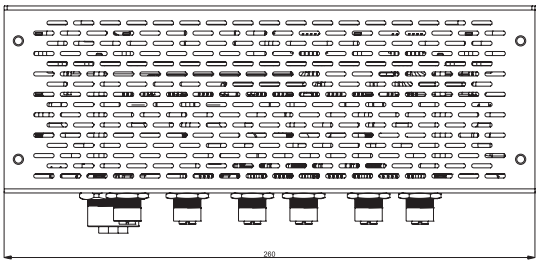
Topology View

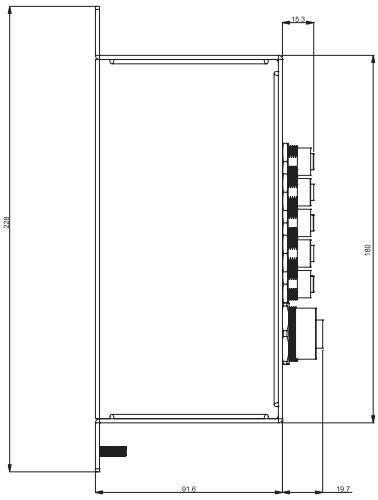
PoE Pin Definition

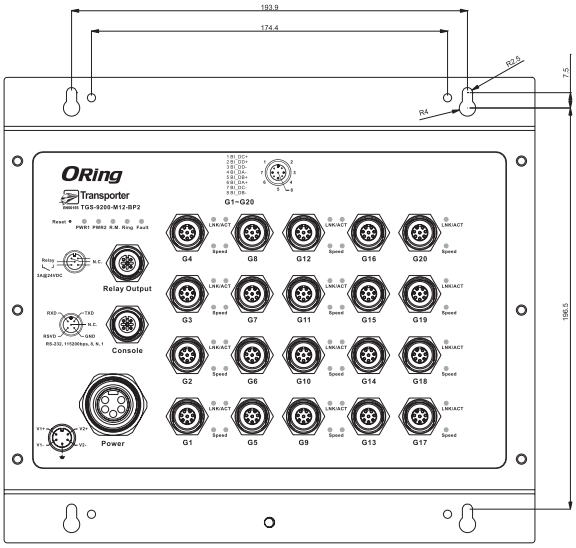
10/100/1000Base-T(X) M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

Dimensions

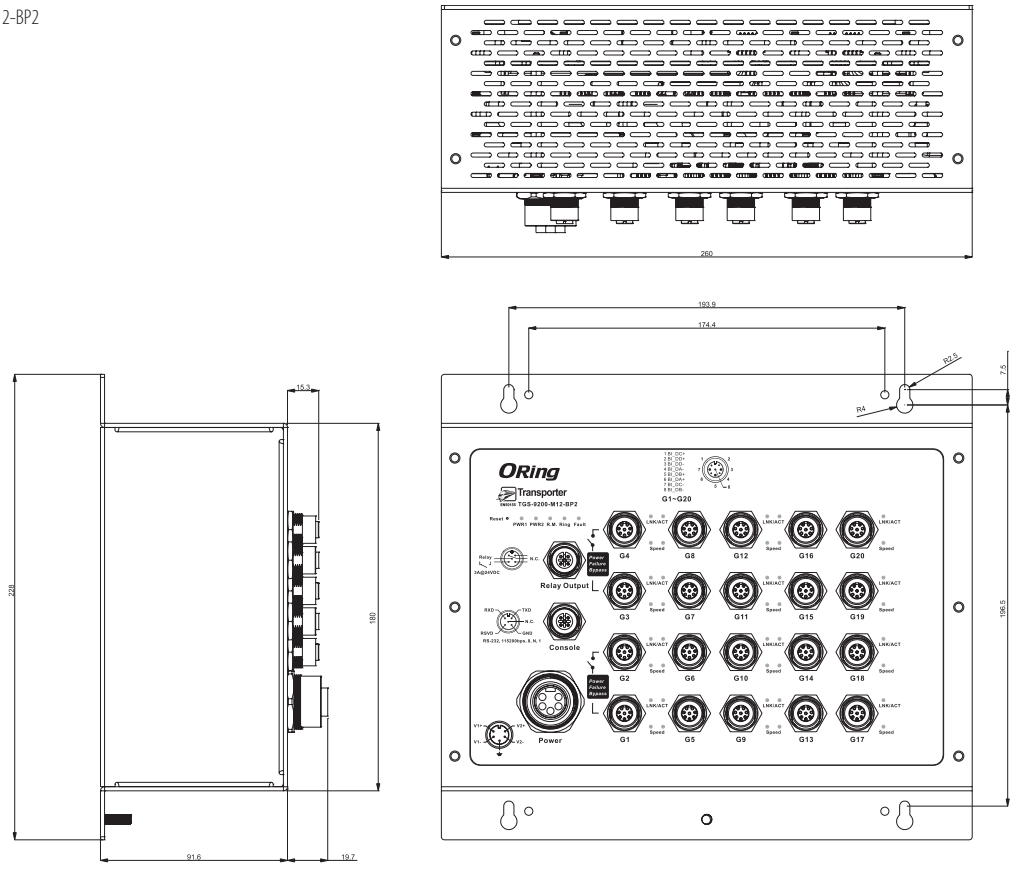
TGS-9200-M12







TGS-9200-M12-BP2



Specifications

ORing Switch Model	TGS-9200-M12	TGS-9200-M12-BP2
Physical Ports		
10/100/1000Base-T(X) ports in M12 Auto MDI/MDIX	20 (8-pin A-coding)	20 (8-pin A-coding with 2 x bypass function included)
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8K	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 40Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define	
Jumbo frame	Up to 9.6K Bytes	

Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security	
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP	
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)	
RS-232 Serial Console Port	RS-232 in M12 (A-coding) connector with console cable. 115200bps, 8, N, 1	
LED Indicators		
Power Indicator (PWR)	Green : Power LED x 2	
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.	
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred	
10/100/1000Base-T(X) M12 Port Indicator	Up of Green LED for Link/Act indicator. Down of dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps, Off for 10Mbps	
Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input power	Dual DC inputs. 12~48VDC on 5-pin M23 connector	Dual DC inputs. 12~48VDC on 5-pin M23 connector
Power Consumption (Typ.)	20 Watts	20.5 Watts
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	260 (W) x 91.6 (D) x228 (H) mm (10.24 x 3.60 x 8.98 inch.)	
Weight (g)	2513 g	2535 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27, EN61373	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Warranty	5 years	

***NOTE: This function is available by request only**

Ordering Information

TGPS-9 AA B -M12-CCC

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Bypass Function
Option	**- 20:** 20 ports	**- 0:** 0 port	**- BP2:** 2xbypass function included

	Model Name	Description
Available Model	TGS-9200-M12	EN50155 20-port managed Gigabit Ethernet switch with 20x10/100/1000Base-T(X), M12 connector
	TGS-9200-M12-BP2	EN50155 20-port managed Gigabit Ethernet switch with 20x10/100/1000Base-T(X), M12 connector and 2xbypass included

Packing List

- TGS-9200-M12
- Quick Installation Guide
- ORing Tool CD

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- M12C : M12 cable accessories
- Console cable

TGS-9120-M12 Series

TGS-9120-M12 Series

EN50155 12-port managed Gigabit Ethernet switch with 12x10/100/1000Base-T(X) ports, M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Built-in 2 sets of bypass ports (-BP2 model)
- Wall mounting enabled

Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications such as rolling stock, vehicle, and railway. The TGS-9120-M12, which is compliant with the EN50155 standard, is a managed Gigabit Redundant Ring Ethernet switch with 12x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. It is specifically designed for the toughest industrial environments. TGS-9120-M12 EN50155 Ethernet switch uses M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TGS-9120-M12-BP2 includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. And

***NOTE: This function is available by request only**

support wide operating temperature from -40 to 70°C. TGS-9120-M12 can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Ethernet application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

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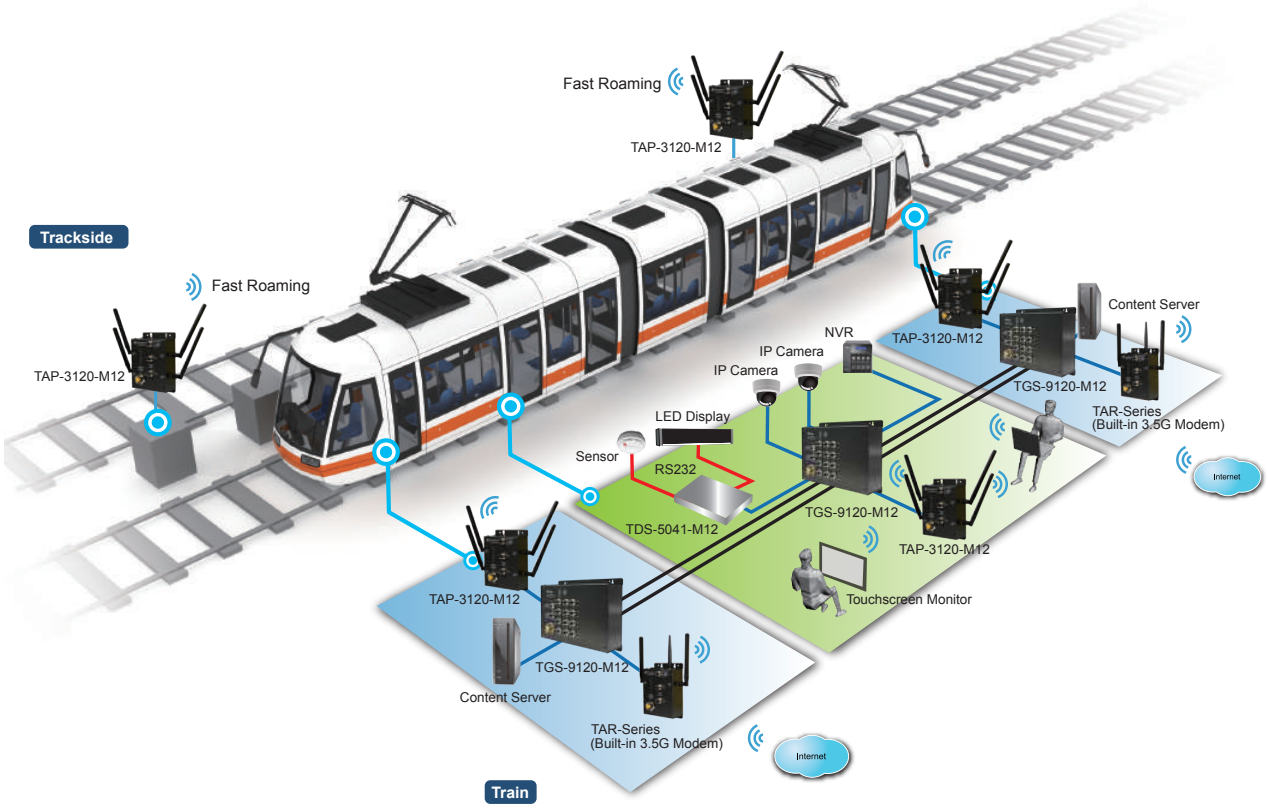

Open-Vision

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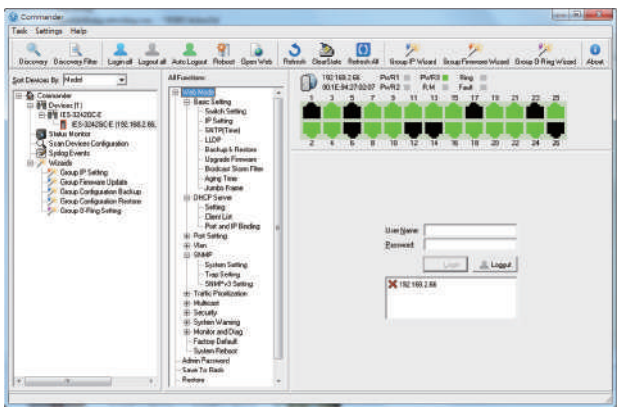
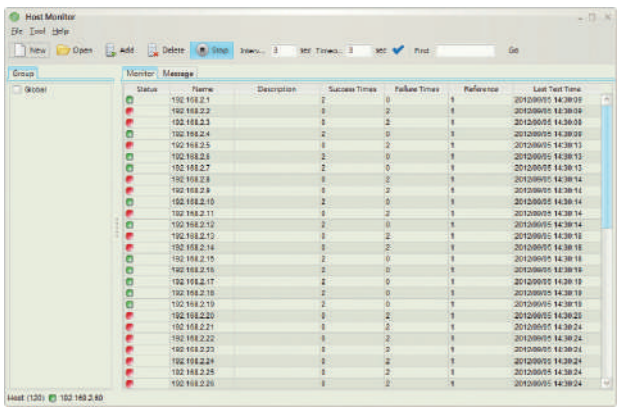
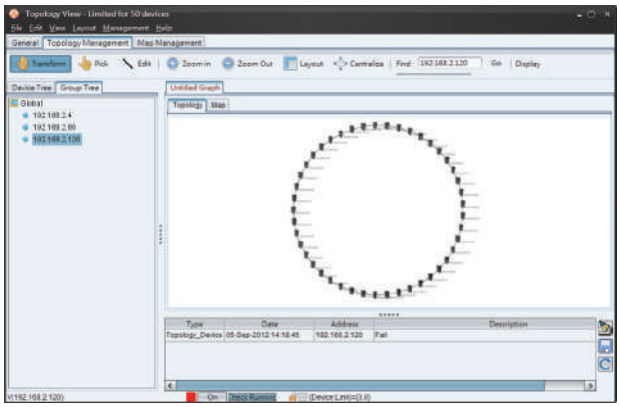


Commander



Host Monitor



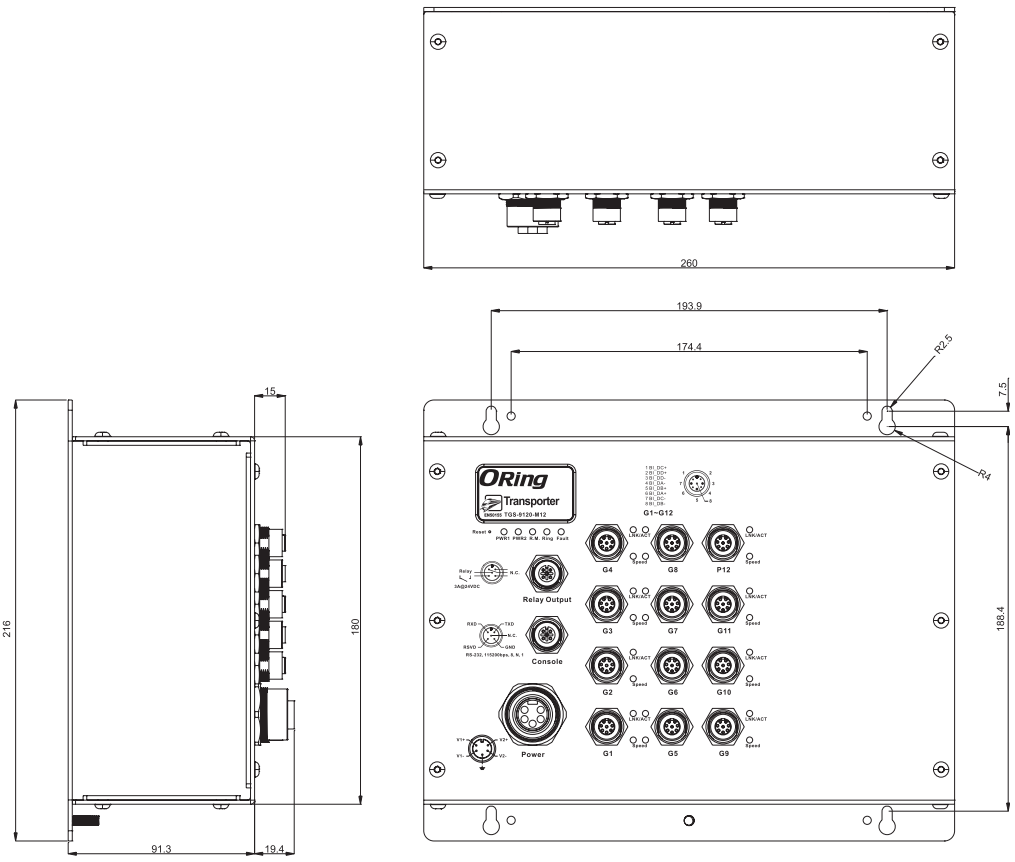
Topology View

PoE Pin Definition

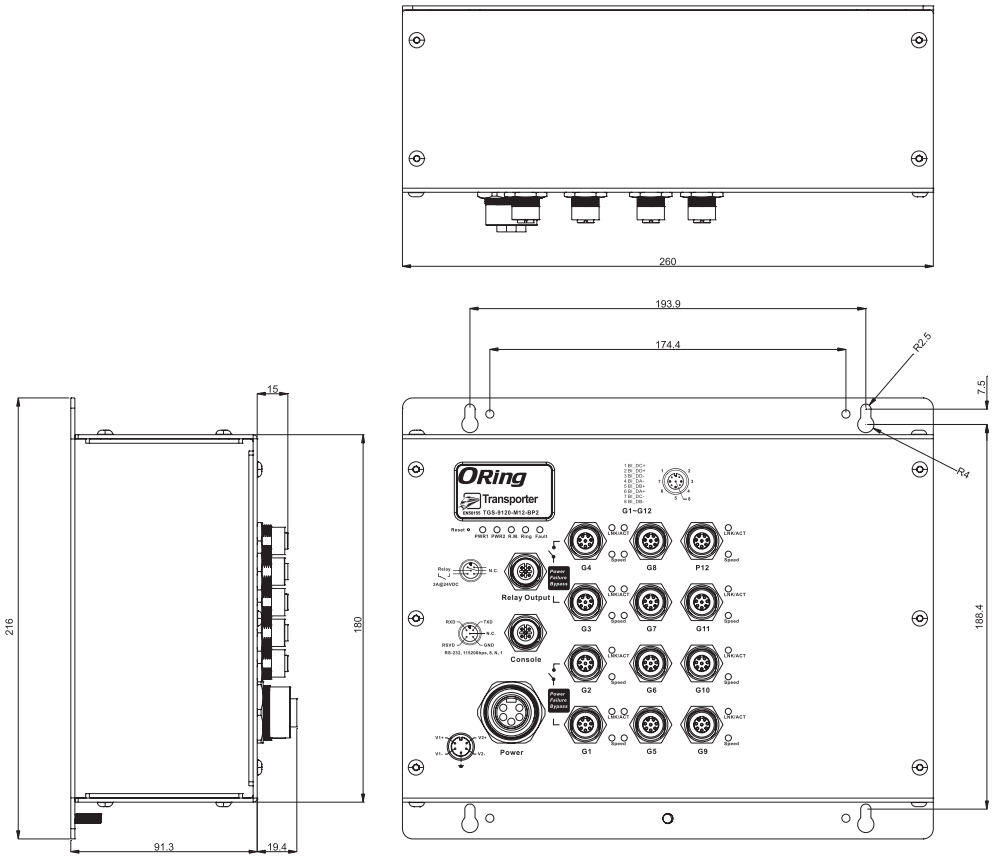
10/100/1000Base-T(X) M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

Dimensions

TGS-9120-M12



TGS-9120-M12-BP2



Specifications

ORing Switch Model	TGS-9120-M12	TGS-9120-M12-BP2
Physical Ports		
10/100/1000Base-T(X) ports in M12 Auto MDI/MDIX	12 (8-pin A-coding)	12 (8-pin A-coding with 2 x bypass function included)
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8K	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 40Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define	
Jumbo frame	Up to 9.6K Bytes	

Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security	
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP	
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)	
RS-232 Serial Console Port	RS-232 in M12 (A-coding) connector with console cable. 115200bps, 8, N, 1	
LED Indicators		
Power Indicator (PWR)	Green : Power LED x 2	
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.	
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred	
10/100/1000Base-T(X) M12 Port Indicator	Top Green LED for Link/Act indicator Bottom dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps, Off for 10Mbps	
Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (A-coding)	
Power		
Redundant Input power	Dual DC inputs. 12~48VDC on 5-pin M23 connector	
Power Consumption (Typ.)	17.3 Watts	17.8 Watts
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	260 (W) x 91.3 (D) x216 (H) mm	
Weight (g)	2196 g	2218 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27, EN61373	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Warranty	5 years	

***NOTE: This function is available by request only**

Ordering Information

TGPS-9 AA B -M12-CCC

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Bypass Function
Option	**- 12:** 12 ports	**- 0:** 0 port	**- BP2:** 2xbypass function included

	Model Name	Description
Available Model	TGS-9120-M12	EN50155 12-port managed Gigabit Ethernet switch with 12x10/100/1000Base-T(X), M12 connector
	TGS-9120-M12-BP2	EN50155 12-port managed Gigabit Ethernet switch with 12x10/100/1000Base-T(X), M12 connector and 2xbypass included

Packing List

- TGS-9120-M12
- Quick Installation Guide
- ORing Tool CD

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- M12C : M12 cable accessories

TGS-1080-M12 Series

TGS-1080-M12 Series

EN50155 8-port unmanaged Gigabit Ethernet switch with 8x10/100/1000Base-T(X), M12 connector

Features

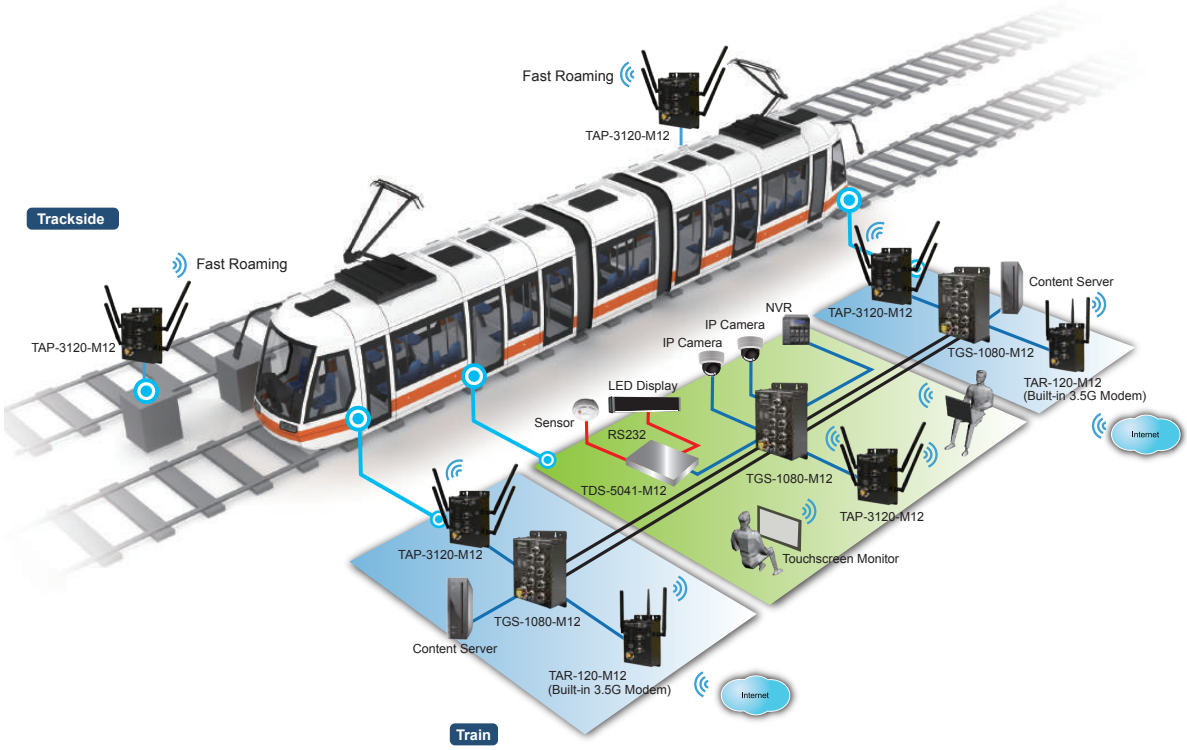
- Leading EN50155-compliant Ethernet switch for rolling stock application
- Provide 8x10/100/1000Base-T(X) ports
- Support dual power inputs for power redundancy
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- M12 connectors to guarantee reliable operation against environmental disturbances
- Rigid IP-40 housing design
- Wall mounting enabled

Introduction

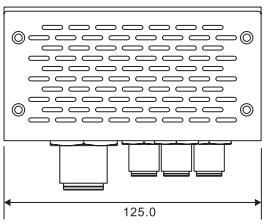
ORing's Transporter™ series un-managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TGS-1080-M12 is an un-managed Ethernet switch with 8x10/100/1000Base-T(X) which is specifically designed for the toughest and fully compliant with EN50155 requirement. Each TGS-1080-M12 switch has 8X10/100/1000Base-T(X) ports. TGS-1080-M12 EN50155 Ethernet switch uses M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock application.

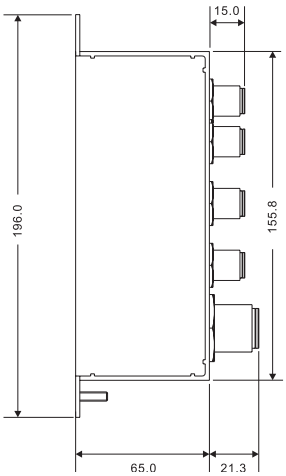
Practical Operation

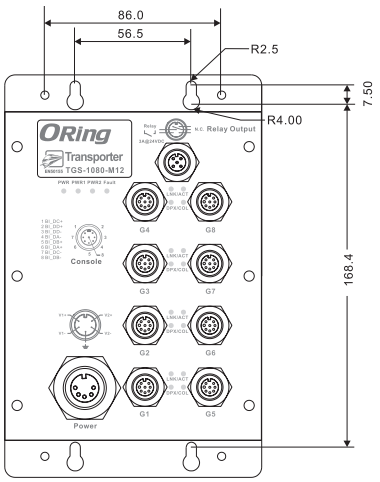
TGS-1080-M12 can be used for train backbone Ethernet connection. TGS-1080-M12 has 8-port Gigabit Ethernet ports which provides high transmission rate for any Ethernet devices connected to this Ethernet Switch. The designs of rugged housing and wide operating temperature range from -40 ~ 70°C, makes TGS-1080-M12 reliable in any kinds of transporter applications



Dimensions

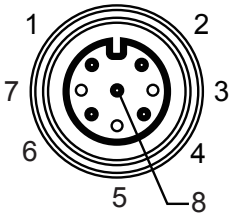






(Unit=mm)

Pin Definition



10/100/1000Base-T(X) M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

Specifications

ORing Switch Model	TGS-1080-M12	TGS-1080-M12-MV
Physical Ports		
10/100/1000Base-T(X) Ports in M12	8 x M12 connector (8-pin A-coding)	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control	
MAC Table	8K MAC addresses	
Processing	Store-and-Forward	
LED Indicators		
Power indicator	Green : Power LED x 3	Green : Power LED x 1
Fault indicator	Amber : Indicate PWR1 or PWR2 failure	
10/100/1000Base-T(X) M12 port indicator	Top for port Link/Act indicator. Green for 1Gbps link, Amber for 10/100 Mbps link Bottom Amber for Duplex / Collision indicator	
Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input power	Dual DC inputs. 12~48VDC on 5-pin M23 connector	72~110VDC power input on 5-pin M23 connector
Power consumption (Typ.)	2.88 Watts	7.88 Watts
Overload current protection	Present	
Reverse polarity protection	Present	
Physical Characteristic		
Enclosure	IP-40	
Dimension (W x D x H)	125 (W) x 65 (D) x196 (H) mm	
Weight (g)	967 g	1195 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	

Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6, EN61373
Warranty	5 years

Ordering Information

TGS-1 AA B -M12

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 port

	Model Name	Description
Available Model	TGS-1080-M12	EN50155 8-port unmanaged Gigabit Ethernet switch with 8x10/100/1000Base-T(X), M12 connector
	TGS-1080-M12-MV	EN50155 8-port unmanaged Gigabit Ethernet switch with 8x10/100/1000Base-T(X), M12 connector, middle-voltage power input

Packing List

- TGS-1080-M12 x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- M12C : M12 cable accessories

TGS-1080-M12-BP2 Series

TGS-1080-M12-BP2 Series

EN50155 8-port unmanaged Gigabit Ethernet switch with 8x10/100/1000Base-T(X), M12 connector and 2xbypass included

Features

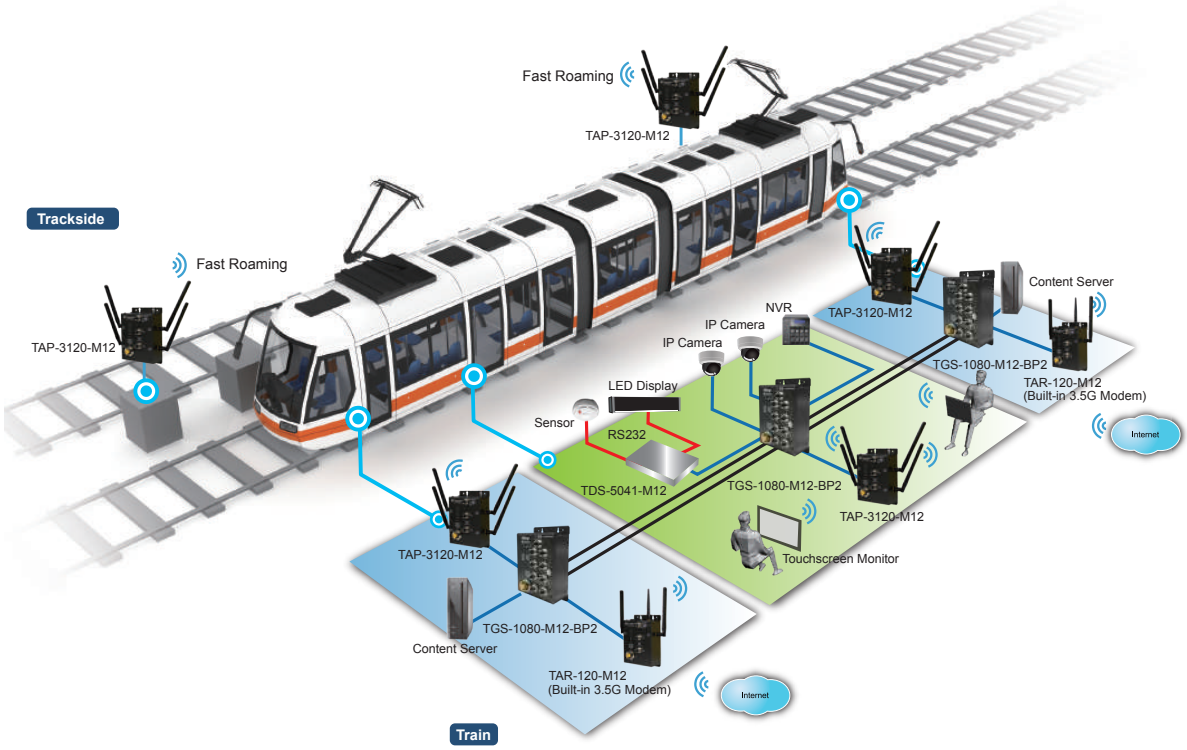
- Leading EN50155-compliant Ethernet switch for rolling stock application
- Provide 8x10/100/1000Base-T(X) ports
- Support dual power inputs for power redundancy
- Built-in 2 sets of bypass ports
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- M12 connectors to guarantee reliable operation against environmental disturbances
- Rigid IP-40 housing design
- Wall mounting enabled

Introduction

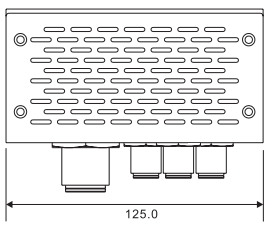
ORing's Transporter™ series un-managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TGS-1080-M12-BP2 is an un-managed Ethernet switch with 8x10/100/1000Base-T(X) which is specifically designed for the toughest and fully compliant with EN50155 requirement. Each TGS-1080-M12-BP2 switch has 8X10/100/1000Base-T(X) ports. TGS-1080-M12-BP2 EN50155 Ethernet switch uses M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TGS-1080-M12-BP2 includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock application.

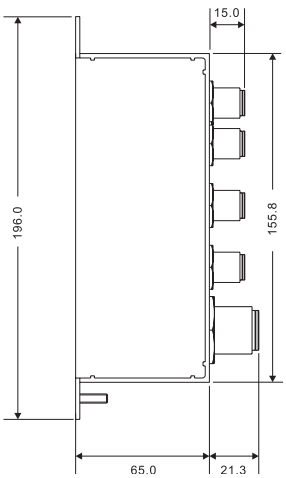
Practical Operation

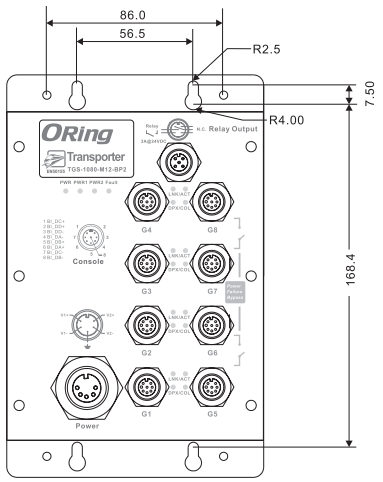
TGS-1080-M12-BP2 can be used for train backbone Ethernet connection. TGS-1080-M12-BP2 has 8-port Gigabit Ethernet ports which provides high transmission rate for any Ethernet devices connected to this Ethernet Switch. The designs of rugged housing and wide operating temperature range from -40 ~ 70°C, makes TGS-1080-M12-BP2 reliable in any kinds of transporter applications



Dimensions

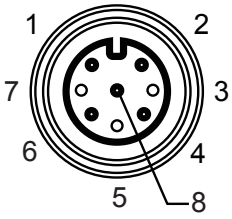






(Unit=mm)

Pin Definition



10/100/1000Base-T(X) M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

Specifications

ORing Switch Model	TGS-1080-M12-BP2	TGS-1080-M12-BP2-MV
Physical Ports		
10/100/1000Base-T(X) Ports in M12	8 x M12 connector (8-pin A-coding, bypass function included by last 4 ports)	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control	
MAC Table	8K MAC addresses	
Processing	Store-and-Forward	
LED Indicators		
Power indicator	Green : Power LED x 3	Green : Power LED x 1
Fault indicator	Amber : Indicate PWR1 or PWR2 failure	
10/100/1000Base-T(X) M12 port indicator	Top for port Link/Act indicator. Green for 1Gbps link, Amber for 10/100 Mbps link Bottom Amber for Duplex / Collision indicator	
Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input power	Dual DC inputs. 12~48VDC on 5-pin M23 connector	72~110VDC power input on 5-pin M23 connector
Power consumption (Typ.)	6.24 Watts	11.24 Watts
Overload current protection	Present	
Reverse polarity protection	Present	
Physical Characteristic		
Enclosure	IP-40	
Dimension (W x D x H)	125 (W) x 65 (D) x196 (H) mm	
Weight (g)	1007	1235 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	

Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6, EN61373
Warranty	5 years

Ordering Information

TGS-1 AA B -M12-BP2

Code Definition	10/100/1000Base-T(X) Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 port

	Model Name	Description
Available Model	TGS-1080-M12-BP2	EN50155 8-port unmanaged Gigabit Ethernet switch with 8x10/100/1000Base-T(X), M12 connector and 2xbypass included
	TGS-1080-M12-BP2-MV	EN50155 8-port unmanaged Gigabit Ethernet switch with 8x10/100/1000Base-T(X), M12 connector and 2xbypass included, middle-voltage power input

Packing List

- TGS-1080-M12-BP2 x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- M12C : M12 cable accessories

TPS-9168GT-M12

TPS-9168GT-M12

EN50155 24-port managed PoE Ethernet switch with 16x10/100Base-T(X) P.S.E. and 8x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- Supports IEEE 802.3af compliant PoE and total power budget 240Watts with maximum 15.4Watts per port
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL and 802.1x User Authentication for security
- Support DBU-01 (Data backup unit for easy configuration backup)
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support TTDP Protocol (Train Topology Discovery Protocol)
- Wall mounting enabled

RoHS Lead Free CE FC

R6 READY | O-Ring | P.S.E PUE | Redundant PWR | EN50155 | -40~75°C Temperature

Introduction

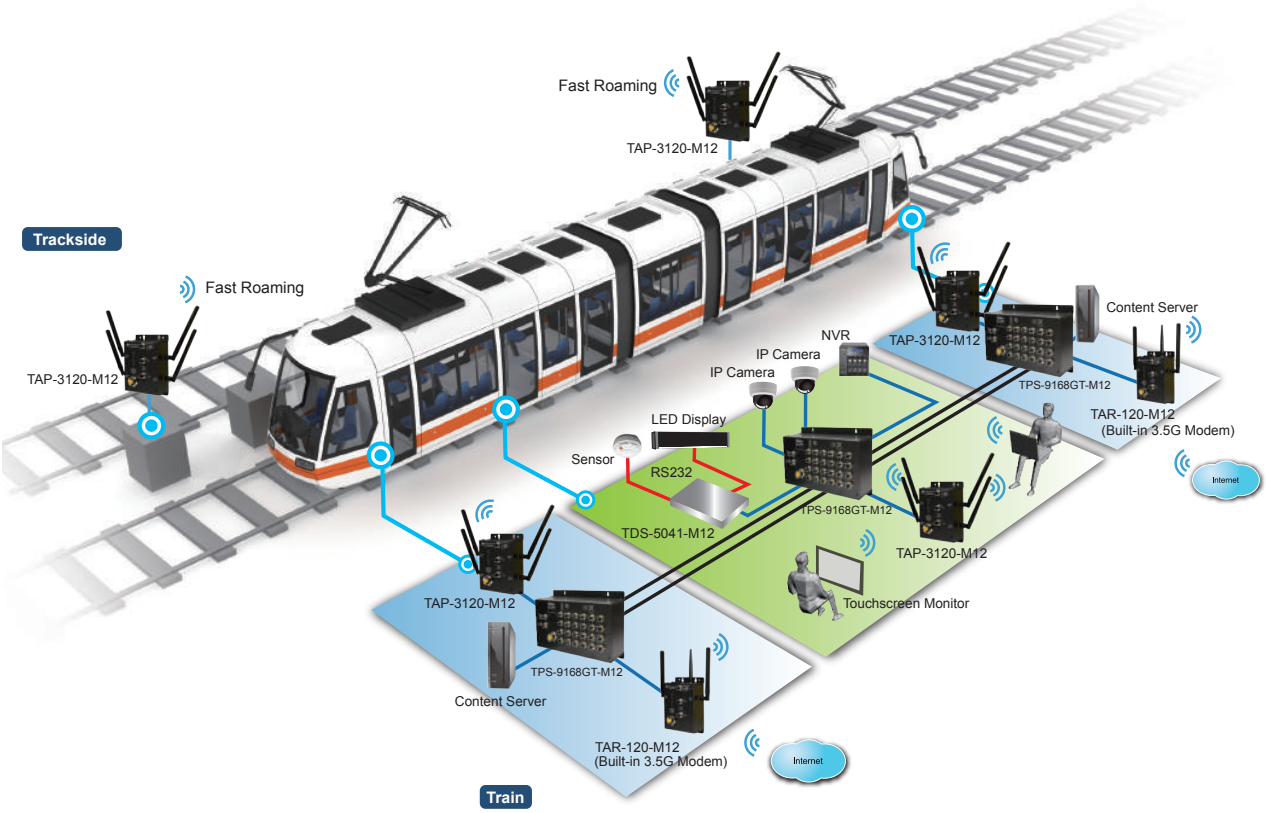
ORing's Transporter™ series managed PoE Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TPS-9168GT-M12 is managed Redundant Ring Ethernet switch with 16x10/100Base-T(X) P.S.E. and 8x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection), O-Chain and MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. TPS-9168GT-M12 also support Power over Ethernet, a system to transmit electrical power up to **15.4 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TPS-9168GT-M12 switch has 16x10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. TPS-9168GT-M12 can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for EN50155 highly-managed Ethernet application.

***NOTE: This function is available by request only**

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

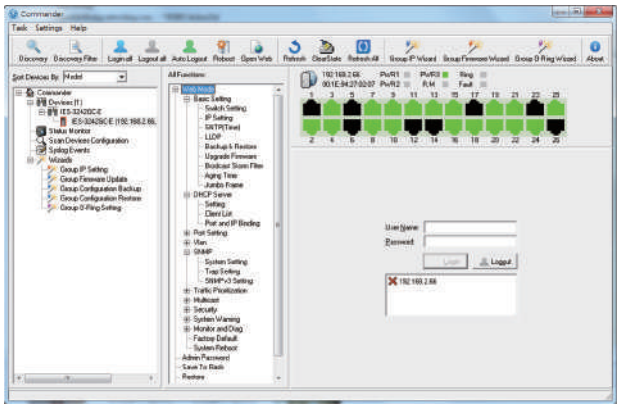
***NOTE: This function is available by request only**

Railway Application

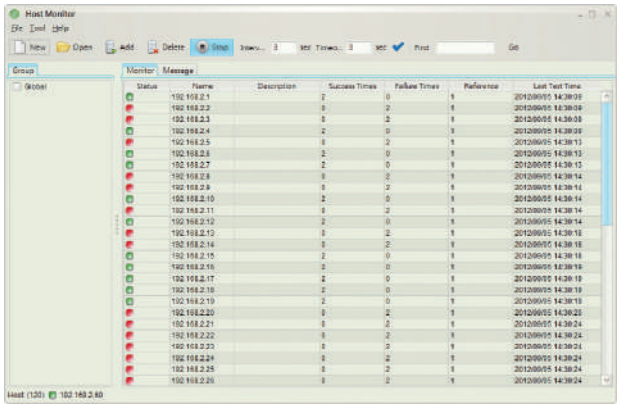


Open-Vision

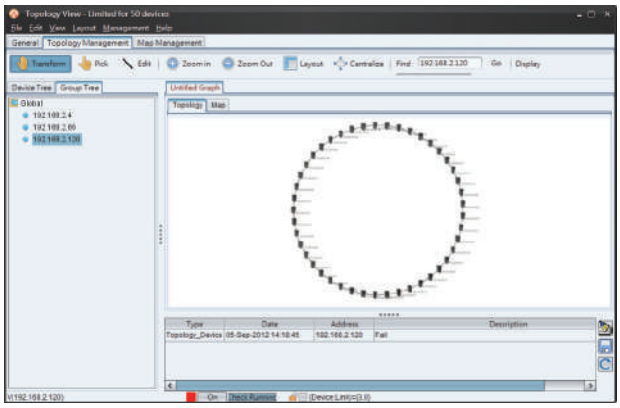
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

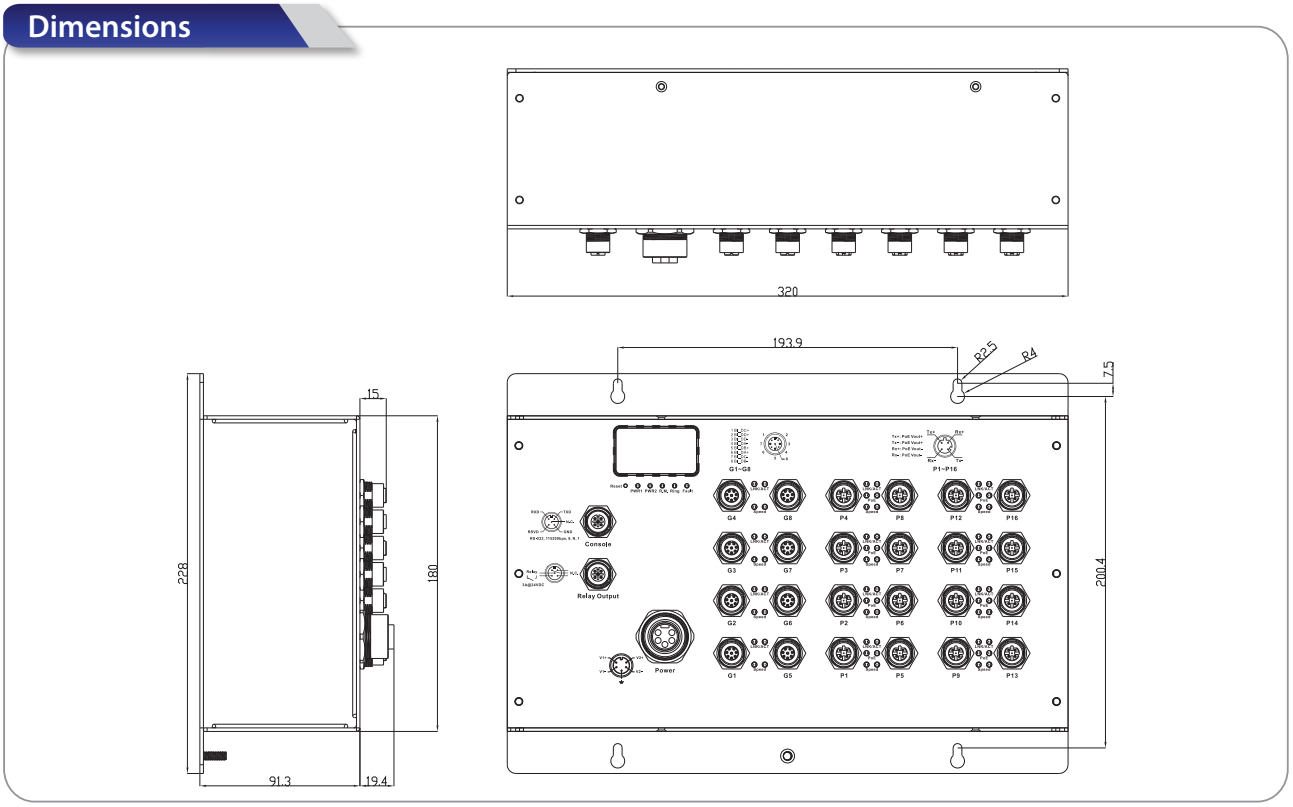


Host Monitor

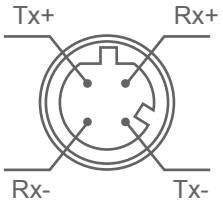


Topology View

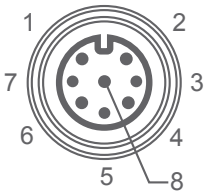
Dimensions



(Unit=mm)



10/100Base-T(X) P.S.E. M12 port	
M12 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#4	RD- with PoE Power input -



10/100/1000Base-T(X) M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

Specifications

ORing Switch Model	TPS-9168GT-M12
Physical Ports	
10/100Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	**16 (4-pin D-coding)**
10/100/1000Base-T(X) ports in M12 Auto MDI/MDIX	**8 (8-pin A-coding)**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1d for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification
MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 19.2Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security

Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units Support TTDP Protocol (Train Topology Discovery Protocol) to map the IP address automatically TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SNTP, NTP for synchronizing of clocks over network SMTP Client Modbus TCP
Network Redundancy	O-Ring O-Chain MRP*NOTE MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in M12 (A-coding) connector with console cable. 115200bps, 8, N, 1
LED indicators	
Power Indicator (PWR)	Green : Power LED x 2
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100Base-T(X) M12 P.S.E. Port Indicator	Up of Green LED for Link/Act indicator. Middle of Green LED for PoE enabled indicator. Down of dual color LED for Ethernet speed indicator : Amber for 100Mbps, off for 10Mbps
10/100/1000Base-T(X) M12 Port Indicator	Up of Green LED for Link/Act indicator. Down of dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps, off for 10Mbps
Fault contact	
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)
Power	
Redundant Input power	Dual DC inputs. 48VDC on 5-pin M23 connector
Power consumption (Typ.)	13.11 Watts (power consumption of P.S.E. is not included)
Total PoE Output Power	240 Watts
Overload current protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	320 (W) x 91.3 (D) x228 (H) mm (12.60 x 3.59 x 8.98 inch.)
Weight (g)	3120 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	EN 55022, EN 55024(CE EMC),EN 50121-4,EN 60945, FCC, EN 50121-3-2(EN50155), EN 61000-6-2, EN 61000-6-4,IEC 61000-3-2 ,IEC 61000-3-3
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Railway	IEC 60571, IEC 62236-3-2
Warranty	5 years

*NOTE: This function is available by request only

Ordering Information

TPS-9 AA B CC –M12

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 16:** 16 ports	**- 8:** 8 ports	**- GT:** 10/100/1000Base-T(X) port

Available Model	Model Name	Description
	TPS-9168GT-M12	EN50155 24-port managed PoE Ethernet switch with 16x10/100Base-T(X) P.S.E. and 8x10/100/1000Base-T(X), M12 connector

Packing List

- TPS-9168GT-M12 x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- M12C : M12 cable accessories
- Console cable

TPS-3882GT-M12-BP1 Series

TPS-3882GT-M12-BP1 Series

EN50155 18-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. , 8x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- 8 ports P.S.E. fully compliant with IEEE802.3af standard, provide up to 15.4 Watts per port
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** support applications with multiple redundant rings topology
- Support standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- STP/RSTP/MSTP supported
- Support **PTP Clien**t (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support VLAN and LLDP protocol
- DHCP assign each Equipment IP by each Port
- Provided Relay bypass function with two gigabit ports
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

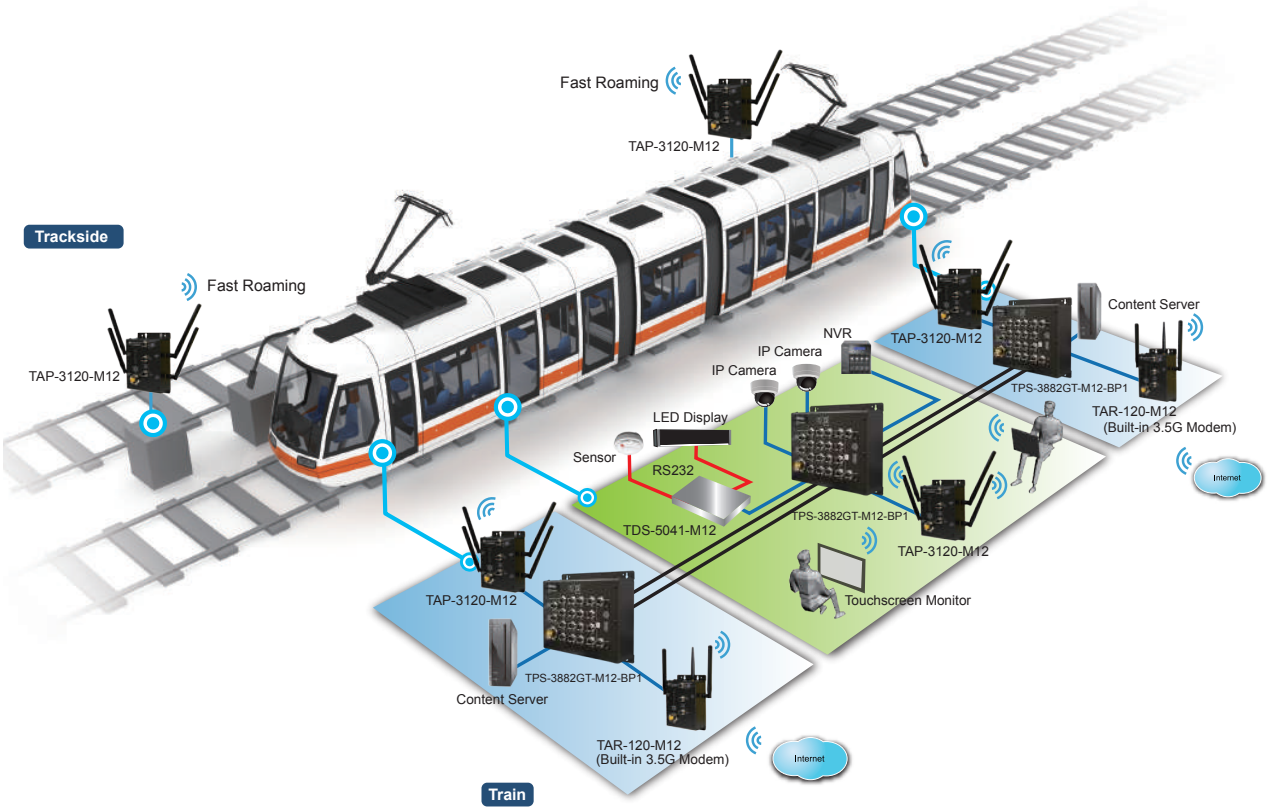
Introduction

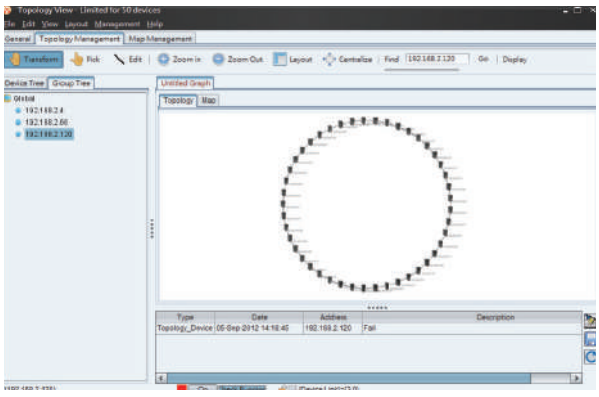
ORing's Transporter™ series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TPS-3882GT-M12-BP1 is a managed PoE Redundant Ring Ethernet switch with 8x10/100Base-T(X) P.S.E., 8x10/100Base-T(X) and 2x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain and MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. And O-Chain technology is supported which can applied for multiple redundant Ethernet rings. TPS-3882GT-M12-BP1 also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TPS-3882GT-M12-BP1 switch has 8X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. TPS-3882GT-M12-BP1 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TPS-3882GT-M12-BP1 can be managed centralized and convenient by a powerful windows utility ~ Open-Vision. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed PoE Ethernet application.

***NOTE: This function is available by request only**

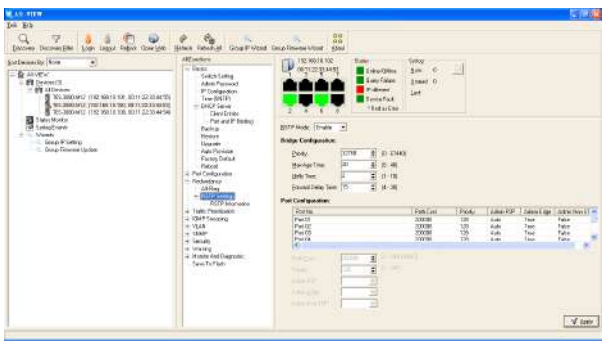
Practical Operation

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



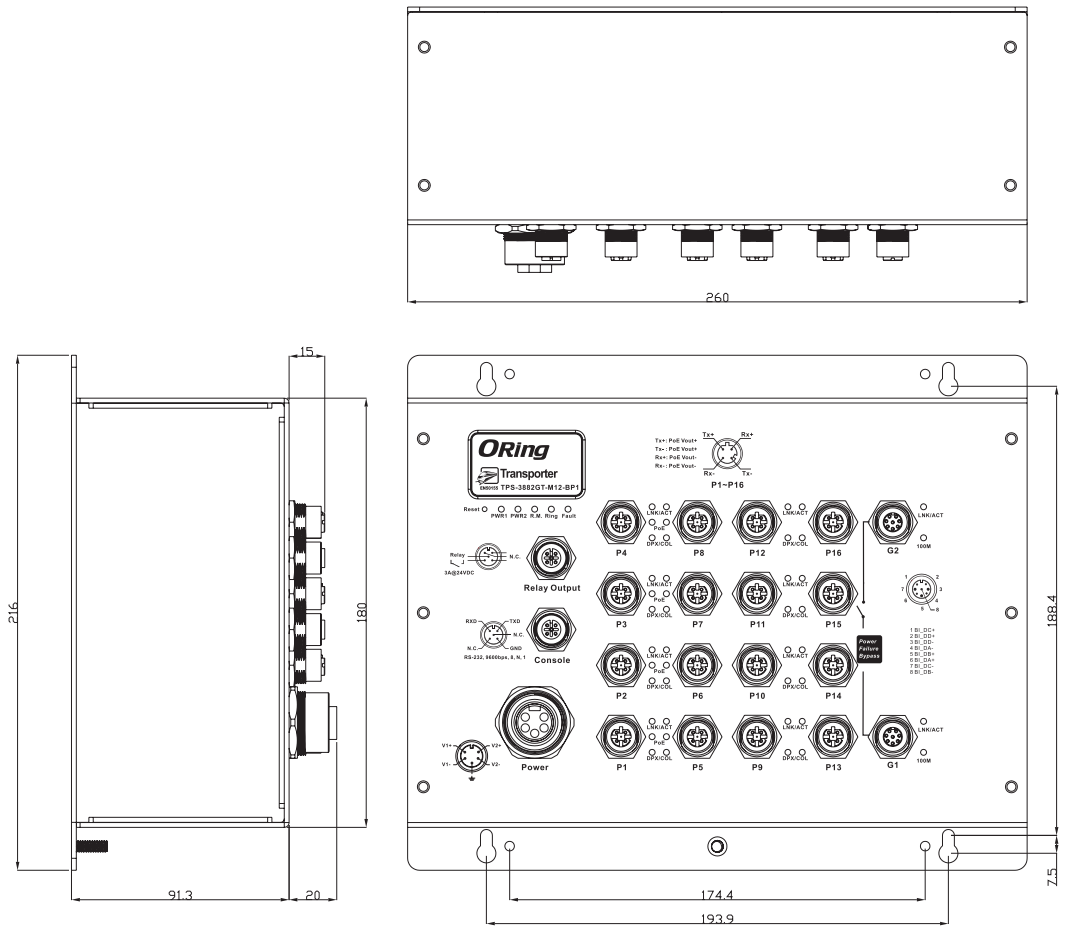


Topology View

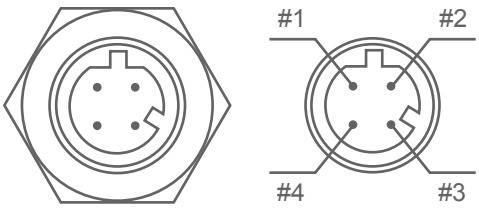


Monitoring and Configuration interface

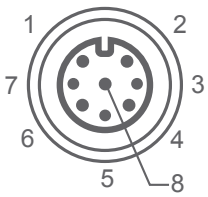
Dimensions



PoE Pin Definition

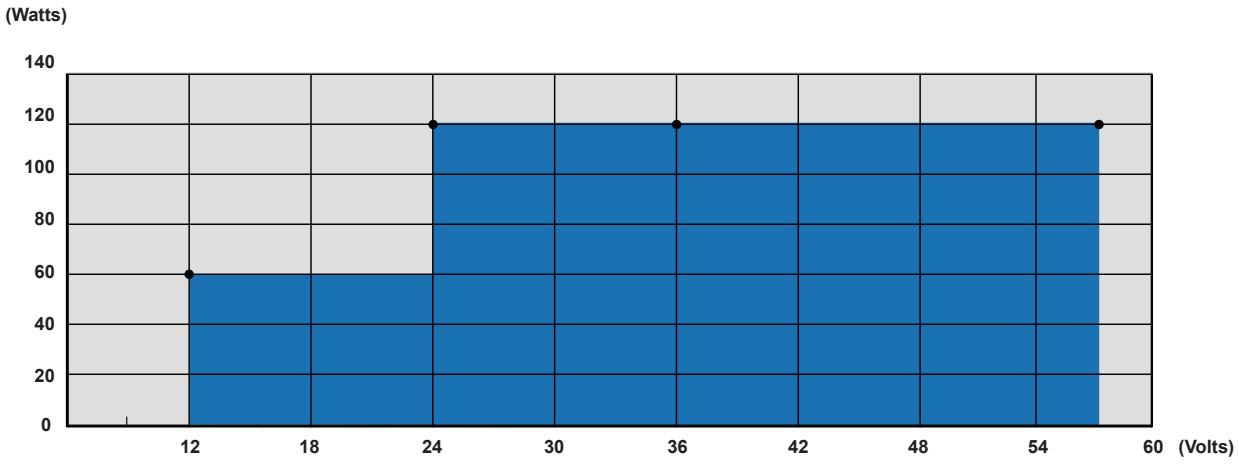


10/100Base-T(X) P.S.E. M12 port	
M12 D-coding Pin Definition	
Pin No.	Description
#1	TX+ with PoE Vout+
#2	RX+ with PoE Vout-
#3	TX- with PoE Vout+
#4	RX- with PoE Vout-



10/100/1000Base-T(X) M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

PoE Power Distribution



P1~P8 PoE Power Distribution (respectively)

Specifications

ORing Switch Model	TPS-3882GT-M12-BP1	TPS-3882GT-M12-BP1-24V
Physical Ports		
10/100Base-T(X) Ports in M12 Auto MDI/MDIX with P.S.E.	**8 x M12 connector (4-pin D-coding)**	
10/100Base-T(X) Ports in M12 Auto MDI/MDIX	**8 x M12 connector (4-pin D-coding)**	
10/100/1000Base-T(X) ports in M12	**2 x M12 connector (8-pin A-coding)**	
RS-232 Serial Console Port	RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification (up to 15.4 Watts per port for P.S.E.)	
MAC Table	8192 MAC addresses	
Priority Queues	4	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 7.2Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define	
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security	

Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support	
Network Redundancy	O-Ring Open-Ring O-Chain MRP*NOTE STP RSTP MSTP	
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support	
LED Indicators		
Power Indicator	Green : Power LED x 2	
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode	
O-Ring Indicator	Green : Indicate system operated in O-Ring mode	
Fault Indicator	Amber : Indicate unexpected event occurred	
10/100Base-T(X) M12 PoE Port Indicator	Top Green for port Link/Act. Middle Green for PoE indicator. Bottom Amber for Collision/Duplex indicator.	
10/100Base-T(X) M12 Port Indicator	Green for Link/Act. Amber for duplex/collision indicator	
10/100/1000Base-T(X) M12 Port Indicator	Green for Link/Act. Amber for 100Mbps indicator	
Fault Contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input Power	Dual DC inputs. 48VDC on 5-pin M23 connector	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin M23 connector
Power Consumption (Typ.)	8.88 Watts (power consumption of P.S.E. is not included)	14.88 Watts (power consumption of P.S.E. is not included)
PoE Output Power	120 Watts	60 Watts (12~24VDC) / 120 Watts (24~57VDC)
Overload Current Protection	Present	
Reverse Polarity Protection	Not Present	
Physical Characteristics		
Enclosure	IP-40	
Dimensions (W x D x H)	260 (W) x 91.3 (D) x216 (H) mm	
Weight (g)	2082	2140
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B, EN 50155(Pending)	
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A	
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	

***NOTE: This function is available by request only**

Other	EN 50155(IEC 61373) (pending)	
MTBF	308356 hrs	298468 hrs
Warranty	5 years	

Ordering Information

TPS-3 A B C DD -M12-EEE

Code Definition	10/100Base-T(X) P.S.E. Port Number	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type	Bypass Function
Option	**- 08:** 8 ports	**- 08:** 8 ports	**- 2:** 2 ports	**- GT:** 10/100/1000Base-T(X) port	**- BP1:** 1xbypass function included

	Model Name	Description
Available Model	TPS-3882GT-M12-BP1	EN50155 18-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., 8x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included
	TPS-3882GT-M12-BP1-24V	EN50155 18-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., 8x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included, 24VDC power inputs

Packing List

- TPS-3882GT-M12-BP1 x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows utility Suit, 500 IP devices
- M12C : M12 cable accessories
- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply

TPS-3162GT-M12-BP1 Series

TPS-3162GT-M12-BP1 Series

EN50155 18-port managed PoE Ethernet switch with 16x10/100Base-T(X) P.S.E. and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- 16 ports P.S.E. fully compliant with IEEE802.3af standard, provide up to 15.4 Watts per port
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** support applications with multiple redundant rings topology
- Support standard IEC 62439 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP/MSTP supported
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Support Modbus TCP protocol
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support VLAN and LLDP protocol
- DHCP assign each Equipment IP by each Port
- Provided Relay bypass function with two gigabit ports
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

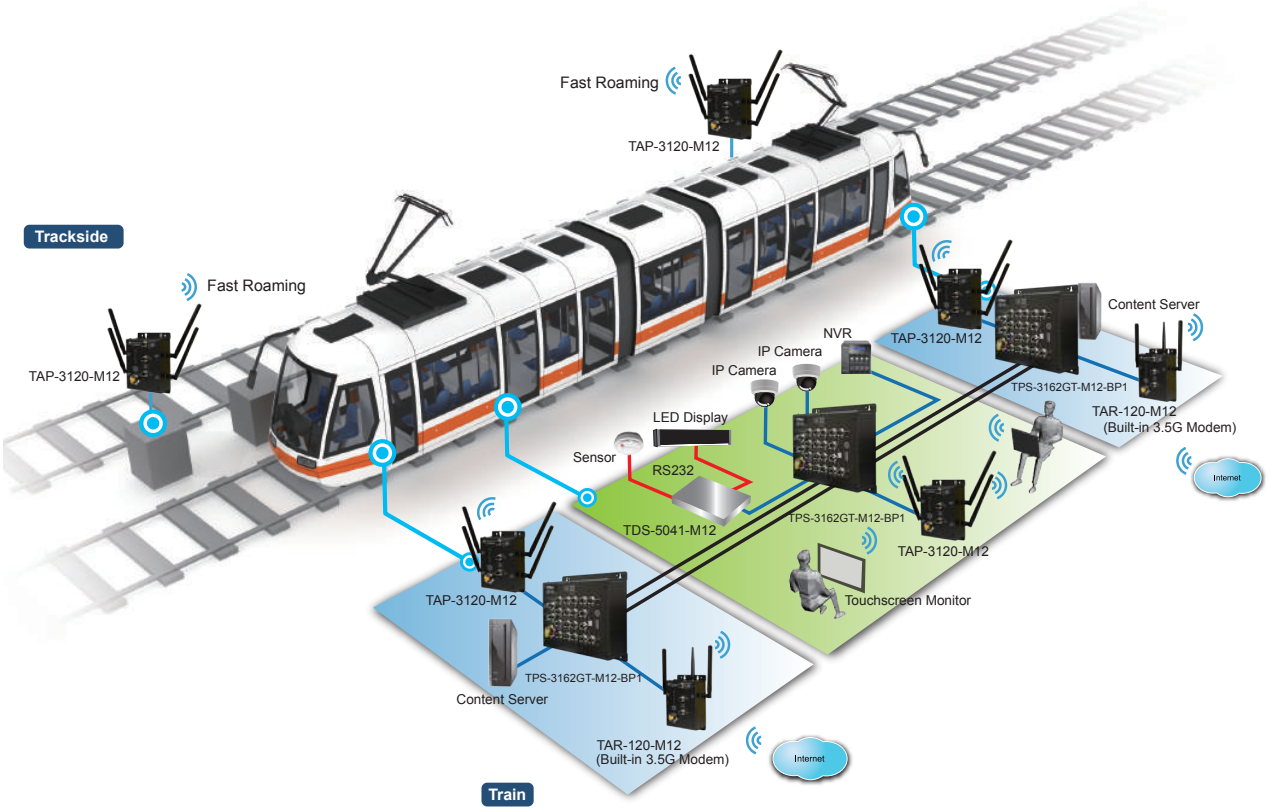
Introduction

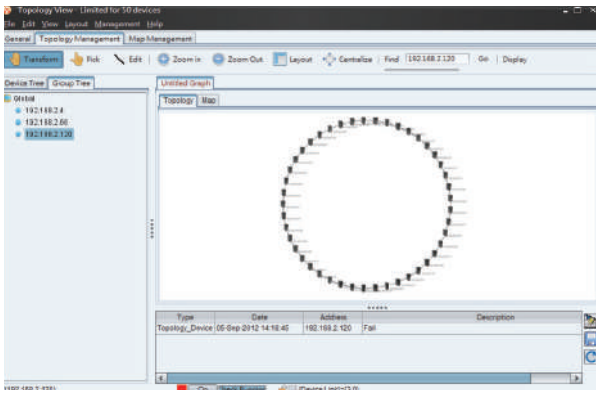
ORing's Transporter™ series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TPS-3162GT-M12-BP1 is a managed PoE Redundant Ring Ethernet switch with 16x10/100Base-T(X) P.S.E. and 2x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain and MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. And O-Chain technology is supported which can applied for multiple redundant Ethernet rings. TPS-3162GT-M12-BP1 also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TPS-3162GT-M12-BP1 switch has 16X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. TPS-3162GT-M12-BP1 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TPS-3162GT-M12-BP1 can be managed centralized and convenient by a powerful windows utility ~ Open-Vision. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed PoE Ethernet application.

***NOTE: This function is available by request only**

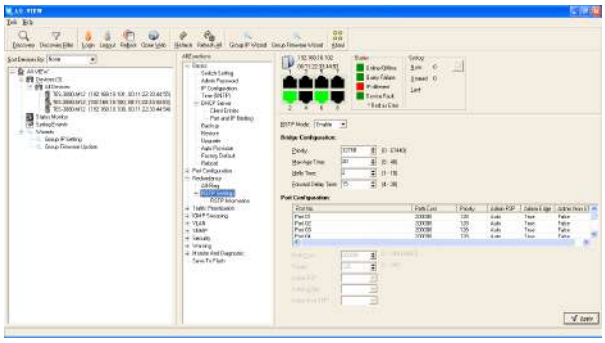
Practical Operation

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



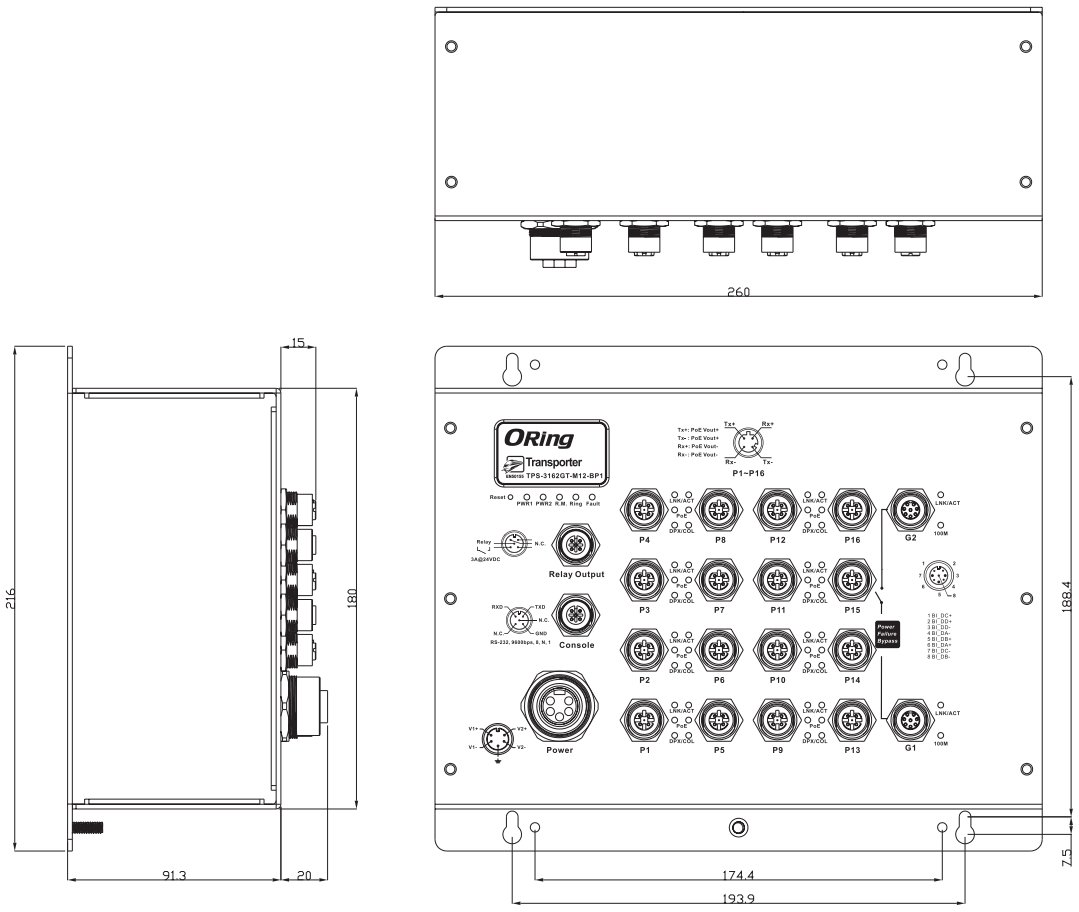


Topology View

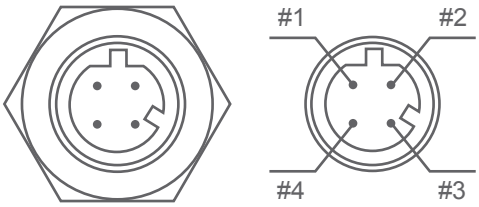


Monitoring and Configuration interface

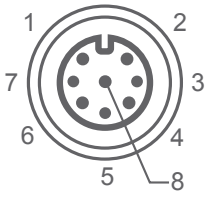
Dimensions



PoE Pin Definition

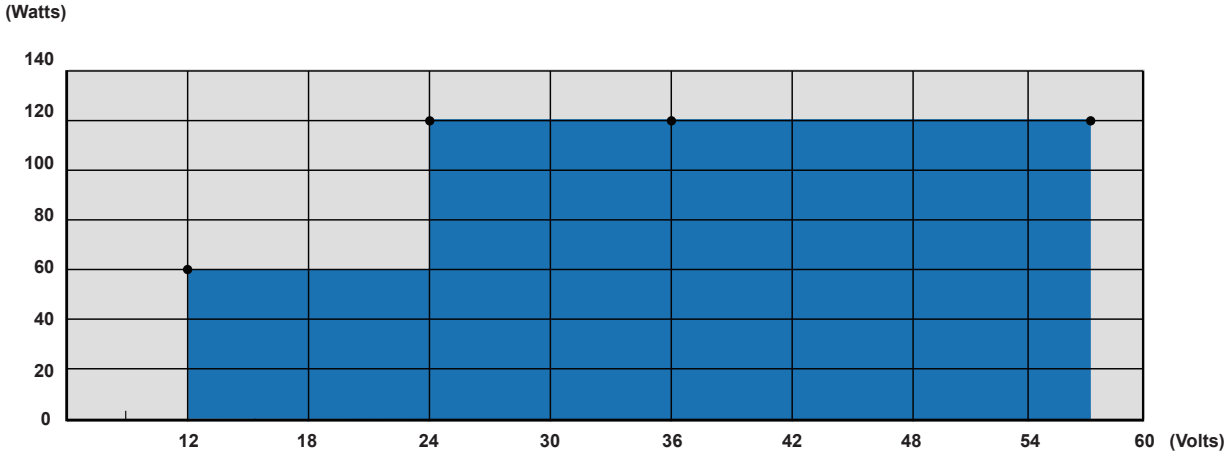


10/100Base-T(X) P.S.E. M12 port	
M12 D-coding Pin Definition	
Pin No.	Description
#1	TX+ with PoE Vout+
#2	RX+ with PoE Vout-
#3	TX- with PoE Vout+
#4	RX- with PoE Vout-

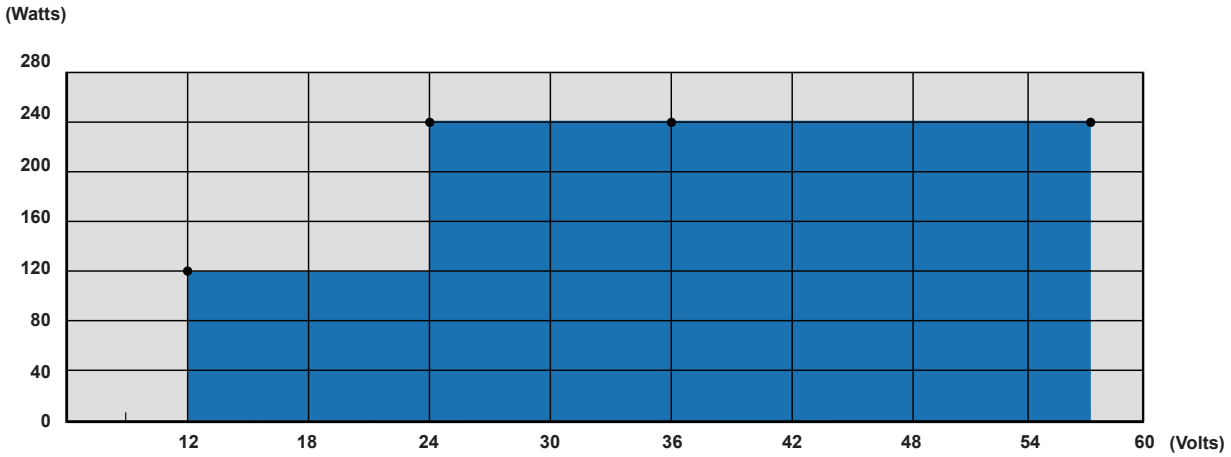


10/100/1000Base-T(X) M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

PoE Power Distribution



P1~P8 / P9~P16 PoE Power Distribution (respectively)



Total PoE Power Distribution

Specifications

ORing Switch Model	TPS-3162GT-M12-BP1	TPS-3162GT-M12-BP1-24V
Physical Ports		
10/100Base-T(X) Ports in M12 Auto MDI/MDIX with P.S.E.	**16 x M12 connector (4-pin D-coding)**	
10/100/1000Base-T(X) ports in M12	**2 x M12 connector (8-pin A-coding)**	
RS-232 Serial Console Port	RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification (up to 15.4 Watts per port for P.S.E.)	
MAC Table	8192 MAC addresses	

Priority Queues	4	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 7.2Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define	
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security	
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP	
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** STP RSTP MSTP	
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support	
LED Indicators		
Power Indicator	Green : Power LED x 2	
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode	
O-Ring Indicator	Green : Indicate system operated in O-Ring mode	
Fault Indicator	Amber : Indicate unexpected event occurred	
10/100Base-T(X) M12 PoE Port Indicator	Top Green for port Link/Act. Middle Green for PoE indicator. Bottom Amber for Collision/Duplex indicator.	
10/100/1000Base-T(X) M12 Port Indicator	Green for Link/Act. Amber for 100Mbps indicator	
Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input Power	Dual DC inputs. 48VDC on 5-pin M23 connector	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin M23 connector
Power Consumption (Typ.)	8.88 Watts (power consumption of P.S.E. is not included)	14.88 Watts (power consumption of P.S.E. is not included)
PoE Output Power	240 watts	120 Watts (12~24VDC) / 240 Watts (24~57VDC)
Overload Current Protection	Present	
Reverse Polarity Protection	Not Present	
Physical Characteristic		
Enclosure	IP-40	
Dimension (W x D x H)	260 (W) x 91.3 (D) x216 (H) mm	
Weight (g)	2104	2220
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	

***NOTE: This function is available by request only**

Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B, EN 50155(pending)	
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A	
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Other	EN 50155(IEC 61373) (pending)	
MTBF	276508 hrs	267612 hrs
Warranty	5 years	

Ordering Information

TPS-3 AA B CC -M12-DDD

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Number	Additional Port Number
Option	**- 16:** 16 ports	**- 2:** 2 ports	**- GT:** 10/100/1000Base-T(X) port	**- BP1:** 1xbypass function included

	Model Name	Description
Available Model	TPS-3162GT-M12-BP1	EN50155 18-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., 8x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included
	TPS-3162GT-M12-BP1-24V	EN50155 18-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., 8x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included, 24VDC power inputs

Packing List

- TPS-3162GT-M12-BP1 x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows utility Suit, 500 IP devices
- M12C : M12 cable accessories
- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply

TPS-3082GT-M12-BP1 Series

TPS-3082GT-M12-BP1 Series

EN50155 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included

Features

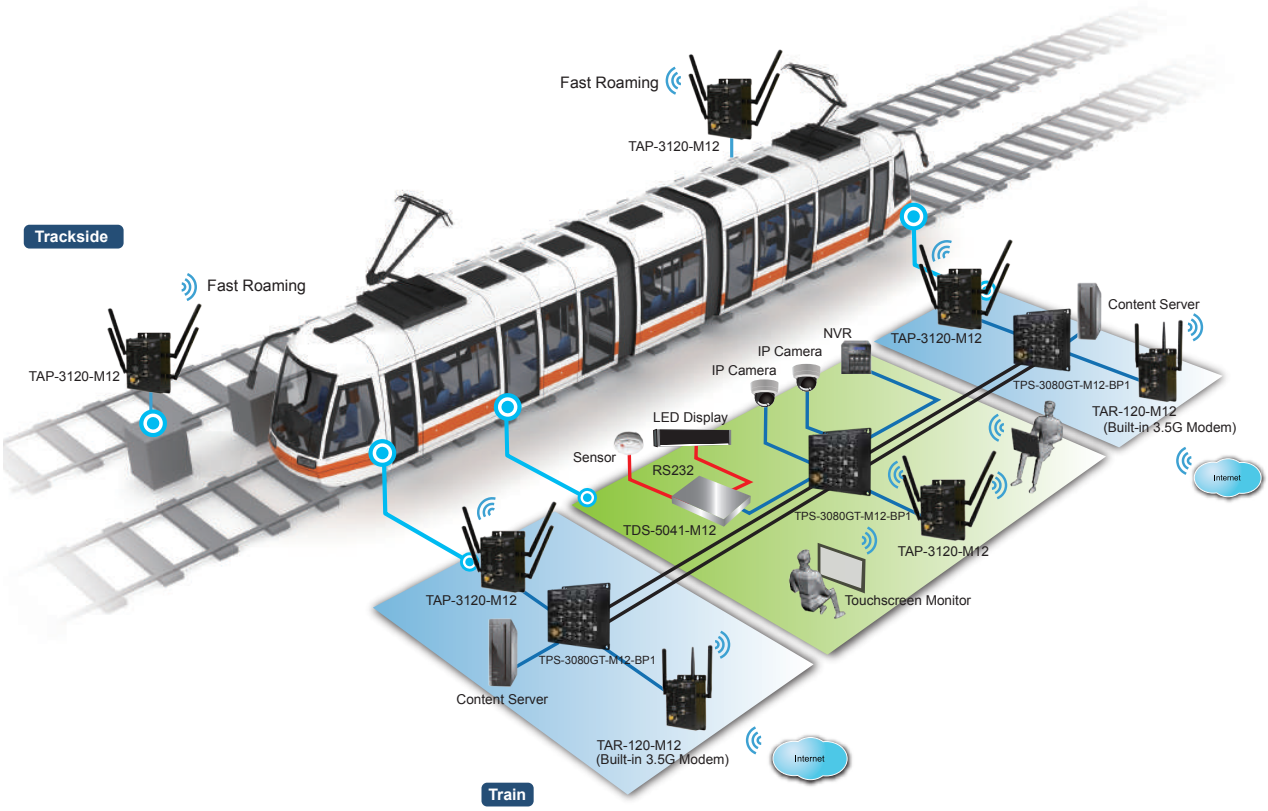
- Leading EN50155-compliant Ethernet switch for rolling stock application
- 8 ports P.S.E. fully compliant with IEEE802.3af standard, provide up to 15.4 Watts per port
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support VLAN and LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- DHCP assign each Equipment IP by each Port
- Provided Relay bypass function with two gigabit ports
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

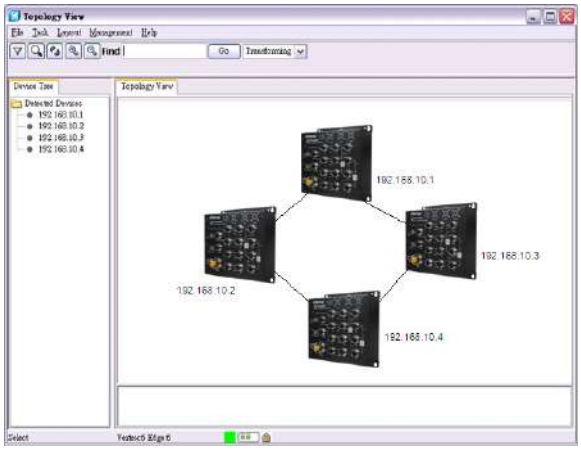
Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TPS-3082GT-M12-BP1 is a managed PoE Redundant Ring Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. TPS-3082GT-M12-BP1 also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TPS-3082GT-M12-BP1 switch has 8X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. TPS-3082GT-M12-BP1 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TPS-3082GT-M12-BP1 can be managed centralized and convenient by a powerful windows utility ~ Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

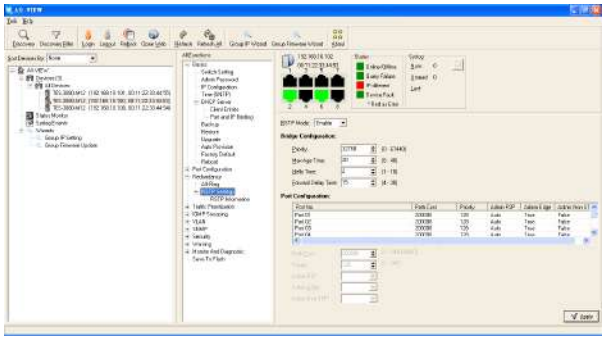
Practical Operation

ORing's switches are intelligent switches. Different form other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.





Topology View

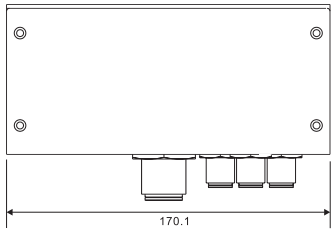


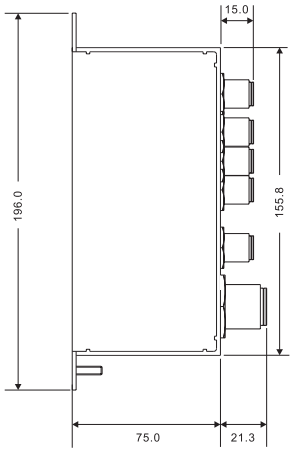
Monitoring and Configuration interface

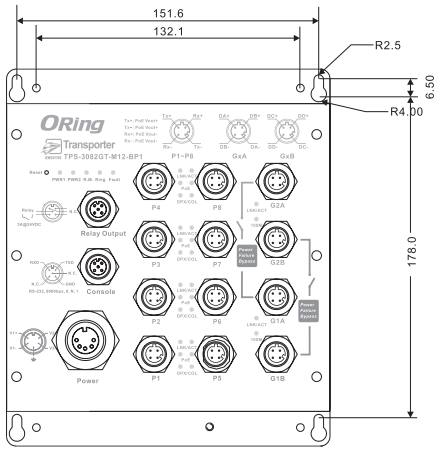
PoE Pin Definition

M12 D-coding Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

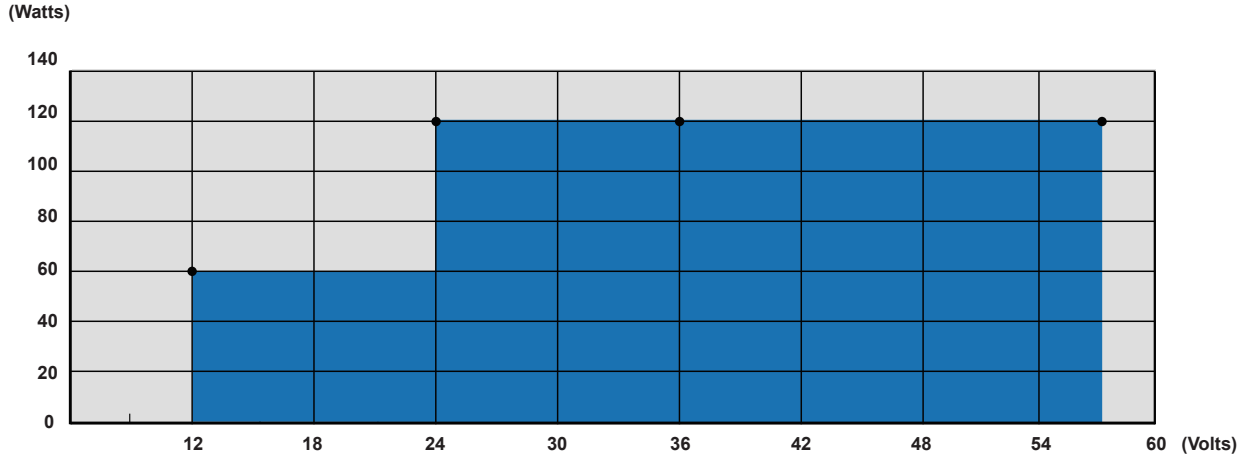
Dimensions







PoE Power Distribution



Specifications

ORing Switch Model	TPS-3082GT-M12-BP1-24V	TPS-3082GT-M12-BP1
Physical Ports		
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX with P.S.E	8 x M12 connector (4-pin D-coding)	
10/100/1000Base-T(X) ports in M12	2 x (combinig 2 x M12 connectors 4-pin D-coding for 1 Gigabit port)	
RS-232 Serial Console Port	RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification (up to 15.4 Watts per port for P.S.E.)	
MAC Table	8192 MAC addresses	
Priority Queues	4	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 5.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define	
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security	
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP	
Network Redundancy	O-Ring Open-Ring O-Chain RSTP:2004 MSTP	
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support	
LED Indicators		
Power Indicator	Green : Power LED x 2	
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode	
O-Ring Indicator	Green : Indicate system operated in O-Ring mode	
Fault Indicator	Amber : Indicate unexpected event occurred	
10/100Base-T(X) M12 PoE Port Indicator	Up Green for port Link/Act. Down Green for PoE indicator. Amber for Collision/Duplex indicator.	

10/100/1000Base-T(X) M12 Port Indicator	Green for Link/Act. Amber for 100Mbps indicator	
Fault Contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input Power	Dual DC inputs. 24VDC (12 ~ 57VDC) on 5-pin M23 connector	Dual DC inputs. 48VDC on 5-pin M23 connector
Power Consumption (Typ.)	15 Watts (power consumption of P.S.E. is not included)	9 Watts (power consumption of P.S.E. is not included)
PoE Output Power	60 Watts (12~24VDC) / 120 Watts (24~57VDC)	120 Watts
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-40	
Dimensions (W x D x H)	170 (W) x 75 (D) x196 (H) mm	170 (W) x 75 (D) x196 (H) mm
Weight (g)	1510 g	1427 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

TPS-3 AA B CC -M12-BP1

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 2:** 2 ports	**- GT:** 10/100/1000Base-T(X) port

	Model Name	Description
Available Model	TPS-3082GT-M12-BP1-24V	EN50155 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included, 24VDC power inputs
	TPS-3082GT-M12-BP1	EN50155 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included

Packing List

- TPS-3082GT-M12-BP1
- ORing Tool CD
- Quick Installation Guide

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows utility Suit, 500 IP devices
- M12C : M12 cable accessories
- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply
- M12C : M12 cable accessories
- Console cable

TPS-3082GT-M12X-BP1

TPS-3082GT-M12X-BP1

EN50155 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2x10/100/1000Base-T(X), X-coded M12 connector and 1xbypass included

Features

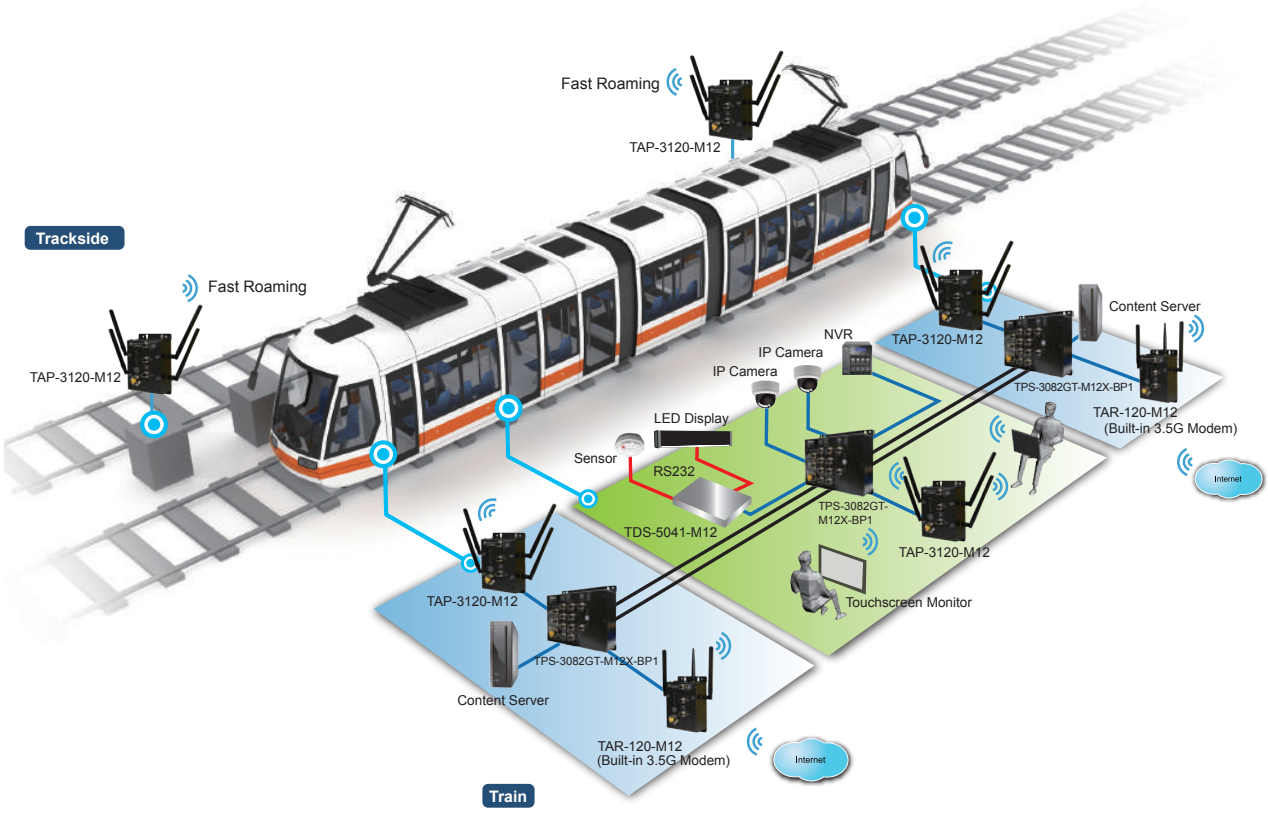
- Leading EN50155-compliant Ethernet switch for rolling stock application
- 8 ports P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 Watts per port
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- STP/RSTP/MSTP supported
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support VLAN and LLDP protocol
- DHCP assign each Equipment IP by each Port
- Provided Relay bypass function with two gigabit ports
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

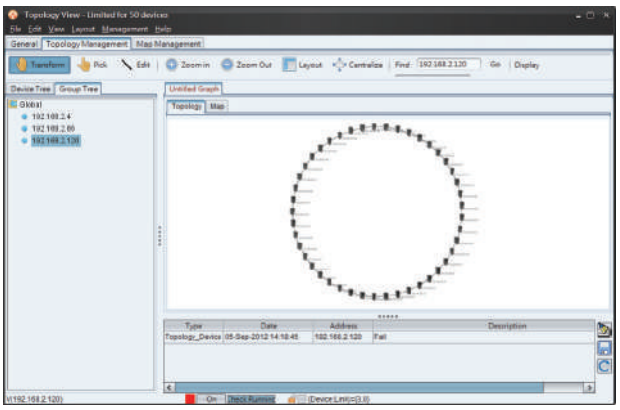
Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TPS-3082GT-M12X-BP1 is a managed PoE Redundant Ring Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2x10/100/1000Base-T(X) X-coded ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), and MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. TPS-3082GT-M12X-BP1 also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TPS-3082GT-M12X-BP1 switch has 8X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. TPS-3082GT-M12X-BP1 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TPS-3082GT-M12X-BP1 can be managed centralized and convenient by a powerful windows utility ~ Open-Vision. In addition, the wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

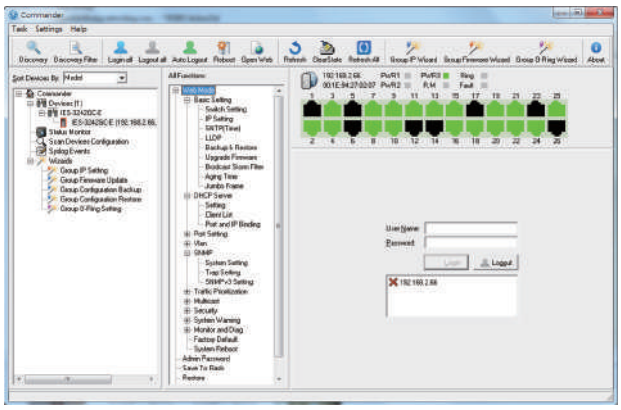
Practical Operation

ORing's switches are intelligent switches. Different form other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



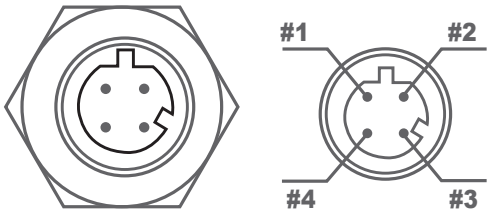


Topology View

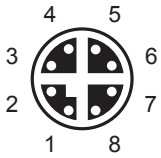


Monitoring and Configuration interface

PoE Pin Definition

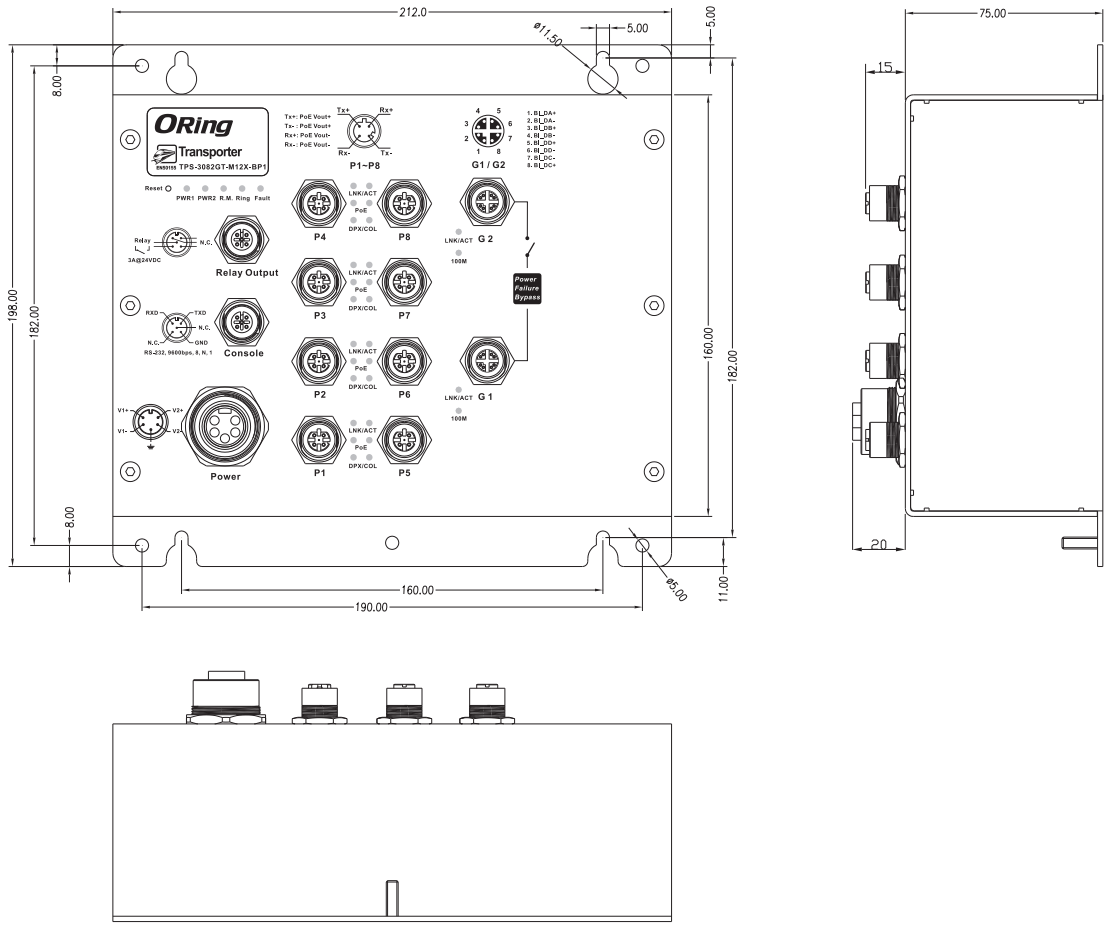


M12 D-coding Pin Definition	
Pin No.	Description
#1	TX+ with PoE Vout+
#2	RX+ with PoE Vout-
#3	TX- with PoE Vout+
#4	RX- with PoE Vout-



M12 X-coding Pin Definition	
Pin No.	Description
#1	BI_DA+
#2	BI_DA-
#3	BI_DB+
#4	BI_DB-
#5	BI_DD+
#6	BI_DD-
#7	BI_DC-
#8	BI_DC+

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	TPS-3082GT-M12X-BP1
Physical Ports	
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX with P.S.E.	**8 x M12 connector (4-pin D-coding)**
10/100/1000Base-T(X) ports in M12	**2 x M12 connector (8-pin X-coding)**
RS-232 Serial Console Port	RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 5.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support
Network Redundancy	O-Ring STP RSTP MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
LED Indicators	
Power Indicator	Green : Power LED x 2
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode
Ring Indicator	Green : Indicate system operated in O-Ring mode
Fault Indicator	Amber : Indicate unexpected event occurred
10/100Base-T(X) M12 PoE Port Indicator	Up Green for port Link/Act. Down Green for PoE indicator. Amber for Collision/Duplex indicator.
10/100/1000Base-T(X) M12 Port Indicator	Green for Link/Act. Amber for 100Mbps indicator
Fault contact	
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)

Power	
Redundant Input Power	Dual DC inputs. 50 ~ 57VDC on 5-pin M23 connector
Power Consumption (Typ.)	11.4 Watts
PoE Output Power	240 Watts (65°C) / 180Watts (75°C)
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-40
Dimension (W x D x H)	212 (W) x 75 (D) x 198 (H) mm
Weight (g)	1550 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	EN 55022, EN 55024(CE EMC),EN 50121-4,EN 60945, FCC, EN 50121-3-2(EN50155), EN 61000-6-2, EN 61000-6-4,IEC 61000-3-2 ,IEC 61000-3-3
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

TPS-3 AA B CC – M12X – BP1

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 2:** 2 ports	**- GT**: 10/100/1000Base-T(X) port

Available Model	Model Name	Description
	TPS-3082GT-M12X-BP1	EN50155 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2x10/100/1000Base-T(X), X-coded M12 connector and 1xbypass included

Packing List

- TPS-3082GT-M12X-BP1 x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows utility Suit, 500 IP devices
- M12C : M12 cable accessories
- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply
- Console cable

TPS-3082GF-MM-M12-QODC

TPS-3082GF-MM-M12-QODC

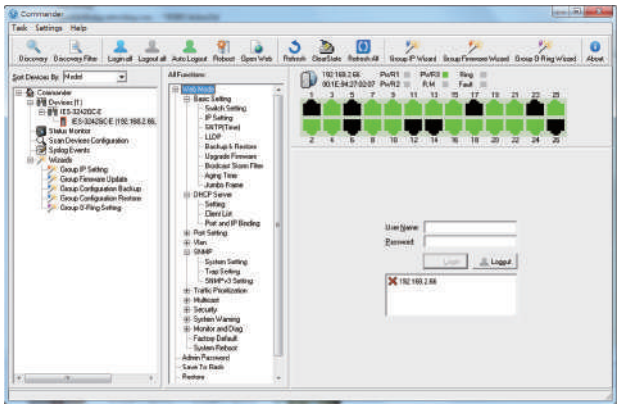
EN50155 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2x1000Base-SX, Q-ODC connector

Features

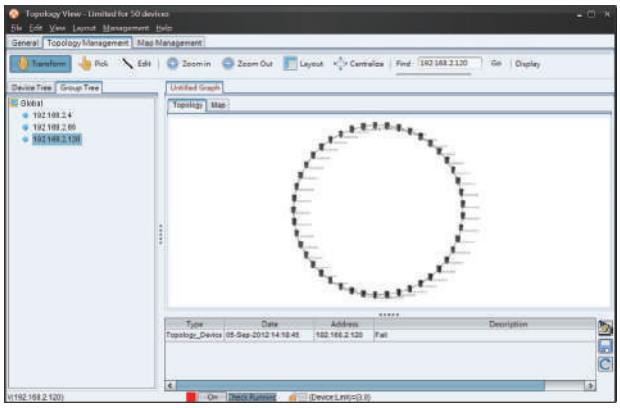
- Leading EN50155-compliant Ethernet switch for rolling stock application
- 8 ports P.S.E. fully compliant with IEEE802.3af standard, provide up to 15.4 Watts per port
- World's fastest Redundant Ethernet Ring: O-Ring (recovery time < 10ms over 250 units of connection)
- STP/RSTP/MSTP supported
- Support PTP Client (Precision Time Protocol) clock synchronization
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support VLAN and LLDP protocol
- DHCP assign each Equipment IP by each Port
- Provide two Gigabit fiber port with Q-ODC connector
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (Open-Vision) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TPS-3082GF-MM-M12-QODC is a managed PoE Redundant Ring Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2x1000Base-SX Q-ODC ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring and MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. TPS-3082GF-MM-M12-QODC also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TPS-3082GF-MM-M12-QODC switch has 8X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. TPS-3082GF-MM-M12-QODC EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TPS-3082GF-MM-M12-QODC can be managed centralized and convenient by a powerful windows utility ~ Open-Vision. In addition, the wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

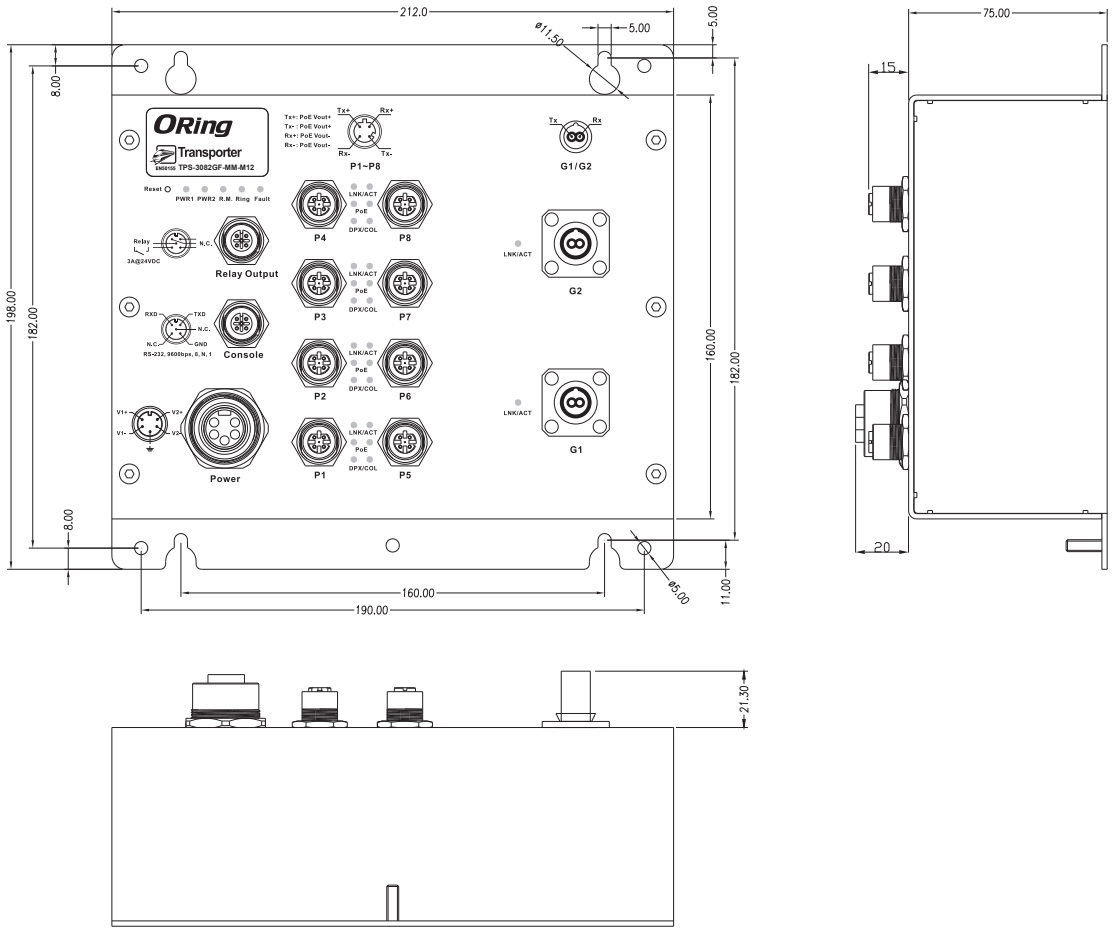


Commander



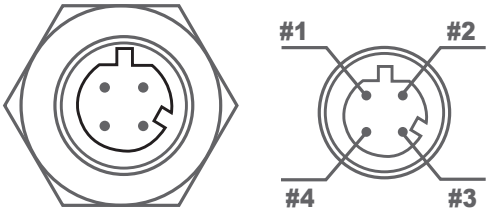
Topology View

Dimensions



(Unit=mm)

PoE Pin Definition



M12 D-coding Pin Definition	
Pin No.	Description
#1	TX+ with PoE Vout+
#2	RX+ with PoE Vout-
#3	TX- with PoE Vout+
#4	RX- with PoE Vout-

Specifications

ORing Switch Model		TPS-3082GF-MM-M12-QODC
Physical Ports		
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX with P.S.E.		**8 x M12 connector (4-pin D-coding)**
1000Base-SX Fiber Ports in Q-ODC connector		**2 x Q-ODC connector**
RS-232 Serial Console Port		**RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1**
Fiber Ports Specification	Fiber Ports Number	2
	Fiber Ports Standard	1000Base-SX
	Fiber Mode	Multi-mode
	Fiber Diameter (μm)	62.5/125 μm @ 50/125 μm
	Fiber Optical Connector	Q-ODC
	Typical Distance (Km)	0.55 Km
	Wavelength (nm)	850 nm
	Max. Output Optical Power (dbm)	-4 dbm
	Min. Output Optical Power (dbm)	-9.5 dbm
	Max. Input Optical Power (Saturation)	0 dbm
	Min. Input Optical Power (Sensitivity)	-18 dbm
	Link Budget (db)	8.5 db
Technology		
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification (up to 15.4 Watts per port for P.S.E.)
MAC Table		8192 MAC addresses
Priority Queues		4
Processing		Store-and-Forward
Switch Properties		Switching latency: 7 us Switching bandwidth: 5.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features		Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security
Software Features		STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support PTP Client (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support
Network Redundancy		O-Ring STP RSTP MSTP
Warning / Monitoring System		Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support

LED Indicators	
Power Indicator	Green : Power LED x 2
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode
O-Ring Indicator	Green : Indicate system operated in O-Ring mode
Fault Indicator	Amber : Indicate unexpected event occurred
10/100Base-T(X) M12 PoE Port Indicator	Up Green for port Link/Act. Down Green for PoE indicator. Amber for Collision/Duplex indicator.
1000Base-SX Q-ODC Port Indicator	Green LED for Link/Act indicator
Fault contact	
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)
Power	
Redundant Input Power	Dual DC inputs. 48VDC on 5-pin M23 connector
Power Consumption (Typ.)	10.75W
PoE Output Power	120 watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	212 (W) x 75 (D) x 198 (H) mm
Weight (g)	1462g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	EN 55022, EN 55024(CE EMC),EN 50121-4,EN 60945, FCC, EN 50121-3-2(EN50155), EN 61000-6-2, EN 61000-6-4,IEC 61000-3-2 ,IEC 61000-3-3
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

TPS-3 AA B CC – DD –M12-QODC

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Number	Fiber Optical Mode
Option	**- 08:** 8 ports	**- 2:** 2 ports	**- GF**: 1000Base-X Fiber Ports	**- MM**: Multi-mode

	Model Name	Description
Available Model	TPS-3082GF-MM-M12-QODC	EN50155 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2x1000Base-SX, multi-mode, 550m/850nm, Q-ODC connector

Packing List

- TPS-3082GF-MM-M12-QODC x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows utility Suit, 500 IP devices
- M12C : M12 cable accessories
- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply
- Console cable

TPS-3044TX-M12

TPS-3044TX-M12

EN50155 8-port managed PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 4x10/100Base-T(X), M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- 4 ports P.S.E. fully compliant with IEEE802.3af standard, provide up to 15.4 Watts per port
- Provide **PoE power on delay** function, users can define delay time for PoE power supply
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus/TCP protocol
- Support TACACS+ and 802.1x User Authentication for security
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

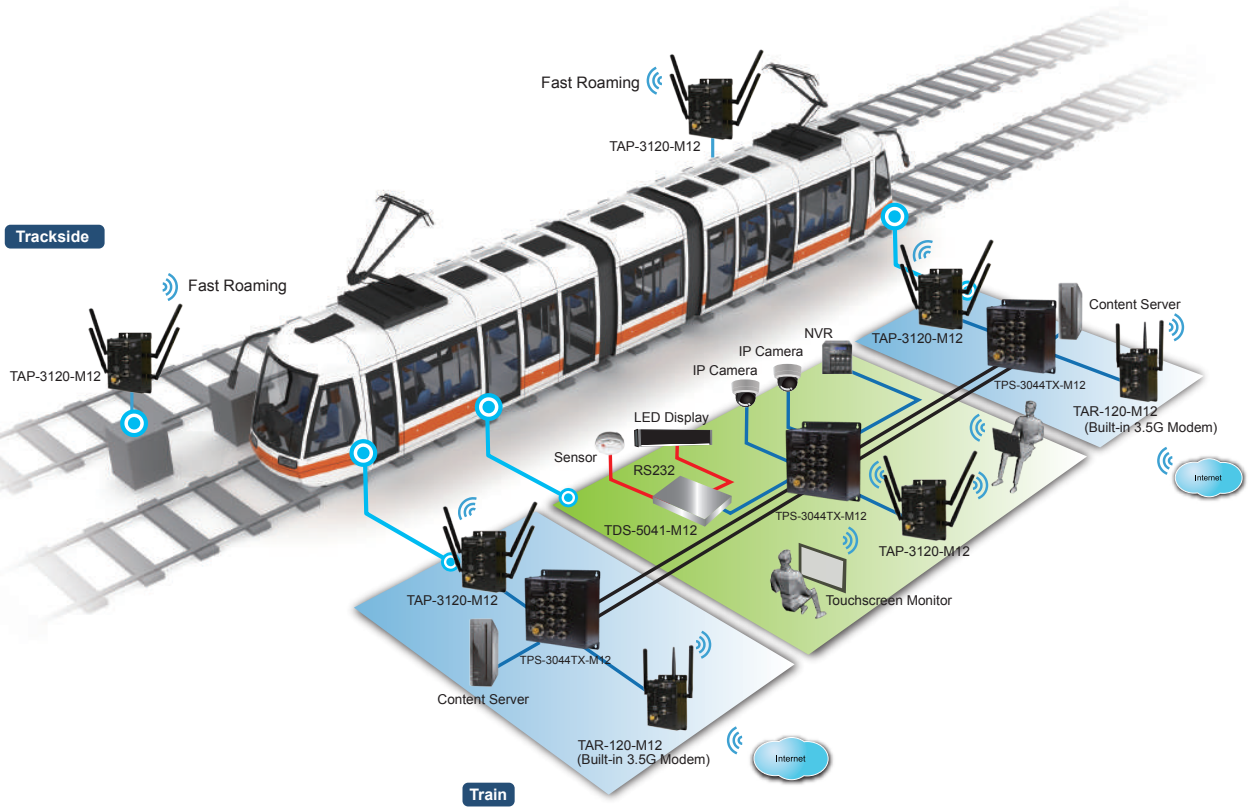
Introduction

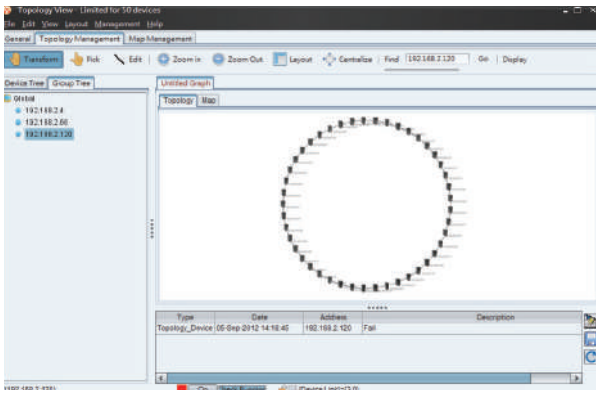
ORing's Transporter series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TPS-3044TX-M12 is a managed Redundant Ring PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 4x10/100Base-T(X) ports which is compliant with EN50155 request. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. TPS-3044TX-M12 also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TPS-3044TX-M12 switch has 4X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. It is specifically designed for the toughest industrial environments. TPS-3044TX-M12 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TPS-3044TX-M12 can be managed centralized and convenient by a powerful windows utility ~ Open-Vision. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed PoE Ethernet application.

***NOTE: This function is available by request only**

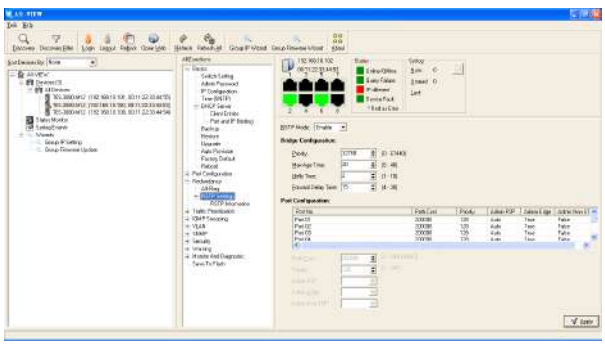
Practical Operation

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.





Topology View

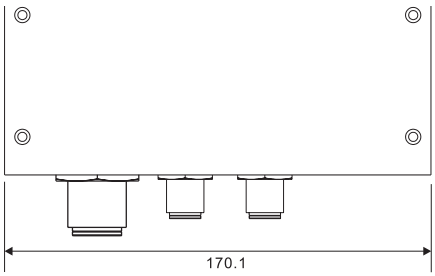


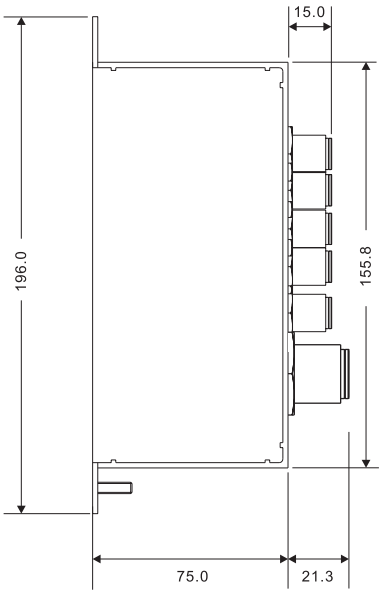
Monitoring and Configuration interface

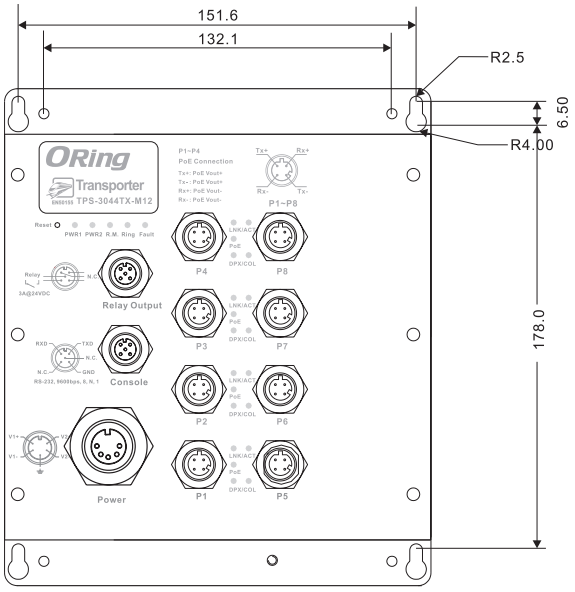
PoE Pin Definition

M12 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#4	RD- with PoE Power input -

Dimensions







Specifications

ORing Switch Model	TPS-3044TX-M12
Physical Ports	
10/100 Base-T(X) Ports P.S.E. on M12 Auto MDI/MDIX	4(M12 D-coding)
10/100 Base-T(X) Ports on M12 Auto MDI/MDIX	4(M12 D-coding)
RS-232 Serial Console Port	RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification (up to 15.4 Watts per port for P.S.E.)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 1.6Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP*NOTE STP RSTP:2004 MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
LED Indicators	
Power Indicator	Green : Power LED x 2
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode
O-Ring Indicator	Green : Indicate system operated in O-Ring mode
Fault Indicator	Amber : Indicate unexpected event occurred

***NOTE: This function is available by request only**

10/100Base-T(X) M12 P.S.E. Port Indicator (Port1 ~ 4)	Top Green LED for port Link/Act. Middle Green LED for PoE indicator. Bottom Amber LED for port Duplex/Collision
10/100Base-T(X) M12 Port Indicator (Port5 ~ 8)	Green for port Link/Act. Amber for Duplex/Collision
Fault Contact	
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (A-coding)
Power	
Redundant Input Power	Dual DC inputs. 48VDC on 5-pin M23 connector
Power Consumption (Typ.)	8.16 Watts (P.S.E. output not included)
Overload Current Protection	Present
Reverse Polarity Protection	Not Present
Physical Characteristics	
Enclosure	IP-40
Dimensions (W x D x H)	170.1 (W) x 96.3 (D) x 196 (H) mm
Weight (g)	1345 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

TPS-3 AA B CC -M12

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 04:** 4 ports	**- 4:** 4 ports	**- TX:** 10/100Base-T(X) port

	Model Name	Description
Available Model	TPS-3044TX-M12	EN50155 8-port managed PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 4x10/100/base-T(X), M12 connector

Packing List

- TPS-3044TX-M12
- ORing Tool CD
- Quick Installation Guide
- Console Cable

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows utility Suit, 500 IP devices
- M12C : M12 cable accessories
- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply
- M12C : M12 cable accessories
- Console cable

TPS-141TX-M12 Series

TPS-141TX-M12 Series

EN50155 5-port unmanaged PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 1x10/100Base-T(X), M12 connector

Features

- Supports 4 x 10/100 Base-T(X) with P.S.E. PoE ports
- 4 port **P.S.E.** fully compliant with IEEE802.3at standard, provide up to 30 Watts per port
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Support broadcast storm protection
- Ultra-rugged enclosure M12 connector for toughest industrial usages
- Wall mounting enabled

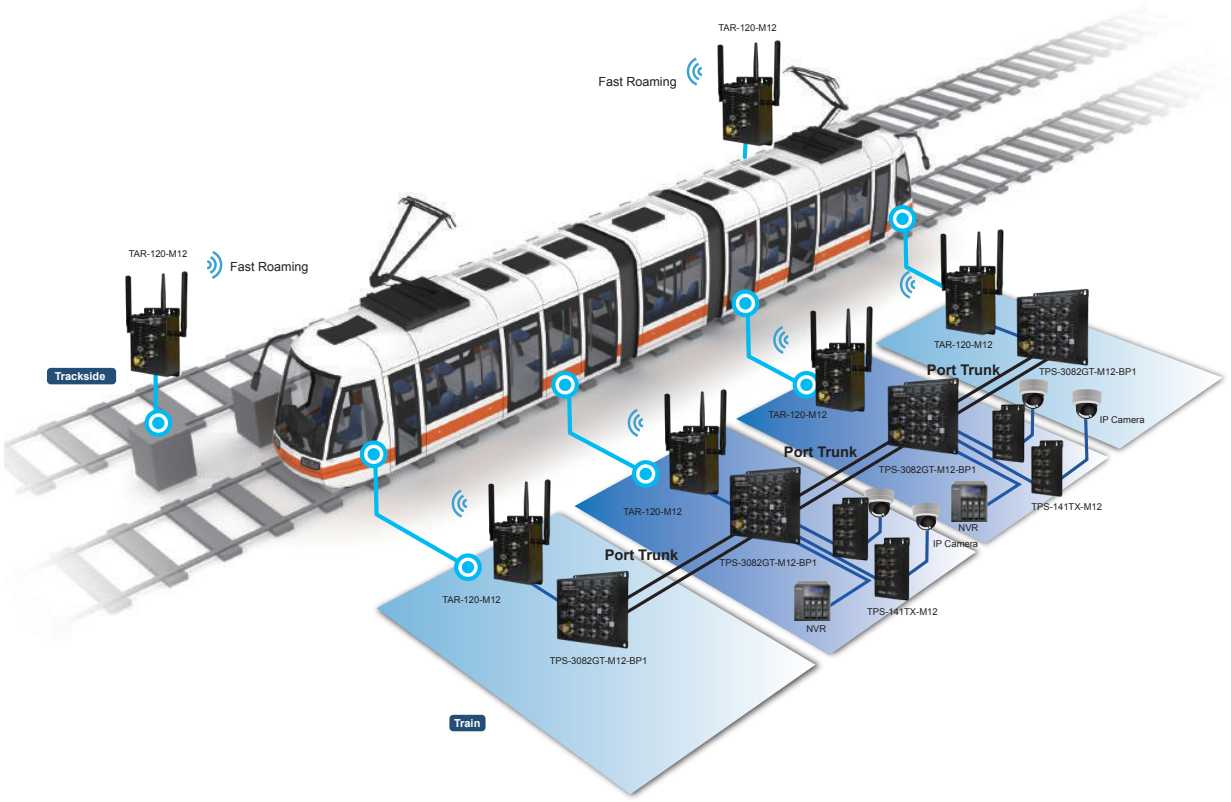
EN50155 | P.S.E. PoE IEEE802.3at | -40~70°C Temperature | RoHS Lead Free | CE | FC

Introduction

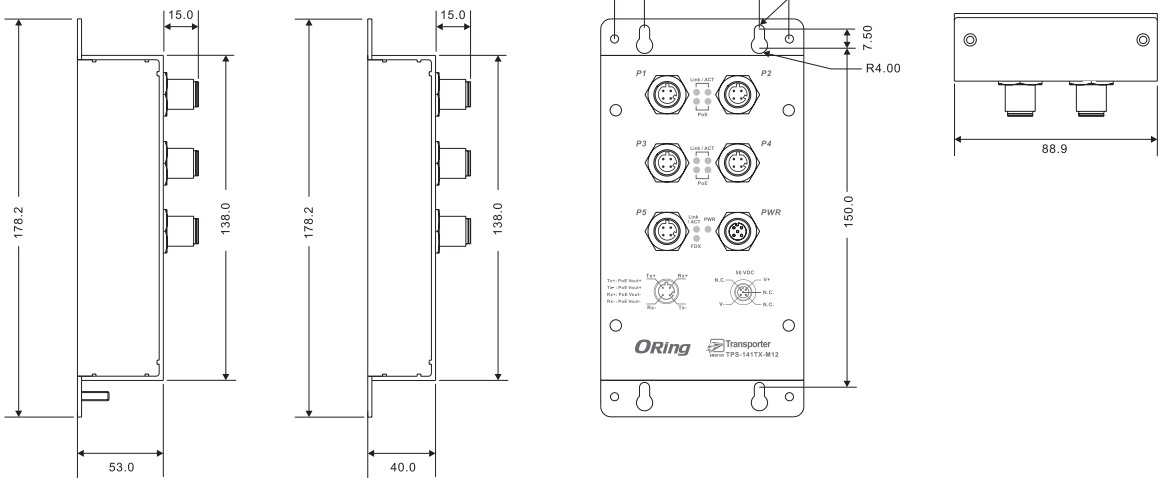
ORing's Transporter™ series Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TPS-141TX-M12 series are unmanaged PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. ports and 1x10/100Base-T(X) port which is compliant with EN50155 requirement. It is specifically designed for the toughest industrial environments. TPS-141TX-M12 series EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TPS-141TX-M12 series also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. TPS-141TX-M12 series switch has 4x10/100Base-T(X) P.S.E. (Power Sourcing Equipment) port to provide power in a PoE setup. The very wide operating temperature range from -40°C to 70°C can satisfy most operating environment.

Practical Operation

TPS-141TX-M12 series can be used in connecting several Ethernet devices which need to operated under harsh environment requirement. The designs of rugged housing and wide operating temperature range form -40 ~ 70°C, makes TPS-141TX-M12 series reliably in any kinds of transporter applications.

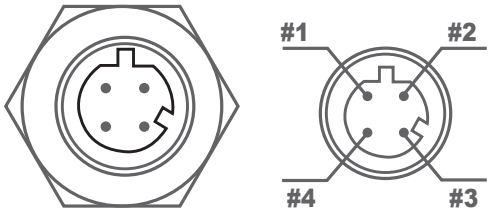


Dimensions



TPS-141TX-M12-24V/MV TPS-141TX-M12

PoE Pin Definition



M12 D-coding Pin Definition	
Pin No.	Description
#1	TX+ with PoE Vout+
#2	RX+ with PoE Vout-
#3	TX- with PoE Vout+
#4	RX- with PoE Vout-

Specifications

ORing Switch Model	TPS-141TX-M12-24V	TPS-141TX-M12	TPS-141TX-M12-MV
Physical Ports			
10/100 Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	4 x M12 connector (4-pin M12 D-coding)		
10/100 Base-T(X) Port in M12 Auto MDI/MDIX	1 x M12 connector (4-pin M12 D-coding)		
Technology			
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)		
Processing	Store-and-Forward		
LED indicators			
Power indicator	Green : Power LED x 1		
10/100Base-T(X) M12 port with P.S.E. indicator	Green for port Link/Act. Blue for PoE indicator		
10/100Base-T(X) M12 port indicator	Green for port Link/Act. Amber for port Duplex/Collision		
Power			
Input Power	12~57VDC power input on M12 connector (5-pin M12 A-coding)	50 ~ 57VDC power input on M12 connector (5-pin M12 A-coding)	72~110VDC power input on M12 connector (5-pin M12 A-coding)
Power Consumption (Typ.)	3.8 Watts (PoE outputs not included)	3 Watts (PoE outputs not included)	7 Watts (PoE outputs not included)
PoE Output Power	60 Watts (12~24VDC) / 120 Watts (24~57VDC)	120 Watts	60 Watts
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristic			
Enclosure	IP-40		
Dimension (W x D x H)	88.9 x 53 x 178.2 mm	88.9 x 40 x 178.2 mm	88.9 x 53 x 178.2 mm
Weight (g)	450 g	363 g	573 g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		

Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6, EN61373
Safety	EN60950-1
Warranty	5 years

Ordering Information

TPS-1 A B TX -M12

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number with 10/100Base-T(X)
Option	**- 4:** 4 ports	**- 1:** 1 port

	Model Name	Description
Available Model	TPS-141TX-M12-24V	EN50155 5-port unmanaged PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 1x10/100Base-T(X), M12 connector, 24VDC power input
	TPS-141TX-M12	EN50155 5-port unmanaged PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 1x10/100Base-T(X), M12 connector
	TPS-141TX-M12-MV	EN50155 5-port unmanaged PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 1x10/100Base-T(X), M12 connector, middle-voltage power input

Packing List

- TPS-141TX-M12 series x 1
- Quick Installation Guide x 1

Optional Accessories

- M12 cables series

TPS-1080-M12 Series

TPS-1080-M12 Series

EN50155 8-port unmanaged PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., M12 connector

Features

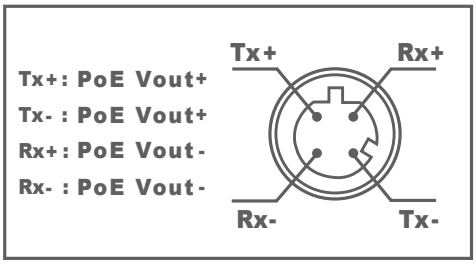
- Leading EN50155-compliant Ethernet switch for rolling stock application
- Provide 8x10/100Base-T(X) PoE (P.S.E.) ports
- Supports IEEE 802.3at compliant PoE with maximum 30Watts per port
- Support dual power inputs for power redundancy
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- M12 connectors to guarantee reliable operation against environmental disturbances
- Rigid IP-40 housing design
- Wall mounting enabled

EN50155 | Redundant PWR | P.S.E. PoE IEEE802.3at | -40~70°C Temperature | RoHS Lead Free | CE | FC

Introduction

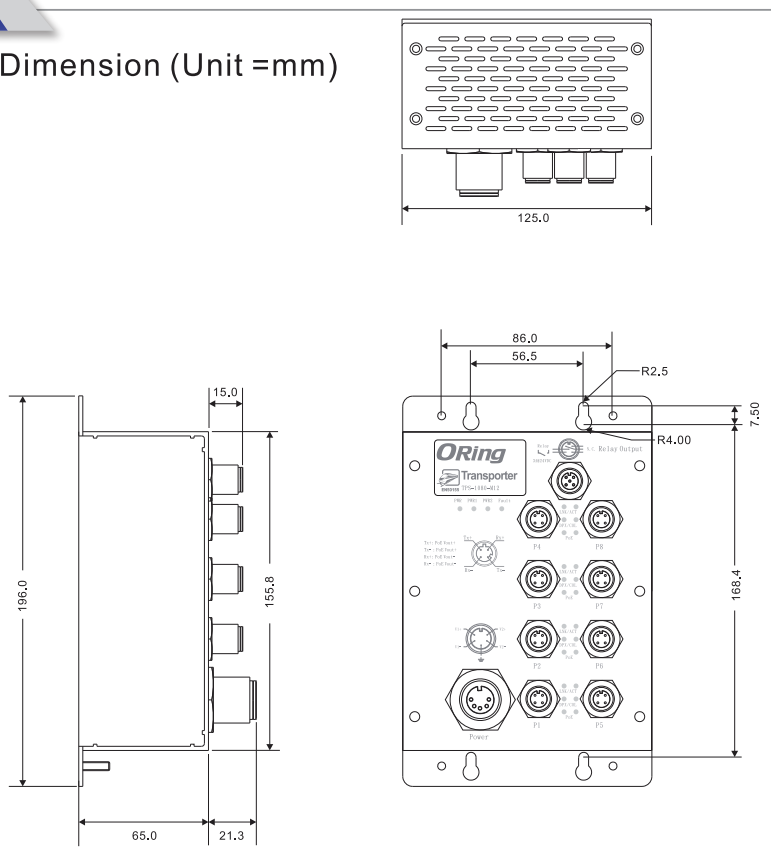
ORing's Transporter™ series un-managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TPS-1080-M12 is an un-managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. which is specifically designed for the toughest and fully compliant with EN50155 requirement. TPS-1080-M12 also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TPS-1080-M12 switch has 8X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. TPS-1080-M12 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed PoE Ethernet application.

PoE Pin Definition



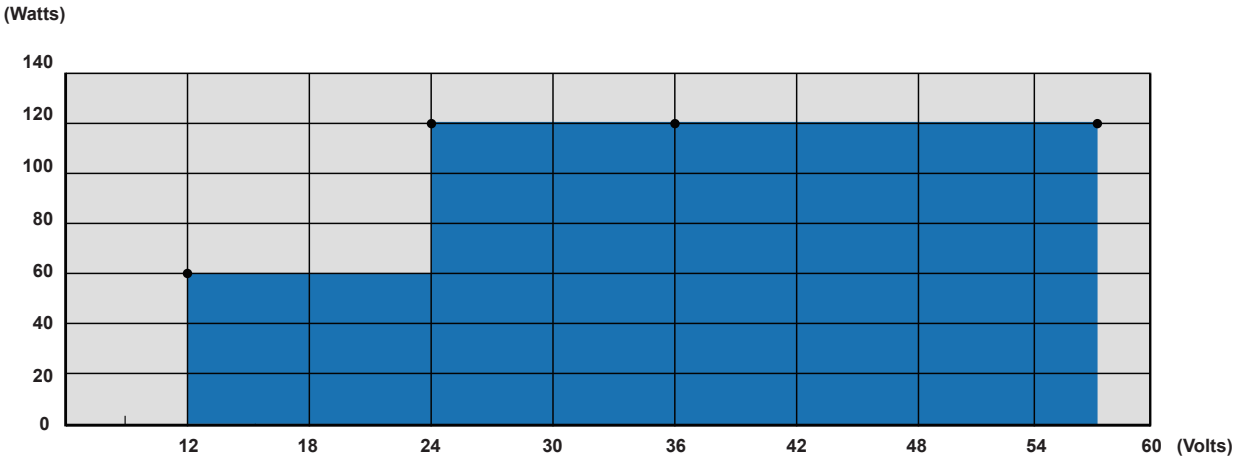
Dimensions

Dimension (Unit =mm)



TPS-1080-M12

PoE Power Distribution



TPS-1080-M12-24V model PoE Power Distribution

Specifications

ORing Switch Model	TPS-1080-M12	TPS-1080-M12-24V
Physical Ports		
10/100Base-T(X) Ports in M12 With P.S.E.	8 x M12 connector (4-pin D-coding)	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3at compliant PoE specification (Maximum 30Watts per port)	
Processing	Store-and-Forward	
MAC Table	8K MAC addresses	
LED Indicators		
Power Indicator	Green : Power LED x 3	
Fault indicator	Amber : Indicate PWR1 or PWR2 failure	
10/100Base-T(X) M12 port indicator and PoE indicator	Top for port Link/Act indicator. Green for 100Mbps link, Amber for 10 Mbps link Middle Amber for Duplex / Collision indicator Bottom blue for PoE Injected indicator	
Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input power	Dual DC inputs. 50~57VDC on 5-pin M23 connector	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin M23 connector
Power Consumption (Typ.)	2.5 Watts (power consumption of P.S.E. is not included)	7.5 Watts (power consumption of P.S.E. is not included)
PoE Output Power	240 Watts	60 Watts (12~24VDC) / 120 Watts (24~57VDC)
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-40	
Dimensions (W x D x H)	125 (W) x 65 (D) x196 (H) mm	
Weight (g)	996g	1054g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Warranty	5 years	

Ordering Information

TPS-1 AA B -M12

Code Definition	10/100 Base-T(X) P.S.E. Port Number	Additional Port Number with 10/100Base-T(X)
Option	**- 08:** 8 ports	**- 0:** 0 port

	Model Name	Description
Available Model	TPS-1080-M12	EN50155 8-port unmanaged PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., M12 connector
	TPS-1080-M12-24V	EN50155 8-port unmanaged PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., M12 connector, 24VDC power inputs

Packing List

- TPS-1080-M12
- Quick Installation Guide

Optional Accessories

- M12C : M12 cable accessories

TPS-1080-M12-BP2 Series

TPS-1080-M12-BP2 Series

EN50155 8-port unmanaged PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., M12 connector and 2xbypass included

Features

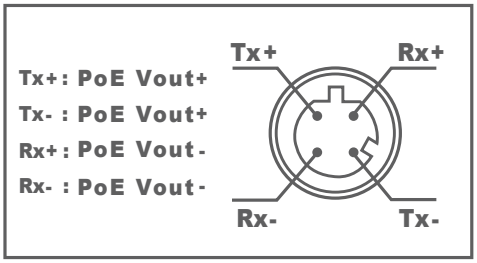
- Leading EN50155-compliant Ethernet switch for rolling stock application
- Provide 8x10/100Base-T(X) PoE (P.S.E.) ports
- Supports IEEE 802.3at compliant PoE with maximum 30Watts per port
- Support dual power inputs for power redundancy
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Built-in 2 sets of bypass ports
- M12 connectors to guarantee reliable operation against environmental disturbances
- Rigid IP-40 housing design
- Wall mounting enabled

EN50155 Redundant PWR P.S.E. PoE IEEE802.3at -40~70°C Temperature RoHS Lead Free CE FC

Introduction

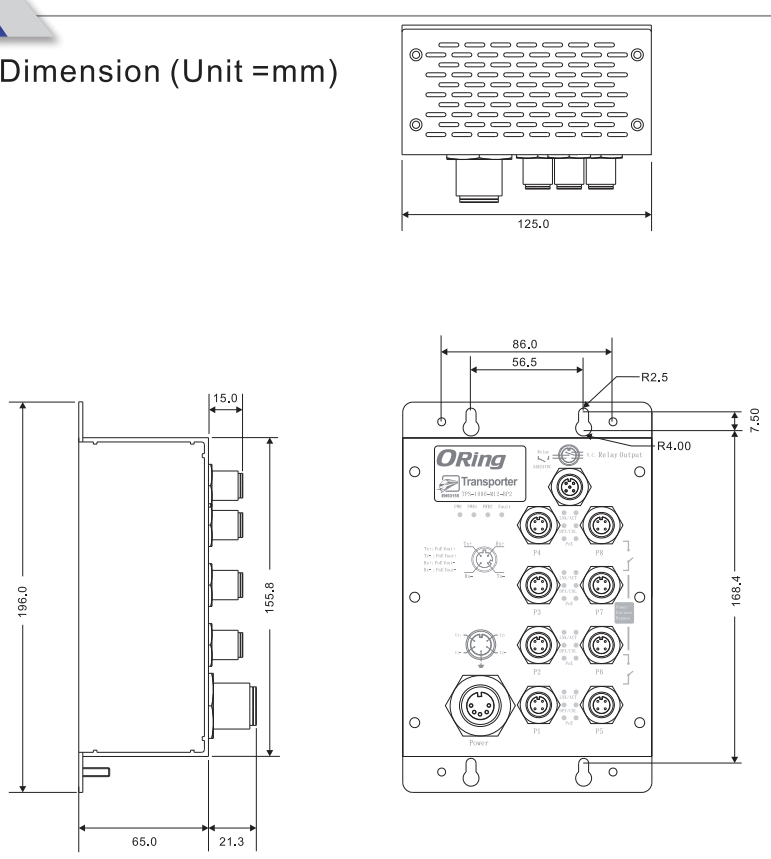
ORing's Transporter™ series un-managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TPS-1080-M12-BP2 is an un-managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. (4 of these ports also double as 2 sets of bypass ports), which is specifically designed for the toughest and fully compliant with EN50155 requirement. TPS-1080-M12-BP2 also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TPS-1080-M12-BP2 switch has 8X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. TPS-1080-M12-BP2 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TPS-1080-M12-BP2 includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed PoE Ethernet application.

PoE Pin Definition



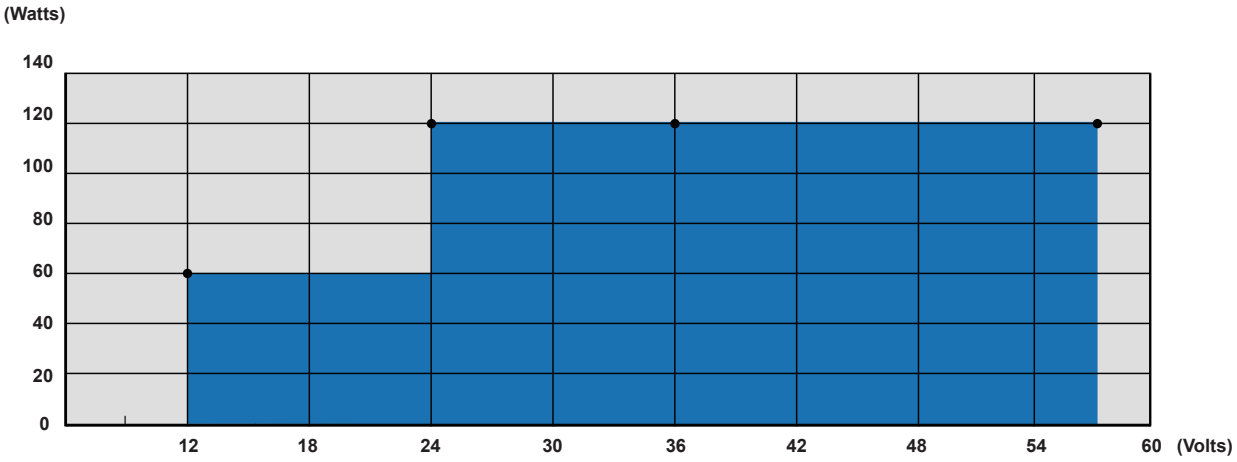
Dimensions

Dimension (Unit =mm)



TPS-1080-M12-BP2

PoE Power Distribution

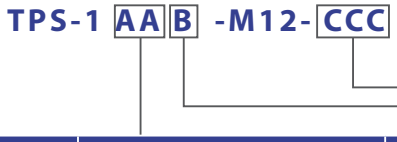


TPS-1080-M12-BP2-24V model PoE Power Distribution

Specifications

ORing Switch Model	TPS-1080-M12-BP2	TPS-1080-M12-BP2-24V
Physical Ports		
10/100Base-T(X) Ports in M12 With P.S.E.	8 x M12 connector (4-pin D-coding, bypass function included by last 4 ports)	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3at compliant PoE specification (Maximum 30Watts per port)	
Processing	Store-and-Forward	
MAC Table	8K MAC addresses	
LED Indicators		
Power Indicator	Green : Power LED x 3	
Fault indicator	Amber : Indicate PWR1 or PWR2 failure	
10/100Base-T(X) M12 port indicator and PoE indicator	Top for port Link/Act indicator. Green for 100Mbps link, Amber for 10 Mbps link Middle Amber for Duplex / Collision indicator Bottom blue for PoE Injected indicator	
Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input power	Dual DC inputs. 50~57VDC on 5-pin M23 connector	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin M23 connector
Power Consumption (Typ.)	2.5 Watts (power consumption of P.S.E. is not included)	7.5 Watts (power consumption of P.S.E. is not included)
PoE Output Power	240 Watts	60 Watts (12~24VDC) / 120 Watts (24~57VDC)
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-40	
Dimensions (W x D x H)	125 (W) x 65 (D) x196 (H) mm	
Weight (g)	1018 g	1076 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Warranty	5 years	

Ordering Information



Code Definition	10/100 Base-T(X) P.S.E. Port Number	Additional Port Number with 10/100Base-T(X)	Bypass Function
Option	**- 08:** 8 ports	**- 0:** 0 port	**- BP2:** 2xbypass function included

	Model Name	Description
Available Model	TPS-1080-M12-BP2	EN50155 8-port unmanaged PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., M12 connector and 2xbypass included
	TPS-1080-M12-BP2-24V	EN50155 8-port unmanaged PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., M12 connector and 2xbypass included, 24VDC power inputs

Packing List
- TPS-1080-M12-BP2
- Quick Installation Guide

Optional Accessories
- M12C : M12 cable accessories

TPS-B3082ET-M12-BP1

TPS-B3082ET-M12-BP1

EN50155 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2xEthernet extender with 1xbypass, M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- 8 ports P.S.E. fully compliant with IEEE802.3af standard, provide up to 15.4 Watts per port
- Provide **PoE power on delay** function, users can define delay time for PoE power supply
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus/TCP protocol
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- Built-in 1 set of **by-pass** port
- Support LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- Port lock to prevent access from unauthorized MAC address
- Extends Ethernet up to **200m** (650 feet) over 24AWG cables and **300m** (980 feet) over CAT5e cable (2-wired auto mode)
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

Introduction

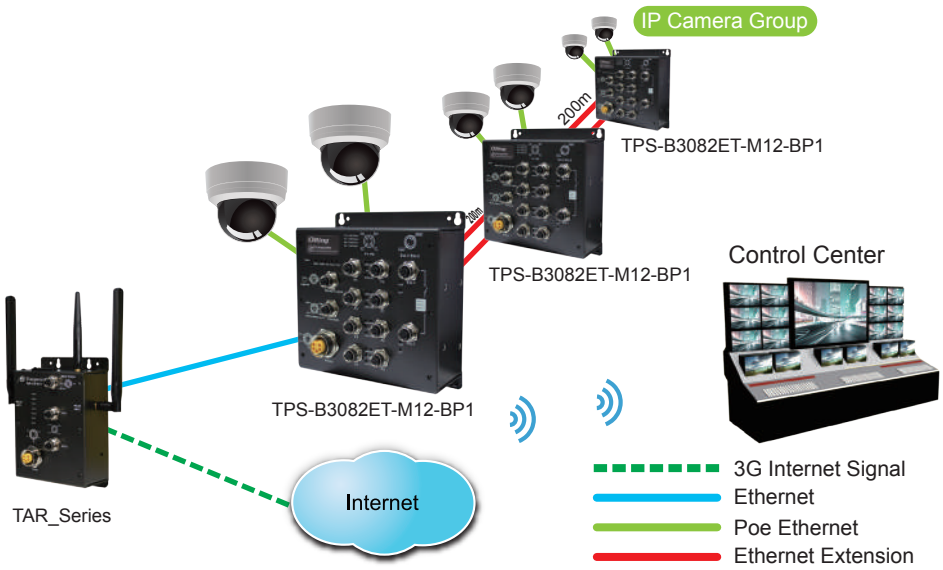
ORing's TransporterTM series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TPS-B3082ET-M12-BP1 is a managed Redundant Ring PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. which is compliant with EN50155 request. TPS-B3082ET-M12-BP1 also includes one set of bypass ports along with Ethernet extension technology supporting up to 200 meters transmission distance. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE and MSTP/RSTP:2004/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Another Open-Ring technology is also supported which can be applied for other vendors' proprietary ring. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. TPS-B3082ET-M12-BP1 also supports Power over Ethernet, a system

***NOTE: This function is available by request only**

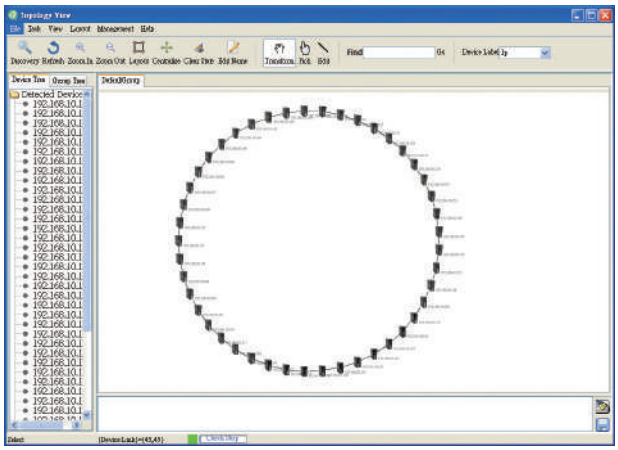
to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TPS-B3082ET-M12-BP1 switch has 8X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. It is specifically designed for the toughest industrial environments. TPS-B3082ET-M12-BP1 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TPS-B3082ET-M12-BP1 can be managed centralized and convenient by a powerful windows utility ~ Open-Vision. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed PoE Ethernet application.

Open-Vision

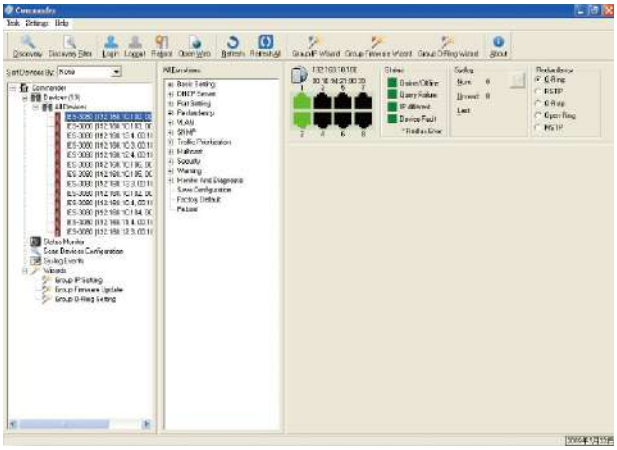
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Network connection

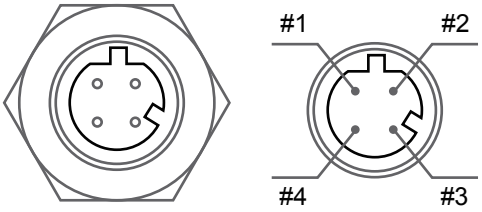


Topology View



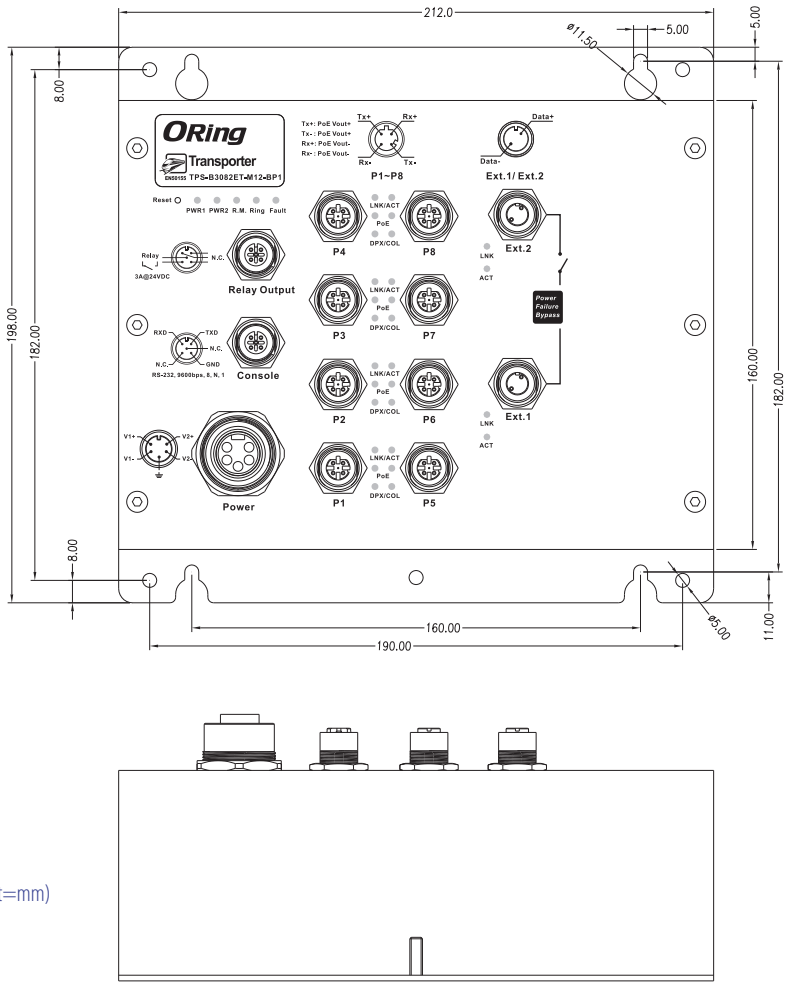
Monitoring and Configuration interface

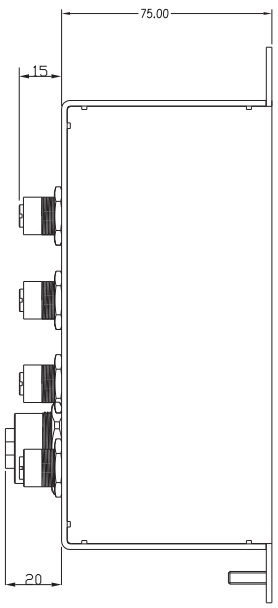
PoE Pin Definition



M12 Pin Definition	
Pin No.	Description
#1	TX+ with PoE Vout+
#2	RX+ with PoE Vout-
#3	TX- with PoE Vout+
#4	RX- with PoE Vout-

Dimensions





(Unit=mm)

Specifications

ORing Switch Model	TPS-B3082ET-M12-BP1
Physical Ports	
10/100 Base-T(X) Ports P.S.E. on M12 Auto MDI/MDIX	**8 (M12 D-coding)**
100Mbps Ethernet Extender Ports in M12	**2 (M12 D-coding)**
RS-232 Serial Console Port	RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification (up to 15.4 Watts per port for P.S.E.)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 2Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP:2004/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support PTP Client (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP***NOTE** STP RSTP:2004 MSTP
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
LED Indicators	
Power Indicator	Green : Power LED x 2
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode
O-Ring Indicator	Green : Indicate system operated in O-Ring mode

***NOTE: This function is available by request only**

Fault Indicator	Amber : Indicate unexpected event occurred
10/100Base-T(X) M12 P.S.E. Port Indicator (Port1 ~ 8)	Top Green LED for port Link/Act. Middle Green LED for PoE indicator. Bottom Amber LED for port Duplex/Collision
Ethernet Extender Indicator	Top Green LED for Link indicator. Bottom Green LED for ACT indicator
Fault contact	
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (A-coding)
Power	
Redundant Input Power	Dual 48VDC on 5-pin M23 connector
Power Consumption (Typ.)	11.76W
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	212 (W) x 75 (D) x 198 (H) mm
Weight (g)	1454g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

TPS-B3 AA B ET– M12–BP1

Code Definition	10/100Base-T(X) P.S.E. Port Number	Ethernet Extender port Number
Option	**- 08:** 8 ports	**- 2:** 2 port

Available Model	Model Name	Description
	TPS-B3082ET-M12-BP1	EN50155 10-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E. and 2xEthernet extender with 1xbypass function, M12 connector

Packing List

- TPS-B3082ET-M12-BP1 x 1
- Console Cable x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows utility Suit, 500 IP devices
- Console cable
- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply
- M12C : M12 cable accessories

TGPS-9168GT-M12

TGPS-9168GT-M12

EN50155 24-port managed Gigabit PoE Ethernet switch with 16x10/100/1000Base-T(X) P.S.E. and 8x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Supports IEEE 802.3af compliant PoE and total power budget 240Watts with maximum 15.4Watts per port
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL and 802.1x User Authentication for security
- Support DBU-01 (Data backup unit for easy configuration backup)
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support TTDP Protocol (Train Topology Discovery Protocol)
- Wall mounting enabled

Introduction

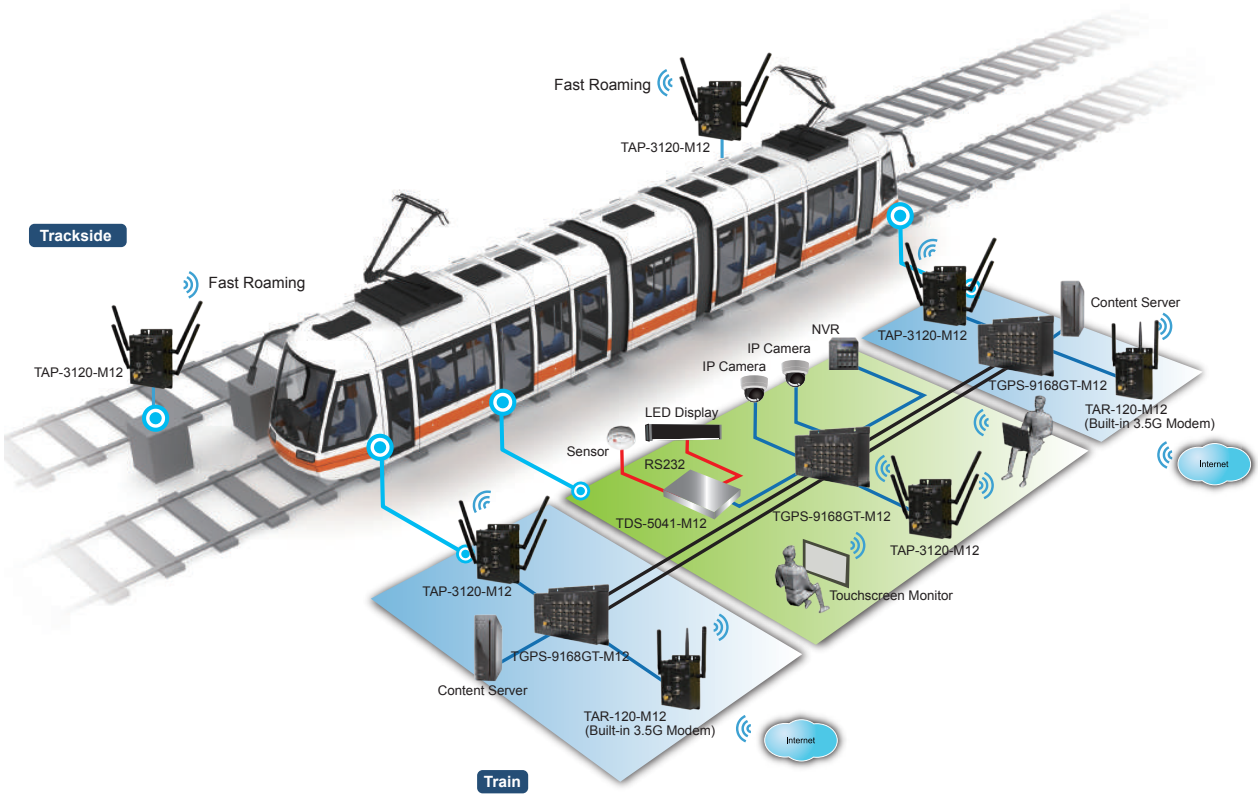
ORing's Transporter™ series managed PoE Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TGPS-9168GT-M12 is managed Redundant Ring Ethernet switch with 16x10/100/1000Base-T(X) P.S.E. and 8x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection), O-Chain and MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. TGPS-9168GT-M12 also support Power over Ethernet, a system to transmit electrical power up to **15.4 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TGPS-9168GT-M12 switch has 16x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. TGPS-9168GT-M12 can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for EN50155 highly-managed Ethernet application.

***NOTE: This function is available by request only**

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

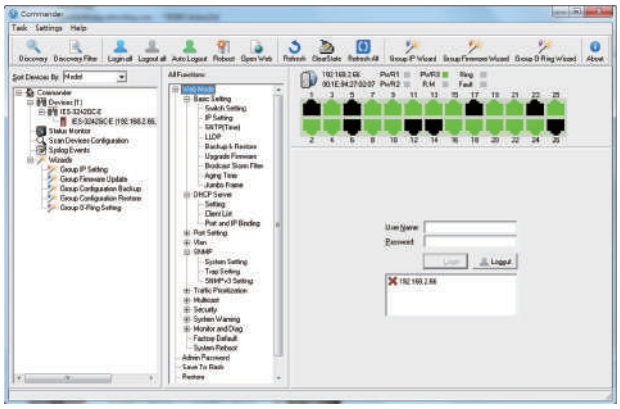
***NOTE: This function is available by request only**

Introduction

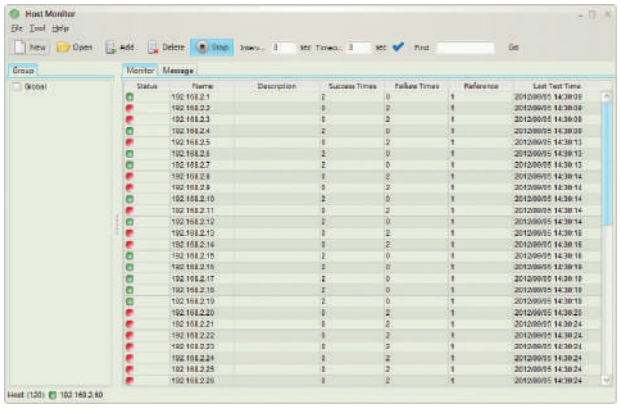


Open-Vision

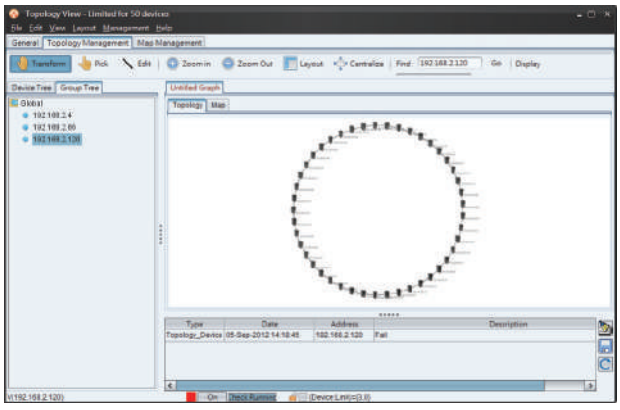
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

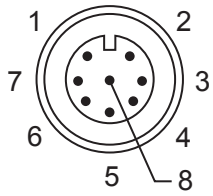


Host Monitor



Topology View

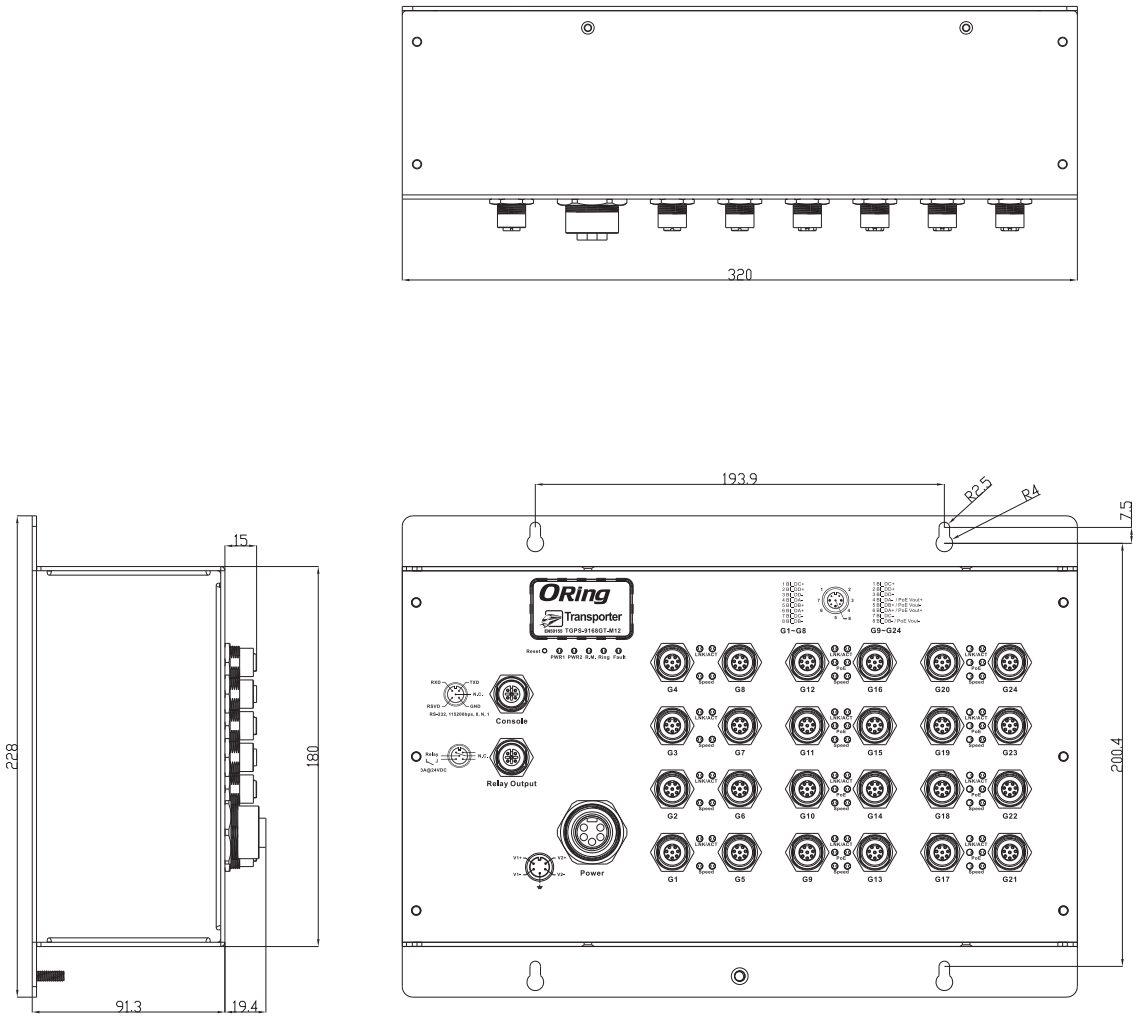
Pin Definition



10/100/1000Base-T(X) M12 port			
	M12 Pin Definition		
Pin No.	Description	Pin No.	Description
#1	BI_DC+	#5	BI_DB+
#2	BI_DD+	#6	BI_DA+
#3	BI_DD-	#7	BI_DC-
#4	BI_DA-	#8	BI_DB-

10/100/1000Base-T(X) P.S.E. M12 port			
	Description		
Pin No.	Description	Pin No.	Description
#1	BI_DC+	#5	BI_DB+ with PoE Vout-
#2	BI_DD+	#6	BI_DA+ with PoE Vout+
#3	BI_DD-	#7	BI_DC-
#4	BI_DA- with PoE Vout+	#8	BI_DB- with PoE Vout-

Dimensions



Specifications

ORing Switch Model	TGPS-9168GT-M12
Physical Ports	
10/100/1000Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	**16 (8-pin A-coding)**
10/100/1000Base-T(X) ports in M12 Auto MDI/MDIX	**8 (8-pin A-coding)**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1d for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification
MAC Table	8k
Priority Queues	8

Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 48Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units Support TTDP Protocol (Train Topology Discovery Protocol) to map the IP address automatically TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SNTP, NTP for synchronizing of clocks over network SMTP Client Modbus TCP
Network Redundancy	O-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in M12 (A-coding) connector with console cable. 115200bps, 8, N, 1
LED indicators	
Power Indicator (PWR)	Green : Power LED x 2
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) M12 P.S.E. Port Indicator	Up of Green LED for Link/Act indicator. Middle of Green LED for PoE enabled indicator. Down of dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps, off for 10Mbps
10/100/1000Base-T(X) M12 Port Indicator	Up of Green LED for Link/Act indicator. Down of dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps, off for 10Mbps
Fault contact	
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)
Power	
Redundant Input power	Dual DC inputs. 48VDC on 5-pin M23 connector
Power consumption (Typ.)	21 Watts (power consumption of P.S.E. is not included)
Total PoE Output Power	240 Watts
Overload current protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	320 (W) x 91.3 (D) x228 (H) mm (12.60 x 3.59 x 8.98 inch.)
Weight (g)	3113 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)

***NOTE: This function is available by request only**

Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	EN 55032, EN 55024(CE EMC),EN 50121-4,EN 60945, FCC Part 15 B, EN 50121-3-2(EN50155), EN 61000-6-2, EN 61000-6-4,IEC 61000-3-2 ,IEC 61000-3-3
EMI	CISPR 32, EN55032, FCC Part 15 B Class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8 (PFMF), EN61000-4-11 (DIP)
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Railway	IEC 60571, IEC 62236-3-2
MTBF	242649 hurs
Warranty	5 years

Ordering Information

TGPS-9 AA B CC -M12

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 16:** 16 ports	**- 8:** 8 ports	**- GT:** 10/100/1000Base-T(X) port

	Model Name	Description
Available Model	TGPS-9168GT-M12	EN50155 24-port managed Gigabit PoE Ethernet switch with 16x10/100/1000Base-T(X) P.S.E. and 8x10/100/1000Base-T(X), M12 connector

Packing List

- TGPS-9168GT-M12 x 1
- TGPS-9168GT-M12 x 1
- Quick Installation Guide x 1

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- M12C : M12 cable accessories
- Console cable

TGPS-9164GT-M12 Series

TGPS-9164GT-M12 Series

EN50155 20-port managed Gigabit PoE Ethernet switch with 16x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Supports IEEE 802.3at compliant PoE and total power budget is 240Watts (-24V model) / 480Watts with maximum 30Watts per port
- Support PoE scheduled configuration and PoE auto-ping check function
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Provided 2xRelay bypass function with four gigabit ports (-BP2 model)
- Wall mounting enabled

Introduction

ORing's Transporter™ series managed PoE Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TGPS-9164GT-M12 is managed Redundant Ring Ethernet switch with 16x10/100Base-T(X) P.S.E. and 4x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE and MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. TGPS-9164GT-M12 also support Power over Ethernet, a system to transmit electrical power up to 30 watts, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TGPS-9164GT-M12 switch has 16x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection.

***NOTE: This function is available by request only**

TGPS-9164GT-M12-BP2 includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. And support wide operating temperature from -40 to 70°C. TGPS-9164GT-M12 can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for EN50155 highly-managed Ethernet application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
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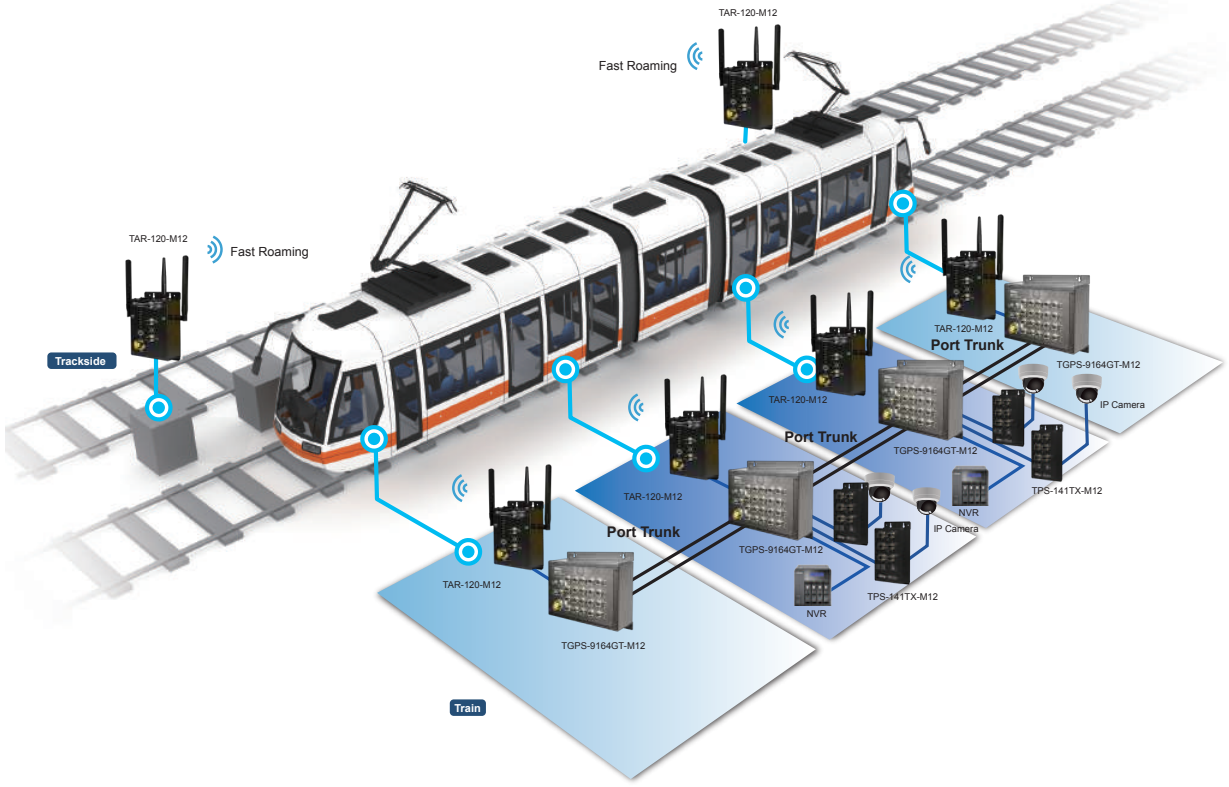

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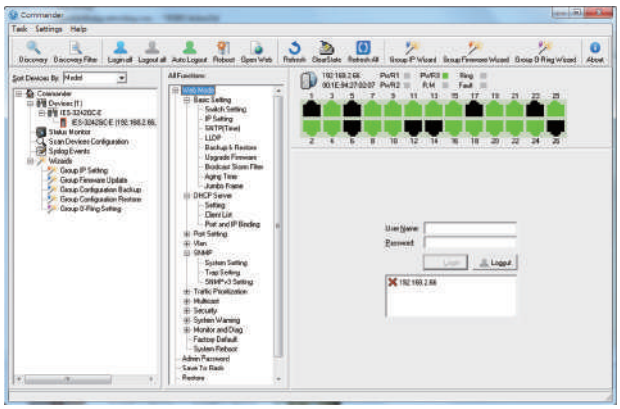
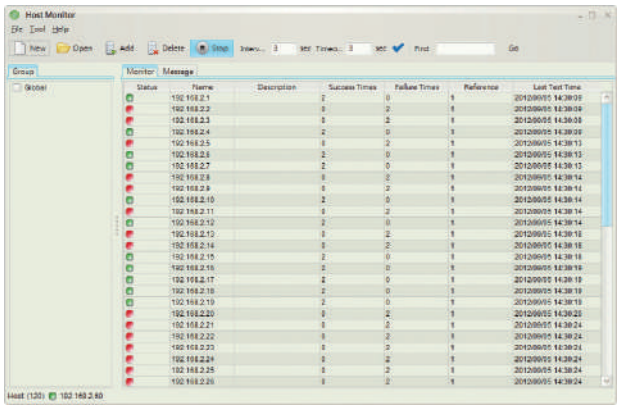
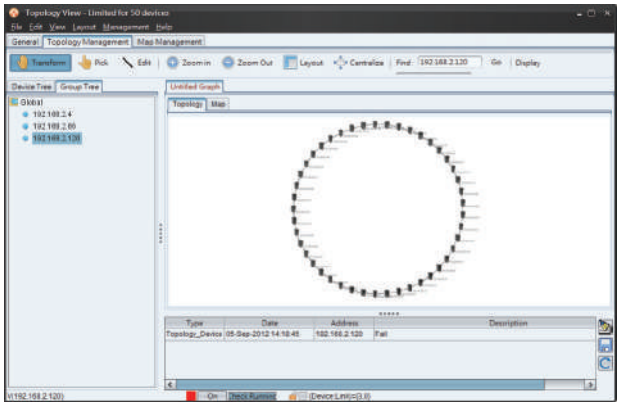


Commander



Host Monitor



Topology View

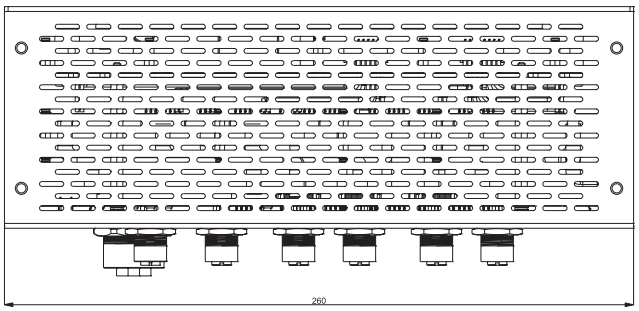
PoE Pin Definition

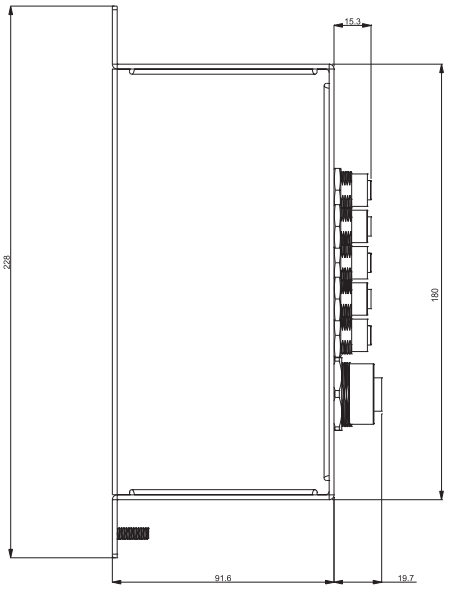
10/100/1000Base-T(X) M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

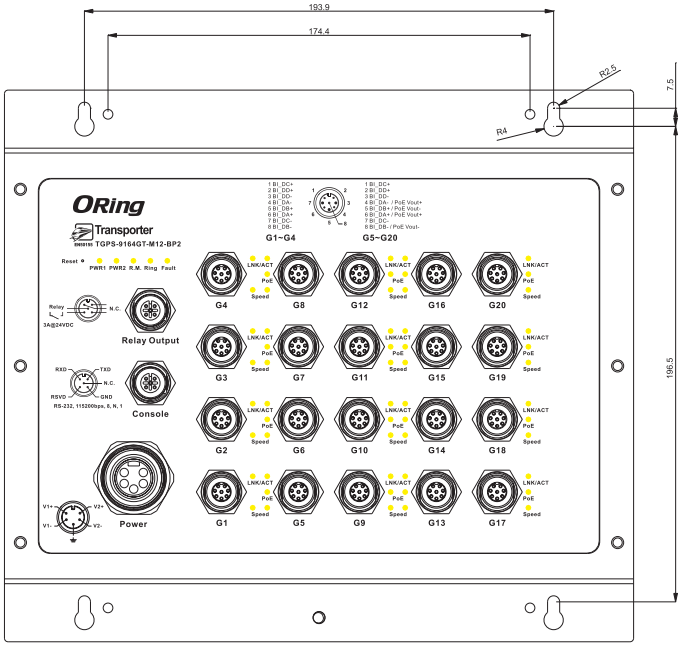
10/100/1000Base-T(X) P.S.E. M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA- with PoE Vout+
#5	BI_DB+ with PoE Vout-
#6	BI_DA+ with PoE Vout+
#7	BI_DC-
#8	BI_DB- with PoE Vout-

Dimensions

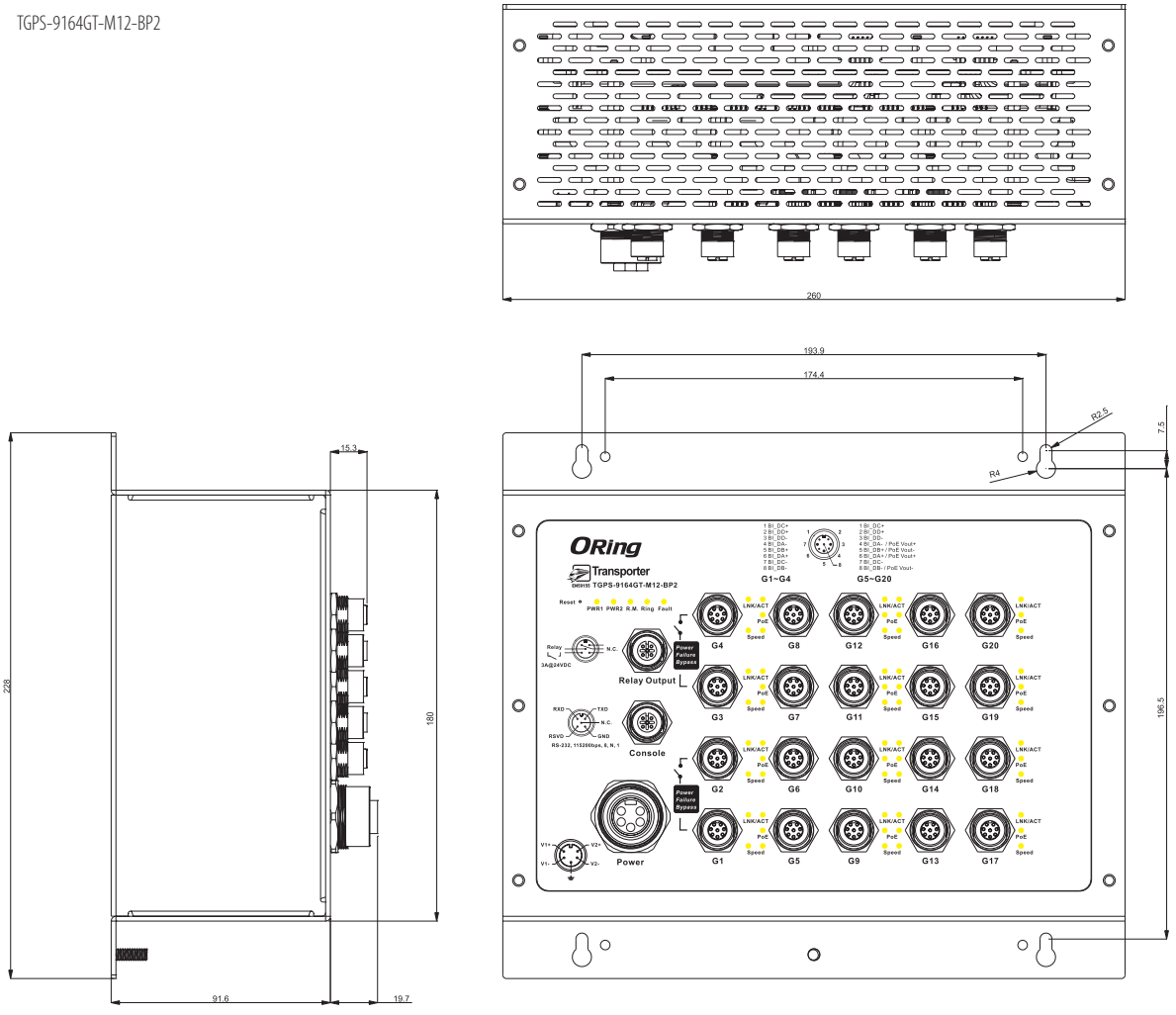
TGPS-9164GT-M12



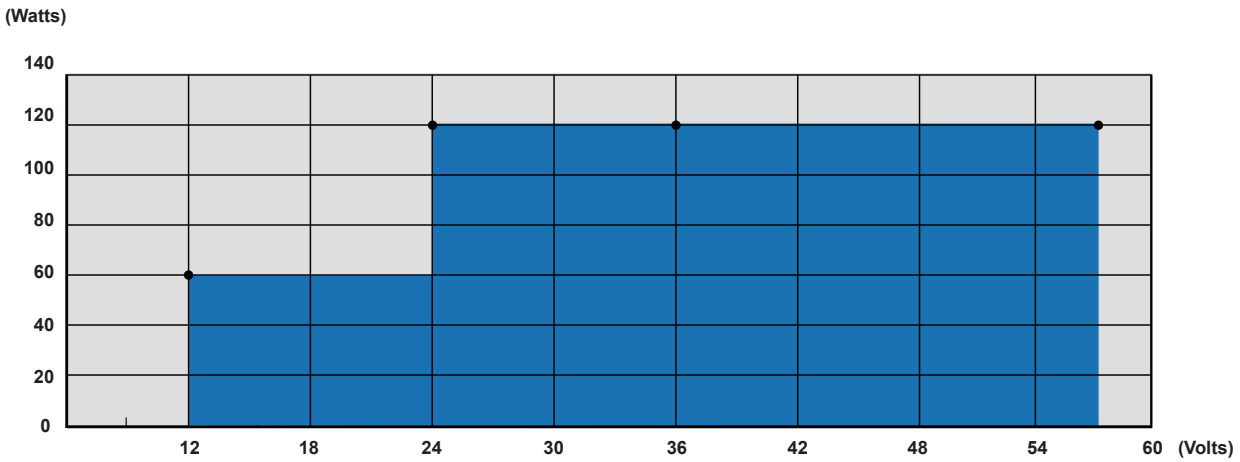




TGPS-9164GT-M12-BP2



PoE Power Distribution



Specifications

ORing Switch Model	TGPS-9164GT-M12	TGPS-9164GT-M12-24V	TGPS-9164GT-M12-BP2	TGPS-9164GT-M12-BP2-24V
Physical Ports				
10/100/1000Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	16 (8-pin A-coding)			
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX	4 (8-pin A-coding)		4 (8-pin A-coding with 2 x bypass function included)	
Technology				
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at PoE specification			
MAC Table	8K			
Priority Queues	8			
Processing	Store-and-Forward			
Switch Properties	Switching latency: 7 us Switching bandwidth: 40Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define			
Jumbo frame	Up to 9.6K Bytes			
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security			
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP			
Network Redundancy	O-Ring Open-Ring O-Chain RSTP MSTP			
RS-232 Serial Console Port	RS-232 in M12 (A-coding) connector with console cable. 115200bps, 8, N, 1			
LED Indicators				
Power Indicator (PWR)	Green : Power LED x 2			
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode			
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.			
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred			
10/100/1000Base-T(X) M12 P.S.E. Port Indicator	Up of Green LED for Link/Act indicator. Middle of Green LED for PoE enabled indicator. Down of dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps			
10/100/1000Base-T(X) M12 Port Indicator	Up of Green LED for Link/Act indicator. Down of dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps			

Fault contact				
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)			
Power				
Redundant Input power	Dual DC inputs. 50~57VDC on 5-pin M23 connector	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin M23 connector	Dual DC inputs. 50~57VDC on 5-pin M23 connector	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin M23 connector
Power Consumption (Typ.)	20 Watts (power consumption of P.S.E. is not included)	25 Watts (power consumption of P.S.E. is not included)	20 Watts (power consumption of P.S.E. is not included)	25 Watts (power consumption of P.S.E. is not included)
PoE Output power	480 Watts	120 Watts (12~24VDC) / 240 Watts (24~57VDC)	480 Watts	120 Watts (12~24VDC) / 240 Watts (24~57VDC)
Overload Current Protection	Present			
Reverse Polarity Protection	Present			
Physical Characteristics				
Enclosure	IP-30			
Dimensions (W x D x H)	260 (W) x 91.6 (D) x228 (H) mm			
Weight (g)	2528 g	2553 g	2550 g	2575 g
Environmental				
Storage Temperature	-40 to 85°C (-40 to 185°F)			
Operating Temperature	-40 to 70°C (-40 to 158°F)			
Operating Humidity	5% to 95% Non-condensing			
Regulatory Approvals				
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)			
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11			
Shock	IEC60068-2-27			
Free Fall	IEC60068-2-32			
Vibration	IEC60068-2-6			
Warranty	5 years			

Ordering Information

TGPS-9 AA B CC -M12-DDD

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type	Additional Port Type
Option	**- 16:** 16 ports	**- 4:** 4 ports	**- GT:** 10/100/1000Base-T(X) ports	**- BP2:** 2xbypass function included

	Model Name	Description
Available Model	TGPS-9164GT-M12	EN50155 20-port managed Gigabit PoE Ethernet switch with 16x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), M12 connector
	TGPS-9164GT-M12-24V	EN50155 20-port managed Gigabit PoE Ethernet switch with 16x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), M12 connector, 24VDC power inputs
	TGPS-9164GT-M12-BP2	EN50155 20-port managed Gigabit PoE Ethernet switch with 16x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), M12 connector and 2xbypass included
	TGPS-9164GT-M12-BP2-24V	EN50155 20-port managed Gigabit PoE Ethernet switch with 16x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), M12 connector and 2xbypass included, 24VDC power inputs

Packing List

- TGPS-9164GT-M12
- Quick Installation Guide
- ORing Tool CD

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- M12C : M12 cable accessories
- Console cable

TGPS-9084GT-M12 Series

TGPS-9084GT-M12 Series

EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP*NOTE** (Media Redundancy Protocol) function
- Supports IEEE 802.3at compliant PoE and total power budget is 120Watts (-24V model) / 240Watts with maximum 30Watts per port
- Support PoE scheduled configuration and PoE auto-ping check function
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Built-in 2 sets of bypass ports (-BP2 model)
- Wall mounting enabled

Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications such as rolling stock, vehicle, and railway. The TGPS-9084GT-M12, which is compliant with the EN50155 standard, is a managed Gigabit Redundant Ring Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, O-Ring (recovery time < 30ms over 250 units of connection), Open-Ring, O-Chain, MRP*NOTE and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. It is specifically designed for the toughest industrial environments. TGPS-9084GT-M12 EN50155 Ethernet switch uses M12 connectors to ensure tight, robust connections, and guarantee

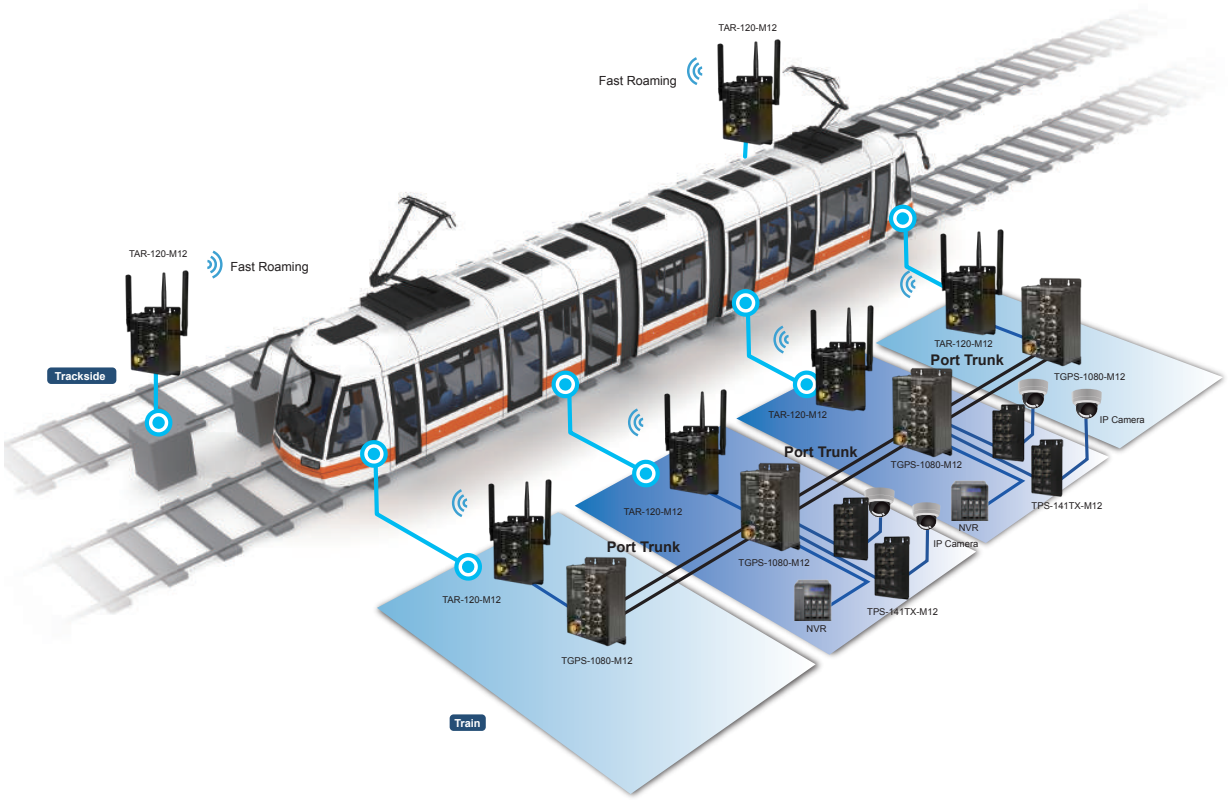
***NOTE: This function is available by request only**

reliable operation against environmental disturbances, such as vibration and shock. TGPS-9084GT-M12 also support Power over Ethernet, a system to transmit electrical power up to 30 watts, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TGPS-9084GT-M12 switch has 8x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection.

TGPS-9084GT-M12-BP2 includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. And support wide operating temperature from -40 to 70°C. TGPS-9084GT-M12 can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Ethernet application.

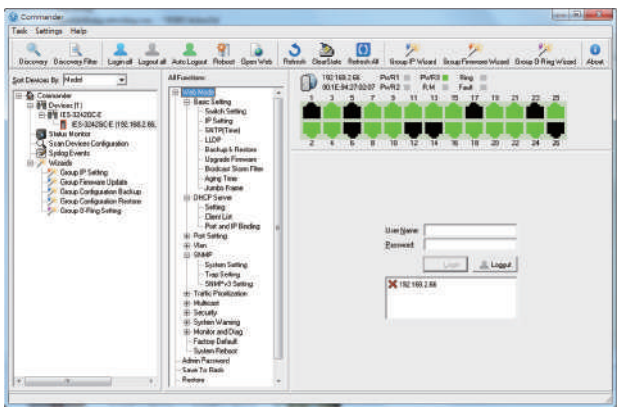
- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring r edundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring** : Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

***NOTE: This function is available by request only**

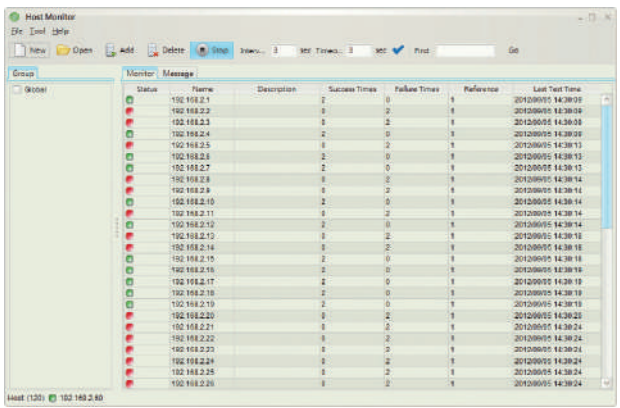


Open-Vision

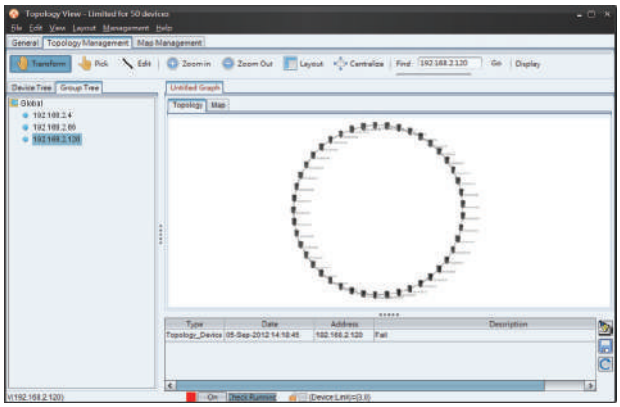
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



Host Monitor



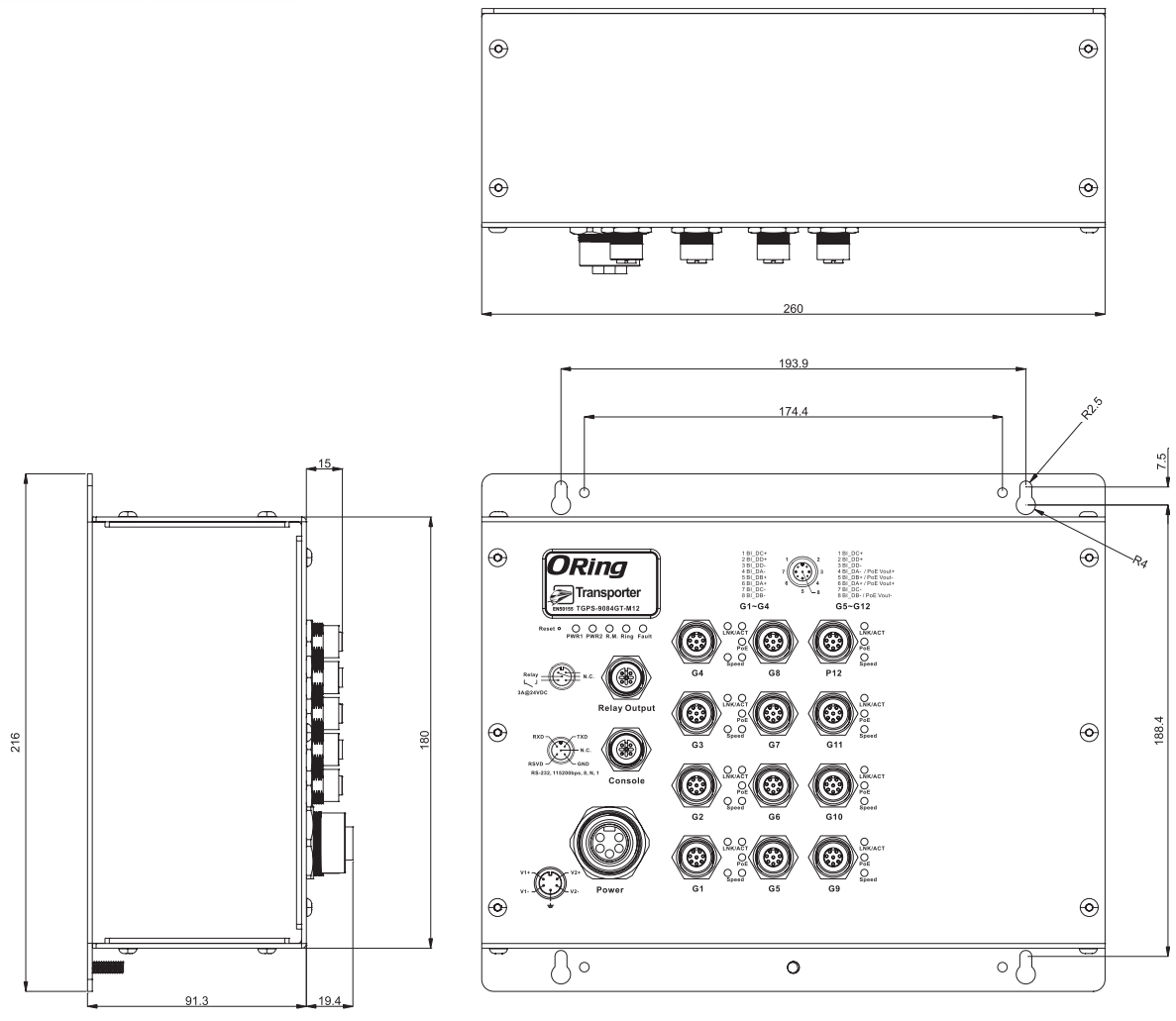
Topology View

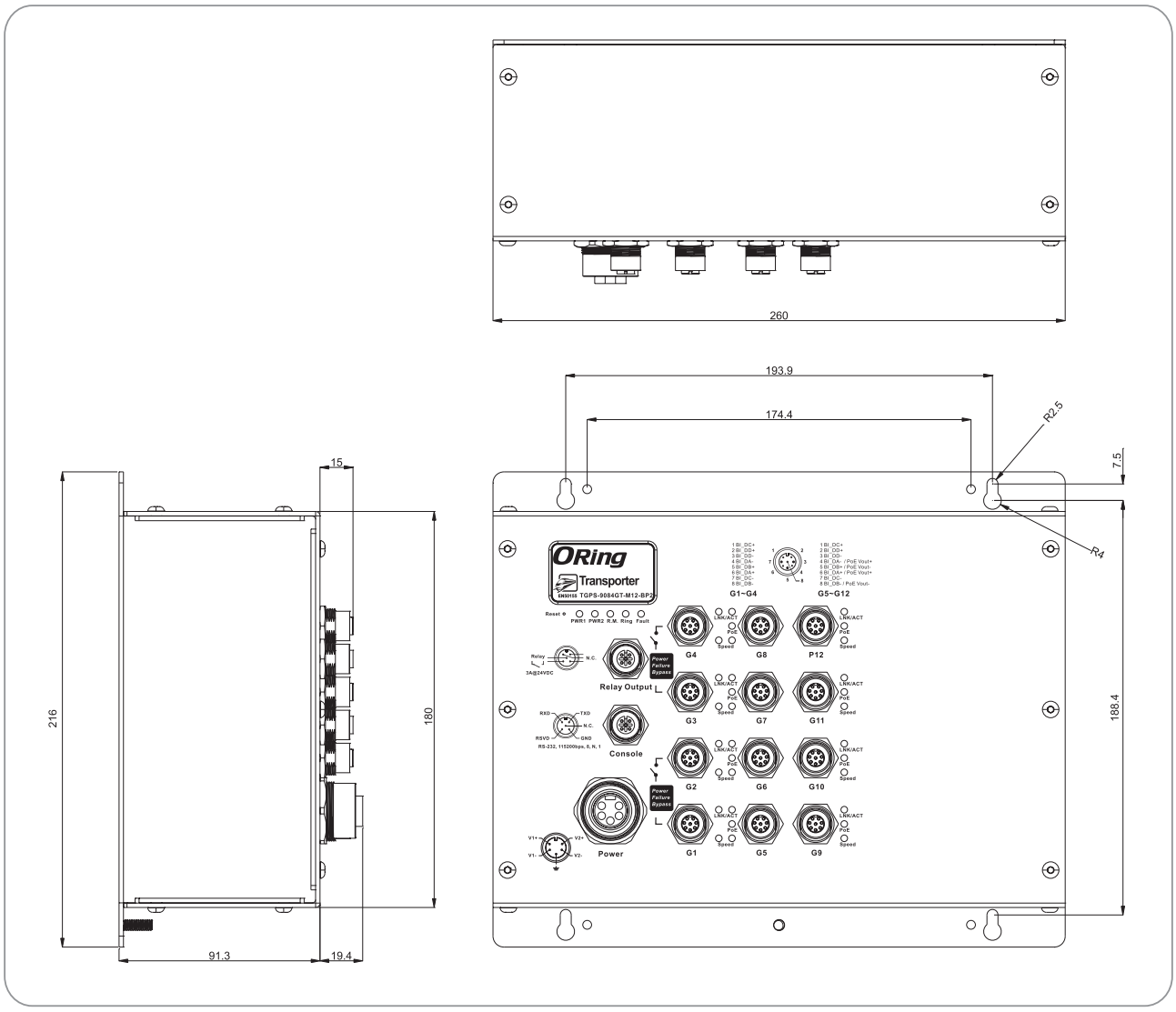
PoE Pin Definition

10/100/1000Base-T(X) M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

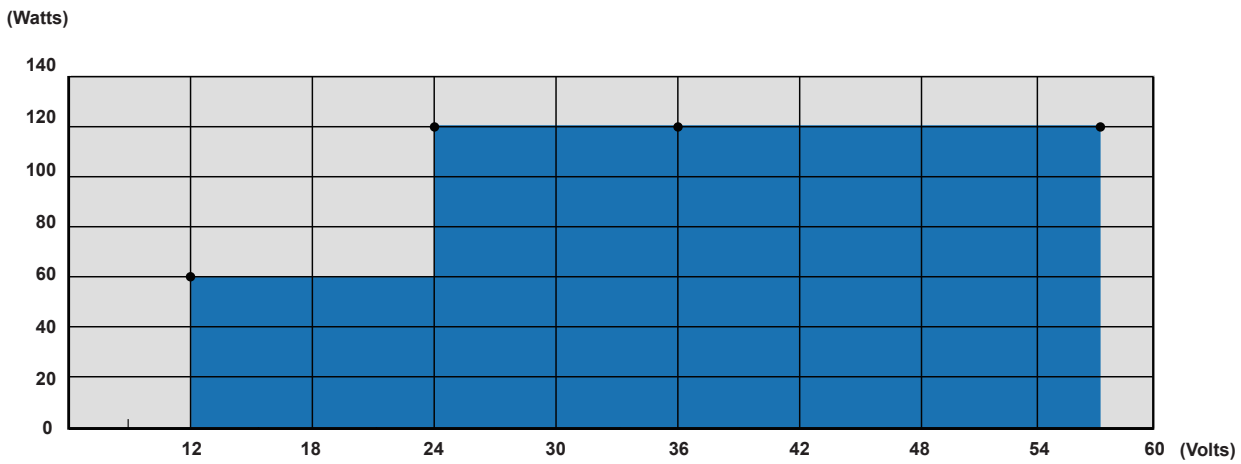
10/100/1000Base-T(X) P.S.E. M12 port	
RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA- with PoE Vout+
#5	BI_DB+ with PoE Vout-
#6	BI_DA+ with PoE Vout+
#7	BI_DC-
#8	BI_DB- with PoE Vout-

Dimensions





PoE Power Distribution



Specifications

ORing Switch Model	TGPS-9084GT-M12	TGPS-9084GT-M12-24V	TGPS-9084GT-M12-BP2	TGPS-9084GT-M12-BP2-24V
Physical Ports				
10/100/1000Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	8 (8-pin A-coding)			
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX	4 (8-pin A-coding)		4 (8-pin A-coding with 2 x bypass function included)	
Technology				
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)			
MAC Table	8K			
Priority Queues	8			
Processing	Store-and-Forward			
Switch Properties	Switching latency: 7 us Switching bandwidth: 24Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define			
Jumbo frame	Up to 9.6K Bytes			
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security			
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP			
Network Redundancy	O-Ring Open-Ring O-Chain RSTP MSTP			
RS-232 Serial Console Port	RS-232 in 5-pin M12 connector with console cable. 115200bps, 8, N, 1			
LED Indicators				
Power Indicator (PWR)	Green : Power LED x 2			
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode			
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.			
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred			
10/100/1000Base-T(X) M12 P.S.E.	Top Green LED for port Link/Act indicator.			
Port Indicator	Middle Green LED for PoE enable indicator Bottom dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps			
10/100/1000Base-T(X) M12 Port Indicator	Top Green LED for Link/Act indicator Bottom dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps			

Fault contact				
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (A-coding)			
Power				
Redundant Input power	Dual DC inputs. 50~57VDC on 5-pin M23 connector	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin M23 connector	Dual DC inputs. 50~57VDC on 5-pin M23 connector	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin M23 connector
Power Consumption (Typ.)	18 Watts (power consumption of P.S.E. is not included)	23 Watts (power consumption of P.S.E. is not included)	18 Watts (power consumption of P.S.E. is not included)	23 Watts (power consumption of P.S.E. is not included)
PoE Output power	240 Watts	60 Watts (12~24VDC) / 120 Watts (24~57VDC)	240 Watts	60 Watts (12~24VDC) / 120 Watts (24~57VDC)
Overload Current Protection	Present			
Reverse Polarity Protection	Present			
Physical Characteristics				
Enclosure	IP-30			
Dimensions (W x D x H)	260 (W) x 91.3 (D) x216 (H) mm			
Weight (g)	2240 g	2356 g	2262 g	2378 g
Environmental				
Storage Temperature	-40 to 85°C (-40 to 185°F)			
Operating Temperature	-40 to 70°C (-40 to 158°F)			
Operating Humidity	5% to 95% Non-condensing			
Regulatory Approvals				
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)			
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11			
Shock	IEC60068-2-27			
Free Fall	IEC60068-2-32			
Vibration	IEC60068-2-6			
Warranty	5 years			

Ordering Information

TGPS-9 AA B CC -M12-DDD

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type	Additional Port Type
Option	**- 08:** 8 ports	**- 4:** 4 ports	**- GT:** 10/100/1000Base-T(X) ports	**- BP2:** 2xbypass function included

	Model Name	Description
Available Model	TGPS-9084GT-M12	EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x10/100/1000Base-T(X), M12 connector
	TGPS-9084GT-M12-24V	EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x10/100/1000Base-T(X), M12 connector, 24VDC power inputs
	TGPS-9084GT-M12-BP2	EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x10/100/1000Base-T(X), M12 connector and 2xbypass included
	TGPS-9084GT-M12-BP2-24V	EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x10/100/1000Base-T(X), M12 connector and 2xbypass included, 24VDC power inputs

Packing List

- TGPS-9084GT-M12
- Quick Installation Guide
- ORing Tool CD

Optional Accessories

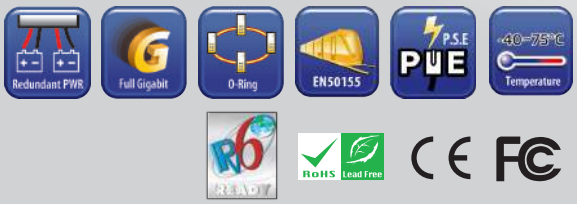
- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- M12C : M12 cable accessories

TGPS-9084GT-M12X Series

EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), X-coded M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Supports IEEE 802.3af compliant PoE with maximum 15.4Watts per port
- Support PoE scheduled configuration and PoE auto-ping check function
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Wall mounting enabled



Introduction

ORing's Transporter™ series managed PoE Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TGPS-9084GT-M12X is managed Redundant Ring Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection), O-Chain, MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. TGPS-9084GT-M12X also support Power over Ethernet, a system to transmit electrical power up to **15.4 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TGPS-9084GT-M12X switch has 8x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. TGPS-9084GT-M12X supports wide operating temperature from -40°C to 75°C. TGPS-9084GT-M12X can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for EN50155 highly-managed Ethernet application.

***NOTE: This function is available by request only**

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- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
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- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
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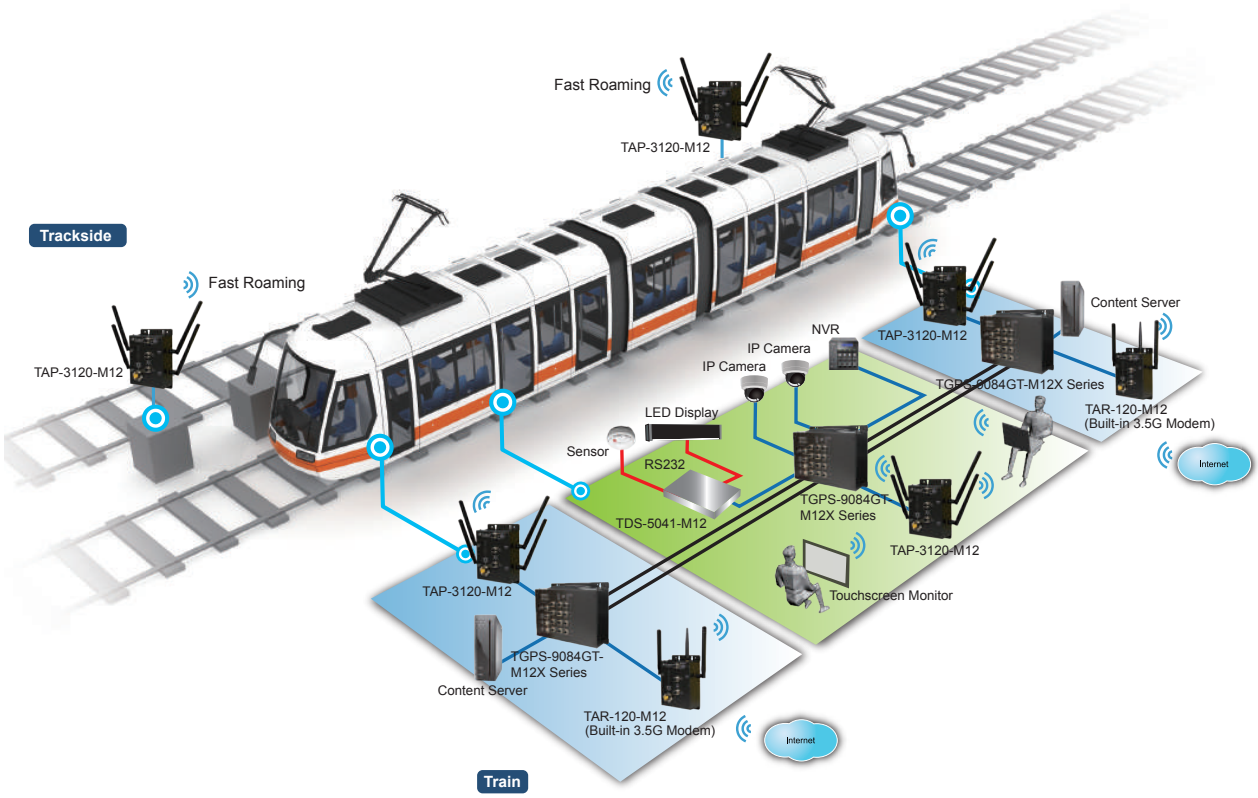
Introduction



Open-Vision

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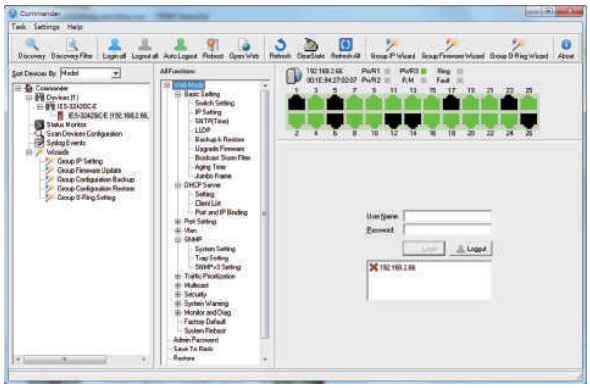
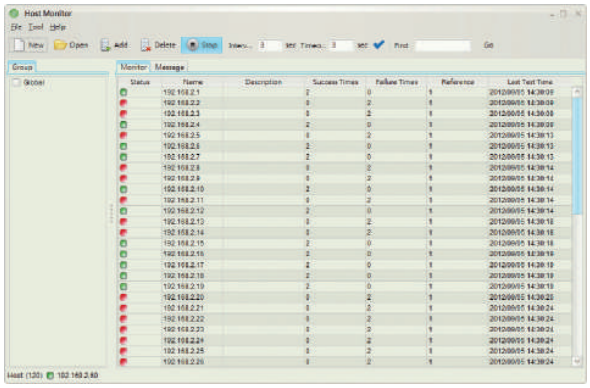
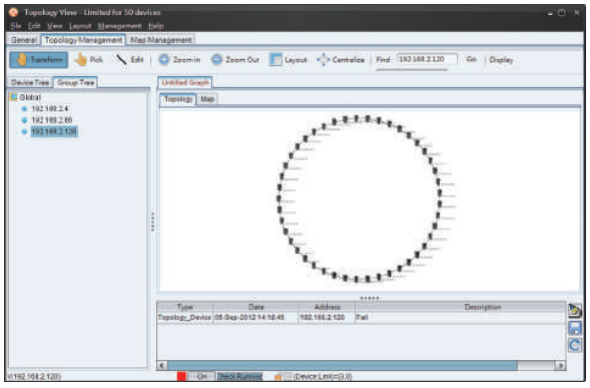


Commander



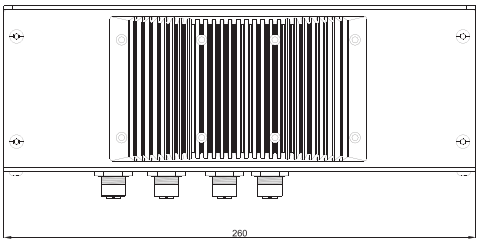
Host Monitor

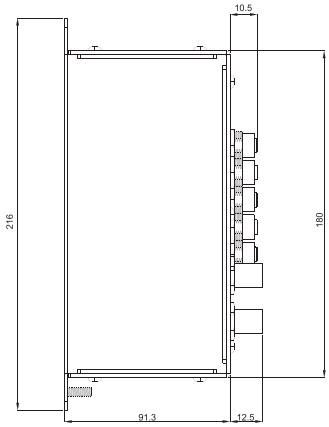


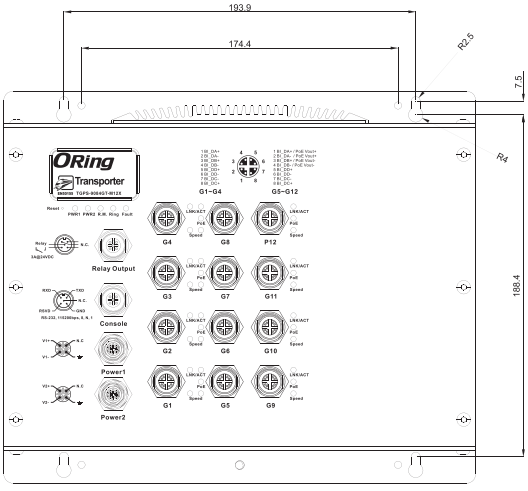
Topology View

Dimensions

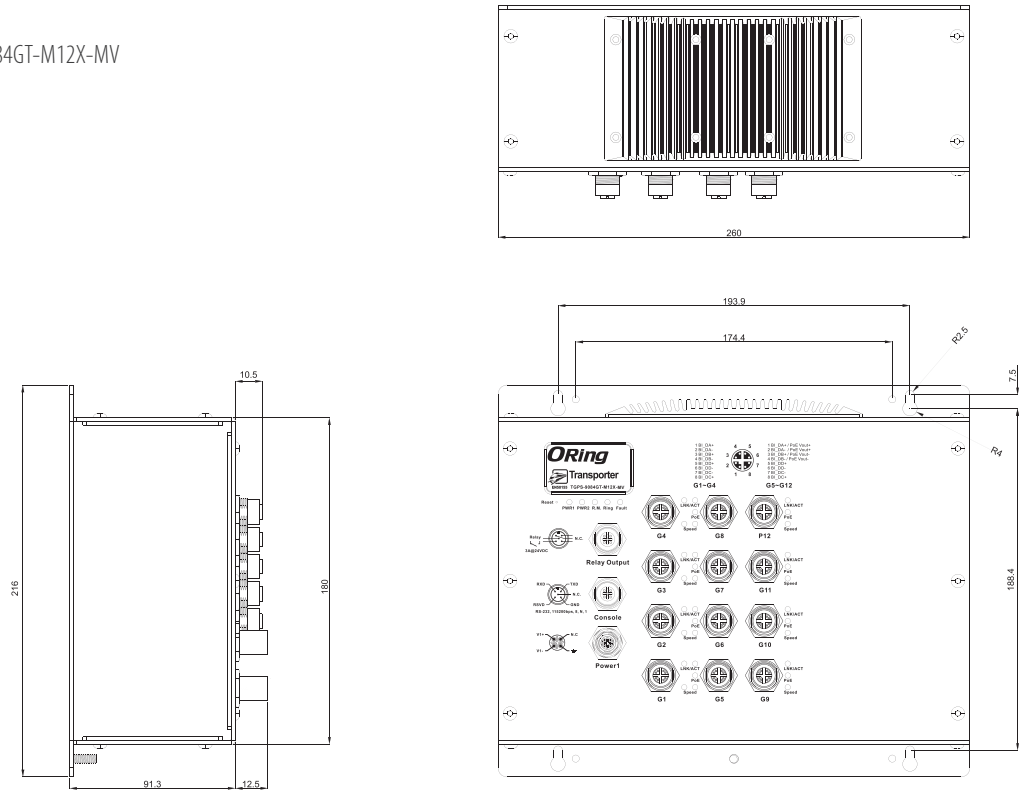
TGPS-9084GT-M12X-24V







TGPS-9084GT-M12X-MV



Pin Definition

10/100/1000Base-T(X) M12 port	
M12 X-coding Pin Definition	
Pin No.	Description
#1	BI_DA+
#2	BI_DA-
#3	BI_DB+
#4	BI_DB-
#5	BI_DD+
#6	BI_DD-
#7	BI_DC-
#8	BI_DC+

10/100/1000Base-T(X) P.S.E. M12 port	
M12 X-coding Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Vout+
#2	BI_DA- with PoE Vout+
#3	BI_DB+ with PoE Vout-
#4	BI_DB- with PoE Vout-
#5	BI_DD+
#6	BI_DD-
#7	BI_DC-
#8	BI_DC+

Specifications

ORing Switch Model	TGPS-9084GT-M12X-24V	TGPS-9084GT-M12X-MV
Physical Ports		
10/100/1000Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	**8 (8-pin X-coding)**	
10/100/1000Base-T(X) ports in M12 Auto MDI/MDIX	**4 (8-pin X-coding)**	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification	
MAC Table	8k	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 24Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define	
Jumbo frame	Up to 9.6K Bytes	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security	
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP	
Network Redundancy	O-Ring O-Chain MRP*NOTE MSTP (RSTP/STP compatible)	
RS-232 Serial Console Port	RS-232 in M12 (A-coding) connector with console cable. 115200bps, 8, N, 1	
LED indicators		
Power Indicator (PWR)	Green : Power LED x 2	
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.	
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred	
10/100/1000Base-T(X) M12 P.S.E. Port Indicator	Top Green LED for Link/Act indicator Middle of Green LED for PoE enabled indicator Bottom dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps, Off for 10Mbps	
10/100/1000Base-T(X) M12 Port Indicator	Top Green LED for Link/Act indicator Bottom dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps, Off for 10Mbps	

***NOTE: This function is available by request only**

Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input power	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin S-coding	110VDC (66-154VDC) on 5-pin S-coding
Power consumption (Typ.)	19 Watts (power consumption of P.S.E. is not included)	24 Watts (power consumption of P.S.E. is not included)
Total PoE budget	60 Watts (12~24VDC) 120 Watts (24~57VDC)	60 Watts
Overload current protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristic		
Enclosure	IP-40	
Dimension (W x D x H)	260 (W) x 91.3 (D) x216 (H) mm	
Weight (g)	2626	2758
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B, EN 50155(EN 50121-1, EN 50121-3-2)	
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A	
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Other	EN 50155 (IEC 61373)	
MTBF	327978.7241 hrs	352515.9723 hrs
Warranty	5 years	

Ordering Information

TGPS-9 AA B CC -M12X

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 08:** 8 ports	**- 4:** 4 ports	**- GT:** 10/100/1000Base-T(X) ports

	Model Name	Description
Available Model	TGPS-9084GT-M12X-24V	EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), X-coded M12 connector, 24VDC power input
	TGPS-9084GT-M12X-MV	EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), X-coded M12 connector, 110VDC power input

Packing List

- TGPS-9084GT-M12X x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

Optional Accessories

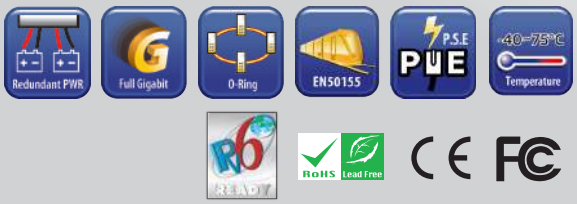
- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- M12C : M12 cable accessorie

TGPS-9084GT-M12X-BP2 Series

EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), X-coded M12 connector and 2xbypass included

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP*NOTE** (Media Redundancy Protocol) function
- Supports IEEE 802.3af compliant PoE with maximum 15.4Watts per port
- Support PoE scheduled configuration and PoE auto-ping check function
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az E **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Wall mounting enabled



Introduction

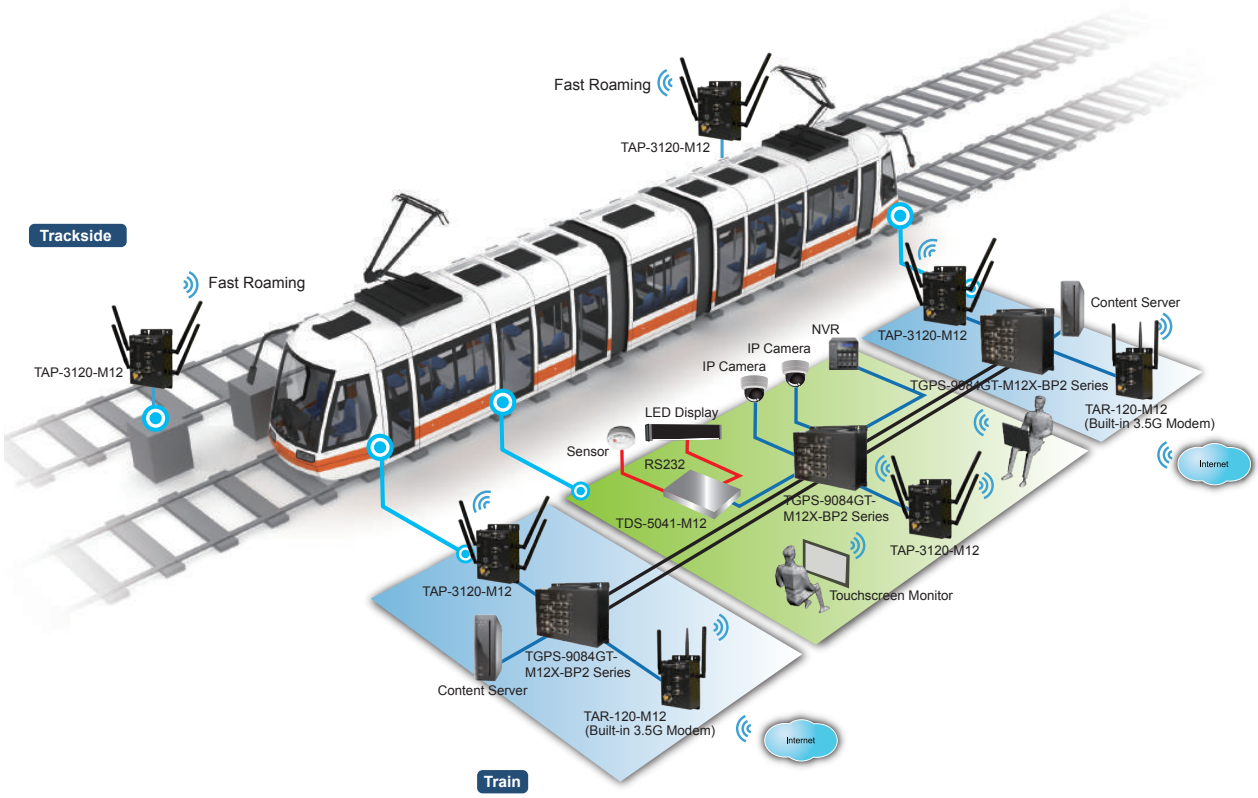
ORing's Transporter™ series managed PoE Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TGPS-9084GT-M12X-BP2 is managed Redundant Ring Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection), O-Chain, MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. TGPS-9084GT-M12X-BP2 also support Power over Ethernet, a system to transmit electrical power up to **15.4 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TGPS-9084GT-M12X-BP2 switch has 8x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. TGPS-9084GT-M12X-BP2 includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. And support wide operating temperature from -40°C to 75°C. TGPS-9084GT-M12X-BP2 can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for EN50155 highly-managed Ethernet application.

***NOTE: This function is available by request only**

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

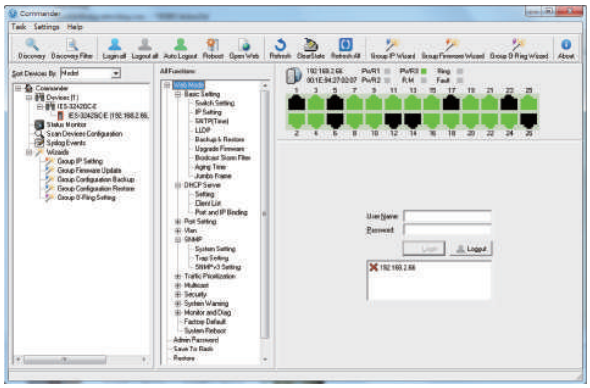
***NOTE: This function is available by request only**

Introduction

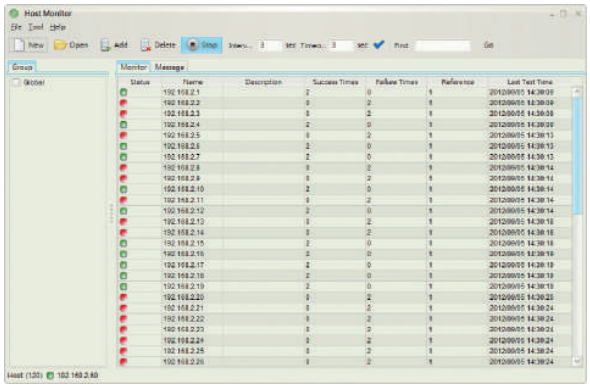


Open-Vision

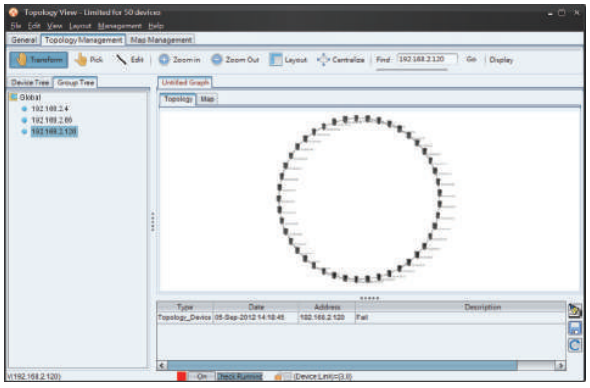
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



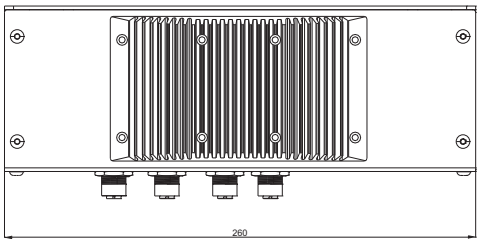
Host Monitor

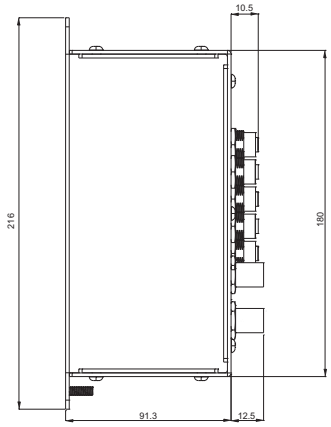


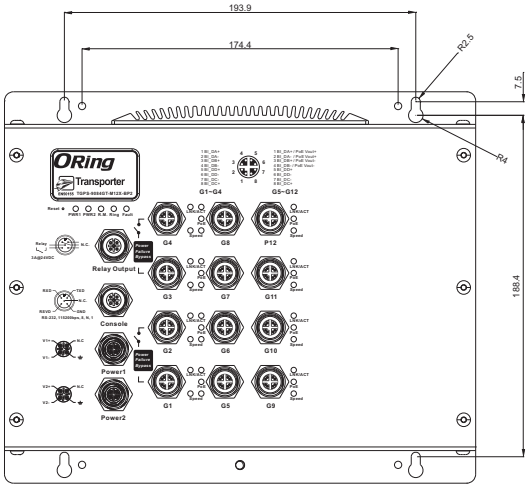
Topology View

Dimensions

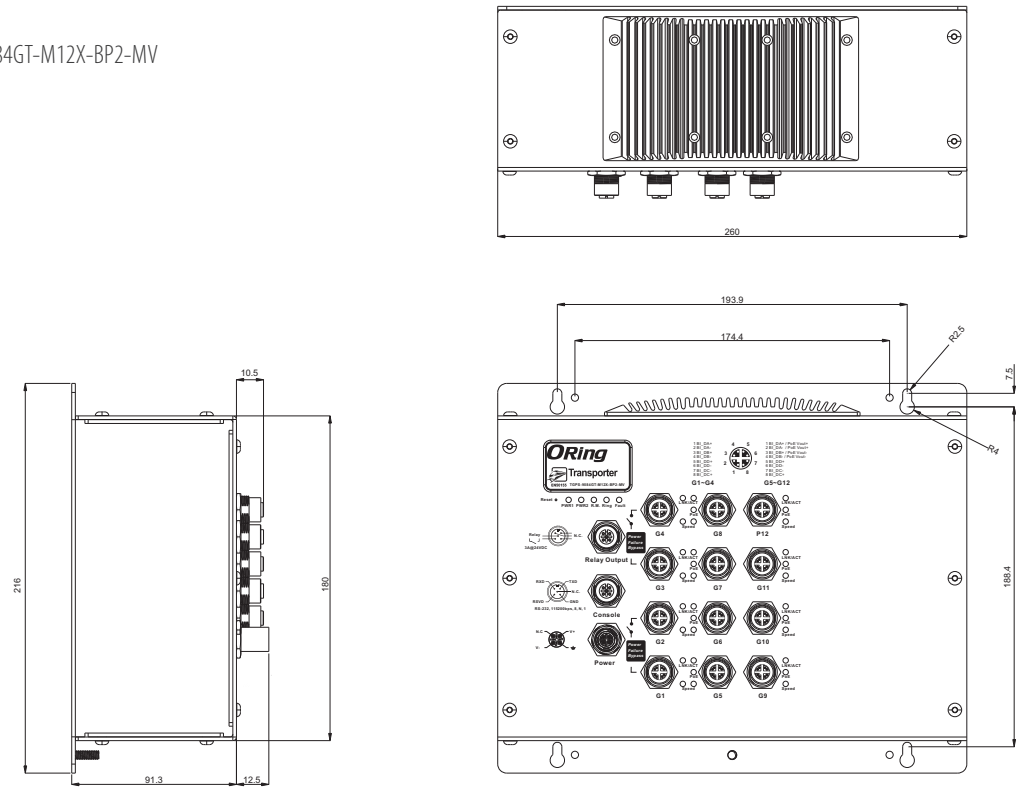
TGPS-9084GT-M12X-BP2-24V







TGPS-9084GT-M12X-BP2-MV



Pin Definition

10/100/1000Base-T(X) M12 port	
M12 X-coding Pin Definition	
Pin No.	Description
#1	BI_DA+
#2	BI_DA-
#3	BI_DB+
#4	BI_DB-
#5	BI_DD+
#6	BI_DD-
#7	BI_DC-
#8	BI_DC+

10/100/1000Base-T(X) P.S.E. M12 port	
M12 X-coding Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Vout+
#2	BI_DA- with PoE Vout+
#3	BI_DB+ with PoE Vout-
#4	BI_DB- with PoE Vout-
#5	BI_DD+
#6	BI_DD-
#7	BI_DC-
#8	BI_DC+

Specifications

ORing Switch Model	TGPS-9084GT-M12X-BP2-24V	TGPS-9084GT-M12X-BP2-MV
Physical Ports		
10/100/1000Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	**8 (8-pin X-coding)**	
10/100/1000Base-T(X) ports in M12 Auto MDI/MDIX	**4 (8-pin X-coding with 2 x bypass function included)**	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3af PoE specification	
MAC Table	8k	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switching latency: 7 us Switching bandwidth: 24Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define	
Jumbo frame	Up to 9.6K Bytes	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security	
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP	
Network Redundancy	O-Ring O-Chain MRP*NOTE MSTP (RSTP/STP compatible)	
RS-232 Serial Console Port	RS-232 in M12 (A-coding) connector with console cable. 115200bps, 8, N, 1	
LED indicators		
Power Indicator (PWR)	Green : Power LED x 2	
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.	
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred	
10/100/1000Base-T(X) M12 P.S.E. Port Indicator	Top Green LED for Link/Act indicator Middle of Green LED for PoE enabled indicator Bottom dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps, Off for 10Mbps	
10/100/1000Base-T(X) M12 Port Indicator	Top Green LED for Link/Act indicator Bottom dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps, Off for 10Mbps	

***NOTE: This function is available by request only**

Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input power	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin S-coding	110VDC (66-154VDC) on 5-pin S-coding
Power consumption (Typ.)	19 Watts (power consumption of P.S.E. is not included)	24 Watts (power consumption of P.S.E. is not included)
Total PoE budget	60 Watts (12~24VDC) 120 Watts (24~57VDC)	60 Watts
Overload current protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristic		
Enclosure	IP-40	
Dimension (W x D x H)	260 (W) x 91.3 (D) x216 (H) mm	
Weight (g)	2648	2780
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B, EN 50155(EN 50121-1, EN 50121-3-2)	
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A	
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Other	EN 50155 (IEC 61373)	
MTBF	215929.0292 hr	226504.6597 hr
Warranty	5 years	

Ordering Information

TGPS-9 AA B CC -M12X- DDD

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type	Bypass Function
Option	**- 08:** 8 ports	**- 4:** 4 ports	**- GT:** 10/100/1000Base-T(X) ports	**- BP2:** 2xbypass function included

	Model Name	Description
Available Model	TGPS-9084GT-M12X-BP2-24V	EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), X-coded M12 connector and 2xbypass included, 24VDC power input
	TGPS-9084GT-M12X-BP2-MV	EN50155 12-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), X-coded M12 connector and 2xbypass included, 110VDC power input

Packing List

- TGPS-9084GT-M12X-BP2 x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- M12C : M12 cable accessorie

TGPS-9080-M12A-MV

TGPS-9080-M12A-MV

EN50155 8-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. with A-coded M12 connector, 110VDC power input

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP***NOTE (Media Redundancy Protocol) function
- Supports IEEE 802.3at compliant PoE and total power budget is 60 Watts with maximum 30Watts per port
- Support PoE scheduled configuration and PoE auto-ping check function
- Support IEEE 1588v2 clock synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL and 802.1x User Authentication for security
- Support DBU-01 (Data backup unit for easy configuration backup)
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Wall mounting enabled
- IP-40 housing design

Full Gigabit | O-Ring | EN50155 | P.S.E PUE | -40~75°C Temperature | R6 READY | RoHS Lead Free | CE | FC

*NOTE: This function is available by request only

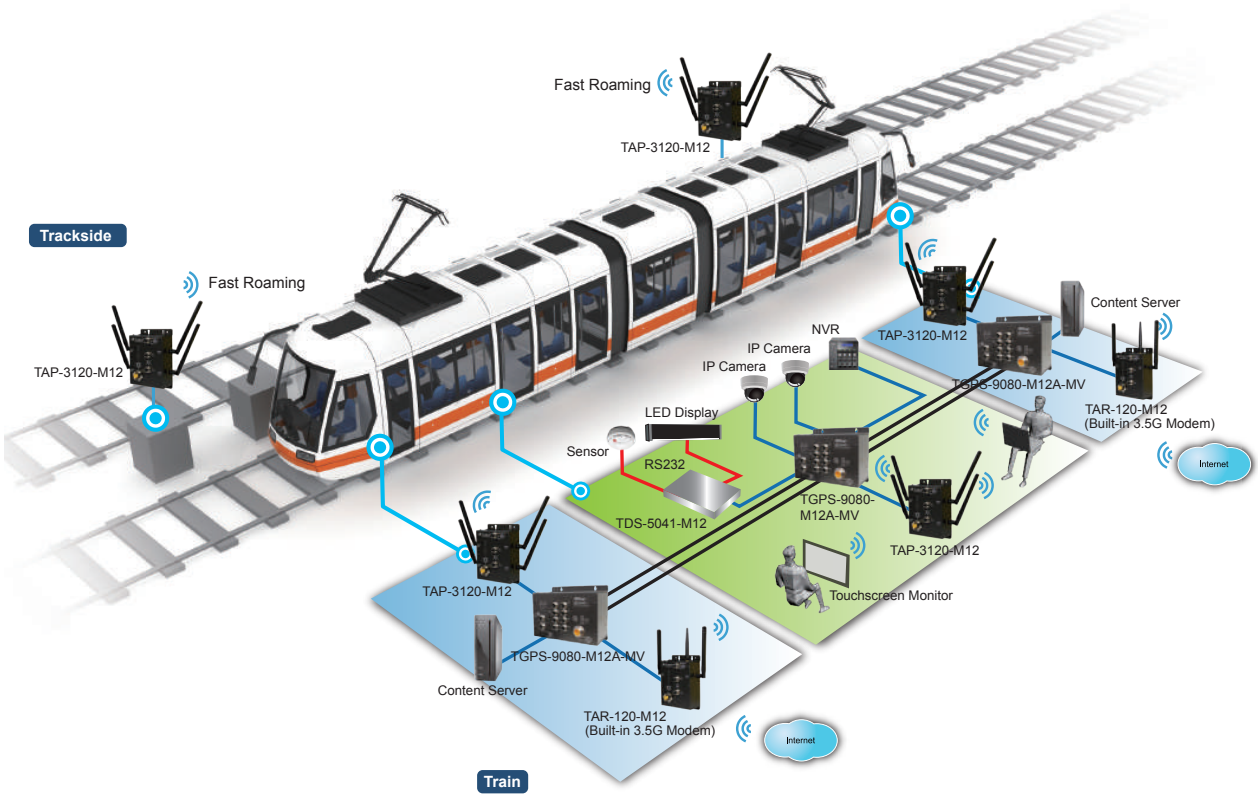
Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications such as rolling stock, vehicle, and railway. The TGPS-9080-M12A-MV, which is compliant with the EN50155 standard, is a managed Gigabit Redundant Ring Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection), O-Chain and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. It is specifically designed for the toughest industrial environments. TGPS-9080-M12A-MV EN50155 Ethernet switch uses M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TGPS-9080-M12A-MV also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TGPS-9080-M12A-MV switch has 8x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. While TGPS-9080-M12A-MV complies with EN50155, the switch supports wide operating temperature from -40°C to 75°C. TGPS-9080-M12A-MV can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Ethernet application.

- **O-Ring** : O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE** : Media Redundancy Protocol (MRP) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management** : The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS** : The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function** : ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- **Advanced DOS/DDOS Auto Prevention** : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588v2 Technology** : The IEEE 1588v2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modbus TCP** : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet** : This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.

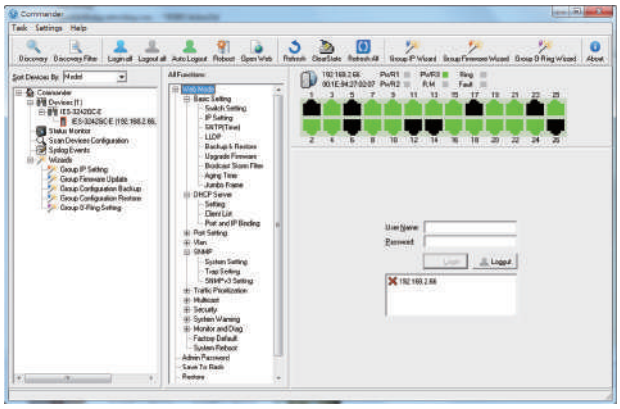
***NOTE: This function is available by request only**

Introduction

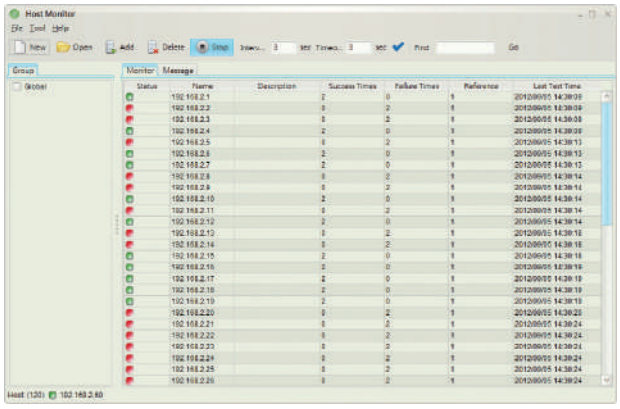


Open-Vision

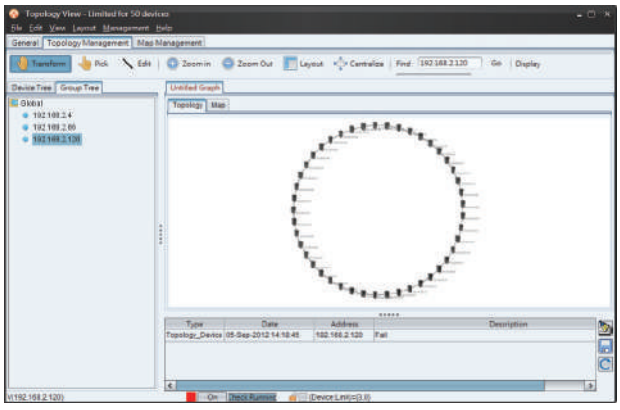
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

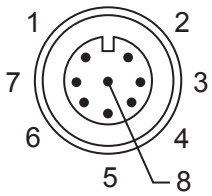


Host Monitor



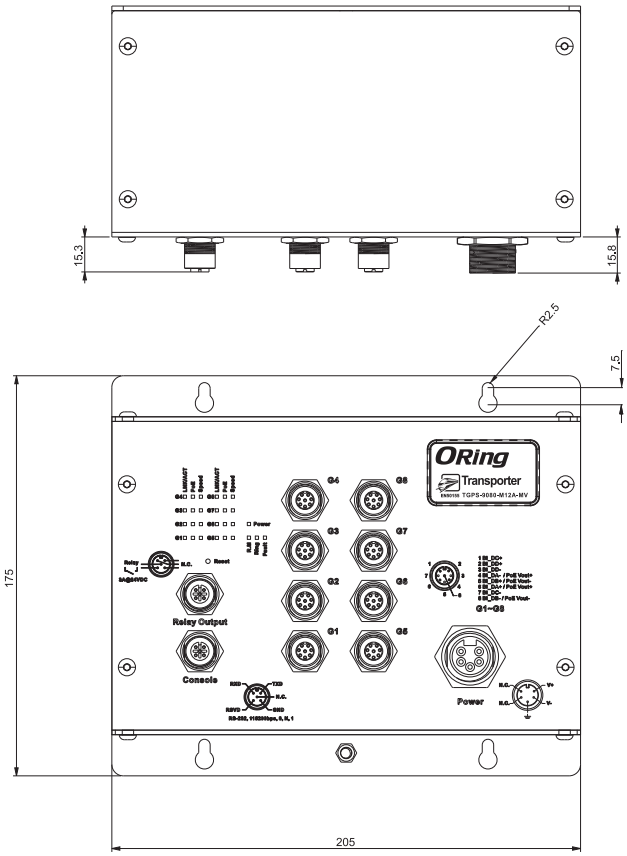
Topology View

Pin Definition



10/100/1000Base-T(X) P.S.E. M12 port	
	M12 Pin Definition
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA- with PoE Vout+
#5	BI_DB+ with PoE Vout-
#6	BI_DA+ with PoE Vout+
#7	BI_DC-
#8	BI_DB- with PoE Vout-

Dimensions



Specifications

ORing Switch Model	TGPS-9080-M12A-MV
Physical Ports	
10/100/1000Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	**8 (8-pin A-coding)**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
MAC Table	8k
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 16Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define

Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	O-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in 5-pin M12 connector with optional console cable which can be purchased separately. 115200bps, 8, N, 1
LED Indicators	
Power Indicator (PWR)	Green : Power LED x 1
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode
O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) M12 P.S.E. Port Indicator	Top Green LED for port Link/Act indicator. Middle Green LED for PoE enable indicator Bottom dual color LED for Ethernet speed indicator : Green LED for 1000Mbps, Amber for 100Mbps, Off for 10Mbps
Power	
Input power	72/96/110VDC (50.4-154VDC). 7/8 inch 5-pin male connector
Power consumption (Typ.)	13 Watts (power consumption of P.S.E. is not included)
Total PoE Output Power	60 Watts
Overload current protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-40
Dimension (W x D x H)	205 (W) x 99 (D) x175 (H) mm
Weight (g)	1790 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	CE EMC (EN55024, EN 55032), FCC Part 15 B, EN50155
EMI	EN55032, CISPR32, FCC Part 15 B class A, EN 61000-3-2, EN 61000-3-3
EMS	EN 55024 (IEC/EN61000-4-2 (ESD), IEC/EN61000-4-3 (RS), IEC/EN61000-4-4 (EFT), IEC/EN61000-4-5 (Surge), IEC/EN61000-4-6 (CS), IEC/EN61000-4-8(PFMF), IEC/EN61000-4-11(DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6

***NOTE: This function is available by request only**

Safety	EN60950-1
Other	EN50155
MTBF	301482 hrs
Warranty	5 years

Ordering Information

TGPS-9 AA B -M12A-MV

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 ports

	Model Name	Description
Available Model	TGPS-9080-M12A-MV	EN50155 8-port managed Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. with A-coded M12 connector, 110VDC power Input

Packing List

- TGPS-9080-M12A-MV x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

Optional Accessories

- Open-Vision M500 : Powerful Network Management Windows Utility Suit, 500 IP devices
- RS-232 Console Cable

TGPS-1080-M12 Series

TGPS-1080-M12 Series

EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., M12 connector

Features

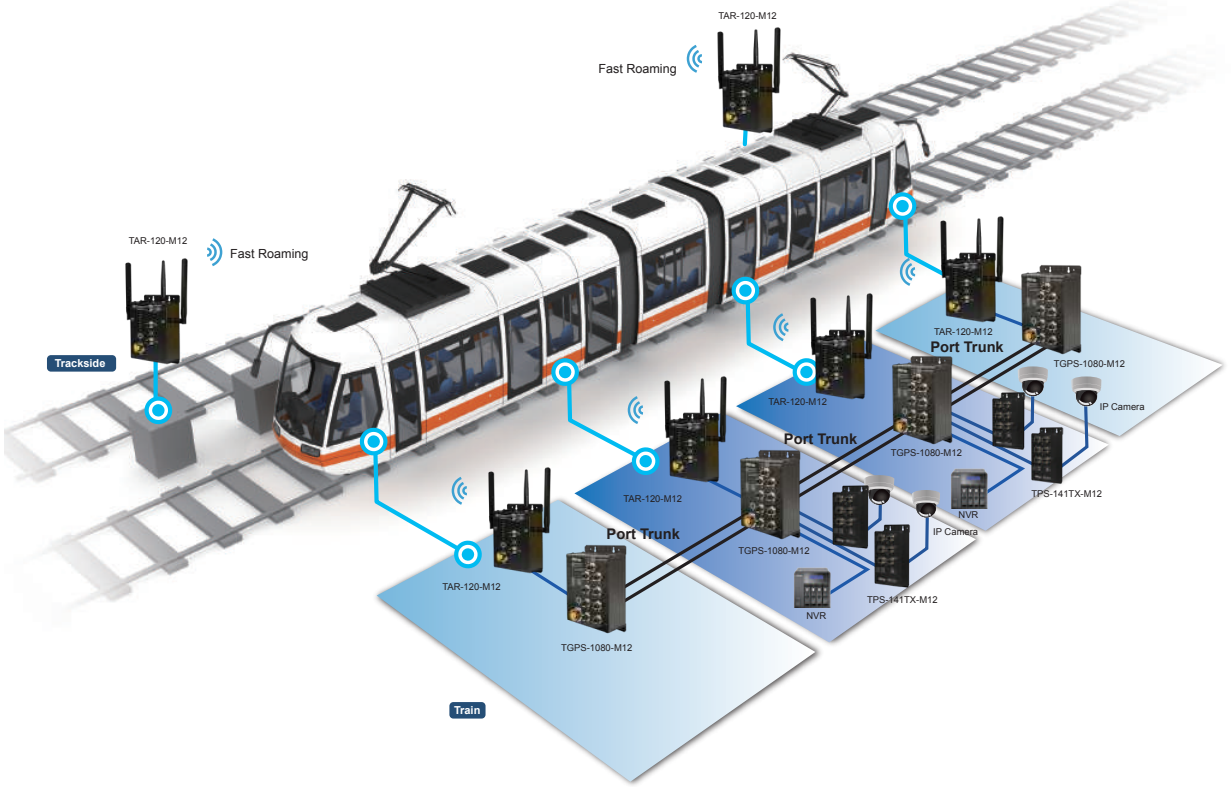
- Leading EN50155-compliant Ethernet switch for rolling stock application
- Provide 8x10/100/1000Base-T(X) PoE (P.S.E.) ports
- Supports IEEE 802.3at compliant PoE with maximum 30Watts per port
- Support dual power inputs for power redundancy
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- M12 connectors to guarantee reliable operation against environmental disturbances
- Rigid IP-40 housing design
- Wall mounting enabled

Introduction

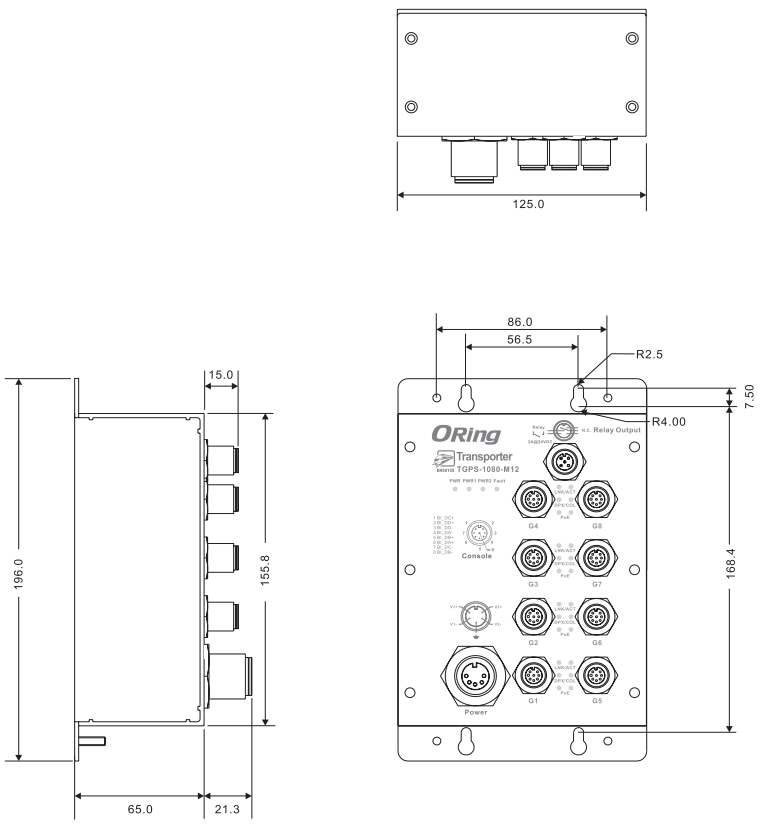
ORing's Transporter™ series un-managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TGPS-1080-M12 is an un-managed PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. which is specifically designed for the toughest and fully compliant with EN50155 requirement. TGPS-1080-M12 also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TGPS-1080-M12 switch has 8X10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. TGPS-1080-M12 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, the wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed PoE Ethernet application.

Practical Operation

TGPS-1080-M12 can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.



Dimensions

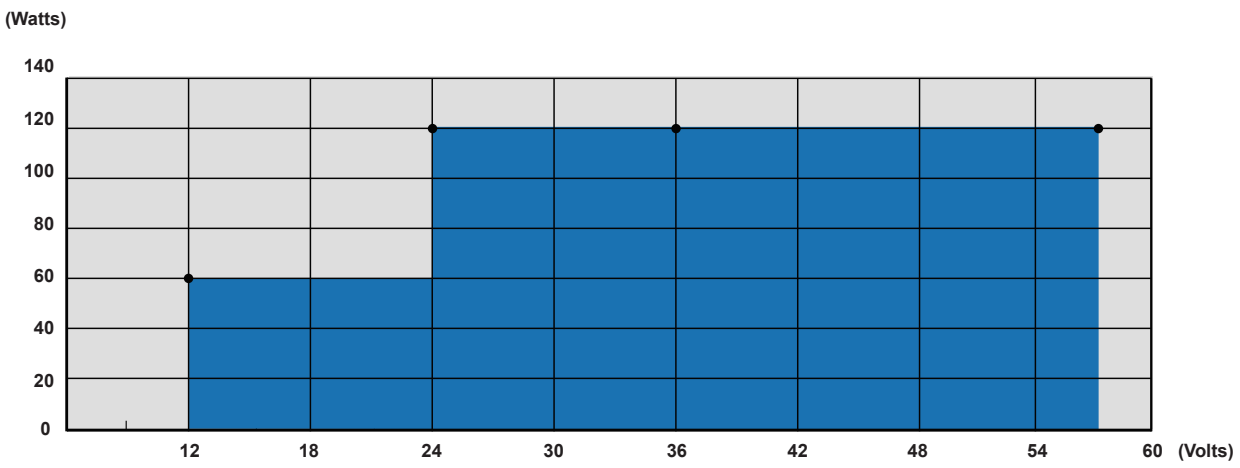


TGPS-1080-M12

PoE Pin Definition

1000Base-T P.S.E. RJ-45 Port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA- / PoE Vout+
#5	BI_DB+ / PoE Vout-
#6	BI_DA+ / PoE Vout+
#7	BI_DC-
#8	BI_DB- / PoE Vout-

PoE Power Distribution



Specifications

ORing Switch Model	TGPS-1080-M12-24V	TGPS-1080-M12
Physical Ports		
10/100/1000Base-T(X) Ports in M12 With P.S.E.	8 x M12 connector (8-pin A-coding)	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3at compliant PoE specification (total power budget is 120Watts with maximum 30Watts per port)	
MAC Table	8K MAC addresses	
Processing	Store-and-Forward	
LED Indicators		

Power Indicator	Green : Power LED x 3	
Fault indicator	Amber : Indicate PWR1 or PWR2 failure	
10/100/1000Base-T(X) M12 port indicator and PoE indicator	Top Green for port Link/Act indicator Middle Amber for Duplex / Collision indicator Bottom Blue for PoE power injected indicator	
Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input power	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin M23 connector	Dual DC inputs. 50~57 VDC on 5-pin M23 connector
Power Consumption (Typ.)	11 Watts (power consumption of P.S.E. is not included)	6 Watts
PoE Output Power	60 Watts (12~24VDC) / 120 Watts (24~57VDC)	240 Watts
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-40	
Dimensions (W x D x H)	125(W) x 65 (D) x 196(H) mm	125(W) x 65 (D) x 196(H) mm
Weight (g)	988 g	930 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27, EN61373	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Warranty	5 years	

Ordering Information

TGPS-1 AA B -M12

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number with 10/100Base-T(X)
Option	**- 08:** 8 ports	**- 0:** 0 port

	Model Name	Description
Available Model	TGPS-1080-M12-24V	EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., M12 connector, 24VDC power inputs
	TGPS-1080-M12	EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. M12 connector

Packing List

- TGPS-1080-M12
- Quick Installation Guide
- Wall-Mount Kit

Optional Accessories

- M12C : M12 cable accessories

TGPS-1080-M12-BP2 Series

TGPS-1080-M12-BP2 Series

EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., M12 connector and 2xbypass included

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Provide 8x10/100/1000Base-T(X) PoE (P.S.E.) ports
- Supports IEEE 802.3at compliant PoE and with maximum 30Watts per port
- Support dual power inputs for power redundancy
- Built-in 2 sets of bypass ports
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- M12 connectors to guarantee reliable operation against environmental disturbances
- Rigid IP-40 housing design
- Wall mounting enabled

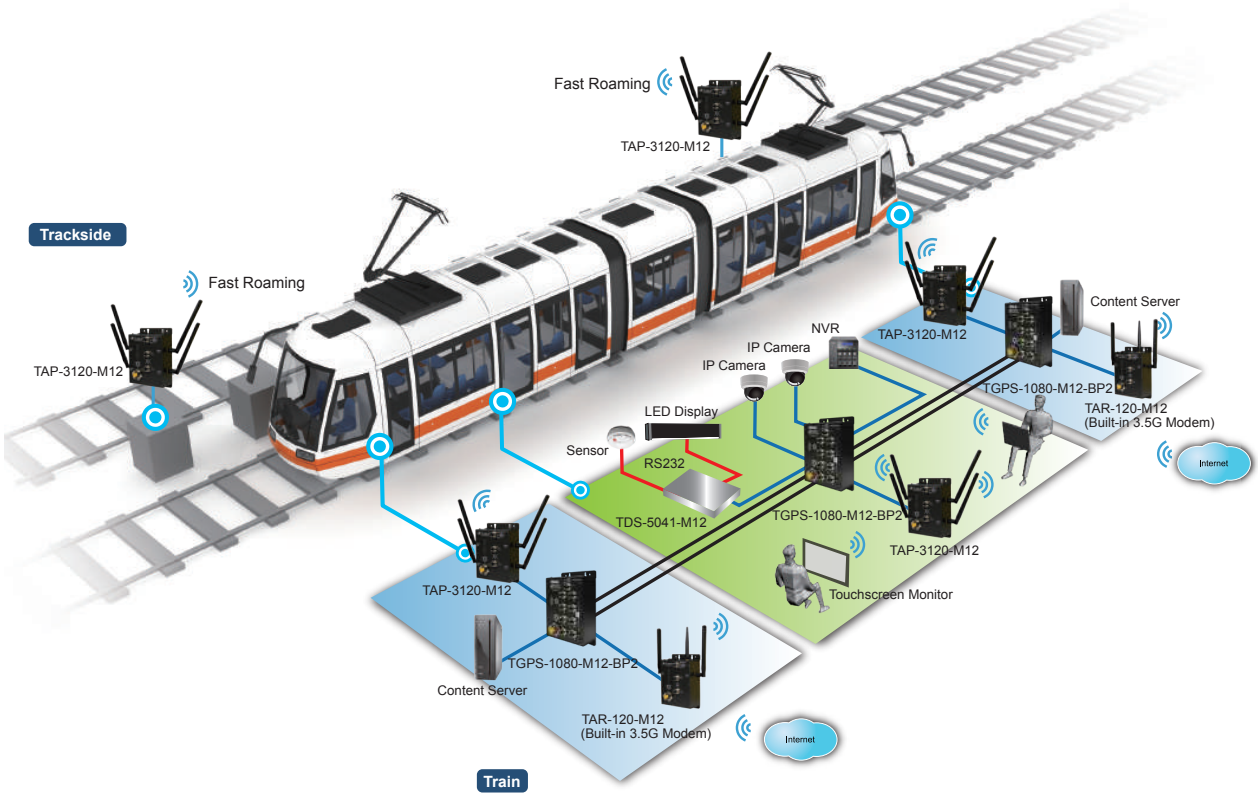
EN50155 | Full Gigabit | Redundant PWR | P.S.E. PoE IEEE802.3at | -40~70°C Temperature | RoHS Lead Free | CE | FC

Introduction

ORing's Transporter™ series un-managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TGPS-1080-M12-BP2 is an un-managed PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. (4 of these ports also double as 2 sets of bypass ports), which is specifically designed for the toughest and fully compliant with EN50155 requirement. TGPS-1080-M12-BP2 also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TGPS-1080-M12-BP2 switch has 8X10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. TGPS-1080-M12-BP2 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TGPS-1080-M12-BP2 includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. The wide operating temperature range from -40 to 70°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed PoE Ethernet application.

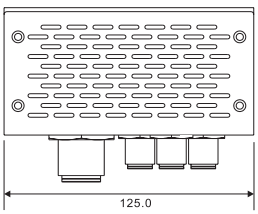
Practical Operation

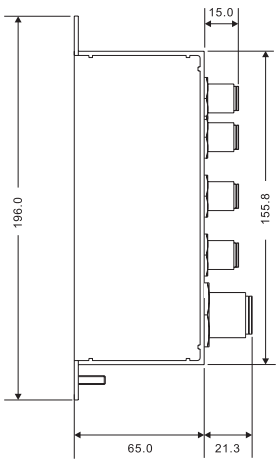
TGPS-1080-M12-BP2 can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.

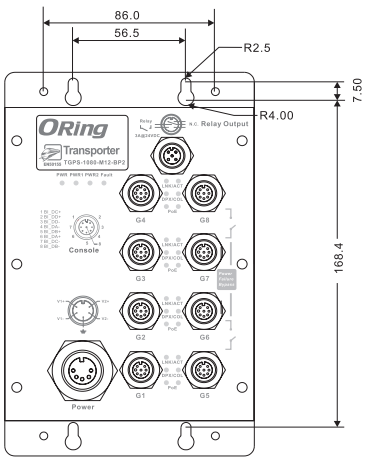


Dimensions

Dimension (Unit =mm)





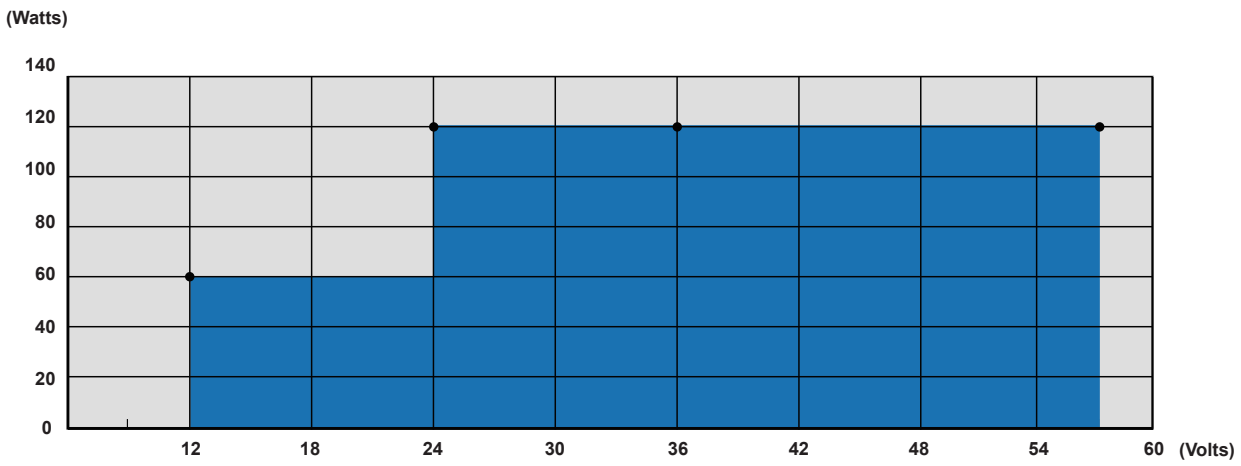


TGPS-1080-M12-BP2

PoE Pin Definition

1000Base-T P.S.E. RJ-45 Port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA- / PoE Vout+
#5	BI_DB+ / PoE Vout-
#6	BI_DA+ / PoE Vout+
#7	BI_DC-
#8	BI_DB- / PoE Vout-

PoE Power Distribution



Specifications

ORing Switch Model	TGPS-1080-M12-BP2- 24V	TGPS-1080-M12-BP2
Physical Ports		
10/100/1000Base-T(X) Ports in M12 With P.S.E.	8 x M12 connector (8-pin A-coding, bypass function included by last 4 ports)	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3at compliant PoE specification (total power budget is 120Watts with maximum 30Watts per port)	
MAC Table	8K MAC addresses	
Processing	Store-and-Forward	
LED Indicators		
Power Indicator	Green : Power LED x 3	
Fault indicator	Amber : Indicate PWR1 or PWR2 failure	

10/100/1000Base-T(X) M12 port indicator and PoE indicator	Top Green for port Link/Act indicator Middle Amber for Duplex / Collision indicator Bottom Blue for PoE power injected indicator	
Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input power	Dual DC inputs. 24VDC (12 ~ 57VDC) on 5-pin M23 connector	Dual DC inputs. 50~57VDC on 5-pin M23 connector
Power Consumption (Typ.)	11 Watts (power consumption of P.S.E. is not included)	6 Watts
PoE Output power	60 Watts (12~24VDC) / 120 Watts (24~57VDC)	240 Watts
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-40	
Dimensions (W x D x H)	125 (W) x 65 (D) x 196(H) mm	125 (W) x 65 (D) x 196(H) mm
Weight (g)	1010 g	952 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27, EN61373	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Warranty	5 years	

Ordering Information

TGPS-1 AA B -M12-BP2

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 port

	Model Name	Description
Available Model	TGPS-1080-M12-BP2-24V	EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., M12 connector and 2xbypass included, 24VDC power inputs
	TGPS-1080-M12-BP2	EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E., M12 connector and 2xbypass included

Packing List

- TGPS-1080-M12-BP2_Series
- Quick Installation Guide
- Wall-Mount Kit

Optional Accessories

- M12C : M12 cable accessories

TGXPS-1080-M12-24V Series

EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/500/1000Base-T(X) P.S.E., M12 connector, 24VDC power input

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Provide 8x10/100/500/1000Base-T(X) PoE (P.S.E.) ports
- Supports IEEE 802.3at compliant PoE with maximum 30Watts per port
- Support dual power inputs for power redundancy
- Built-in 2 sets of bypass ports (-BP2)
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- M12 connectors to guarantee reliable operation against environmental disturbances
- Rigid IP-30 housing design
- Wall mounting enabled

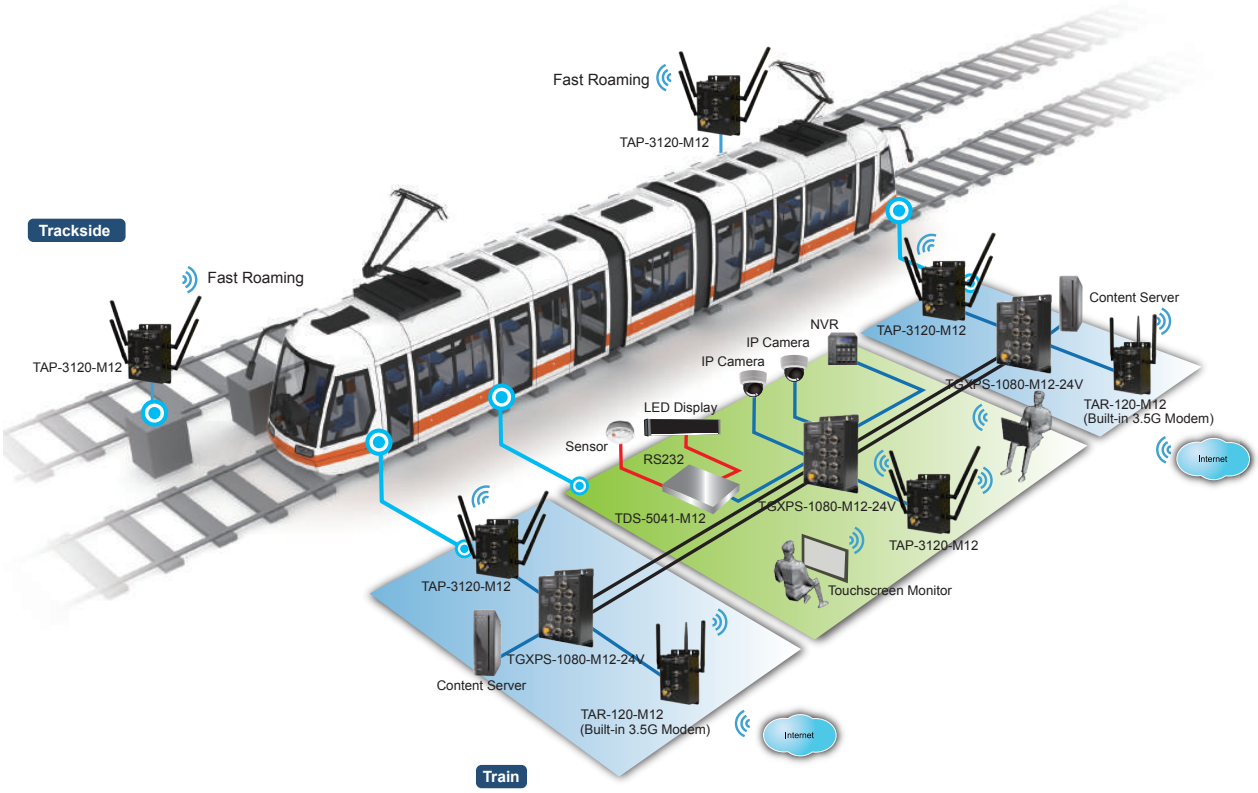
Introduction

ORing's TransporterTM series un-managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TGXPS-1080-M12-24V is an un-managed PoE Ethernet switch with 8x10/100/500/1000Base-T(X) P.S.E. which is specifically designed for the toughest and fully compliant with EN50155 requirement. TGXPS-1080-M12-24V also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TGXPS-1080-M12-24V switch has 8X10/100/500/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. TGXPS-1080-M12-24V EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, the wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed PoE Ethernet application.

While installing in the train, TGXPS-1080-M12-24V is mainly used for in-train monitoring and Entertainment service due to its high speed Gigabit Ethernet connection and PoE capability. Devices connected will be IP camera or CCTV for the use of train surveillance. As an unmanaged Ethernet Switch, TGXPS-1080-M12-24V is not able and will not be used for any control related application. Its main function is simply forwarding the Ethernet packet from one Ethernet based device to another Ethernet device which are all connected to the Switch.

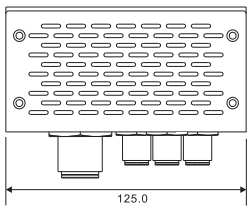
Practical Operation

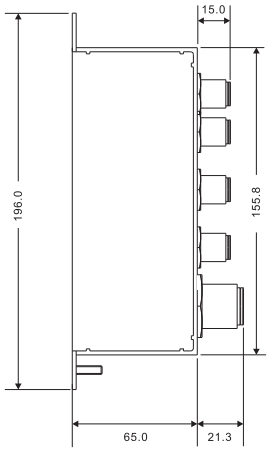
TGXPS-1080-M12-24V can be used in connecting several PoE P.D. Ethernet devices like IP-Camera or other Ethernet devices. In addition, there are two different power inputs at terminal block to avoid interruption caused by power down. When the primary DC power input fails, the backup power input will take over immediately to guarantee a non-stop operation.

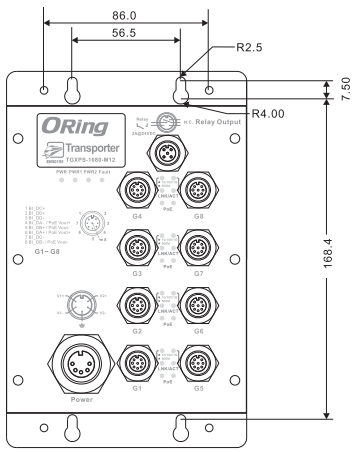


Connections of Ethernet devices

Dimensions

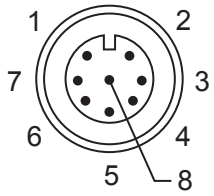






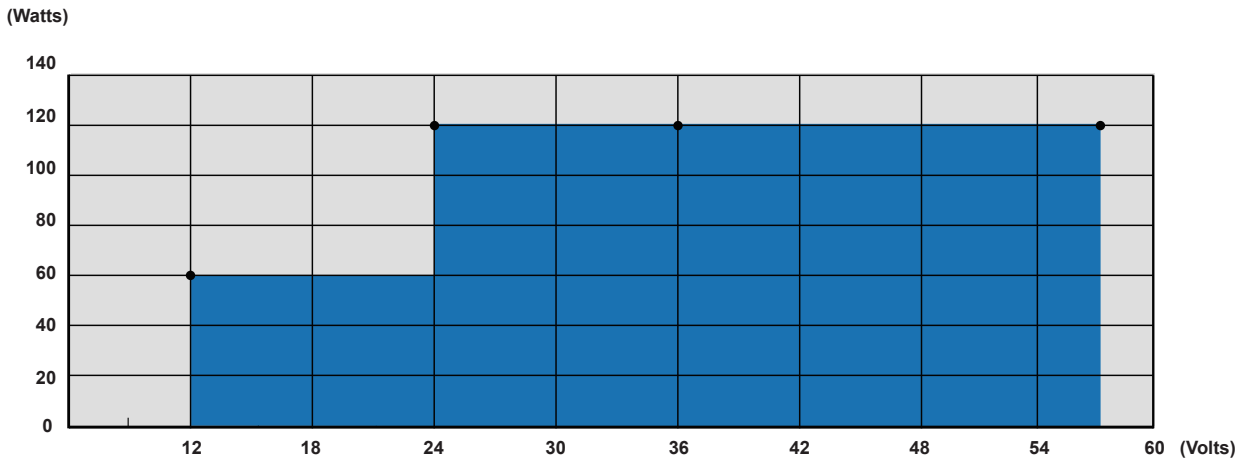
(Unit=mm)

Pin Definition



10/100/500/1000Base-T(X) P.S.E. M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA- / PoE Vout+
#5	BI_DB+ / PoE Vout-
#6	BI_DA+ / PoE Vout+
#7	BI_DC-
#8	BI_DB- / PoE Vout-

PoE Power Distribution



TGXPS-1080-M12(-BP2)-24V model PoE Power Distribution

Specifications

ORing Switch Model	TGXPS-1080-M12-24V	TGXPS-1080-M12-BP2-24V
Physical Ports		
10/100/500/1000Base-T(X) Ports in M12 With P.S.E.	**8 x M12 connector (8-pin A-coding)**	**8 x M12 connector (8-pin A-coding, bypass function included by last 4 ports)**
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3at compliant PoE specification (Maximum 30Watts per port)	
MAC Table	4K MAC addresses	
Processing	Store-and-Forward	
LED indicators		
Power indicator	Green : Power LED x 3	
Fault indicator	Amber : Indicate PWR1 or PWR2 failure	
10/100/500/1000Base-T(X) M12 port indicator and PoE indicator	Top for 10/100/1000Mbps port Link/Act indicator. Green for 1Gbps link, Amber for 10/100 Mbps link Middle Amber for 500Mbps port Link/Act indicator Bottom blue for PoE Injected indicator	

Fault contact		
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding)	
Power		
Redundant Input power	Dual DC inputs. 24 (12~57VDC) VDC on 5-pin M23 connector	
Power consumption (Typ.)	8 Watts (power consumption of P.S.E. is not included)	
PoE Output Power	60 Watts (12~24VDC) / 120 Watts (24~57VDC)	
Overload current protection	Present	
Reverse polarity protection	Present	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	125 (W) x 65 (D) x196 (H) mm	
Weight (g)	979 g	1001 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B, EN 50121-3-2 (EN 50155)	
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A	
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN 60950-1	
Other	EN 50155	
MTBF	442602 hrs	273770 hrs
Warranty	5 years	

Ordering Information

TGXPS-1 AA B –M12–BP2-24V

Code Definition	10/100/500/1000Base-T(X) P.S.E. Port Number	Additional Port Number
Option	**- 08:** 8 ports	**- 0:** 0 port

	Model Name	Description
Available Model	TGXPS-1080-M12-24V	EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/500/1000Base-T(X) P.S.E., M12 connector, 24VDC power inputs
	TGXPS-1080-M12-BP2-24V	EN50155 8-port unmanaged Gigabit PoE Ethernet switch with 8x10/100/500/1000Base-T(X) P.S.E., M12 connector and 2xbypass included, 24VDC power inputs

Packing List

- TGXPS-1080-M12-24V x 1
- Quick Installation Guide x 1

Optional Accessories

- M12C : M12 cable accessories

TGXPS-141GX-M12 Series

TGXPS-141GX-M12 Series

EN50155 5-port unmanaged Gigabit PoE Ethernet switch with 4x10/100/500/1000Base-T(X) P.S.E. and 1x10/100/500/1000Base-T(X), M12 connector

Features

- Supports 4 x 10/100/500/1000 Base-T(X) with P.S.E. PoE ports
- 4 port **P.S.E.** fully compliant with IEEE802.3at standard, provide up to 30 Watts per port
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Support broadcast storm protection
- Ultra-rugged enclosure M12 connector for toughest industrial usages
- Wall mounting enabled

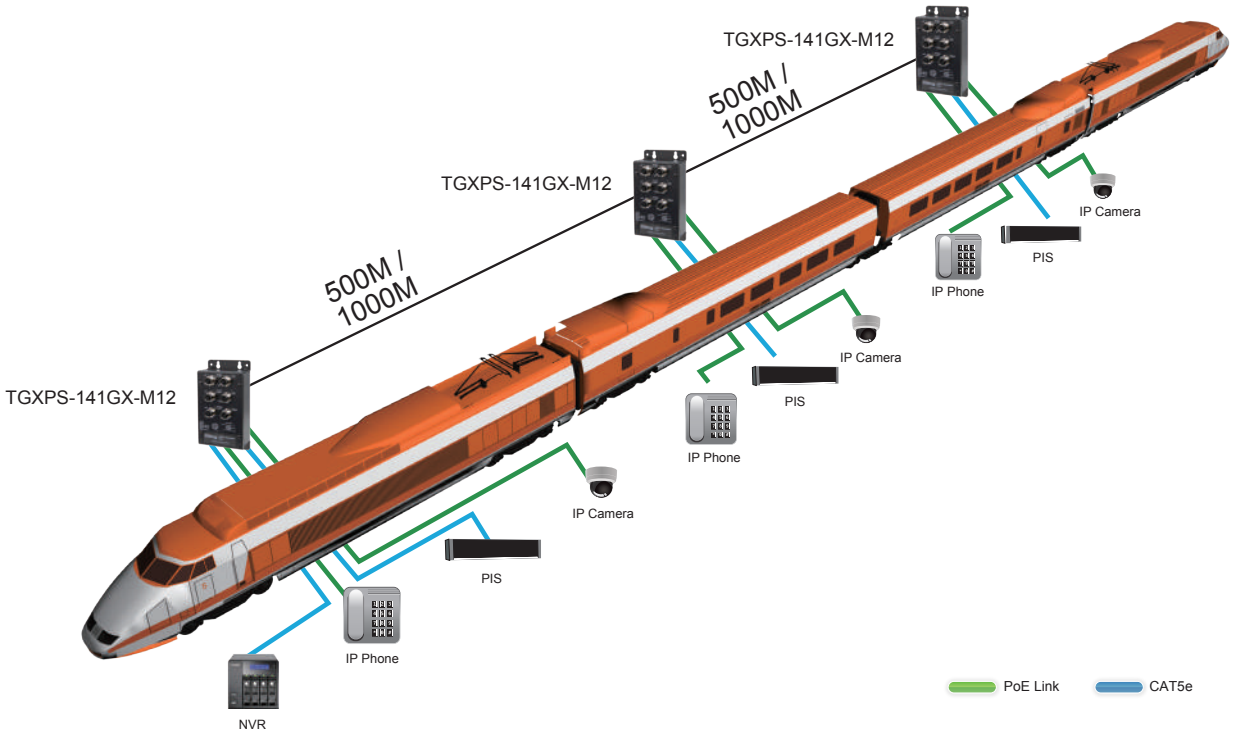
EN50155 | Full Gigabit | P.S.E. PoE IEEE802.3at | -40~75°C Temperature | RoHS Lead Free | CE | FC

Introduction

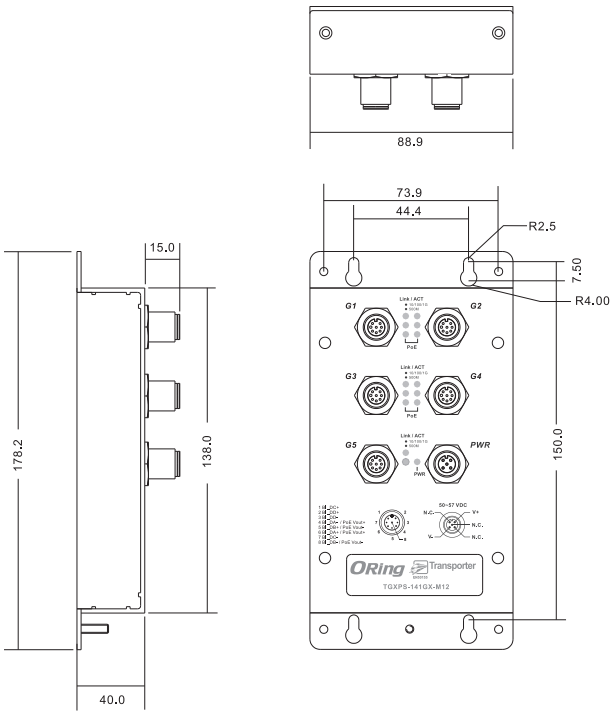
ORing's Transporter™ series Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TGXPS-141GX-M12 series are unmanaged PoE Ethernet switch with 4x10/100/500/1000Base-T(X) P.S.E. ports and 1x10/100/500/1000Base-T(X) port which is compliant with EN50155 requirement. It is specifically designed for the toughest industrial environments. TGXPS-141GX-M12 series EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TGXPS-141GX-M12 series also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. TGXPS-141GX-M12 series switch has 4x10/100/500/1000Base-T(X) P.S.E. (Power Sourcing Equipment) port to provide power in a PoE setup. The very wide operating temperature range from -40°C to 75°C can satisfy most operating environment.

Practical Operation

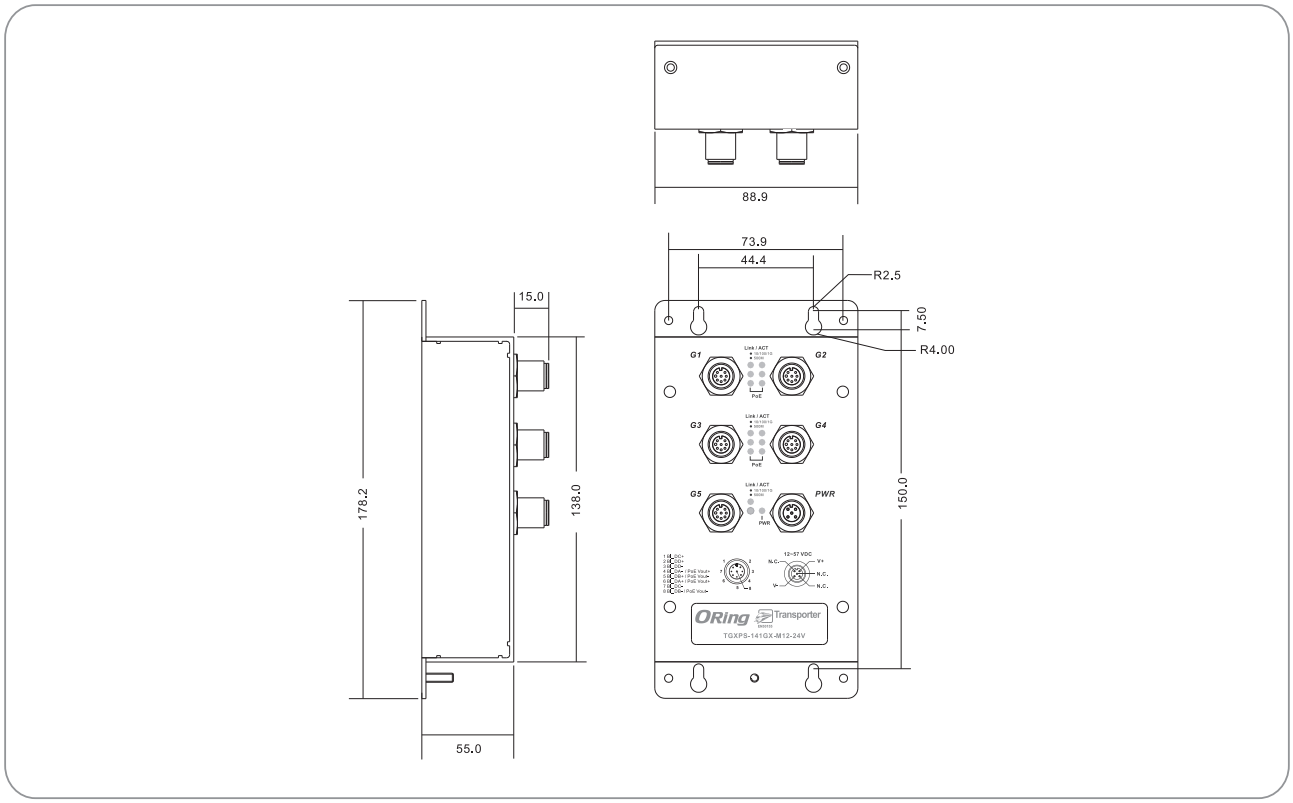
TGXPS-141GX-M12 series can be used in connecting several Ethernet devices which need to operated under harsh environment requirement. The designs of rugged housing and wide operating temperature range from -40 ~ 75°C, makes TGXPS-141GX-M12 series reliably in any kinds of transporter applications.



Dimensions

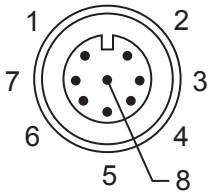


(Unit=mm)



(Unit=mm)

Pin Definition



10/100/500/1000Base-T(X) P.S.E. M12 port	
M12 Pin Definition	
Pin No.	Description
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA- with PoE Vout+
#5	BI_DB+ with PoE Vout-
#6	BI_DA+ with PoE Vout+
#7	BI_DC-
#8	BI_DB- with PoE Vout-

Specifications

ORing Switch Model	TGXPS-141GX-M12	TGXPS-141GX-M12-24V	TGXPS-141GX-M12-MV
Physical Ports			
10/100/500/1000Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	**4 x M12 connector (8-pin M12 A-coding)**		
10/100/500/1000Base-T(X) Port in M12 Auto MDI/MDIX	**1 x M12 connector (8-pin M12 A-coding)**		
Technology			
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)		

Processing	Store-and-Forward		
LED indicators			
Power indicator	Green : Power LED x 1		
10/100/500/1000Base-T(X) M12 port with P.S.E. indicator	Top dual color LED for 10/100/1000Mbps Link/ACT indicator : Green LED for 1000Mbps, Amber for 10/100Mbps Middle Green for port Link/Act at 500Mbps Bottom Blue for PoE indicator		
10/100/500/1000Base-T(X) M12 port indicator	Top dual color LED for 10/100/1000Mbps Link/ACT indicator : Green LED for 1000Mbps, Amber for 10/100Mbps Bottom Green for port Link/Act at 500Mbps		
Power			
Input Power	50 ~ 57VDC power input on M12 connector (5-pin M12 A-coding)	12~57VDC power input on M12 connector (5-pin M12 A-coding)	72~110VDC power input on M12 connector (5-pin M12 A-coding)
Power Consumption (Typ.)	3 Watts (power consumption of P.S.E. is not included)	3 Watts (power consumption of P.S.E. is not included)	6 Watts (power consumption of P.S.E. is not included)
PoE Output Power	120 Watts	60 Watts (12~24VDC) / 120 Watts (24~57VDC)	60 Watts
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristic			
Enclosure	IP-40		
Dimension (W x D x H)	88.9 x 40 x 178.2 mm	88.9 x 55 x 178.2 mm	88.9 x 55 x 178.2 mm
Weight (g)	511	643	771
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-40 to 75°C (-40 to 167°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory approvals			
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)		
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11		
Shock	IEC60068-2-27, EN61373		
Free Fall	IEC60068-2-32		
Vibration	IEC60068-2-6, EN61373		
Safety	EN60950-1		
Warranty	5 years		

Ordering Information

TGXPS-1 A B GX-M12

Code Definition	10/100/500/1000Base-T(X) P.S.E. Port Number	Additional Port Number with 10/100/500/1000Base-T(X)
Option	**- 4:** 4 ports	**- 1:** 1 port

	Model Name	Description
Available Model	TGXPS-141GX-M12	EN50155 5-port unmanaged Gigabit PoE Ethernet switch with 4x10/100/500/1000Base-T(X) P.S.E. and 1x10/100/500/1000Base-T(X), M12 connector
	TGXPS-141GX-M12-24V	EN50155 5-port unmanaged Gigabit PoE Ethernet switch with 4x10/100/500/1000Base-T(X) P.S.E. and 1x10/100/500/1000Base-T(X), M12 connector, 24VDC power input
	TGXPS-141GX-M12-MV	EN50155 5-port unmanaged Gigabit PoE Ethernet switch with 4x10/100/500/1000Base-T(X) P.S.E. and 1x10/100/500/1000Base-T(X), M12 connector, 110VDC power input

Packing List

- TGXPS-141GX-M12 series x 1
- Quick Installation Guide x 1

Optional Accessories

- M12 cable series

TXPS-141XT-M12 Series

EN50155 5-port unmanaged PoE Ethernet switch with 4x10/100/500Base-T(X) P.S.E. and 1x10/100/500Base-T(X), M12 connector

Features

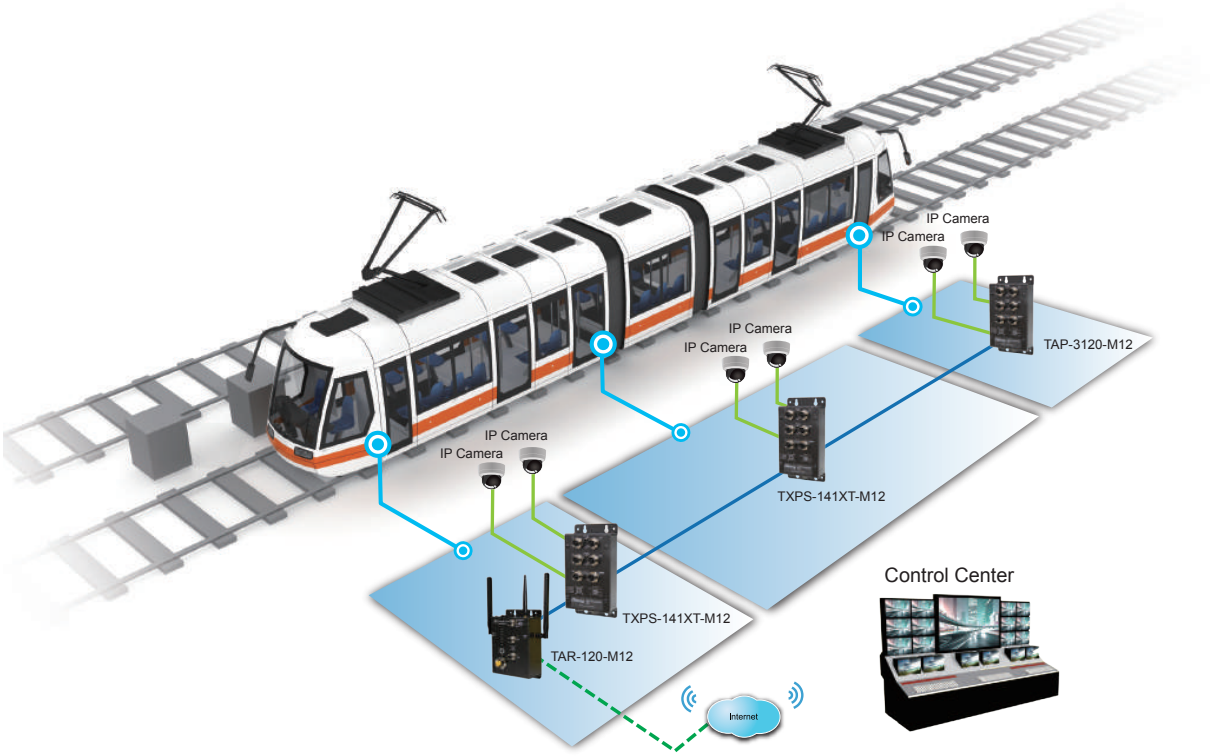
- Supports 4 x 10/100/500 Base-T(X) with P.S.E. PoE ports
- 4 port **P.S.E.** fully compliant with IEEE802.3at standard, provide up to 30 Watts per port
- Support auto-negotiation and auto-MDI/MDI-X
- Support store and forward transmission
- Support flow control
- Support broadcast storm protection
- Ultra-rugged enclosure M12 connector for toughest industrial usages
- Wall mounting enabled

Introduction

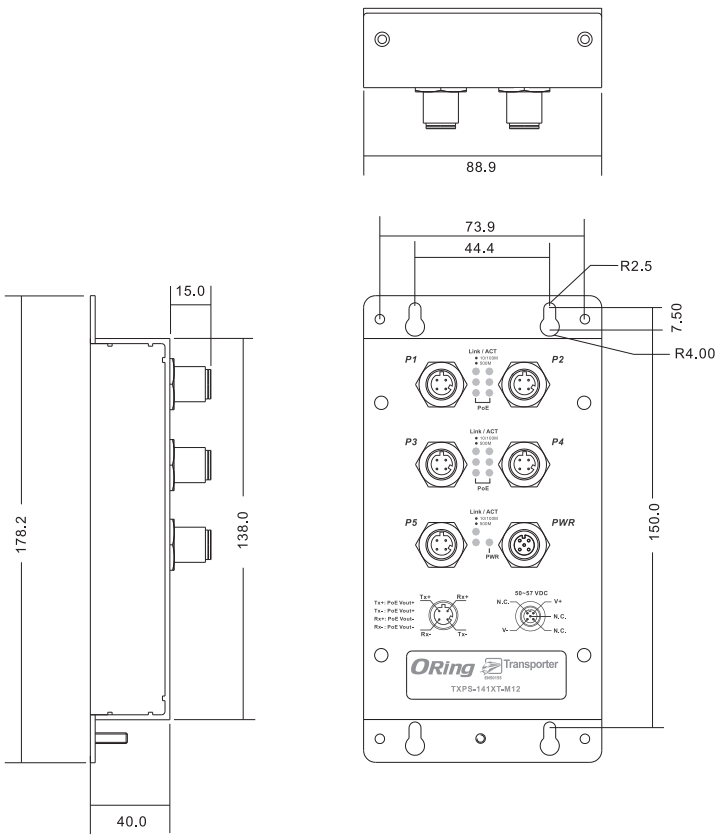
ORing's Transporter™ series Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TXPS-141XT-M12 series are unmanaged PoE Ethernet switch with 4x10/100/500Base-T(X) P.S.E. ports and 1x10/100/500Base-T(X) port which is compliant with EN50155 requirement. It is specifically designed for the toughest industrial environments. TXPS-141XT-M12 series EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TXPS-141XT-M12 series also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. TXPS-141XT-M12 series switch has 4x10/100/500Base-T(X) P.S.E. (Power Sourcing Equipment) port to provide power in a PoE setup. The very wide operating temperature range from -40°C to 75°C can satisfy most operating environment.

Practical Operation

TXPS-141XT-M12 series can be used in connecting several Ethernet devices which need to operated under harsh environment requirement. The designs of rugged housing and wide operating temperature range from -40 ~ 75°C, makes TXPS-141XT-M12 series reliably in any kinds of transporter applications.

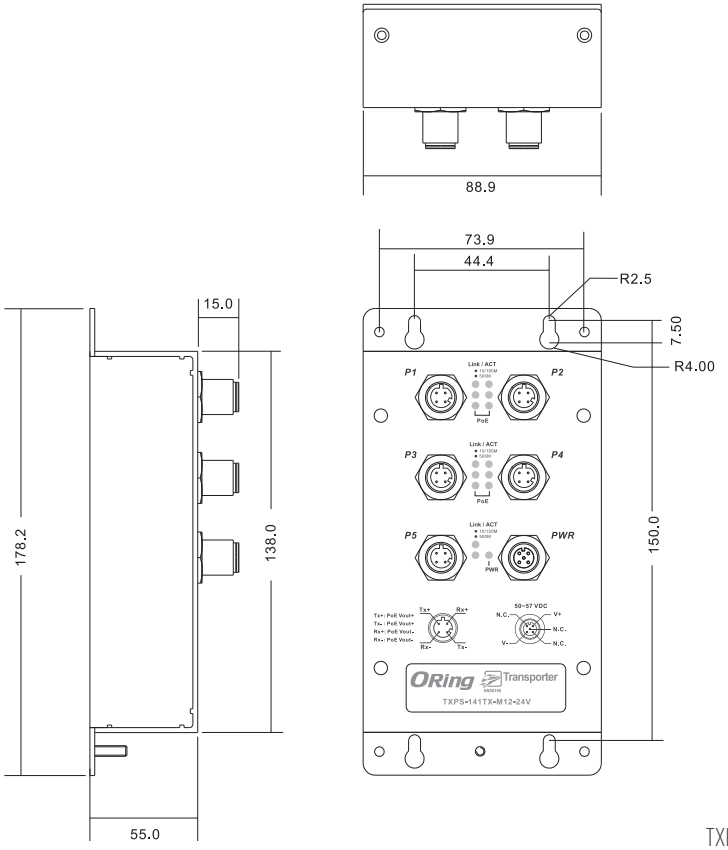


Dimensions



TXPS-141XT-M12

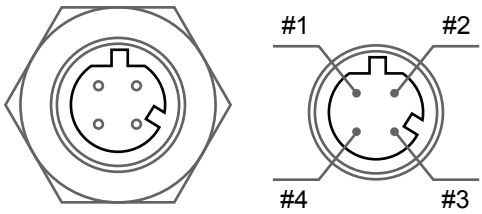
(Unit=mm)



TXPS-141XT-M12-24V/MV

(Unit=mm)

Pin Definition



M12 D-coding Pin Definition	
Pin No.	Description
#1	TX+ with PoE Vout+
#2	RX+ with PoE Vout-
#3	TX- with PoE Vout+
#4	RX- with PoE Vout-

Specifications

ORing Switch Model	TXPS-141XT-M12	TXPS-141XT-M12-24V	TXPS-141XT-M12-MV
Physical Ports			
10/100/500Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	**4 x M12 connector (4-pin M12 D-coding)**		
10/100/500Base-T(X) Port in M12 Auto MDI/MDIX	**1 x M12 connector (4-pin M12 D-coding)**		
Technology			
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)		
Processing	Store-and-Forward		
LED indicators			
Power indicator	Green : Power LED x 1		

10/100/500Base-T(X) M12 port with P.S.E. indicator	Top Green for port Link/Act at 10/100Mbps Middle Green for port Link/Act at 500Mbps Bottom Blue for PoE indicator		
10/100/500Base-T(X) M12 port indicator	Top Green for port Link/Act at 10/100Mbps Bottom Green for port Link/Act at 500Mbps		
LED Indicators			
Input Power	50 ~ 57VDC power input on M12 connector (5-pin M12 A-coding)	12~57VDC power input on M12 connector (5-pin M12 A-coding)	72~110VDC power input on M12 connector (5-pin M12 A-coding)
Power Consumption (Typ.)	1 Watts	2 Watts	5 Watts
PoE Output Power	120 Watts	60 Watts (12~24VDC) / 120 Watts (24~57VDC)	60 Watts
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristic			
Enclosure	IP-40		
Dimension (W x D x H)	88.9 x 40 x 178.2 mm	88.9 x 55 x 178.2 mm	88.9 x 55 x 178.2 mm
Weight (g)	511	643	771
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-40 to 75°C (-40 to 167°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory approvals			
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)		
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11		
Shock	IEC60068-2-27, EN61373		
Free Fall	IEC60068-2-32		
Vibration	IEC60068-2-6, EN61373		
Safety	EN60950-1		
Warranty	5 years		

Ordering Information

TXPS-1 A B XT-M12

Code Definition	10/100/500Base-T(X) P.S.E. Port Number	Additional Port Number with 10/100/500Base-T(X)
Option	**- 4:** 4 ports	**- 1:** 1 port

	Model Name	Description
Available Model	TXPS-141XT-M12	EN50155 5-port unmanaged PoE Ethernet switch with 4x10/100/500Base-T(X) P.S.E. and 1x10/100/500Base-T(X), M12 connector
	TXPS-141XT-M12-24V	EN50155 5-port unmanaged PoE Ethernet switch with 4x10/100/500Base-T(X) P.S.E. and 1x10/100/500Base-T(X), M12 connector, 24VDC power input
	TXPS-141XT-M12-MV	EN50155 5-port unmanaged PoE Ethernet switch with 4x10/100/500Base-T(X) P.S.E. and 1x10/100/500Base-T(X), M12 connector, 110VDC power input

Packing List

- TXPS-141XT-M12 series x 1
- Quick Installation Guide x 1

Optional Accessories

- M12 cable series

TSPL-101GT-M12 Series

TSPL-101GT-M12 Series

EN50155 Industrial 1-port Gigabit PoE Splitter, M12 connector

Features

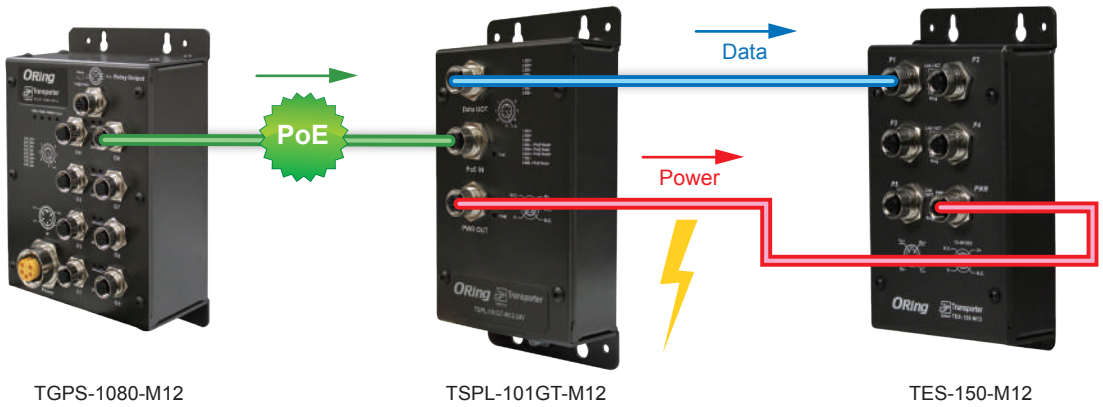
- Leading EN50155-compliant Ethernet switch for rolling stock application
- Fully compliant with IEEE802.3at standard
- Supports 10/100/1000Base-T(X) for PoE In and Data Out
- Power Short Circuit Protection for Power Output
- Auto protection for Over Voltage Power Input
- Supports Power Outputs up to 24Watts Max.
- Ultra-rugged enclosure M12 connector for toughest industrial usages
- Wall Mounting enabled

EN50155 | Full Gigabit | PoE P.D. PoE | -25~75°C Temperature | RoHS Lead Free | CE | FC

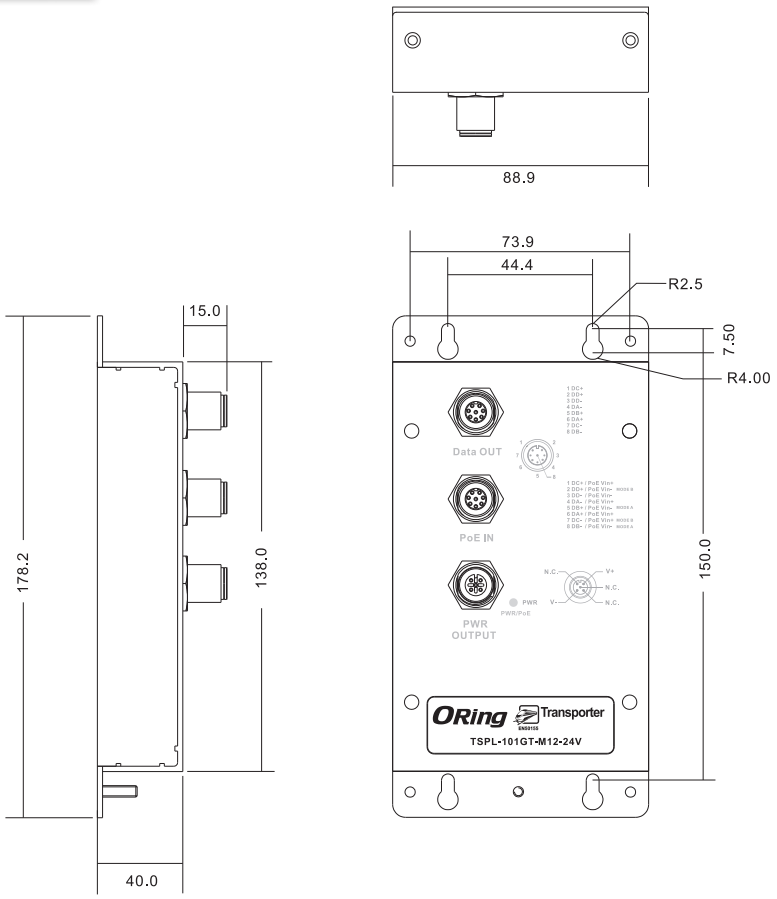
Introduction

ORing's Transporter™ series PoE Splitters are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TSPL-101GT-M12 series is high power PoE Splitter for use in Power over Ethernet systems which is compliant with EN50155 requirement. It is specifically designed for the toughest industrial environments. TSPL-101GT-M12 series EN50155 PoE Splitter use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. With Ethernet Input (data + power) port and Output (data only) port, TSPL-101GT-M12 series may split power from existing PoE connection and convert up to 24VDC/1A or 12VDC/2A for power hungry applications such as Wireless APs, Security cameras and IP Phones. The internal current limit, short-circuit and overload protection are implemented for use as a DC power supply.

Practical Operation



Dimensions



(Unit=mm)

Connector and Pin Definition

[PoE Mode A]

1000 Base-T				
	RJ-45 Input (Data and Power)		RJ-45 Output (Data Only)	
Pin	Symbol	Description	Symbol	Description
1	BI_DA+ (Vdc+)	Data BI_DA+ and Feeding Power(+)	BI_DA+	Data BI_DA+
2	BI_DA- (Vdc+)	Data BI_DA- and Feeding Power(+)	BI_DA-	Data BI_DA-
3	BI_DB+ (Vdc-)	Data BI_DB+ and Feeding Power(-)	BI_DB+	Data BI_DB+
4	BI_DC+	Data BI_DC+	BI_DC+	Data BI_DC+
5	BI_DC-	Data BI_DC-	BI_DC-	Data BI_DC-
6	BI_DB- (Vdc-)	Data BI_DB- and Feeding Power(-)	BI_DB-	Data BI_DB-
7	BI_DD+	Data BI_DD+	BI_DD+	Data BI_DD+
8	BI_DD-	Data BI_DD-	BI_DD-	Data BI_DD-

10/100 Base-T(X)				
	RJ-45 Input (Data and Power)		RJ-45 Output (Data Only)	
Pin	Symbol	Description	Symbol	Description
1	Rx+ (Vdc+)	Data Receive and Feeding power(+)	Rx+	Data Receive
2	Rx- (Vdc+)	Data Receive and Feeding power(+)	Rx-	Data Receive
3	Tx+ (Vdc-)	Data Transmit and Feeding power(-)	Tx+	Data Transmit
4	NC	Not Connected	NC	Not Connected
5	NC	Not Connected	NC	Not Connected
6	Tx- (Vdc-)	Data Transmit and Feeding power(-)	Tx-	Data Transmit
7	NC	Not Connected	NC	Not Connected
8	NC	Not Connected	NC	Not Connected

Note: pins 3 and 6 (Vdc-) should not be shorted to ground

[PoE Mode B]

1000 Base-T				
	RJ-45 Input (Data and Power)		RJ-45 Output (Data Only)	
Pin	Symbol	Description	Symbol	Description
1	BI_DA+	Data BI_DA+	BI_DA+	Data BI_DA+
2	BI_DA-	Data BI_DA-	BI_DA-	Data BI_DA-
3	BI_DB+	Data BI_DB+	BI_DB+	Data BI_DB+
4	BI_DC+ (Vdc+)	Data BI_DC+ and Feeding Power(+)	BI_DC+	Data BI_DC+
5	BI_DC- (Vdc+)	Data BI_DC- and Feeding Power(+)	BI_DC-	Data BI_DC-
6	BI_DB-	Data BI_DB-	BI_DB-	Data BI_DB-
7	BI_DD+ (Vdc-)	Data BI_DD+ and Feeding Power(-)	BI_DD+	Data BI_DD+
8	BI_DD- (Vdc-)	Data BI_DD- and Feeding Power(-)	BI_DD-	Data BI_DD-

10/100 Base-T(X)				
	RJ-45 Input (Data and Power)		RJ-45 Output (Data Only)	
Pin	Symbol	Description	Symbol	Description
1	Rx+	Data Receive	Rx+	Data Receive +
2	Rx-	Data Receive	Rx-	Data Receive -
3	Tx+	Data Transmit	Tx+	Data Transmit +
4	Vdc+	Feeding power(+)	NC	Not Connected
5	Vdc+	Feeding power(+)	NC	Not Connected
6	Tx-	Data Transmit	Tx-	Data Transmit -
7	Vdc-	Feeding power(-)	NC	Not Connected
8	Vdc-	Feeding power(-)	NC	Not Connected

Note: pins 7 and 8 (Vdc-) should not be shorted to ground

Specifications

ORing Injector Model	TSPL-101GT-M12-24V	TSPL-101GT-M12-12V
Physical Ports		
10/100/1000Base-T(X) Port with PoE Input in M12 Auto MDI/MDIX	**1 x M12 connector (8-pin M12 A-coding)**	
10/100/1000Base-T(X) Output Port in M12 Auto MDI/MDIX	**1 x M12 connector (8-pin M12 A-coding)**	
Power Output Connector	**1 x M12 connector (5-pin M12 A-coding)**	

Operating Voltage		
Input Voltage	36 ~ 57 VDC	
Output Voltage	24V @ 1A max.	12V @ 2A max.
LED Indicator		
Power Indicator	PWR / Ready: 1 x LED	
	Green On: Power is on and functioning Normally.	
Protection		
Short Circuit Protection	Present	
Over Load Protection	Present	
Physical Characteristic		
Enclosure	IP-40	
Dimension (W x D x H)	88.9 (W) x 40 (D) x 178.2 (H)mm (3.5 x 1.57 x 7.0 inch)	
Weight (g)	385 g	
Environmental		
Storage Temperature	-40 to 80°C (-40 to 176°F)	
Operating Temperature	-25 to 75°C (-13 to 167°F)	
Operating Humidity	5% to 90% Non-condensing	
Regulatory approvals		
EMC	EN 55022, EN 55024(CE EMC),EN 50121-4,EN 60945, FCC, EN 50121-3-2(EN50155), EN 61000-6-2, EN 61000-6-4,IEC 61000-3-2 ,IEC 61000-3-3	
EMI	CISPR 22, EN 55011, FCC Part 15B Class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8 (PFMF), EN61000-4-11 (DIP)	
Shock	IEC 60068-2-27, IEC 61373(EN50155)	
Free Fall	IEC 60068-2-31 (IEC 60068-2-32)	
Vibration	IEC 60068-2-6, IEC 61373(EN50155)	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

TSPL-101GT–M12-AA

Code Definition	Networking Port Number	
Option	**- 24V:** 24VDC output **- 12V:** 12VDC output	

	Model Name	Description
Available Model	TSPL-101GT-M12-24V	EN50155 Industrial 1-port Gigabit High Power PoE Splitter, IEEE802.3at standard compliant, 24VDC output, M12 connector
	TSPL-101GT-M12-12V	EN50155 Industrial 1-port Gigabit High Power PoE Splitter, IEEE802.3at standard compliant, 12VDC output, M12 connector

Packing List
- TSPL-101GT-M12 x 1
- QIG x 1

Optional Accessories (Can be purchased separately)
- M12 cable series

TINJ-101GT-M12 Series

TINJ-101GT-M12 Series

EN50155 Industrial 1-port Gigabit High Power PoE Injector ,M12 connector

Features

- PoE+Injector for 1x10/100/1000 Base-T(X)
- Fully compliant with IEEE802.3at/802.3af standard
- Auto protection for Over Voltage Power Input and over current output
- Supports Power Output up to 30Watts
- Supports wide Power Input range from 12~57Vdc
- Ultra-rugged enclosure M12 connector for toughest industrial usages
- Wall mounting enabled

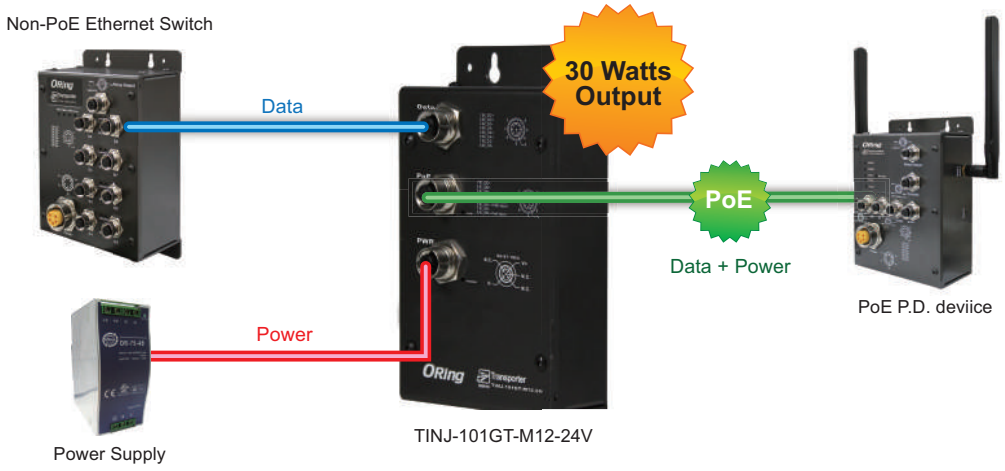
EN50155 | Full Gigabit | P.S.E PoE | -25~70°C Temperature | RoHS Lead Free | CE | FC

Introduction

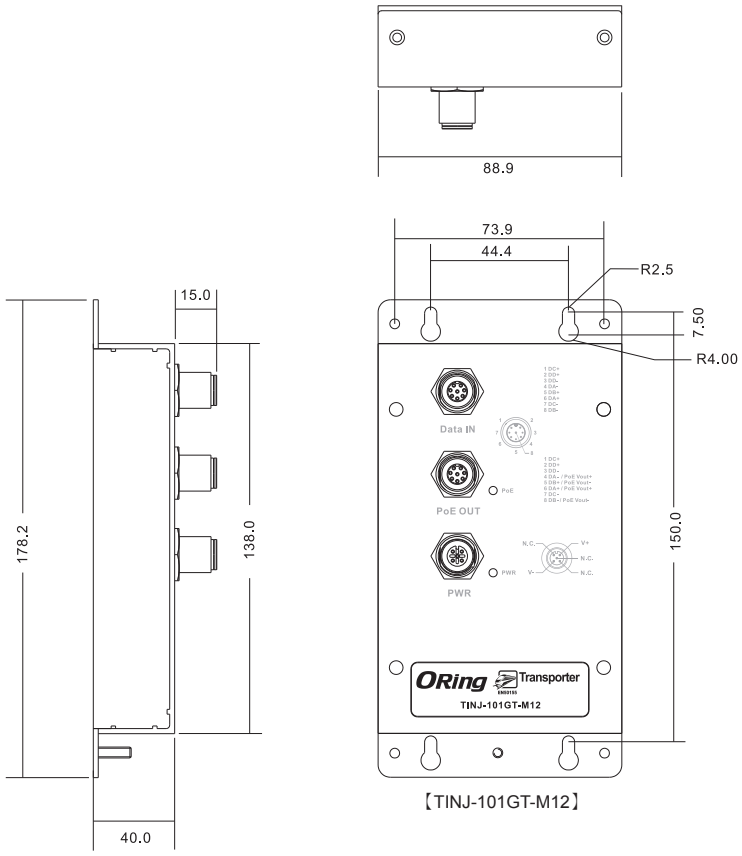
ORing's Transporter™ series PoE Injectors are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TINJ-101GT-M12 PoE Injector is an advanced IEEE802.3at compliant device with Intelligent Detection that provided **1-port 10/100/1000 Base-T(X)** PoE output which is compliant with EN50155 requirement. It is specifically designed for the toughest industrial environments. TINJ-101GT-M12 EN50155 PoE Injector use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. The device does not turn on power until it detects a valid PoE signature from the PoE devices attached downstream on the Ethernet cable. This protection against damage to non-PoE compliant equipment which may be connected to the Ethernet cable. Because of this intelligent detection, only an IEEE 802.3at/802.3af compliant device can be powered with the TINJ-101GT-M12 PoE Injector. Typically in Ethernet networks the maximum allowable CAT5 cable length is about 100 meters, due to the limitation of the Ethernet standards. The TINJ-101GT-M12 PoE Injector can function with any PoE P.D. equipment which is fully compliant with the IEEE 802.3at/802.3af PoE standards.

Note: The equipment being powered must be fully IEEE 802.3at/802.3af compliant in order for the power supply to be able to sense the PoE devices signature and apply power. Power is supplied on Ethernet pins 4/6 (V+) and 5/8 (V-).

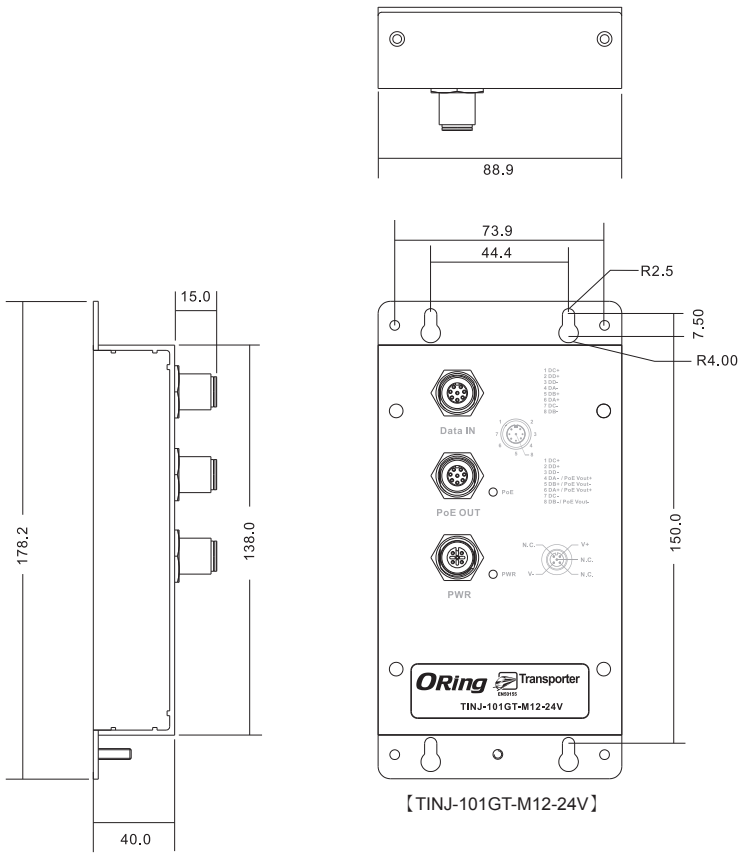
Practical Operation



Dimensions



【TINJ-101GT-M12】

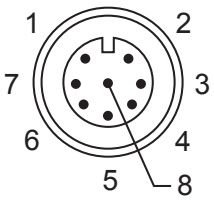


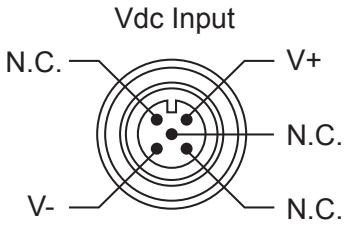
【TINJ-101GT-M12-24V】

(Unit=mm)

Pin Definition

1 BI_DC+
2 BI_DD+
3 BI_DD -
4 BI_DA - / PoE Vout+
5 BI_DB + / PoE Vout-
6 BI_DA + / PoE Vout+
7 BI_DC -
8 BI_DB - / PoE Vout-





Connector and Pin Definition

1000 Base-T				
	M12 Input (Data Only)		M12 Output (Data and Power)	
Pin	Symbol	Description	Symbol	Description
1	BI_DC+	Data BI_DC+	BI_DC+	Data BI_DC+
2	BI_DD+	Data BI_DD+	BI_DD+	Data BI_DD+
3	BI_DD-	Data BI_DD-	BI_DD-	Data BI_DD-
4	BI_DA-	Data BI_DA-	BI_DA- (Vdc+)	Data BI_DA- and Feeding Power(+)
5	BI_DB+	Data BI_DB+	BI_DB+ (Vdc-)	Data BI_DB+ and Feeding Power(-)
6	BI_DA+	Data BI_DA+	BI_DA+ (Vdc+)	Data BI_DA+ and Feeding Power(+)
7	BI_DC-	Data BI_DC-	BI_DC-	Data BI_DC-
8	BI_DB-	Data BI_DB-	BI_DB- (Vdc-)	Data BI_DB- and Feeding Power(-)

10/100 Base-T(X)				
	M12 Input (Data Only)		M12 Output (Data and Power)	
Pin	Symbol	Description	Symbol	Description
1	NC	Not Connected	NC	Not Connected
2	NC	Not Connected	NC	Not Connected
3	NC	Not Connected	NC	Not Connected
4	Rx-	Data Receive	Rx- (Vdc+)	Data Receive and Feeding power(+)
5	Tx+	Data Transmit	Tx+ (Vdc-)	Data Transmit and Feeding power(-)
6	Rx+	Data Receive	Rx+ (Vdc+)	Data Receive and Feeding power(+)
7	NC	Not Connected	NC	Not Connected
8	Tx-	Data Transmit	Tx- (Vdc-)	Data Transmit and Feeding power(-)

Note: pins 5 and 8 (-Vdc) should not be shorted to ground

Specifications

ORing Injector Model	TINJ-101GT-M12	TINJ-101GT-M12-24V
Physical Ports		
10/100/1000 Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	1 x M12 connector (8-pin M12 A-coding)	
10/100/1000 Base-T(X) Port in M12 Auto MDI/MDIX	1 x M12 connector (8-pin M12 A-coding)	
Operating Voltage		
Input Voltage	**50 ~ 57 VDC on 4-pin M12 A-coding**	**12 ~ 57 VDC on 4-pin M12 A-coding**
Output Power	**50V / 600mA, 30 Watts max.**	

LED Indicators		
Power Indicator	PWR / Ready: 1 x LED	
Green On: Power is on and functioning Normally.	1 x LED Blue On: PoE Device Link Blue Blinking: Detecting PoE Device Blue Off : None PoE Device Detected	
Protection		
Short Circuit Protection	Present	
Over Load Protection	Present	
Physical Characteristic		
Enclosure	IP-40	
Dimension (W x D x H)	88.9 (W) x 40 (D) x 178.2 (H)mm (3.5 x 1.57 x 7.0 inch)	
Weight (g)	385g	446g
Environmental		
Storage Temperature	-40 to 80°C (-40 to 176°F)	
Operating Temperature	-25 to 70°C (-13 to 158°F)	
Operating Humidity	5% to 90% Non-condensing	
Regulatory approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

TINJ-10[1]GT-M12-[24V]

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	VDC Input
Option	**-1** : 1 port	**None** : 50 ~ 57 VDC **-24** : 12 ~ 57 VDC

	Model Name	Description
Available Model	TINJ-101GT-M12	EN50155 Industrial 1-port Gigabit High Power PoE Injector,M12 connector
	TINJ-101GT-M12-24V	EN50155 Industrial 1-port Gigabit High Power PoE Injector, 12V~57V Input Support, M12 connector

Packing List

- TINJ-101GT-M12 x 1
- QIG x 1

Optional Accessories

- M12 cable series

TINJ-101-M12 Series

TINJ-101-M12 Series

EN50155 Industrial 1-port 10/100 PoE Injectorwith 30W output, M12 connector

Features

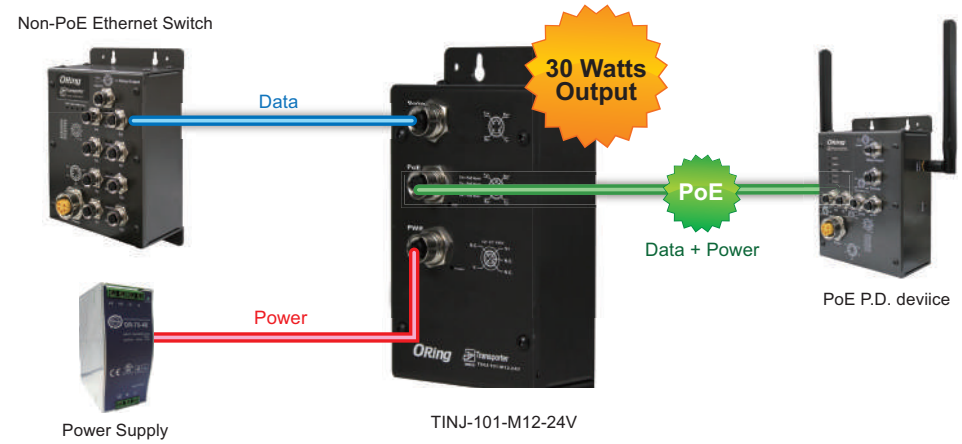
- Supports 1x10/100 Base-T(X) for power and data Output
- Fully compliant with IEEE802.3at/802.3af standard
- Auto protection for Over Voltage Power Input and over current output
- Supports Power Output up to 30Watts
- Supports Power wide Input range from 12Vdc to 57 Vdc
- Ultra-rugged enclosure M12 connector for toughest industrial usages
- Wall mounting enabled

Introduction

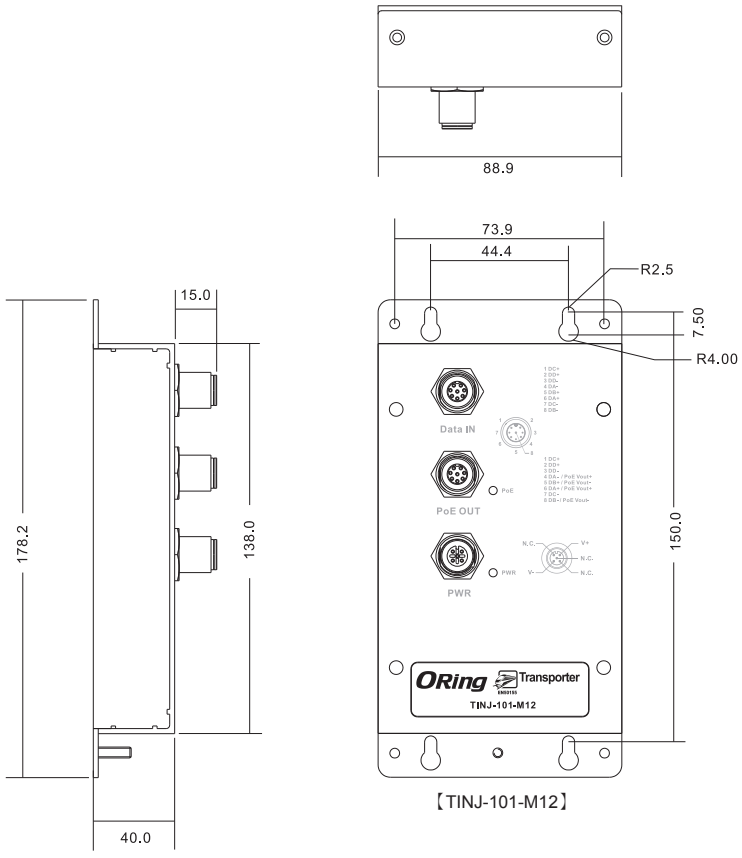
ORing's Transporter™ series PoE Injectors are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The TINJ-101-M12 PoE Injector is an advanced IEEE802.3at compliant device with Intelligent Detection that provided 1-port 10/100 Base-T(X) PoE output which is compliant with EN50155 requirement. It is specifically designed for the toughest industrial environments. TINJ-101-M12 EN50155 PoE Injector use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. The device does not turn on power until it detects a valid PoE signature from the PoE devices attached downstream on the Ethernet cable. This protection against damage to non-PoE compliant equipment which may be connected to the Ethernet cable. Because of this intelligent detection, only an IEEE 802.3at/802.3af compliant device can be powered with the TINJ-101-M12 PoE Injector. Typically in Ethernet networks the maximum allowable CAT5 cable length is about 100 meters, due to the limitation of the Ethernet standards. The TINJ-101-M12 PoE Injector can function with any PoE P.D. equipment which is fully compliant with the IEEE 802.3at/802.3af PoE standards.

Note: The equipment being powered must be fully IEEE 802.3at/802.3af compliant in order for the power supply to be able to sense the PoE devices signature and apply power. Power is supplied on Ethernet pins 2/4 (V+) and 1/3 (V-).

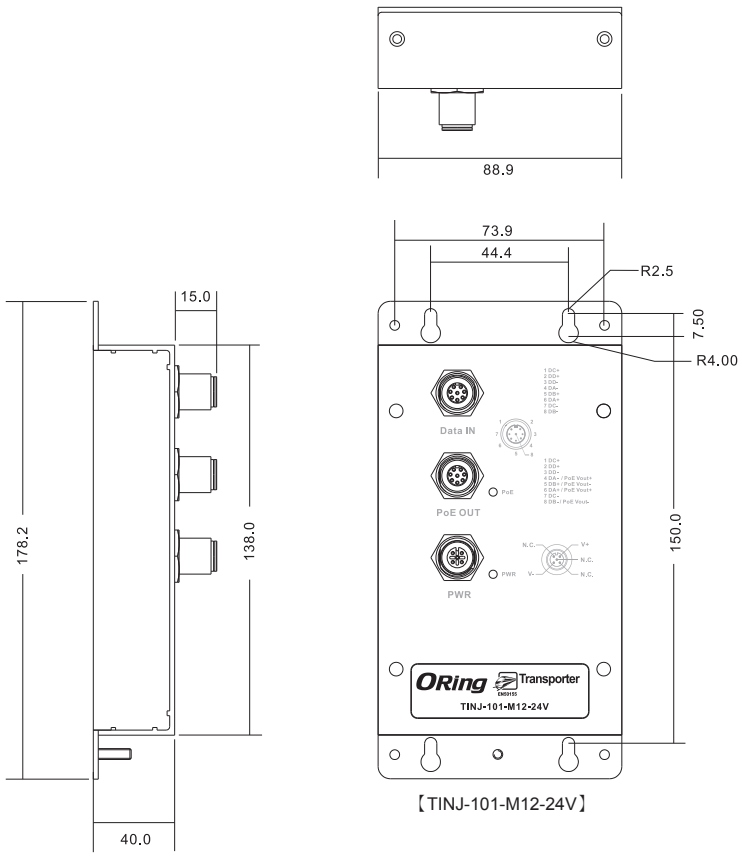
Practical Operation



Dimensions



【TINJ-101-M12】

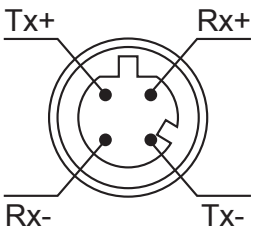


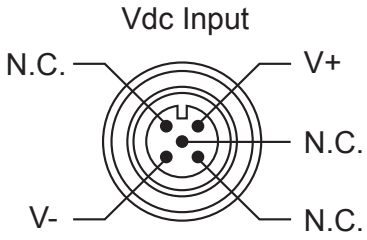
【TINJ-101-M12-24V】

(Unit=mm)

Pin Definition

Tx+:PoE Vout+
Tx-:PoE Vout+
Rx+:PoE Vout-
Rx-:PoE Vout-





Connector and Pin Definition

10/100 Base-T(X)				
	M12 Input (Data Only)		M12 Output (Data and Power)	
Pin	Symbol	Description	Symbol	Description
1	Rx+	Data Receive	Rx+ (Vdc-)	Data Receive and Feeding power(-)
2	Tx+	Data Transmit	Tx+ (Vdc+)	Data Transmit and Feeding power(+)
3	Rx-	Data Receive	Rx- (Vdc-)	Data Receive and Feeding power(-)
4	Tx-	Data Transmit	Tx- (Vdc+)	Data Transmit and Feeding power(+)

Note: pins 1 and 3 (-Vdc) should not be shorted to ground

Specifications

ORing Injector Model	TINJ-101-M12	TINJ-101-M12-24V
Physical Ports		
10/100 Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	1 x M12 connector (4-pin M12 D-coding)	
10/100 Base-T(X) Port in M12 Auto MDI/MDIX	1 x M12 connector (4-pin M12 D-coding)	
Operating Voltage		
Input Voltage	**50 ~ 57 VDC on 4-pin M12 A-coding**	**12 ~ 57 VDC on 4-pin M12 A-coding**
LED Indicators		
Power Indicator	PWR / Ready: 1 x LED Green On: Power is on and functioning Normally.	
PoE Indicators	1 x LED Blue On: PoE Device Link Blue Blinking: Detecting PoE Device Blue Off : None PoE Device Detected	
Protection		
Short Circuit Protection	Present	
Over Load Protection	Present	
Physical Characteristic		
Enclosure	IP-40	
Dimension (W x D x H)	88.9 (W) x 40 (D) x 178.2 (H)mm (3.5 x 1.57 x 7.0 inch)	
Weight (g)	385g	446g
Environmental		
Storage Temperature	-40 to 80°C (-40 to 176°F)	
Operating Temperature	-25 to 70°C (-13 to 158°F)	
Operating Humidity	5% to 90% Non-condensing	

Regulatory approvals		
EMC	EN 55032, EN 55024(CE EMC),FCC Part 15 B, EN 50121-1, EN 50121-3-2 (EN50155), EN 61000-3-2, EN 61000-3-3	
EMI	CISPR 32, EN 55032, FCC Part 15B class A	
EMS	IEC 61000-4-2 (ESD), IEC 61000-4-3 (RS), IEC 61000-4-4 (EFT), IEC 61000-4-5 (Surge), IEC 61000-4-6 (CS), IEC 61000-4-8(PFMF), IEC 61000-4-11(DIP)	
Shock	IEC 60068-2-27	
Free Fall	IEC 60068-2-31	
Vibration	IEC 60068-2-6	
Safety	EN 60950-1,	
Other	EN 50155	
MTBF	5287222 hrs	4449756 hrs
Warranty	5 years	

Ordering Information

TINJ-10[1]-M12-[24V]

Code Definition	10/100Base-T(X) P.S.E. Port Number	VDC Input
Option	**-1**: 1 port	**None** : 50 ~ 57 VDC **-24** : 12 ~ 57 VDC

Available Model	Model Name	Description
	TINJ-101-M12	EN50155 Industrial 1-port FET PoE Injector with 30W output, 50V~57VDC Input,M12 connector
	TINJ-101-M12-24V	EN50155 Industrial 1-port FET PoE Injector with 30W output, 12V~57VDC Input,M12 connector

Packing List

- TINJ-101-M12 x 1
- QIG x 1

Optional Accessories

- M12 cable series

IBS-102FX Series

IBS-102FX Series

Industrial 2-port optical bypass switch for fiber optical network with 4xLC duplex Connector

Features

- Support 100M/1G/10G optical bypass function of 2 port duplex or 4 port simplex fiber connection
- Different models supported for multi-mode or single-mode optical fiber
- Low insertions loss
- Throughput not affected and no extra delay
- Bypass switching time < 10ms
- Dual wide-range power inputs: 12~48VDC
- Relay output for power failure warning
- Rigid IP-30 housing design
- DIN-Rail/Wall-mount installation

RoHS Lead Free CE FC

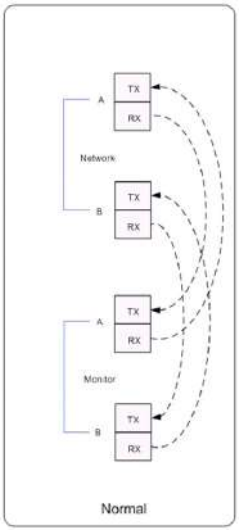
Introduction

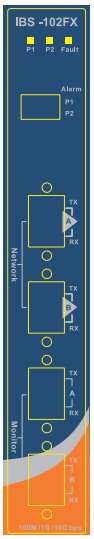
IBS-102FX series are the external Bypass switches for 100M/1G/10G fiber optical networks. These fiber optical bypass switches protect the network from failures and subsequent maintenance by ensuring network integrity during power loss. Each of these fiber optical bypass switches includes Network ports and Monitor ports. The Network ports are used for connection to main-network connections and provide protection mechanism, and the Monitor ports are used for down-link local networking device. When the power is on, the operation mode of the Bypass switch is set to Normal, and the local networking device is connected with main-network. When power failure occurs, the Bypass switch is swiftly set to bypass mode to isolate the main-network from the local networking device.

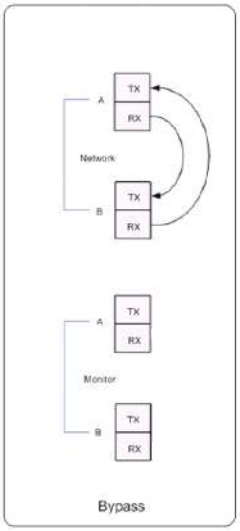
Practical Operation

Normal mode:
The Bypass switch diverts the data from the Network ports data to the Monitor ports.

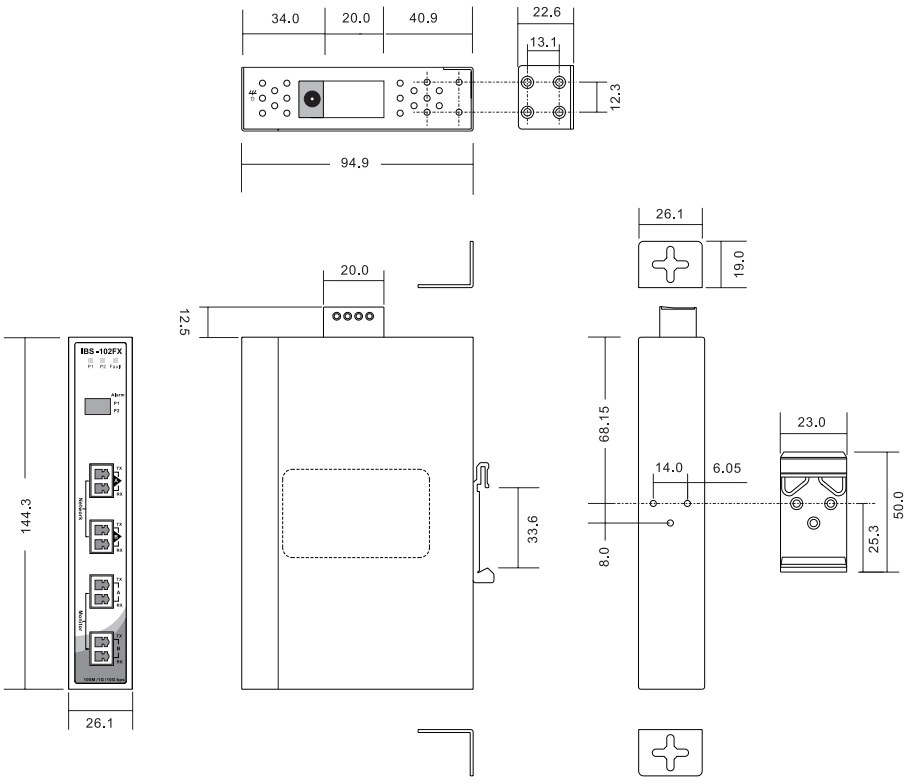
Bypass mode:
The Network data traffic routed directly to the other Network port. And the Monitor data traffic routed directly to the other Monitor port.







Dimensions



(Unit=mm)

Specifications

ORing Bypass Switch Model	IBS-102FX-SS-LC	IBS-102FX-MM-LC
Physical Ports		
LC connector	4 Duplex Single-mode LC connector	4 Duplex Multi-mode LC connector
Fiber Ethernet		
Optical Fiber	Single-mode: 9/125μm	Multi-mode: 50/125μm or 62.5/125μm
Operating Wavelength	1260 ~ 1570 nm	780 ~ 1350 nm
Insert loss	1.6 dB	< 1.0 dB
Switch time	< 10ms	
DIP Switch Settings		
DIP Swicth No.1	Power-1 failed warning detection – (On) relay enable (Off) relay disable	
DIP Switch No.2	Power-2 failed warning detection – (On) relay enable (Off) relay disable	
LED Indicators		
Power indicator	Green : power LED x 2.	
Normal indicator	Green On : Operated in normal mode	
Fault indicator	Amber : Indicates power failure occurred	
Fault contact		
Relay	Relay output for power failure warning	
Power		
Input power	Dual 12~48 VDC power inputs at DC-Jack and 4-pin terminal block	
Power consumption (Typ.)	2.7 Watts	
Overload current protection	Present	
Reverse Polarity	Present on terminal block	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	26.1(W) x 94.9(D) x 144.3(H) mm (1.03 x 3.74 x 5.68 inch.)	
Weight (g)	405g	
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-20 to 70°C (-4 to 158°F)	
Operating Humidity	10% to 90% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	1,246,758	
Warranty	1 year	

Ordering Information

IBS-10[A]FX-[BB]-LC

Code Definition	Networking Port Number	Single mode or Multi mode
Option	**- 2:** 2 ports	**- MM:** Multi-mode **- SS:** Single-mode

	Model Name	Description
Available Model	IBS-102FX-MM-LC	Industrial 2-port bypass switch for fiber optical network with 4xLC duplex, multi-mode, LC connector
	IBS-102FX-SS-LC	Industrial 2-port bypass switch for fiber optical network with 4xLC duplex, single-mode, LC connector

Packing List

- IBS-102FX
- Wall-mount Kit
- DIN-Rail Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- PAA-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, US plug
- PAE-121000, 12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, EU plug
- FPC series : Fiber Patch cord

INJ-102GT (HW version2.0)

INJ-102GT

Industrial 2-port Gigabit High Power PoE Injector

Features

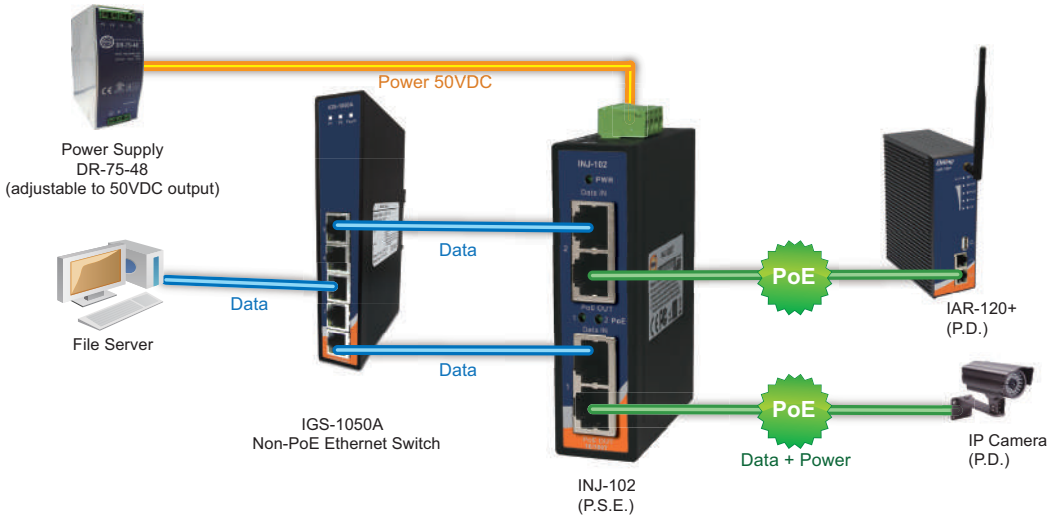
- PoE+Injector for 1x10/100/1000 Base-T(X)
- Fully compliant with IEEE 802.3at/802.3af standard
- Auto protection for Over Voltage Power Input and over current output
- Supports Power Output up to 30Watts per port
- Supports wide Power Input range from 50~57VDC
- IP-30 Rugged Case Design
- DIN-Rail and Wall Mount Design

Introduction

The INJ-102GT PoE Injector is an advanced IEEE802.3at compliant device with Intelligent Detection, providing 2-ports of 10/100/1000Base-T(X) PoE outputs. The device does not turn on power until it detects a valid PoE signature from the PoE devices attached downstream on the Ethernet cable. This mechanism protects against damage to non-PoE compliant equipment which may be connected to the Ethernet cable. Because of this Intelligent Detection, only an IEEE 802.3at/802.3af compliant device can be powered with the INJ-102GT PoE Injector. Typically in Ethernet networks the maximum allowable CAT5 cable length is about 100 meters – due to the limitation of the Ethernet standards. The INJ-102GT PoE Injector can function with any PoE P.D. equipment which is fully compliant with the IEEE 802.3at/802.3af PoE standards.

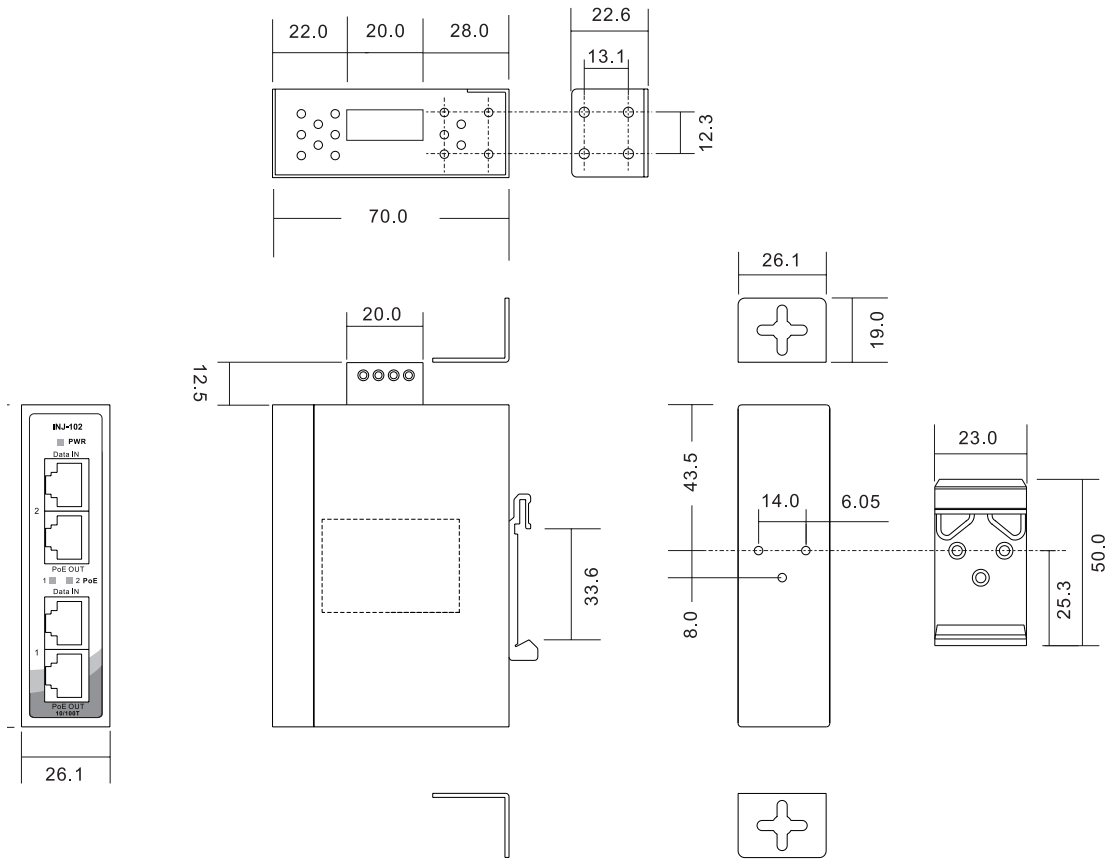
Note : The equipment being powered must be fully IEEE 802.3at/802.3af compliant in order for the power supply to be able to sense the PoE devices signature and apply power. Power is supplied on Ethernet pins 1/2 (V+) and 3/6 (V-).

Practical Operation



PoE Injector Connections

Dimensions



(Unit=mm)

Connectors and Pin Definitions

	RJ-45 Output (Data and Power)		RJ-45 Input (Data Only)	
Pin No.	Symbol	Description	Symbol	Description
1	Rx+ (VDC+)	Data Receive and Feeding power(+)	Rx+	Data Receive
2	Rx- (VDC+)	Data Receive and Feeding power(+)	Rx-	Data Receive
3	Tx+ (VDC-)	Data Transmit and Feeding power(-)	Tx+	Data Transmit
4	NC	Not Connected	NC	Not Connected
5	NC	Not Connected	NC	Not Connected
6	Tx- (VDC-)	Data Transmit and Feeding power(-)	Tx-	Data Transmit
7	NC	Not Connected	NC	Not Connected
8	NC	Not Connected	NC	Not Connected

Note: Pins 3 and 6 (VDC -) should not be shorted to ground.

Specifications

ORing Injector Model	INJ-102GT
Physical Ports	
10/100/1000Base-T(X) in RJ-45 Ethernet Port Input	2
10/100/1000Base-T(X) in RJ-45 Ethernet Port with P.S.E. Output	2
Operating Voltage	
Input Voltage	50~57 VDC on 4-pin terminal block
Output Power	50V / 600mA, 30 Watts max. per port
LED Indicator	
Power Indicator	PWR / Ready: 1 x LED Green On: Power is on and functioning Normally.
PoE Indicators	2 x LED Blue On: PoE Device Link Blue Blinking: Detecting PoE Device Blue Off : None PoE Device Detected
Protection	
Short Circuit Protection	Present
Over Load Protection	Present
High Voltage Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimension (W x D x H)	26.1 (W) x 70 (D) x 95 (H)mm (1.03 x 2.76 x 3.74 inch)
Weight (g)	250g
Environmental	
Storage Temperature	-40 to 80°C (-40 to 176°F)
Operating Temperature	-20 to 70°C (-4 to 158°F)
Operating Humidity	5% to 90% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	2 years

Ordering Information

INJ-102GT

	Model Name	Description
Available Model	INJ-102	Industrial 2-port Gigabit High Power PoE Injector

Packing List

- INJ-102
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-75-48 : 75 Watts DIN-Rail power supply (adjustable to 50 VDC output)
- DR-120-48 : 120 Watts DIN-Rail power supply (adjustable to 50 VDC output)
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

INJ-102GT-24V

INJ-102GT-24V

Industrial 2-port Gigabit High Power PoE Injector, 12V~57V Input Support

Features

- PoE+Injector for 1x10/100/1000 Base-T(X)
- Fully compliant with IEEE802.3at/802.3af standard
- Auto protection for Over Voltage Power Input and over current output
- Supports Power Output up to 30Watts per port
- Supports Wide Power Input range from 12Vdc to 57VDC
- IP-30 Rugged Case Design
- DIN-Rail and Wall Mount Design

Full Gigabit | PoE P.D. PoE | -20~70°C Temperature

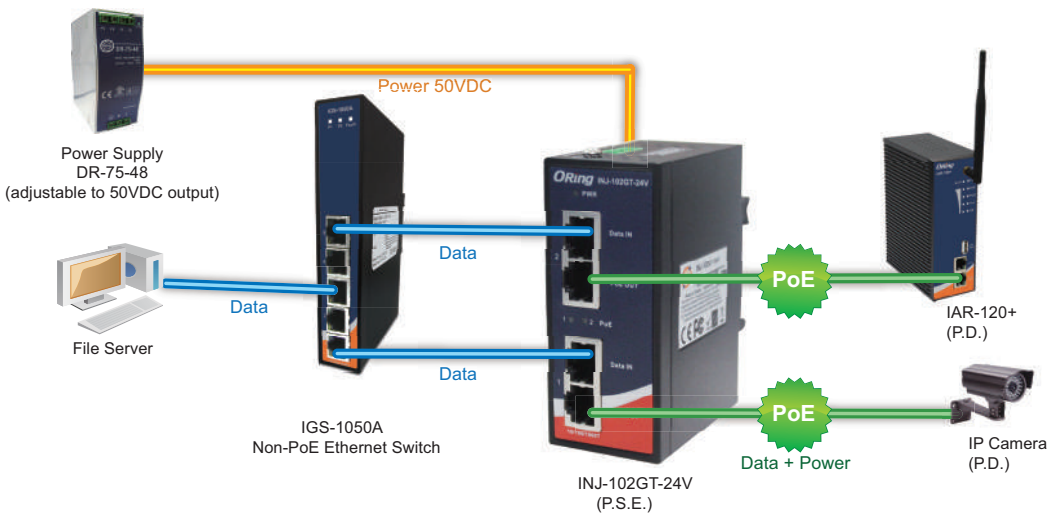
RoHS Lead Free

Introduction

The INJ-102GT-24V PoE Injector is an advanced IEEE802.3at compliant device with intelligent detection that provided 2-ports 10/100/1000Base-T (X) PoE outputs. The device does not turn on power until it detects a valid PoE signature from the PoE devices attached downstream on the Ethernet cable. This protection against damage to non-PoE compliant equipment which may be connected to the Ethernet cable. Because of this intelligent detection, only an IEEE 802.3at/802.3af compliant device can be powered with the INJ-102GT-24V PoE Injector. Typically in gigabit networks the maximum allowable CAT5 cable length is about 100 meters, due to the limitation of the Ethernet standards. The INJ-102GT-24V PoE Injector can function with any PoE P.D. equipment which is fully compliant with the IEEE 802.3at/802.3af PoE standards.

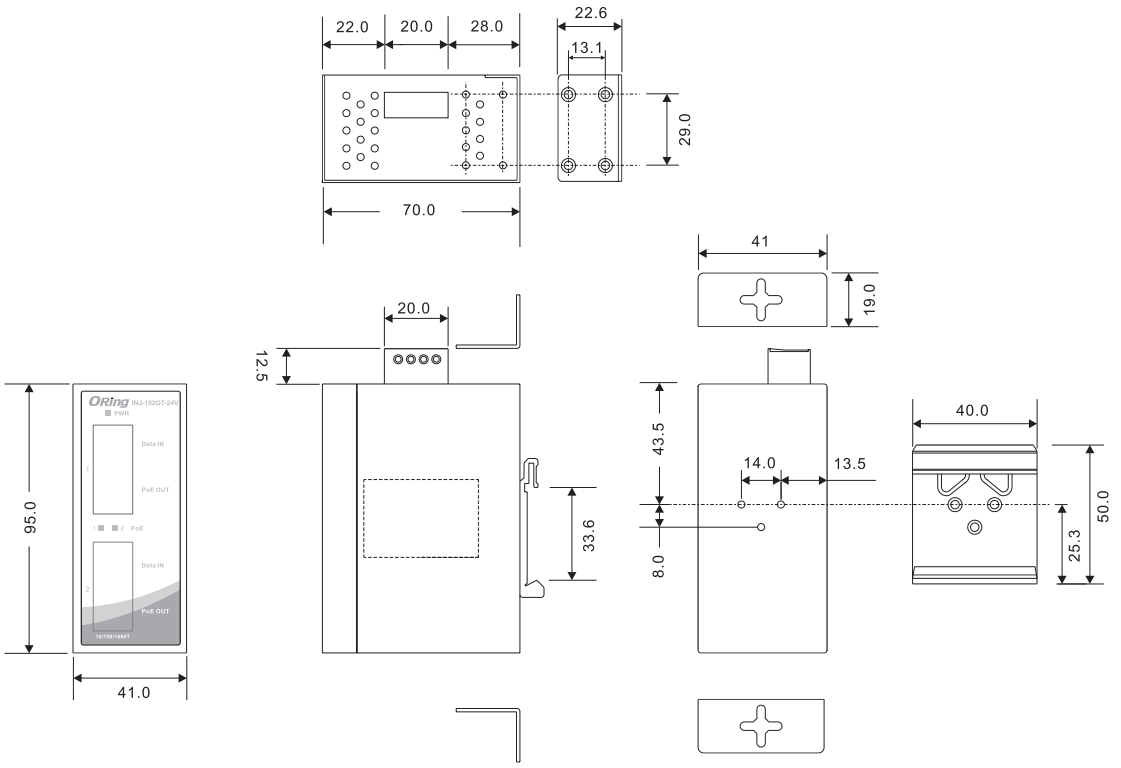
Note: The equipment being powered must be fully IEEE 802.3at/802.3af compliant in order for the power supply to be able to sense the PoE devices signature and apply power. Power is supplied on Ethernet pins 1/2 (V+) and 3/6 (V-).

Practical Operation



PoE Injector Connections

Dimensions



(Unit=mm)

Connectors and Pin Definitions

1000 Base-T

	RJ-45 Output (Data and Power)		RJ-45 Input (Data Only)	
Pin No.	Symbol	Description	Symbol	Description
1	BI_DA+(Vdc+)	Data BI_DA+ and Feeding Power(+)	BI_DA+	Data BI_DA+
2	BI_DA-(Vdc+)	Data BI_DA- and Feeding Power(+)	BI_DA-	Data BI_DA-
3	BI_DB+(Vdc-)	Data BI_DB+ and Feeding Power(-)	BI_DB+	Data BI_DB+
4	BI_DC+	Data BI_DC+	BI_DC+	Data BI_DC+
5	BI_DC-	Data BI_DC-	BI_DC-	Data BI_DC-
6	BI_DB-(Vdc-)	Data BI_DB- and Feeding Power(-)	BI_DB-	Data BI_DB-
7	BI_DD+	Data BI_DD+	BI_DD+	Data BI_DD+
8	BI_DD-	Data BI_DD-	BI_DD-	Data BI_DD-

10/100 Base-T

	RJ-45 Output (Data and Power)		RJ-45 Input (Data Only)	
Pin No.	Symbol	Description	Symbol	Description
1	Rx+ (VDC+)	Data Receive and Feeding power(+)	Rx+	Data Receive
2	Rx- (VDC+)	Data Receive and Feeding power(+)	Rx-	Data Receive
3	Tx+ (VDC-)	Data Transmit and Feeding power(-)	Tx+	Data Transmit
4	NC	Not Connected	NC	Not Connected
5	NC	Not Connected	NC	Not Connected
6	Tx- (VDC-)	Data Transmit and Feeding power(-)	Tx-	Data Transmit
7	NC	Not Connected	NC	Not Connected
8	NC	Not Connected	NC	Not Connected

Note: pins 3 and 6 (-Vdc) should not be shorted to ground

Specifications

ORing Injector Model	INJ-102GT-24V
Physical Ports	
RJ-45 Ethernet Port Input	2
RJ-45 Ethernet Port with P.S.E. Output	2
Operating Voltage	
Input Voltage	12 ~ 57 Vdc on 4-pin terminal block
Output Power	50V / 600mA, 30 Watts max. Per port
LED Indicator	
Power Indicator	PWR / Ready: 1 x LED Green On: Power is on and functioning Normally.
PoE Indicators	2 x LED Blue On: PoE Device Link Blue Blinking: Detecting PoE Device Blue Off : None PoE Device Detected
Protection	
Short Circuit Protection	Present
Over Load Protection	Present
High Voltage Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimension (W x D x H)	41(W)x70(D)x95(H) mm (1.61 x 2.75 x 3.74 inch.)
Weight (g)	370g
Environmental	
Storage Temperature	-40 to 80°C (-40 to 176°F)
Operating Temperature	-20 to 70°C (-4 to 158°F)
Operating Humidity	5% to 90% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	2 years

Ordering Information

INJ-102GT-24V

Available Model	Model Name	Description
	INJ-102GT-24V	Industrial 2-port Gigabit High Power PoE Injector, 12V~57V Input Support

Packing List

- INJ-102GT-24V
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply

INJ-102GT++ Series

INJ-102GT++ Series

Industrial 2-port Gigabit High Power Plus PoE++ Injector

Features

- PoE+Injector for 1x10/100/1000 Base-T(X)
- Fully compliant with IEEE802.3at/802.3af standard
- Auto protection for Over Voltage Power Input and over current output
- Supports totally **Power Output up to 90/180Watts** for all ports usage.
- High reliability and rigid IP-30 housing
- DIN-Rail and Wall Mount Design

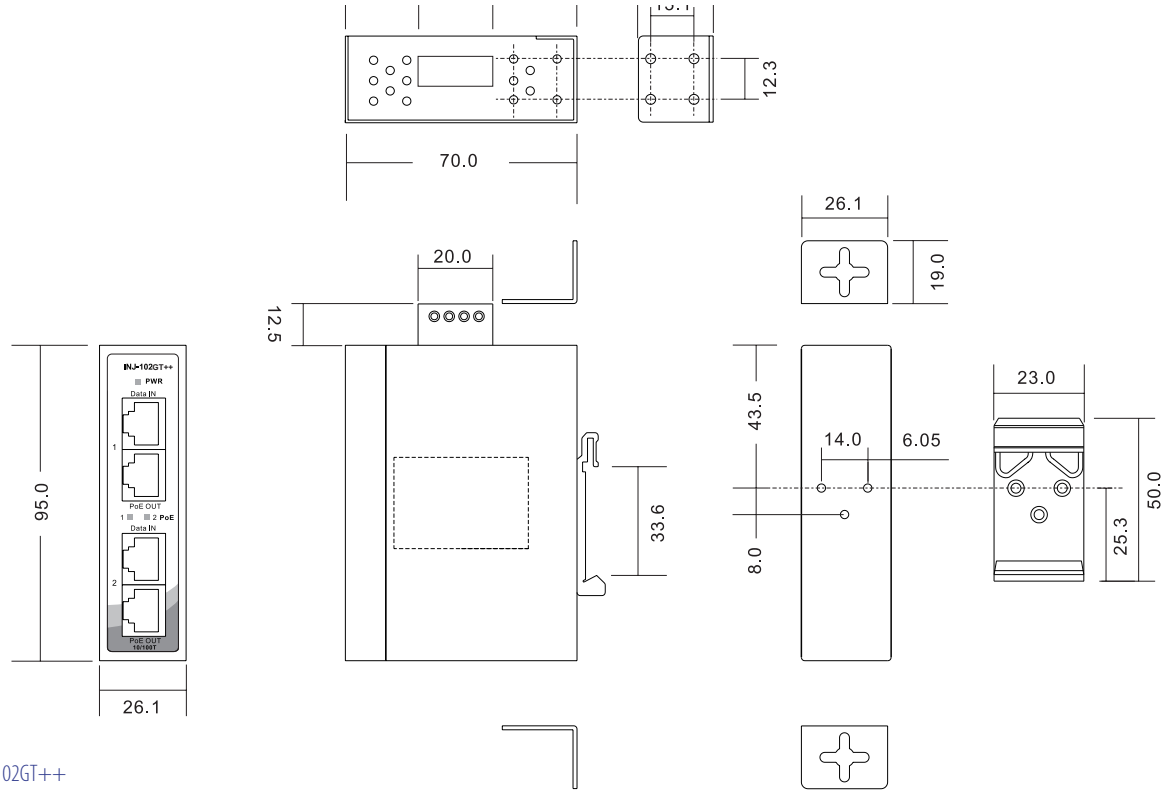
Introduction

The INJ-102GT++ PoE Injector series is not only an IEEE802.3at compliant device but also an advanced high power PoE injector. It is intelligent detection that provided 2-ports 10/100/1000Base-T (X) PoE outputs. The device does not turn on power until it detects a valid PoE signature from the PoE devices attached downstream on the Ethernet cable. This protection against damage to non-PoE compliant equipment which may be connected to the Ethernet cable. Therefore, only an IEEE 802.3at/802.3af compliant device can be powered with the INJ-102GT++ PoE Injector. Typically in gigabit networks the maximum allowable CAT5 cable length is about 100 meters, due to the limitation of the Ethernet standards. The INJ-102GT++ PoE Injector can function with any PoE P.D. equipment which is fully compliant with the IEEE 802.3at/802.3af PoE standards.

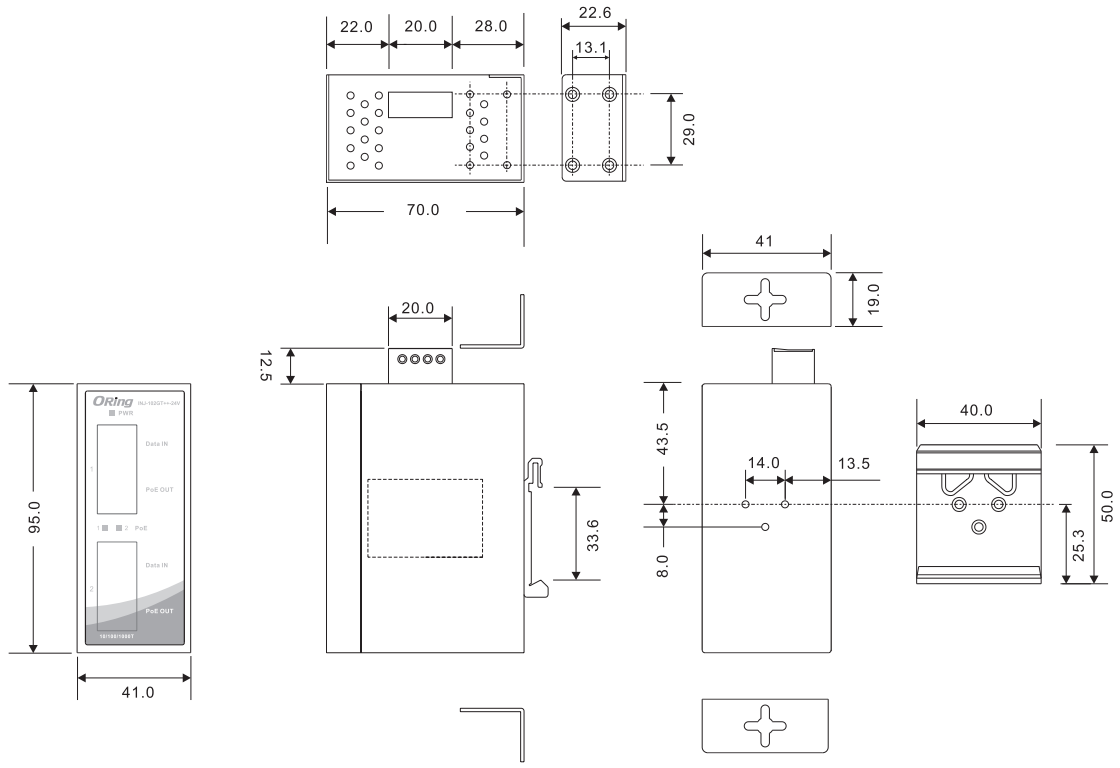
Note:The equipment being powered must be fully IEEE 802.3at/802.3af compliant in order for the power supply to be able to sense the PoE devices signature and apply power. Power is supplied on Ethernet pins 1/2 (V+)

Practical Operation

Dimensions



INJ-102GT++



INJ-102GT++-24V

Connectors and Pin Definitions

1000 Base-T

	RJ-45 Output (Data and Power)		RJ-45 Input (Data Only)	
Pin No.	Symbol	Description	Symbol	Description
1	BI_DA+	Data BI_DA+	BI_DA+(Vdc1+)	Data BI_DA+ and Feeding Power(+)
2	BI_DA-	Data BI_DA-	BI_DA-(Vdc1+)	Data BI_DA+ and Feeding Power(+)
3	BI_DB+	Data BI_DB+	BI_DB+(Vdc1-)	Data BI_DB+ and Feeding Power(-)
4	BI_DC+	Data BI_DC+	BI_DC+(Vdc2+)	Data BI_DC+Feeding Power(+)
5	BI_DC-	Data BI_DC	BI_DC-(Vdc2+)	Data BI_DCFeeding Power(+)
6	BI_DB-	Data BI_DB	BI_DB-(Vdc1-)	Data BI_DB- and Feeding Power(-)
7	BI_DD+	Data BI_DD+	BI_DD+(Vdc2-)	Data BI_DD+ Feeding Power(-)
8	BI_DD-	Data BI_DDBI	BI_DD-(Vdc2-)	Data BI_DDFeeding Power(-)VU,4

10/100 Base-T

	RJ-45 Output (Data and Power)		RJ-45 Input (Data Only)	
Pin No.	Symbol	Description	Symbol	Description
1	Rx+	Data Receive	Rx+ (Vdc1+)	Data Receive
2	Rx-	Data Receive	Rx-(Vdc1+)	Data Receive
3	Tx+	Data Transmit	Tx+ (Vdc1-)	Data Transmit
4	NC	Not Connected	NC (Vdc2+)	Not Connected
5	NC	Not Connected	NC (Vdc2+)	Not Connected
6	Tx-	Data Transmit	Tx-(Vdc1-)	Data Transmit
7	NC	Not Connected	NC (Vdc2-)	Not Connected
8	NC	Not Connected	NC(Vdc2-)	Not Connected

Specifications

ORing Injector Model	INJ-102GT++	INJ-102GT++-24V
Physical Ports		
RJ-45 Ethernet Port Input	2	
RJ-45 Ethernet Port with P.S.E. Output	2	
Operating Voltage		
Input Voltage	50 ~ 57 Vdc on 4-pin terminal block	24 ~ 50 Vdc on 4-pin terminal block
Output Power	57V / 1579mA, 180 Watts max[Note2] **(Total of 2 ports)**	50V / 1800mA, 90 Watts max[Note2] **(Total of 2 ports)**
LED Indicator		
Power Indicator	PWR: 1 x LED Green On: Power is on and functioning Normally.	
PoE Indicators	2 x LED Blue On: PoE Device Link Blue Off : None PoE Device Detected	
Protection		
Short Circuit Protection	Present	
Over Load Protection	Present	
Physical Characteristics		
Enclosure	IP-30	
Dimension (W x D x H)	26.1(W)x70(D)x95(H)mm (1.03 x 2.76 x 3.74 inch)	41(W)x70(D)x95(H) mm (1.61 x 2.75 x 3.74 inch.)
Weight (g)	369g	300g
Environmental		
Storage Temperature	-40 to 80°C (-40 to 176°F)	
Operating Temperature	-20 to 70°C (-4 to 158°F)	
Operating Humidity	5% to 90% Non-condensing	

Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Note 2: LTPoE++TM PSE technology is applied on this product. Only when an LTPoE++ ™ Powered Device (PD) is attached can the PSE port deliver up to 180W of output power.

Ordering Information

INJ-102GT++

	Model Name	Description
Available Model	INJ-102GT++	Industrial 2-port Gigabit High Power PoE++ Injector
	INJ-102GT++-24V	Industrial 2-port Gigabit High Power PoE++ Injector, 24~50VDC power Input

Packing List
- INJ-102GT++
- DIN-Rail Kit
- Wall-mount Kit

Optional Accessories (Can be purchased separately)
- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply

INJ-101GT++-60W

INJ-101GT++-60W

Industrial 1-port Gigabit High Power PoE++ Injector

Features

- PoE++ Injector for 1x10/100/1000Base-T(X)
- Fully compliant with IEEE802.3at/802.3af standard
- Auto protection for Over Voltage Power Input and over current output
- Supports totally Power Output up to 60 Watts for all ports usage.
- Provided DIP switch configurator for PoE mode management
- High reliability and rigid IP-30 housing
- DIN-Rail and Wall Mount Design

RoHS Lead Free CE FC Full Gigabit P.S.E. POE 60W IEEE 802.3bt -40~75°C Temperature

Introduction

The INJ-101GT++ PoE Injector series is not only an IEEE802.3at compliant device but also an advanced high power PoE injector. It is intelligent detection that provided 1-ports 10/100/1000Base-T (X) PoE outputs. The device does not turn on power until it detects a valid PoE signature from the PoE devices attached downstream on the Ethernet cable. This protection against damage to non-PoE compliant equipment which may be connected to the Ethernet cable. Therefore, only an IEEE 802.3at/802.3af compliant device can be powered with the INJ-101GT++ PoE Injector. Typically in Gigabit networks the maximum allowable CAT5 cable length is about 100 meters, due to the limitation of the Ethernet standards. The INJ-101GT++ PoE Injector can function with any PoE P.D. equipment which is fully compliant with the IEEE 802.3af/at PoE standards, and provide the DIP switch configurator for High power PoE management.

Note1: The equipment being powered must be fully IEEE 802.3at/802.3af compliant in order for the power supply to be able to sense the PoE devices signature and apply power. Power is supplied on Ethernet pins 1/2 (V+), 3/6 (V-)

Application

Connectors and Pin Definitions

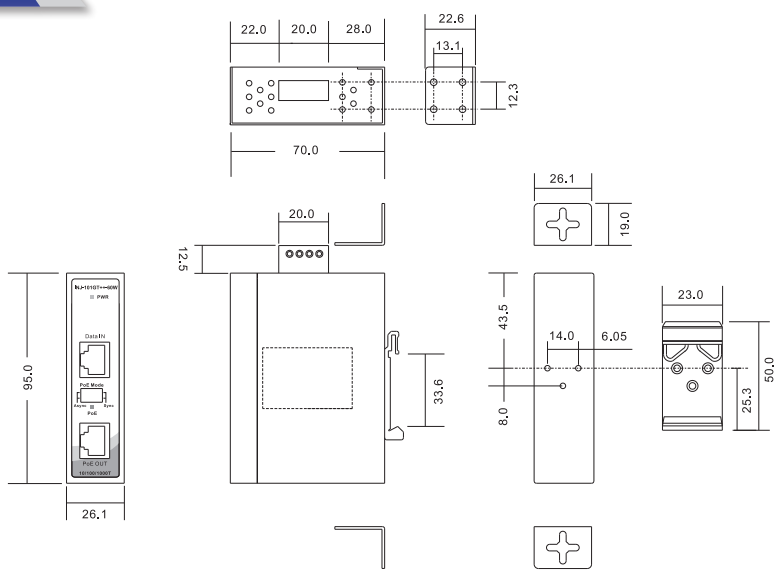
1000 Base-T

	RJ-45 Input (Data Only)		RJ-45 Output (Data and Power)	
Pin No.	Symbol	Description	Symbol	Description
1	BI_DA+	Data BI_DA+	BI_DA+(Vdc1+)	Data BI_DA+ and Feeding Power(+
2	BI_DA-	Data BI_DA-	BI_DA-(Vdc1+)	Data BI_DA- and Feeding Power(+)
3	BI_DB+	Data BI_DB+	BI_DB+(Vdc1-)	Data BI_DB+ and Feeding Power(-)
4	BI_DC+	Data BI_DC+	BI_DC+(Vdc2+)	Data BI_DC+ Feeding Power(+)
5	BI_DC-	Data BI_DC-	BI_DC-(Vdc2+)	Data BI_DC- Feeding Power(+)
6	BI_DB-	Data BI_DB-	BI_DB-(Vdc1-)	Data BI_DB- and Feeding Power(-)
7	BI_DD+	Data BI_DD+	BI_DD+(Vdc2-)	Data BI_DD+ Feeding Power(-)
8	BI_DD-	Data BI_DD-	BI_DD-(Vdc2-)	Data BI_DD- Feeding Power(-)

10/100 Base-TX

	RJ-45 Input (Data Only)		RJ-45 Output (Data and Power)	
Pin No.	Symbol	Description	Symbol	Description
1	Rx+	Data Receive	Rx+(Vdc1+)	Data Receive and Feeding power(+)
2	Rx-	Data Receive	Rx-(Vdc1+)	Data Receive and Feeding power(+)
3	Tx+	Data Transmit	Tx+(Vdc1-)	Data Transmit and Feeding power(-)
4	NC	Not Connected	NC(Vdc2+)	Not Connected Feeding power(+)
5	NC	Not Connected	NC(Vdc2+)	Not Connected Feeding power(+)
6	Tx-	Data Transmit	Tx-(Vdc1-)	Data Transmit and Feeding power(-)
7	NC	Not Connected	NC(Vdc2-)	Not Connected Feeding power(-)
8	NC	Not Connected	NC(Vdc2-)	Not Connected Feeding power(-)

Dimensions



(Unit=mm)

Specifications

ORing Injector Model	INJ-101GT++-60W
Physical Ports	
RJ-45 Ethernet Port Input	1
RJ-45 Ethernet Port with P.S.E. Output	1

Operating Voltage	
Input Voltage	50 ~ 57 VDC on 4-pin terminal block
LED Indicators	
Power Indicator	PWR: 1 x LED Green On: Power is on and functioning Normally.
PoE Indicators	1 x LED Blue On: PoE Device Link Off : None PoE Device Detected Blink (Blue) : Overload present
PoE Mode	
DIP Switch 1/2 [Note1]	DIP Switch 1/2 (OFF): PoE P.S.E set to master and Asyncronize mode. DIP Switch 1/2 (ON) : PoE P.S.E set to Syncronize mode (default)
Power	
Input Power	50 ~ 57 VDC on 4-pin terminal block
Power Consumption	1 Watts (Not include PD's device)
PoE Power Budget	60 Watts max
Protection	
Short Circuit Protection	Present
Over Load Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	26.1(W)x70(D)x95(H)mm (1.03 x 2.76 x 3.74 inch)
Weight (g)	188g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	EN55032, EN55024(CE EMC), FCC Part 15B, EN61000-3-2, EN61000-3-3
EMI	CISPR 32, EN55032, FCC Part 15B class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8 (PFMF), EN61000-4-11 (DIP)
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	3923869 hrs
Warranty	5 years

Note1: (1) By default, the output value of the high power PoE++ is in Sync mode which supports PoE af/at-compliant P.D. devices.
(2) If you cannot enable the 60W PTZ camera, please set the DIP switch to Async mode and reconnect power. This mode only supports Dual P.D mode. You may not connect to an af/at-compliant P.D. device with this mode.

Ordering Information

INJ-101GT++-60W

	Model Name	Description
Available Model	INJ-101GT++-60W	Industrial 1-port Gigabit High Power PoE++ Injector

Packing List
- INJ-101GT++-60W x 1
- QIG x 1
- DIN-Rail Kit x 1
- Wall-mount Kit x 1

Optional Accessories (Can be purchased separately)
- DR/SDR/DRP series DIN-Rail power supply

SPL-101GT Series

SPL-101GT Series

Industrial 1-port Gigabit PoE Splitter

Features

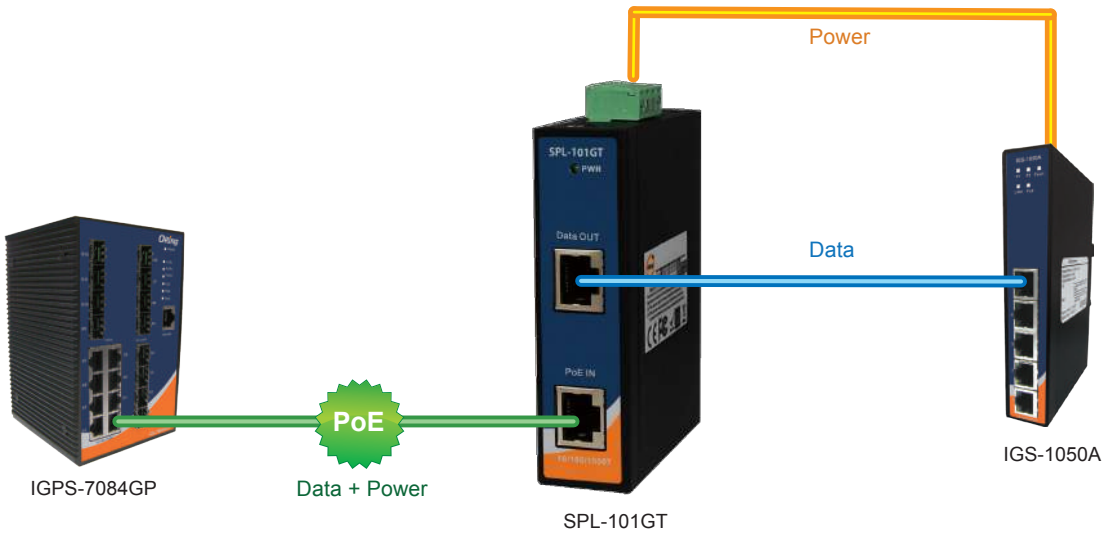
- Fully compliant with IEEE802.3at standard
- Supports 10/100/1000Base-T(X) for PoE In and Data Out
- Power Isolation and Short Circuit Protection for Power Output
- Auto protection for Over Voltage Power Input
- Supports Power Outputs up to 21Watts Max.
- IP-30 Rugged Case Design
- DIN-Rail and Wall Mount Design

P.D. PoE | Full Gigabit | -20~70°C Temperature | RoHS Lead Free | CE | FC

Introduction

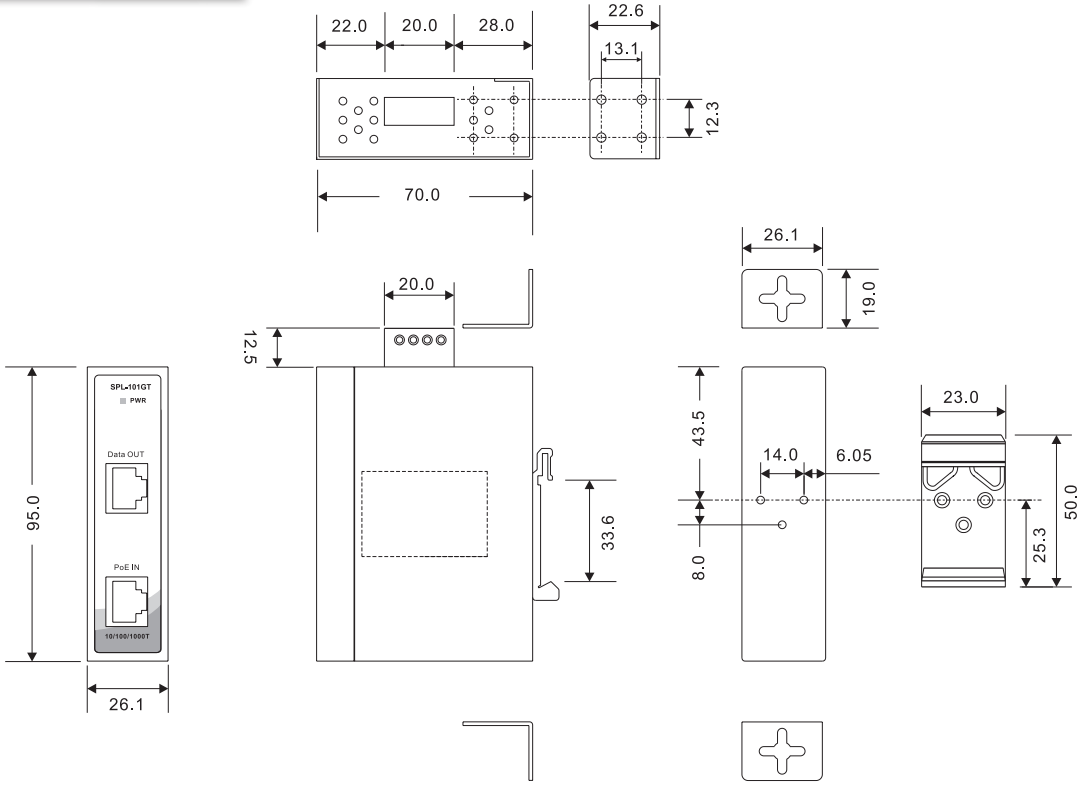
SPL-101GT series is a high power PoE+ Splitter for use in Power over Ethernet systems. With Ethernet Input (data + power) port and Output (data only) port, SPL-101GT may split power from existing LAN cable and convert up to 24VDC/0.9A or 12VDC/1.8A(SPL-101GT-12V) for power hungry applications such as Wireless APs, Security cameras and IP Phones. The internal current limit, short-circuit and overload protection are implemented for use as a DC power supply.

Practical Operation



Connections of Splitter

Dimensions



(Unit=mm)

Connectors and Pin Definitions

[PoE Definition 1]

1000 Base-T

	RJ-45 Input (Data and Power)		RJ-45 Output (Data Only)	
Pin No.	Symbol	Description	Symbol	Description
1	BI_DA+	Data BI_DA+	BI_DA+	Data BI_DA+
2	BI_DA-	Data BI_DA-	BI_DA-	Data BI_DA-
3	BI_DB+	Data BI_DB+	BI_DB+	Data BI_DB+
4	BI_DC+ (VDC+)	Data BI_DC+ and Feeding Power(+)	BI_DC+	Data BI_DC+
5	BI_DC- (VDC+)	Data BI_DC- and Feeding Power(+)	BI_DC-	Data BI_DC-
6	BI_DB-	Data BI_DB-	BI_DB-	Data BI_DB-
7	BI_DD+ (VDC-)	Data BI_DD+ and Feeding Power(-)	BI_DD+	Data BI_DD+
8	BI_DD- (VDC-)	Data BI_DD- and Feeding Power(-)	BI_DD-	Data BI_DD-

10/100 Base-T(X)

	RJ-45 Input (Data and Power)		RJ-45 Output (Data Only)	
Pin No.	Symbol	Description	Symbol	Description
1	Rx+	Data Receive	Rx+	Data Receive
2	Rx-	Data Receive	Rx-	Data Receive
3	Tx+	Data Transmit	Tx+	Data Transmit
4	VDC+	Feeding power(+)	NC	Not Connected
5	VDC+	Feeding power(+)	NC	Not Connected
6	Tx-	Data Transmit	Tx-	Data Transmit
7	VDC-	Feeding power(-)	NC	Not Connected
8	VDC-	Feeding power(-)	NC	Not Connected

Note: Pins 7 and 8 (-VDC) should not be shorted to ground.

[PoE Definition 2]

1000 Base-T

	RJ-45 Input (Data and Power)		RJ-45 Output (Data Only)	
Pin No.	Symbol	Description	Symbol	Description
1	BI_DA+ (VDC+)	Data BI_DA+ and Feeding Power(+)	BI_DA+	Data BI_DA+
2	BI_DA- (VDC+)	Data BI_DA- and Feeding Power(+)	BI_DA-	Data BI_DA-
3	BI_DB+ (VDC-)	Data BI_DB+ and Feeding Power(-)	BI_DB+	Data BI_DB+
4	BI_DC+	Data BI_DC+	BI_DC+	Data BI_DC+
5	BI_DC-	Data BI_DC-	BI_DC-	Data BI_DC-
6	BI_DB- (VDC-)	Data BI_DB- and Feeding Power(-)	BI_DB-	Data BI_DB-
7	BI_DD+	Data BI_DD+	BI_DD+	Data BI_DD+
8	BI_DD-	Data BI_DD-	BI_DD-	Data BI_DD-

10/100 Base-T(X)

	RJ-45 Input (Data and Power)		RJ-45 Output (Data Only)	
Pin No.	Symbol	Description	Symbol	Description
1	Rx+ (VDC+)	Data Receive and Feeding power(+)	Rx+	Data Receive
2	Rx- (VDC+)	Data Receive and Feeding power(+)	Rx-	Data Receive
3	Tx+ (VDC-)	Data Transmit and Feeding power(-)	Tx+	Data Transmit
4	NC	Not Connected	NC	Not Connected
5	NC	Not Connected	NC	Not Connected
6	Tx- (VDC-)	Data Transmit and Feeding power(-)	Tx-	Data Transmit
7	NC	Not Connected	NC	Not Connected
8	NC	Not Connected	NC	Not Connected

Note: Pins 3 and 6 (VDC -) should not be shorted to ground.

Specifications

ORing Splitter Model	SPL-101GT	SPL-101GT-12V
Physical Ports		
RJ-45 Ethernet Port with P.S.E. Input	1	
RJ-45 Ethernet Port Output	1	
Power Output Connector	4-pin terminal block	
Operating Voltage		
Input Voltage	36 ~ 57 VDC on PoE in RJ-45 connector	
Output Voltage	24V ± 5% @ 0.9A max. on 4-pin terminal block	12V ± 5% @ 1.8A max. on 4-pin terminal block
Efficiency	80.7%	79%
LED Indicator		
Power Indicator	PWR / Ready: 1 x LED Blue On: Power is on and is functioning Normally.	
Protection		
Short Circuit Protection	Present	
Over Load Protection	Present	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	26.1 (W) x 70 (D) x 95 (H)mm (1.03 x 2.76 x 3.74 inch)	
Weight (g)	250g	
Environmental		
Storage Temperature	-40 to 80°C (-40 to 176°F)	
Operating Temperature	-20 to 70°C (-4 to 158°F)	
Operating Humidity	5% to 90% Non-condensing	

Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class B
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Safety	EN60950-1
Warranty	5 years

Ordering Information

SPL-101GT-12V

Code Definition	Output voltage
Option	**-Normal:** 24VDC power output **-12V:** 12VDC power output

	Model Name	Description
Available Model	SPL-101GT	Industrial 1-port Gigabit High Power PoE Splitter, IEEE802.3at standard compliant
	SPL-101GT-12V	Industrial 1-port Gigabit High Power PoE Splitter, IEEE802.3at standard compliant, 12VDC output

Packing List

- SPL-101GT x 1
- DIN-Rail Kit x 1
- Wall-mount Kit x 1

SPL-101GT++-12V

SPL-101GT++-12V

Industrial 1-port Gigabit PoE Splitter, 60Watts Output

Features

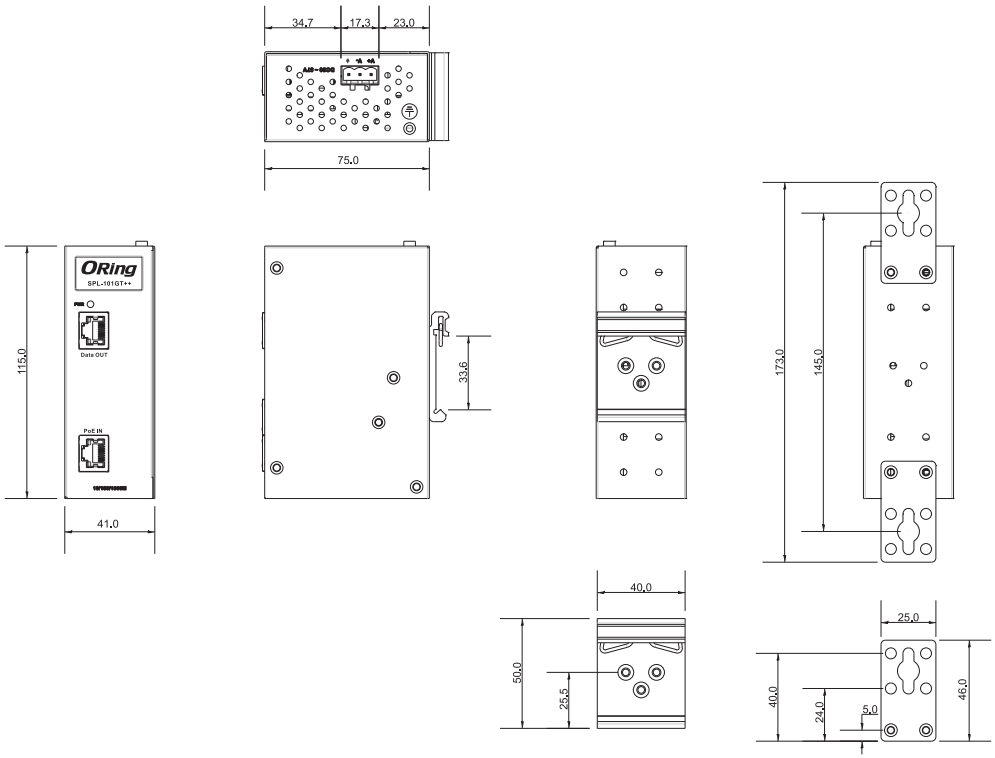
- Fully compliant with IEEE802.3af/at standard
- Supports 10/100/1000Base-T(X) for PoE In and Data Out
- Support PoE P.D input up to 90Watts
- Power Isolation and Short Circuit Protection for Power Output
- Auto protection for Over Voltage Power Input
- Supports Power Output up to 60Watts/12VDC
- IP-30 Rugged Case Design
- DIN-Rail and Wall Mount Design

RoHS Lead Free CE FC Full Gigabit P.D. PoE 90W IEEE 802.3bt -40~75°C Temperature

Introduction

SPL-101GT++-12V is a high power plus PoE Splitter for use in Power over Ethernet systems. With Ethernet Input (data + power) port and Output (data only) port, SPL-101GT++-12V may split power from existing LAN cable and convert up to 12VDC/5A for power hungry applications such as Wireless APs, Security cameras and IP Phones. The internal current limit, short-circuit and overload protection are implemented for use as a DC power supply.

Dimensions



(Unit=mm)

Connectors and Pin Definitions

[PoE Definition 1]

1000 Base-T

	RJ-45 Input (Data and Power)		RJ-45 Output (Data Only)	
Pin No.	Symbol	Description	Symbol	Description
1	BI_DA+(Vdc1+)	Data BI_DA+ and Feeding Power(+)	BI_DA+	Data BI_DA+
2	BI_DA-(Vdc1+)	Data BI_DA- and Feeding Power(+)	BI_DA-	Data BI_DA-
3	BI_DB+(Vdc1-)	Data BI_DB+ and Feeding Power(-)	BI_DB+	Data BI_DB+
4	BI_DC+(Vdc2+)	Data BI_DC+ Feeding Power(+)	BI_DC+	Data BI_DC+
5	BI_DC-(Vdc2+)	Data BI_DC- Feeding Power(+)	BI_DC-	Data BI_DC-
6	BI_DB-(Vdc1-)	Data BI_DB- and Feeding Power(-)	BI_DB-	Data BI_DB-
7	BI_DD+(Vdc2-)	Data BI_DD+ Feeding Power(-)	BI_DD+	Data BI_DD+
8	BI_DD-(Vdc2-)	Data BI_DD- Feeding Power(-)	BI_DD-	Data BI_DD-

10/100 Base-T(X)

	RJ-45 Input (Data and Power)		RJ-45 Output (Data Only)	
Pin No.	Symbol	Description	Symbol	Description
1	Rx+(Vdc1+)	Data Receive and Feeding power(+)	Rx+	Data Receive
2	Rx-(Vdc1+)	Data Receive and Feeding power(+)	Rx-	Data Receive
3	Tx+(Vdc1-)	Data Transmit and Feeding power(-)	Tx+	Data Transmit
4	NC(Vdc2+)	Not Connected Feeding power(+)	NC	Not Connected
5	NC(Vdc2+)	Not Connected Feeding power(+)	NC	Not Connected
6	Tx-(Vdc1-)	Data Transmit and Feeding power(-)	Tx-	Data Transmit
7	NC(Vdc2-)	Not Connected Feeding power(-)	NC	Not Connected
8	NC(Vdc2-)	Not Connected Feeding power(-)	NC	Not Connected

Specifications

ORing Splitter Model	SPL-101GT++-12V
Physical Ports	
RJ-45 Ethernet Port with P.S.E. Input	**1**
RJ-45 Ethernet Port Output	**1**
Power Output Connector	**4-pin terminal block**
Operating Voltage	
Power Output Voltage	12V @ 5A ±5% typical
LED Indicator	
Power Indicator	PWR / Ready: 1 x LED
	Green On: Power is on and functioning Normally.
Power	
Input Power	90W P.D input
Protection	
Short Circuit Protection	Present
Over Load Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	41(W) x 75 (D) x 115 (H)mm (1.61 x 2.95 x 4.52 inch)
Weight (g)	366g
Environmental	
Storage Temperature	-40 to 80°C (-40 to 176°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 90% Non-condensing
Regulatory approvals	
EMC	EN55032, EN 55024(CE EMC), FCC Part 15 B, EN 61000-3-2, EN 61000-3-3
EMI	CISPR 32, EN 55032, FCC Part 15 B Class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8 (PFMF), EN61000-4-11 (DIP)
Shock	IEC60068-2-27
Free Fall	IES60068-2-6
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	1676582 hrs
Warranty	5 years

Ordering Information

SPL - 101GT[++]-12V

Code Definition	Output voltage
Option	**++ : 90Watts High Power Plus PoE**

Available Model	Model Name	Description
	SPL-101GT++-12V	Industrial 1-port Gigabit PoE++ Splitter, 60Watts/12VDC Output

Packing List

- SPL-101GT++-12V x 1
- DIN-Rail Kit x 1
- Wall-mount Kit x 1

PET-102GT++

PET-102GT++

Industrial 2-port Gigabit High Power PoE++ Extender

Features

- Support 1 port PoE P.D. input to 2 port POE P.S.E output with 10/100/1000 Base-T(X) for power and data extender
- Support P.S.E. based on IEEE 802.3af/at standard
- PoE P.D. input support 90watts max.
- PoE P.S.E. output support 90watts max. per port
- Multiple unit , daisy-chain installation support
- High reliability and rigid IP-30 housing
- DIN-Rail and wall mount design

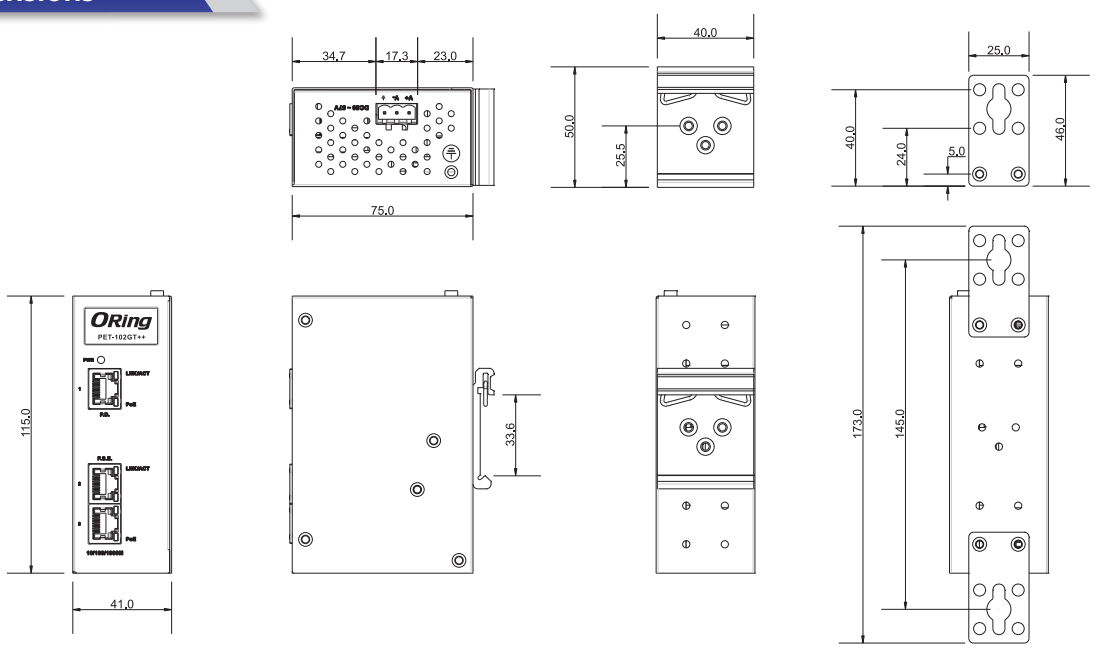
Full Gigabit | P.S.E PoE | -20~70°C Temperature | RoHS Lead Free | CE | FC

Introduction

ORing PET-102GT++ is a high power PoE extender and compatible with IEEE802.3at/af[Note1] standard. With one 10/100/1000TxBase-T(X) P.D. input port and two 10/100/1000TxBase-T(X) P.S.E. output ports, the device not only pass on Ethernet data but also feed on and forward power from the previous PoE device to the next device. Furthermore, the PET-102GT++ can be powered by external DC power sources. By using external DC power to compensate for power losses caused by long-haul transmission, users can continue to use the PoE extender to enlarge the distance unlimitedly. With the ability to provide 90Watts[Note3] PoE power per port, the PET-102GT++ is surely a user-friendly and high-power PoE extender.

Note1: The equipment being powered must be fully IEEE 802.3at/802.3af compliant in order for the power supply to be able to sense the PoE devices signature and apply power. Power is supplied on Ethernet pins 1/2 (V+) and 3/6 (V-).

Dimensions



(Unit=mm)

Connectors and Pin Definitions

[PoE Pin Definition 1]

1000 Base-T

	RJ-45 Input (Data Only)		RJ-45 Output (Data and Power)	
Pin No.	Symbol	Description	Symbol	Description
1	BI_DA+	Data BI_DA+	BI_DA+ (Vdc1+)	Data BI_DA+ and Feeding Power(+)
2	BI_DA-	Data BI_DA-	BI_DA- (Vdc1+)	Data BI_DA- and Feeding Power(+)
3	BI_DB+	Data BI_DB+	BI_DB+ (Vdc1-)	Data BI_DB+ and Feeding Power(-)
4	BI_DC+	Data BI_DC+	BI_DC+ (Vdc2+)	Data BI_DC+ Feeding Power(+)[Note2]
5	BI_DC-	Data BI_DC-	BI_DC- (Vdc2+)	Data BI_DC- Feeding Power(+)[Note2]
6	BI_DB-	Data BI_DB-	BI_DB- (Vdc1-)	Data BI_DB- and Feeding Power(-)
7	BI_DD+	Data BI_DD+	BI_DD+ (Vdc2-)	Data BI_DD+ Feeding Power(-)[Note2]
8	BI_DD-	Data BI_DD-	BI_DD- (Vdc2-)	Data BI_DD- Feeding Power(-)[Note2]

10/100 Base-T(X)

	RJ-45 Input (Data Only)		RJ-45 Output (Data and Power)	
Pin No.	Symbol	Description	Symbol	Description
1	Rx+	Data Receive	Rx+ (Vdc1+)	Data Receive and Feeding power(+)
2	Rx-	Data Receive	Rx- (Vdc1+)	Data Receive and Feeding power(+)
3	Tx+	Data Transmit	Tx+ (Vdc1-)	Data Transmit and Feeding power(-)
4	NC	Not Connected	NC (Vdc2+)	Not Connected Feeding power(+)[Note2]
5	NC	Not Connected	NC (Vdc2+)	Not Connected Feeding power(+)[Note2]
6	Tx-	Data Transmit	Tx- (Vdc1-)	Data Transmit and Feeding power(-)
7	NC	Not Connected	NC (Vdc2-)	Not Connected Feeding power(-)[Note2]
8	NC	Not Connected	NC (Vdc2-)	Not Connected Feeding power(-)[Note2]

Note2: Only valid for PoE++ connection

Specifications

ORing Switch Model	PET-102GT++
Physical Ports	
RJ-45 Ethernet Port with P.D. Input	1
RJ-45 Ethernet Port with P.S.E. Output	2
Operating Voltage	
Input Voltage	50 ~ 57 VDC
Output Power	90 Watts max[Note3] per port
LED Indicators	
Power Indicator	DC PWR / Ready : 1 x LED Green On : Power is on and functioning Normally.
PoE P.D. Input Port Indicator	Green for Link/Act, Amber for PoE input enabled
PoE P.S.E. outputs Port Indicatior	Green for Link/ACT, Amber for PoE output enabled
Protection	
Short Circuit Protection	Present
Over Load Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	41(W) x 75 (D) x 115 (H)mm (1.61 x 2.95 x 4.52 inch)
Weight (g)	349g
Environmental	
Storage Temperature	-40 to 80°C (-40 to 176°F)

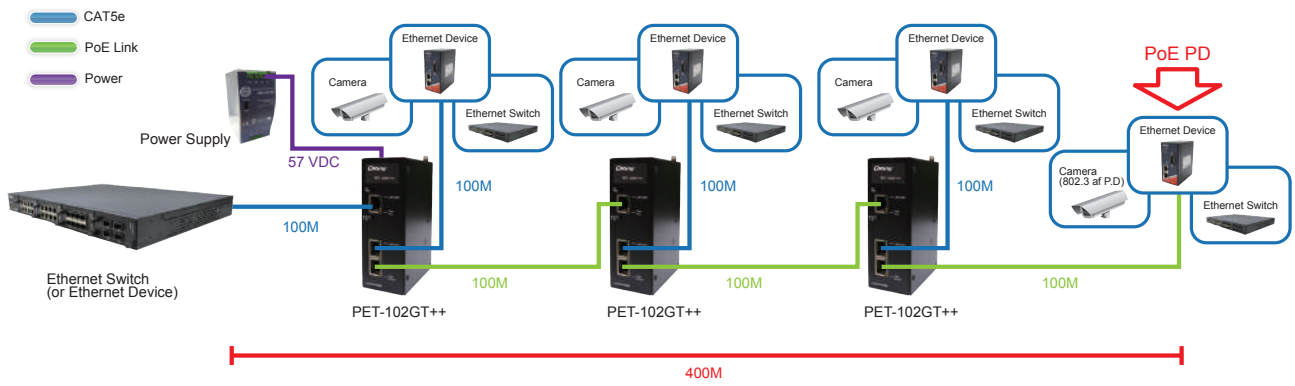
Operating Temperature	-20 to 70°C (-4 to 158°F)
Operating Humidity	5% to 90% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Note3: LTPoE++™ PSE technology is applied on this product. Only when an LTPoE++™ Powered Device (PD) is attached can the PSE port deliver up to 90W of output power.

Installation and Distance

Power input on the first unit / P. D. attached on the last unit	50VDC	57VDC
IEEE802.3at (25.5W)	Extended 1 unit Max. Distance up to 300 meters	Extended 2 units Max. Distance up to 400 meters
IEEE802.3af (12.95W)	Extended 3 units Max. Distance up to 500 meters	Extended 4 units Max distance up to 600 meters
NO P.D. on the last unit	Extended 4 units Max. Distance up to 600 meters	Extended 5 units Max. Distance up to 700 meters
Note : The test result is with one P.D. device connected to the last unit and only for reference.		

Example for 57VDC power input and attached IEEE802.3at P.D.



Ordering Information

PET-102GT++

Available Model	Model Name	Description
	PET-102GT++	Industrial 2-port Gigabit High Power PoE++ Extender

Packing List

- PET-102GT++ x 1
- QIG x 1
- DIN-Rail Kit x 1
- Wall-mount Kit x 1

Optional Accessories

- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply
- SDR-240-48 : 240 Watts DIN-rail power supply
- SDR-480-48 : 480 Watts DIN rail power supply
- DRP048V60W1BN : 60 Watts DIN-Rail power supply
- DRP048V120W1BN : 120 Watts DIN-Rail power supply
- DRP048V240W1BN : 240 Watts DIN-Rail power supply
- DRP048V480W1BN : 480 Watts DIN-Rail power supply

2 Industrial Media Converter

Naming Rules

Model Name Symbol Color Legend

BLACK: For the associated sub-category, the symbol is constant for both this Overall List or in the Datasheet(s) of the indicated model(s).

PURPLE: For the associated sub-category, the symbol is variable or optional for this Overall List and is constant or optional for the Datasheet(s) of the indicated model(s).

BLUE: For the associated sub-category, the symbol is variable or optional for both this Overall List and the Datasheet(s) of the indicated model(s).

INDUSTRIAL MEDIA CONVERTER	Industrial DIN-Rail Ethernet to Fiber Media Converter
Model Name in mylar	IGMC-ZAABCCS-DD (Gigabit)
	IMC-ZABCCS-DD
Ordering info & label	IGMC-ZAABCCS-DD-EE (Gigabit)
	IMC-ZABCCS-DD-EE
Code Definition	**Z: Management Type**
	1: Unmanaged
	AA: 10/100/1000Base-T(X) Port Number (IGMC only)
	A: 10/100Base-T(X) Port Number (IMC only)
	B: 1000Base-X Fiber Port Number **B: Fiber Port Number (IMC only)**
	CC: Fiber Port Type
	F: 100Base-FX
	P : 100Base-FX in SFP socket
	GF: 1000Base-X
	GP: 1000Base-X in SFP socket
	S: Slenderness
	B: Mini-type (IMC only)
	DD: Fiber Optical Mode (CC=F or GF only)
	MM: Multi-mode
	SS: Single-mode
	EE: Fiber Optical Connector (CC=F or GF only)
	SC
	ST

INDUSTRIAL MEDIA CONVERTER	Industrial USB to Serial Media Converter
INDUSTRIAL MEDIA CONVERTER	Industrial Serial to Serial Media Converter
Model Name in mylar	ISC-ABCDE-F
Ordering info & label	ISC-ABCDE-F-GG
Code Definition	**A: Serial Port Number**
	B: Serial Port Type
	1: RS-232 only
	2: RS-422/485
	3: RS-232/422/485
	C: Converter Serial Port Number
	D: Converter Serial Port Type
	0: other type
	1: RS-232 only
	2: RS-422/485
	3: RS-232/422/485
	E: Other Type
	F: 100Base-FX Fiber
	U: USB
	F: Data-Line Isolation Protection
	I: 3 kV Isolation
	GG: Power Adapter option
	_US: US power adapter
	_EU: EU power adapter

INDUSTRIAL MEDIA CONVERTER	Industrial Rack-Mount Ethernet to Fiber Media Converter
Model Name in mylar	RMC-Z000 (Chassis) RPM-FFF-AC (Power Supply Module)
	RMC-ZABCC-DD
Ordering info & label	RMC-Z000 (Chassis) RPM-FFF-ACGG (Power Supply Module)
	RMC-ZABCC-DD-EE
Code Definition	**Z: Management Type**
	1: Unmanaged
	A: 10/100Base-T(X) Port Number (excluding Chassis)
	B: Additional Port Number
	CC: Additional Port Type
	FB: 100Base-FX
	PB : 100Base-FX in SFP socket
	DD: Fiber Optical Mode (CC=FB only)
	MM: Multi-mode
	SS: Single-mode
	EE: Fiber Optical Connector (CC=FB only)
	SC
	ST
	FFF: Power Output (in watts)
	GG: Power Cord Option
	_US:US power cord
	_EU:EU power cord

Product Selection Guide

	Industrial Rack-Mount Ethernet to Fiber Media Converter				
	Chassis	Power Supply	Card type Ethernet to fiber		
Industrial Media Converter					
	RMC-1000	**RPM-130-AC**	**RGMC-111GPB**	**RMC-121FB**	**RMC-111FB / 111PB**
Port Number					
Chassis Slots	18	-	-	-	-
10/100Base-T(X) RJ45 Ports	-	-	-	2	1
10/100/1000Base-T(X) RJ45 Ports	-	-	1	-	-
100Base-FX Fiber Ports	-	-	-	1 (Multi/Single-Mode)	1 (Multi/Single-Mode) 1 (SFP)
1000Base-X Fiber Ports	-	-	1 (SFP)	-	-
USB Port	-	-	-	-	-
RS-232 Serial Port	-	-	-	-	-
RS-422/485 Serial Port	-	-	-	-	-
RS-232/422/485 Serial Port	-	-	-	-	-
Serial Port Feature					
Baud Rate	-	-	-	-	-
Signals	-	-	-	-	-
Power Redundancy					
DC Back Plane	-	-	1	1	1
DC Terminal Block	-	-	-	-	-
DC Power Jack	-	-	-	-	-
AC Power Cord	2 (Optional)	1	-	-	-
Installation					
DIN-Rail Mounting	-	-	-	-	-
Wall mounting	-	-	-	-	-
Rack-Mount	●	● (RMC-1000)	● (RMC-1000)	● (RMC-1000)	● (RMC-1000)
Physical Characteristics					
Casing Protection	IP-20		IP-20	IP-20	IP-20
Dimensions (mm)	430(W) x 243(D) x 132(H)		21.8W) x 66.8(D) x 126(H)	68(D) x 126(H)	68(D) x 126(H)
Operating Temperature					
-10 to 60°C	●	-	●	●	●
-10 to 70°C	-	●	-	-	-
-40 to 70°C	-	-	-	-	-
Protection					
Power Overload Current Protection	●	●	●	●	●
Power Reverse Polarity Protection	-	-	-	-	-
Serial Isolation Protection	-	-	-	-	-
Warranty	2 years				

Product Selection Guide

	Industrial Ethernet to Fiber Media Converter			
	Mini type Ethernet to fiber		Mini type Ethernet Extender	
Industrial Media Converter				
	IMC-121FB	**IMC-111FB / 111PB**	**IMC-B111ETB-TB**	**IMC-B111ETB-RJ45**
Port Number				
Chassis Slots	-	-	-	-
10/100Base-T(X) RJ45 Ports	2	1	1	1
10/100/1000Base-T(X) RJ45 Ports	-	-	-	-
100Base-FX Fiber Ports	1 (Multi/Single-Mode)	1 (Multi/Single-Mode) / 1 (SFP)	-	-
1000Base-X Fiber Ports	-	-	-	-
100M Extende Port	-	-	1 (Terminal Block -2 Wired)	1 (RJ45-2/4/8 Wired)
RS-232 Serial Port	-	-	-	-
RS-422/485 Serial Port	-	-	-	-
RS-232/422/485 Serial Port	-	-	-	-
Serial Port Feature				
Baud Rate	-	-	-	-
Signals	-	-	-	-
Power Redundancy				
DC Back Plane	-	-	-	-
DC Terminal Block	2	2	2	2
DC Power Jack	by cable	by cable	by cable	by cable
AC Power Cord	-	-	-	-
Installation				
DIN-Rail Mounting	●	●	●	●
Wall mounting	●	●	●	●
Rack-Mount	-	-	-	-
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	26.1(W) x 70(D) x 95(H)	26.1(W) x 70(D) x 95(H)	26.1(W) x 70(D) x 95(H)	26.1(W) x 70(D) x 95(H)
Operating Temperature				
-10 to 60°C	-	-	-	-
-10 to 70°C	-	-	-	-
-40 to 75°C	●	●	●	●
Protection				
Power Overload Current Protection	●	●	●	●
Power Reverse Polarity Protection	●	●	●	●
Serial Isolation Protection	-	-	-	-
Warranty	5 years			

Product Selection Guide

	Industrial Ethernet to Fiber Media Converter		
	Slim type Gigabit Ethernet to fiber		
Industrial Media Converter			
	IGMC-1011GF / 1011GP	**IGMC-111GP**	**IGPMC-111GP**
Port Number			
Chassis Slots	-	-	-
10/100Base-T(X) RJ45 Ports	-	-	-
10/100/1000Base-T(X) RJ45 Ports	1	1	1(P.S.E.)
100Base-FX Fiber Ports	-	-	-
1000Base-X Fiber Ports	1 (Multi/Single-Mode) / 1 (SFP)	1	1
100M Extende Port	-	-	-
RS-232 Serial Port	-	-	-
RS-422/485 Serial Port	-	-	-
RS-232/422/485 Serial Port	-	-	-
Serial Port Feature			
Baud Rate	-	-	-
Signals	-	-	-
Power Redundancy			
DC Back Plane	-	-	-
DC Terminal Block	2	2	2
DC Power Jack	-	-	-
AC Power Cord	-	-	-
Installation			
DIN-Rail Mounting	•	•	•
Wall mounting	•	•	•
Rack-Mount	-	-	-
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	26.1(W) x 94.9(D) x 144.3(H)	40(W) x 70(D) x 95(H)	40(W) x 70(D) x 95(H)
Operating Temperature			
-40 to 75°C	•	•	•
-40 to 85°C	-	-	-
Protection			
Power Overload Current Protection	•	•	•
Power Reverse Polarity Protection	•	•	•
Serial Isolation Protection	-	-	-
Warranty	5 years		

Product Selection Guide

	Industrial Ethernet to Fiber Media Converter		
	Mini type Ethernet to fiber	IEC 61850-3 Ethernet to fiber	IEC 61850-3 Ethernet to fiber M12 Connector
Industrial Media Converter			
	IGMC-111GPB	**IMC-P111FX/P-LV / HV**	**IMC-P111FX/P -M12-LV / HV**
Port Number			
Chassis Slots	-	-	-
10/100Base-T(X) RJ45 Ports	-	1 / 1	1(M12 A-Coded)
10/100/1000Base-T(X) RJ45 Ports	1	- / -	
100Base-FX Fiber Ports	-	1 (Multi/Single-Mode) / 1 (SFP)	1 (Multi/Single-Mode) / 1 (SFP)
1000Base-X Fiber Ports	1 (SFP)	- / -	-
USB Port	-	- / -	-
RS-232 Serial Port	-	- / -	-
RS-422/485 Serial Port	-	- / -	-
RS-232/422/485 Serial Port	-	- / -	-
Serial Port Feature			
Baud Rate	-	- / -	-
Signals	-	- / -	-
Power Redundancy			
DC Back Plane	-	-	
DC Terminal Block	2	2(for LV Model)	2(for LV Model)
DC Power Jack	by cable	-	-
AC Power Cord	-	2(for HV Model)	2(for HV Model)
Installation			
DIN-Rail Mounting	●	●	●
Wall mounting	●	●	●
Rack-Mount	-	-	-
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	26.1(W) x 70(D) x 95(H)	52(W) x 106.1(D) x 144.3(H)mm	52(W) x 106.1(D) x 144.3(H)mm
Operating Temperature			
-10 to 60°C	-	-	-
-40 to 75°C	●	-	-
-10 to 85°C	-	●	●
Protection			
Power Overload Current Protection	●	●	●
Power Reverse Polarity Protection	●	●	●
Serial Isolation Protection	-	-	-
Warranty	5 years		

Product Selection Guide

	Industrial Ethernet to Fiber Media Converter			
	Ethernet Extender	Mini type PoE Ethernet to fiber		Gigabit Ethernet to fiber
Industrial Media Converter				
	IMC-V111ET-TB	**IPMC-111PB**	**IPMC-111PB++-60W**	**ITGMC-111GP+**
Port Number				
Chassis Slots	-	-	-	-
10/100Base-T(X) RJ45 Ports	1	1 (P.S.E.)	1 (60W P.S.E)	-
10/100/1000Base-T(X) RJ45 Ports	-	-	-	-
1G/10GBase-T(X) RJ45 Ports	-	-	-	1
100Base-FX Fiber Ports	-	1 (SFP)	1 (SFP)	-
1000Base-X Fiber Ports	-	-	-	-
1G/10GBase-X Fiber Ports	-	-	-	1
USB Port	-	-	-	-
RS-232 Serial Port	-	-	-	-
RS-422/485 Serial Port	-	-	-	-
RS-232/422/485 Serial Port	-	-	-	-
Power Redundancy				
DC Back Plane	-	-	-	-
DC Terminal Block	2	2	2	2
DC Power Jack	by cable	by cable	by cable	by cable
AC Power Cord	-	-	-	-
Installation				
DIN-Rail Mounting	•	•	•	•
Wall mounting	•	•	•	•
Rack-Mount	-	-	-	-
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	41 (W) x 70 (D) x 95.5 (H)mm	26.1(W) x 70(D) x 95(H)	26.1(W) x 70(D) x 95(H)	40 (W) x 108 (D) x 154 (H)mm
Operating Temperature				
-10 to 60°C	-	-	-	-
-20 to 60°C	-	-	-	•
-40 to 75°C	•	•	•	-
Protection				
Power Overload Current Protection	•	•	•	•
Power Reverse Polarity Protection	-	•	•	•
Serial Isolation Protection	-	-	-	-
Warranty	5 years			

Product Selection Guide

		USB to Serial Media Converter	
	Gigabit Ethernet to fiber	USB to Serial	
Industrial Media Converter			
	ITGMC-111GP+	**ISC-4110U / 8110U**	
Port Number			
Chassis Slots	-	-	
10/100Base-T(X) RJ45 Ports	-	-	
10/100/1000Base-T(X) RJ45 Ports	-	-	
1G/10GBase-T(X) RJ45 Ports	1	-	
100Base-FX Fiber Ports	-	-	
1000Base-X Fiber Ports	-	-	
1G/10GBase-X Fiber Ports	1	-	
USB Port	-	1	
RS-232 Serial Port	-	4 (DB62 female)	8 (DB62 female)
		DB62 to DB9 cable attached	
RS-422/485 Serial Port	-	-	
RS-232/422/485 Serial Port	-	-	
Serial Port Feature			
Baud Rate	-	300 ~ 921.6Kbps	
Signals	-	RS-232 : TX, RX, RTS, CTS, DTR, DSR, DCD, GND	
Power Redundancy			
DC Back Plane	-	-	
DC Terminal Block	2	1	
DC Power Jack	by cable	1	
AC Power Cord	-	-	
USB Bus Power	-	1	
Installation			
DIN-Rail Mounting	●	●	
Wall mounting	●	●	
Rack-Mount	-	-	
Physical Characteristics			
Casing Protection	IP-30	IP-30	
Dimensions (mm)	40 (W) x 108 (D) x 154 (H)mm	26.1(W) x 94.9(D) x 144.3(H) mm	
Operating Temperature			
-10 to 60°C	-	-	
-20 to 60°C	●	-	
-40 to 70°C	-	●	
Protection			
Power Overload Current Protection	●	●	
Power Reverse Polarity Protection	●	●	
Serial Isolation Protection	-	-	
Warranty	5 years		

Product Selection Guide

	Serial to Serial Media Converter			
	Serial to Serial			
Industrial Media Converter				
	ISC-1210U-I / 1310U-I	**ISC-1112 / 1112-I**	**ISC-1112B/1112B-1**	**ISC-1212-I**
Port Number				
10/100Base-T(X) RJ45 Ports	-	-	-	-
10/100/1000Base-T(X) RJ45 Ports	-	-	-	-
Fiber Ports	-	-	-	-
1000Base-X Fiber Ports	-	-	-	-
USB Port	1	-	-	-
RS-232 Serial Port	-	1	1 (DB9 male)	-
RS-422/485 Serial Port	1 / -	1	1	2
RS-232/422/485 Serial Port	- / 1	-	-	-
Serial Port Feature				
Baud Rate	300 ~ 115.2Kbps	300 ~ 115.2Kbps	300 ~ 921.6Kbps	300 ~ 115.2Kbps
Signals	RS-422 : TX+, TX-, RX+, RX-, RTS+, RTS-, CTS+, CTS- RS-485 : Data+, Data- / RS-232 : TX, RX, RTS, CTS, GND RS-422 : TX+, TX-, RX+, RX- RS-485 : Data+, Data-	RS-232 : TX, RX, GND RS-422 : TX+, TX-, RX+,RX- RS-485 : Data+, Data-	RS-232 : TX, RX,GND RS-422 : TX+, TX-, RX+, RX- RS-485 : Data+, Data-, GND RS-485(4-wine) : TX+, TX-, RX+, RX-	RS-422 : TX+, TX-, RX+,RX-RS-485 : Data+, Data-
Power Redundancy				
DC Terminal Block	-	1	2	1
DC Power Jack	-	-	-	-
USB Bus Power	●	-	-	-
Installation				
DIN-Rail Mounting	●	●	●	●
Wall mounting	●	●	●	●
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	71.2(W) x 25.3(D) x 100.6(H) mm	71.2(W)x25.3(D)x100.6(H) mm	26.1(W) x 70(D) x 95(H) mm	71.2(W)x25.3(D)x100.6(H) mm
Operating Temperature				
-10 to 70°C	●	●	-	●
-20 to 70°C	-	-	-	-
-40 to 70°C	-	-	●	-
Protection				
Power Overload Current Protection	●	●	●	●
Power Reverse Polarity Protection	-	-	-	-
Serial Isolation Protection	3000 VDC	- / 3000 VDC	- / 3000 VDC	3000 VDC
Warranty	2 years	5 years	5 years	2 years

Industrial Media Converter Overview

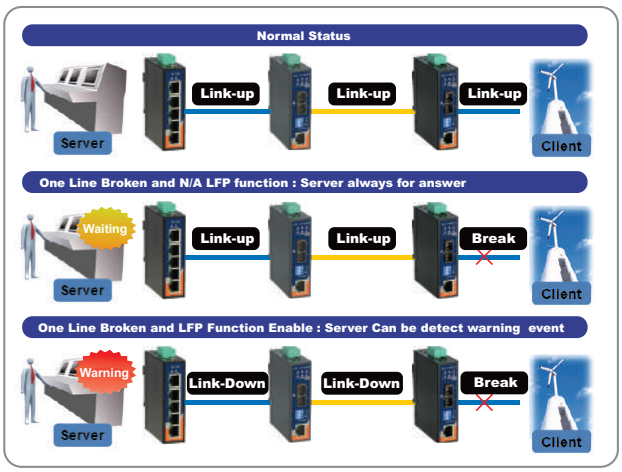
ORing offers Serial to Serial, USB to Serial, Fiber to Ethernet, and Gigabit Fiber to Ethernet media converters. Also, ORing's serial converters allow devices to communicate effortlessly across different serial interfaces and offer convenient, intelligent features.

Key Technologies

LFP (Link Fault Pass-Through)

Technology Description

Link Fault Pass-Through is the technology that actively "passes" any link failure of one side of the media converter to the other side, enabling subsequent devices connected to the other side to respond properly.
Traditional media converters usually suffer from inability to transfer link failure from one side to another. In other words, when link failure occurs on one side, the other side is still transmitting packets without actual data, causing subsequent devices of the link to wait for a response that will never arrive.
Link Fault Pass-Through effectively solves such problem of media converters by actively relaying link failures from one side to another. For example, if the links on the Ethernet side of the media converter fails, the media converter reinitiates auto-negotiation on the Ethernet side but stays in the link failure state. Additionally, the converter actively stop transmitting on links of the optical fiber side so subsequent devices connected to the optical fiber link would respond to network failure properly. With Link Fault Pass-Through technology, link failure would be noticed swiftly, minimizing data loss caused by such failure.



Supporting Product(s): ORing's IMC-111 series and RMC-111 series support this feature.

Hot Plug

Technology Description

ORing RMC-1000 media converter chassis features the revolutionary rack-mount design for hosting up to 18 card-type ORing media converters. For user convenience, RMC-1000 is equipped with Hot Plug technology. This technology enables the user to install or remove a media converter card for each slot without having to power off RMC-1000

Supporting Product(s):

RMC-1000

RMC-1000

RMC-1000

Industrial rack-mount Ethernet to fiber media converter Chassis with 18 slots

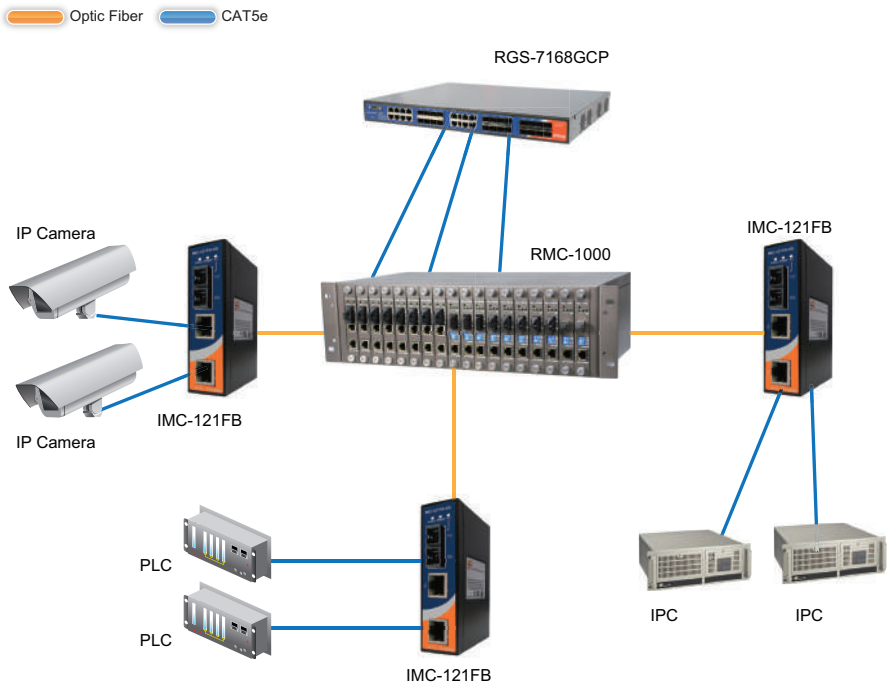
Features

- Supports 18 slots for media converter
- Each slot supports RMC-111PB/111FB/121FB series with 10/100Base-T(X) auto-negotiation and auto-MDI/MDI-X
- Supports single-mode or multi-mode for 100Base-FX interface
- Dual-power supply design for power redundancy
- Hot-swappable for Media Converters and power supplies
- High reliability and easy installation
- 19 inches Rack-mount enabled

Redundant PWR -10~60°C Temperature RoHS Lead Free

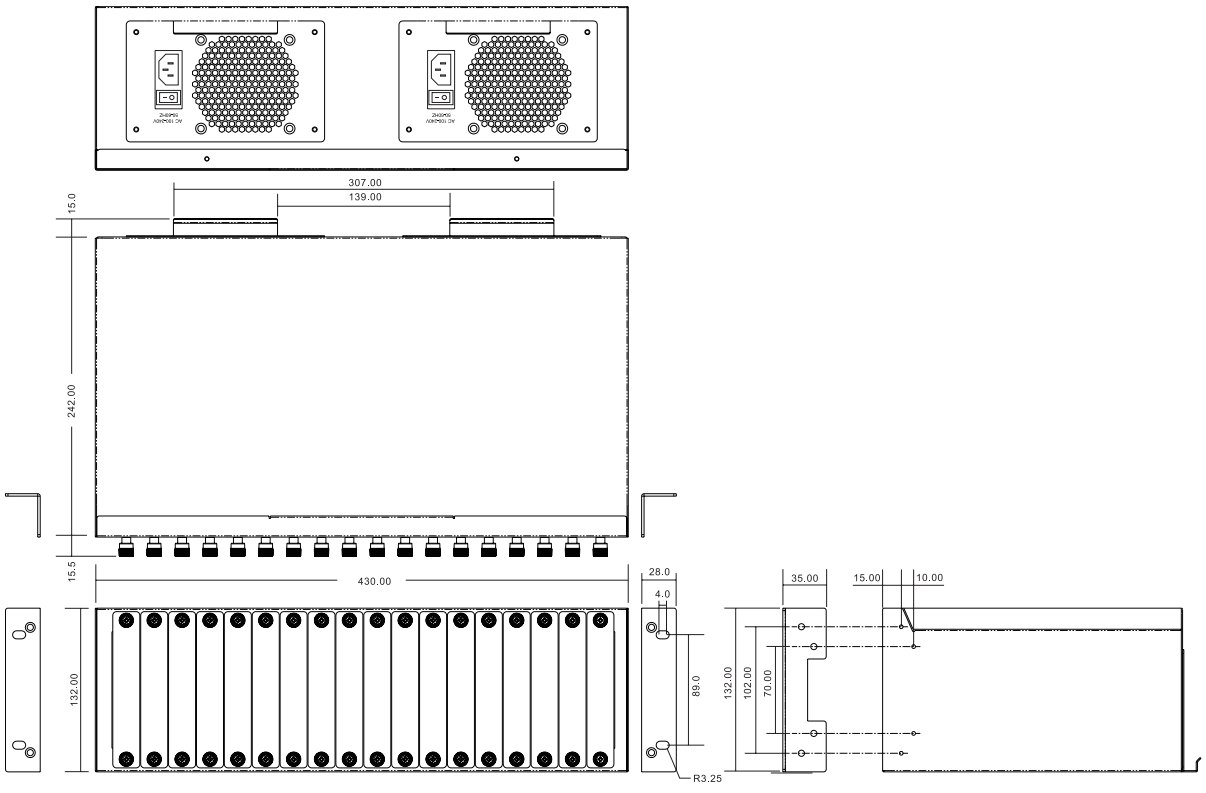
Introduction

RMC-1000 is the rack-mounted chassis box for RMC-111/121FB series media converter. RMC-1000 with 18 slots for Ethernet to optical fiber media converters which provide media conversion between 10/100Base-T(X) and 100Base-FX. Its dual power supply design can avoid interruption caused by power failure. In addition, media converter is also hot-swappable for each slot and can be installed easily. Therefore, RMC-1000 is reliable rack-mount chassis for media converter for high-density of media conversion application.



Connections of Media Converter

Dimensions



Specifications

ORing Chassis Media Converter Model	RMC-1000
Physical Ports	
Slot number	18
Power	
Input power	Two optional 100~240VAC power inputs
Overload current protection	Present
Physical Characteristics	
Dimension (W x D x H)	430 (W) x 243 (D) x 132 (H) mm (16.93 x 9.57 x 5.2 inch)
Weight (g)	4955 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-10 to 60°C (14 to 140°F)
Operating Humidity	5% to 95% Non-condensing

Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	870,520
Warranty	2 years

Ordering Information

	Model Name	Description
Available Model	RMC-1000	Industrial Rack-mount Ethernet to fiber media converter Chassis with 18 slots

Packing List

- RMC-1000
- Rack-mount Kit
- Quick Installation Guide

Optional Products (Can be purchased separately)

- RMC-111PB : Industrial Rack mount card type Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, SFP socket
- RMC-111FB-MM : Industrial Rack mount card type Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector
- RMC-111FB-SS : Industrial Rack mount card type Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector
- RMC-121FB-MM : Industrial Rack mount card type Ethernet to fiber media converter with 2x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector
- RMC-121FB-SS : Industrial Rack mount card type Ethernet to fiber media converter with 2x10/100Base-T(X) and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector
- RPM-130-AC-EU-R10 : 130W rack mount 12VDC/10.8A Power Supply Module with universal 100 to 240VAC input, EU power cord
- RPM-130-AC-US : 130W rack mount 12VDC/10.8A Power Supply Module with universal 100 to 240VAC input, US power cord
- FPC series : Fiber Patch cord

RMC-121FB Series

RMC-121FB Series

Industrial rack-mount card type Ethernet to fiber media converter with 2x10/100Base-T(X) and 1x100Base-FX

Features

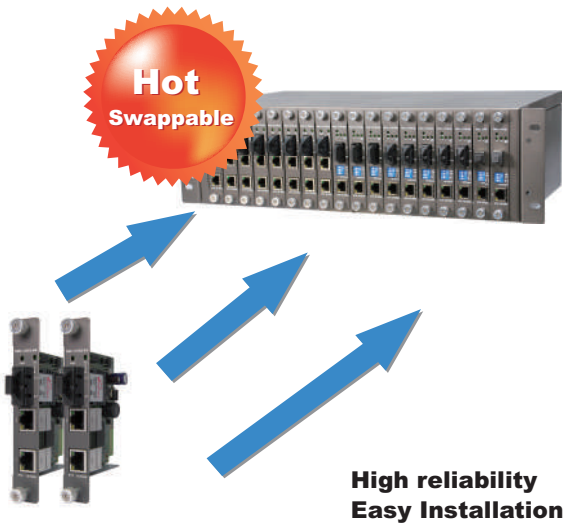
- Each converter supports two 10/100Base-T(X) ports with auto-negotiation and auto-MDI/MDI-X
- Support Ethernet to fiber port conversion for long distance communication
- 2 x 10/100 Base-T(X) ports to save the usage of copper ports
- Support store-and-forward transmission
- Hot-swappable, high reliability and easy installation
- Up to 18 slots of high-density installation in RMC-1000 chassis on the 19-inch rack

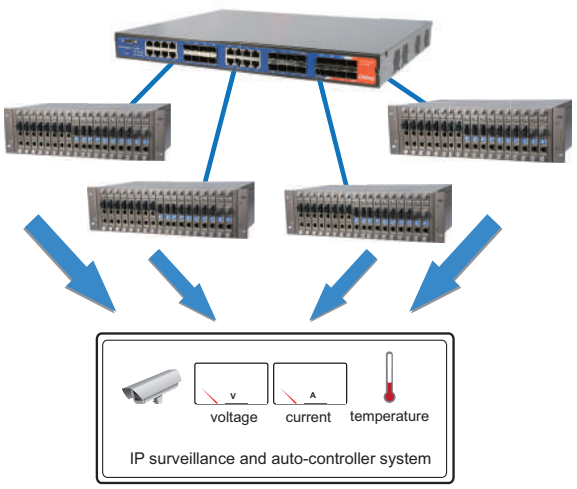
-10~60°C Temperature

RoHS Lead Free CE FC

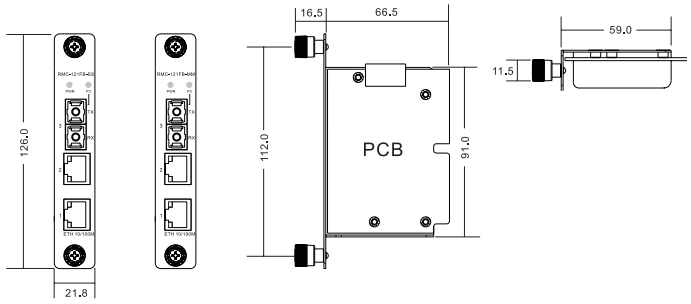
Introduction

RMC-121FB series are industrial rack-mount card type Ethernet to fiber media converters for the rack-mount chassis box of RMC-1000, as these converters are hot-swappable and can be easily installed on RMC-1000. RMC-121FB series provide media conversion between 2x10/100Base-T(X) and 1x100Base-FX. RMC-121 series allow you to extend communication distance by optical fiber. RMC-121FB series support MDI/MDIX auto detection, so you don't need to use crossover wires. Therefore, the RMC-121FB series, with RMC-1000 as their host, are reliable media converters that can satisfy most demands of operating environment.





Dimensions



(Unit=mm)

Specifications

ORing Card-Type Media Converter Model		RMC-121FB-MM-SC	RMC-121FB-SS-SC
Physical Ports			
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX		2	2
100Base-FX fiber Port			
Fiber Ports Specifications	Fiber Ports Number	1	1
	Fiber Ports Standard	100Base-FX	100Base - FX
	Fiber Mode	Multi-mode	Single-mode
	Fiber Diameter (μm)	62.5/125 μm 50/125 μm	9/125 μm
	Fiber Optical Connector	SC	SC
	Typical Distance (km)	2 km	30 km
	Wavelength (nm)	1310 nm	1310 nm
	Max. Output Optical Power (dBm)	-14 dBm	-8 dBm
	Min. Output Optical Power (dBm)	-23.5 dBm	-15 dBm
	Max. Input Optical Power (Saturation)	0dB	0 dBm
	Min. Input Optical Power (Sensitivity)	-31 dBm	-34 dBm
	Link Budget (dB)	7.5 dB	19 dB
Technology			
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3xfor flow control	
Processing		Store-and-Foward	

LED Indicators	
Power Indicator	Green : Power LED x 1
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision
100Base-FX Fiber Port Indicator	Green for fiber port Link/Act
Power	
Power Consumption (Typ.)	4.5 Watts
Overload Current Protection	Present
Physical Characteristics	
Dimensions (W x D x H)	21.8 (W) x 73.1 (D) x 126 (H) mm
Weight (g)	137 g
Environmental	
Storage Temperature	-40 to 85°C(-40 to 185°F)
Operating Temperature	-10 to 60°C (14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Warranty	2 years

Ordering Information

RMC-1 A B C B - DD - EE

Code Definition	10/100Base-T(X) Port Number	Fiber Port Number	Fiber Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	- **2** : 2 port	- **1**: 1 port	- **F** : 100Base-FX	- **MM** : Multi-mode - **SS** : Single-mode	- **SC**: SC Connector

	Model Name	Description
Available Model	RMC-121FB-MM-SC	Industrial Rack-mount card type Ethernet to fiber media converter with 2x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2km/1310nm, SC connector
	RMC-121FB-SS-SC	Industrial Rack-mount card type Ethernet to fiber media converter with 2x10/100Base-T(X) and 1x100Base-FX, single-mode, 30km/1310nm, SC connector

Packing List

- RMC-121FB
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- FPC series : Fiber Patch cord

RMC-111FB Series / RMC-111PB

RMC-111FB Series

RMC-111PB

Industrial rack-mount card type Ethernet to fiber media converter with 1x10/100Base-T(X) to 1x100Base-FX

Features

- Each converter supports one 10/100Base-T(X) port with auto-negotiation and auto-MDI/MDI-X
- Support Ethernet to fiber or Ethernet to SFP port for long distance communication
- Support **LFP (Link Fault Pass-through)** function
- Support full/half duplex operation
- Support store-and-forward transmission
- Provide DIP-Switches for function setting
- Hot-swappable, High reliability and easy installation
- Up to 18 slots of high-density installation in RMC-1000 chassis on the 19-inch rack

-10~60°C Temperature

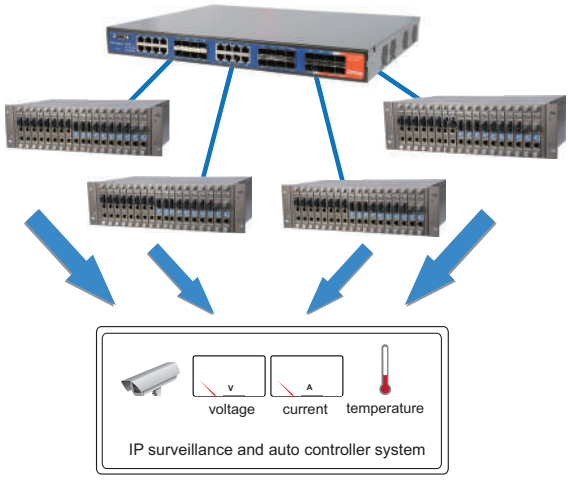
RoHS Lead Free

Introduction

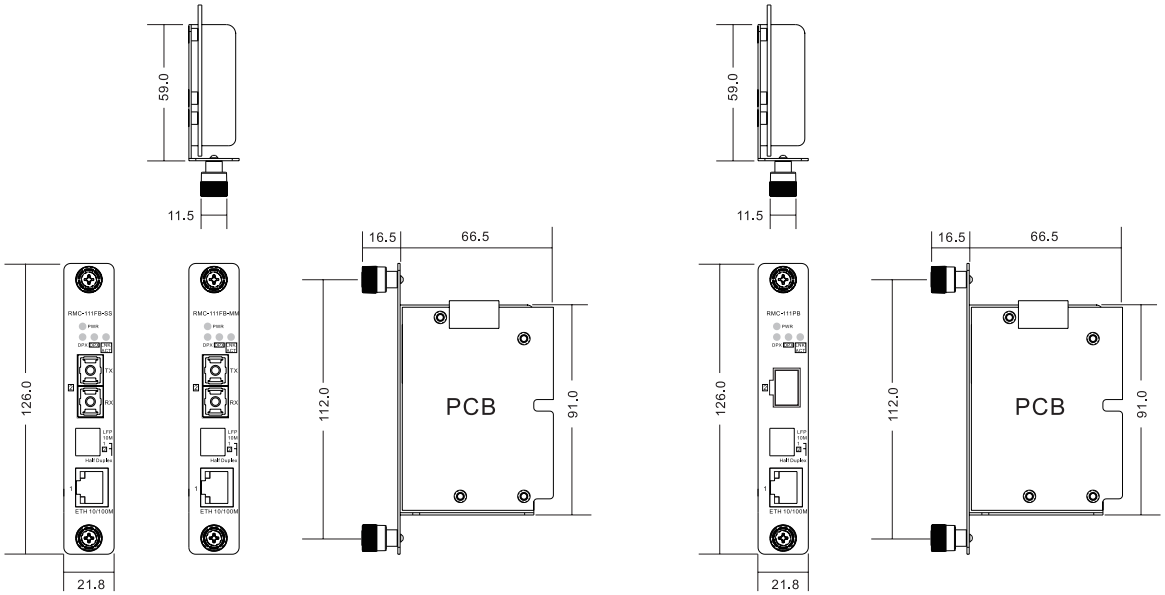
RMC-111 series are industrial rack-mount card type Ethernet to fiber media converters for the rack-mount chassis box of RMC-1000, as these card type converters are hot-swappable and can be easily installed on RMC-1000. RMC-111 series are the cost-effective solution for the conversion between 10/100Base-T(X) and 100Base-FX interface, allowing you to extend communication distance by optical fiber. RMC-111 series support MDI/MDIX auto detection, so you don't need to use crossover wires.

RMC-111 series also support the **LFP (Link Fault Pass-through)** feature. When one side of the link fails, the other side continues transmitting packets and waits for a response that never arrives from the disconnected side. Use the DIP-Switch to enable the LFP function, then RMC-111 series will force the link to shutdown as soon as noticed that the other link has failed, giving the application software a sign to react to the situation. Therefore, the RMC-111 series, with RMC-1000 as their host, are reliable media converters that can satisfy most demands of operating environments.

High reliability
Easy Installation



Dimensions



(Unit=mm)

Specifications

ORing Card-Type Media Converter Model		RMC-111FB-MM	RMC-111FB-SS	RMC-111PB
Physical Ports				
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX		1	1	1
Fiber Ports Specifications	Fiber Ports Number	1	1	-
	Fiber Ports standard	100Base-FX	100Base-FX	-
	Fiber Mode	Multi-mode	Single-mode	-
	Fiber Diameter (μm)	62.5/125 μm 50/125 μm	9/125 μm	-
	Fiber Optical Connector	SC	SC	-
	Typical Distance (km)	2 km	30 km	-
	Wavelength (nm)	1310 nm	1310 nm	-
	Max. Output Optical Power (dBm)	-14 dBm	-8 dBm	-
	Min. Output Optical Power (dBm)	-23.5 dBm	-15 dBm	-
	Max. Input Optical Power (Saturation)	0 dBm	0 dBm	-
	Min. Input Optical Power (Sensitivity)	-31 dBm	-34 dBm	-
	Link Budget (dB)	7.5 dB	19dB	-
100Base-FX SFP port		-	-	1
Technology				
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3x for Flow control		
Processing		Store-and-Forward		

DIP-Switch setting	DIP-Switch 1 for LFP mode selection : (ON) enable / (OFF) disable DIP-Switch 2 for Ethernet speed selection : (ON)10Mbps / (OFF) 10/100Mbps Auto-negotiate DIP-Switch 3 for Ethernet full/half duplex selection : (ON) Half-duplex / (OFF) Full/Half-Duplex Auto-negotiate DIP-Switch 4 for fiber full/half duplex selection : (ON) Half-Duplex / (OFF) Full-Duplex	
LED Indicators		
Power / Indicator	Green : Power LED x 1	
10/100Base-T(X) RJ45 port indicator	Green for port Link/Act Amber for 100Mbps indicator Green for port duplex indicator	
100Base-FX fiber port indicator	Green for fiber port Link/Act - (ON) Link up / (Blinking) Acting / (OFF) Link down Green for fiber port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex	
LFP statue indicator	Amber for link fault detected and passed	
Power		
Power consumption (Typ.)	2.2 Watts	
Reverse Polarity Protection	Present	
Physical Characteristics		
Dimensions (W x D x H)	21.8 (W) x 73.1 (D) x 126 (H) mm	
Weight (g)	145 g	140 g
Environmental		
Storage Temperature	-40 to 85°C(-40 to 185°F)	
Operating Temperature	-10 to 60°C (14 to 140°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Warranty	2 years	

Ordering Information

RMC-1 A B C B - DD - EE

Code Definition	10/100/1000Base-T(X) Port Number	100Base-FX Fiber Port Number	Fiber Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	- **1:** 1 port	- **1:** 1 port	- **F :** 100Base-FX Fiber - **P :** 100Base-FX SFP	- **MM :** Multi-mode - **SS :** Single-mode	- **SC :** SC connector

	Model Name	Description
Available Model	RMC-111FB-MM-SC	Industrial Rack-mount card type Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2km/1310nm, SC connector
	RMC-111FB-SS-SC	ndustrial Rack-mount card type Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, single-mode, 30km/1310nm, SC connector
	RMC-111PB	Industrial Rack-mount card type Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, SFP socket

Packing List

- RMC-111FB/111PB
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- FPC series : Fiber Patch cord

RGMC-111GPB

RGMC-111GPB

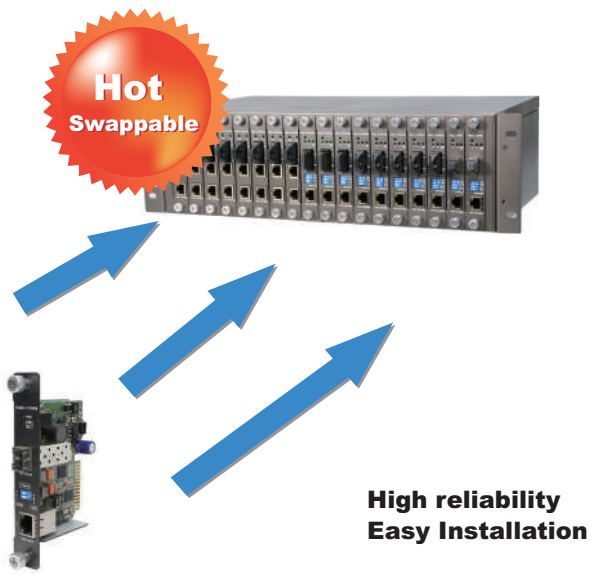
Industrial Rack mount card type Ethernet to fiber media converter with 1x100/1000Base-T(X) to 1x100/1000Base-X, SFP socket

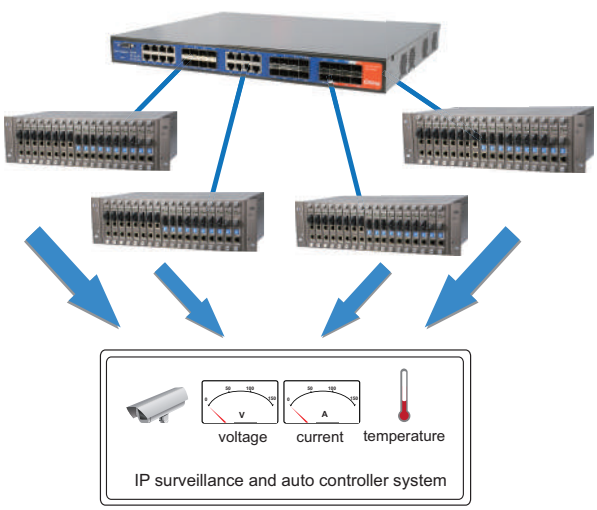
Features

- Supports 1 port 100/1000Base-T(X) auto-negotiation and auto-MDI/MDI-X
- Support Ethernet to SFP port signal conversion
- Ethernet port supports full/half duplex operation
- SFP port support full-duplex operation
- Supports store and forward transmission
- Provided DIP-Switch to setting SFP speed
- Hot-swappable, High reliability and easy installation
- Up to 18 slot high density installation in RMC-1000 chassis on 19 inches rack

Introduction

RGMC-111GPB is industrial rack mount card type Ethernet to fiber media converter for rack-mounted chassis box of RMC-1000, that supports hot-swappable and easy installation to RMC-1000. RGMC-111GPB is a cost-effective solution for the conversion between 100/1000Base-T(X) and 100/1000Base-X SFP interface, it allows you to extend communication distance by optical fiber. RGMC-111GPB supports MDI/MDIX auto detection, so you don't need to use crossover wire. Therefore, the RGMC-111GPB to collocate RMC-1000 is reliable media converter and can satisfy most demand of operating environment.

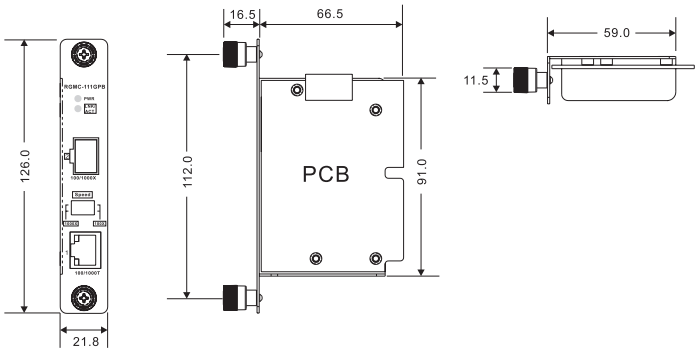




Working Status

Ethernet Port Status	SFP Fiber Port Status	Working Status
100Mbps	100Mbps	Working
100Mbps	1000Mbps	Not Avail
1000Mbps	1000Mbps	Working
1000Mbps	100Mbps	Not Avail

Dimensions



(Unit=mm)

Specifications

ORing Media Converter Model	RGMC-111GPB
Physical Ports	
100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	1
100/1000Base-FX SFP port	1
Technology	
Ethernet Standards	IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X
Processing	Store-and-Forward
DIP-Switch 1/2	DIP-Switch 1 (ON) and DIP-Switch 2 (ON) : SFP speed setting to 100Mbps DIP-Switch 1 (OFF) and DIP-Switch 2 (OFF) : SFP speed setting to 1000Mbps
LED Indicators	
Power / Indicator	Green : Power LED x 1
10/100Base-T(X) RJ45 port indicator	LED for Link/Act and Speed indicator ~ Green on only : 1000Mbps Link/Act - (ON) Link up / (Flash) Acting / (OFF) Link down Green and Amber on : 100Mbps Link/Act - (ON) Link up / (Flash) Acting / (OFF) Link down ***Note : If amber on only : 10Mbps (This is not avail mode)**

100/1000Base-(F)X fiber port indicator	Green for fiber port Link/Act - (ON) Link up / (Flash) Acting / (OFF) Link down
Power	
Power consumption (Typ.)	3.6Watts
Overload current protection	Present
Physical Characteristics	
Dimensions (W x D x H)	21.8 (W) x 66.5 (D) x 126 (H) mm
Weight (g)	125g
Environmental	
Storage Temperature	-40 to 85°C(-40 to 185°F)
Operating Temperature	-10 to 60°C (14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Warranty	2 years

Ordering Information

RGMC-1 A B GPB

Code Definition	100/1000Base-T(X) Port Number	100/1000Base-(F)X SFP Port Number
Option	- **1:** 1 port	- **1:** 1 port

Available Model	Model Name	Description
	RGMC-111GPB	Industrial Rack mount card type Ethernet to fiber media converter with 1x100/1000Base-T(X) to 1x100/1000Base-X, SFP socket

Packing List

- RGMC-111GPB
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

IGMC-1011GF/1011GP

IGMC-1011GF IGMC-1011GP

Industrial slim type Gigabit Ethernet to fiber media converter

Features

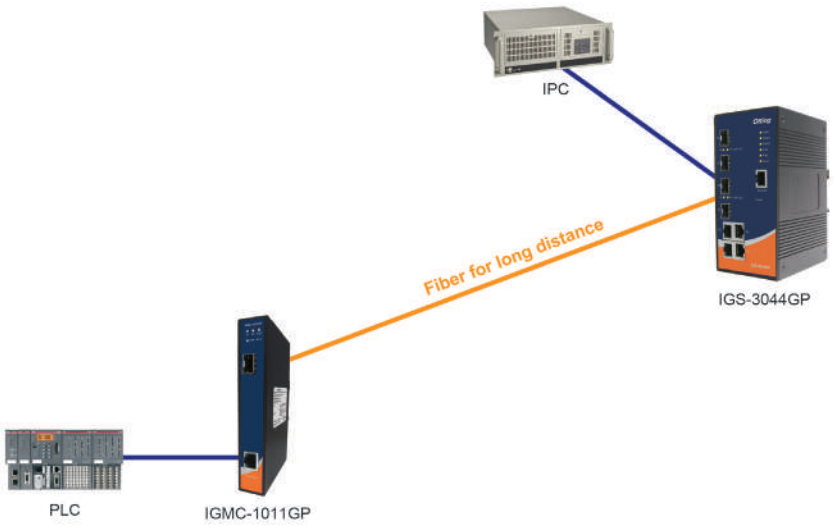
- Support 1 port 10/100/1000Base-T(X) auto-negotiation and auto-MDI/MDI-X
- Support 1 port 1000Base-X multi-mode/single-mode or SFP port
- Support Jumbo Frame up to 10240 Bytes
- Support store-and-forward transmission
- Relay output to carry capacity of 1A at 24 VDC
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

Full Gigabit Slim Type Redundant PWR -40~75°C Temperature

RoHS Lead Free CE FC

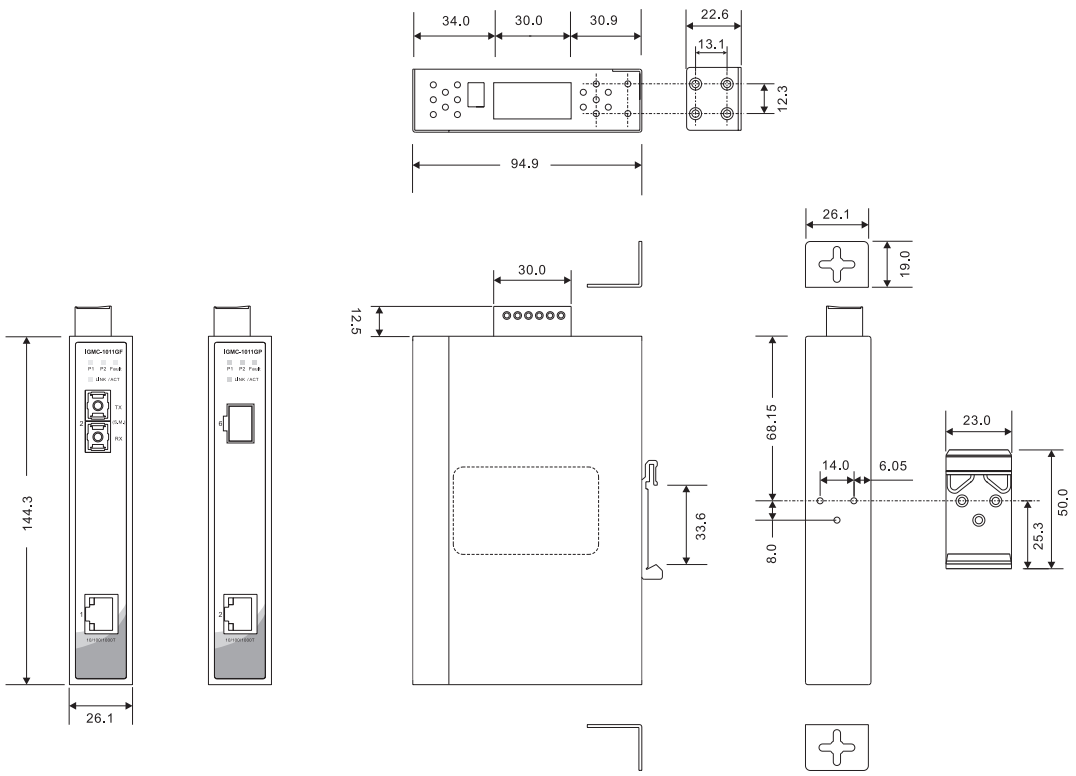
Introduction

IGMC-1011GF/IGMC-1011GP series are industrial gigabit media converters provide media conversion between 10/100/1000Base-T(X) and 1000Base-X. IGMC-1011GF/IGMC-1011GP series are rigid IP-30 housing design and supporting an operating temperature of -40 to 75°C. Therefore, the IGMC-1011GF/IGMC-1011GP series are reliable media converters and can satisfy most demand of operating environment.



Connections of Media Converter

Dimensions



(Unit=mm)

Specifications

ORing Media Converter Model		IGMC-1011GF-MM-SC	IGMC-1011GF-SS-SC	IGMC-1011GP
Physical Ports				
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX		1	1	1
Fiber Ports Specifications	Fiber Ports Number	1	1	-
	Fiber Ports standard	1000Base-SX	1000Base-LX	-
	Fiber Mode	Multi-mode	Single-mode	-
	Fiber Diameter (μm)	62.5/125 μm 50/125 μm	9/125 μm	-
	Fiber Optical Connector	SC	SC	-
	Typical Distance (km)	550 m	10 km	-
	Wavelength (nm)	850 nm	1310 nm	-
	Max. Output Optical Power (dBm)	-4 dBm	-3 dBm	-
	Min. Output Optical Power (dBm)	-9.5 dBm	-9.5 dBm	-
	Max. Input Optical Power (Saturation)	0 dBm	-3 dBm	-
	Min. Input Optical Power (Sensitivity)	-18 dBm	-20 dBm	-
	Link Budget (dB)	8.5 dB	10.5 dB	-
1000Base-X SFP port		-	-	1
Technology				
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X		
Jumbo Frame		10240 Bytes		

LED Indicators			
Power / Indicator	Green : Power LED x 2		
Fault Indicator	Amber : Indicate power failure		
10/100/1000Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for 100Mbps indicator		
1000Base-X Port Indicator	Green for port Link/Act		
Fault contact			
Relay	Relay output to carry capacity of 1A at 24 VDC		
Dip Switch	Relay output function enable / disable by dip switch		
Power			
Input Power	Dual 12~ 48 VDC power inputs on 6-pin terminal block		
Power Consumption (Typ.)	3.5 Watts		
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristics			
Enclosure	IP-30		
Dimensions (W x D x H)	26.1(W) x 94.9(D) x 144.3(H) mm (1.03x3.74x5.68 inch.)		
Weight (g)	400 g	400 g	380g
Environmental			
Storage Temperature	-40 to 85°C(-40 to 185°F)		
Operating Temperature	-40 to 75°C (-40 to 167°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory Approvals			
EMI	FCC Part 15, CISPR (EN55022) class A		
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11		
Shock	IEC60068-2-27		
Free Fall	IEC60068-2-32		
Vibration	IEC60068-2-6		
Safety	EN60950-1		
MTBF(Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	597,923	611,417	650,069
Warranty	5 years		

Ordering Information

IGMC-1 AA B CC - DD - EE

Code Definition	10/100/1000Base-T(X) Port Number	1000Base-X Fiber Port Number	Fiber Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	- **01:** 1 port	- **1:** 1 port	- **GF :** 1000Base-FX Fiber - **GP :** 1000Base-X SFP	- **MM :** Multi-mode - **SS :** Single-mode	- **SC :** SC connector

	Model Name	Description
Available Model	IGMC-1011GF-MM-SC	Industrial Gigabit Ethernet to fiber media converter with 1x10/100/1000Base-T(X) and 1x1000Base-SX, multi-mode, 550m/850nm, SC connector
	IGMC-1011GF-SS-SC	Industrial Gigabit Ethernet to fiber media converter with 1x10/100/1000Base-T(X) and 1x1000Base-LX, single-mode, 10km/1310nm, SC connector
	IGMC-1011GP	Industrial Gigabit Ethernet to fiber media converter with 1x10/100/1000Base-T(X) and 1x1000Base-X, SFP socket

Packing List

- IGMC-1011GF/GP
- DIN-Rail Kit
- Wall-Mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- SFP1G series, 1Gbps SFP optical transceiver
- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- FPC series : Fiber Patch cord

IGMC-111GP

IGMC-111GP

Industrial Gigabit Ethernet to fiber media converter with 1x10/100/1000Base-T(X) and 1x100/1000Base-X, SFP socket

Features

- Support 1 port 10/100/1000Base-T(X) auto-negotiation and auto-MDI/MDI-X copper port
- Support 1 port 100/1000Base-X SFP fiber port
- Support Jumbo Frame up to 9K Bytes
- Support **LFP (Link Fault Pass-through)** function
- Relay output to carry capacity of 1A at 24 VDC for warning system
- Provided DIP-Switch to setting function
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

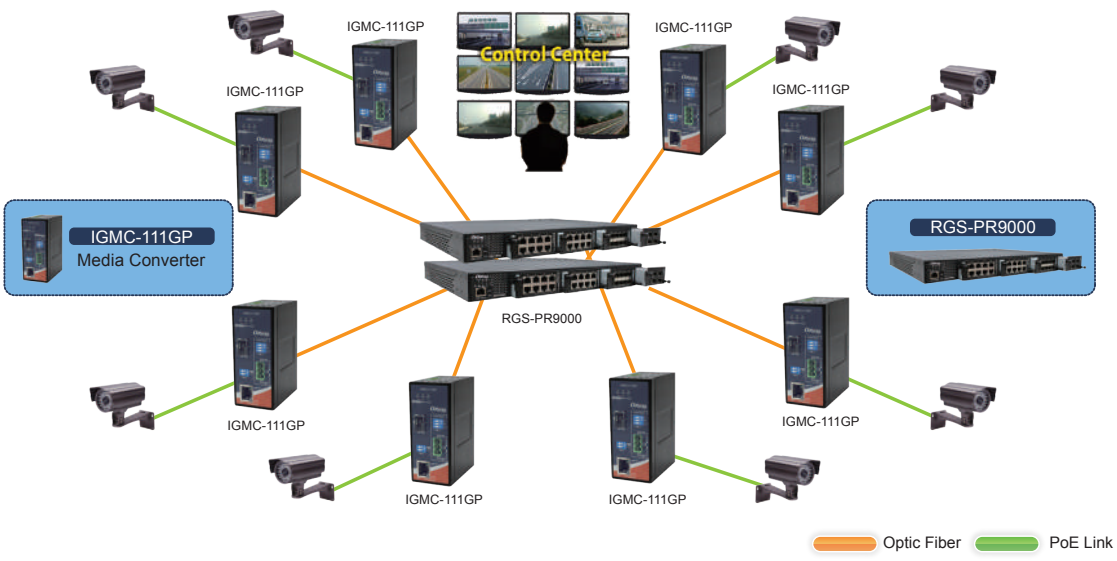
RoHS Lead Free CE FC Full Gigabit Redundant PWR -40~75°C Temperature

Introduction

The IGMC-111GP is a cost-effective solution for the conversion interface between 10/100/1000Base-T(X) and 100/1000Base-X SFP socket; it allows you to extend communication distance by optical fiber. IGMC-111GP supports MDI/MDIX auto detection, so you don't need to use crossover wires.

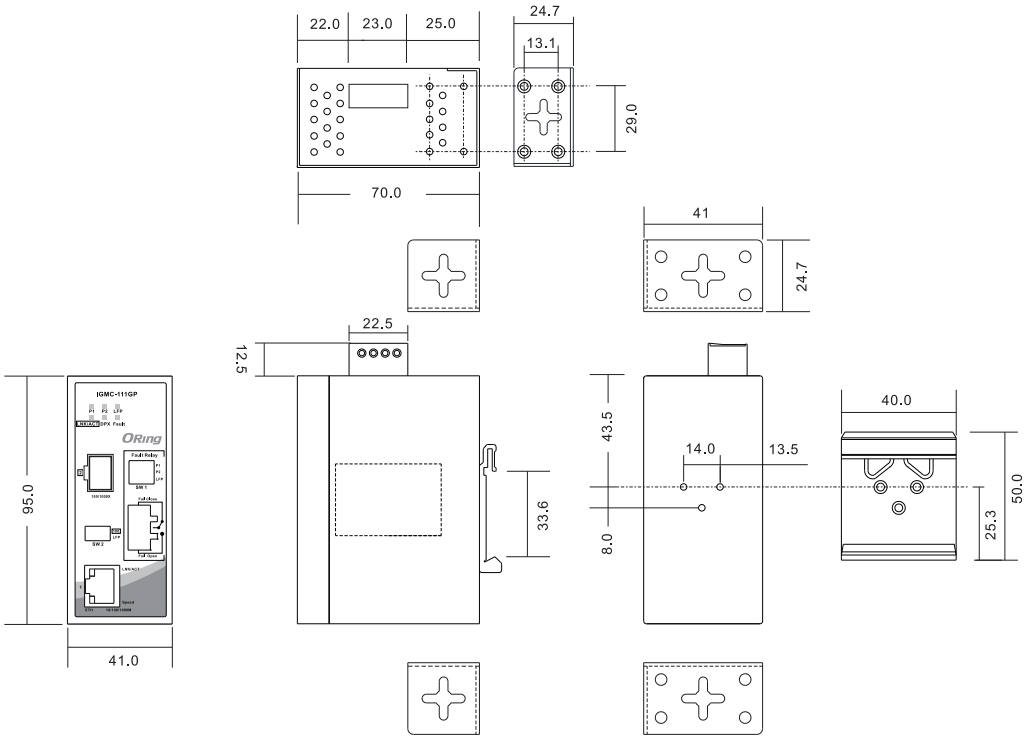
The IGMC-111GP also supports the **LFP (Link Fault Pass-through)** feature. When one side of the link fails, the other side continues transmitting packets, and waiting for a response that never arrives from the disconnected side. Use the DIP-Switch to enable the LFP function, then IGMC-111GP will force the link to shut down as soon as noticed that the other link has failed, giving the application software a chance to react to the situation.

The IGMC-111GP with wide operating temperature range from -40 ~ 75°C and accepts a wide voltage range from dual 12~48 VDC power inputs, so it is suitable for harsh operating environments. Therefore, the IGMC-111GP is reliable media converter and can satisfy most demand of operating environment.



Connections of Media Converter

Dimensions



(Unit=mm)

RJ-45 Pin Definition

10/100Base-T(X) P.S.E. RJ-45 port

RJ-45 Pin Definition	
Pin No.	Description
#1	TD+
#2	TD-
#3	RD+
#4	Not used
#5	Not used
#6	RD-
#7	Not used
#8	Not used

1000Base-T RJ-45 port

RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+
#2	BI_DA-
#3	BI_DB+
#4	BI_DC+
#5	BI_DC-
#6	BI_DB-
#7	BI_DD+
#8	BI_DD-

DIP-Switch Setting

3-PIN DIP-Switch 1		Description	
DIP-Switch No.	Function	DIP-Switch Status	
1	Power-1 failure detection	ON	When power-1 failure, enable relay output
		OFF	Disable power-1 failure detection
2	Power-2 failure detection	ON	When power-2 failure, enable relay output
		OFF	Disable power-2 failure detection
3	LFP warning detection	ON	LFP signals when detected, enable relay output
		OFF	Disable LFP signals detection

2-PIN DIP-Switch 2		Description	
DIP-Switch No.	Function	DIP-Switch Status	
1	100/1000Base-FX mode selection	ON	100Base-FX mode
		OFF	1000Base-X mode
2	LFP function	ON	Enable LFP function
		OFF	Disable LFP function

Specifications

ORing Switch Model	IGMC-111GP
Physical Ports	
10/100/1000 Base-T(X) Port in RJ45 Auto MDI/MDIX	1
100/1000Base-X SFP port	1
Technology	
Ethernet Standards	IEEE 802.3i for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X
Jumbo Frame	9K Bytes (1G mode only)
LED Indicators	
Power / Ready Indicator	Green: Power LED x 2
LFP statue indicator	Amber LED – (ON) LFP function fail / (OFF) LFP function disable
100/1000Base-X SFP Port Indicator	Green for port Link/Act
10/100/1000Base-T(X) Port Duplex Mode Indicator	Green LED – (ON) Full-duplex mode / (OFF) Half-Duplex mode
10/100/1000Base-T(X) RJ45 port Indicator	Green for Link/Act Dual color LED for speed – Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24 VDC
Power	
Input Power	Dual 12~ 48 VDC voltage power inputs in 4-pin terminal block
Power Consumption (Typ.)	4Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	40 (W) x70 (D) x 95 (H) mm
Weight (g)	291g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1

MTBF	1,167,318 hours
Warranty	5 years

Ordering Information

IGMC-1 A B CC

Code Definition	10/100/1000Base-T(X) Port Number	100/1000Base-X Fiber Port Number	Fiber Port Type
Option	- **1:** 1 port	- **1:** 1 port	- **GP :** 100/1000Base-X SFP

Available Model	Model Name	Description
	IGMC-111GP	Industrial Gigabit Ethernet to fiber media converter with 1x10/100/1000Base-T(X) and 1x100/1000Base-X, SFP socket

Packing List

- IGMC-111GP x 1
- Wall-mount Kit x 1
- Quick Installation Guide x 1
- DIN-Rail Kit x 1

Optional Accessories (Can be purchased separately)

- SFP 100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver

IGPMC-111GP

IGPMC-111GP

Industrial Gigabit PoE Ethernet to fiber media converter with 1x10/100/1000Base-T(X) P.S.E. and 1x100/1000Base-X, SFP socket

Features

- Support 1 port 10/100/1000Base-T(X) P.S.E. auto-negotiation and auto-MDI/MDI-X copper port
- Support 1 port 100/1000Base-X SFP fiber port
- **P.S.E. fully compliant with IEEE802.3at** standard, provide up to 30 Watts
- Support Jumbo Frame up to 9K Bytes
- Support **LFP (Link Fault Pass-through)** function
- Relay output to carry capacity of 1A at 24 VDC for warning system
- Provided DIP-Switch to setting function
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

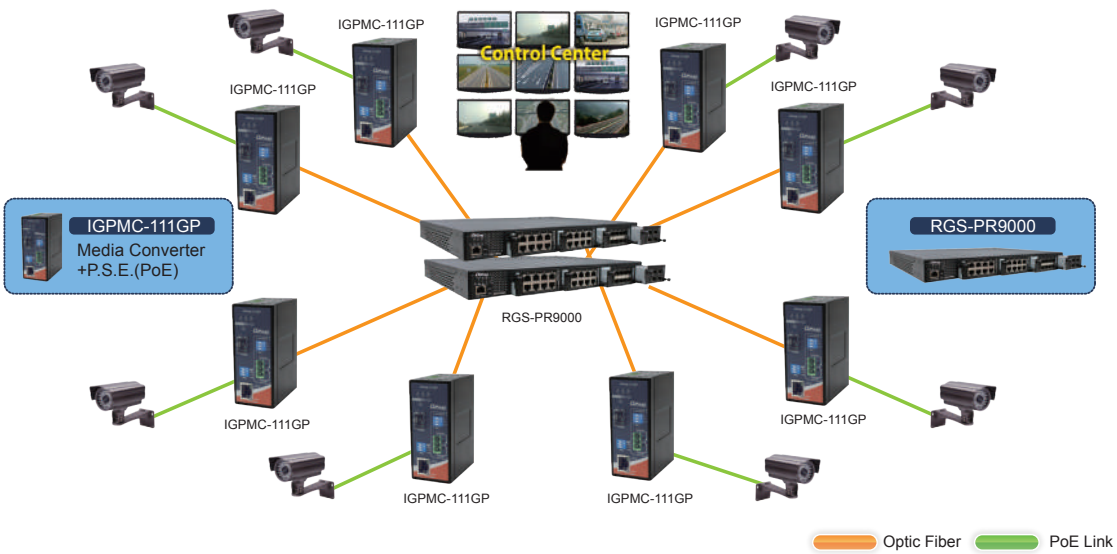
RoHS Lead Free | CE | FC | P.S.E PUE | Full Gigabit | Redundant PWR | -40~75°C Temperature

Introduction

The IGPMC-111GP is a cost-effective solution for the conversion interface between 10/100/1000Base-T(X) and 100/1000Base-X SFP socket; it allows you to extend communication distance by optical fiber. IGPMC-111GP supports MDI/MDIX auto detection, so you don't need to use crossover wires. IGPMC-111GP also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each IGPMC-111GP has 1x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) port to provide power in a PoE setup.

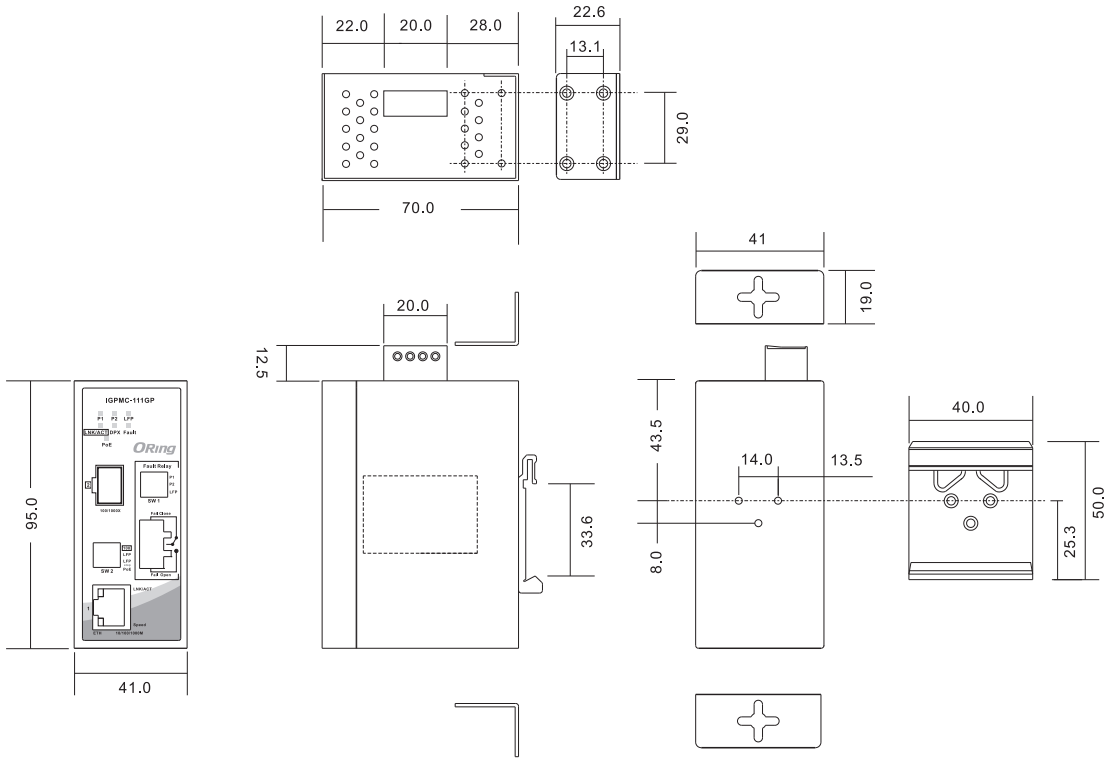
The IGPMC-111GP also supports the **LFP (Link Fault Pass-through)** feature. When one side of the link fails, the other side continues transmitting packets, and waiting for a response that never arrives from the disconnected side. Use the DIP-Switch to enable the LFP function, then IGPMC-111GP will force the link to shut down as soon as noticed that the other link has failed, giving the application software a chance to react to the situation.

The IGPMC-111GP with wide operating temperature range from -40 ~ 75°C and accepts a wide voltage range from dual 50~57 VDC power inputs, so it is suitable for harsh operating environments. Therefore, the IGPMC-111GP is reliable media converter with PoE capability and can satisfy most demand of operating environment.



Connections of Media Converter

Dimensions



(Unit=mm)

RJ-45 Pin Definition

10/100Base-T(X) P.S.E. RJ-45 port

RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#4	Not used
#5	Not used
#6	RD- with PoE Power input -
#7	Not used
#8	Not used

1000Base-T P.S.E. RJ-45 port

RJ-45 Pin Definition	
Pin No.	Description
#1	BI_DA+ with PoE Power input +
#2	BI_DA- with PoE Power input +
#3	BI_DB+ with PoE Power input -
#4	BI_DC+
#5	BI_DC-
#6	BI_DB- with PoE Power input -
#7	BI_DD+
#8	BI_DD-

DIP-Switch Setting

3-PIN DIP-Switch 1		Description	
DIP-Switch No.	Function	DIP-Switch Status	
1	Power-1 failure detection	ON	When power-1 failure, enable relay output
		OFF	Disable power-1 failure detection
2	Power-2 failure detection	ON	When power-2 failure, enable relay output
		OFF	Disable power-2 failure detection
3	LFP warning detection	ON	LFP signals when detected, enable relay output
		OFF	Disable LFP signals detection

2-PIN DIP-Switch 2		Description	
DIP-Switch No.	Function	DIP-Switch Status	
1	100/1000Base-FX mode selection	ON	100Base-FX mode
		OFF	1000Base-FX mode
2	LFP function	ON	Enable LFP function
		OFF	Disable LFP function
3	LFP control PoE output	ON	LFP signal when it is detected, the PoE output is stopped
		OFF	PoE continuous power supply

Specifications

ORing Switch Model	IGPMC-111GP
Physical Ports	
10/100/1000 Base-T(X) P.S.E. Port in RJ45 Auto MDI/MDIX	1
100/1000Base-X SFP port	1
Technology	
Ethernet Standards	IEEE 802.3i for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
Jumbo Frame	9K Bytes (1G mode only)
LED Indicators	
Power / Ready Indicator	Green: Power LED x 2
LFP statue indicator	Amber – (ON) LFP function fail / (OFF) LFP function disable
100/1000Base-X SFP Port Indicator	Green for port Link/Act
10/100/1000Base-T(X) Port Duplex Mode Indicator	Green LED – (ON) Full-duplex mode / (OFF) Half-Duplex mode
10/100/1000Base-T(X) RJ45 port Indicator	Green for Link/Act Dual color LED for speed – Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
PoE indicator	Green: Power is supplied over Ethernet cable.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24 VDC
Power	
Input Power	Dual 50 ~ 57 VDC voltage power inputs in 4-pin terminal block
Power Consumption (Typ.)	4Watts (PoE output is not included)
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	40 (W) x70 (D) x 95 (H) mm
Weight (g)	291g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11

Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	1,116,093hrs
Warranty	5 years

Ordering Information

IGPMC-1 A B CC

Code Definition	10/100/1000Base-T(X) Port Number	100/1000Base-X Fiber Port Number	Fiber Port Type
Option	- **1:** 1 port	- **1:** 1 port	- **GP :** 100/1000Base-X SFP

Available Model	Model Name	Description
	IGPMC-111GP	Industrial Gigabit Ethernet to fiber PoE media converter with 1x10/100/1000Base-T(X) P.S.E. and 1x100/1000Base-X, SFP socket

Packing List

- IGPMC-111GP x 1
- Wall-mount Kit x 1
- Quick Installation Guide x 1
- DIN-Rail Kit x 1

Optional Accessories (Can be purchased separately)

- SFP 100 series : 100Mbps SFP optical transceiver
- SFP 1G series : 1Gbps SFP optical transceiver

IGMC-111GPB

IGMC-111GPB

Industrial mini type Gigabit Ethernet to fiber media converter with 1x100/1000Base-T(X) to 1x100/1000Base-X, SFP socket

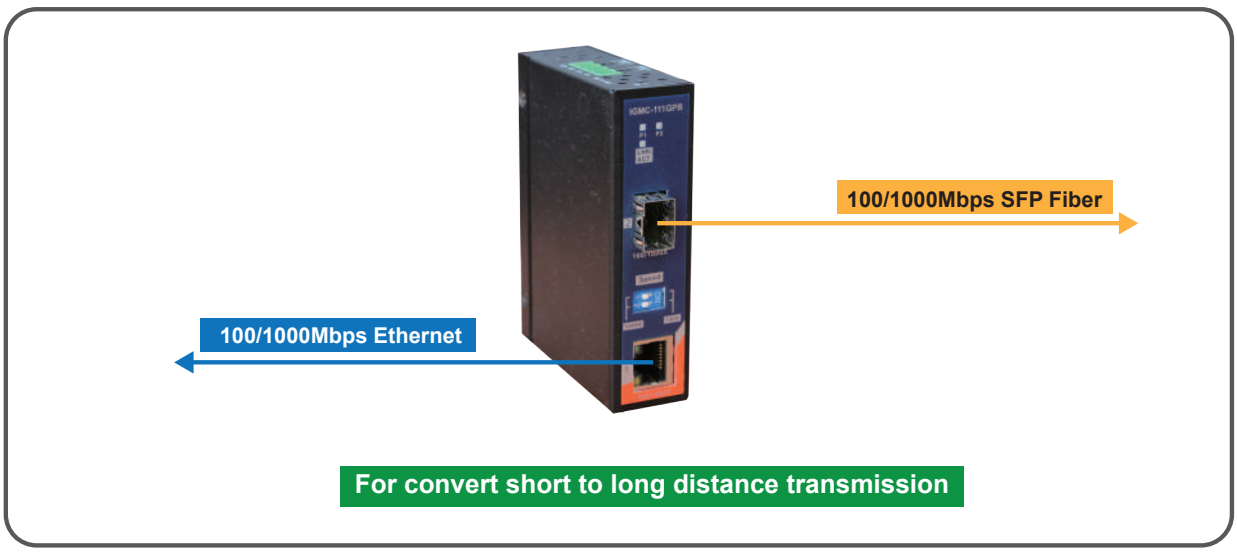
Features

- Supports 1 port 100/1000Base-T(X) auto-negotiation and auto-MDI/MDI-X
- Support Ethernet to SFP port signal conversion
- Ethernet port supports full/half duplex operation
- SFP port support full-duplex operation
- Supports store and forward transmission
- Provided DIP-Switch to setting SFP speed
- High reliability and rigid IP-30 housing
- DIN-Rail and wall mounting enabled

RoHS Lead Free CE FC Slim Type Redundant PWR -40~75°C Temperature

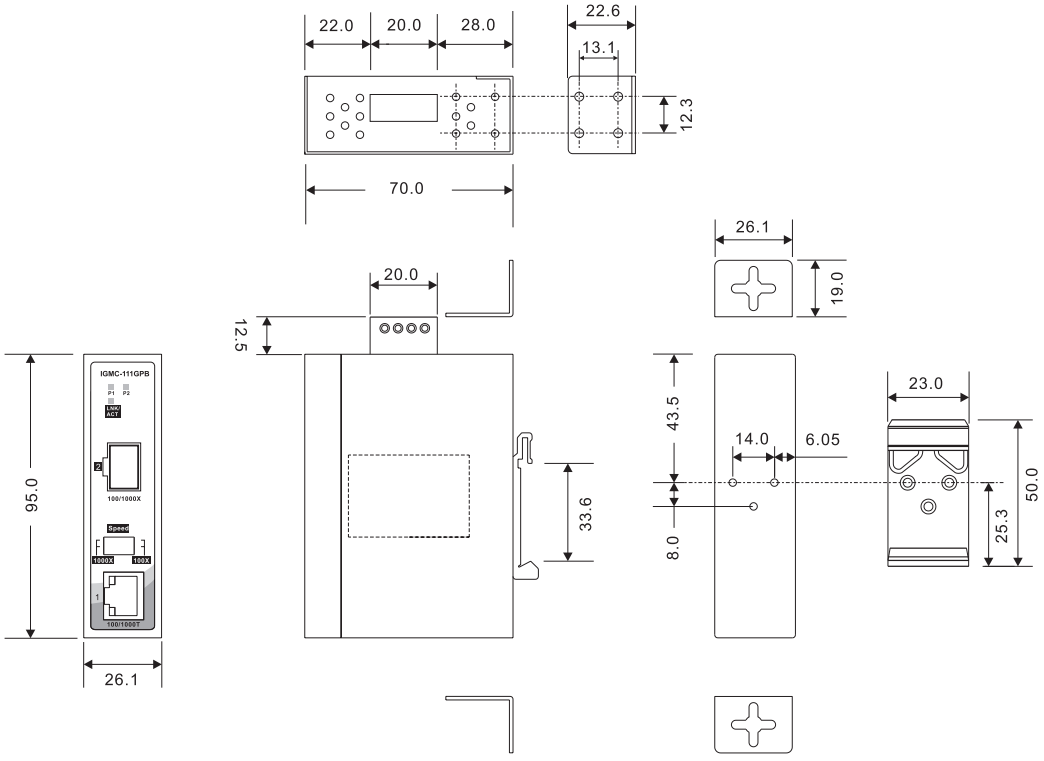
Introduction

IGMC-111GPB is a cost-effective solution for the conversion between 100/1000Base-T(X) and 100/1000Base-X interface, it allows you to extend communication distance by optical fiber. IGMC-111GPB supports MDI/MDIX auto detection, so you don't need to use crossover wires. IGMC-111GPB with wide operating temperature range from -40 ~ 75°C and accepts a wide voltage range from dual 12 ~ 48 VDC power inputs, so it is suitable for harsh operating environments. Therefore, the IGMC-111GPB is reliable media converter and can satisfy most demand of operating environment.



Connections of Media Converter

Dimensions



(Unit=mm)

Working Status

Ethernet Port Status	SFP Fiber Port Status	Working Status
100Mbps	100Mbps	Working
100Mbps	1000Mbps	Not Avail
1000Mbps	1000Mbps	Working
1000Mbps	100Mbps	Not Avail

Specifications

ORing Media Converter Model	IGMC-111GPB
Physical Ports	
100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	1
100/1000Base-X SFP port	1
Technology	
Ethernet Standards	IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X
Processing	Store-and-Forward
DIP-Switch setting	DIP-Switch 1 (ON) and DIP-Switch 2 (ON) : SFP speed setting to 100Mbps DIP-Switch 1 (OFF) and DIP-Switch 2 (OFF) : SFP speed setting to 1000Mbps

LED Indicators	
Power Indicator	Green : Power LED x 2 (ON : power input on-line / (OFF) power input off-line
10/100Base-T(X) RJ45 Port Indicator	LED for Link/Act and Speed indicator ~ Green on only : 1000Mbps Link/Act - (ON) Link up / (Flash) Acting / (OFF) Link down Green and Amber on : 100Mbps Link/Act - (ON) Link up / (Flash) Acting / (OFF) Link down ***Note : If amber on only : 10Mbps (This is not working mode)**
100/1000Base-(F)X fiber port indicator	Green for fiber port Link/Act - (ON) Link up / (Flash) Acting / (OFF) Link down
Power	
Input Power	Dual 12~48 VDC voltage power input at 4-pin terminal block
Power Consumption (Typ.)	3.6 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1 (W) x 70 (D) x 95 (H)mm (1.03 x 2.76 x 3.74 inch)
Weight (g)	190 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IGMC-1 A B GPB

Code Definition	100/1000Base-T(X) Port Number	100/1000Base-(F)X Fiber Port Number
Option	- **1** : 1 port	- **1**: 1 port

	Model Name	Description
Available Model	IGMC-111GPB	Industrial mini type Gigabit Ethernet to fiber media converter with 1x100/1000Base-T(X) and 1x100/1000Base-X, SFP socket

Packing List

- IGMC-111GPB
- DIN-Rail Kit
- Wall-Mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- SFP100 series : 100Mbps SFP optical transceiver
- SFP1G series : 1000Mbps SFP optical transceiver

IMC-121FB Series

IMC-121FB Series

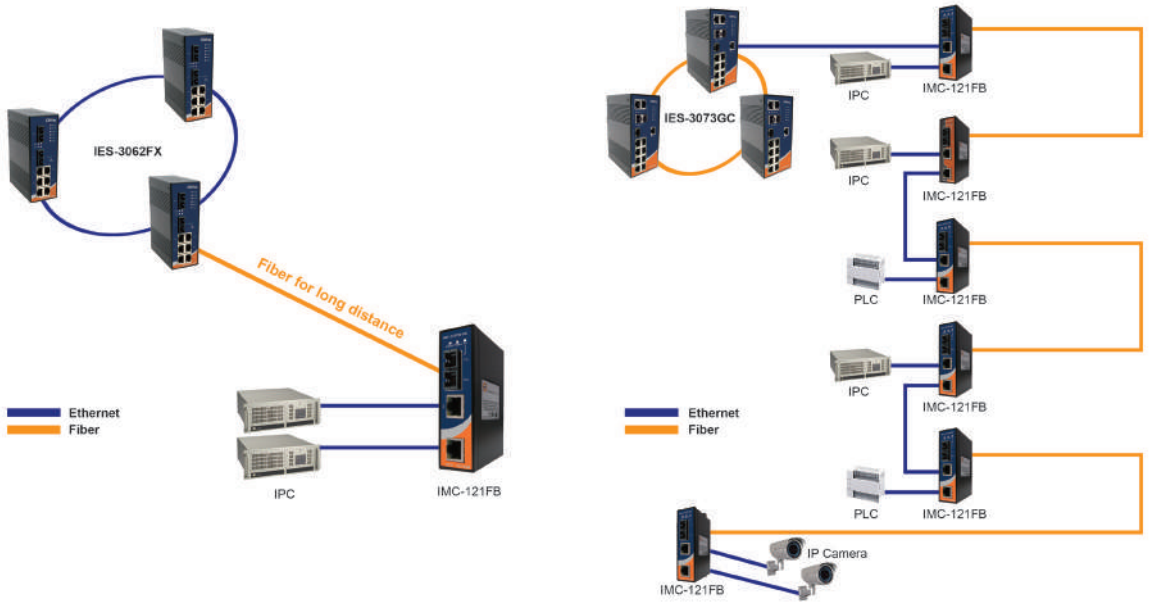
Industrial mini type Ethernet to fiber media converter with 2x10/100Base-T(X) and 1x100Base-FX

Features

- Support 2 ports 10/100Base-T(X) auto-negotiation and auto-MDI/MDI-X
- 2x10/100 Base-T(X) ports to save the usage of copper ports
- High reliability and rigid IP-30 housing
- DIN-Rail and wall mounting enabled

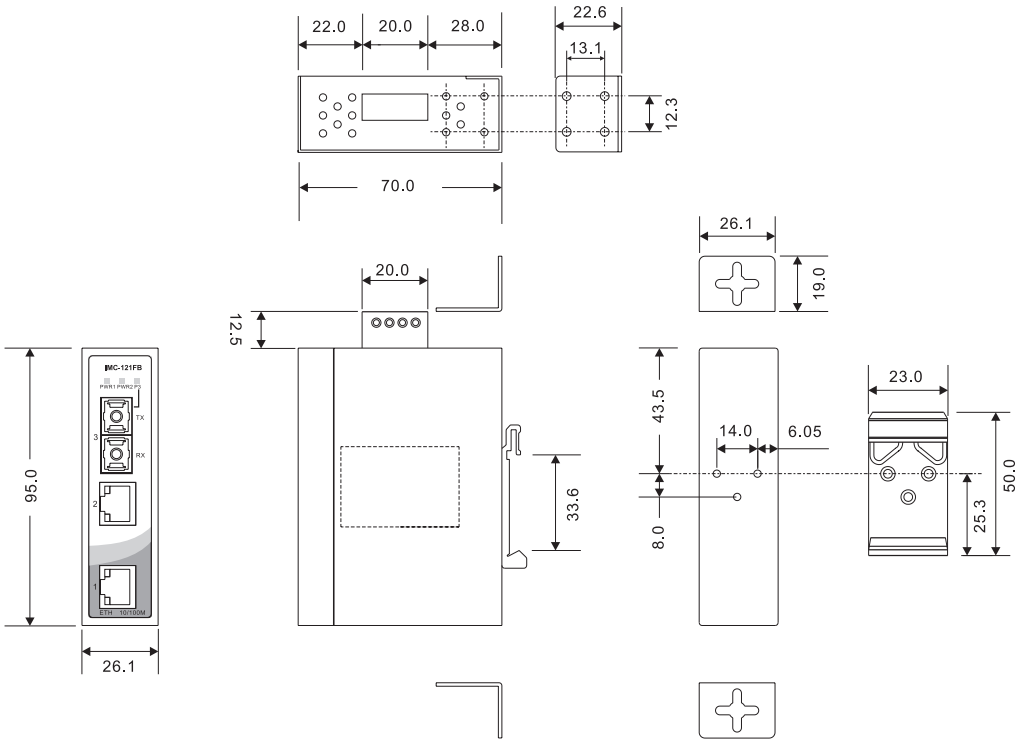
Introduction

IMC-121FB series are industrial media converters providing media conversion between 10/100Base-T(X) and 100Base-FX. IMC-121FB series feature rigid IP-30 housing design and support wide operating temperature range from -40 to 75°C. Therefore, IMC-121FB series are reliable media converter and can satisfy most demands of operating environments.



Connections of Ethernet Media Converter

Dimensions



(Unit=mm)

Specifications

ORing Media Converter Model		IMC-121FB-MM-SC	IMC-121FB-SS-SC
Physical Ports			
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX		2	2
100Base-FX fiber Port			
Fiber Ports Specifications	Fiber Ports Number	1	1
	Fiber Ports Standard	100Base - FX	100Base - FX
	Fiber Mode	Multi-mode	Single-mode
	Fiber Diameter (μm)	62.5/125 μm 50/125 μm	9/125 μm
	Fiber Optical Connector	SC	SC
	Typical Distance (km)	2 km	30 km
	Wavelength (nm)	1310 nm	1310 nm
	Max. Output Optical Power (dBm)	-14 dBm	-8 dBm
	Min. Output Optical Power (dBm)	-23.5 dBm	-15 dBm
	Max. Input Optical Power (Saturation)	0 dBm	0 dBm
	Min. Input Optical Power (Sensitivity)	-31 dBm	-34 dBm
	Link Budget (dB)	7.5 dB	19 dB
Technology			
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX	

LED Indicators		
Power Indicator	Green : Power LED x 2	
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. Amber for Duplex/Collision	
100Base-FX Fiber Port Indicator	Green for fiber port Link/Act	
Power		
Input Power	Dual 12~48 VDC power input at 4-pin terminal block	
Power Consumption (Typ.)	4.5 Watts	
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	26.1 (W) x 70 (D) x 95 (H)mm (1.03 x 2.76 x 3.74 inch)	
Weight (g)	210 g	
Environmental		
Storage Temperature	-40 to 85°C(-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
MTBF (Hours) (MIL-HDBK-217F2, GB, GC, 25°C)	1,023,458	1,028,086
Warranty	5 years	

Ordering Information

IMC-1 A B C B - DD - EE

Code Definition	10/100Base-T(X) Port Number	Fiber Port Number	Fiber Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	- **2** : 2 port	- **1**: 1 port	- **F** : 100Base-FX	- **MM** : Multi-mode - **SS** : Single-mode	- **SC**: SC Connector

	Model Name	Description
Available Model	IMC-121FB-MM-SC	Industrial mini type Ethernet to fiber media converter with 2x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2km/1310nm, SC connector
	IMC-121FB-SS-SC	Industrial min type Ethernet to fiber media converter with 2x10/100Base-T(X) and 1x100Base-FX, single-mode, 30km/1310nm, SC connector

Packing List

- IMC-121FB
- DIN-Rail Kit
- Wall-Mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- FPC series : Fiber Patch cord

IMC-B111ETB-TB

IMC-B111ETB-TB

Industrial mini type extended media converter with 1x100Base-TX to 1xEthernet extender, Terminal block socket

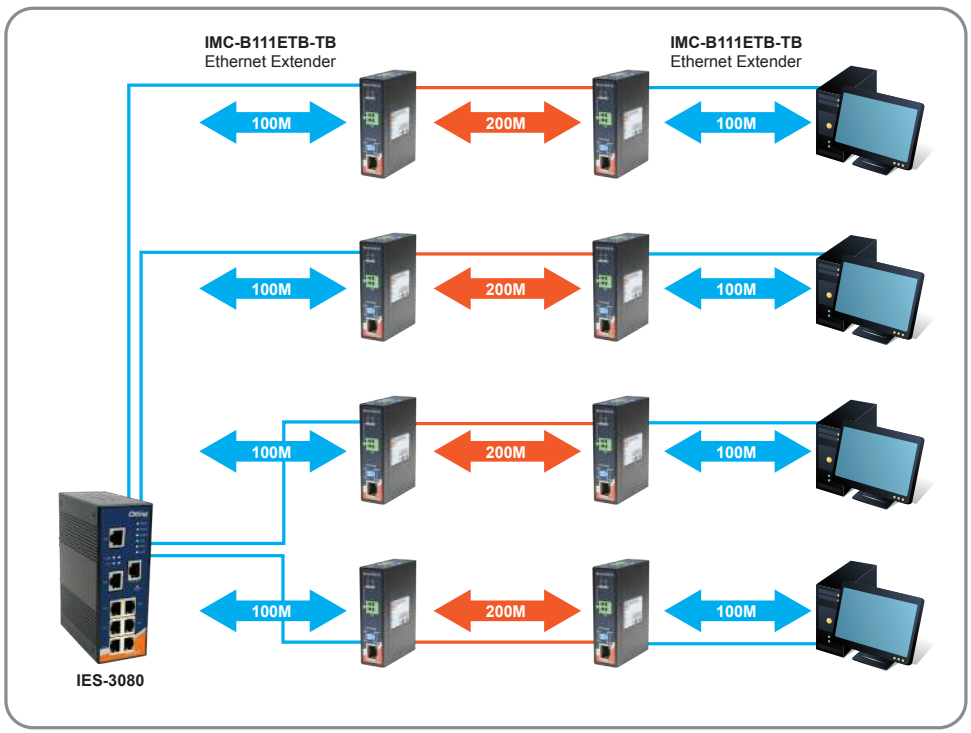
Features

- Extend Ethernet distance up to 300m (984 feet) over UTP cable or up to 200m (656 feet) over 24AWG none-UTP cable
- Supports 2-wired transmission
- Provided DIP-Switch to selecting Auto/Manual mode for Master/Slave setting
- Supports Auto mode to auto-negotiation for master/slave mode switching
- Ethernet port support full/half duplex operation
- Ethernet port support Auto MDI/MDI-X switching function
- Redundant 12~48VDC power inputs with Terminal Block
- Rigid IP-30 mini-type housing design
- DIN-Rail and wall mounting enabled

Mini Type Temperature

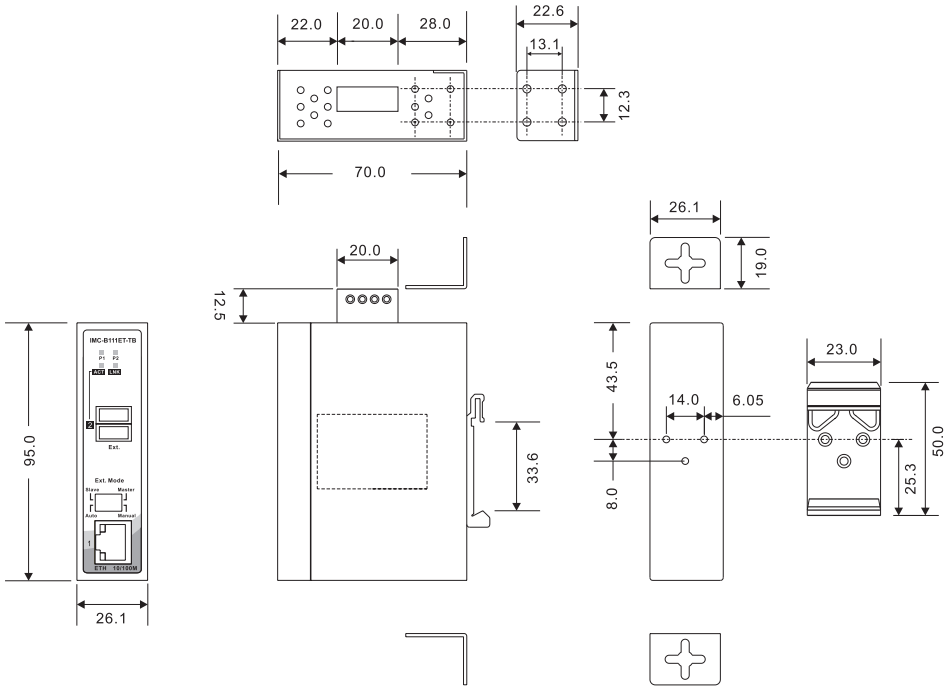
Introduction

IMC-B111ETB-TB is a cost-effective solution for extending an Ethernet connection beyond its inherent distance limitation. IMC-B111ETB-TB can extend the distance to 300 meters using a UTP cable or 200meters using a 24AWG cable. IMC-B111ETB-TB supports 2-wired transmission. IMC-B111ETB-TB provides a wide operating temperature range from -40~75°C, making it suitable for harsh operating environments.



Connections of Media Converter

Dimensions



(Unit=mm)

Specifications

ORing Extended Converter Model	IMC-B111ETB-TB
Physical Ports	
100Base-TX Port in RJ45 Auto MDI/MDIX	1
100Mbps Ethernet Extender Ports in Terminal Block	1 (support 2-wired)
Technology	
Ethernet Standards	IEEE 802.3u for 100Base-TX
Processing	Store-and-Forward
LED Indicators	
Power Indicator	Green : Power LED x 2
100Base-T(X) RJ45 Port Indicator	Green LED for Link indicator. Amber LED for Ack indicator
Ethernet Extender Indicator	Green LED for Link indicator. Amber LED for Ack indicator.
DIP-Switch	
DIP-Switch Setting	DIP-switch 1 for master/slave mode select : (On) Master mode, (Off) slave mode DIP-switch 2 for Auto/Manual mode select : (On) Manual mode ~ Extender need to manual setting master mode or slave mode follow the DIP-switch 1 setting (Off) Auto mode ~ Extender will be auto negotiation and auto setting master or slave mode
Power	
Input Power	Dual 12 ~ 48VDC power inputs.
Power Consumption (Typ.)	2 Watts
Overload Current Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1 (W) x 70 (D) x 95 (H)mm (1.03 x 2.76 x 3.74 inch)
Weight (g)	240 g

Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IMC-B1 A B ETB - CC

Code Definition	100Base-T(X) Port Number	Ethernet Extender Port Number	Ethernet Extender Port Type
Option	- **1** : 1 port	- **1**: 1 port	- **TB** : Terminal block interface

Available Model	Model Name	Description
	IMC-B111ETB-TB	Industrial mini type extended media converter with 1x100Base-TX to 1xEthernet extender, Terminal block socket

Packing List

- IMC-B111ETB-TB
- DIN-Rail Kit
- Wall-Mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply

IMC-B111ETB-RJ45

IMC-B111ETB-RJ45

Industrial mini type extended media converter with 1x100Base-TX to 1xEthernet extender, RJ45 socket

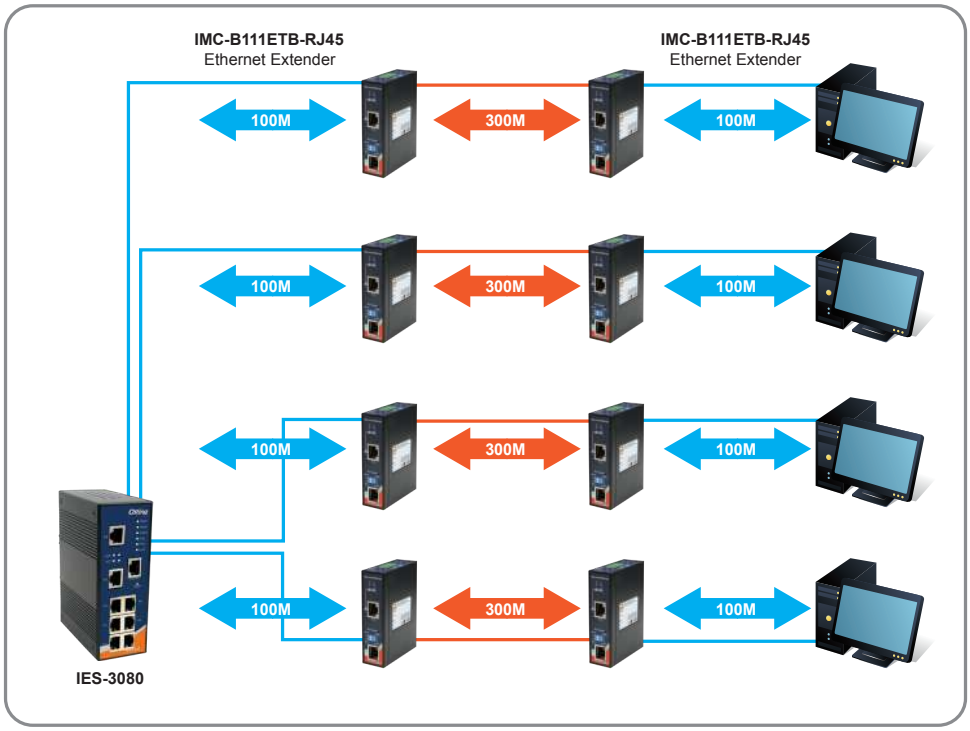
Features

- Extend Ethernet distance up to 300m (984 feet) over UTP cable or up to 200m (656 feet) over 24AWG none-UTP cable
- Support 2/4/8-wired auto detecting transmission
- Provided DIP-Switch to selecting Auto/Manual mode for Master/Slave setting
- Supports Auto mode to auto-negotiation for master/slave mode switching
- Ethernet port support full/half duplex operation
- Ethernet port support Auto MDI/MDI-X switching function
- Redundant 12~48VDC power inputs with Terminal Block
- Rigid IP-30 mini-type housing design
- DIN-Rail and wall mounting enabled

Mini Type -40~75°C Temperature RoHS Lead Free CE FC

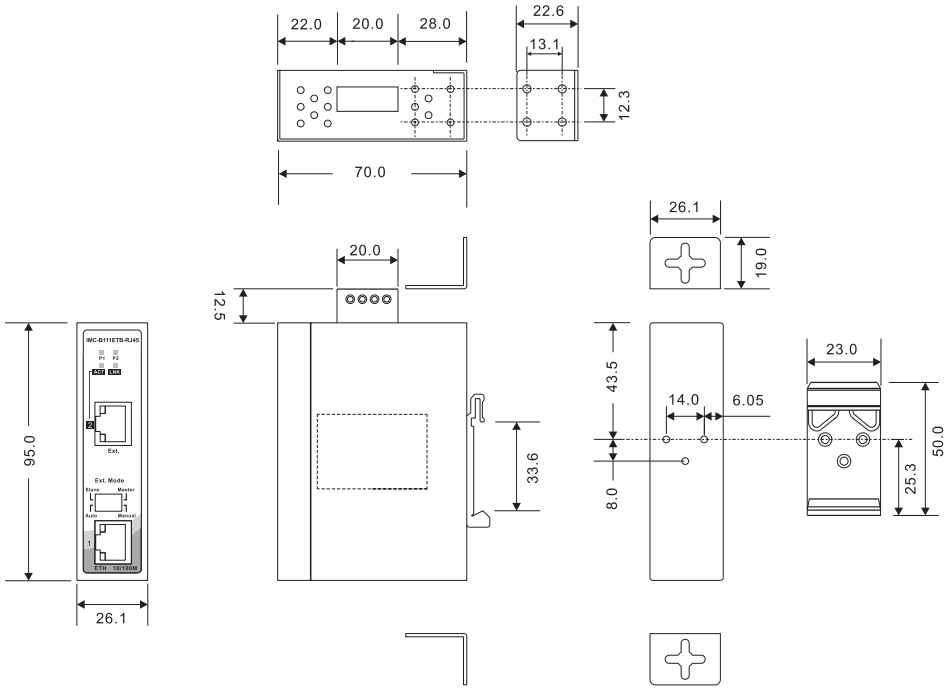
Introduction

IMC-B111ETB-RJ45 is a cost-effective solution for extending an Ethernet connection beyond its inherent distance limitation. IMC-B111ETB-RJ45 can extend the distance to 300 meters using a UTP cable or 200meters using a 24AWG cable. IMC-B111ETB-RJ45 supports 2/4/8-wired auto detecting transmission. IMC-B111ETB-RJ45 provides a wide operating temperature range from -40~75°C, making it suitable for harsh operating environments.



Connections of Media Converter

Dimensions



(Unit=mm)

Specifications

ORing Extended Converter Model	IMC-B111ETB-RJ45
Physical Ports	
100Base-TX Port in RJ45 Auto MDI/MDIX	1
100Mbps Ethernet Extender Ports in RJ45	1 (support 2/4/8-wired auto detecting)
Technology	
Ethernet Standards	IEEE 802.3u for 100Base-TX
Processing	Store-and-Forward
LED Indicators	
Power Indicator	Green : Power LED x 2
100Base-T(X) RJ45 Port Indicator	Green LED for Link indicator. Amber LED for Ack indicator
Ethernet Extender Indicator	Green LED for Link indicator. Amber LED for Ack indicator.
DIP-Switch	
DIP-Switch Setting	DIP-switch 1 for master/slave mode select : (On) Master mode, (Off) slave mode DIP-switch 2 for Auto/Manual mode select : (On) Manual mode ~ Extender need to manual setting master mode or slave mode follow the DIP-switch 1 setting (Off) Auto mode ~ Extender will be auto negotiation and auto setting master or slave mode
Power	
Input Power	Dual 12 ~ 48VDC power inputs.
Power Consumption (Typ.)	2 Watts
Overload Current Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	26.1 (W) x 70 (D) x 95 (H)mm (1.03 x 2.76 x 3.74 inch)
Weight (g)	242 g

Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IMC-B1 A B ETB - CCCC

Code Definition	100Base-T(X) Port Number	Ethernet Extender Port Number	Ethernet Extender Port Type
Option	- **1** : 1 port	- **1**: 1 port	- **RJ45** : RJ45 interface

Available Model	Model Name	Description
	IMC-B111ETB-RJ45	Industrial mini type extended media converter with 1x100Base-TX to 1xEthernet extender, RJ45 connector

Packing List

- IMC-B111ETB-RJ45
- DIN-Rail Kit
- Wall-Mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply

IMC-111FB / IMC-111PB

IMC-111FB IMC-111PB

Industrial mini type Ethernet to fiber media converter with 1x10/100Base-T(X) to 1x100Base-FX fiber / 1x100Base-FX SFP socket

Features

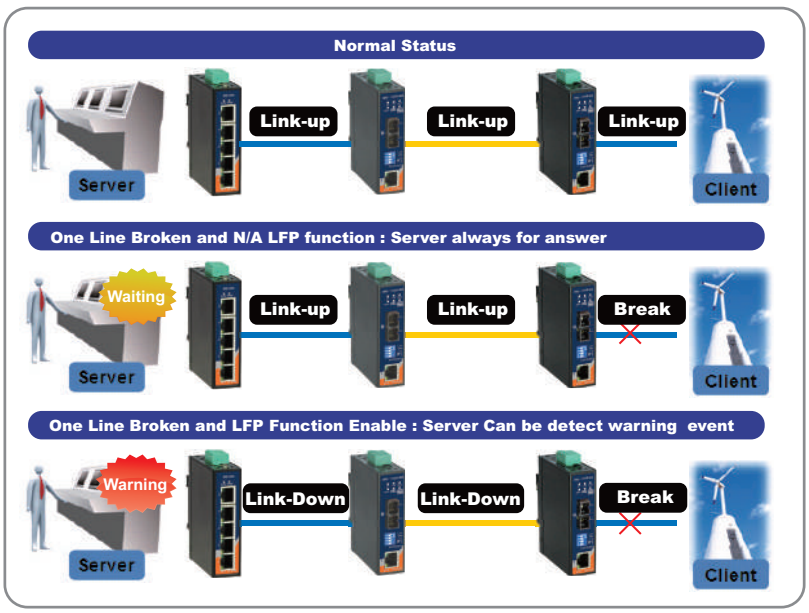
- Support 1 port 10/100Base-T(X) auto-negotiation and auto-MDI/MDI-X
- Support Ethernet to fiber or Ethernet to SFP port
- Support **LFP (Link Fault Pass-through)** function
- Support full/half duplex operation
- Support store and forward transmission
- Provide DIP-Switch to set functions
- High reliability and rigid IP-30 housing
- DIN-Rail and wall mounting enabled

Mini Type Redundant PWR -40~75°C Temperature RoHS Lead Free

Introduction

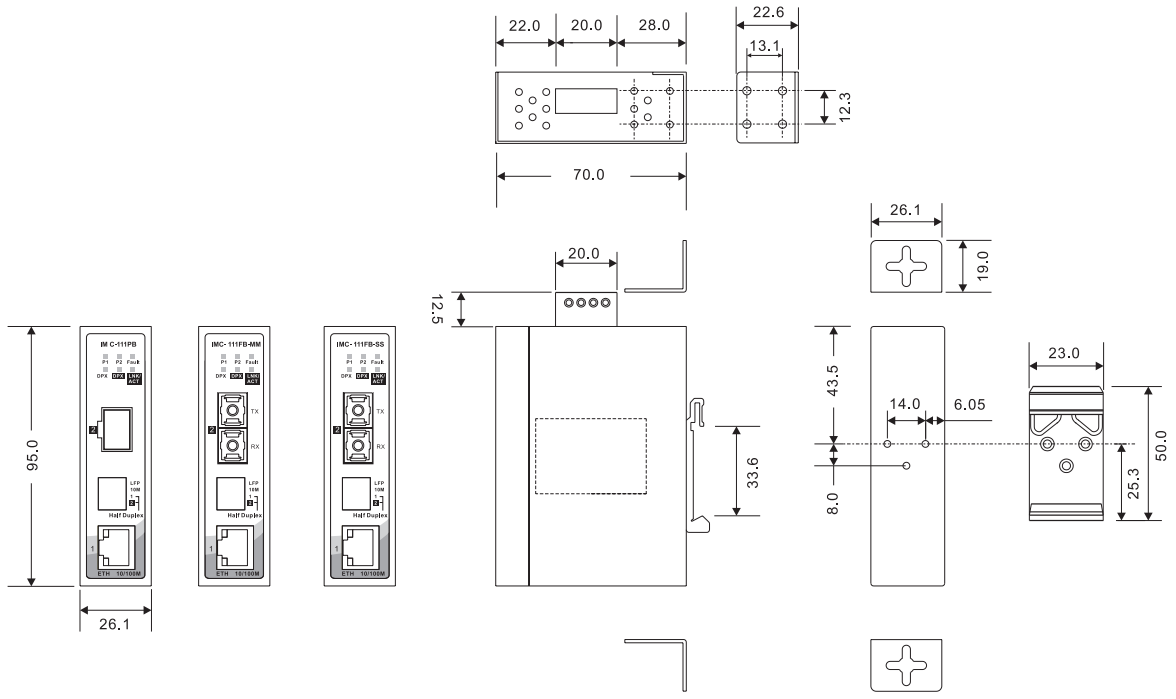
IMC-111 series are the cost-effective solution for the conversion between 10/100Base-T(X) and 100Base-FX interface, as they allow you to extend communication distance by optical fiber. IMC-111 series support MDI/MDIX auto detection, so you don't need to use crossover wires. IMC-111 series have wide operating temperature range from -40 ~ 75℃ and have dual power inputs, each accepting a wide voltage range from 12 ~ 48 VDC. Hence IMC-111 series are suitable for harsh operating environments.

IMC-111 series also support the **LFP (Link Fault Pass-through)** feature. When one side of the link fails, the other side continues transmitting packets and waits for a response that never arrives from the disconnected side. Use the DIP-Switch to enable the LFP function, and then IMC-111 series will force the link to shutdown as soon as noticed that the other link has failed, giving the application software a chance to react to the situation. Therefore the IMC-111 series are reliable media converters that can satisfy most demand of different operating environments.



Connections of Media Converter and LFP function

Dimensions



(Unit=mm)

Specifications

ORing Media Converter Model		IMC-111FB-MM	IMC-111FB-SS	IMC-111PB
Physical Ports				
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX		1	1	1
Fiber Ports				
Fiber Ports Specifications	Fiber Ports Number	1	1	-
	Fiber Ports Standard	100Base - FX	100Base - FX	-
	Fiber Mode	Multi-mode	Single-mode	-
	Fiber Diameter (μm)	62.5/125 μm 50/125 μm	9/125 μm	-
	Fiber Optical Connector	SC	SC	-
	Typical Distance (km)	2 km	30 km	-
	Wavelength (nm)	1310 nm	1310 nm	-
	Max. Output Optical Power (dBm)	-14 dBm	-8 dBm	-
	Min. Output Optical Power (dBm)	-23.5 dBm	-15 dBm	-
	Max. Input Optical Power (Saturation)	0 dBm	0 dBm	-
	Min. Input Optical Power (Sensitivity)	-31 dBm	-34 dBm	-
	Link Budget (dB)	7.5 dB	19 dB	-
100Base-FX SFP port		-	-	1

Technology			
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3x for Flow control		
Processing	Store-and-Forward		
DIP-Switch setting	DIP-Switch 1 for LFP mode selection : (ON) enable / (OFF) disable DIP-Switch 2 for Ethernet speed selection : (ON)10Mbps / (OFF) 10/100Mbps Auto-negotiate DIP-Switch 3 for Ethernet full/half duplex selection : (ON) Half-duplex / (OFF) Full/Half-Duplex Auto-negotiate DIP-Switch 4 for fiber full/half duplex selection : (ON) Half-Duplex / (OFF) Full-Duplex		
LED Indicators			
Power Indicator	Green : Power LED x 2		
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act – (ON) Link up / (Blinking) Acting / (OFF) Link down Amber for 100Mbps/10Mbps indicator – (ON) Link at 100Mbps / (OFF) Link at 10Mbps Green for port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex		
100Base-FX Fiber Port Indicator	Green for fiber port Link/Act - (ON) Link up / (Flash) Acting / (OFF) Link down Green for fiber port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex		
LFP status indicator	Amber LED – (ON) LFP function fail / (OFF) LFP function disable		
Power			
Input Power	Dual 12~48 VDC power input at 4-pin terminal block		
Power Consumption (Typ.)	2.2 Watts		
Overload Current Protection	Present		
Reverse Polarity Protection	Present on terminal block		
Physical Characteristics			
Enclosure	IP-30		
Dimensions (W x D x H)	26.1 (W) x 70 (D) x 95 (H)mm (1.03 x 2.76 x 3.74 inch)		
Weight (g)	218 g	218 g	213 g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-40 to 75°C (-40 to 167°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory Approvals			
EMI	FCC Part 15, CISPR (EN55022) class A		
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11		
Shock	IEC60068-2-27		
Free Fall	IEC60068-2-32		
Vibration	IEC60068-2-6		
Safety	EN60950-1		
Warranty	5 years		

Ordering Information

IMC-1 A B C B - DD - EE

Code Definition	10/100Base-T(X) Port Number	Fiber Port Number	Fiber Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	- **1** : 1 port	- **1**: 1 port	- **F** : 100Base-FX - **P**: 100Base-FX SFP	- **MM** : Multi-mode - **SS** : Single-mode	- **SC**: SC Connector

	Model Name	Description
Available Model	IMC-111FB-MM-SC	Industrial mini type Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2km/1310nm, SC connector
	IMC-111FB-SS-SC	Industrial min type Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, single-mode, 30km/1310nm, SC connector
	IMC-111PB	Industrial mini type Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, SFP socket

Packing List

- IMC-111FB / 111PB
- DIN-Rail Kit
- Wall-Mount Kit
- Quick Installation Guide

Optional Accessories

- SFP100 series : 100Mbps SFP optical transceiver
- DR-75 series : 75 Watts power supply
- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply
- FPC series : Fiber Patch cord

IMC-P111FX Series
IMC-P111P Series

IMC-P111FX Series IMC-P111P Series

Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) to 1x100Base-FX fiber or 1x100Base-FX SFP socket

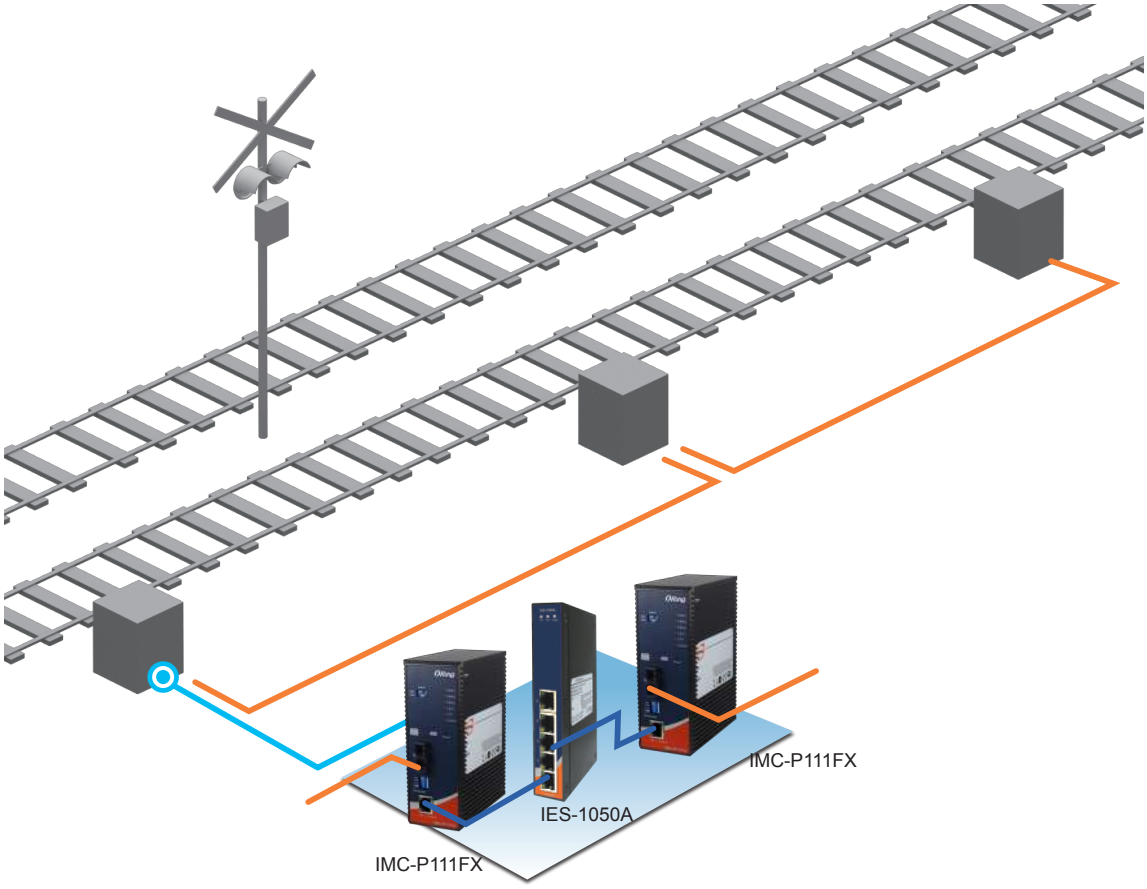
Features

- Designed for Railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Supports 1 port 10/100Base-T(X) auto-negotiation and auto-MDI/MDI-X
- Support Ethernet to fiber or Ethernet to SFP port
- Support **LFP (Link Fault Pass-through)** function
- Supports full/half duplex operation
- Supports store and forward transmission
- Supports relay output for power failed alarm
- Provided DIP-Switch to setting function
- High reliability and rigid IP-30 housing
- DIN-Rail and wall mounting enabled

Introduction

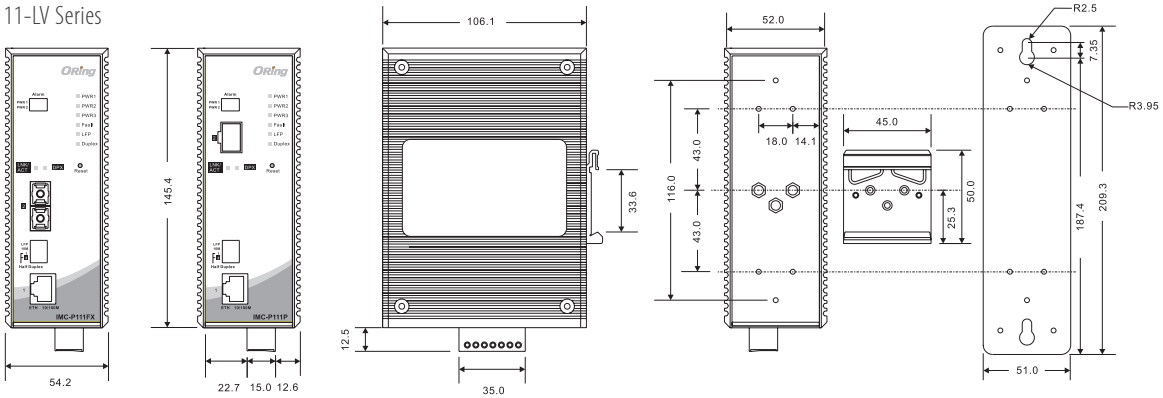
IMC-P111 series is a cost-effective solution for the conversion between 10/100Base-T(X) and 100Base-FX interface; it allows you to extend communication distance by optical fiber. IMC-P111 series are designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613. IMC-P111 series supports MDI/MDIX auto detection, so you don't need to use crossover wires. IMC-P111 series with wide operating temperature range from -40 ~ 85^{0}C and accepts a wide voltage range power inputs, so it is suitable for harsh operating environments.

IMC-P111 series also support the **LFP (Link Fault Pass-through)** feature. When one side of the link fails, the other side continues transmitting packets, and waiting for a response that never arrives from the disconnected side. Use the DIP-Switch to enable the LFP function, then IMC-P111 series will force the link to shutdown as soon as noticed that the other link has failed, giving the application software a chance to react to the situation. Therefore, the IMC-P111 series is reliable media converter and can satisfy most demand of power substation and rolling stock application.

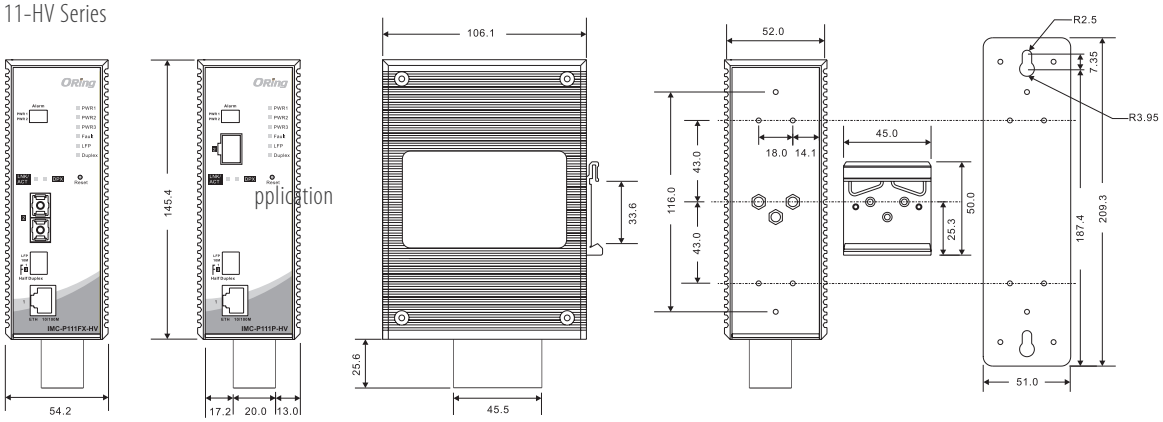


Dimensions

IMC-P111-LV Series



IMC-P111-HV Series



pplication

(Unit=mm)

Specifications

ORing Media Converter Model		IMC-P111FX-MM	IMC-P111FX-SS	IMC-P111P
Physical Ports				
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX		1	1	1
Fiber Port Specification	Fiber Ports Number	1	1	-
	Fiber Ports Standard	100Base-FX	100Base-FX	-
	Fiber Mode	Multi-mode	Single-mode	-
	Fiber Diameter (μm)	62.5/125 μm 50/125 μm	9/125 μm	-
	Fiber Optical Connector	SC	SC	-
	Typical Distance (Km)	2 Km	30 Km	-
	Wavelength (nm)	1310 nm	1310 nm	-
	Max. Output Optical Power (dbm)	-14 dbm	-8 dbm	-
	Min. Output Optical Power (dbm)	-23.5 dbm	-15 dbm	-
	Max. Input Optical Power (Saturation)	0 dbm	0 dbm	-
	Min. Input Optical Power (Sensitivity)	-31 dbm	-34 dbm	-
	Link Budget (db)	7.5 db	19 db	-
100Base-FX SFP port		-	-	1
Technology				
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-T(X) and 100Base-FX IEEE 802.3x for Flow control		
Processing		Store-and-Forward		
DIP-Switch setting		DIP-Switch 1 for LFP mode selection : (ON) enable / (OFF) disable DIP-Switch 2 for Ethernet speed selection : (ON)10Mbps / (OFF) 10/100Mbps Auto-negotiate DIP-Switch 3 for Ethernet full/half duplex selection : (ON) Half-duplex / (OFF) Full/Half-Duplex Auto-negotiate DIP-Switch 4 for fiber full/half duplex selection : (ON) Half-Duplex / (OFF) Full-Duplex		
Alarm DIP-Switch				
DIP-Switch 1		Power-1 failed warning : (ON) enable, (OFF) disable		
DIP-Switch 2		Power-2 failed warning : (ON) enable, (OFF) disable		
LED Indicators				
Power Indicator		Green : Power LED x 3 (ON : power input on-line / (OFF) power input off-line		
10/100Base-T(X) RJ45 port indicator		Green for port Link/Act – (ON) Link up / (Blinking) Acting / (OFF) Link down Amber for port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex		
100Base-FX fiber port indicator		Green for fiber port Link/Act - (ON) Link up / (Flash) Acting / (OFF) Link down Amber for fiber port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex		
LFP statue indicator		Amber LED – (ON) LFP function fail / (OFF) LFP function disable		
Fault indicator		Amber : Indicate unexpected event occurred		
Duplex indicator		Green for port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex		
Power				
LV Model Input Power		Triple DC inputs. Dual 12~48VDC on 7-pin terminal block, one 12~45VDC on power jack		
HV Model Input Power		Dual 100~240VAC power inputs on 8-pin terminal block		
Power consumption (Typ.)		LV model : 12 Watts, HV model : 100VAC/4.8Watts, 240VAC/5.8Watts)	LV model : 12 Watts HV model : 100VAC/4.8Watts, 240VAC/5.8Watts)	LV model : 12 Watts HV model : 100VAC/4.8Watts, 240VAC/5.8Watts)
Overload current protection		Present		
Reverse polarity protection		Present on terminal block		

Physical Characteristic			
Enclosure	IP-30		
Dimension (W x D x H)	52(W)x106.1(D)x144.3(H) mm (2.05x4.18x5.68 inch.)		
Weight (g)	LV model : 660 g HL model : 802 g	LV model : 660 g HL model : 802 g	LV model : 650g HV model : 792g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-40 to 85°C (-40 to 185°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory approvals			
EMC	CE EMC (EN 55024, EN 55032), IEC 61850/IEEE1613, FCC Part 15 B		
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A		
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP))		
Shock	IEC60068-2-27		
Free Fall	IEC60068-2-31		
Vibration	IEC60068-2-6		
Safety	EN60950-1		
MTBF	-HV: 871329 hrs -LV: 602979 hrs	-HV: 779622 hrs -LV: 509133 hrs	-HV: 1401738 hrs -LV: 816887 hrs
Warranty	5 years		

Ordering Information

IMC-P1 A B CC - DD-EE

Code Definition	10/100Base-T(X) Port Number	100Base-FX Fiber Port Number	Fiber Port Type	Fiber Optical Mode	Fiber Optical Connector
Option	**- 1:** 1 port	**- 1:** 1 ports	**-FX:** 100Base-FX fiber **-P:** 100Base-FX SFP	**-MM:** Multi-mode **-SS:** Single-mode	**-SC:** SC connector

	Model Name	Description
Available Model	IMC-P111FX-MM-SC-LV	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector, low-voltage power inputs
	IMC-P111FX-SS-SC-LV	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector, low-voltage power inputs
	IMC-P111FX-MM-SC-HV_US	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, US power cord
	IMC-P111FX-SS-SC-HV_US	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, UK power cord
	IMC-P111FX-MM-SC-HV_UK	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, SFP socket, low-voltage power inputs
	IMC-P111FX-SS-SC-HV_UK	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, UK power cord
	IMC-P111FX-MM-SC-HV_EU	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, EU power cord
	IMC-P111FX-SS-SC-HV_EU	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, EU power cord
	IMC-P111FX-MM-SC-HV_JP	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, JP power cord
	IMC-P111FX-SS-SC-HV_JP	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, JP power cord
	IMC-P111P-LV	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, SFP socket, low-voltage power inputs

	Model Name	Description
Available Model	IMC-P111P-HV_US Preliminary	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, SFP socket, high-voltage power inputs, US power cord
	IMC-P111P-HV_UK Preliminary	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, SFP socket, high-voltage power inputs, UK power cord
	IMC-P111P-HV_EU Preliminary	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, SFP socket, high-voltage power inputs, EU power cord
	IMC-P111P-HV_JP Preliminary	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, SFP socket, high-voltage power inputs, JP power cord

Packing List

- IMC-P111FX/P111P x 1
- Wall-Mount Kit x 1
- Quick Installation Guide x 1
- Din-Rail Kit x 1

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- DR-75 series : 75 Watts power supply
- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply

IMC-V111ET-TB

IMC-V111ET-TB

Industrial extended media converter with 1x10/100Base-T(X) to 1xVDSL2, Terminal block socket

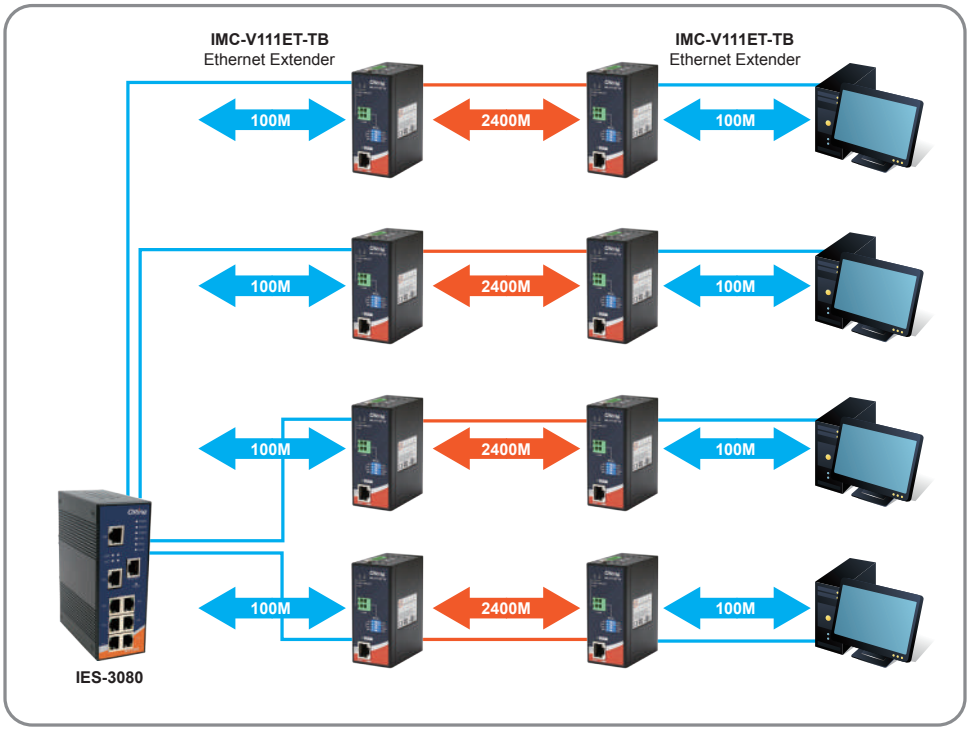
Features

- Extend Ethernet distance up to 2,400m over 24AWG cable
- Cost-effective CO/CPE selectable via DIP switch
- Supports 2-wired transmission
- Redundant, reverse polarity protection 12~48VDC power inputs with Terminal Block
- Selectable Asymmetric and Symmetric mode for transmission of upstream and downstream signals
- Selectable SNR margin
- Ethernet port support Auto MDI/MDI-X switching function
- Ethernet port support full/half duplex operation
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

RoHS Lead Free · CE · FC · Redundant PWR · -40~75°C Temperature

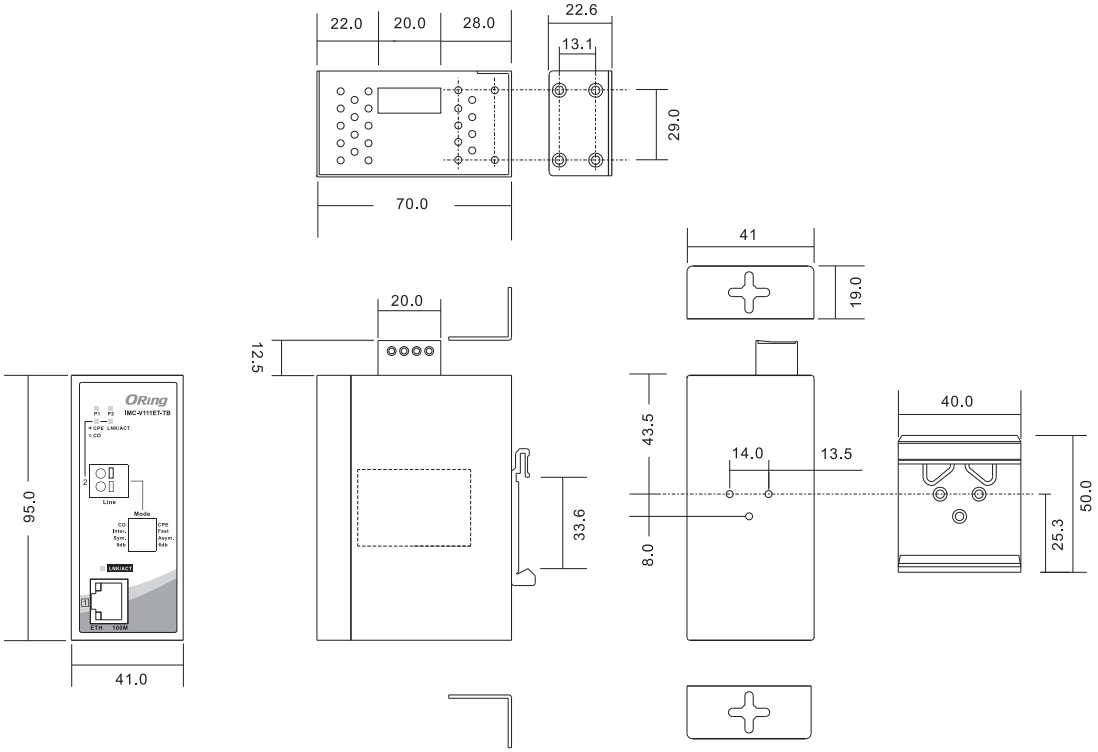
Introduction

IMC-V111ET-TB is a cost-effective solution for extending an Ethernet connection beyond its inherent distance limitation. IMC-V111ET-TB can extend the distance to 2,400 meters using a 24AWG cable. It has a switching architecture with 1 RJ-45 100Mbps Ethernet port and one asymmetric or symmetric Ethernet over VDSL2 port which is a terminal block connector supports 2-wired transmission. IMC-V111ET-TB provides a wide operating temperature range from -40~75°C, making it suitable for harsh operating environments.



Connections of Media Converter

Dimensions



(Unit=mm)

Specifications

ORing Switch Model	IMC-V111ET-TB		
Physical Ports			
100Base-TX Port in RJ45 Auto MDI/MDIX	**1**		
100Mbps Ethernet Extender Ports in Terminal Block	**1 (support 2-wired)**		
Technology			
Ethernet Standards	IEEE 802.3u for 100Base-TX, VDSL ITU-T G.993.1, VDSL2 ITU-T G.993.2		
Processing	Store-and-Forward		
Performance			
VDSL speed	Refer to Appendix A.		
LED Indicators			
Power Indicator	Green : Power LED x 2		
CO/CPE mode Indicator	Green LED for CPE mode.		
100Base-T(X) RJ45 Port Indicator	Green LED for Link/ACK indicator.		
Ethernet Extender Indicator	Green LED for Link/ACK indicator.		
DIP-Switch			
DIP-Switch Setting	DIP-switch 1 for CPE/CO (Slave/Master) mode select :	(ON) CPE mode	(Off) CO mode
	DIP-switch 2 for fast/interleaved mode select :	(ON) Fast mode	(Off) Inter. mode
	DIP-switch 3 for Asymmetric/Symmetric mode select :	(ON) Asym. mode	(Off) Sym. mode
	DIP-switch 4 for SNR mode select :	(ON) 6db mode	(Off) 9db mode
Power			
Input power	Dual 12 ~ 48VDC power inputs.		

Power consumption (Typ.)	4.75 Watts
Overload current protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	41 (W) x 70 (D) x 95.5 (H)mm (1.61 x 2.76 x 3.76 inch)
Weight (g)	272g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Warranty	5 years

Appendix A

Loop Length (m, PE 0.4mm loop)	Annex-17a-A-17a-eu32_I-8/2			
	Downstream		Upstream	
	ActDataRate (Mbps)	Noise Margin Reported (dB)	ActDataRate (Mbps)	Noise Margin Reported (dB)
0	101.0	14.8	52.5	7.2
200	101.0	12.4	52.5	7
400	88.2	6.6	45.8	6.8
600	60.5	5.9	30.4	6.3
800	44.6	6.1	12.7	6.5
1000	33.5	6.3	5.6	6.1
1200	28.4	7.4	2.1	6
1400	21.5	7.5	0.7	6
1600	16.8	7.1	0.7	6.3
1800	12.9	7.4	0.7	6.2
2000	9.8	7.6	0.8	6.1
2200	7.7	7.4	0.8	6.1
2400	5.9	7.4	0.7	6.2

Loop Length (m, PE 0.4mm loop)	Annex-B-B7-9_I-8/2			
	Downstream		Upstream	
	ActDataRate (Mbps)	Noise Margin Reported (dB)	ActDataRate (Mbps)	Noise Margin Reported (dB)
0	71.7	7.1	76.4	7.1
200	69.6	7.7	74.7	7.1
400	60.0	7.1	65.3	6.9
600	46.8	6.4	44.6	6.5
800	37.8	6.8	19.6	6.1
1000	29.5	6.3	9.1	5.7
1200	26.1	6.8	4.2	5.7
1400	22.2	7.8	1.2	5.6
1600	18.0	7.4	0.7	6.2
1800	14.5	7.2	0.7	6.2
2000	11.5	7.2	0.8	5.9
2200	9.3	7.3	0.7	6
2400	7.4	7.3	0.6	6.1

Loop Length (m, PE 0.4mm loop)	Annex-30a-A-30a-eu32_I-8/2			
	Downstream		Upstream	
	ActDataRate (Mbps)	Noise Margin Reported (dB)	ActDataRate (Mbps)	Noise Margin Reported (dB)
0	101.0	25	101.0	8.2
200	101.0	19.4	97.1	6.3
400	100.9	6	53.3	5.7
600	60.8	5.8	32.8	7
800	39.3	5.6	15.4	8.9
1000	31.9	6.3	5.5	7
1200	29.2	7.2	2.1	6.1

Loop Length (m, PE 0.4mm loop)	Annex-B-B7-10_I-8/2			
	Downstream		Upstream	
	ActDataRate (Mbps)	Noise Margin Reported (dB)	ActDataRate (Mbps)	Noise Margin Reported (dB)
0	101.0	17.6	101.0	17.4
200	101.0	10.2	101.0	17.8
400	64.8	6.3	96.2	6.8
600	46.9	5.9	51.5	6.6
800	32.6	8.1	21.0	7.7
1000	29.2	6.3	9.1	6
1200	25.7	7.5	4.9	5.6

Ordering Information

IMC-V1 A B ET- CC

Code Definition	100Base-T(X) Port Number	100Mbps Ethernet Extender Port Number	Ethernet Extender Port Type
Option	- **1** : 1 port	- **1** : 1 port	- **TB** : Terminal block interface

Available Model	Model Name	Description
	IMC-V111ET-TB	Industrial VDSL extended media converter with 1x100Base-TX to 1xEthenet extender, Terminal block socket

Packing List

- IMC-V111ET-TB x 1
- Quick Installation Guide x 1
- DIN-Rail Kit x 1
- Wall-mount Kit x 1

Optional Accessories

- DR-45 series : 45 Watts DIN-Rail power supply
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply

IPMC-111PB

IPMC-111PB

Industrial mini type Ethernet to fiber PoE media converter with 1x10/100Base-T(X) P.S.E. and 1x100Base-FX, SFP socket

Features

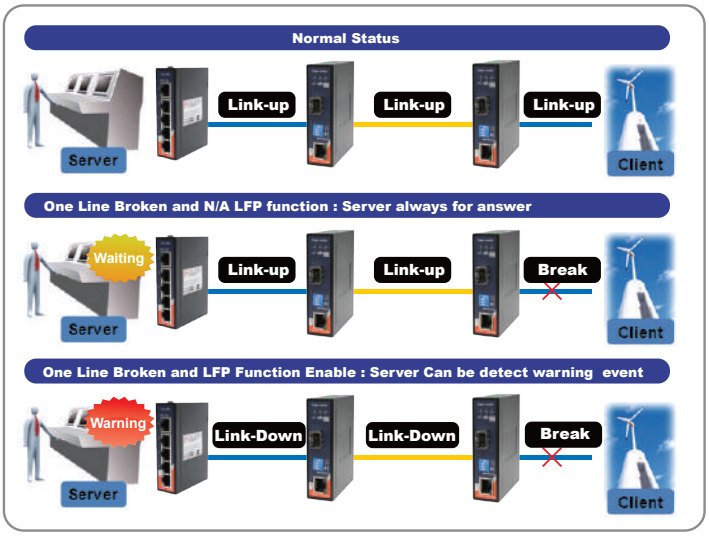
- Supports 1 port 10/100Base-T(X) P.S.E. auto-negotiation and auto-MDI/MDI-X
- Support Ethernet to fiber or Ethernet to SFP port
- Support **LFP (Link Fault Pass-through)** function
- Supports full/half duplex operation
- **P.S.E.** fully compliant with IEEE802.3at standard, provide up to 30 Watts
- Supports store and forward transmission
- Provided DIP-Switch to setting function
- High reliability and rigid IP-30 housing
- DIN-Rail and wall mounting enabled

P.S.E PUE | Mini Type | Redundant PWR | -40~75°C Temperature | RoHS Lead Free | CE | FC

Introduction

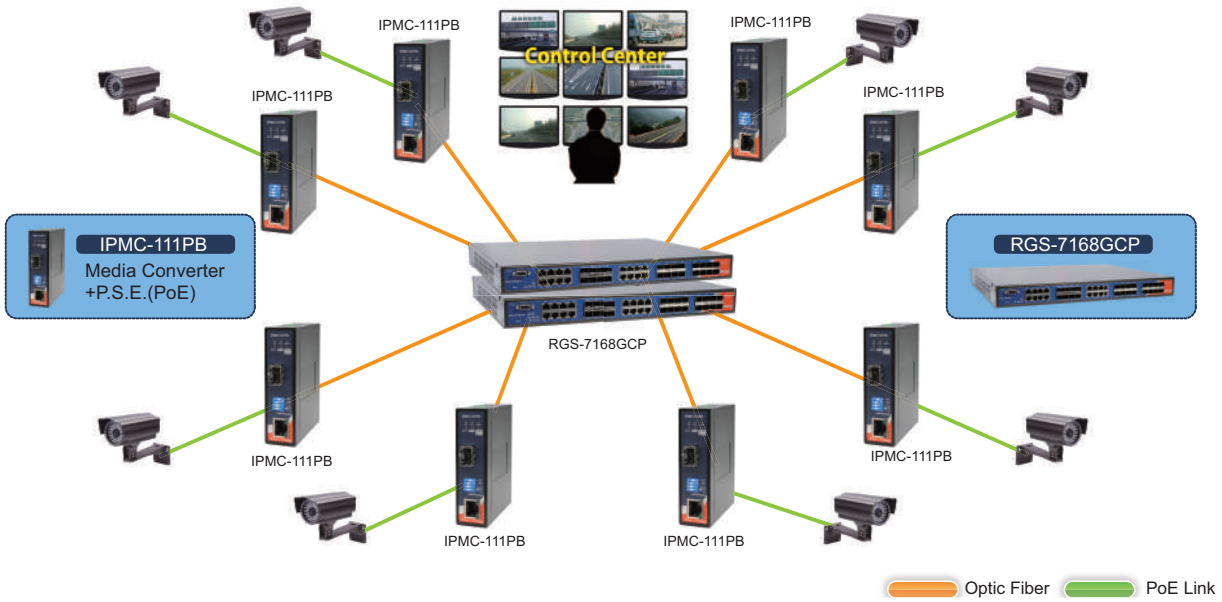
IPMC-111PB is a cost-effective solution for the conversion interface between 10/100Base-T(X) and 100Base-FX, it allows you to extend communication distance by optical fiber. IPMC-111PB supports MDI/MDIX auto detection, so you don't need to use crossover wires. IPMC-111PB also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each IPMC-111PB has 1x10/100Base-T(X) P.S.E. (Power Sourcing Equipment) port to provide power in a PoE setup. IPMC-111PB with wide operating temperature range from -40 ~ 75℃ and accepts a wide voltage range from dual 50~57 VDC power inputs, so it is suitable for harsh operating environments.

IPMC-111PB also supports the **LFP (Link Fault Pass-through)** feature. When one side of the link fails, the other side continues transmitting packets, and waiting for a response that never arrives from the disconnected side. Use the DIP-Switch to enable the LFP function, then IPMC-111PB will force the link to shutdown as soon as noticed that the other link has failed, to notice the administrator to react to the situation. Therefore, the IPMC-111PB is reliable media converter with PoE capability and can satisfy most demand of operating environment.



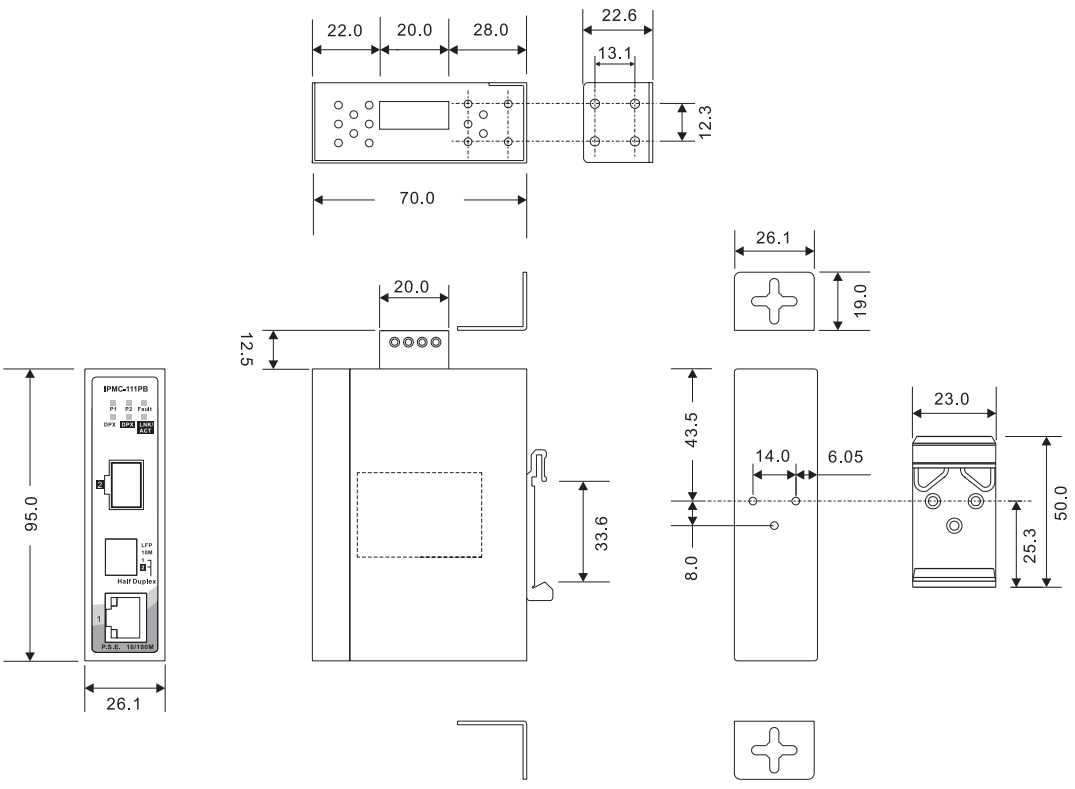
Connections of the LFP function

Practical Operation



Connections of the media converters

Dimensions



(Unit=mm)

Connector and Pin Definition

10/100Base-T(X) P.S.E. RJ-45 port

	RJ-45 Output (Data and Power)	
Pin	**Symbol**	**Description**
1	Rx+ (Vdc+)	Data Receive and Feeding power(+)
2	Rx- (Vdc+)	Data Receive and Feeding power(+)
3	Tx+ (Vdc-)	Data Transmit and Feeding power(-)
4	NC	Not Connected
5	NC	Not Connected
6	Tx- (Vdc-)	Data Transmit and Feeding power(-)
7	NC	Not Connected
8	NC	Not Connected

Note: pins 3 and 6 (-Vdc) should not be shorted to ground

Specifications

ORing Media Converter Model	IPMC-111PB
Physical Ports	
10/100 Base-T(X) with P.S.E. Port in RJ45 Auto MDI/MDIX	**1**
100/1000Base-X SFP port	**1**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3x for Flow control IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.)
Processing	Store-and-Forward
LED indicators	
Power indicator	Green : Power LED x 2 (ON : power input on-line / (OFF) power input off-line
10/100Base-T(X) RJ45 port indicator	Green for port Link/Act – (ON) Link up / (Blinking) Acting / (OFF) 10Mbps or Link down Green for port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex
100Base-FX fiber port indicator	Green for fiber port Link/Act - (ON) Link up / (Flash) Acting / (OFF) Link down Green for fiber port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex
LFP state indicator	Amber LED – (ON) LFP function happen / (OFF) LFP function disable
PoE indicator	Green for P.S.E. indicator
DIP Switch for function	
DIP-Switch setting	DIP-Switch 1 for LFP mode selection : (ON) enable / (OFF) disable DIP-Switch 2 for Ethernet speed selection : (ON)10Mbps / (OFF) 10/100Mbps Auto-negotiate DIP-Switch 3 for Ethernet full/half duplex selection : (ON) Half-duplex / (OFF) Full/Half-Duplex Auto-negotiate DIP-Switch 4 for fiber full/half duplex selection : (ON) Half-Duplex / (OFF) Full-Duplex
Power	
Input power	Dual 50~57 VDC voltage power inputs at 4-pin terminal block
Power consumption (Typ.)	3 Watts (Not include P.D's device)
Overload current protection	Present
Reverse polarity protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	26.1 (W) x 70 (D) x 95 (H)mm (1.03 x 2.76 x 3.74 inch)
Weight (g)	228g
Environmental	

Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	2130802hr
Warranty	5 years

H/W version: 2

Ordering Information

IPMC-1 A B C B

Code Definition	10/100Base-T(X) Port Number	Fiber Port Number	Fiber Port Type
Option	- **1** : 1 port	- **1**: 1 port	- **P**: 100Base-FX SFP

Available Model	Model Name	Description
	IPMC-111PB	Industrial mini type Ethernet to fiber PoE+ media converter with 1x10/100Base-T(X) P.S.E. and 1x100Base-FX, SFP socket

Packing List

- IPMC-111PB x 1
- Wall-Mount Kit x 1
- Quick Installation Guide x 1
- Din-Rail Kit x 1

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- DR/SDR/DRP series DIN-Rail power supply

IPMC-111PB++-60W

IPMC-111PB++-60W

Industrial mini type Ethernet to fiber High power PoE++ media converter with 1x10/100Base-T(X) P.S.E. and 1x100Base-FX, SFP socket

Features

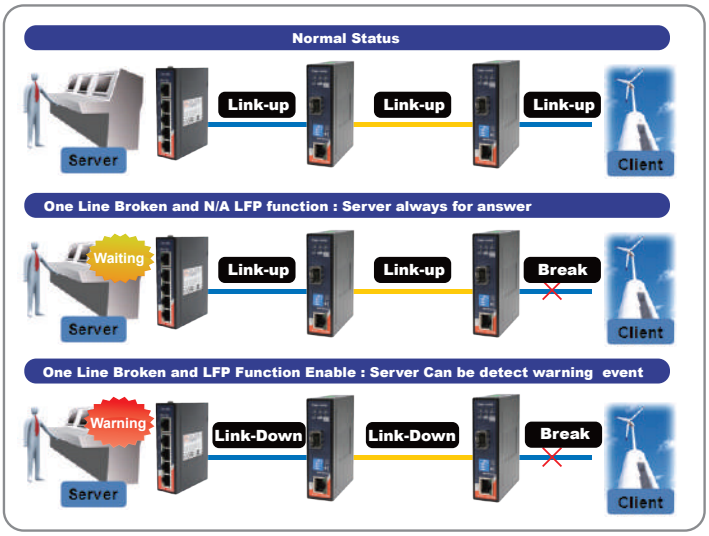
- Supports 1 port 10/100Base-T(X) P.S.E. auto-negotiation and auto-MDI/MDI-X
- Support Ethernet to fiber or Ethernet to SFP port
- Support **LFP (Link Fault Pass-through)** function
- Supports full/half duplex operation
- **P.S.E.** fully compliant with IEEE802.3at standard, provide up to **60Watts**
- Supports store and forward transmission
- Provided DIP-Switch to setting function and PoE mode selectable
- High reliability and rigid IP-30 housing
- DIN-Rail and wall mounting enabled

P.S.E. POE 60W IEEE 802.3bt | Mini Type | Redundant PWR | -40~75°C Temperature | RoHS Lead Free | CE | FC

Introduction

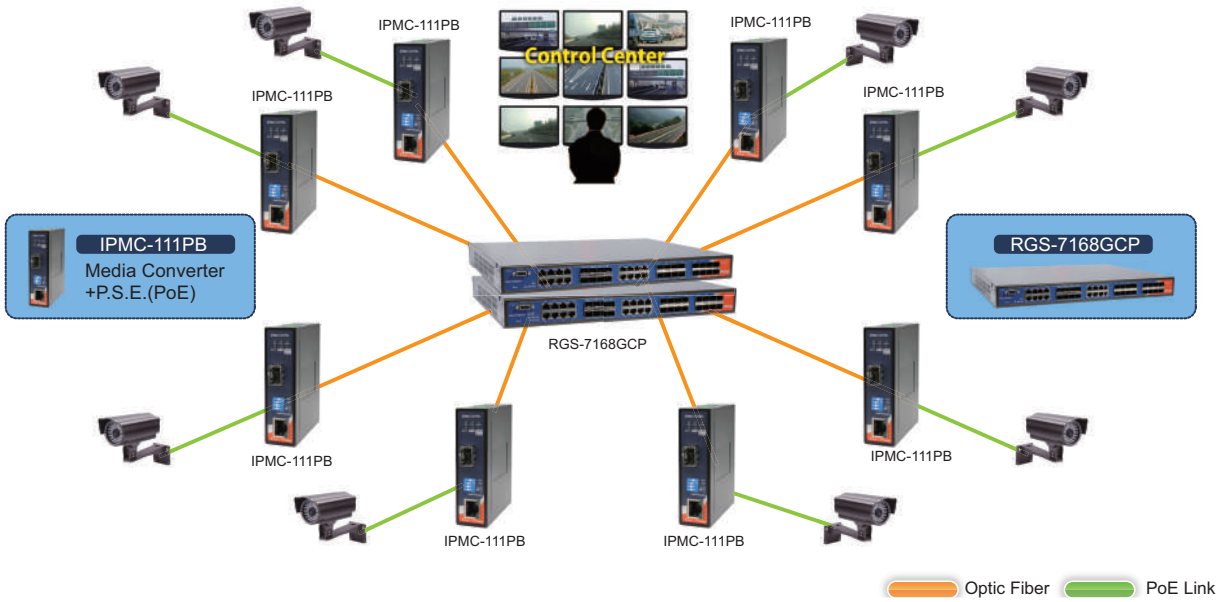
IPMC-111PB++-60W is a cost-effective solution for the conversion interface between 10/100Base-T(X) and 100Base-FX, it allows you to extend communication distance by optical fiber. IPMC-111PB++-60W supports MDI/MDIX auto detection, so you don't need to use crossover wires. IPMC-111PB++-60W also support Power over Ethernet, a system to transmit electrical power up to **60 watts**, along with data, to remote devices over standard 4-pair cable in an Ethernet network. Each IPMC-111PB++-60W has 1x10/100Base-T(X) P.S.E. (Power Sourcing Equipment) port to provide power in a PoE setup. IPMC-111PB with wide operating temperature range from -40 ~ 75℃ and accepts a wide voltage range from dual 50~57 VDC power inputs, so it is suitable for harsh operating environments.

IPMC-111PB++-60W also supports the **LFP (Link Fault Pass-through)** feature. When one side of the link fails, the other side continues transmitting packets, and waiting for a response that never arrives from the disconnected side. Use the DIP-Switch to enable the LFP function, then IPMC-111PB++-60W will force the link to shutdown as soon as noticed that the other link has failed, to notice the administrator to react to the situation. Therefore, the IPMC-111PB++-60W is reliable media converter with PoE capability and can satisfy most demand of operating environment.



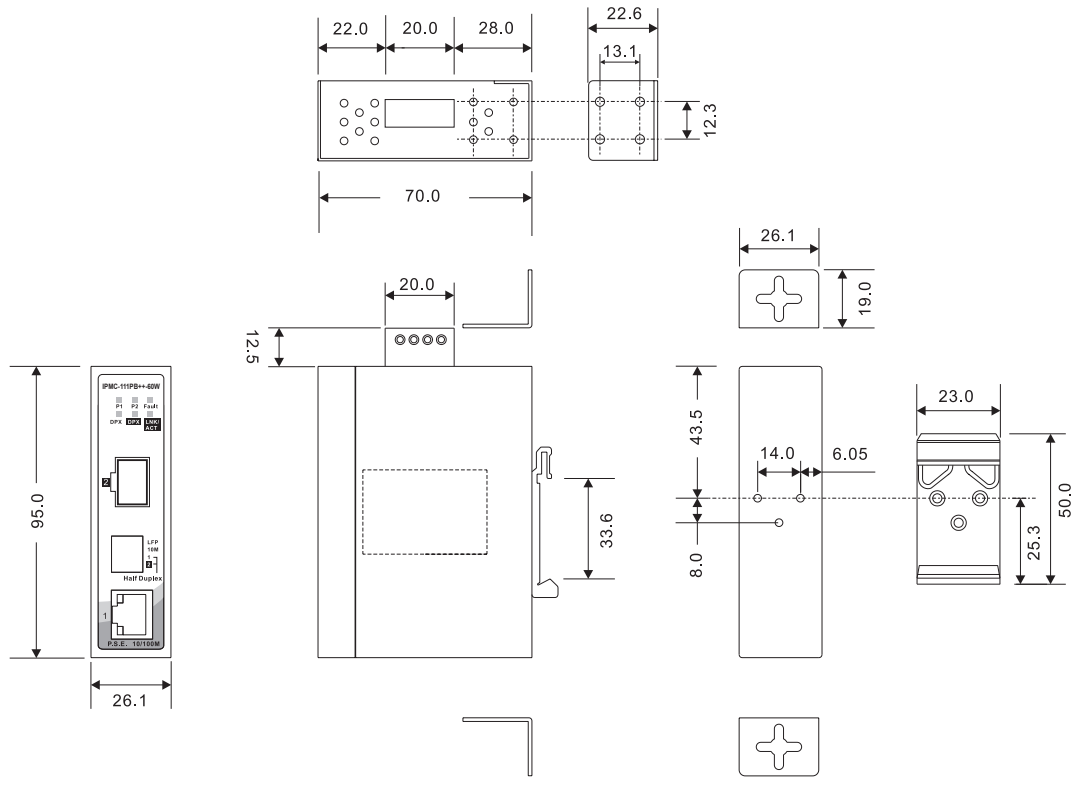
Connections of the LFP function

Practical Operation



Connections of the media converters

Dimensions



(Unit=mm)

Connector and Pin Definition

10/100 Base-T(X)

	RJ-45 Output (Data and Power)	
Pin	**Symbol**	**Description**
1	Rx+ (Vdc1+)	Data Receive and Feeding power(+)
2	Rx- (Vdc1+)	Data Receive and Feeding power(+)
3	Tx+ (Vdc1-)	Data Transmit and Feeding power(-)
4	NC (Vdc2+)	Not Connected and Feeding power(+)
5	NC (Vdc2+)	Not Connected and Feeding power(+)
6	Tx- (Vdc1-)	Data Transmit and Feeding power(-)
7	NC (Vdc2-)	Not Connected Feeding power(-)
8	NC (Vdc2-)	Not Connected Feeding power(-)

Note: pins 3/6/7/8 (-Vdc) should not be shorted to ground

Specifications

ORing Media Converter Model	IPMC-111PB++-60W
Physical Ports	
10/100 Base-T(X) with P.S.E. Port in RJ45 Auto MDI/MDIX	**1**
100/1000Base-X SFP port	**1**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3x for Flow control IEEE 802.3at PoE specification
Processing	Store-and-Forward
LED indicators	
Power indicator	Green : Power LED x 2 (ON : power input on-line / (OFF) power input off-line
10/100Base-T(X) RJ45 port indicator	Green for port Link/Act – (ON) Link up / (Blinking) Acting / (OFF) 10Mbps or Link down Green for port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex
100Base-FX fiber port indicator	Green for fiber port Link/Act - (ON) Link up / (Flash) Acting / (OFF) Link down Green for fiber port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex
LFP state indicator	Amber LED – (ON) LFP function happen / (OFF) LFP function disable
PoE indicator	Green for P.S.E. indicator
DIP Switch for function	
DIP-Switch setting	DIP-Switch 1 for LFP mode selection : (ON) enable / (OFF) disable DIP-Switch 2 for Ethernet speed selection : (ON)10Mbps / (OFF) 10/100Mbps Auto-negotiate DIP-Switch 3 for Ethernet full/half duplex selection : (ON) Half-duplex / (OFF) Full/Half-Duplex Auto-negotiate DIP-Switch 4 for fiber full/half duplex selection : (ON) Half-Duplex / (OFF) Full-Duplex
DIP Switch for PoE mode	
DIP Switch 1/2	DIP Switch 1/2 (OFF): PoE P.S.E set to master and Asyncronize mode. (default) DIP Switch 1/2 (ON) : PoE P.S.E set to syncronize mode
Power	
Input power	Dual 50~57 VDC voltage power inputs at 4-pin terminal block
Power consumption (Typ.)	3 Watts (Not include P.D's device)
Short circuit protection	Present
Reverse polarity protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	26.1 (W) x 70 (D) x 95 (H)mm (1.03 x 2.76 x 3.74 inch)

Weight (g)	228g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	EN55032, EN55024(CE EMC), FCC Part 15 B, EN61000-3-2, EN 61000-3-3
EMI	CISPR 32, EN 55032, FCC Part 15 B class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8 (PFMF), IEC 61000-4-11 (DIP)
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	2067004 hrs
Warranty	5 years

Ordering Information

IPMC-1 A B C B++-60W

Code Definition	10/100Base-T(X) Port Number	Fiber Port Number	Fiber Port Type
Option	- **1** : 1 port	- **1**: 1 port	- **P**: 100Base-FX SFP

Available Model	Model Name	Description
	IPMC-111PB++-60W	Industrial mini type Ethernet to fiber High power PoE++ media converter with 1x10/100Base-T(X) P.S.E. and 1x100Base-FX, SFP socket

Packing List

- IPMC-111PB++-60W x 1
- Wall-Mount Kit x 1
- Quick Installation Guide x 1
- Din-Rail Kit x 1

Optional Accessories (Can be purchased separately)

- SFP100 series : 100Mbps SFP optical transceiver
- DR/SDR/DRP series DIN-Rail power supply

ITGMC-111GP+

ITGMC-111GP+

Industrial Gigabit Ethernet to fiber media converter with 1G/10GBase-T and 1x1G/10GBase-X, SFP+ socket

Features

- Support 1 port 1G/10GBase-T auto-negotiation and auto-MDI/MDI-X copper port
- Support 1 port 1G/10GBase-X SFP+ fiber port
- Support Jumbo Frame up to 10K Bytes
- Relay output to carry capacity of 1A at 24 VDC for warning system
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled

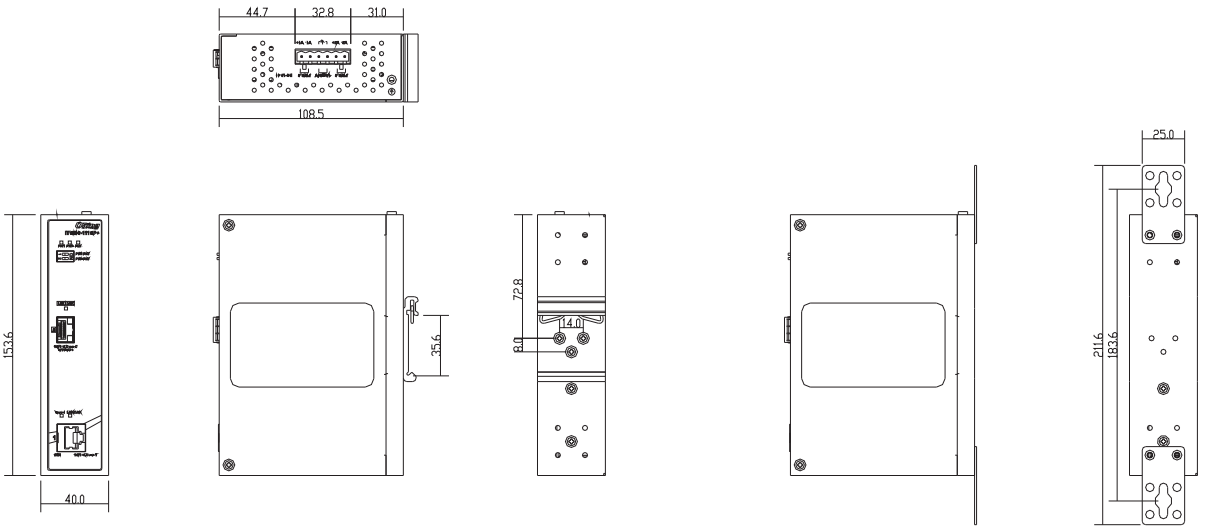
10 Gigabit Redundant PWR RoHS Lead Free CE FC

Introduction

The ITGMC-111GP+ is a cost-effective solution for the interface conversion between 1G/10GBase-T and 1G/10GBase-X SFP+ socket. It allows you to extend communication distance of Gigabit copper port with optical fiber. ITGMC-111GP+ supports MDI/MDIX auto detection, so you don't need to use crossover wires.

The ITGMC-111GP+ is designed with wide operating temperature range from -20 ~ 60°C and accepts a wide voltage range from dual 12~48 VDC power inputs, so it is suitable for harsh operating environments. Therefore, the ITGMC-111GP+ is the reliable media converter and can satisfy most demand of operating environment.

Dimensions



(Unit=mm)

Specifications

ORing 10G Media Converter Model	ITGMC-111GP+
Physical Ports	
1G/10GBase-T in RJ45 Auto MDI/MDIX	1
1G/10GBase-X SFP+ port	1*NOTE1
Technology	
Ethernet Standards	IEEE 802.3ae for 10Gigabit Ethernet IEEE 802.3an for 10GBase-T IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X
Jumbo Frame	10K
LED Indicators	
Power Indicator	Green : Power LED x 2
1G/10GBase-X SFP+ Port Indicator	Green for port Link/Act
1G/10GBase-T RJ45 port Indicator	Green for Link/Act Dual color LED for speed – Green for 10Gbps, Amber for 1Gbps
Relay Indicator	Amber LED – ON: Relay activated(closed) / OFF: Relay de-activated(opened)
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24 VDC
Power	
Input Power	Dual 12 ~ 48 VDC voltage power inputs in 6-pin terminal block
Power Consumption (Typ.)	8.6W
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	40 (W) x 108 (D) x 154 (H) mm
Weight (g)	437g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-20 to 60°C (-4 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
MTBF(mean time between failures)	
Time	944763.5677 hrs
Warranty	5 years

***Note1: 10GBase-T must use shielding twisted pair cable of Cat6a or above.**

Ordering Information

ITGMC-1 A B CCC

Code Definition	1G/10GBase-T Port Number	1G/10GBase-X Fiber Port Number	Fiber Port Type
Option	- **1** : 1 port	- **1**: 1 port	- **GP+**: 1G/10GBase-X SFP+

Available Model	Model Name	Description
	ITGMC-111GP+	Industrial Gigabit Ethernet to fiber media converter with 1x1G/10GBase-T and 1x1G/10GBase-X, SFP+ socket

Packing List

- ITGMC-111GP+ x 1
- Wall-mount Kit x 1
- Quick Installation Guide x 1
- DIN-Rail Kit x 1

Optional Accessories (Can be purchased separately)

- SFP1G series : 1Gbps SFP optical transceiver
- SFP10G series : 10Gbps SFP+ optical transceiver
- SFPC10G series : 10Gbps SFP+ copper cable
- DR/SDR/DRP series DIN-Rail power supply

ISC-4110U / 8110U

ISC-4110U ISC-8110U

Industrial 1-port USB to 4/8-port RS-232 serial media converter

Features

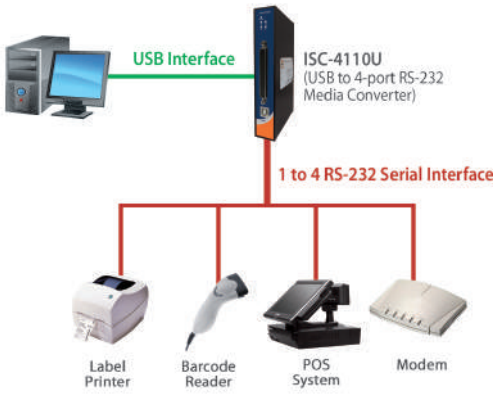
- Fully compliant with USB 2.0 specifications
- Support Full-Duplex transmission
- RS-232 support RTS/CTS, DSR/DTR handshake signals
- Support baud rate up to 921.6Kbps
- USB bus powered with Ultra low power consumption (<500mA)
- Rigid IP-30 slim type housing design
- DIN-Rail and wall mounting enabled
- Driver support : Windows/ Win-CE/ Windows Mobile/ Linux multi O.S.

Slim Type Redundant PWR -40~70°C Temperature

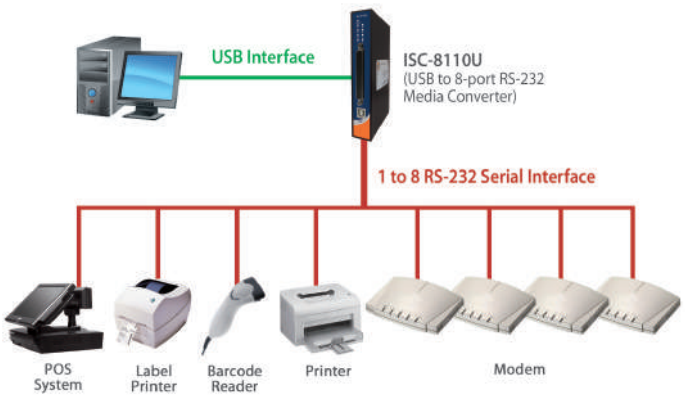
RoHS Lead Free

Introduction

ISC-4110U and ISC-8110U are intelligent and compact-size media converters that provide conversion between one Universal Serial Bus (USB) port and 4 or 8 High-Speed RS-232 serial ports. The ISC-4110U and ISC-8110U feature easy connectivity for traditional serial devices. The RS-232 standard supports full-duplex communication and handshaking signals (such as RTS, CTS, DSR, DTR). Internal high-speed transient suppressors on each data line protect the modules from dangerous voltages levels or spikes. ISC-4110U/8110U can derive the power from USB port or redundant power inputs. Therefore, ISC-4110U and ISC-8110U are among the most reliable choices for USB to RS-232 media converter applications.

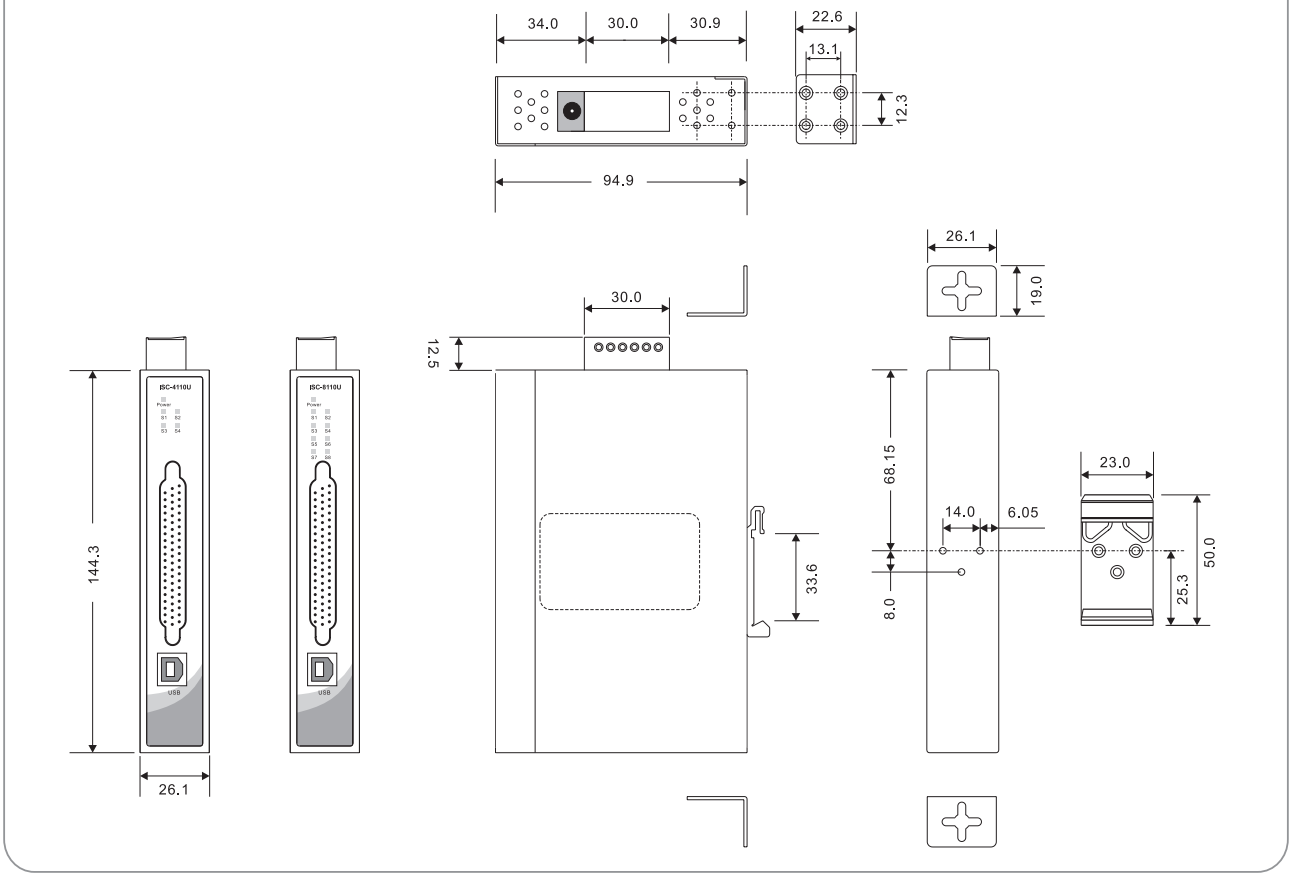


Connections of USB to Serial Media Converter



Connections of USB to Serial Media Converter

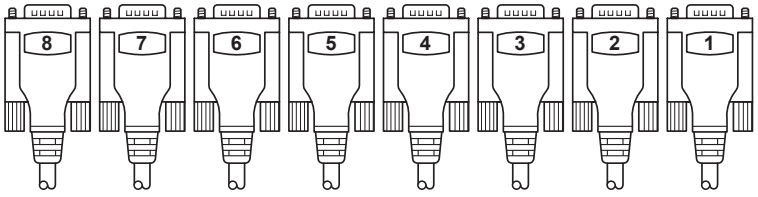
Dimensions



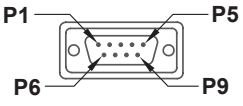
(Unit=mm)

Pin Definitions

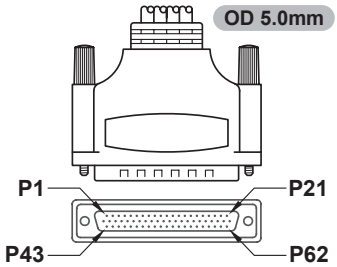
Cable of DB62 male to 4/8-port DB9 male connector is provided. The cable length is 1 meter.



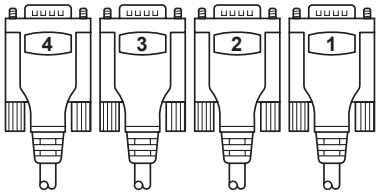
8-port DB9 Male connector



DB9 Male Pin Assignment

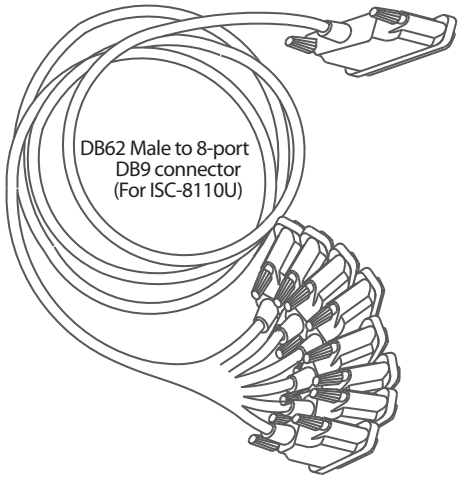


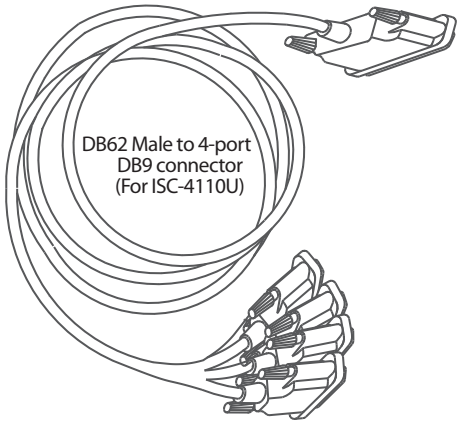
DB62 Male with 4/8-port RS-232 connector



4-port DB9 Male connector

Pin #	RS-232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	N.C.
RS-232 mode act as DTE	





Specifications

ORing Media Converter Model	ISC-4110U	ISC-8110U
Physical Ports		
USB 2.0 port	1	1
RS-232 Serial Port	4	8
Serail Connector	DB9 connector (Male) : By DB62 to 4xDB9 cable	DB9 connector (Male) : By DB62 to 8xDB9 cable
Baud Rate	300 to 921.6Kbps	
RS-232 Signals	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND	
LED Indicators		
Power Indicator	Green : Power LED x 1	
Data Transmission Indicator	Green LED x 4	Green LED x 8
Power		
Input Power	USB bus power (self power) or Dual DC inputs by 12-48VDC on 2-pin terminal block and power jack	
Power Consumption (Typ.)	1.6 Watts (320mA@5V USB Bus Power)	2 Watts (400mA@5V USB Bus Power)
Protection		
Serial Port Protection	Build-in 15KV ESD protection	
Driver Support		
Operation System	Windows 2000 (32bit), Windows 20003/XP/Vista/2008/7 (32/64bit), Windows Mobile 5/6, PocketPC 2003, WinCE 4.2~5.2/6.0, Linux x86 (32/64bit)	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	26.1(W) x 94.9(D) x 144.3(H) mm (1.03 x 3.74 x 5.68 inch)	
Weight (g)	348g	350g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	

Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

ISC-ABCDE

Code Definition	Serial Port Number	Port Type	Converter Prot Number	Converter Type	Other Type
Option	**- 4 :** 4port **- 8 :** 8port	**- 1 :** RS-232 only **- 2 :** RS-422/485 **- 3 :** RS-232/422/485	**- 1 :** 1port	**- 0 :** other type **- 1 :** RS-232 only **- 2 :** RS-422/485 **- 3 :** RS-232/422/485	**- F :** 100Base-FX Fiber **- U :** USB

	Model Name	Description
Available Model	ISC-4110U_US	Industrial 1-port USB to 4-port RS-232 serial media converter, US power adapter
	ISC-4110U_EU	Industrial 1-port USB to 4-port RS-232 serial media converter, EU power adapter
	ISC-8110U_US	Industrial 1-port USB to 8-port RS-232 serial media converter, US power adapter
	ISC-8110U_EU	Industrial 1-port USB to 8-port RS-232 serial media converter, EU power adapter

Packing List

- ISC-4110U/8110U
- DIN-Rail Kit
- Wall-Mount Kit
- USB Cable
- DB62 to DB9 Cable
- 12V/1A Power adapter
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- SDR-240-48, 240W DIN-Rail power supply
- SDR-480-48, 480W DIN-Rail power supply

ISC-1210U-I / 1310U-I

ISC-1210U-I ISC-1310U-I

Industrial USB to Serial Media Converter with Isolation

Features

- Fully compliant with USB specification 1.1
- Support Full-Duplex transmission for RS-232/RS-422
- RS-232/RS-422 support RTS/CTS handshake signals
- Transient suppression on RS-485 data lines
- Auto detect and switching for USB to RS-232/422/485
- Auto detect and switching baud rate up to 115.2Kbps
- USB bus powered with ultra low power consumption
- DIN-Rail and wall mounting enabled

Isolation -10~70°C Temperature

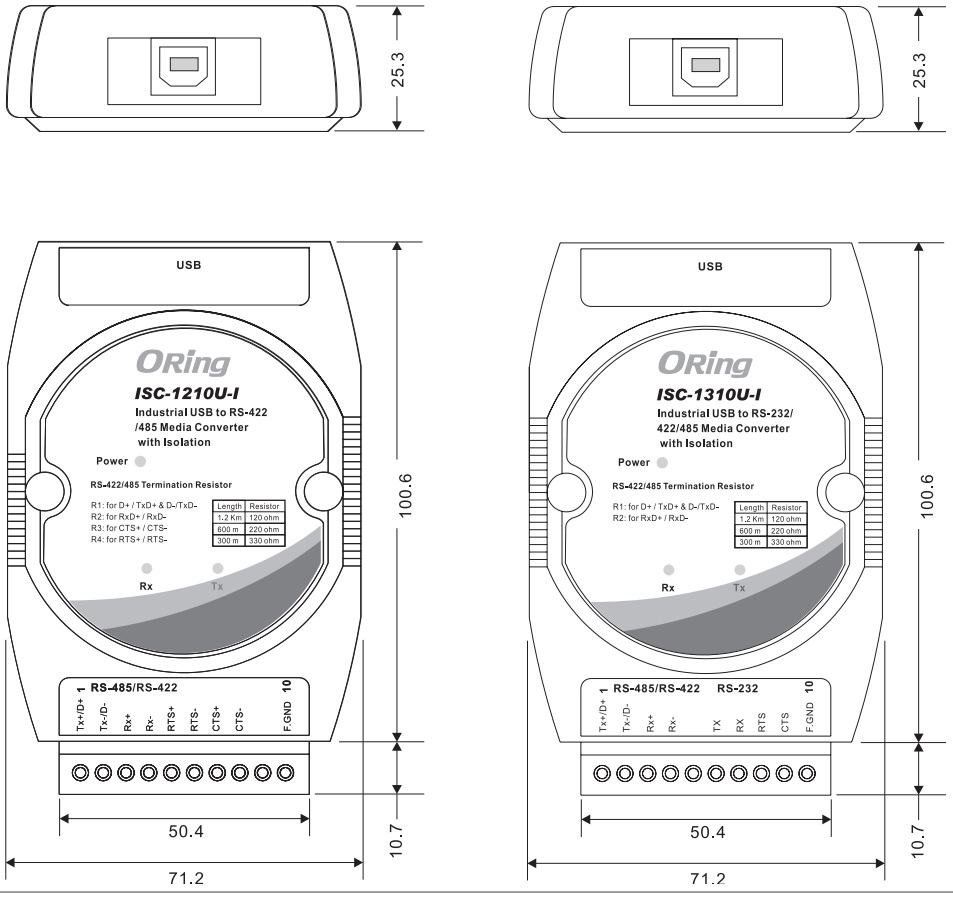
RoHS Lead Free CE FC

Introduction

The ISC-1210U-I / ISC-1310U-I converter is an intelligent, stackable expansion module that connects to a PC USB port or USB Hub via the Universal Serial Bus(USB) port, providing one High-Speed RS-232/RS-422 or RS-485 serial port(jumper-less). The ISC-1210U-I / ISC-1310U-I features easy connectivity for traditional serial devices. The RS-232 standard supports full-duplex communication and handshaking signals (such as RTS, CTS) and the RS-485 control is completely transparent to the user and software written for half-duplex operation without any modification. The ISC-1210U-I / ISC-1310U-I's opto-isolators provide 3000 VDC of isolation to protect the host computer from destructive voltage spikes on the RS-232/RS-422 and RS-485 data lines. ISC-1210U-I / ISC-1310U-I also offer internal surge-protection on data lines. The internal high-speed transient suppressors on each data line protect the modules from dangerous voltages levels or spikes. In addition, the ISC-1210U-I / ISC-1310U-I module derives the power from USB port and doesn't need any aid of external power adapter.

Connections of USB to Serial Media Converter

Dimensions



(Unit=mm)

Specifications

ORing Media Converter Model	ISC-1210U-I	ISC-1310U-I
Physical Ports		
USB V1.1 Port	1	1
Serial Port	RS-422/485	RS-232/422/485
Serail Connector	10-pin terminal block	
Baud Rate	300 to 115.2Kbps	
Signals	RS-422 : TX+, TX-, RX+, RX-, RTS+, RTS-, CTS+, CTS- RS-485 : Data+, Data-	RS-232 : TX, RX, RTS, CTS, GND RS-422 : TX+, TX-, RX+, RX- RS-485 : Data+, Data-
LED Indicators		
Power Indicator	Green : Power LED x 1	
TxD Indicator	Green LED x 1	
RxD Indicator	Red LED x 1	
Power		
Input Power	From USB bus power (self power)	
Power Consumption (Typ.)	0.65 Watts	

Protection		
Isolation	3000 VDC	
Driver Support		
O.S.	Windows 95/98/ME/2000/XP, Linux	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	71.2(W) x 25.3(D) x 100.6(H) mm (2.8x1x3.96 inch.)	
Weight (g)	130 g	140 g
Environmental		
Storage Temperature	-25 to 85°C (-13 to 185°F)	
Operating Temperature	-10 to 70°C (14 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Warranty	2 years	

Ordering Information

ISC- A B C D E - F

Code Definition	Serial Port Number	Port Type	Converter Prot Number	Converter Type	Other Type	Additional Function
Option	- **1 :** 1port	- **1 :** RS-232 - **2 :** RS-422/485 - **3 :** RS-232/422/485	- **1 :** 1port	- **0 :** other type - **1 :** RS-232 - **2 :** RS-422/485 - **3 :** RS-232/422/485	- **F :** 100Base-FX Fiber - **U :** USB	- **I :** Isolation

	Model Name	Description
Available Model	ISC-1210U-I	Industrial 1-port USB to 1-port RS-422/485 serial media converter with 3KV isolation
	ISC-1310U-I	Industrial 1-port USB to 1-port RS-232/422/485 serial media converter with 3KV isolation

Packing List

- ISC-1210U-I/1310U-I
- DIN-Rail Kit
- Wall-Mount Kit
- USB Cable
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

ISC-1112 / ISC-1112-I

ISC-1112 / ISC-1112-I

Industrial RS-232 to RS-422/485 Serial Media Converter

- Support multiple baud rate and multiple data format
- Support highest power output
- Auto Hardware Direction Control for RS-485
- Auto switching baud rate from 300 ~ 115200 bps
- Power requirements from +9 ~ 30 VDC
- ABS with captive mounting hardware design
- DIN-Rail and wall mounting enabled

Isolation -10~70°C Temperature

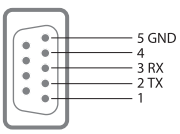
RoHS Lead Free CE FC

Introduction

ISC-1112 series are industrial media converters provide media conversion between RS-232 and RS-422/485 interface. ISC-1112 series are ABS housing design and supporting an operating temperature of -10 to 70°C. The RS-485 control is completely transparent to the user and software written for half-duplex operation without any modification. ISC-1112-I opto-isolators provide 3000VDC of isolation to protect the host computer from destructive voltage spikes. Therefore, the ISC-1112 series is reliable serial media converter and can satisfy most demand of operating environment.

Connections of Serial Media Converter

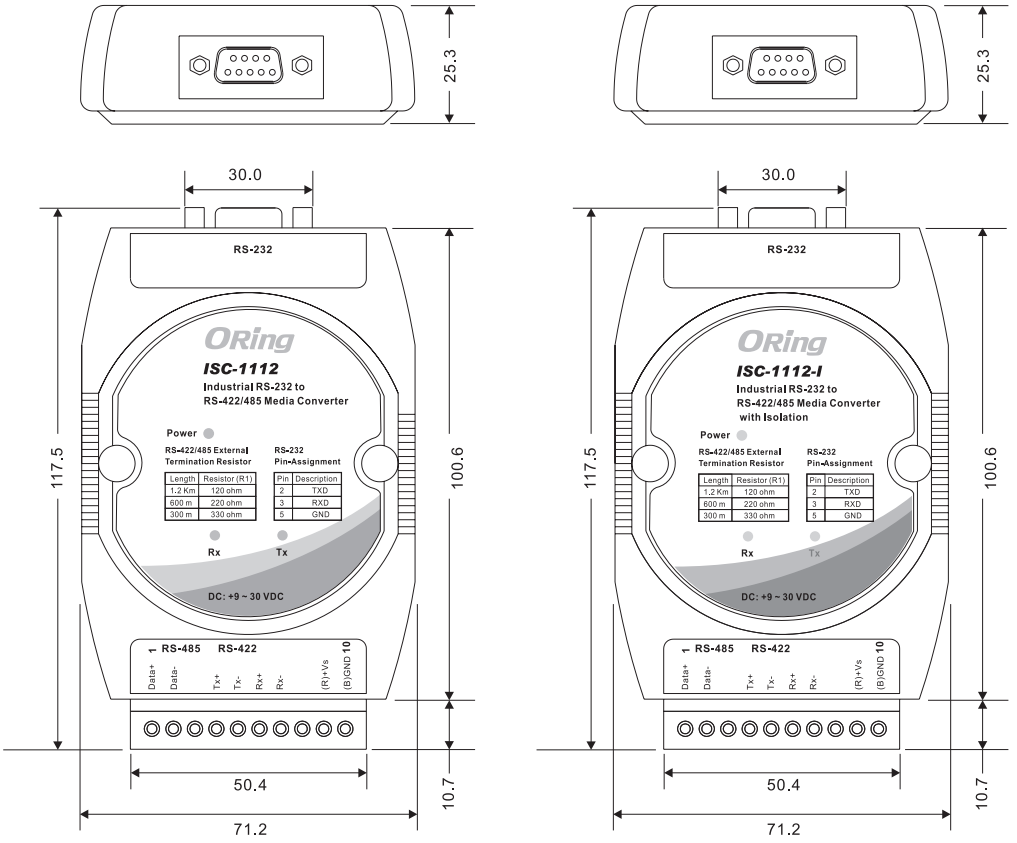
Pin Assignment



RS-232 in DB9 Female

RS-422/485 Terminal Block Pin Assignment										
Interface	RS-485		Reserved	RS-422				Reserved	Power Input	
Pin No.	1	2	3	4	5	6	7	8	9	10
Info	Data+	Data-	N.C.	TX+	TX-	RX+	RX-	N.C.	V+	GND

Dimensions



(Unit=mm)

Specifications

ORing Media Converter Model	ISC-1112-I	ISC-1112
Physical Ports		
RS-232 Connector	DB9 (Female)	
RS-422/485 Connector	10-pin terminal block	
RS-232 Signals	TX, RX, GND	
RS-422/485 Signals	RS-422 : TX+, TX-, RX+, RX- RS-485 : Data+, Data-	
Baud Rate	300 to 115.2Kbps	
Data bit	5, 6, 7, 8	
Stop bit	1, 1.5, 2	
Parity	None, Even, Odd, Space, Mark	
Flow Control	XON/XOFF (software) Auto Hardware Direction Control for RS-485	
Serial Isolation	3000VDC	-
LED Indicators		
Power Indicator	Green : Power LED x 1	
TxD Indicator	Green LED x 1	

RxD Indicator	Red LED x 1	
Power		
Input Power	+9 ~ 30 VDC power inputs on 10-pin terminal block	
Power Consumption (Typ.)	2.2 Watts	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	71.2(W) x 25.3(D) x 100.6(H) mm (2.8x1x3.96 inch.)	
Weight (g)	130g	133g
Environmental		
Storage Temperature	-25 to 85°C (-13 to 185°F)	
Operating Temperature	-10 to 70°C (14 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Warranty	2 years	

Ordering Information

ISC-ABCDE-F

Code Definition	Serial port Number	Port Type	Converter Prot Number	Converter Type	Other Type	Additional Function
Option	- **1 :** 1port	- **1 :** RS-232 - **2 :** RS-422/485 - **3 :** RS-232/422/485	- **1 :** 1port	- **0 :** other type - **1 :** RS-232 - **2 :** RS-422/485 - **3 :** RS-232/422/485	- **F :** 100Base-FX Fiber - **U :** USB	- **I :** Isolation

	Model Name	Description
Available Model	ISC-1112-I	Industrial 1-port RS-232 to 1-port RS-422/485 serial media converter with 3KV isolation
	ISC-1112	Industrial 1-port RS-232 to 1-port RS-422/485 serial media converter

Packing List

- ISC-1112/112-I
- DIN-Rail Kit
- Wall-Mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75-12, 12V/75W DIN-Rail power supply
- DR-75-24, 24V/75W DIN-Rail power supply

ISC-1212-I

ISC-1212-I

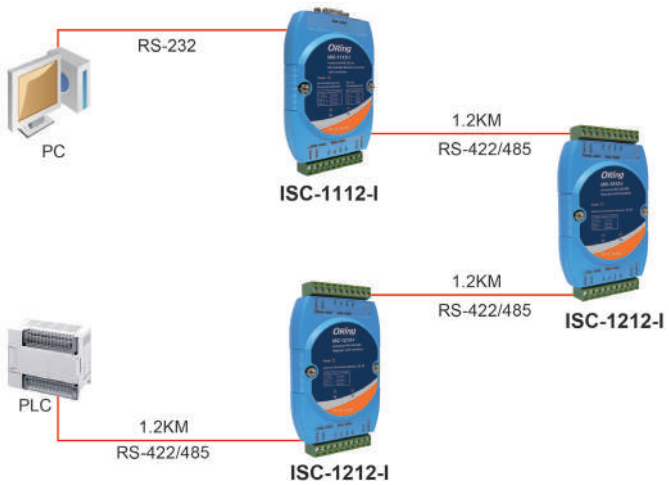
Industrial RS-422/485 repeater with 3KV isolation

Features

- Automatic internal RS-422/485 bus supervision
- No external flow control signals required for RS-485
- Serial type support auto detect and switch
- Supported baud rate up to 115.2Kbps
- Reach distance up to 4000 feet (1200m)
- Support multiple baud rate and multiple data format
- Reserved space for termination resistors (R8,R9)
- Power and data flow indicator for troubleshooting
- Power requirement : +9 ~ 30VDC
- DIN-Rail and wall mounting enabled

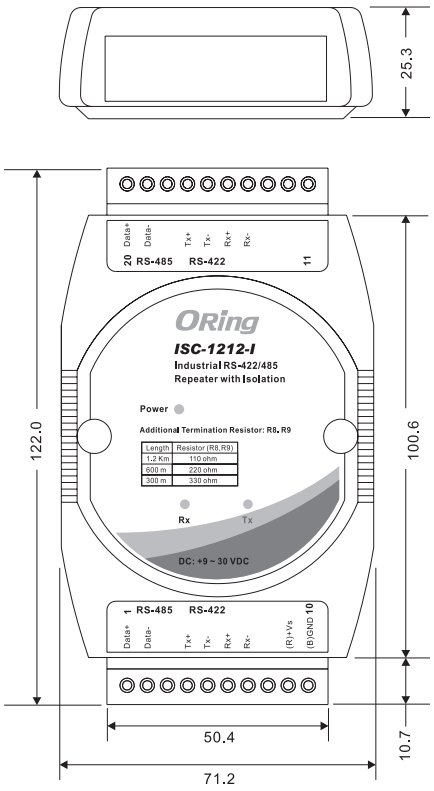
Introduction

The ISC-1212-I is a RS-422/485 repeater which boosts the RS-422/485 signals to extend the reach distance up to 4000 ft (1200m) and increase the maximum number of connection up to 128 nodes. With a special circuitry, ISC-1212-I is able to automatically detect the data flow and switch the direction of the data lines accordingly. "Auto baud rate detector" enables ISC-1212-I to automatically configure RS-422/485 signals to any baud rate without external switch setting. Build in opto-isolations on ISC-1212-I provides 3000VDC of isolation to protect the host computer from destructive voltage spikes on the RS-422/485 data lines. ISC-1212-I also offers internal surge-protection on the data lines. The internal high-speed transient suppressors on each data line protect the module from dangerous voltages levels or spikes. Therefore, the ISC-1212-I is a reliable RS-422/485 repeater and can satisfy most demand of operating environment.



Connections of RS-422/485 Repeater

Dimensions



(Unit=mm)

Pin Assignment

Inputs RS-422/485 Terminal Block Pin Assignment										
Interface	RS-485		Reserved	RS-422				Reserved	Power Input	
Pin No.	1	2	3	4	5	6	7	8	9	10
Info	Data+	Data-	N.C.	TX+	TX-	RX+	RX-	N.C.	V+	GND

Outputs RS-422/485 Terminal Block Pin Assignment										
Interface	RS-485		Reserved	RS-422				Reserved		
Pin No.	20	19	18	17	16	15	14	13	12	11
Info	Data+	Data-	N.C.	TX+	TX-	RX+	RX-	N.C.		

Specifications

ORing Media Converter Model	ISC-1212-I
Physical Ports	
RS-422/485 Connector	10-pin terminal block
RS-422/485 Signals	RS-422 : TX+, TX-, RX+, RX- RS-485 : Data+, Data-
Baud Rate	300 ~ 115.2 Kbps
Data bit	5, 6, 7, 8
Stop bit	1, 1.5, 2

Parity	None, Even, Odd, Space, Mark
Flow Control	XON/XOFF(software) Auto Hardware Direction Control for RS-485
LED Indicators	
Power Indicator	Green : Power LED x 1
TxD Indicator	Green LED x 1
RxD Indicator	Red LED x 1
Power	
Input Power	+9 ~ 30 VDC power inputs on 10-pin terminal block
Power Consumption (Typ.)	0.7 Watts
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	71.2(W) x 25.3(D) x 100.6(H) mm (2.8x1x3.96 inch.)
Weight (g)	130g
Environmental	
Storage Temperature	-25 to 85°C (-13 to 185°F)
Operating Temperature	-10 to 70°C (14 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Warranty	2 years

Ordering Information

ISC-**A**B**C**D**E**-**F**

Code Definition	Serial Port Number	Serial Port Type	Converter Prot Number	Converter Type	Other Converter Type	Additional function
Option	- **1 :** 1port	- **1 :** RS-232 - **2 :** RS-422/485 - **3 :** RS-232/422/485	- **1 :** 1port	- **0 :** other type - **1 :** RS-232 - **2 :** RS-422/485 - **3 :** RS-232/422/485	- **F :** 100Base-FX Fiber - **U :** USB	- **I :** Isolation

Available Model	Model Name	Description
	ISC-1212-I	Industrial RS-422/485 repeater with 3KV isolation

Packing List

- ISC-1212-I
- DIN-Rail Kit
- Wall-Mount Kit
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75-12, 12V/75W DIN-Rail power supply
- DR-75-24, 24V/75W DIN-Rail power supply

3 Industrial Device Server

Naming Rules

Model Name Symbol Color Legend

BLACK: For the associated sub-category, the symbol is constant for both this Overall List or in the Datasheet(s) of the indicated model(s).

PURPLE: For the associated sub-category, the symbol is variable or optional for this Overall List and is constant or optional for the Datasheet(s) of the indicated model(s).

BLUE: For the associated sub-category, the symbol is variable or optional for both this Overall List and the Datasheet(s) of the indicated model(s).

INDUSTRIAL DEVICE SERVER	Industrial 1-Port Secure Device Server
INDUSTRIAL DEVICE SERVER	Industrial 4-Port Secure Device Server
Model Name	IDS-50ABC-DEEEEFFG
Ordering info & label	IDS-50ABC-DEEEEFFG
Code Definition	**A: Serial Port Number**
	B: Ethernet Port Number
	C: Converter Type
	F: 100Base-FX
	"": 10/100Base-T(X)
	D: Serial Port Classification
	I: Serial port are isolated RS-422/485
	"": Serial port are non-isolated RS-232/422/485
	EEEE: Fiber Optical Mode
	MM-SC: Multi-mode Fiber in SC connector
	SS-SC: Single-mode Fiber in SC connector
	FF: Extra Ethernet Feature
	WG: IEEE802.11 b/g mode
	G: PoE P.D. Feature
	"+": PoE P.D. present at ETH2

INDUSTRIAL DEVICE SERVER	Industrial Slim-Type Secure Device Server
Model Name	IDS-1ABS
Ordering info & label	IDS-1ABS
Code Definition	**A: Serial Port Number**
	B: Ethernet Port Number
	S: Slenderness
	A: Slim-type

Product Selection Guide

	Industrial Device Server			
	Device Server			
Industrial Device Server				
	IDS-4312 / IDS-4312+	**IDS-1112**	**IDS-342GT**	**IDS-342GT+**
Serial Port				
Serial port Numbers	**1**	**1**	**4**	**4**
Serial Mode	RS-232/422/485	RS-232	RS-232/422/485	RS-232/422/485
Serial Port Connector	DB9 (male)	DB9 (male)	DB9 (male)	DB9 (male)
Serial Port with 2KV Isolation	-	-	-	-
Serial Baud Rate	110 bps to 460.8 Kbps	110 bps to 460.8 Kbps	110 bps to 921.6 Kbps	110 bps to 921.6 Kbps
Ethernet Port				
10/100Base-T(X) in RJ45 Auto MDI/MDIX Ports	2	2	2	2
10/100/1000Base-T(X) in R345	-	-	2	2
Wireless LAN Interface	IEEE 802.11b/g/n	IEEE 802.11b/g	-	-
Support PoE (IEEE 802.3af compliant)	● (ETH1)	-	-	●
Ethernet Switch mode / Fast Recovery Mode supported	-	●	-	-
Power Redundancy				
DC Terminal Block	1 (4-pin)	2	2	2
DC Power Jack	-	-	-	-
Installation				
DIN-Rail Mounting	●	●	●	●
Wall mounting	●	●	●	●
Physical Characteristics				
Casing Protection	IP-30	IP-30	IP-30	IP-30
Dimensions (mm)	45(W) x 81(D) x 95(H) mm	40(W) x 115(D) x 153(H) mm	54.2(W) x 106.1(D) x 145.4(H) mm	54.2(W) x 106.1(D) x 145.4(H) mm
Operating Temperature				
-40 to 70°C	-	-	●	●
-10 to 60°C	●	●	-	-
Networking Technology				
Operating Modes	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP RTU Master , RTU Slave,ASCII Master , ASCII Slave	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP RTU Master , RTU Slave,ASCII Master , ASCII Slave
Windows O.S.Supported	Windows NT/2000/XP/2003/ VISTA 32/64-Bit/ Windows 7 32/64-Bit	Windows NT/2000/XP/2003/ VISTA 32/64-Bit/ Windows 7 32/64-Bit	Windows NT/2000/XP/2003/ VISTA 64-Bit/ Windows 7 64-Bit	Windows NT/2000/XP/2003/ VISTA 64-Bit/ Windows 7 64-Bit
Multiple Link	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP
Event Notification	Syslog / SMTP/ SNMP trap	Syslog / SMTP/ SNMP trap / Beeper	Syslog / SNMP trap	Syslog / SNMP trap
NAT Router Pass Through	-	●	-	-
PPPoE	-	●	-	-
DDNS	-	●	-	-
Security				
HTTPS/SSH Management	●	●	●	●
IP White List	●	●	-	-
SSL Data Encryption	●	●	●	●
IEEE 802.1X	●	●	-	-
Warranty	5 years			

Product Selection Guide

	Industrial Device Server		
	Device Server		
Industrial Device Server			
	IDS-342/342+	**IDS-322/322+**	**IDS-312/312+**
Serial Port			
Serial port Numbers	4	2	1
Serial Mode	RS-232/422/485	RS-232/422/485	RS-232/422/485
Serial Port Connector	DB9 (male)	DB9 (male)	DB9 (male)
Serial Port with 2KV Isolation	-	-	-
Serial Baud Rate	110 bps to 460.8 Kbps	110 bps to 460.8 Kbps	110 bps to 460.8 Kbps
Ethernet Port			
10/100Base-T(X) in RJ45 Auto MDI/MDIX Ports	2	2	2
100Base-FX Fiber Ports	-	-	-
Wireless LAN Interface	-	-	-
ETH1 Support PoE (IEEE 802.3af compliant)	- / •	- / •	- / •
Ethernet Switch mode / Fast Recovery Mode supported	-	-	-
Power Redundancy			
DC Terminal Block	2	2	2
DC Power Jack	-	-	-
Installation			
DIN-Rail Mounting	•	•	•
Wall mounting	-	•	•
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	66(W) x 80.6(D) x 95(H) mm	45(W) x 80.6(D) x 95(H) mm	45(W) x 80.6(D) x 95(H) mm
Operating Temperature			
-40 to 70°C	•	•	•
-10 to 60°C	-	-	-
Networking Technology			
Operating Modes	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
Windows O.S.Supported	Windows NT/2000/XP/2003/ VISTA 64-Bit/ Windows 7 64-Bit	Windows NT/2000/XP/2003/ VISTA 64-Bit/ Windows 7 64-Bit	Windows NT/2000/XP/2003/ VISTA 64-Bit/ Windows 7 64-Bit
Multiple Link	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP
Event Notification	Syslog / SMTP/ SNMP trap	Syslog / SMTP/ SNMP trap	Syslog / SMTP/ SNMP trap
NAT Router Pass Through	-	-	-
PPPoE	-	-	-
DDNS	-	-	-
Security			
HTTPS/SSH Management	•	•	•
IP White List	•	•	•
SSL Data Encryption	•	•	•
IEEE 802.1X	-	-	-
Warranty	5 years		

Product Selection Guide

	Industrial Device Server		EN50155 Switch
	Device Server		Device Server
Industrial Device Server			
	IDS-312L	IDS-242GT-I+	TDS-5041-I-M12
Serial Port			
Serial port Numbers	1	4	4
Serial Mode	RS-232/422/485	RS-422/485	RS-422/485
Serial Port Connector	DB9 (male)	5 pin Terminal (male)	M12 (male)
Serial Port with 2KV Isolation	-	•	•
Serial Baud Rate	110 bps to 460.8 Kbps	110 bps to 921.6 Kbps	110 bps to 460.8 Kbps
Ethernet Port			
10/100Base-T(X) in RJ45 Auto MDI/MDIX Ports	2	2 (10/100/1000 Base-TX)	1(M12)
100Base-FX Fiber Ports	-	-	-
Wireless LAN Interface	-	-	-
Support PoE (IEEE 802.3af compliant)	-	-	-
Ethernet Switch mode / Fast Recovery Mode supported	-	-	-
Power Redundancy			
DC Terminal Block	1	1	1(M12)
DC Power Jack	-	-	-
Installation			
DIN-Rail Mounting	•	•	-
Wall mounting	•	•	•
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-40
Dimensions (mm)	26(W) x 75(D) x 110(H) mm	54.2(W) x 106.1(D) x 145.4(H) mm	170(W) x 65(D) x 195(H) mm
Operating Temperature			
-40 to 70°C	•	•	•
-10 to 60°C	-	-	-
Networking Technology			
Operating Modes	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
Windows O.S.Supported	Windows NT/2000/XP/2003/ VISTA 64-Bit/ Windows 7 64-Bit	Windows NT/2000/XP/2003/ VISTA 64-Bit/ Windows 7 64-Bit	Windows NT/2000/XP/2003/ VISTA 32/64-Bit/ Windows 7 32/64-Bit
Multiple Link	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP
Event Notification	Syslog / SMTP/ SNMP trap	Syslog / SMTP/ SNMP trap	Syslog / SMTP/ SNMP trap / Beeper
NAT Router Pass Through	-	-	•
PPPoE	-	-	•
DDNS	-	-	•
Security			
HTTPS/SSH Management	•	•	•
IP White List	•	•	•
SSL Data Encryption	•	•	•
IEEE 802.1X	-	-	-
Warranty	5 years		

Product Selection Guide

	Industrial Device Server	
	Device Server	
Industrial Device Server		
	RDS-3166G	**RDS-3086G**
Serial Port		
Serial port Numbers	**16**	**8**
Serial Mode	RS-232/422/485	RS-232/422/485
Serial Port Connector	RJ48	RJ48
Serial Port with 2KV Isolation	•	•
Serial Baud Rate	50 bps to 921.6 Kbps	50 bps to 921.6 Kbps
Ethernet Port		
10/100/1000Base-T(X) in RJ45 Auto MDI/ MDIX Ports	4	4
100/1000Base-X SFP Ports	2	2
Wireless LAN Interface	-	-
ETH2 Support PoE (IEEE 802.3af compliant)	-	-
Ethernet Switch mode / Fast Recovery Mode supported	-	-
Power Redundancy		
DC Terminal Block	-	-
AC Power Cord	1	1
Installation		
Rack Mounting	•	•
Wall mounting	-	-
Physical Characteristics		
Casing Protection	IP-30	IP-30
Dimensions (mm)	443.7(W) x211.5(D) x 44(H) mm	443.7(W) x211.5(D) x 44(H) mm
Operating Temperature		
-40 to 70°C	•	•
-10 to 60°C	-	-
Networking Technology		
Operating Modes	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
Windows O.S.Supported	Windows NT/2000/XP/2003/ VISTA 64-Bit/ Windows 7 64-Bit	Windows NT/2000/XP/2003/ VISTA 64-Bit/ Windows 7 64-Bit
Multiple Link	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP
Event Notification	Syslog / SNMP trap / and Beeper	Syslog / SNMP trap / and Beeper
NAT Router Pass Through	-	-
PPPoE	-	-
DDNS	-	-
Security		
HTTPS/SSH Management	•	•
IP White List	-	-
SSL Data Encryption	•	•
IEEE 802.1X	-	-
Warranty	5 years	

Industrial Device Server

ORing's serial-to-Ethernet device servers offer up to 8 serial ports along with different interfaces of copper, optic fiber, or wireless LAN, plus support for various operation modes: TCP server, TCP client, UDP, and Virtual COM. All device server models include free-bundled management utility, plus DS-Tool with Virtual COM drivers

Key Technologies

SSL Data Encryption

Technology Description

Handshaking

The client asks the server to identify itself. The server hands a "digital certificate" (public encryption key included) to the client. If the "digital certificate" is trustworthy, the client sends confirmation to the server. Now the client and server have "shaked hands".

Data Transmission

The client encrypts data with a public encryption key and sends the encrypted data to the server. The server then decrypts the received data with its secret private decryption key and retrieves the data. With strong encryption (128-bits or higher), the required decipher time & effort may far exceed any hacker's lifetime.

SSL Data Encryption Benefits

SSL data encryption provides several benefits. It enforces data privacy via strongly designed data encryption schemes. Additionally, it allows identity establishment, i.e. each client has his or her own unique "digital certificate" . Moreover, SSL data encryption is a trust-based data communication scheme. Data communications exist if and only if the server and the client formally trust each other.

Supporting Products:


IDS-5011


IDS-5011F


IDS-5012


IDS-5011-WG


IDS-5042-I+


IDS-5042/5042+


IDS-5042-WG/IWG


IDS-312/312+


IDS-322/322+


IDS-342/342+


RDS-3086G


RDS-3166G


IDS-342GT

Modbus Gateway

Technology Description

ORing also offers a Modbus gateway product portfolio which serves as a converter between Modbus TCP and Modbus RTU/ASCII devices. ORing's Modbus gateways allow Modbus RTU/ASCII devices to be easily connected with network-based Modbus TCP devices without changing existing structure. ORing Modbus gateways are able to support dozens of RTU/ASCII devices through the serial ports, connecting a high density of Modbus nodes to the same network. Apart from Web configuration support, ORing Modbus gateways also provide a wide range of functions such as Master/Slave mode support, a wide range of operating temperature, and rugged design.

Supporting Products:



IDS-342GT | RDS-3086G | RDS-3166G

Multiple-OS Support

For maximum compatibility and versatility, ORing's device servers support many different Windows Operating systems: Windows NT, 2000, XP, 2003, VISTA(32/64-bit),and Windows 7(32/64-bit).

PPPoE and DDNS for Internet Connection

Technology Description

PPPoE (Point-to-Point Protocol over Ethernet) is a network protocol for encapsulating Point-to-Point Protocol (PPP) frames inside Ethernet frames. It is used mainly with DSL services where individual users connect to the xDSL modem over Ethernet. IDS series products feature PPPoE to build up a connection a network through xDSL modem from Intranet to Internet without routers.

DDNS (Dynamic Domain Name Server) is a method, protocol, or network service that provides the capability for a networked device using the Internet Protocol Suite, such as an IP router or computer system, to notify a domain name server to change, in real time, the active DNS configuration of its configured hostnames, addresses or other information stored in DNS. When getting the connection through PPPoE and the IP address is floated, end users may not configure device servers. However, through DDNS, it's easy for different IP domain users to connect to IDS series device servers.

PPPoE Benefits

PPPoE enables clients to adopt the traditional dial-up access mode, which allows end users to use the familiar hardware and similar software to access the Internet. Moreover, clients can also use Ethernet adapters to connect PCs and xDSL modems so that PCs can share xDSL lines and thus saves investment.

DDNS Benefits

With DDNS, the administrator does not need to set up the static IP address for each PC every time the network infrastructure changes. Moreover, you only need addresses that would be used simultaneously, rather than having one for every possible user of IP.

Supporting Products:







IDS-5011 | IDS-5011F | IDS-5012 | IDS-5042-I+ | IDS-5042/5042+ | IDS-5042-IWG | IDS-5042-WG

IDS-4312 / IDS-4312+

IDS-4312 / IDS-4312+

Industrial 1 secure serial port to IEEE 802.11 b/g/n wireless device server

Features

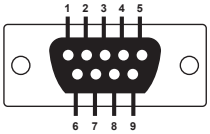
- High Speed Air Connectivity: WLAN interface support up to 150 Mbps link speed
- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
- Security: SSL data encryption; secured management by HTTPS and SSH: IP Access: IP White List
- Event Warning by Syslog, Email, SNMP trap
- Configurable by Web-based and Windows utility (**DS-Tool**)
- Various Windows O.S. supported:
  Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit)
- 1KV isolation for PoE PD port (**IDS-4312+**)

Introduction

IDS-4312 is an innovative secure 1 port RS-232/422/485 to 802.11 b/g/n WLAN, up to 150 Mbps, and 2 port LAN device server with standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, and UDP. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. On the other hand, IDS-4312 can simultaneously transfer data up to 5 redundant host PCs to aovid Ethernet connection breakdown or any host PC fails. Further, IDS-4312 features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

IDS-4312 supports RS-232/422/485 and provides dual redundant power inputs, 12~48 VDC, on terminal block to guarantee a non-stop operation. Further, IDS-4312+ features PoE PD (Power Device) function, compliant with IEEE802.3af standard, with 1kv isolation on the PoE port. With wide operating temperature, -40~70°C, and rugged IP-30 housing design, IDS-4312 series could operate in the harsh industrial environment. Therefore, IDS-4312 is the best solution to the high demand of secure serial to Ethernet critical data communication.

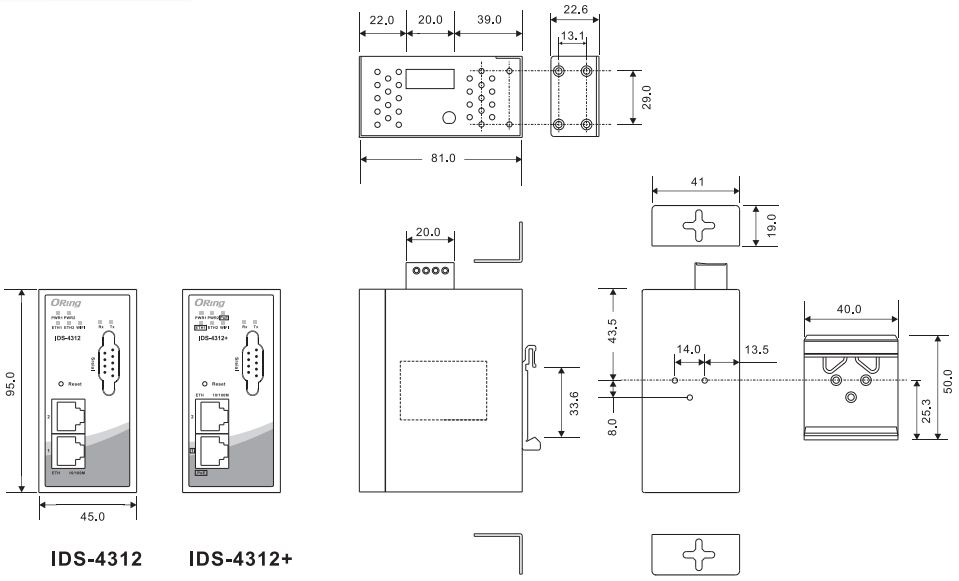
Pin Definition



DB9 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	DCD	TX-	TX-	DATA -
2	RXD	TX+	TX+	DATA +
3	TXD	RX+	RX+	
4	DTR	RX-	RX-	
5	GND	GND	GND	
6	DSR			
7	RTS			
8	CTS			
9	RI			

Dimensions



Unit=mm

Specifications

ORing Device Server Model	IDS-4312	IDS-4312+
Physical Ports		
10/100 Base-T(X) Ports in RJ45	2	
Auto MDI/MDIX		P.O.E.Present at ETH1 Power Device (IEEE 802.3af): IEEE 802.3af compliant input interface Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 108 ohms min
WLAN feature		
Operation Mode	Client	
Antenna and Connector	1 x External reverse SMA-type antenna connector	
Radio Frequency Type	DSSS, OFDM	
Modulation	IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g/n: OFDM with BPSK, QPSK, 16QAM, 64QAM	
Frequency Band	America / FCC: 2.412~2.462 GHz (11 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels)	
Transmission Rate	802.11b: 1/2/5.5/11 Mbps 802.11g: 6/9/12/18/24/36/48/54 Mbps 802.11n(40MHz): UP to 150 Mbps	
Transmit Power	802.11b: 13.5dBm ± 1.5dBm 802.11g: 13.5dBm ± 1.5dBm 802.11n(2.4G@20MHz): 13.5dBm ± 1.5dBm 802.11n(2.4G@40MHz): 13.5dBm ± 1.5dBm	
Receive Sensitivity	802.11b: -90dBm ± 2dBm@1Mbps 802.11g: -72dBm ± 2dBm@54Mbps 802.11n(2.4G@40MHz,MCS7): -68dBm ± 2dBm	
Encryption Security	WEP: (64-bit, 128-bit key supported) WPA/WPA2:802.11i (WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported	
Serial Ports		
Connector	DB9 x 1	
Operation Mode	RS-232/422/485	

Serial Baud Rate	110 bps to 460.8 Kbps	
Data Bits	7, 8	
Parity	odd, even, none, mark, space	
Stop Bits	1, 1.5, 2	
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND	
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR	
Network Protocol		
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS, SMTP	
LED indicators		
Power indicator	3 x LEDs, PWR 1(2)(PoE): Green On: Power is on	
10/100TX RJ45 port indicator	Green for port Link/Act at 100Mbps.	
Serial TX / RX LEDs:	Red: Serial port is receiving data Green: Serial port is transmitting data	
WLAN LED	WLAN Link /ACT: Green: Blinking	
Power		
Redundant Input power	Dual DC inputs. 12-48VDC on 4-pin terminal block	
Power consumption (Typ.)	3.98 W	
Overload current protection	Present	
Reverse polarity protection	Present on terminal block	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	45 (W) x 81 (D) x 95 (H) mm	
Weight (g)	322 g	331 g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMI	FCC Part 15, CISPR (EN55022 Class A)	
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS) EN61000-4-4 (EFT) N61000-4-5 (Surge) EN61000-4-6 (CS) EN61000-4-8 EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

IDS- A B C D E

Code Definition	Wireless Mode	Serial Port Type	Serial Port Number	Ethernet port Number	POE Identification
Option	**- 1:** 802.11 b/g **- 2:** 802.11 a **- 3:** 802.11 a/b/g **- 4:** 802.11 b/g/n **- 5:** 802.11 a/n **- 6:** 802.11 a/b/g/n	**- 1:** RS-232 **- 2:** RS-422/485 **- 3:** RS-232/422/485	**- 1:** 1 ports	**- 2:** 2 ports	**-"+":** P.O.E. PD present at ETH1

	Model Name	Description
Available Model	IDS-4312	Industrial 1-port secure serial to IEEE 802.11 b/g/n wireless device server with 1xRS-232/422/485 and 2x10/100Base-T(X)
	IDS-4312+	Industrial 1-port secure serial to IEEE 802.11 b/g/n wireless device server with 1xRS-232/422/485 and 2x10/100Base-T(X), 1-port PoE P.D.

Packing List

- IDS-4312 / IDS-4312+ x 1
- Din-Rail Kit x 1
- CD x 1
- Wall-Mount kit x 2
- Quick Installation Guide x 1
- Antenna x 1

Optional Accessories

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply

IDS-1112

IDS-1112

Industrial 1 secure serial port to 802.11b/g wireless device server with 1xRS232 and 1x10/100 Base-T(X)

Features

- High Speed Air Connectivity: WLAN interface support up to 54Mbps link speed
- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
- Redundant multiple host devices:

  5 host devices: Virtual COM, TCP Server, TCP Client mode;

  4 IP ranges: UDP
- NAT-pass through: user can manage IDS-1112 through NAT router
- High Security Capability: SSL data encryption; secured management by HTTPS and SSH: IP Access: IP White List; wireless: WEP/WPA/WPA2/802.1X/TKIP
- Internet Communication: PPPoE
- Update DNS Hostname: DDNS
- Event Warning by Syslog, Email, SNMP trap, and Beeper
- Configurable by Web-based and Windows utility (DS-Tool)
- Various Windows O.S. supported:

  Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/Windows 7(32/64bit)

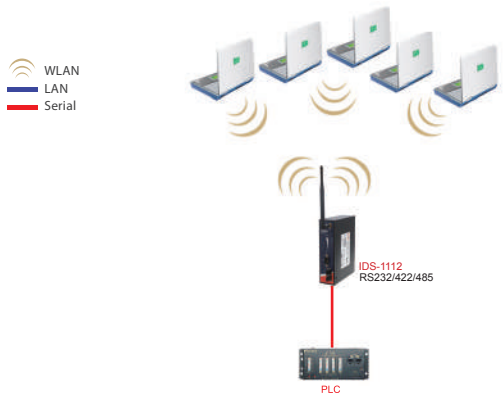
Introduction

IDS-1112 is an innovative secure 1 port RS232 to 802.11b/g WLAN, up to 54Mbps, and 1 port LAN device server featuring the standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, and UDP. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. The features of NAT Router Pass Through, DDNS, and PPPoE make it more convenient for administrators to configure ORing's device servers through NAT router from different IP domains or Internet via modem remotely. On the other hand, IDS-1112 can simultaneously transfer data up to 5 redundant host PCs to aovid Ethernet connection breakdown or any host PC fails. Further, IDS-1112 features HTTPS, SSH, SSL encryption, and 802.1X to assure the security of critical data transmission.

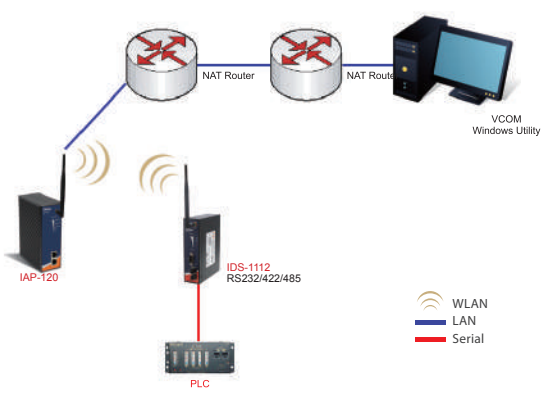
IDS-1112 supports RS-232 and provides dual redundant power inputs, 12~48 VDC, on DC power jack and terminal block to guarantee a non-stop operation. With wide operating temperature, -10~65oC, and rugged IP-30 housing design, IDS-1112 could operate in the harsh industrial environment. Therefore, IDS-1112 is the best solution to the high demand of secure serial to WLAN critical data communication.

Practical Operation

In practical operation of serial device servers, Windows utility (DS-Tool) is supported. This utility is very helpful for you to manage and monitor all of industrial device servers on the industrial network.



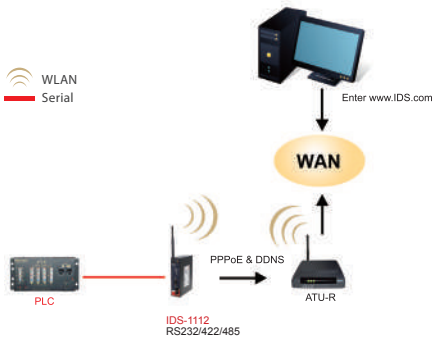
Multiple Host PCs



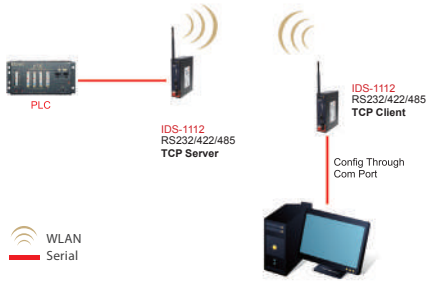
NAT Router Pass-Through

Wireless Client Mode

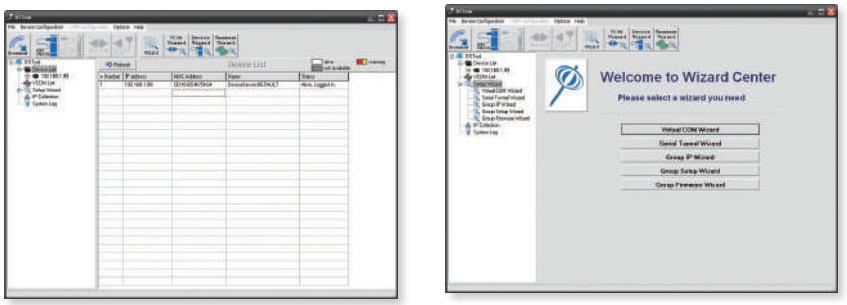
SSL Data Encryption



PPPoE and DDNS

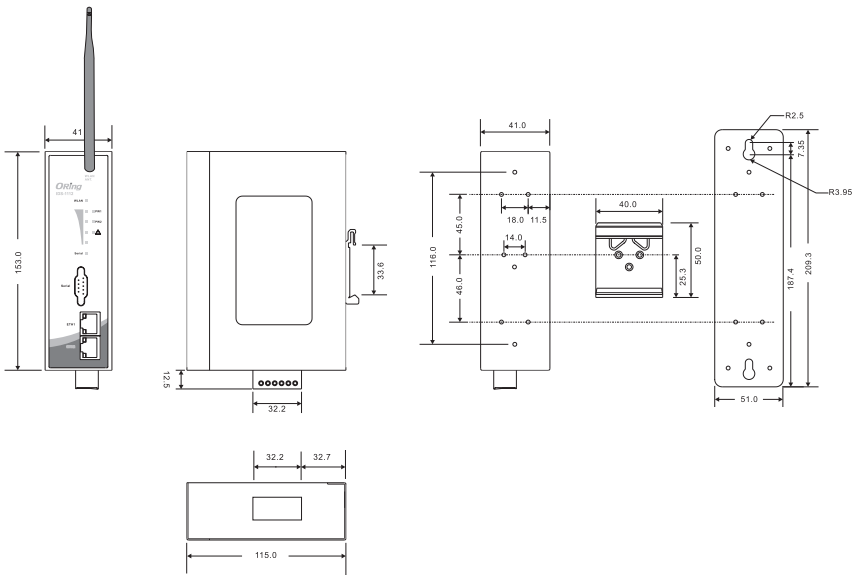


TCP Client / Server Modes



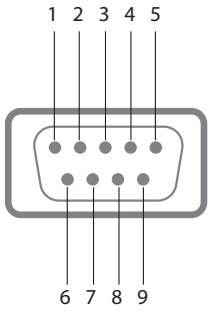
DS-Tool (Windows Utility) : Monitoring and Configuration interface

Dimensions



Unit=mm

Pin Definitions



DB9(male) connector

Pin #	RS-232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
RS-232 mode act as DTE	

Specifications

ORing Device Server Model	IDS-1112
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	1
WLAN Feature	
WLAN Standard	IEEE802.11b/g
Operating Mode	Client mode
Antenna and Connector	Reverse SMA
Radio Frequency Type	DSSS, OFDM
Modulation	IEEE802.11b : CCK, DQPSK, DBPSK IEEE802.11g : OFDM with BPSK, QPSK, 16QAM, 64QAM
Frequency	America/FCC: 2.412~2.462 GHz (11 channels) Europe CE/ETSI: 2.412~2.472 GHz (13 channels)
Transmission Rate	IEEE802.11b : 1/ 2/ 5.5/ 11 Mbps IEEE802.11g : 6/ 9/ 12/ 18/ 24/ 36/ 48/ 54 MbpsIEEE802.11b: 1/ 2/ 5.5/ 11 Mbps IEEE802.11g: 6/ 9/ 12/ 18/ 24/ 36/ 48/ 54 Mbps
Transmit Power	IEEE802.11b/g : 18dBm
Receiver Sensitivity	-81dBm @ 11Mbps, PER< 8%; -64dBm @ 54Mbps, PER< 10%
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WAP-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption
Serial Ports	
Connector	DB9(male) x 1
Operation Mode	RS-232
Serial Baud Rate	110 bps to 230.4 Kbps
Data Bits	5, 6, 7, 8
Parity	odd, even, none, mark, space
Stop Bits	1, 1.5, 2
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR
Network Features	
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS, SMTP, DDNS, PPPoE
LED Indicators	

Power Indicator	PWR 1(2) / Ready : Red On: Power is on and booting up. Green On: Power is on and functioning Normally. Green Blinking: Located by Administrator.
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act at 100Mbps. Amber for port Link/Act at 10Mbps.
WLAN Indicator	Green for WLAN Link /ACTWLAN Link /ACT: Green: WLAN Strength: 1<25% , 2<50%, 3<75%, 4<100%
Serial TX / RX LEDs	Red: Serial port is receiving data Green: Serial port is transmitting data
Power	
Redundant Input Power	Dual DC inputs. 12-48VDC on 3-pin terminal block and power jack
Power Consumption (Typ.)	5.3 watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristics	
Enclosure	IP-40
Dimensions (W x D x H)	40 (W)x 115 (D)x153 (H) mm (1.61 x4.52x6.06 inch.)
Weight (g)	551 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-10 to 60°C (14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IDS-ABCD

Code Definition	WLAN Identification	Serial Port Type	Serial Port Number	Ethernet Port Number
Option	**- 1:** IEEE802.11 b/g mode	**- 1:** RS-232 only	**- 1:** 1 port	**- 2:** 2 port

Available Model	Model Name	Description
	IDS-1112	Industrial 1-port secure serial to IEEE 802.11 b/g wireless device server with 1xRS-232 and 1x10/100Base-T(X)

Packing List

- IDS-1112
- DIN-Rail Kit
- Wall-mount Kit
- 2dBi Antenna
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- PAA-121000, 12VDC/1000mA 12W Power Adapter, US plug • SDR-480-48, 480W DIN-Rail power supply
- PAE-121000, 12VDC/1000mA 12W Power Adapter, EU plug • PAE-121000, 12VDC/1000mA 12W Power Adapter, EU plug
- RF-Antenna Base
- RF-Cable
- RF Surge Protector Series

IDS-342GT

IDS-342GT

Industrial 4-port secure serial to Ethernet device server with 4xRS-232/422/485 and 2x10/100/1000Base-T(X)

Features

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP, Modbus Gateway
- Redundant multiple host devices:

5 host devices: Virtual COM, TCP Server, TCP Client mode;

4 IP ranges: UDP

- Support Modbus Gateway : Modbus TCP, Modbus RTU, Modbus ASCII
- Security: SSL data encryption; secured management by HTTPS and SSH
- Event Warning by Syslog, SNMP trap, and Beeper
- Configurable by Web-based and Windows utility (**DS-Tool**)
- Various Windows O.S. supported:

Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit)

SSL -40~70°C Temperature Redundant PWR RoHS Lead Free CE FC

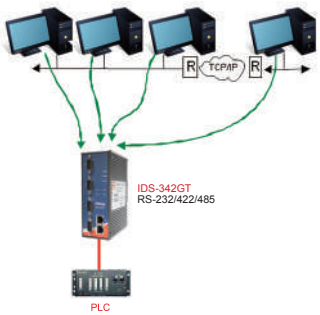
Introduction

IDS-342GT is an innovative secure 4 port RS-232/422/485 to 2 ports Gigabit Ethernet secure device server with standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, and UDP. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. On the other hand, IDS-342GT can simultaneously transfer data up to 5 redundant host PCs to aovid Ethernet connection breakdown or any host PC fails. Further, IDS-342GT features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

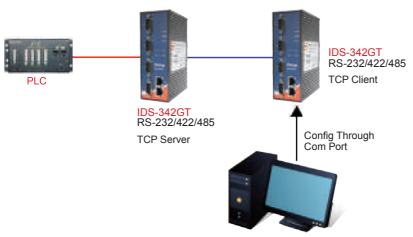
IDS-342GT supports RS-232/422/485 and provides dual redundant power inputs, 12~48 VDC, on terminal block to guarantee a non-stop operation. With wide operating temperature, -40~70°C, and rugged IP-30 housing design, IDS-342GT series could operate in the harsh industrial environment. Therefore, IDS-342GT is the best solution to the high demand of secure serial to Ethernet critical data communication.

Practical Operation

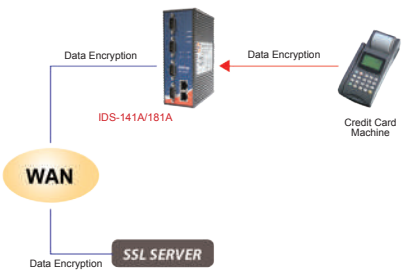
In practical operation of serial device servers, Windows utility (DS-Tool) is supported. This utility is very helpful for you to manage and monitor all of industrial device servers on the industrial network.



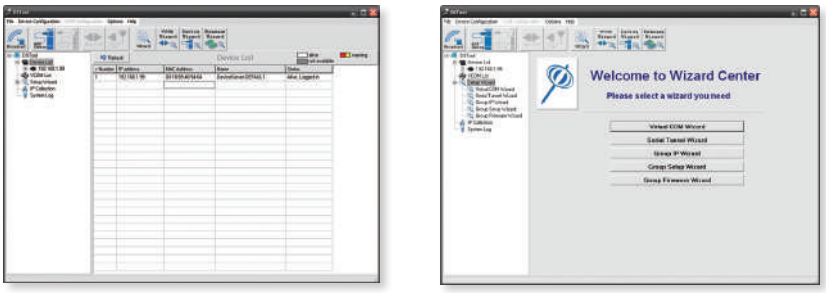
Multiple Host PCs



TCP Client/Server Modes

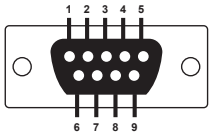


SSL Data Encryption



DS-Tool (Windows Utility): Monitoring and Configuration interface

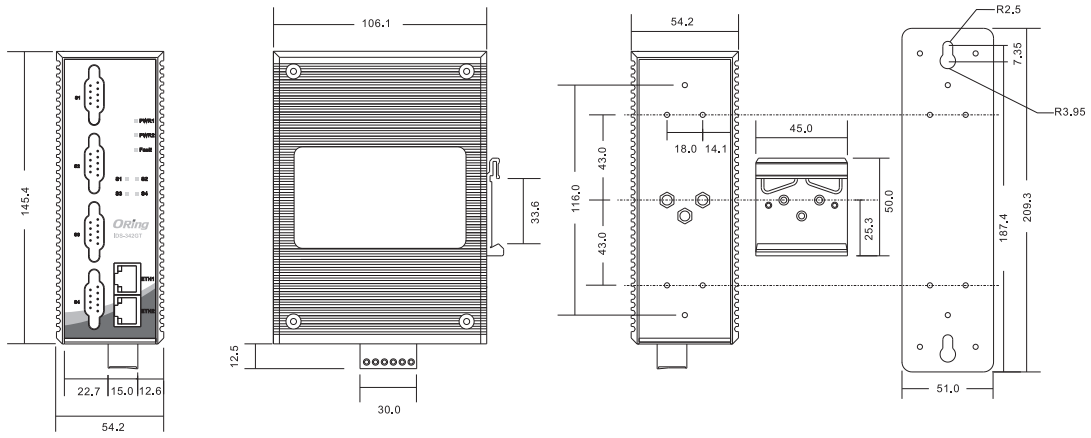
Pin Definition



DB9 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	DCD	TX-	TX-	DATA -
2	RXD	TX+	TX+	DATA +
3	TXD	RX+	RX+	
4	DTR	RX-	RX-	
5	GND	GND	GND	
6	DSR			
7	RTS			
8	CTS			
9	RI			

Dimensions



Unit=mm

Specifications

ORing Switch Model	IDS-342GT
Physical Ports	
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2
Serial Ports	
Connector	DB9 x 4
Operation Mode	RS-232/422/485
Serial Baud Rate	110 bps to 921.6 Kbps
Data Bits	7, 8
Parity	odd, even, none, mark, space
Stop Bits	1, 1.5, 2

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR
Network Protocol	
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS
LED indicators	
Power indicator	PWR 1(2) / Ready: Green On: Power is on and functioning Normally.
10/100/1000 RJ45 port indicator	Top Green for port Link at 1000Mbps, Amber for port Link at 100Mbps, off for port Link at 10Mbps Bottom Green for port Link/Act
Serial TX / RX LEDs:	Red: Serial port is receiving data Green: Serial port is transmitting data
Power	
Redundant Input power	Dual DC inputs. 12-48VDC on 6-pin terminal block
Power consumption (Typ.)	6.96W
Overload current protection	Present
Reverse polarity protection	Present on terminal block
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	54.2(W)x106.1(D)x145.4(H) mm (2.13x4.18x5.72 inch.)
Weight (g)	740g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IDS-3 A B CC

Code Definition	Serial Port Type	Serial Port Number	Ethernet port Number	Ethernet port Type
Option	**- 1: RS-232** **- 2: RS-422/485** **- 3: RS-232/422/485**	**- 4:** 4 ports	**- 2:** 2 ports	**-GT:** Gigabit Ethernet

Available Model	Model Name	Description
	IDS-342GT	Industrial 4-port secure serial to Ethernet device server with 4xRS-232/422/485 and 2x10/100/1000Base-T(X)

Packing List

- IDS-342GT x 1
- CD x 1
- Quick Installation Guide x 1

Optional Accessories

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- DR-75 series : 75 Watts power supply

IDS-342GT(+)

IDS-342GT(+)

Industrial 4-port secure serial to Ethernet device server with 4xRS-232/422/485 and 2x10/100/1000Base-T(X)

Features

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP, Modbus Gateway
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP
- Support Modbus Gateway : Modbus TCP, Modbus RTU, Modbus ASCII
- Support 2 Gigabit Ethernet ports for high speed data transmission
- Security: SSL data encryption; secured management by HTTPS and SSH
- 1KV isolation for PoE P.D. port
- Supports 9.6K Bytes Jumbo Frame
- Event Warning by Syslog, SNMP trap, Relay and Beeper
- Configurable by Web-based and Windows utility (DS-Tool)
- Various Windows O.S. supported:
  Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit)

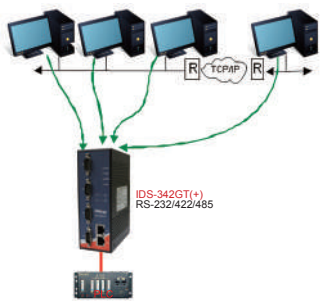
SSL | PoE IEEE802.3af P.D. | -40~70°C Temperature | Redundant PWR | RoHS Lead Free | CE | FC

Introduction

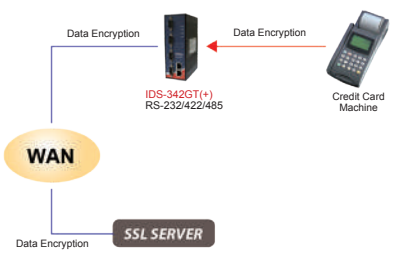
IDS-342GT(+) is an innovative secure 4 port RS-232/422/485 to 2 ports Gigabit Ethernet secure device server with standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, and UDP. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. On the other hand, IDS-342GT(+) can simultaneously transfer data up to 5 redundant host PCs to aovid Ethernet connection breakdown or any host PC fails. Further, IDS-342GT(+) features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission. IDS-342GT(+) supports RS-232/422/485 and provides dual redundant power inputs, 12~48 VDC, on terminal block to guarantee a non-stop operation. In addition, IDS-342GT(+) also provides P.D. feature at ETH2 port which is fully compliant with IEEE802.3af PoE P.D. specification to save the layout cost of power line. With wide operating temperature, -40~70°C, and rugged IP-30 housing design, IDS-342GT(+) series could operate in the harsh industrial environment. Therefore, IDS-342GT(+) is the best solution to the high demand of secure serial to Ethernet critical data communication.

Practical Operation

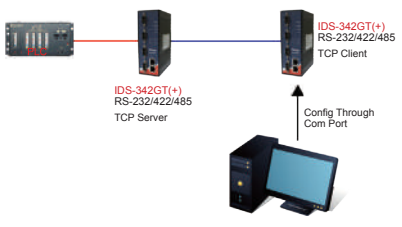
In practical operation of serial device servers, Windows utility (DS-Tool) is supported. This utility is very helpful for you to manage and monitor all of industrial device servers on the industrial network.



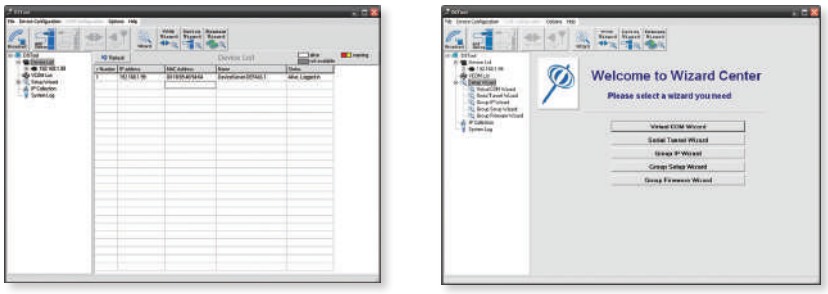
Multiple Host PCs



SSL Data Encryption

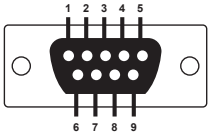


TCP Client/Server Modes



DS-Tool (Windows Utility): Monitoring and Configuration interface

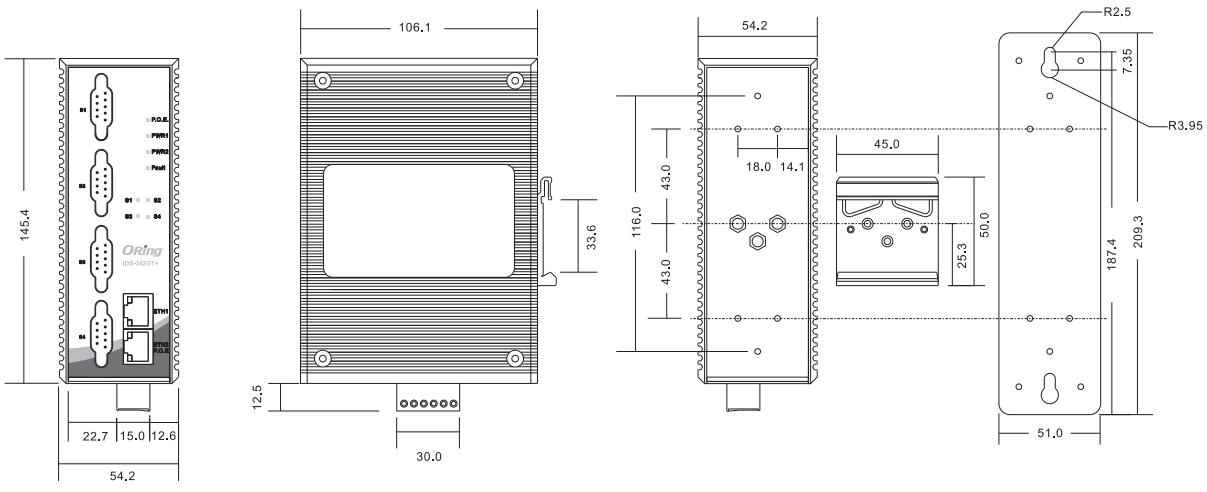
Pin Definition



DB9 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	DCD	TX-	TX-	DATA -
2	RXD	TX+	TX+	DATA +
3	TXD	RX+	RX+	
4	DTR	RX-	RX-	
5	GND	GND	GND	
6	DSR			
7	RTS			
8	CTS			
9	RI			

Dimensions



Unit=mm

Specifications

ORing Switch Model	IDS-342GT	IDS-342GT+
Physical Ports		
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
PoE P.D. port		Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 108 ohms min
Serial Ports		
Connector	DB9 x 4	
Operation Mode	RS-232/422/485	
Serial Baud Rate	110 bps to 921.6 Kbps	
Data Bits	7, 8	
Parity	odd, even, none, mark, space	
Stop Bits	1, 1.5, 2	
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND	
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR	
Network Protocol		
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS	
Jumbo frame	Up to 9.6K Bytes	
LED indicators		
Power indicator	PWR 1(2) / Ready: Green On: Power is on and functioning Normally.	
10/100/1000 RJ45 port indicator	Top Green for port Link at 1000Mbps, Amber for port Link at 100Mbps, off for port Link at 10Mbps Bottom Green for port Link/Act	
Serial TX / RX LEDs:	Red: Serial port is receiving data Green: Serial port is transmitting data	
Power		
Redundant Input power	Dual DC inputs. 12-48VDC on 6-pin terminal block	
Power consumption (Typ.)	6.96W	
Overload current protection	Present	
Reverse polarity protection	Present on terminal block	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	54.2(W)x106.1(D)x145.4(H) mm (2.13x4.18x5.72 inch.)	
Weight (g)	740g	745g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMC	EN 55022, EN 55024(CE EMC), EN 50121-4,EN 60945, FCC ,EN 61000-6-2, IEC 61000-3-2 ,IEC 61000-3-3	
EMI	CISPR 22, EN 55011, FCC Part 15B Class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8 (PFMF), EN61000-4-11 (DIP)	
Shock	IEC60068-2-27	

Free Fall	IEC 60068-2-31 (IEC 60068-2-32)	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
MTBF	560362 hours	280039 hours
Warranty	5 years	5 years

Ordering Information

IDS-3 A B CC D

Code Definition	Serial Port Type	Serial Port Number	Ethernet port Number	Ethernet port Type	PoE Identification
Option	**- 1: RS-232** **- 2: RS-422/485** **- 3: RS-232/422/485**	**- 4:** 4 ports	**- 2:** 2 ports	**- GT:** Gigabit Ethernet	**-"+": PoE P.D. present**

	Model Name	Description
Available Model	IDS-342GT	Industrial 4-port secure serial to Ethernet device server with 4xRS-232/422/485 and 2x10/100/1000Base-T(X)
	IDS-342GT+	Industrial 4-port secure serial to Ethernet device server with 4xRS-232/422/485 and 2x10/100/1000Base-T(X) with 1-port PoE P.D.

Packing List

- IDS-342GT(+) x 1
- CD x 1
- Quick Installation Guide x 1

Optional Accessories

- DR/SDR/DRP Series DIN-Rail power supply

IDS-342(+)

IDS-342(+)

Industrial 4 secure serial port to Ethernet device server with 4xRS-232/422/485 and 2x10/100Base-T(X)

Features

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
- Support 4xRS-232/422/485 in DB9 connector
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP
- Security: SSL data encryption; secured management by HTTPS and SSH:
  IP Access: IP White List
- Event Warning by Syslog, Email, SNMP trap, Relay and Beeper
- Configurable by Web-based and Windows utility (**DS-Tool**)
- Various Windows O.S. supported:
  Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit)
- Ethernet switch mode enable Daisy Chain
- 1KV isolation for PoE PD port (IDS-342+)

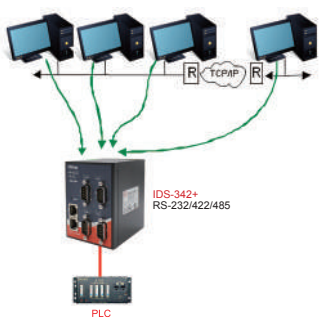
Introduction

IDS-342 is an innovative secure 4 port RS-232/422/485 to 2 ports LAN secure device server with standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, and UDP. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. On the other hand, IDS-342 can simultaneously transfer data up to 5 redundant host PCs to aovid Ethernet connection breakdown or any host PC fails. Further, IDS-342 features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

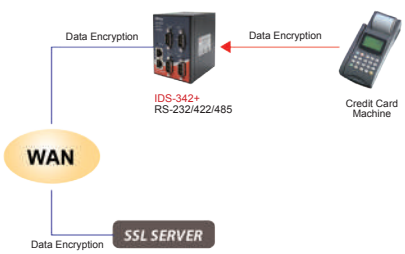
IDS-342 supports RS-232/422/485 and provides dual redundant power inputs, 12~48 VDC, on terminal block to guarantee a non-stop operation. Further, IDS-342+ features PoE PD (Power Device) function, compliant with IEEE802.3af standard, with 1kv isolation on the PoE port. With wide operating temperature, -40~70°C, and rugged IP-30 housing design, IDS-342 series could operate in the harsh industrial environment. Therefore, IDS-342 is the best solution to the high demand of secure serial to Ethernet critical data communication.

Practical Operation

In practical operation of serial device servers, Windows utility (DS-Tool) is supported. This utility is very helpful for you to manage and monitor all of industrial device servers on the industrial network.

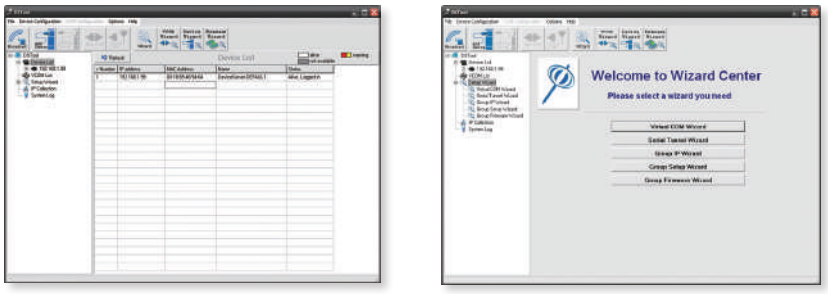


Multiple Host PCs



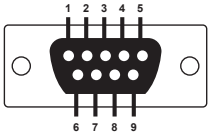
SSL Data Encryption

TCP Client/Server Modes



DS-Tool (Windows Utility): Monitoring and Configuration interface

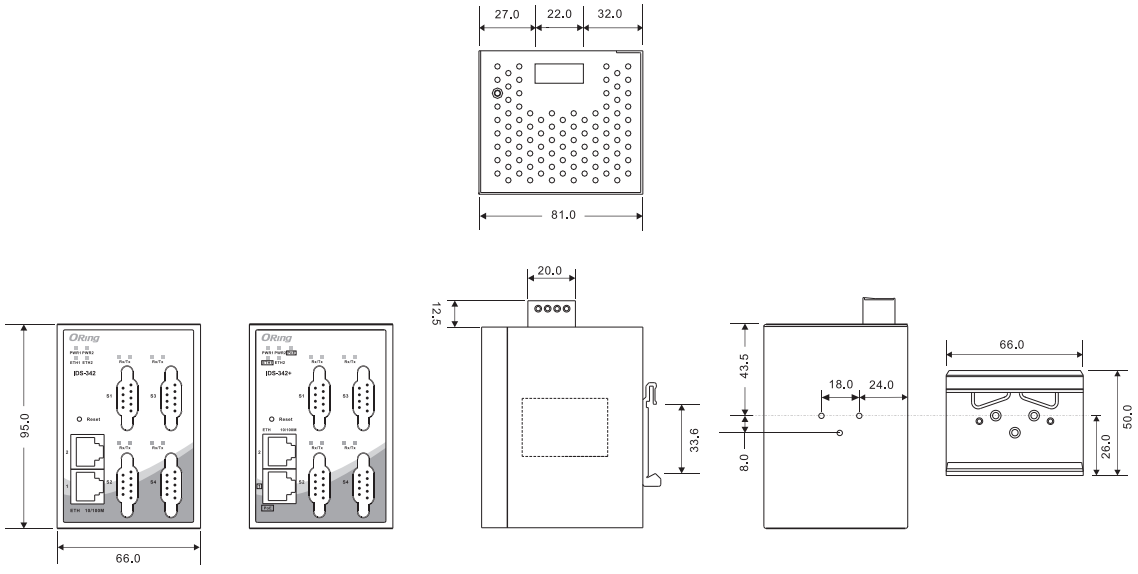
Pin Definition



DB9 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	DCD	TX-	TX-	DATA -
2	RXD	TX+	TX+	DATA +
3	TXD	RX+	RX+	
4	DTR	RX-	RX-	
5	GND	GND	GND	
6	DSR			
7	RTS			
8	CTS			
9	RI			

Dimensions



Unit=mm

Specifications

ORing Switch Model	IDS-342	IDS-342+
Physical Ports		
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
P.O.E.		P.O.E.Present at ETH1 Power Device (IEEE 802.3af): IEEE 802.3af compliant input interface Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min
Serial Ports		
Connector	DB9 x 4	
Operation Mode	RS-232/422/485	
Serial Baud Rate	110 bps to 460.8 Kbps	
Data Bits	7, 8	
Parity	odd, even, none, mark, space	
Stop Bits	1, 1.5, 2	
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND	
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR	
Network Protocol		
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS, SMTP	
LED indicators		
Power indicator	3 x LEDs, PWR 1(2)(PoE) / Ready: Green On: Power is on	
10/100 RJ45 port indicator	Green for port Link/Act at 100Mbps.	
Serial TX / RX LEDs:	Red: Serial port is receiving data Green: Serial port is transmitting data	
Power		
Redundant Input power	Dual DC inputs. 12-48VDC on 6-pin terminal block	Dual DC inputs. 12-48VDC on 6-pin terminal block
Power consumption (Typ.)	IEEE 802.3af PoE PD (Eth 1)	
Overload current protection	Present	
Reverse polarity protection	Present on terminal block	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	66 (W) x 80.6 (D) x 95 (H) mm	
Weight (g)	375g	384g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

IDS-3 A B C

Code Definition	Serial Port Type	Serial Port Number	Ethernet port Number	Ethernet port Type
Option	**- 1: RS-232** **- 2: RS-422/485** **- 3: RS-232/422/485**	**- 4:** 4 ports	**- 2:** 2 ports	**-"+":** P.O.E. PD present at ETH1

	Model Name	Description
Available Model	IDS-342	Industrial 4-port secure serial to Ethernet device server with 4xRS-232/422/485 and 2x10/100Base-T(X)
	IDS-342+	Industrial 4-port secure serial to Ethernet device server with 4xRS-232/422/485 and 2x10/100Base-T(X), 1-port PoE P.D.

Packing List

- IDS-342+ x 1
- CD x 1
- Din-Rail Kit x 1
- Quick Installation Guide x 1

Optional Accessories

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply

IDS-322(+)

IDS-322(+)

Industrial 2 secure serial port to Ethernet device server with 2xRS-232/422/485 and 2x10/100Base-T(X)

Features

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
- Support 2xRS-232/422/485 in DB9 connector
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP
- Security: SSL data encryption; secured management by HTTPS and SSH:
  IP Access: IP White List
- Event Warning by Syslog, Email, SNMP trap, Relay and Beeper
- Configurable by Web-based and Windows utility (**DS-Tool**)
- Various Windows O.S. supported:
  Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit)
- Ethernet switch mode enable Daisy Chain
- 1KV isolation for PoE PD port (IDS-322+)

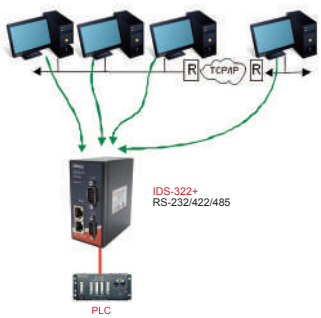
Introduction

IDS-322 is an innovative secure 2 port RS-232/422/485 to 2 ports LAN secure device server with standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, and UDP. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. On the other hand, IDS-322 can simultaneously transfer data up to 5 redundant host PCs to aovid Ethernet connection breakdown or any host PC fails. Further, IDS-322 features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

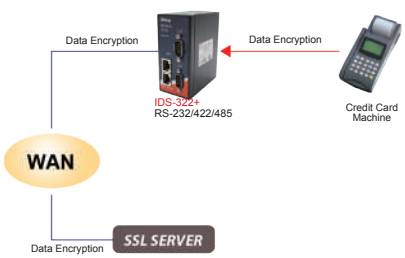
IDS-322 supports RS-232/422/485 and provides dual redundant power inputs, 12~48 VDC, on terminal block to guarantee a non-stop operation. Further, IDS-322+ features PoE PD (Power Device) function, compliant with IEEE802.3af standard, with 1kv isolation on the PoE port. With wide operating temperature, -40~70°C, and rugged IP-30 housing design, IDS-322 series could operate in the harsh industrial environment. Therefore, IDS-322 is the best solution to the high demand of secure serial to Ethernet critical data communication.

Practical Operation

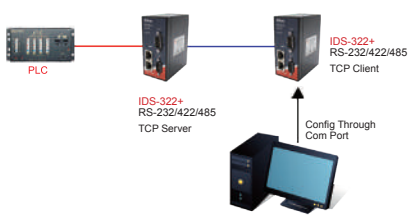
In practical operation of serial device servers, Windows utility (DS-Tool) is supported. This utility is very helpful for you to manage and monitor all of industrial device servers on the industrial network.



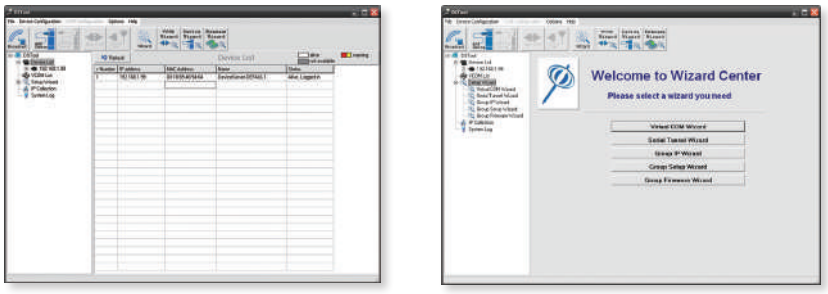
Multiple Host PCs



SSL Data Encryption

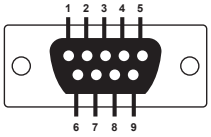


TCP Client/Server Modes



DS-Tool (Windows Utility): Monitoring and Configuration interface

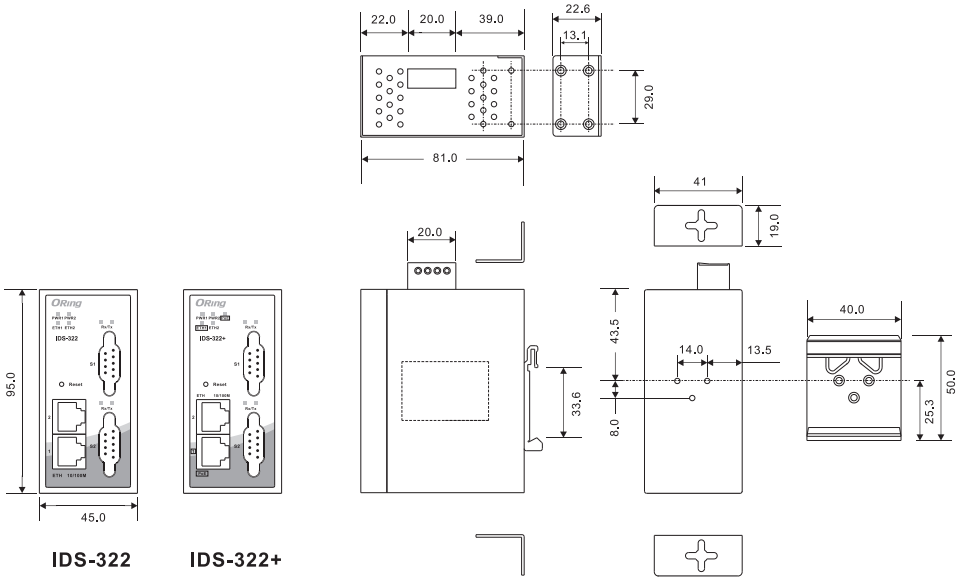
Pin Definition



DB9 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	DCD	TX-	TX-	DATA -
2	RXD	TX+	TX+	DATA +
3	TXD	RX+	RX+	
4	DTR	RX-	RX-	
5	GND	GND	GND	
6	DSR			
7	RTS			
8	CTS			
9	RI			

Dimensions



Unit=mm

Specifications

ORing Switch Model	IDS-322	IDS-322+
Physical Ports		
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
P.O.E.		P.O.E.Present at ETH1 Power Device (IEEE 802.3af): IEEE 802.3af compliant input interface Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min
Serial Ports		
Connector	DB9 x 2	
Operation Mode	RS-232/422/485	
Serial Baud Rate	110 bps to 460.8 Kbps	
Data Bits	7, 8	
Parity	odd, even, none, mark, space	
Stop Bits	1, 1.5, 2	
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND	
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR	
Network Protocol		
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS, SMTP	
LED indicators		
Power indicator	3 x LEDs, PWR 1(2)(PoE) / Ready: Green On: Power is on	
10/100 RJ45 port indicator	Green for port Link/Act at 100Mbps.	
Serial TX / RX LEDs:	Red: Serial port is receiving data Green: Serial port is transmitting data	
Power		
Redundant Input power	Dual DC inputs. 12-48VDC on 6-pin terminal block	Dual DC inputs. 12-48VDC on 6-pin terminal block IEEE 802.3af PoE PD (Eth 1)
Power consumption (Typ.)	3.84W	
Overload current protection	Present	
Reverse polarity protection	Present on terminal block	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	45 (W) x 81 (D) x 95 (H) mm	
Weight (g)	316g	325g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

IDS-3 A B C

Code Definition	Serial Port Type	Serial Port Number	Ethernet port Number	Ethernet port Type
Option	**- 1: RS-232** **- 2: RS-422/485** **- 3: RS-232/422/485**	**- 2:** 2 ports	**- 2:** 2 ports	**-"+":** P.O.E. PD present at ETH1

	Model Name	Description
Available Model	IDS-322	Industrial 2-port secure serial to Ethernet device server with 2xRS-232/422/485 and 2x10/100Base-T(X)
	IDS-322+	Industrial 2-port secure serial to Ethernet device server with 2xRS-232/422/485 and 2x10/100Base-T(X), 1-port PoE P.D.

Packing List

- IDS-322+ x 1
- Wall-Mount Kit x 1
- CD x 1
- Din-Rail Kit x 1
- Quick Installation Guide x 1

Optional Accessories

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply

IDS-312(+)

IDS-312(+)

Industrial 1 secure serial port to Ethernet device server with 1xRS-232/422/485 and 2x10/100Base-T(X)

Features

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
- Support 1xRS-232/422/485 in DB9 connector
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP
- Security: SSL data encryption; secured management by HTTPS and SSH: IP Access: IP White List
- Event Warning by Syslog, Email, SNMP trap, Relay and Beeper
- Configurable by Web-based and Windows utility (**DS-Tool**)
- Various Windows O.S. supported:
  Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit)
- Ethernet switch mode enable Daisy Chain
- 1KV isolation for PoE PD port (802.3af) (IDS-312+)

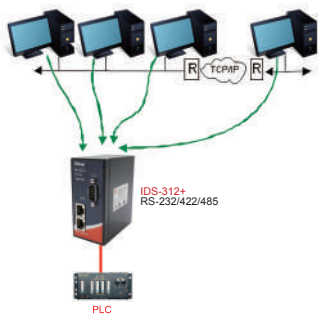
Introduction

IDS-312 is an innovative secure 1 port RS-232/422/485 to 2 ports LAN secure device server with standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, and UDP. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. On the other hand, IDS-312 can simultaneously transfer data up to 5 redundant host PCs to aovid Ethernet connection breakdown or any host PC fails. Further, IDS-312 features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

IDS-312 supports RS-232/422/485 and provides dual redundant power inputs, 12~48 VDC, on terminal block to guarantee a non-stop operation. Further, IDS-312+ features PoE PD (Power Device) function, compliant with IEEE802.3af standard, with 1kv isolation on the PoE port. With wide operating temperature, -40~70°C, and rugged IP-30 housing design, IDS-312 series could operate in the harsh industrial environment. Therefore, IDS-312 is the best solution to the high demand of secure serial to Ethernet critical data communication.

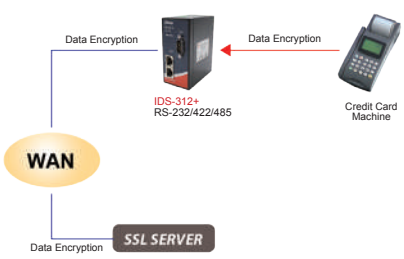
Practical Operation

In practical operation of serial device servers, Windows utility (DS-Tool) is supported. This utility is very helpful for you to manage and monitor all of industrial device servers on the industrial network.

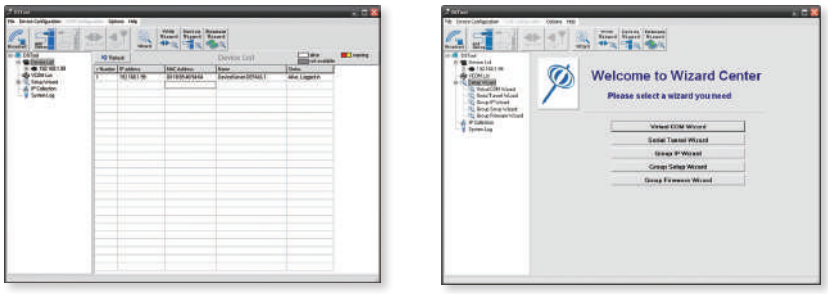


Multiple Host PCs

TCP Client/Server Modes

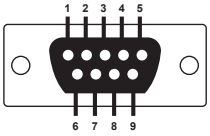


SSL Data Encryption



DS-Tool (Windows Utility): Monitoring and Configuration interface

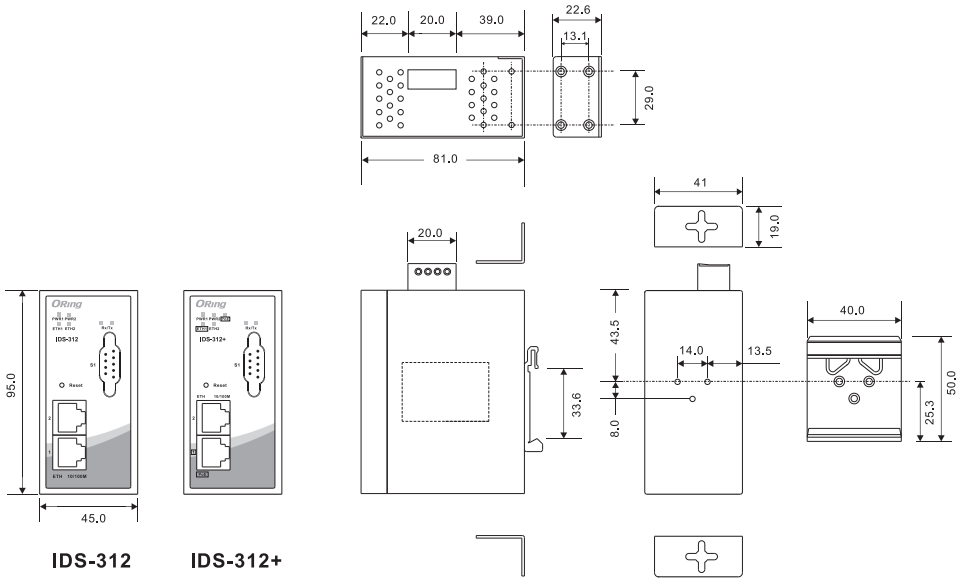
Pin Definition



DB9 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	DCD	TX-	TX-	DATA -
2	RXD	TX+	TX+	DATA +
3	TXD	RX+	RX+	
4	DTR	RX-	RX-	
5	GND	GND	GND	
6	DSR			
7	RTS			
8	CTS			
9	RI			

Dimensions



Unit=mm

Specifications

ORing Switch Model	IDS-312	IDS-312+
Physical Ports		
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
P.O.E.		P.O.E.Present at ETH1 Power Device (IEEE 802.3af): IEEE 802.3af compliant input interface Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min
Serial Ports		
Connector	DB9 x 1	
Operation Mode	RS-232/422/485	
Serial Baud Rate	110 bps to 460.8 Kbps	
Data Bits	7, 8	
Parity	odd, even, none, mark, space	
Stop Bits	1, 1.5, 2	
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND	
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR	
Network Protocol		
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS, SMTP	
LED indicators		
Power indicator	3 x LEDs, PWR 1(2)(PoE) / Ready: Green On: Power is on	
10/100 RJ45 port indicator	Green for port Link/Act at 100Mbps.	
Serial TX / RX LEDs:	Red: Serial port is receiving data Green: Serial port is transmitting data	
Power		
Redundant Input power	Dual DC inputs. 12-48VDC on 6-pin terminal block	Dual DC inputs. 12-48VDC on 6-pin terminal block
Power consumption (Typ.)	3.36W	
Overload current protection	Present	
Reverse polarity protection	Present on terminal block	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	45 (W) x 81 (D) x 95 (H) mm	
Weight (g)	304g	313g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

IDS-3 A B C

Code Definition	Serial Port Type	Serial Port Number	Ethernet port Number	Ethernet port Type
Option	**- 1: RS-232** **- 2: RS-422/485** **- 3: RS-232/422/485**	**- 1:** 1 ports	**- 2:** 2 ports	**-"+":** P.O.E. PD present at ETH1

	Model Name	Description
Available Model	IDS-312	Industrial 1-port secure serial to Ethernet device server with 1xRS-232/422/485 and 2x10/100Base-T(X)
	IDS-312+	Industrial 1-port secure serial to Ethernet device server with 1xRS-232/422/485 and 2x10/100Base-T(X), 1-port PoE P.D.

Packing List

- IDS-312+ x 1
- Wall-Mount Kit x 1
- CD x 1
- Din-Rail Kit x 1
- Quick Installation Guide x 1

Optional Accessories

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply

IDS-312L

IDS-312L

Industrial secure serial port to Ethernet device server with 1xRS-232/422/485 and 2x10/100Base-T(X)

Features

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
- Support 1xRS-232/422/485 in DB9 connector
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP
- Security: SSL data encryption; secured management by HTTPS and SSH: IP Access: IP White List
- Event Warning by Syslog, Email, SNMP trap
- Configurable by Web-based and Windows utility (DS-Tool)
- Various Windows O.S. supported:
  Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit)

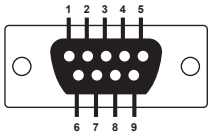
SSL -40~70°C Temperature Redundant PWR RoHS Lead Free CE FC

Introduction

IDS-312L is an innovative secure 1 port RS-232/422/485 to 2 port LAN device server with standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, and UDP. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. On the other hand, IDS-312L can simultaneously transfer data up to 5 redundant host PCs to aovid Ethernet connection breakdown or any host PC fails. Further, IDS-312L features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

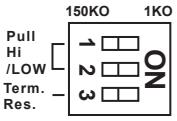
IDS-312L supports RS-232/422/485 and provides dual redundant power inputs, 12~48 VDC, on terminal block to guarantee a non-stop operation. With wide operating temperature, -40~70°C, and rugged IP-30 housing design, IDS-312L series could operate in the harsh industrial environment. Therefore, IDS-312L is the best solution to the high demand of secure serial to Ethernet critical data communication.

Pin Definition



DB9 connector

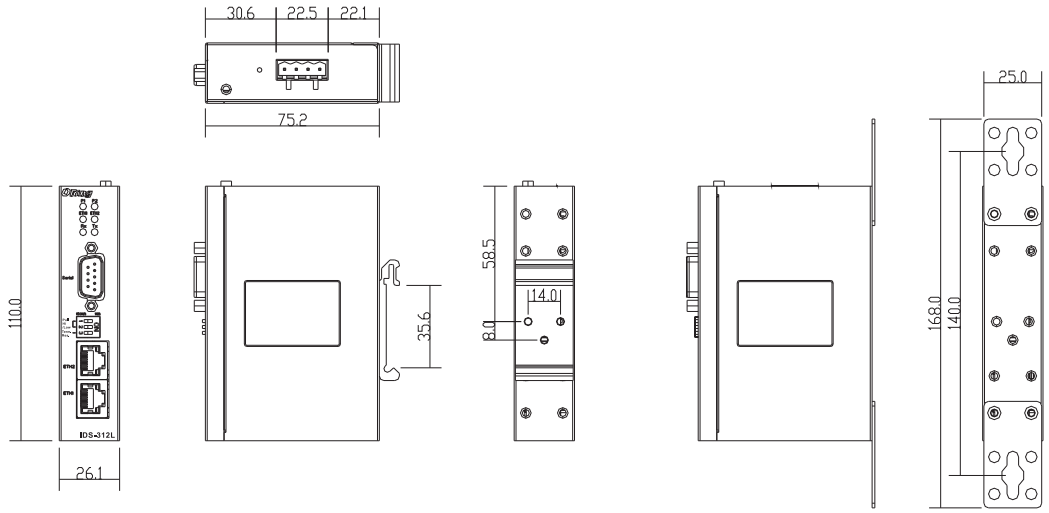
Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	DCD	TX-	TX-	
2	RXD	TX+	TX+	
3	TXD	RX+	RX+	DATA+
4	DTR	RX-	RX-	DATA-
5	GND	GND	GND	GND
6	DSR			
7	RTS			
8	CTS			



DIP Switch

SW No.	Description
#1	150K / 1K Ohm Pull High/Low Resistor
#2	
#3	Enable / Disable Terminal Resistor

Dimensions



Unit=mm

Specifications

ORing Switch Model	IDS-312	IDS-312+
Physical Ports		
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
Serial Ports		
Connector	DB9 x 1	
Operation Mode	RS-232/422/485	
Serial Baud Rate	110 bps to 921.6 Kbps	
Data Bits	7, 8	
Parity	odd, even, none, mark, space	
Stop Bits	1, 1.5, 2	
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND	
RS-422	Tx-, Tx+, Rx+, Rx-	
RS-485	4 wire: Tx-, Tx+, Rx+, Rx- 2 wire: Data-, Data+	
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR	
Network Protocol		
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS, SMTP	
LED indicators		
Power indicator	2 x LEDs, PWR 1(2) / Ready: Green On: Power is on	
10/100TX RJ45 port indicator	Green for port Link/Act at 100Mbps.	
Serial TX / RX LEDs:	Amber: Serial port is receiving data Green: Serial port is transmitting data	

Power	
Redundant Input power	Dual DC inputs. 12-48VDC on 4-pin terminal block
Power consumption (Typ.)	1.44 W
Overload current protection	Present
Reverse polarity protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	26 (W) x 75 (D) x 110 (H) mm
Weight (g)	227g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15B, CISPR 32 (EN55032 Class A)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IDS-3 A B L

Code Definition	Serial Port Type	Serial Port Number	10/100Base-T(X) port Number
Option	**- 1: RS-232** **- 2: RS-422/485** **- 3: RS-232/422/485**	**- 1:** 1 ports	**- 2:** 2 ports

Available Model	Model Name	Description
	IDS-312L	Industrial 1 secure serial port to Ethernet device server with 1xRS-232/422/485 and 2x10/100Base-T(X)

Packing List

- IDS-312L x 1
- Wall-Mount Kit x 2
- CD x 1
- Din-Rail Kit x 1
- Quick Installation Guide x 1

Optional Accessories

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- DR-75 series : 75 Watts power supply

IDS-311F

IDS-311F

Industrial secure serial port to Ethernet device, 1xRS-232/422/485 to 1x10/100Base-T(X) and 1x100Base Fiber

Features

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP and **Modbus Gateway**
- Support 1xRS-232/422/485 in DB9 connector
- Security: SSL data encryption; secured management by HTTPS and SSH: IP Access: IP White List
- Event Warning by Syslog, Email and SNMP trap
- Configurable by Web-based and Windows utility (**DS-Tool**)
- Various Windows O.S. supported:

Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit)

- Support OpenWRT SDK for project

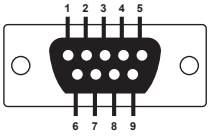
RoHS Lead Free CE FC

Introduction

IDS-311F is an innovative secure 1 port RS-232/422/485 to 1 port LAN and 1 port fiber device server with standard features of device server. In addition, IDS-311F features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

IDS-311F supports RS-232/422/485 and provides dual redundant power inputs, 12~48 VDC, on terminal block to guarantee a non-stop operation. With wide operating temperature, -40~70℃, and rugged IP-30 housing design, IDS-311F series could operate in the harsh industrial environment. Therefore, IDS-311F is the best solution to the high demand of secure serial to Ethernet critical data communication.

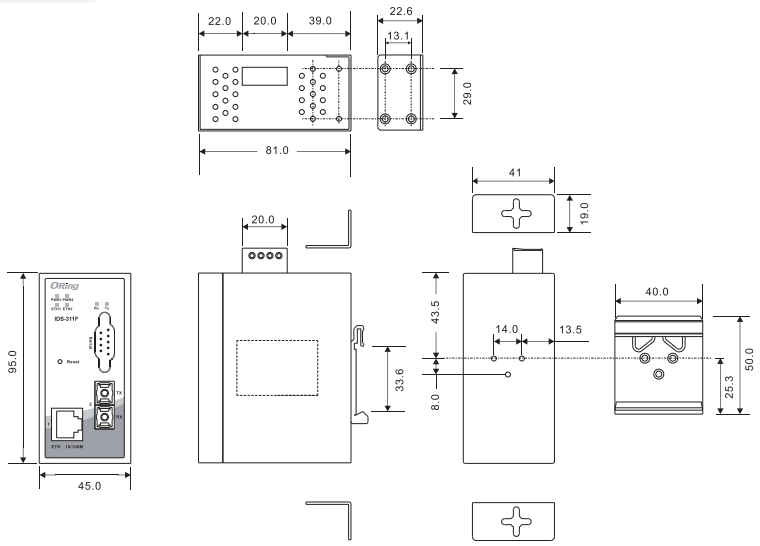
Pin Definition



DB9 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	DCD	TX-	TX-	
2	RXD	TX+	TX+	
3	TXD	RX+	RX+	
4	DTR	RX-	RX-	
5	GND	GND	GND	
6	DSR			
7	RTS			
8	CTS			
9	RI			

Dimensions



Unit=mm

Specifications

ORing Switch Model		IDS-311F-MM	IDS-311F-SS
Physical Ports			
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX		**1**	
Fiber Ports Specification	Operation Mode	**1**	
	Serial Baud Rate	100Base-FX	
	Operation Mode	SC or ST	
	Serial Baud Rate	Multi-mode	Single-mode
	Operation Mode	62.5/125 µm 50/125 µm	9/125 µm
	Serial Baud Rate	2 Km	30 Km
	Operation Mode	1310 nm	1310 nm
	Serial Baud Rate	-14 dbm	-8 dbm
	Operation Mode	-23.5 dbm	-15 dbm
	Serial Baud Rate	0 dbm	0 dbm
	Operation Mode	-31 dbm	-34 dbm
	Serial Baud Rate	7.5 db	19 db
Serial Ports			
Connector		DB9 x 1	
Operation Mode		RS-232/422/485	
Serial Baud Rate		110 bps to 460.8 Kbps	
Data Bits		7, 8	
Parity		odd, even, none, mark, space	
Stop Bits		1, 1.5, 2	
RS-232		TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND	
RS-422		Tx-, Tx+, Rx+, Rx-	
RS-485		4 wire: Tx-, Tx+, Rx+, Rx- 2 wire: Data-, Data+	
Flow Control		XON/XOFF, RTS/CTS, DTR/DSR	
Network Protocol			
Protocol		ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS, SMTP	

LED indicators	
Power indicator	2 x LEDs, PWR 1(2) / Ready: Green On: Power is on
10/100TX RJ45 port indicator (Eth1)	Green for port Link/Act
100Base-FX Fiber Port Indicator (Eth2)	Green for port Link/Act
Serial TX / RX LEDs:	Amber: Serial port is receiving data Green: Serial port is transmitting data
Power	
Redundant Input power	Dual DC inputs. +12 to 48VDC on 4-pin terminal block
Power consumption (Typ.)	3.98 W
Overload current protection	Present
Reverse polarity protection	Present on terminal block
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	45 (W) x 81 (D) x 95 (H) mm
Weight (g)	309g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IDS-3 A B C

Code Definition	Serial Port Type	Serial Port Number	Additional port Number	Additional Port Type
Option	**- 1: RS-232** **- 2: RS-422/485** **- 3: RS-232/422/485**	**- 1:** 1 ports	**- 1:** 1 ports	**- F: 100Base-FX**

	Model Name	Description
Available Model	IDS-311F-MM-SC	Industrial 1 secure serial port to Ethernet device server with 1xRS-232/422/485 and 1x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector
	IDS-311F-SS-SC	Industrial 1 secure serial port to Ethernet device server with 1xRS-232/422/485 and 1x10/100Base-T(X) and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector
	IDS-311F-MM-ST	Industrial 1 secure serial port to Ethernet device server with 1xRS-232/422/485 and 1x10/100Base-T(X) and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector
	IDS-311F-SS-ST	Industrial 1 secure serial port to Ethernet device server with 1xRS-232/422/485 and 1x10/100Base-T(X) and 1x100Base-FX, single-mode, 30Km/1310nm, ST connector

Packing List

- IDS-311F x 1
- Wall-Mount Kit x 2
- CD x 1
- Din-Rail Kit x 1
- Quick Installation Guide x 1

Optional Accessories

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- DR-75 series : 75 Watts power supply

IDS-242GT-I+

IDS-242GT-I+

Industrial 4-port secure serial to Ethernet device server with 4xRS-422/485(2KV isolation) and 2x10/100/1000Base-T(X), 1-port PoE P.D.

Features

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP, Modbus Gateway
- Support Modbus Gateway : Modbus TCP, Modbus RTU, Modbus ASCII
- Support 2 Gigabit Ethernet ports for high speed data transmission
- Security: SSL data encryption; secured management by HTTPS and SSH
- 1KV isolation for PoE P.D. port
- 2KV isolation for serial port
- Supports 9K Bytes Jumbo Frame
- Event Warning by Syslog, SNMP trap, Relay
- Configurable by Web-based and Windows utility (**DS-Tool**)
- Various Windows O.S. supported:
  Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit)

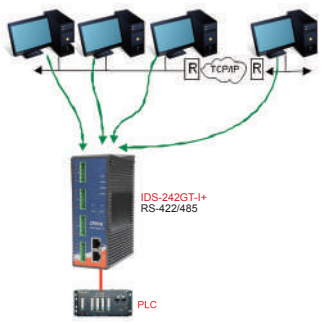
Introduction

IDS-242GT-I+ is an innovative secure 4 port RS-422/485 to 2 ports Gigabit Ethernet secure device server with standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, and UDP. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. Further, IDS-242GT-I+ features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

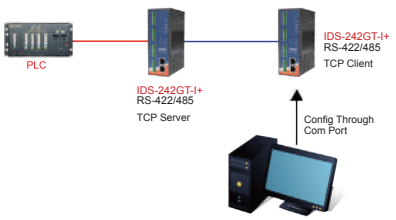
IDS-242GT-I+ supports RS-422/485 and provides dual redundant power inputs, 12~48 VDC, on terminal block to guarantee a non-stop operation. In addition, IDS-242GT-I+ also provides P.D. feature at ETH2 port which is fully compliant with IEEE802.3af PoE P.D. specification to save the layout cost of power line. With wide operating temperature, -40~70°C, and rugged IP-30 housing design, IDS-242GT-I+ series could operate in the harsh industrial environment. Therefore, IDS-242GT-I+ is the best solution to the high demand of secure serial to Ethernet critical data communication.

Practical Operation

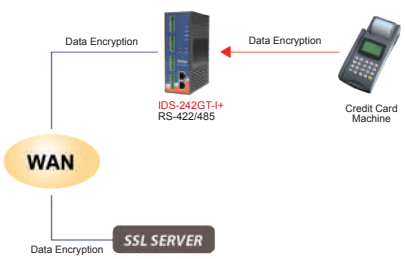
In practical operation of serial device servers, Windows utility (DS-Tool) is supported. This utility is very helpful for you to manage and monitor all of industrial device servers on the industrial network.



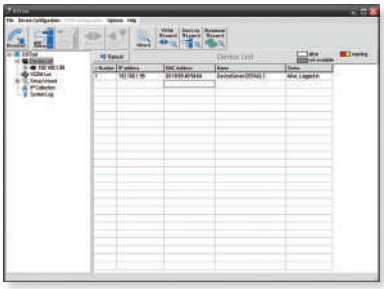
Multiple Host PCs

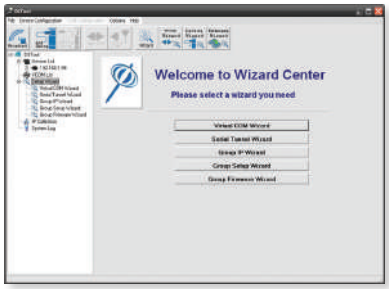


TCP Client/Server Modes



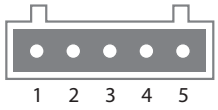
SSL Data Encryption





DS-Tool (Windows Utility): Monitoring and Configuration interface

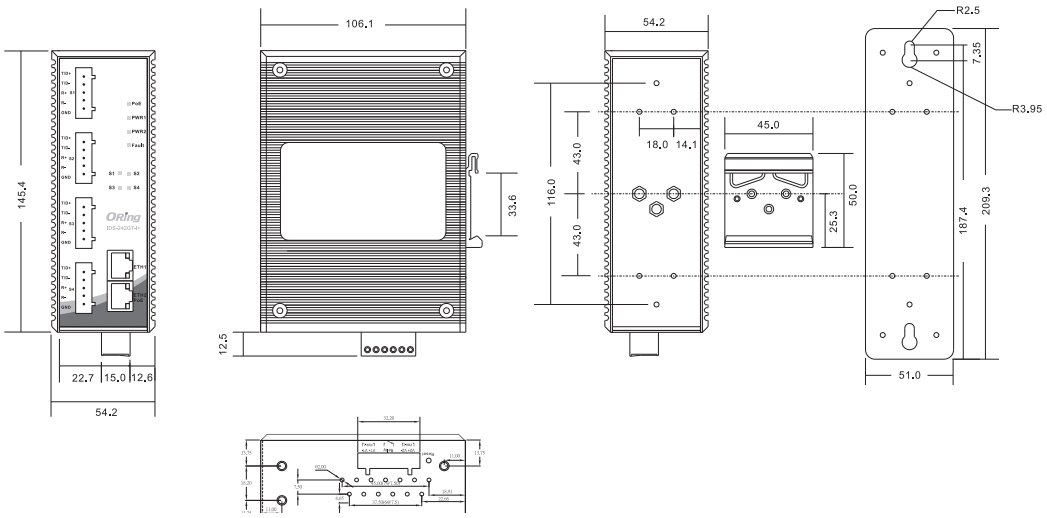
Pin Assignment



5-Pin Terminal block connector

Pin #	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	TXD +	TXD +	DATA +
2	TXD -	TXD -	DATA -
3	RXD +	RXD +	
4	RXD -	RXD -	
5	GND	GND	GND

Dimensions



Unit=mm

Specifications

ORing Switch Model	IDS-242GT-I+
Physical Ports	
10/100/1000 Base-T(X) Ports in RJ45	**2**
Auto MDI/MDIX	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 108 ohms min
Serial Ports	
Connector	5 pin terminal block x 4

Operation Mode	RS-422/485
Serial Baud Rate	110 bps to 921.6 Kbps
Data Bits	7, 8
Parity	odd, even, none, mark, space
Stop Bits	1, 1.5, 2
RS-422	TxD+, TxD-, RxD+, RxD-,GND
RS-485 (4-wire)	TxD+, TxD-, RxD+, RxD-,GND
RS-485 (2-wire)	DATA+, DATA-, GND
Isolating	2KV
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR
Network Protocol	
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS
Jumbo frame	Up to 9.6K Bytes
LED indicators	
Power indicator	PWR 1(2) / Ready: Green On: Power is on and functioning Normally.
10/100/1000 RJ45 port indicator	Top Green for port Link at 1000Mbps, Amber for port Link at 100Mbps, off for port Link at 10Mbps Bottom Green for port Link/Act
Serial TX / RX LEDs:	Red: Serial port is receiving data Green: Serial port is transmitting data
Power	
Redundant Input power	Dual DC inputs. 12-48VDC on 6-pin terminal block
Power consumption (Typ.)	6.96 W
Overload current protection	Present
Reverse polarity protection	Present on terminal block
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	54.2(W)x106.1(D)x145.4(H) mm (2.13x4.18x5.72 inch.)
Weight (g)	705g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15 B, CISPR (EN55032) class A
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS) EN61000-4-4 (EFT) EN61000-4-5 (Surge) EN61000-4-6 (CS) EN61000-4-8 EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IDS-2 A B CC - D E

Code Definition	Serial Port Type	Serial Port Number	Serial Port Number	Serial Port Number	10/100Base-T(X) port Number	Serial Port Number
Option	**- 1: RS-232** **- 2: RS-422/485** **- 3: RS-232/422/485**	**- 4:** 4 ports	**- 2:** 2 ports	**- GT:** Gigabit Ethernet	**- I:** Serial port are isolated RS-422/485	**- "+": PoE P.D. present at ETH2**

Available Model	Model Name	Description
	IDS-242GT-I+	Industrial 4-port secure serial to Ethernet device server with 4x RS-422/485(2KV isolation) and 2x10/100/1000Base-T(X), 1-port PoE P.D.

Packing List

- IDS-242GT-I+ x 1
- DIN-rail Kit x 1
- CD x 1
- Wall-mount Kit x 1
- Quick Installation Guide x 1

Optional Accessories

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- DR-75 series : 75 Watts power supply

TDS-5041-I-M12

TDS-5041-I-M12

EN50155 Industrial 4-port secure serial to Ethernet device server with 4xRS-422/485(2KV isolation) and 1x10/100Base-T(X), M12 connector

Features

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
- Redundant multiple host devices:
- host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP
- NAT-pass through: user can manage TDS-5041-I-M12 through NAT router
- Security: SSL data encryption; secured management by HTTPS and SSH: IP Access: IP White List
- Internet Communication: PPPoE
- Update DNS Hostname: DDNS
- Event Warning by Syslog, Email, SNMP trap, Relay and Beeper
- Configurable by Web-based and Windows utility (DS-Tool)
- Various Windows O.S. supported:
  Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit) / Windows 8 (32/64bit)

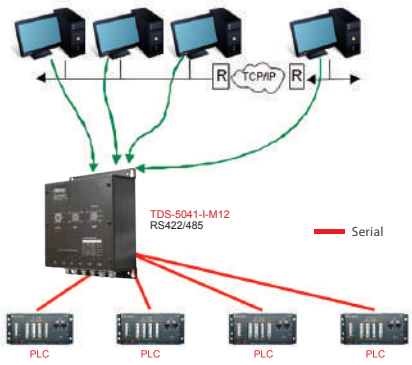
Introduction

TDS-5041-I-M12 is an innovative secure 4-port RS-422/485 to 1 port LAN secure device server, with TCP/IP and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, and UDP. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com easily. The features of NAT Router Pass Through, DDNS, and PPPoE make it more convenient for administrators to configure ORing's device servers through NAT router from different IP domains or Internet via modem remotely. On the other hand, TDS-5041-I-M12 can simultaneously transfer data up to 5 redundant host PCs to aovid Ethernet connection breakdown or any host PC fails. Further, TDS-5041-I-M12 features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

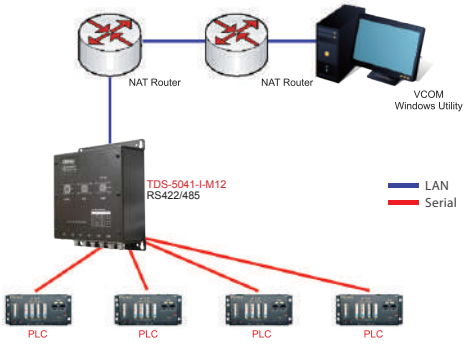
TDS-5041-I-M12 supports 4xRS-422/485 interfaces on 5-pin M12 A-coding connectors and provides one wide range power input, 12~48 VDC, on a 5-pin M12 connector. With wide operating temperature, -40~70oC, TDS-5041-I-M12 could operate in the harsh industrial environment. Therefore, TDS-5041-I-M12 is the best solution to the high demand of secure serial to Ethernet critical data communication for rolling stock application.

Practical Operation

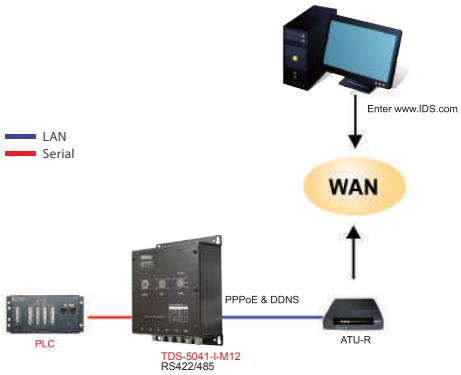
In practical operation of serial device servers, Windows utility (DS-Tool) is supported. This utility is very helpful for you to manage and monitor all of industrial device servers on the industrial network



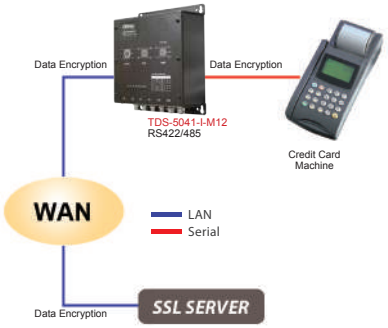
Multiple Host PCs



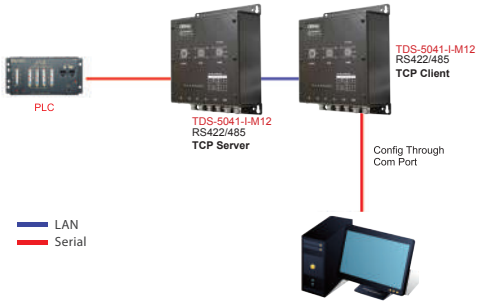
NAT Router Pass-Through



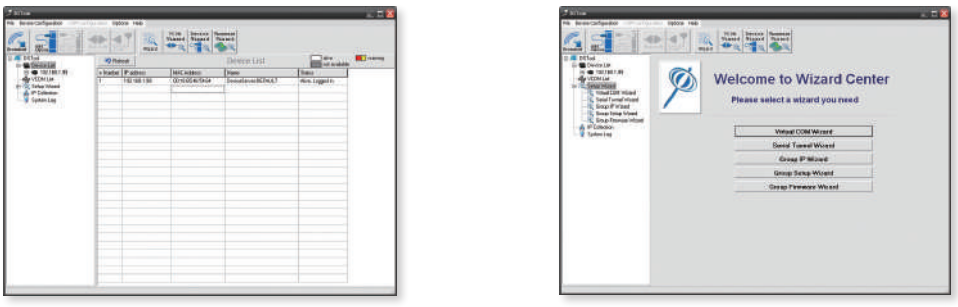
PPPoE and DDNS



SSL Data Encryption

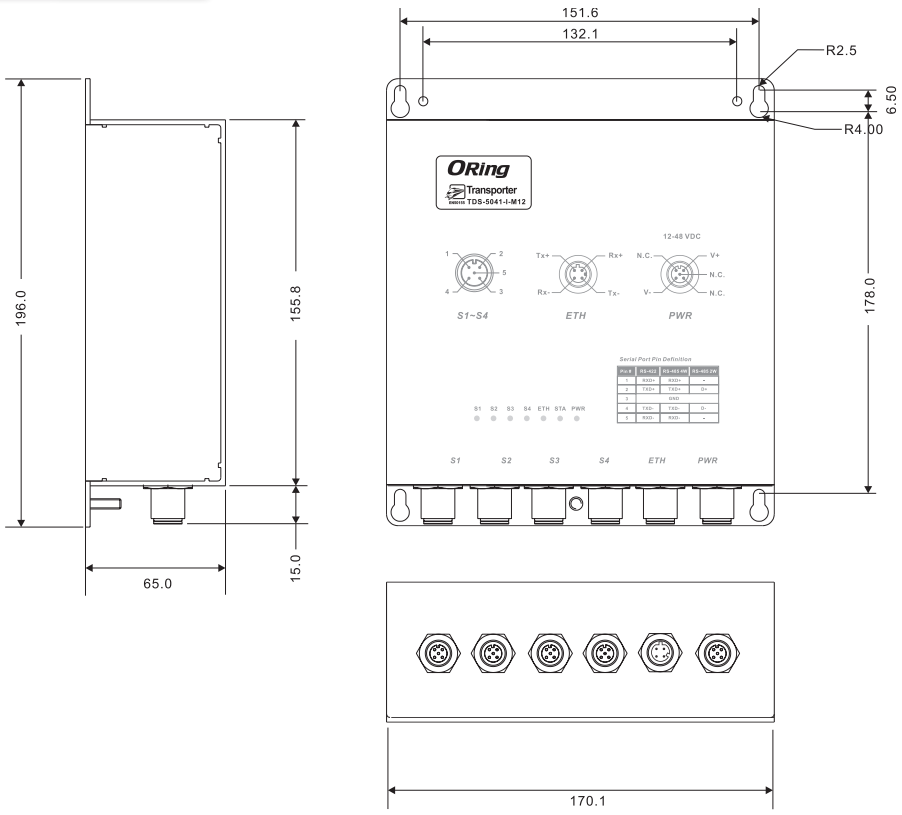


TCP Client/Server Modes



DS-Tool (Windows Utility) : Monitoring and Configuration interface

Dimensions



Unit=mm

Specifications

ORing Device Server Model	TDS-5041-I-M12
Physical Ports	
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX	1 (4-pin D-Coding in female connector)
Serial Ports	
Connector	M12 x 4 (5-pin A-coding in male connector)
Operation Mode	RS-422 / 4(2)-Wire RS-485. Which can be configured by DS-Tool
Serial Baud Rate	110 bps to 460.8 Kbps
Data Bits	5, 6, 7, 8
Parity	odd, even, none, mark, space
Stop Bits	1, 1.5, 2
RS-232	TxD, RxD, GND
RS-485 (2-wire)	Data+, Data-,GND
Flow Control	XON/XOFF
Isolation	2KVDC
Network Features	
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS, SMTP, DDNS, PPPoE
LED Indicators	

Power Indicator	PWR 1(2)(PoE)/ Ready : Red Blinking: Indicates an IP conflict, or DHCP or BOOTP server did not respond properly. Green On: Power is on and functioning Normally. Green Blinking: Located by Administrator.
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act at 100Mbps. Amber for port Link/Act at 10Mbps.
Serial TX / RX LEDs	Red: Serial port is receiving data Green: Serial port is transmitting data
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Input Power	Power Inputs. 12-48VDC x 1(5-pin M12 female in A-coding)
Power Consumption (Typ.)	5.5 watts
Overload Current Protection	Present
Physical Characteristics	
Enclosure	IP-40
Dimensions (W x D x H)	170(W) x 65 (D) x 195(H) mm (6.69 x2.55x7.7.67 inch.)
Weight (g)	950 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (14 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6, EN61373
Warranty	5 years

Ordering Information

TDS-50 A B -I-M12

Code Definition	Serial Port Number	Ethernet Port Number
Option	**- 4:** 4 ports	**- 1:** 1 ports

Available Model	Model Name	Description
	TDS-5041-I-M12	EN50155 Industrial 4-port secure serial to Ethernet device server with 4xRS-422/485(2KV isolation) and 1x10/100Base-T(X), M12 connector

Packing List

- TDS-5041-I-M12
- DIN-Rail Kit
- Wall-mount Kit
- ORing Tool CD
- Quick Installation Guide

Optional Accessories

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply

RDS-3166G

RDS-3166G

Industrial 16 secure serial ports to Ethernet device server with 16xRS-232/422/485 and 4x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket

Features

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
- Redundant multiple host devices:
- host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP
- NAT-pass through: user can manage TDS-5041-I-M12 through NAT router
- Security: SSL data encryption; secured management by HTTPS and SSH: IP Access: IP White List
- Event Warning by Syslog, Email, SNMP trap, and Beeper
- Configurable by Web-based and Windows utility (**DS-Tool**)
- Various Windows O.S. supported:
  Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit) / Windows 8 (32/64bit)

SSL Full Gigabit -40~70°C Temperature

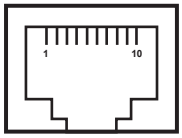
RoHS Lead Free CE FC

Introduction

RDS-3166G is an innovative secure 16 port RS-232/422/485 to 6 ports LAN secure device server with standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP and Modbus Gateway. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. RDS-3166G, is not only a traditional device server, it also includes the function of Modbus Gateway to convert Modbus TCP to Modbus RTU/ASCII which allows it to be installed in various different application field. On the other hand, RDS-3166G can simultaneously transfer data up to 5 redundant host PCs to aovid Ethernet connection breakdown or any host PC fails. Further, RDS-3166G features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

RDS-3166G, supports 4x10/100/1000Base-T(X) and 2x100/1000Base-X SFP ports. The two Gigabit fiber ports provide high bandwidth and long distance for the use of backbone connection. With wide operating temperature, -40~70°C, RDS-3166G series could operate in the harsh industrial environment. Therefore, RDS-3166G is the best solution to the high demand of secure serial to Ethernet critical data communication.

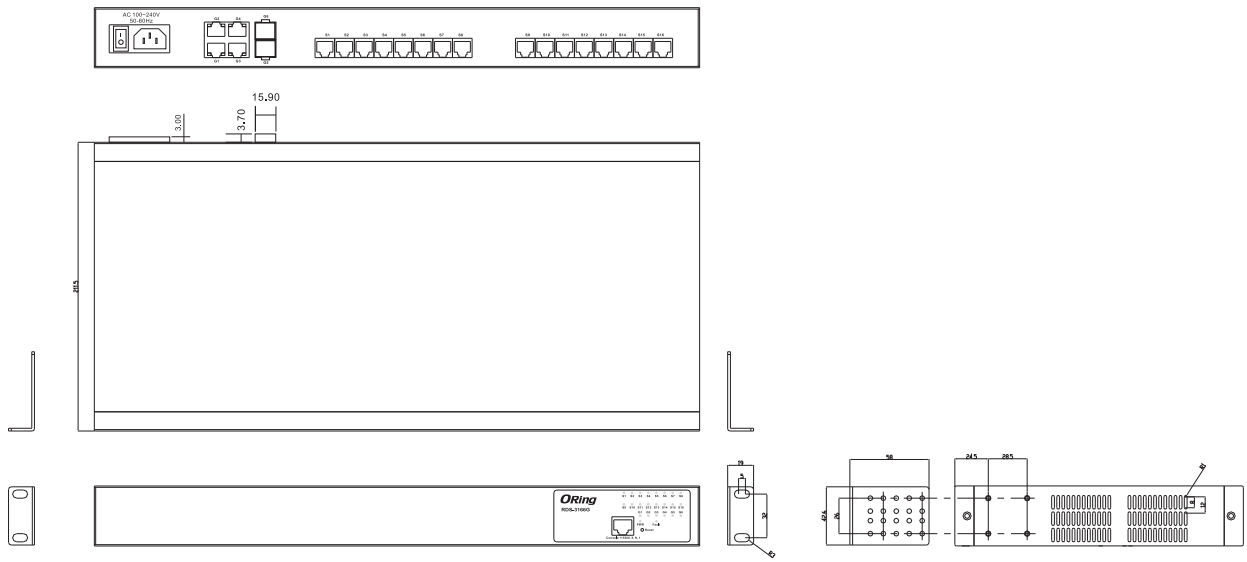
Pin Definitions



10-pin RJ48 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	NC	NC	NC	NC
2	DCD	TXD -	TXD -	DATA-
3	RXD	TXD +	TXD +	DATA+
4	TXD	RXD +	RXD +	
5	DTR	RXD -	RXD -	
6	GND	GND	GND	
7	DSR			
8	RTS			
9	CTS			
10	RI			

Dimensions



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Specifications

ORing Device Server Model	RDS-3166G
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45	4
Auto MDI/MDIX	2
100/1000Base-X with SFP port	RS-232 in RJ45 connector. 115200bps, 8, N, 1
Serial Ports	
Connector (10-pin RJ48)	RJ48 x 16
Operation Mode	RS-232/422/485
Serial Baud Rate	50 bps to 921.6 Kbps
Data Bits	7, 8
Parity	odd, even, none, mark, space
Stop Bits	1, 1.5, 2
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR
Network Protocol	
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS
LED indicators	
Power indicator	PWR : Green On: Power is on
10/100/1000Base-T(X) RJ45 port indicator	Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off for 10Mbps
LED Display System (Front panel)	Serial TX / RX LEDs: Green for Serial port transmitting data, Amber for Serial port receiving data G1~G6 : Green for port Link/Act Fault : indicate unexpected event occurred
Power	
Power Input	100-240VAC with power socket
Power consumption (Typ.)	14.4 Watts

Overload current protection	Present
Physical Characteristic	
Dimension (W x D x H)	443.7 (W) x 211.5 (D) x 44 (H) mm
Weight (g)	2891 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

RDS-3 AA B C

Code Definition	Serial Port Type	Serial Port Number	Ethernet port Number	Ethernet port Type
Option	**- 1: RS-232** **- 2: RS-422/485** **- 3: RS-232/422/485**	**- 16:** 16 ports	**- 6:** 6 ports	**- G:** Gigabit Ethernet port

Available Model	Model Name	Description
	RDS-3166G	Industrial 16-port secure serial to Ethernet device server with 16xRS-232/422/485 and 4x10/100/1000Base-T(X) and 2x100/1000Base-X SFP socket

Packing List

- RDS-3166G x 1
- Rack-mount kit x 1
- CD x 1
- Power Cable
- Quick Installation Guide x 1

Optional Accessories

- RJ48DB9 series : RJ-48 to DB9 cable

RDS-3086G

RDS-3086G

Industrial 8 secure serial ports to Ethernet device server with 8xRS-232/422/485 and 4x10/100/1000Base-T(X) and 2x100/1000Base-X, SFP socket

Features

- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP, Modbus Gateway
- Support 8xRS-232/422/485 in RJ48 connector
- Provide 4 Gigabit Ethernet ports and 2 Gigabit Fiber ports in SFP socket
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP
- Support Modbus Gateway : Modbus TCP, Modbus RTU, Modbus ASCII
- Security: SSL data encryption; secured management by HTTPS and SSH
- Built-in 15 KV ESD protection for all serial signals
- Event Warning by Syslog, SNMP trap, and Beeper
- Standard 1U rackmount size
- Configurable by Web-based and Windows utility (**DS-Tool**)
- Various Windows O.S. supported:
  Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit)

SSL Full Gigabit -40~70°C Temperature

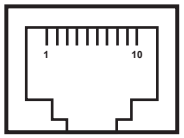
RoHS Lead Free CE FC

Introduction

RDS-3086G is an innovative secure 8 port RS-232/422/485 to 6 ports LAN secure device server with standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, and UDP. In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. RDS-3086G, is not only a traditional device server, it also includes the function of Modbus Gateway to convert Modbus TCP to Modbus RTU/ASCII which allows it to be installed in various different application field. On the other hand, RDS-3086G can simultaneously transfer data up to 5 redundant host PCs to aovid Ethernet connection breakdown or any host PC fails. Further, RDS-3086G features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

RDS-3086G, the rackmount device which supports 4x10/100/1000Base-T(X) and 2x100/1000Base-X SFP ports. The two Gigabit fiber ports provide high bandwidth and long distance for the use of backbone connection. With wide operating temperature, -40~70°C, RDS-3086G series could operate in the harsh industrial environment. Therefore, RDS-3086G is the best solution to the high demand of secure serial to Ethernet critical data communication.

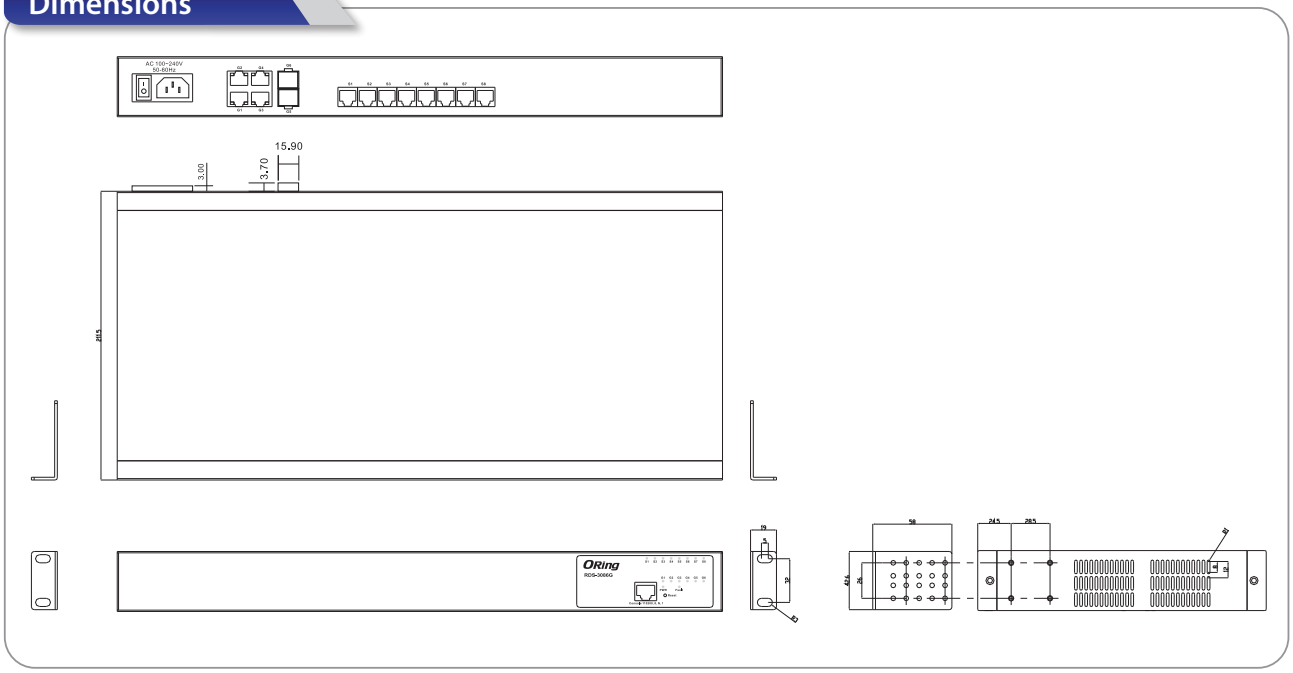
Pin Definitions



10-pin RJ48 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	NC	NC	NC	NC
2	DCD	TXD -	TXD -	DATA-
3	RXD	TXD +	TXD +	DATA+
4	TXD	RXD +	RXD +	
5	DTR	RXD -	RXD -	
6	GND	GND	GND	
7	DSR			
8	RTS			
9	CTS			
10	RI			

Dimensions



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Specifications

ORing Device Server Model	RDS-3086G
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	4
100/1000Base-X with SFP port	2
RS-232 Serial Console Port	RS-232 in RJ45 connector. 115200bps, 8, N, 1
Serial Ports	
Connector (10-pin RJ48)	RJ48 x 8
Operation Mode	RS-232/422/485
Serial Baud Rate	50 bps to 921.6 Kbps
Data Bits	7, 8
Parity	odd, even, none, mark, space
Stop Bits	1, 1.5, 2
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR
Network Protocol	
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS
LED indicators	
Power indicator	PWR : Green On: Power is on
10/100/1000Base-T(X) RJ45 port indicator	Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off for 10Mbps
LED Display System (Front panel)	Serial TX / RX LEDs: Green for Serial port transmitting data, Amber for Serial port receiving data G1~G6 : Green for port Link/Act Fault : indicate unexpected event occurred
Power	
Power Input	100-240VAC with power socket

Power consumption (Typ.)	13.4 Watts
Overload current protection	Present
Physical Characteristic	
Dimension (W x D x H)	443.7 (W) x 211.5 (D) x 44 (H) mm
Weight (g)	2792 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

RDS-3 AA B C

Code Definition	Serial Port Type	Serial Port Number	Ethernet port Number	Ethernet port Type
Option	**- 1: RS-232** **- 2: RS-422/485** **- 3: RS-232/422/485**	**- 08:** 8 ports	**- 6:** 6 ports	**- G:** Gigabit Ethernet port

Available Model	Model Name	Description
	RDS-3086G	Industrial 8-port secure serial to Ethernet device server with 8xRS-232/422/485 and 4x10/100/1000Base-T(X) and 2x100/1000Base-X SFP socket

Packing List

- RDS-3086G x 1
- Rack-mount kit x 1
- CD x 1
- Power Cable
- Quick Installation Guide x 1

Optional Accessories

- RJ48DB9 series : RJ-48 to DB9 cable

RDS-P3000

Industrial IEC 61850-3 modular rack mount Device Server with 4 Serial slots and 1 Ethernet slot

Features

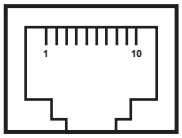
- Designed for power substation / Railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Modular serial port design makes planning easy
- 19 inches rack mountable design
- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP, Modbus Gateway
- Support RS-232/422/485 - DB9 or RJ48 connectors
- Supports application based QoS management
- Support Modbus Gateway : Modbus TCP, Modbus RTU, Modbus SCII.
- Security: SSL data encryption; secured management by HTTPS and SSH
- Supports SNMP v1/v2
- Event Warning by Syslog, Email and SNMP trap
- Configurable by Web-based and Windows utility (DS-Tool)
- Various Windows O.S. supported:
- Windows NT/2000/ XP/ 2003/VISTA(32/64bit)/ Windows 7(32/64bit)

Introduction

RDS-P3000 is modular Serial Device Server with 4 serial slots and 1 Ethernet slot. The Device Server is designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613. RDS-P3000 is with modular design which can support up to 16 serial ports and 6 LAN ports with standard features of device server, such like TCP/IP interface and versatile operation modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP and Modbus Gateway. With modular design, RDS-P3000 is able to communicate with many types of serial devices via different communication methods (RJ48 or DB9). In addition, the Windows untility, DS-Tool, could configure multiple devices and set up the mappings of Virtual Com. Further, RDS-P3000 features HTTPS, SSH, and SSL encryption to assure the security of critical data transmission.

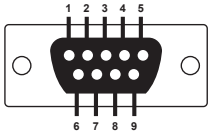
RDS-P3000, which is compliant with the IEC 61850-3 standard, supports wide operating temperature, -40~70°C, RDS-P3000 series could operate in the harsh industrial environment. Therefore, RDS-P3000 is the best solution to the high demand of secure serial to Ethernet critical data communication.

Pin Definitions



10-pin RJ48 connector

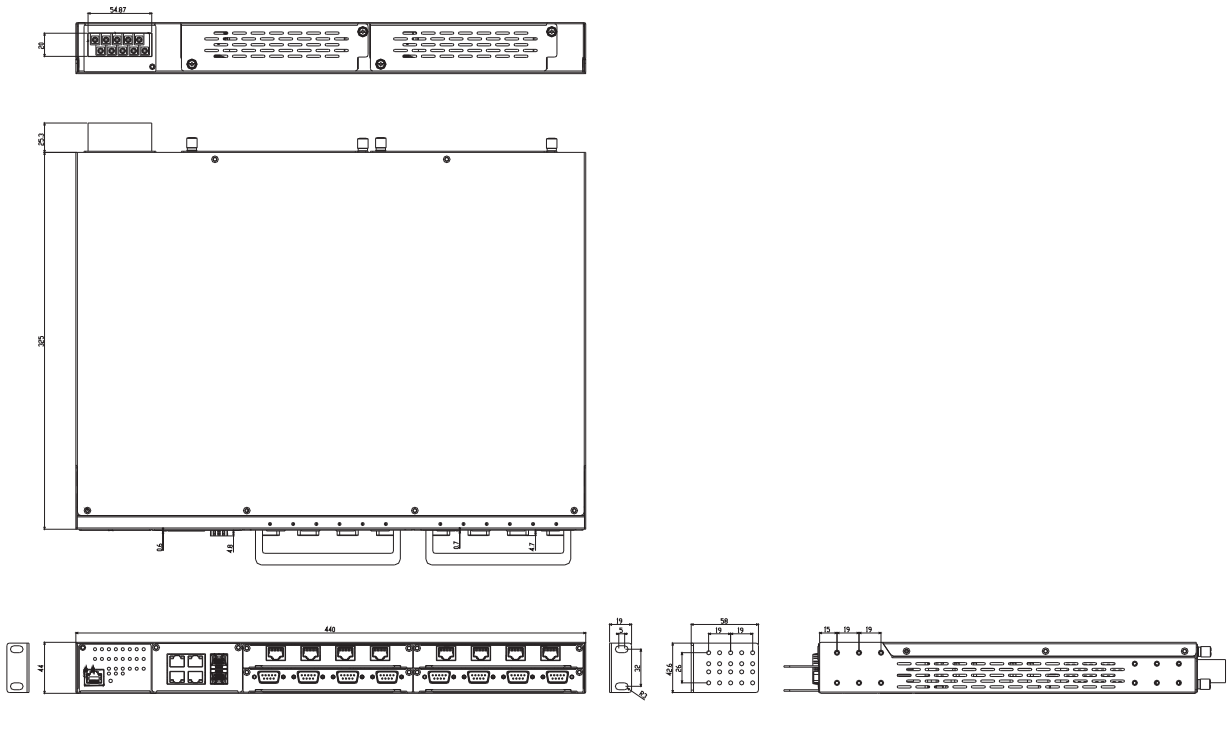
Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	NC	NC	NC	NC
2	DCD	TXD -	TXD -	DATA-
3	RXD	TXD +	TXD +	DATA+
4	TXD	RXD +	RXD +	
5	DTR	RXD -	RXD -	
6	GND	GND	GND	
7	DSR			
8	RTS			
9	CTS			
10	RI			



DB9 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	DCD	TXD-	TXD-	
2	RXD	TXD+	TXD+	
3	TXD	RXD+	RXD+	DATA+
4	DTR	RXD-	RXD-	DATA-
5	GND	GND	GND	GND
6	DSR			
7	RTS			
8	CTS			
9	RI			

Dimensions



Unit=mm

Specifications

ORing Device Server Model	RDS-P3000-LV	RDS-P3000-HV
Physical Ports		
10/100/1000 Base-T(X) in RJ45	**4**	
100/1000Base-X SFP	**2**	
Serial Ports		
Connector (10-pin RJ48)	16 ports in DB9 or 10-pin RJ48 (4 slots, 4 DB9 or RJ48 ports in one slot)	
Operation Mode	RS-232/422/485	
Serial Baud Rate	50 bps to 921.6 Kbps	
Data Bits	7, 8	
Parity	odd, even, none, mark, space	
Stop Bits	1, 1.5, 2	
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND	
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR	
Protocol		
Network Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/V2c, HTTPS, SMTP, Modbus TCP	
Serial Protocol	Modbus RTU	
LED indicators		
Power indicator	PWR : Green On: Power is on Green Blinking: Located by Administrator.	
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred	
10/100/1000Base-T(X) LAN indicator	Green for port Link/Act	
Serial TX / RX LEDs:	Amber: Serial port is receiving data Green: Serial port is transmitting data	
Power		
Power Input	Dual 24/48VDC (24~72VDC) power inputs at terminal block	Dual 100~240VAC / 100~370VDC power inputs at terminal block
Power consumption (Typ.)	15.6 W	
Overload current protection	Present	
Physical Characteristic		
Dimension (W x D x H)	360(W) x 440(D) x 43(H) mm	
Weight (g)	6436 g	
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-40 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
Power Automation	IEC 61850-3, IEEE 1613	
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Warranty	5 years	

Ordering Information

	Model Name	Description
Available Model	RDS-P3000-HV_US	Industrial IEC 61850-3 modular rack mount Serial Device Server with 4 serial slots, 1 Ethernet slot, low-voltage power input, US power cord
	RDS-P3000-HV_EU	Industrial IEC 61850-3 modular rack mount Serial Device Server with 4 serial slots, 1 Ethernet slot, low-voltage power input, EU power cord
	RDS-P3000-HV_AU	Industrial IEC 61850-3 modular rack mount Serial Device Server with 4 serial slots, 1 Ethernet slot, low-voltage power input, AU power cord
	RDS-P3000-HV_UK	Industrial IEC 61850-3 modular rack mount Serial Device Server with 4 serial slots, 1 Ethernet slot, low-voltage power input, UK power cord
	RDS-P3000-LV	Industrial IEC 61850-3 modular rack mount Serial Device Server with 4 serial slots, 1 Ethernet slot, low-voltage power input

Packing List

- RDS-P3000 x 1
- Rack-mount kit x 2
- CD x 1
- Power Cable
- Quick Installation Guide x 1

4 Industrial Wireless Access Point

Naming Rules

Model Name Symbol Color Legend

BLACK: For the associated sub-category, the symbol is constant for both this Overall List or in the Datasheet(s) of the indicated model(s).

PURPLE: For the associated sub-category, the symbol is variable or optional for this Overall List and is constant or optional for the Datasheet(s) of the indicated model(s).

BLUE: For the associated sub-category, the symbol is variable or optional for both this Overall List and the Datasheet(s) of the indicated model(s).

INDUSTRIAL WIRELESS ACCESS POINT	Industrial DIN-Rail WLAN Access Point
Model Name	IAP-ABOD
Ordering info & label	IAP-ABOD_EE
Code Definition	**A: Wireless Mode**
	1: IEEE 802.11b/g
	2: IEEE 802.11a
	3: IEEE 802.11a/b/g
	4: IEEE 802.11b/g/n
	5: IEEE 802.11a/n
	6: IEEE 802.11a/b/g/n
	B: 10/100Base-T(X) Port Number
	D: PoE P.D. Feature
	- "+": PoE P.D. present at ETH2
	EE: Wireless Band Option
	US: US band
	EU: EU band

INDUSTRIAL WIRELESS ACCESS POINT	Industrial IP-67 WLAN Access Point
Model Name	IAP-WABC
	IAP-67DDN-EEF
Ordering info & label	IAP-WABC_GG
	IAP-67DDN-EEF_GG
Code Definition	**IAP-Wxxx Models**
	A: Wireless Mode
	1: IEEE 802.11b/g
	2: IEEE 802.11a
	3: IEEE 802.11a/b/g
	4: IEEE 802.11b/g/n
	5: IEEE 802.11a/n
	6: IEEE 802.11a/b/g/n
	B: 10/100Base-T(X) Port Number
	C: N-type Antenna Connector Number
	0: Built-in antenna (no connectors)
	2: 2 connectors

Code Definition	**IAP-67xxN Models**
	DD: LAN Port Number
	EE: WLAN Identification
	WG: IEEE 802.11b/g mode
	WA: IEEE 802.11a mode
	F: PoE Identification
	"+": PoE P.D. present
	All Models
	GG: Wireless Band Option
	US: US band
	EU: EU band

INDUSTRIAL WIRELESS ACCESS POINT	Industrial EN50155 (Transporter Series) WLAN Access Point
Model Name	TAP-ABC0-M12D
Ordering info & label	TAP-ABC0-M12D_EE
Code Definition	**A: Wireless Mode (Band 1)**
	1: IEEE 802.11b/g
	2: IEEE 802.11a
	3: IEEE 802.11a/b/g
	4: IEEE 802.11b/g/n
	5: IEEE 802.11a/n
	6: IEEE 802.11a/b/g/n
	B: Wireless Mode (optional Band 2)
	1: IEEE 802.11b/g
	2: IEEE 802.11a
	3: IEEE 802.11a/b/g
	4: IEEE 802.11b/g/n
	5: IEEE 802.11a/n
	6: IEEE 802.11a/b/g/n
	C: 10/100Base-T(X) Port Number
	D: PoE P.D. Feature
	- "+": PoE P.D. present at ETH2
	EE: Wireless Band Option
	US: US band
	EU: EU band

Product Selection Guide

Industrial Wireless Access Point	DIN-Rail WLAN Access Point		
			
	IAP-420/420+	IGAP-420/420+	IGAP-620/620+
Ethernet Ports			
10/100 Base-T(X) LAN Ports	2	-	-
10/100 /1000 Base-T(X) LAN Ports	-	2	2
PoE(P.D.) Support	- / • (LAN Port-1)	- / • (LAN Port-2)	- / • (LAN Port-2)
Ethernet Switch / Redundant Mode Support	•	•	•
WLAN Interface			
WLAN Standard	IEEE802.11b/g/n	IEEE802.11b/g/n	IEEE802.11a/b/g/n
Transmit Power	19 dBm max.	17 dBm max.	17 dBm max.
Transmission Rate	IEEE802.11b : 11Mbps IEEE802.11g : 54Mbps IEEE802.11n :150Mbps	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps
Antenna Connector	Reverse SMA	Reverse SMA	Reverse SMA
Antenna	2.4GHz :2 dBi	2.4GHz :2 dBi 5GHz :2 dBi	2.4GHz :2 dBi 5GHz :2 dBi
Power Redundancy			
Power Connector	2(Terminal Block)	2(Terminal Block)	2(Terminal Block)
Installation			
DIN-Rail Mounting	•	•	•
Wall Mounting	•	•	•
Pillar-Mounting	-	-	-
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	41(W)x81(D)x95(H)	74.3(W)x109.2(D)x153.6(H)	74.3(W)x109.2(D)x153.6(H)
Operating Temperature			
-10 to 60°C	•	-	-
-25 to 70°C	-	•	•
Network Technology			
Alarm Notification	Relay Output / SNMP Trap / System Log	Relay Output / SNMP Trap / System Log	Relay Output / SNMP Trap / System Log
Management / Configuration	WEB/Window Utility	WEB/Window Utility	WEB/Window Utility
Warranty	5 years		

Product Selection Guide

Industrial Wireless Access Point	DIN-Rail WLAN Access Point	
		
	IGAP-820/820+	IGAP-6620+
Ethernet Ports		
10/100 Base-T(X) LAN Ports	-	-
10/100 /1000 Base-T(X) LAN Ports	2	2
PoE(P.D.) Support	- / • (LAN Port-2)	• (LAN Port-2)
Ethernet Switch / Redundant Mode Support	•	•
WLAN Interface		
WLAN Standard	IEEE802.11ac/g/n	Dual IEEE802.11a/b/g/n
Transmit Power	18 dBm max.	17 dBm max.
Transmission Rate	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps IEEE802.11ac : 1.3Gbps	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps
Antenna Connector	Reverse SMA	Reverse SMA
Antenna	2.4GHz :2 dBi 5GHz :2 dBi	2.4GHz :2 dBi 5GHz :2 dBi
Power Redundancy		
Power Connector	2(Terminal Block)	2(Terminal Block)
Installation		
DIN-Rail Mounting	•	•
Wall Mounting	•	•
Pillar-Mounting	-	-
Physical Characteristics		
Casing Protection	IP-30	IP-30
Dimensions (mm)	74.3(W)x109.2(D)x153.6(H)	74.3(W)x109.2(D)x153.6(H)
Operating Temperature		
-10 to 60°C	-	-
-25 to 70°C	•	•
Network Technology		
Alarm Notification	Relay Output / SNMP Trap / System Log	Relay Output / SNMP Trap / System Log
Management / Configuration	WEB/Window Utility	WEB/Window Utility
Warranty	5 years	

Product Selection Guide

	Industrial IP-67 WLAN Access Point				EN50155 WLAN Access Point	
Industrial Wireless Access Point						
	IAP-W420+ / IAP-W422+		**IAP-W520+ / IAP-W522+**		**TGAP-620-M12 Series**	**TGAP-820-M12 Series**
Ethernet Ports						
10/100 Base-T(X) LAN Ports	2		2		-	-
10/100/1000 Base-T(X) LAN Ports	-		-		2 (M12)	2 (M12)
PoE(P.D.) Support	•		•		(TGAP-620+-M12)	(TGAP-820+-M12)
WLAN Interface						
WLAN Standard	IEEE802.11 b/g/n		IEEE802.11a/n		IEEE802.11a/b/g/n	IEEE802.11a/c/g/n
Transmit Power	29 dBm max.		27 dBm max.		17 dBm max.	18 dBm max.
Transmission Rate	IEEE802.11b : 11Mbps IEEE802.11g : 54Mbps IEEE802.11n : 300Mbps		IEEE802.11a : 54Mbps IEEE802.11n : 300Mbps		IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps IEEE802.11ac : 1.3Gbps
Antenna Connector	-	N-Type	-	N-Type	Reverse SMA	Reverse SMA
Antenna	Built-in 10 dBi	-	Built-in 15 dBi	-	2.4GHz :2 dBi 5GHz :2 dBi	2.4GHz :2 dBi 5GHz :2 dBi
Power Redundancy						
Power Connector	-		-		2 (M23)	2 (M23)
Installation						
DIN-Rail Mounting	-		-		-	-
Wall Mounting	-		-		•	•
Pillar-Mounting	•		•		-	-
Physical Characteristics						
Casing Protection	IP-67		IP-67		IP-40	IP-40
Dimensions (mm)	157(W)x96(D)x58(H) / 157(W)x96(D)x47.5(H)		157(W)x96(D)x58(H) / 157(W)x96(D)x47.5(H)		125(W)x65(D)x196(H)	125.6(W)x65(D)x196.1(H)
Operating Temperature						
-10 to 60°C	-		-		-	-
-25 to 70°C	•		•		•	•
Network Technology						
Alarm Notification	SNMP Trap / System Log		SNMP Trap / System Log		Relay Output / SNMP Trap / System Log	Relay Output / SNMP Trap / System Log
Management / Configuration	WEB/Window Utility		WEB/Window Utility		WEB/Window Utility	WEB/Window Utility
Warranty	5 years					

Product Selection Guide

Industrial Wireless Access Point	EN50155 WLAN Access Point		
			
	TGAP-6620-M12 Series	TGAP-W610+ series	TGAP-W6610+ Series
Ethernet Ports			
10/100 Base-T(X) LAN Ports	-	-	-
10/100/1000 Base-T(X) LAN Ports	**2 (M12)**	**1(M12/RJ45)**	**1(M12/RJ45)**
PoE(P.D.) Support	(TGAP-6620+-M12)	•	•
WLAN Interface			
WLAN Standard	Dual IEEE802.11a/b/g /n	IEEE802.11a/b/g/n	Dual IEEE802.11a/b/g/n
Transmit Power	17 dBm max.	17 dBm max.	17 dBm max.
Transmission Rate	IIEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps EEE802.11n : 300Mbps	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps EEE802.11n : 300Mbps	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps
Antenna Connector	Reverse SMA	N-Type	N-Type
Antenna	2.4GHz :2 dBi 5GHz :3 dBi	2.4GHz :3 dBi 5GHz :5 dBi	2.4GHz :3 dBi 5GHz :5 dBi
Power Redundancy			
Power Connector	2 (M23)	2 (M12)	2 (M12)
Installation			
DIN-Rail Mounting	-	-	-
Wall Mounting	•	•	•
Pillar-Mounting	-	•	•
Physical Characteristics			
Casing Protection	IP-40	IP-67	IP-67
Dimensions (mm)	125(W)x65(D)x196(H)	310(W)x310(D)x87(H)	310(W)x310(D)x87(H)
Operating Temperature			
-10 to 60°C	-	-	-
-25 to 70°C	•	•	•
Network Technology			
Alarm Notification	Relay Output / SNMP Trap / System Log	Relay Output / SNMP Trap / System Log	Relay Output / SNMP Trap / System Log
Management / Configuration	WEB/Window Utility	WEB/Window Utility	WEB/Window Utility
Warranty	5 years		

Industrial Wireless Access Point Overview

ORing's industrial Wireless Access Points are made for rugged and seamless long distance wireless and wireless redundant roaming networks. All of ORing's industrial wireless products feature long communication range with X-Roaming technology, support for IEEE 802.11 standard, and AP/bridge/repeater/AP-client/client operation modes. Some of these Wireless Access Points are even waterproof (the IP-67 models) – perfect for outdoor use. Additionally, some Wireless Access Points are EN50155-certified Transporter series models, making them especially suitable for rolling stock applications.

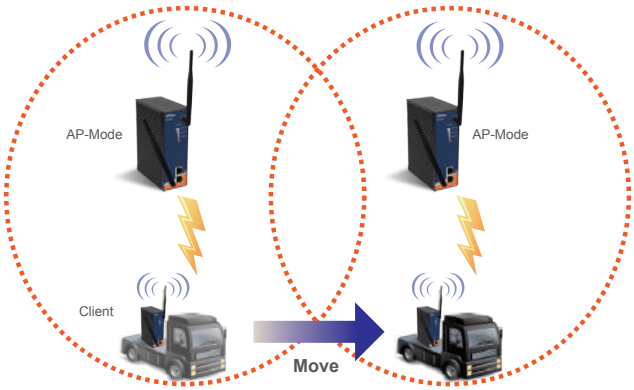
Key Technologies

X-Roaming

Technology Description

IEEE 802.11 networks can only transmit data within a few hundred meters. As for mobile data application, the devices should handoff from one access point to another. ORing's X-Roaming technology, which is available in all of ORing's new wireless access point models, reduces the handoff time between two different access points to less than 100 milliseconds, and makes seamless wireless communication possible.

With ORing's X-Roaming technology, the client can roam seamlessly among different access points. ORing also provides the feature of load balance — to prevent traffic jam of mobile data transmission while roaming, i.e. to limit the total amount of AP clients that connected to the products of ORing APs.



Benefits of X-Roaming

The main benefits of X-Roaming are that it reduces the handoff time between two different access points to less than 100 milliseconds, and therefore it makes seamless wireless communication possible. With ORing's X- Roaming technology, the client can roam seamlessly among different access points.

Supporting Products: ORing's full AP Series products support X-Roaming feature .


TGAP-W6610+-M12


IGAP-820/820+


TGAP-W610+-M12


IGAP-6620+


TGAP-6620-M12

Security: 802.1x Authentication

Technology Description

ORing's IAP/IGAP product series support IEEE 802.1x to enhance security for wireless connections. ORing's IAP/IGAP series act as authenticator and the clients (supplicants) could get authentications from RADIUS (Remote Authentication Dial In User Service) server.

Security Benefits

ORing's IAP/IGAP series provide client-only authentication or, more appropriately, strong mutual authentication using protocols such as EAP-TLS. Thus, un-authorized/un-authenticated client are not possible to connect to ORing's IAP/IGAP and IAR/IGAR series.

Supporting Products: ORing's full IAP/IGAP Series products support security functions.

Dual RF Wireless Redundancy

Technology Description

Network redundancy is vital for Ethernet network reliability – as one network link fails, the alternative network path can be activated to keep the network functional. The same redundancy concept can also be applied to wireless networks. By simultaneously providing 2 different wireless access paths, with different RF frequencies and SSIDs, the user can set up 2 wireless connections and have both simultaneously connected, ensuring that the wireless network stays uninterrupted when one of the two connections fails.

Supporting Products:

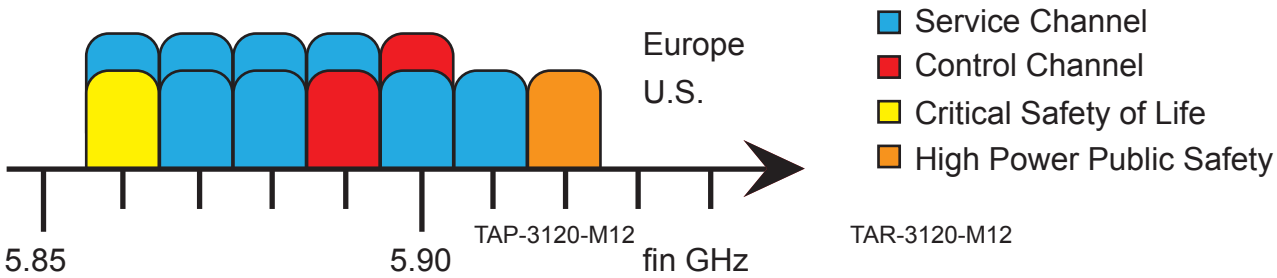
Dual Wifi : IGAP-6620+, TGAP-6620-M12 , TGAP-W6610+-M12 , TGAR-1662+-3G/4G-M12 ,IGAR-1662+-3G

Dual Cellular : TGAR-2062+-3G-M12 , TGAR-2062+-4G-M12 , IGAR-2062+-3G

802.11P

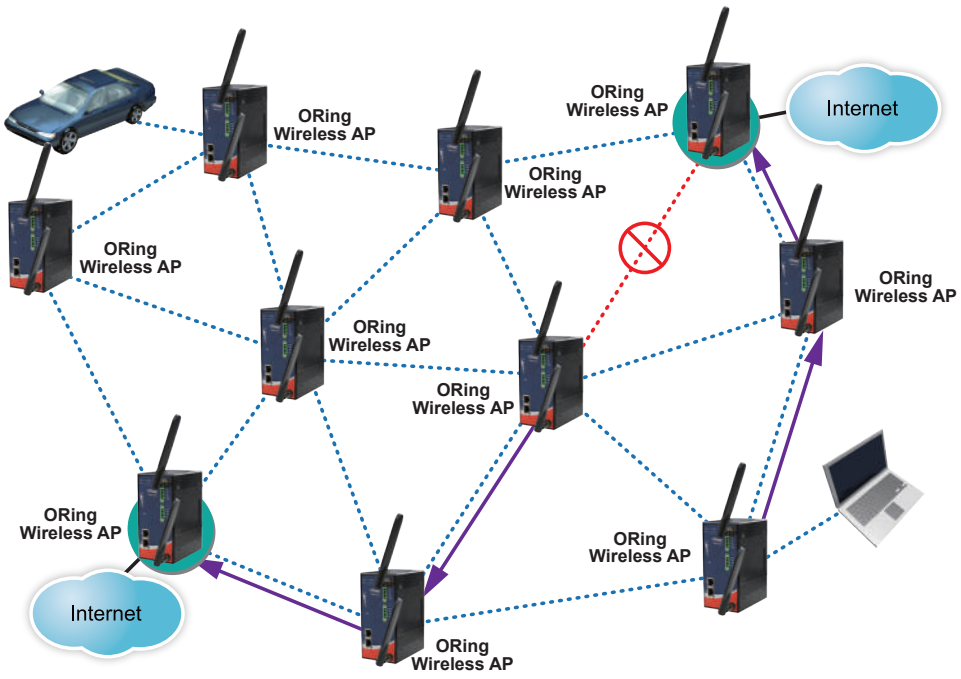
Technology Description

Modified from 802.11a, 802.11p is a standard development to ensure secure wireless communications while in a vehicular environment. Also known as WAVE, 802.11p covers communications from vehicle to infrastructure, vehicle to vehicle, and vehicle to pedestrian. This standard works in 5.9GHz band with seven channels of 10MHz, one for control and six for data services. As there is no need to associate with base stations, data can be transmitted more quickly. Furthermore, receivers have better noise rejection abilities due to no adjacent interference. The standard enables fast wireless communications in the urban road environment as well as higher transportation safety and communications reliability for moving vehicles.



Wireless X-Mesh

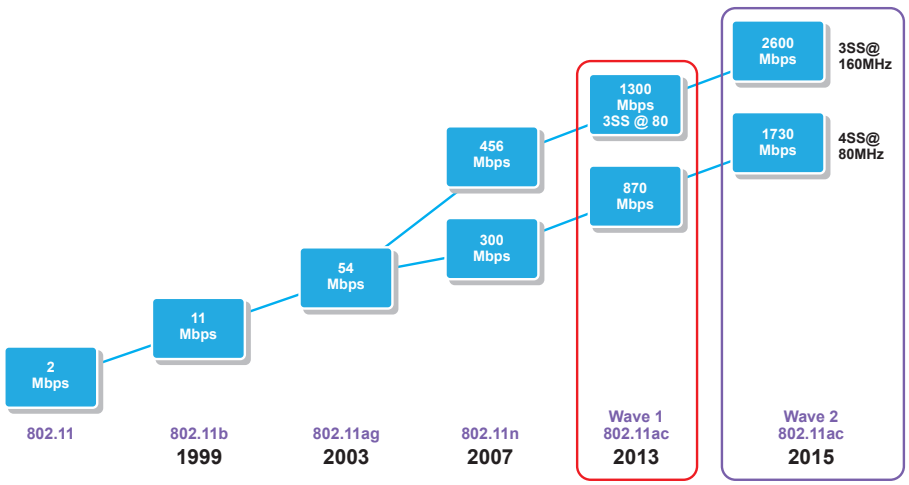
A wireless mesh network consists of several radio nodes in a mesh topology where nodes can communicate with each other even when one node ceases to operate. When a link is down, back-end system will find an available route automatically to ensure signals are transmitted to the destination. Wireless Mesh network has self-configuring and self-healing capabilities. When an AP receives signals, it will determine an optimal route to pass the signals to the next node. If the route encounters interference or hardware problems, the AP will use another route. Compared with traditional star topology, wireless mesh network can reduce traffic congestion and delays.



ORing Has Introduced Our Brand New Industrial 802.11 ac APs

Growing data traffic has led to a dramatic increase in wireless network bandwidth. The data rate in 1999 when 802.11a took place was only 54 Mbps. The speed surged to 300 Mbps in 2009 as 802.11n 2x2 MIMO technology was unveiled and further onto to 2.6 Gbps in 2014 after 3x3 MIMO 802.11ac came into being. The enhancement in data speed boils down to the development of several key technologies, such as multi-streaming, advanced modulation, increased bandwidth, and the transition from single-user to multi-user. As these technologies mature, an increasing number of 802.11ac products have emerged to meet enormous data demand.

ORing has introduced industrial 802.11ac APs with an operating temperature between 70~-25 °C. Equipped with 3x3 external antennas, the APs can provide a data rate of up to 1.3Gbps at 80MHz. To ensure reliable operation in harsh environments, the APs are housed in an IP30- or IP40-rated metal enclosure.



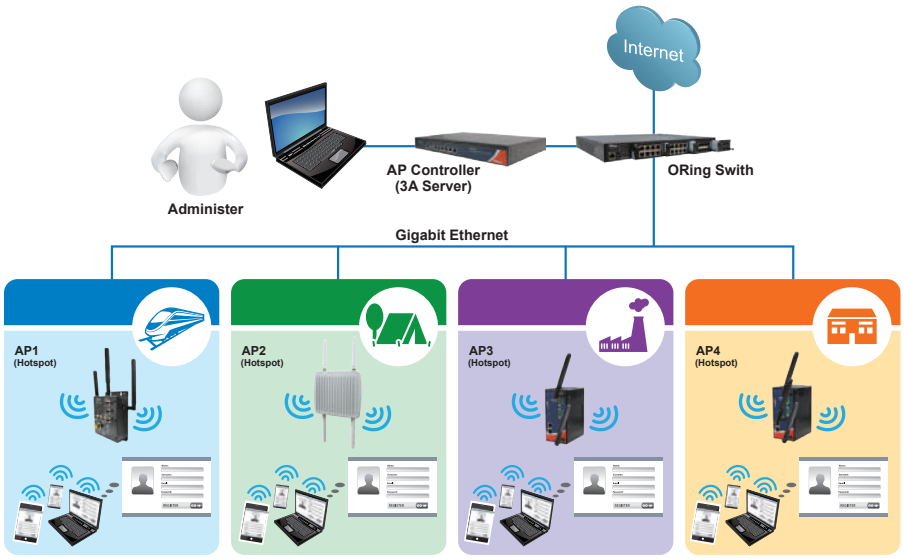
Access Point Controller

Traditionally, managing a large number of wireless APs is time-consuming. Without the ability to manage wireless APs centrally, you usually end up spending a lot of time configuring the APs one by one.

With increased coverage of wireless networks, the number of projects requiring more than 20 wireless APs is on the rise. To deploy and manage the large number of wireless APs easily, AP controllers have emerged.

An AP controller can control multiple APs at the same time with central management, configuration, and connection arrangement. Combined with hotspot and 3A authentication, the controller makes the entire wireless network more secure, convenient, scalable.

ORing's AP controllers can control many APs and configure the APs centrally, while managing firmware version and supporting hotspots and 3A servers, making Wi-Fi network deployment and management a piece of cake.



IAP-420 / IAP-420+

IAP-420 / IAP-420+

Industrial IEEE 802.11 b/g/n wireless access point with 2x10/100Base-T(X)

Features

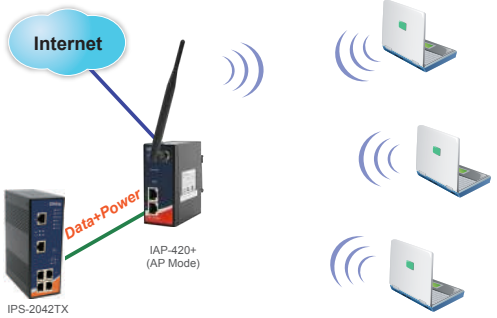
- High Speed Air Connectivity: WLAN interface support up to 150 Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/ WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Provide 2 port 10/100Base-T(X) Ethernet ports
- Support X-Roaming < 100 ms
- Support AP/Client/Bridge/AP-Client Mode
- Support Multiple-SSID to 4 SSID
- Secured Management by HTTPs
- Wireless connecting status monitoring
- Event Warning by Syslog, Email, SNMP Trap
- 1KV isolation for PoE P.D. port of IAP-420+
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

Introduction

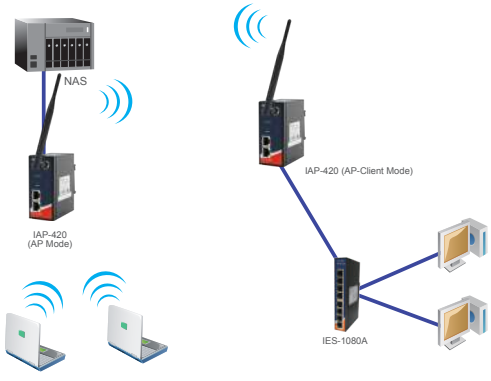
IAP-420 / IAP-420+ series are reliable 802.11 b/g/n WLAN Access Point with 2 ports LAN. It supports 802.1X and MAC filters for security control. It can be configured to operate in AP/Bridge/Repeater/AP-Client mode. You are able to configure IAP-420 / IAP-420+ series by WEB interface via LAN port or WLAN interface. In addition, IAP-420+ also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification. Therefore, IAP-420 / IAP-420+ series are one of the best communication solutions for wireless applications on the industrial network.

Application

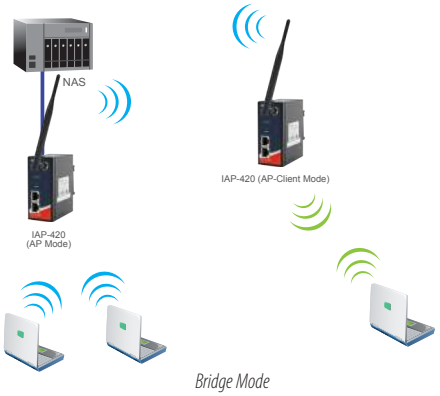
In practical operation of wireless access point, Windows utility (Open-Vision) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network. In addition, the wireless access point support various kinds of operation modes include AP/ Bridge/Repeater/AP-Client mode. IAP-420 / IAP-420+ series also support PoE P.D. feature to extend the layout up to 100 meters. You can build up the wireless network easily.



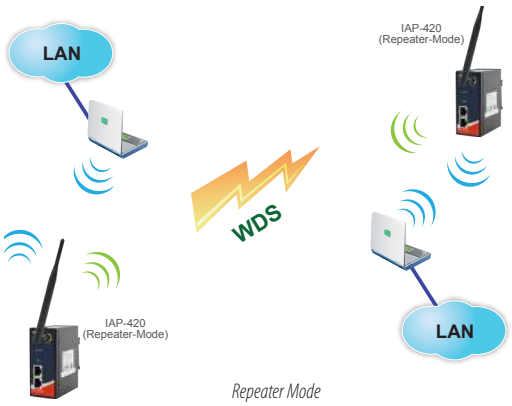
AP Mode



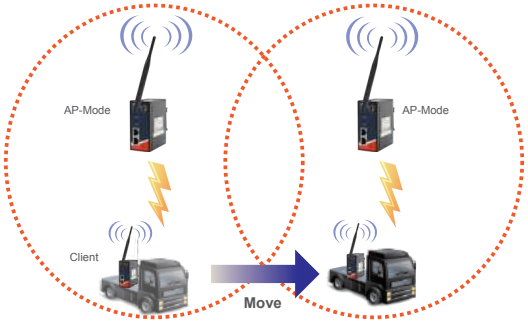
AP-Client Mode



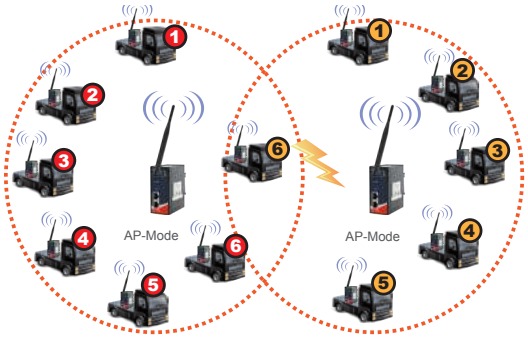
Bridge Mode



Repeater Mode

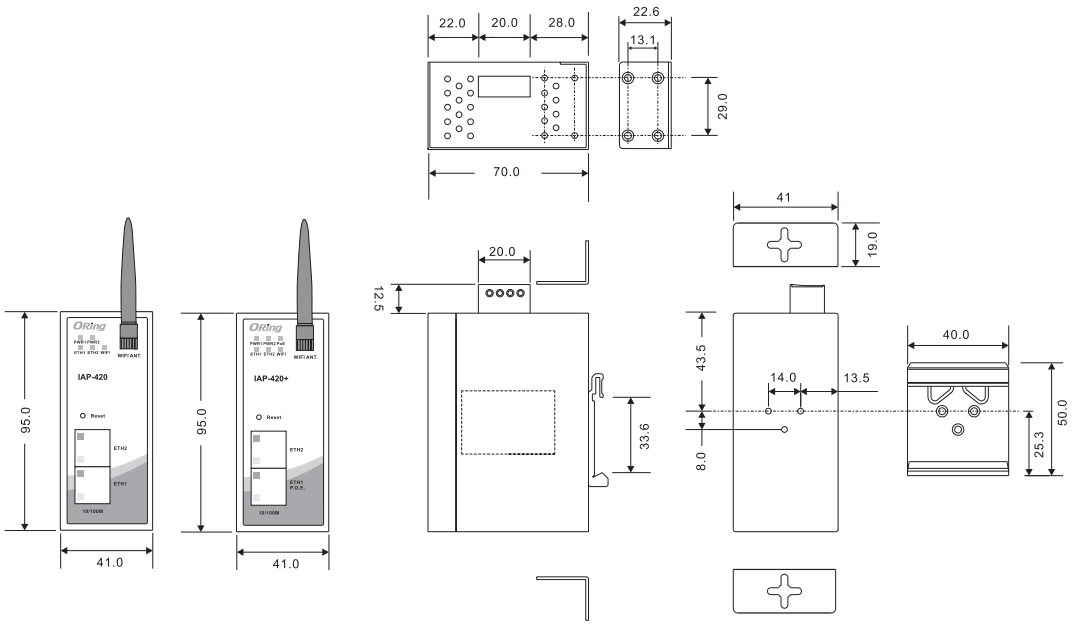


X-Roaming



Wireless Load Balance

Dimensions



Unit=mm

Specifications

ORing WLAN Access Point Model	IAP-420	IAP-420+
Physical Ports		
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
PoE P.D. Port	-	Present at ETH Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 108 ohms min
WLAN Interface		
Operating Mode	AP/Client/Bridge/AP-Client	
Antenna and Connector	1 x External reverse SMA-type antenna connector	
Radio Frequency Type	DSSS, OFDM	
Modulation	IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g/n: OFDM with BPSK, QPSK, 16QAM, 64QAM	
Frequency Band	America / FCC: 2.412~2.462 GHz (11 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels)	
Transmission Rate	802.11b: 1/2/5.5/11 Mbps 802.11g: 6/9/12/18/24/36/48/54 Mbps 802.11n(40MHz): UP to 150 Mbps	
Transmit Power	802.11b: 19dBm ±1.5dBm 802.11g: 17dBm ±1.5dBm 802.11n(2.4G@20MHz): 16.5dBm ±1.5dBm 802.11n(2.4G@40MHz): 14.5dBm ±1.5dBm	
Receiver Sensitivity	802.11b: -90dBm ±2dBm@1Mbps 802.11g: -72dBm ±2dBm@54Mbps 802.11n(2.4G@40MHz,MCS7): -68dBm ±2dBm	
Encryption Security	WEP: (64-bit, 128-bit key supported) WPA/WPA2:802.11i (WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Wireless Security	SSID broadcast disable and enable	
Protocol Support		
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, 802.1X, SNMP, STP	
LED Indicators		
Power Indicator	LED x 3, PWR 1, 2, (PoE): Green On: Power is on and functioning Normally.	
10/100Base-T(X) RJ45 Port Indicator	LED x 2 , Green for port Link/Act at 100Mbps.	
WLAN LEDs	WLAN Link /ACT: Green: Blinking	
Power		
Redundant Input Power	Dual DC inputs. 12~48VDC on 4-pin terminal block	
Power Consumption (Typ.)	4 Watts	
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	41(W)x81(D)x95(H) mm	

Weight (g)	292 g	297 g
Environmental		
Storage Temperature	-40 to 85°C(-40 to 185°F)	
Operating Temperature	-10 to 60°C(14 to 140°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

IAP-ABOC

Code Definition	Wireless Mode	10/100Base-T(X) Port Number	PoE Identification
Option	- **1:** IEEE802.11 b/g - **2:** IEEE802.11 a - **3:** IEEE802.11 a/b/g - **4:** IEEE802.11 b/g/n - **5:** IEEE802.11 a/n - **6:** IEEE802.11 a/b/g/n	- **"2":** 2 ports	-**"+":** PoE P.D. present at ETH1

	Model Name	Description
Available Model	IAP-420_US	Industrial IEEE 802.11 b/g/n wireless access point with 2x10/100Base-T(X), US band
	IAP-420_EU	Industrial IEEE 802.11 b/g/n wireless access point with 2x10/100Base-T(X), EU band
	IAP-420+_US	Industrial IEEE 802.11 b/g/n wireless access point with 2x10/100Base-T(X), 1-port PoE P.D., US band
	IAP-420+_EU	Industrial IEEE 802.11 b/g/n wireless access point with 2x10/100Base-T(X), 1-port PoE P.D., EU band

Packing List

- IAP-420/420+
- DIN-Rail Kit
- Wall-mount Kit
- Antenna
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- WLAN RF Antenna
- RF Antenna Base (Magnetic) series
- RF Cable series
- RF Surge Protector

IGAP-6620+

IGAP-6620+

Industrial Dual RF in IEEE 802.11 a/b/g/n Wireless Access Point with 2x10/100/1000Base-T(X)

Features

- **High Speed Air Connectivity**: Dual RF in IEEE 802.11 a/b/g/n WLAN interface support up to 300Mbps link speed
- **Dual RF** for redundant wireless communication
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Support **Long Distance Air Connectivity**
- Support X-Roaming < 60 ms
- Support wireless load balance
- Support external SMA antenna installation
- Support **Dual AP/Dual Client /Bridge /AP-Client Mode**
- Support **MAC/IP/Port Filter**
- Provide **Digital Input and Digital Output**
- Wireless connecting status monitoring
- Secured Management by HTTPS
- 1KV isolation for PoE P.D.
- Event Warning by Syslog, Email, SNMP Trap, and Relay output
- Rigid IP-30 housing design
- Pole-mount enabled

RoHS Lead Free

Full Gigabit | a/b/g/n Dual Wifi | PoE IEEE802.3af P.D. | Redundant PWR | -10~60°C Temperature

Introduction

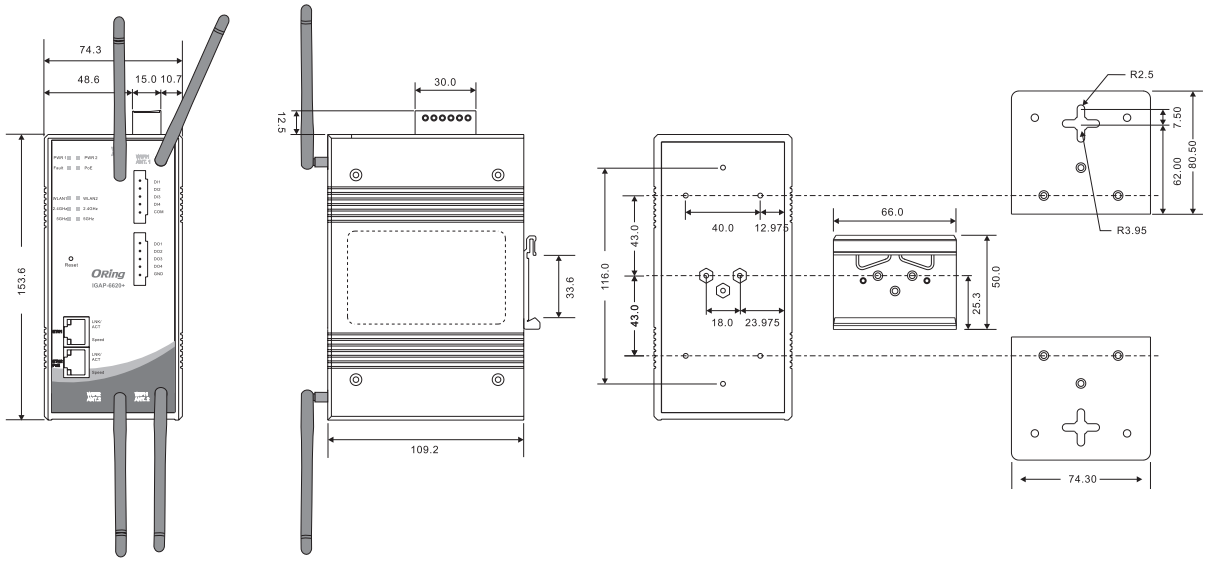
IGAP-6620+ series is a reliable wireless Access Point with dual RF in IEEE 802.11 a/b/g/n wireless modules and 2 Ethernet Gigabit ports with one PoE P.D. port. It can be configured to operate in Dual AP/Dual Client /Bridge /AP-Client Mode and supports MAC filters for security control. IGAP-6620+ provides a dust-tight connection and four reverse SMA connectors that can install any SMA antennas to extend communication distance. It is specifically designed for the toughest industrial environments. You are able to configure IGAP-6620+ by WEB interface via LAN port or WLAN interface. In addition, IGAP-6620+ also provides P.D. feature at ETH2 port which is fully compliant with IEEE802.3af PoE P.D. specification to save the layout cost of power line. IGAP-6620+ can be easily adopted in almost all kinds of applications and provides the most rugged solutions for manage your network in outdoor. Therefore, IGAP-6620+ is one of the best communication solutions for wireless applications

Application

In practical operation of wireless access point, Windows utility (Open-Version) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network.

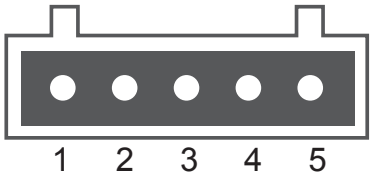
In addition, the wireless access point support various kinds of operation modes include Dual AP/Dual Client /Bridge /AP-Client Mode.

Dimensions



Unit=mm

DI/DO Definition



Digital Input Pin Definition

PIN	1	2	3	4	5
Function	DI1	DI2	DI3	DI4	COM

Digital Output Pin Definition

PIN	1	2	3	4	5
Function	DO1	DO2	DO3	DO4	GND

Specifications

ORing AP Model	IGAP-6620+
Physical Ports	
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2
5-Pin Terminal Block	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC
PoE P.D. Port	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min
WLAN Interface	
Operating Mode	Dual AP/Dual Client /Bridge /AP-Client Mode
Antenna and Connector	4 x reverse SMA Female

Radio Frequency Type	DSSS, OFDM
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM
PoE P.D. Port	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min
Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7
Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption
Wireless Security	SSID broadcast disable and enable
Protocol Support	
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP, RSTP,
LED Indicators	
Power Indicator	3 x LEDs, PWR1(2)(PoE) / Ready: Red On : Power is on and booting up Green On : Power is on and functioning Normal
10/100/1000Base-T(X) indicator	2 x LEDs, LNK/ACT:Green for port Act. Speed: Green for port Link at 1000Mbps Amber for port Link at 100Mbps. Off for port Link at 10Mbps
WLAN LED	2 x Green Solid On: RF on, Blink: data transmitting 2 x Green for WLAN work on 2.4GHz 2 x Green for WLAN work on 5GHz
Power	
Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block
Power Consumption (Typ.)	11 Watts
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93 x 4.3 x 6.05 inch.)
Weight (g)	1250g
Environmental	
Storage Temperature	-40 to 85°C(-40 to 185°F)
Operating Temperature	-10 to 60°C(14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-31

Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IGAP-ABCCE

Code Definition	1st Wireless Mode	2nd Wireless Mode	Giga Ethernet Port Number	PoE Identification
Option	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 b/g/n - **6:** 802.11 a/b/g/n	- **2**: 2 ports	-**"+":** PoE P.D. present at ETH2

	Model Name	Description
Available Model	IGAP-6620+_US	Industrial Outdoor Dual RF in IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000Base-T(X) PoE P.D., US band
	IGAP-6620+_EU	Industrial Outdoor Dual RF in IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000Base-T(X) PoE P.D., EU band

Packing List

- IGAP-6620+
- DIN-Rail Kit
- Wall-mount Kit
- Antenna
- ORing Tool CD
- Quick Installation Guide
- 6-Pin Terminal Block
- 5-Pin Terminal Block
- Dust Cover

IGAP-820 / IGAP-820+

IGAP-820 / IGAP-820+

Industrial IEEE 802.11 ac/g/n wireless access point with 2x10/100/1000Base-T(X)

Features

- **High Speed Air Connectivity: WLAN interface support up to 1.3Gbps link speed**
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Support **X-Roaming < 60 ms**
- Support **wireless load balance**
- Support MAC Filter
- Support Long Distance Air Connectivity
- Provide Digital Input and Digital Output
- Support AP/Client Mode
- Support Multiple-SSID to 4 SSID
- Switch Mode Supported: Daisy Chain support to reduce usage of switch ports
- Wireless connecting status monitoring
- Secured Management by HTTPS
- Event Warning by Syslog, Email, SNMP Trap, Relay and Beeper
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

Introduction

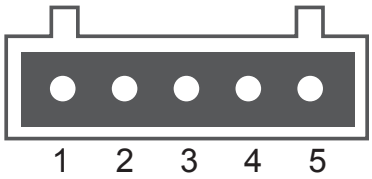
IGAP-820 series is a reliable WLAN Access Point with 2 Ethernet Gigabit ports and IEEE 802.11 ac/g/n wireless module. It can be configured to operate in AP/ Client mode. You are able to configure IGAP-820 / IGAP-820+ by WEB interface via LAN port or WLAN interface. IGAP-820 series provides dual Ethernet ports in switch mode, so that you can use Daisy Chain to reduce the usage of Ethernet switch ports. In addition, IGAP-820+ also provides P.D. feature on ETH2 port which is fully compliant with IEEE802.3af PoE P.D. specification. Therefore, IGAP-820 series is one of the best communication solutions for wireless applications on the industrial network.

Application

In practical operation of wireless access point, Windows utility (Open-Vision) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network.

In addition, the wireless access point support various kinds of operation modes include AP/ Client mode. You can build up the wireless network easily.

DI/DO Definition



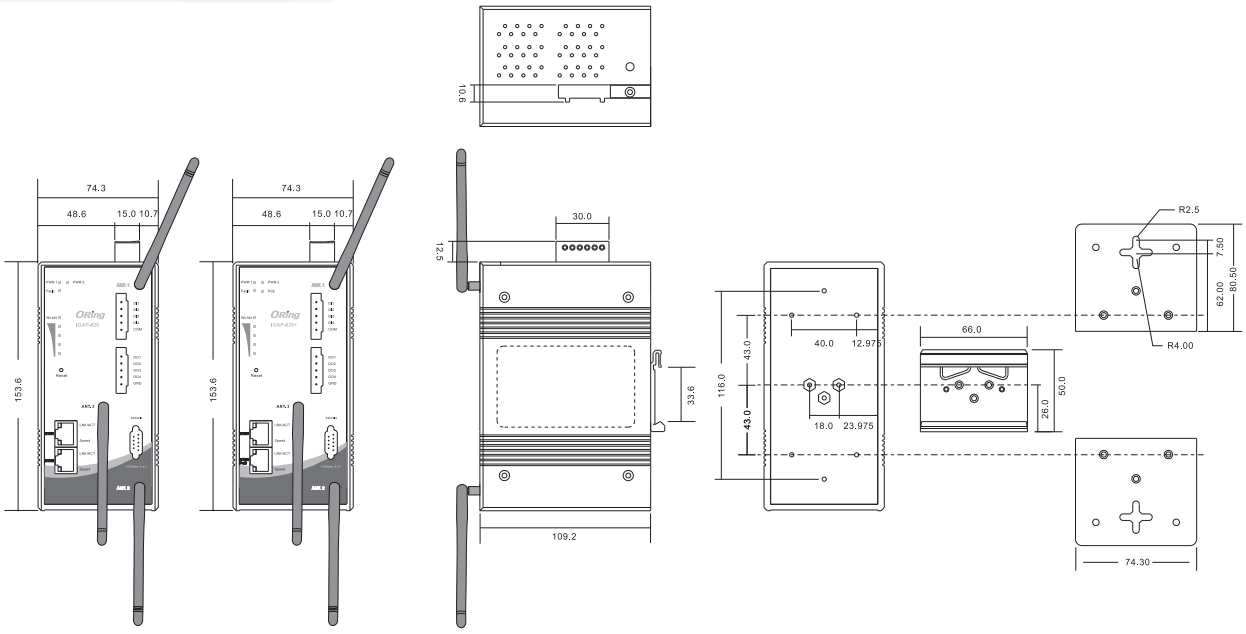
Digital Input Pin Definition

PIN	1	2	3	4	5
Function	DI1	DI2	DI3	DI4	COM

Digital Output Pin Definition

PIN	1	2	3	4	5
Function	DO1	DO2	DO3	DO4	GND

Dimensions



Unit=mm

Specifications

ORing AP Model	IGAP-820	IGAP-820+
Physical Ports		
10/100/1000 Base-T(X) Ports in RJ45	2	
Auto MDI/MDIX	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC	
5-Pin Terminal Block	3	
Antenna Connector	-	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 108 ohms min
WLAN interface		
Operating Mode	AP/Client	
Antenna Connector	Reverse SMA Female	

Modulation	IEEE802.11a: OFDM IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM IEEE802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	
Frequency Band	America/FCC: 2.412~2.462 GHz 5.180~5.240 GHz & 5.745~5.825 GHz Europe CE/ETSI: 2.412~2.472 GHz 5.180~5.240 GHz	
Transmission Rate	802.11b: 11, 5.5, 2, 1 Mbps; 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: up to 450Mbps 802.11ac : up to 1.3Gbps	
Transmit Power	802.11a: 15dBm ± 2dBm@54Mbps 802.11b: 18dBm ± 2dBm@11Mbps 802.11g: 15dBm ± 2dBm@54Mbps 802.11gn HT20: 13dBm ± 2dBm @MCS7 802.11gn HT40: 13dBm ± 2dBm @MCS7 802.11an HT20: 13dBm ± 2dBm @MCS7 802.11an HT40: 12dBm ± 2dBm @MCS7 802.11ac VHT80: 10dBm ± 2dBm @MCS9	
Receiver Sensitivity	802.11a : -65dBm ± 2dBm@54Mbps 802.11b : -76dBm ± 2dBm@11Mbps 802.11g : -65dBm ± 2dBm@54Mbps 802.11gn HT20:-64dBm ± 2dBm@MCS7 802.11gn HT40:-61dBm ± 2dBm@MCS7 802.11an HT20:-64dBm ± 2dBm@MCS7 802.11an HT40:-61dBm ± 2dBm@MCS7 802.11ac VHT80:-51dBm ± 2dBm@MCS9	
Encryption Security	WEP: (64-bit ,128-bit key) WPA/WPA2 PSK :TKIP and AES encryption (802.11i) 802.1X/RADIUS Authentication supported	
Wireless Security	SSID broadcast disable and enable	
Protocol Support		
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP, RSTP	
LED Indicators		
Power Indicator	3 x LEDs, PWR1(2)(PoE)/Ready: Red On : Power is on and booting up Green On : Power is on and functioning Normal	
10/100/1000Base-T(X) RJ45 Port Indicator	2 x LEDs, Green for port Link/Act at 1000Mbps Amber for port Link/Act at 100Mbps.	
WLAN LED	Green Solid On: RF on, Blink: data transmitting Green for WLAN Strength: 1<25%, 2<50%, 3<75%, 4<100%	
Fault	1 x LED, Red for Ethernet link down or power down indicator	
Fault contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block	
Power Consumption (Typ.)	7.5W	8.5W
Overload Current Protection	Present	
Reverse Polarity Protection	Present on terminal block	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93 x 4.3 x 6.05 inch.)	
Weight (g)	1150	1155
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-25 to 70°C (-13 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	

Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IGAP- A B 0 C

Code Definition	Wireless Mode	10/100/1000Base-T(X) Port Number	PoE Identification
Option	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n - **8:** 802.11 ac/g/n	**-"2":** 2 ports	**-"+":** PoE P.D. present at ETH2

	Model Name	Description
Available Model	IGAP-820_US	Industrial IEEE 802.11 ac/g/n wireless access point with 2x10/100/1000 Base-T(X), US band
	IGAP-820_EU	Industrial IEEE 802.11 ac/g/n wireless access point with 2x10/100/1000 Base-T(X), EU band
	IGAP-820+_US	Industrial IEEE 802.11 ac/g/n wireless access point with 2x10/100/1000 Base-T(X), 1-port PoE P.D, US band
	IGAP-820+_EU	Industrial IEEE 802.11 ac/g/n wireless access point with 2x10/100/1000 Base-T(X), 1-port PoE P.D, EU band

Packing List

- IGAP-820/IGAP-820+ x 1
- Antenna x 3
- 6-Pin Terminal Block x 1
- CD x 1
- Din-Rail Kit x 1
- 5-Pin Terminal Block x 2
- Quick Installation Guide x 1
- Wall-Mount Kit x 2
- Dust Cover x 2

Optional Accessories

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base (Magnetic) series
- DR-75 series : 75 Watts power supply
- WLAN RF Antenna (Omni-directional) series
- RF Cable series

IGAP-620 / IGAP-620+

IGAP-620 / IGAP-620+

Industrial IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000Base-T(X)

Features

- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Support **X-Roaming < 60 ms**
- Support **wireless load balance**
- Support MAC Filter
- Support Long Distance Air Connectivity
- Provide Digital Input and Digital Output
- Support AP/Bridge/Repeater/AP-Client Mode
- Switch Mode Supported: Daisy Chain support to reduce usage of switch ports
- Wireless connecting status monitoring
- Secured Management by HTTPS
- Event Warning by Syslog, Email, SNMP Trap, Relay and Beeper
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

RoHS Lead Free CE FC

Introduction

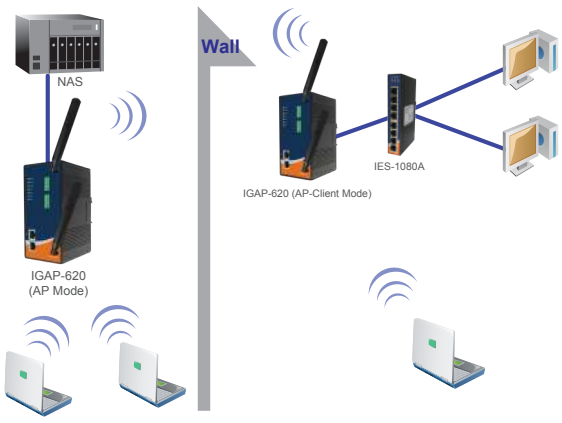
IGAP-620 series is a reliable WLAN Access Point with 2 Ethernet Gigabit ports and IEEE 802.11 a/b/g/n wireless module. It can be configured to operate in AP/Bridge/Repeater/AP-Client mode. You are able to configure IGAP-620 / IGAP-620+ by WEB interface via LAN port or WLAN interface. IGAP-620 series provides dual Ethernet ports in switch mode, so that you can use Daisy Chain to reduce the usage of Ethernet switch ports. In addition, IGAP-620+ also provides P.D. feature on ETH2 port which is fully compliant with IEEE802.3af PoE P.D. specification. Therefore, IGAP-620 series is one of the best communication solutions for wireless applications on the industrial network.

Application

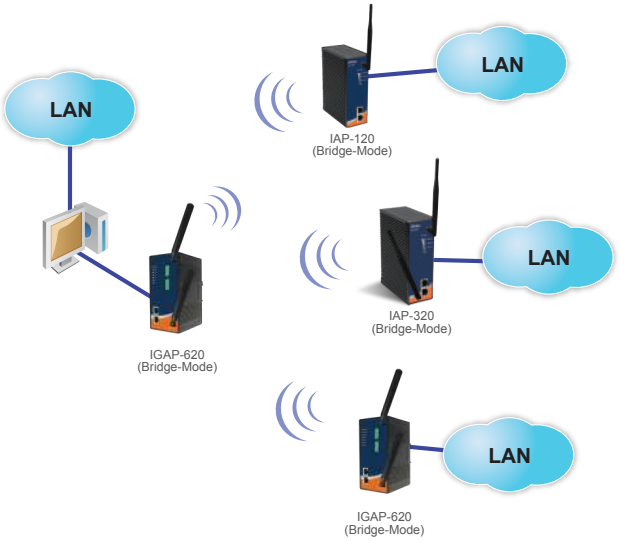
In practical operation of wireless access point, Windows utility (Open-Vision) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network.

In addition, the wireless access point support various kinds of operation modes include AP/ Bridge/Repeater/AP-Client mode. You can build up the wireless network easily

AP Mode



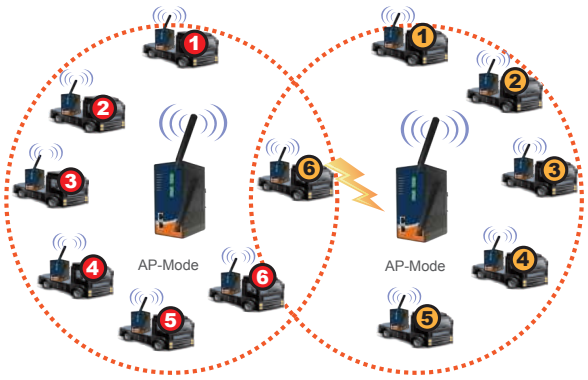
AP-Client Mode



Bridge Mode

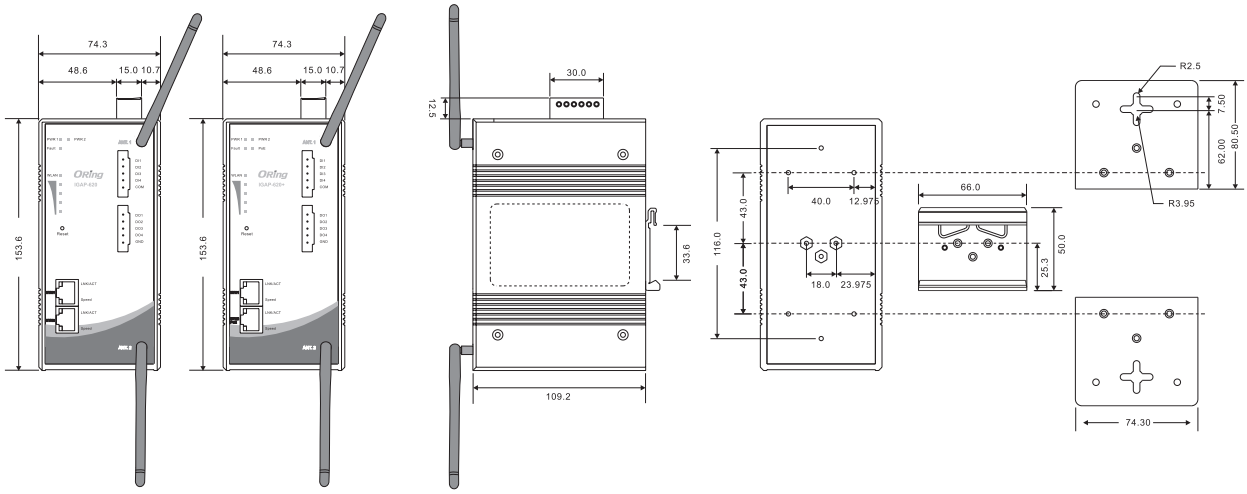
Repeater Mode

X-Roaming



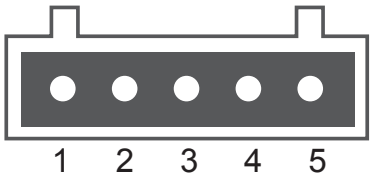
Wireless Load Balance

Dimensions



Unit=mm

DI/DO Definition



Digital Input Pin Definition

PIN	1	2	3	4	5
Function	DI1	DI2	DI3	DI4	COM

Digital Output Pin Definition

PIN	1	2	3	4	5
Function	DO1	DO2	DO3	DO4	GND

Specifications

ORing AP Model	IGAP-620	IGAP-620+
Physical Ports		
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
5-Pin Terminal Block	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC	
PoE P.D. Port	-	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min
WLAN Interface		
Operating Mode	AP/Bridge/Repeater/AP-Client	
Antenna and Connector	2XReverse SMA Female	
Modulation	IEEE802.11a: OFDM IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America/FCC: 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE/ETSI: 2.412~2.472 GHz (13 channels) 5.180~5.240 GHz (4 channels)	
Transmission Rate	802.11b: 11, 5.5, 2, 1 Mbps; 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: up to 300Mbps	
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7	
Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7	
Encryption Security	WEP: (64-bit ,128-bit key) WPA/WPA2 PSK :TKIP and AES encryption (802.11i) 802.1X/RADIUS Authentication supported	
Wireless Security	SSID broadcast disable and enable	
Protocol Support		
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP (IEEE 802.1D)	

LED Indicators		
Power Indicator	3 x LEDs, PWR1(2)(PoE) / Ready: Red On : Power is on and booting up Green On : Power is on and functioning Normal	
10/100/1000Base-T(X) RJ45 Port Indicator	2 x LEDs, Green for port Link/ Act at 1000Mbps Amber for port Link/ Act at 100Mbps.	
WLAN LED	Green Solid On: RF on, Blink: data transmitting Green for WLAN Strength: 1<25%, 2<50%, 3<75%, 4<100%	
Fault	1 x LED, Red for Ethernet link down or power down indicator	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block	
Power Consumption (Typ.)	7.5 Watts	8.5 Watts
Overload Current Protection	Present	
Reverse Polarity Protection	Present on terminal block	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93 x 4.3 x 6.05 inch.)	
Weight (g)	1150 g	1155 g
Environmental		
Storage Temperature	-40 to 85°C(-40 to 185°F)	
Operating Temperature	-10 to 60°C(14 to 140°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	3 years	

Ordering Information

IGAP-[A][B]0[C]

Code Definition	Wireless Mode	10/100/1000Base-T(X) Port Number	PoE Identification
Option	- **1:** IEEE802.11 b/g - **2:** IEEE802.11 a - **3:** IEEE802.11 a/b/g - **4:** IEEE802.11 b/g/n - **5:** IEEE802.11 a/n - **6:** IEEE802.11 a/b/g/n	- **"2":** 2 ports	-**"+":** PoE P.D. present at ETH2

	Model Name	Description
Available Model	IGAP-620_US	IIndustrial IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000 Base-T(X), US band
	IGAP-620_EU	Industrial IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000 Base-T(X), EU band
	IGAP-620+_US	Industrial IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000 Base-T(X), 1-port PoE P.D, US band
	IGAP-620+_EU	Industrial IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000 Base-T(X), 1-port PoE P.D, EU band

Packing List

- IGAP-620/620+
- DIN-Rail Kit
- Wall-mount Kit
- Antenna
- ORing Tool CD
- Quick Installation Guide
- 6-Pin Terminal Block
- 5-Pin Terminal Block
- Dust Cover

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- WLAN RF Antenna (Omni-directional) series
- RF Antenna Base (Magnetic) series
- RF Cable series

IGAP-420 / IGAP-420+

IGAP-420 / IGAP-420+

Industrial IEEE 802.11 b/g/n wireless access point with 2x10/100/1000Base-T(X)

Features

- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Support X-Roaming < 60 ms
- Support wireless load balance
- Support MAC Filter
- Support Long Distance Air Connectivity
- Provide Digital Input and Digital Output
- Support AP/Bridge/Repeater/AP-Client Mode
- Switch Mode Supported: Daisy Chain support to reduce usage of switch ports
- Wireless connecting status monitoring
- Secured Management by HTTPS
- Event Warning by Syslog, Email, SNMP Trap, Relay and Beeper
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

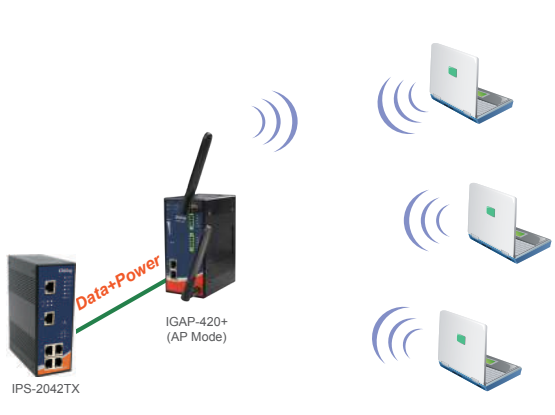
Introduction

IGAP-420 series is a reliable WLAN Access Point with 2 Ethernet Gigabit ports and IEEE 802.11 b/g/n wireless module. It can be configured to operate in AP/Bridge/Repeater/AP-Client mode. You are able to configure IGAP-420 / IGAP-420+ by WEB interface via LAN port or WLAN interface. IGAP-420 series provides dual Ethernet ports in switch mode, so that you can use Daisy Chain to reduce the usage of Ethernet switch ports. In addition, IGAP-420+ also provides P.D. feature on ETH2 port which is fully compliant with IEEE802.3af PoE P.D. specification. Therefore, IGAP-420 series is one of the best communication solutions for wireless applications on the industrial network.

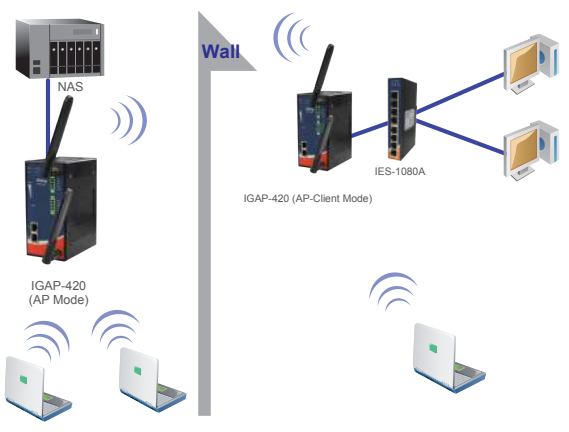
Application

In practical operation of wireless access point, Windows utility (Open-Vision) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network.

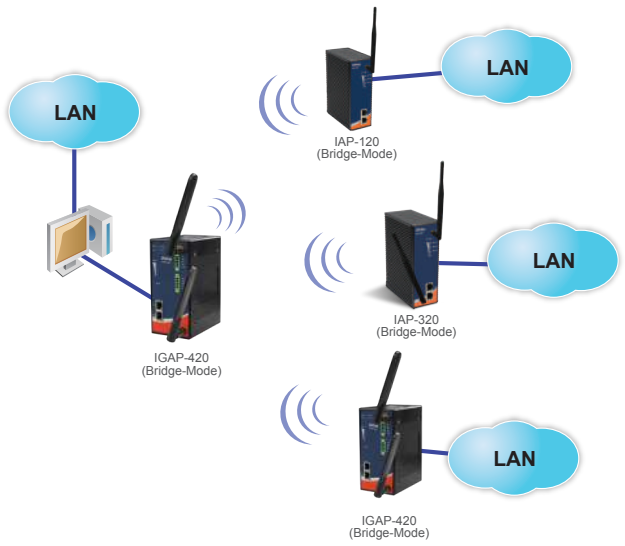
In addition, the wireless access point support various kinds of operation modes include AP/ Bridge/Repeater/AP-Client mode. You can build up the wireless network easily



AP Mode

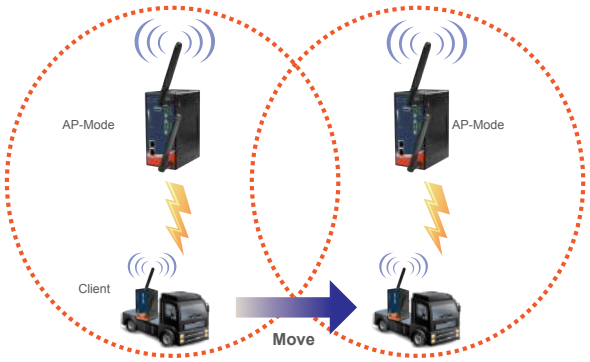


AP-Client Mode

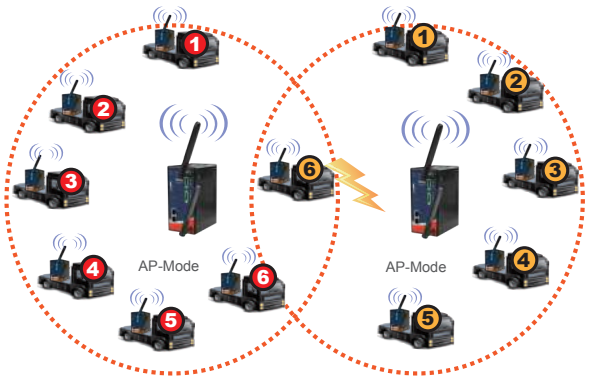


Bridge Mode

Repeater Mode

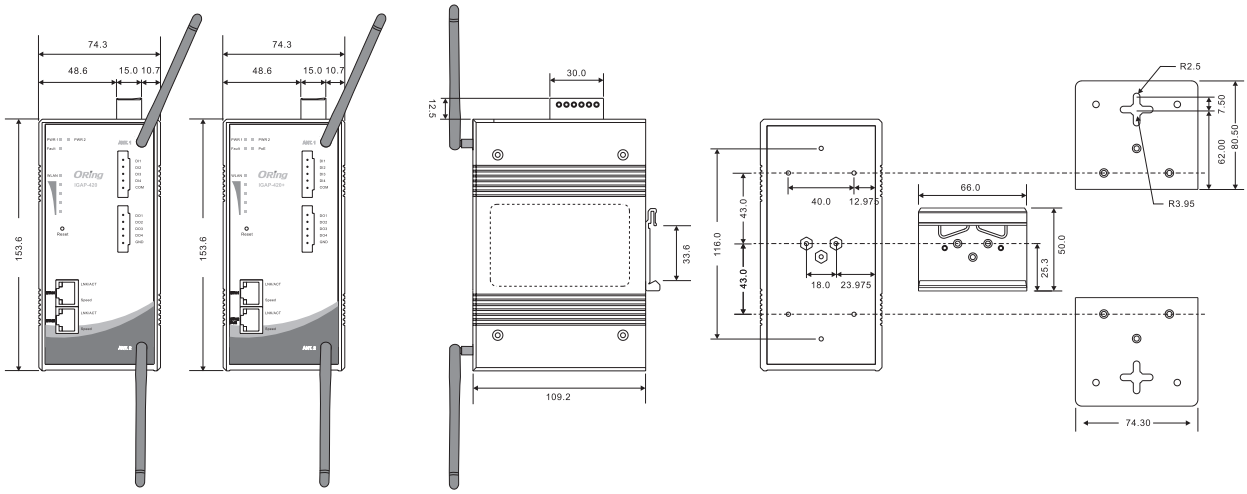


X-Roaming



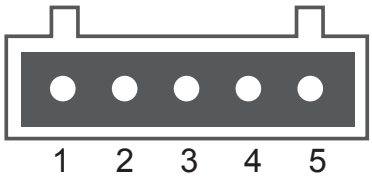
Wireless Load Balance

Dimensions



Unit=mm

DI/DO Definition



Digital Input Pin Definition

PIN	1	2	3	4	5
Function	DI1	DI2	DI3	DI4	COM

Digital Output Pin Definition

PIN	1	2	3	4	5
Function	DO1	DO2	DO3	DO4	GND

Specifications

ORing AP Model	IGAP-420	IGAP-420+
Physical Ports		
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
5-Pin Terminal Block	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC	
Antenna Connector	2	
PoE P.D. Port	-	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min
WLAN Interface		
Operating Mode	AP/Bridge/Repeater/AP-Client	
Antenna and Connector	Reverse SMA Female	
Modulation	IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America/FCC: 2.412~2.462 GHz (11 channels) Europe CE/ETSI: 2.412~2.472 GHz (13 channels)	
Transmission Rate	802.11b: 11, 5.5, 2, 1 Mbps; 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: 20 MHz BW: 130, 117, 104, 78, 52, 39, 26, 13 40 MHz BW: 270, 243, 216, 162, 108, 81, 54, 27	
Transmit Power	IEEE 802.11b: 17dBm ± 1.5dBm@11Mbps IEEE 802.11g: 16dBm ± 1.5dBm@54Mbps IEEE 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 IEEE 802.11gn HT40: 14dBm ± 1.5dBm @MCS7	
Receiver Sensitivity	IEEE 802.11b : -85dBm ± 2dBm@11Mbps IEEE 802.11g : -76dBm ± 2dBm@54Mbps IEEE 802.11gn HT20:-75dBm ± 2dBm@MCS7 IEEE 802.11gn HT40:-72dBm ± 2dBm@MCS7	
Encryption Security	WEP: (64-bit ,128-bit key) WPA/WPA2 PSK :TKIP and AES encryption (802.11i) 802.1X/RADIUS Authentication supported	
Wireless Security	SSID broadcast disable	
Protocol Support		
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP (IEEE 802.1D)	

LED Indicators		
Power Indicator	3 x LEDs, PWR1(2)(PoE) / Ready: Red On : Power is on and booting up Green On : Power is on and functioning Normal	
10/100/1000Base-T(X) RJ45 Port Indicator	2 x LEDs, LNK/ACT:Green for port Act. Speed: Green for port Link at 1000Mbps Amber for port Link at 100Mbps. Off for port Link at 10Mbps	
WLAN LEDs	Green Solid On: RF on, Blink: data transmitting Green for WLAN Strength: 1<25%, 2<50%, 3<75%, 4<100%	
Fault	1 x LED, Red for Ethernet link down or power down indicator	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input Power	Dual DC inputs. 12~48VDC on 6-pin terminal block	
Power Consumption (Typ.)	7.5 Watts	8.5 Watts
Overload Current Protection	Present	
Reverse Polarity Protection	Present on terminal block	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93 x 4.3 x 6.05 inch.)	
Weight (g)	1150 g	1155 g
Environmental		
Storage Temperature	-40 to 85°C(-40 to 185°F)	
Operating Temperature	-25 to 70°C(-13 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

IGAP-AB0C

Code Definition	Wireless Mode	10/100/1000Base-T(X) Port Number	PoE Identification
Option	- **1:** IEEE802.11 b/g - **2:** IEEE802.11 a - **3:** IEEE802.11 a/b/g - **4:** IEEE802.11 b/g/n - **5:** IEEE802.11 a/n - **6:** IEEE802.11 a/b/g/n	- **"2":** 2 ports	-**"+":** PoE P.D. present at ETH2

	Model Name	Description
Available Model	IGAP-420_US	Industrial IEEE 802.11 b/g/n wireless access point with 2x10/100/1000 Base-T(X), US band
	IGAP-420_EU	Industrial IEEE 802.11 b/g/n wireless access point with 2x10/100/1000 Base-T(X), EU band
	IGAP-420+_US	Industrial IEEE 802.11 b/g/n wireless access point with 2x10/100/1000 Base-T(X), 1 port PoE P.D, US band
	IGAP-420+_EU	Industrial IEEE 802.11 b/g/n wireless access point with 2x10/100/1000 Base-T(X), 1 port PoE P.D, EU band

Packing List

- IGAP-420/420+
- DIN-Rail Kit
- Wall-mount Kit
- Antenna
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- WLAN RF Antenna (Omni-directional) series
- RF Antenna Base (Magnetic) series
- RF Cable series

IAP-W520+/W522+

IAP-W520+ IAP-W522+

Industrial outdoor IEEE 802.11 a/n wireless access point with 2x10/100Base-T(X) PoE P.D., IP-67 grade

Features

- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/ WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- High throughput > **80Mbps**
- High power output **500mw**
- Far Distance Air Connectivity up to **7 KM** (IAP-W520+)
- Support **X-Roaming** < 100 ms
- Support AP/Bridge/Client/AP-Client Mode
- Wireless connecting status monitoring
- HTTPs protocol supported for secured management
- Event Warning by Syslog, Email, SNMP Trap
- Rigid **IP-67** housing design
- Pole-mount enabled

X Roaming | PoE P.D. PoE | a/n Wifi 802.11a/n | IP-67 | -20~70°C Temperature | RoHS Lead Free | CE | FC

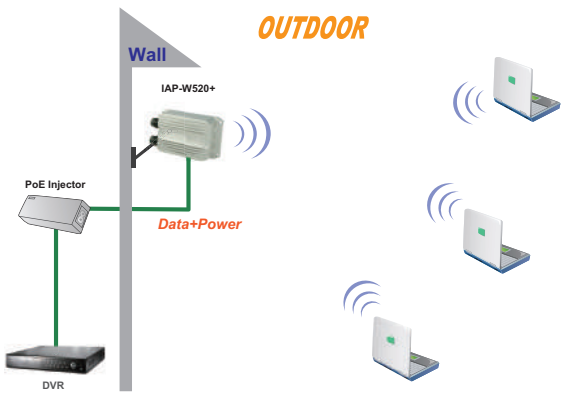
Introduction

IAP-W520+ / W522+ is a reliable IP-67 outdoor IEEE 802.11 a/n WLAN Access Point with 1 PoE P.D. Ethernet port. It can be configured to operate in AP/Bridge/AP-Client/Client mode. It is specifically designed for the toughest industrial environments. In combination with its IP-67 design and the superb management functionality, IAP-W520+ / W522+ provides a waterproof, dust-tight connection. In addition, IAP-W520+ provides high power output of 500mw and high throughput up to 80Mbps to satisfy far distance connection. IAP-W522+ provides two N-type connectors, which can install any N-type antennas to extend communication distance. You are able to configure IAP-W520+ / W522+ by WEB interface via LAN port or WLAN interface. In addition, IAP-W520+ / W522+ also provides P.D. feature which is fully compliant with IEEE802.3af PoE P.D. specification to save the layout cost of power line. The IAP-W520+ / W522+ can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network in outdoor. Therefore, IAP-W520+ / W522+ is one of the best outdoor communication solutions for wireless applications

Application

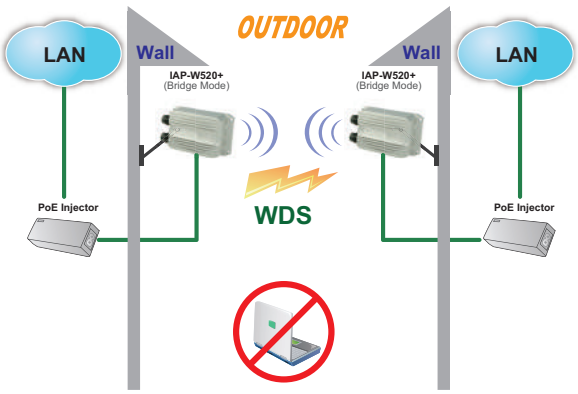
In practical operation of wireless access point, Windows utility (Open-Vision) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial wireless network. In addition, the wireless access point support various kinds of operation modes include AP/ Bridge/AP-Client/Client mode. IAP-W520+ also can connect to each other up to 7,000 meters with built-in panel antenna.

Various Kinds of Operation Modes

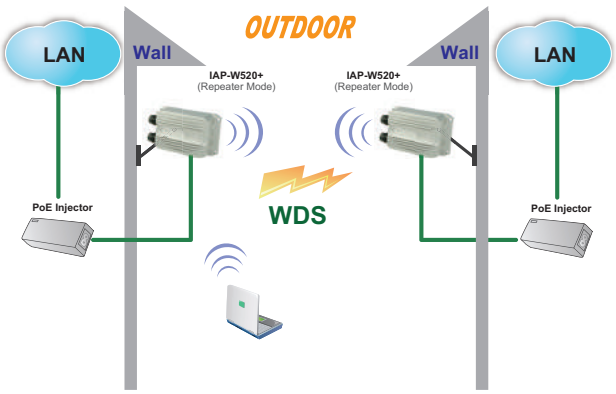


AP Mode

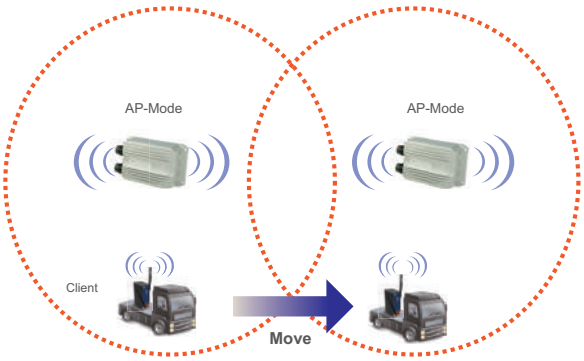
AP-Client Mode



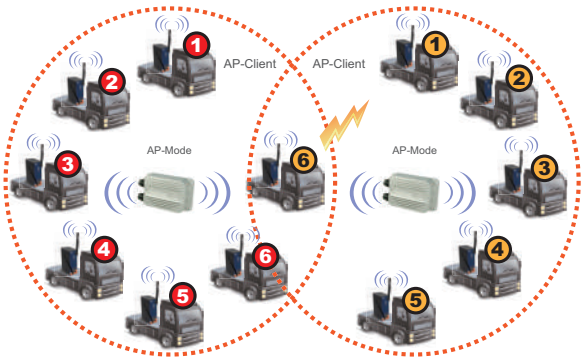
Bridge Mode



Repeater Mode



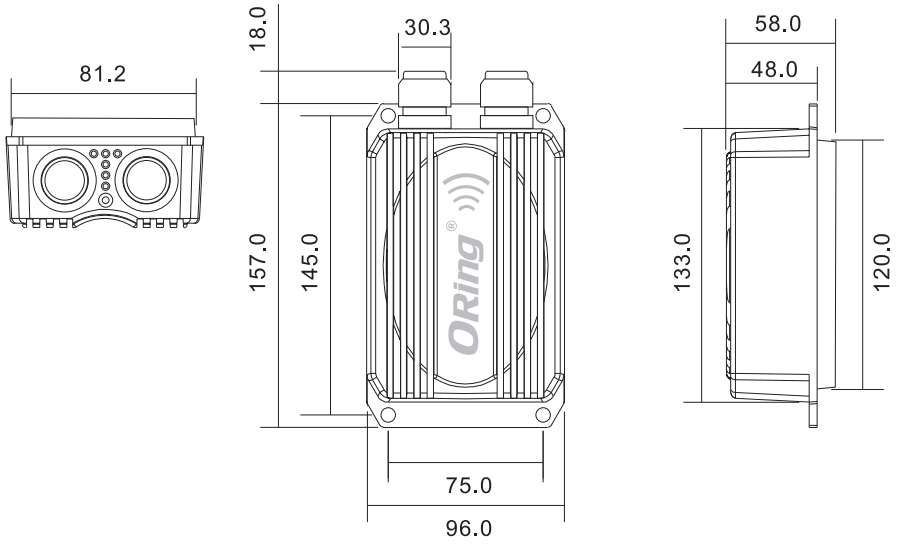
X-Roaming



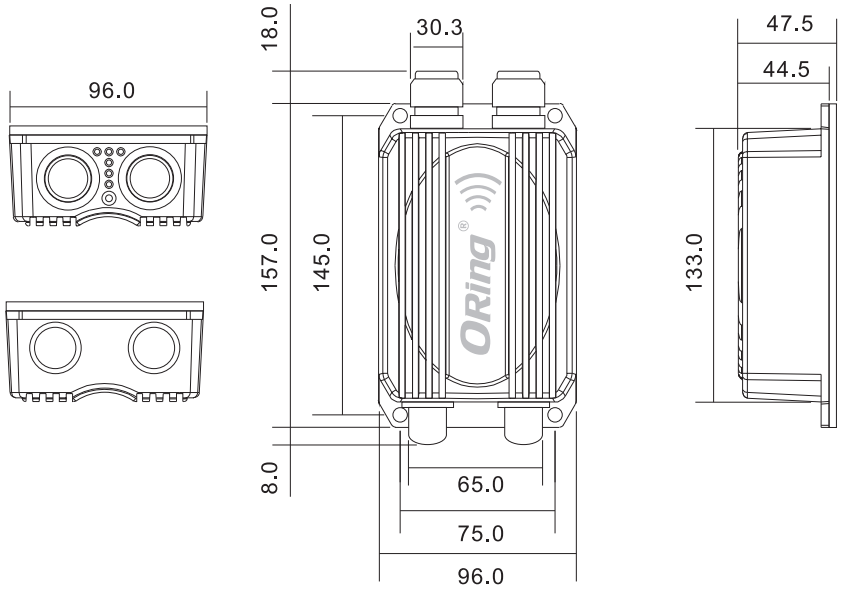
Wireless Load Balance

Dimensions

IAP-W520+



IAP-W522+



Unit=mm

Specifications

ORing WLAN Access Point Model	IAP-W520+	IAP-W522+
Physical Ports		
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2(one port with PoE)	

WLAN Interface		
Operating Mode	AP/Bridge/AP-Client/Client	
Antenna Connector	Build-in 15dBi panel antenna	2 x External N-type antenna connector
Radio Frequency Type	OFDM	
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America / FCC : 5.180 ~ 5.240 GHz & 5.745 ~ 5.825 GHz (9 channels) Europe CE / ETSI : 5.180 ~ 5.240 GHz (4 channels)	
Transmission Rate	IEEE802.11a: 6/ 9/ 12/ 18/ 24/ 36/ 48/ 54 Mbps IEEE801.11n: up to 300Mbps	
Transmit Power	500mw Max.	
Receiver Sensitivity	-97dBm ± 2dBi	
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Wireless Security	SSID broadcast disable	
Protocol Support		
Protocol	ARP,BOOTP, DHCP, DNS, HTTPs, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP (IEEE 802.1D)	
LED Indicators		
Power Indicator	1 x LED, Green On: Power(PoE) is on and functioning Normally.	
10/100Base-T(X) RJ45 Port Indicator	G2 x LED, Green On: Port Link / Act, Blinking: data transmission	
WLAN LED	3 x LED, Green for WLAN Strength: 1<30%, 2<60%, 3<90%	
Power		
Input Power	48VDC from P.o.E	
Power Consumption (Typ.)	9 Watts	
Physical Characteristics		
Enclosure	IP-67	
Dimensions (W x D x H)	157(W)x 96(D)x 58(H) mm (6.18x 3.77x 2.28 inch.)	157(W)x 96(D)x 47.5(H) mm (6.18x 3.77x 1.87 inch.)
Weight (g)	720 g	790 g
Environmental		
Storage Temperature	-30 to 85℃ (-22 to 185°F)	
Operating Temperature	-20 to 70℃ (-4 to 158°F)	
Operating Humidity	0~100% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

IAP-W A B C +

Code Definition	Wireless Mode	10/100Base-T(X) Port Number	Antenna Connector Number
Option	**- 1:** IEEE 802.11 b/g **- 2:** IEEE 802.11 a **- 3:** IEEE 802.11 a/b/g **- 4:** IEEE 802.11 b/g/n **- 5:** IEEE 802.11 a/n **- 6:** IEEE 802.11 a/b/g /n	**-"2"**: 2 port	**-"2"**: 2 connectors

	Model Name	Description
Available Model	IAP-W520+_US	Industrial outdoor IEEE 802.11 a/n wireless access point with 2x10/100Base-T(X), IP-67 grade, US band
	IAP-W520+_EU	Industrial outdoor IEEE 802.11 a/n wireless access point with 2x10/100Base-T(X), IP-67 grade, EU band
	IAP-W522+_US	Industrial outdoor IEEE 802.11 a/n wireless access point with 2x10/100Base-T(X), IP-67 grade, N-type antenna connector, US band
	IAP-W522+_EU	Industrial outdoor IEEE 802.11 a/n wireless access point with 2x10/100Base-T(X), IP-67 grade, N-type antenna connector, EU band

Packing List

- IAP- W520+ / W522+
- Pole-Mount Kit
- ORing Tool CD
- Quick Installation Guide
- RJ-45 Rubber Seal
- N-type ANT. Rubber Seal(IAP-W522+)

Optional Accessories (Can be purchased separately)

IAP-W420+/W422+

IAP-W420+ IAP-W422+

Industrial outdoor IEEE 802.11 b/g/n wireless access point with 2x10/100Base-T(X) PoE P.D., IP-67 grade

Features

- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/ WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- High throughput > **80Mbps**
- High power output **800mw** Max.
- Far Distance Air Connectivity up to **7 KM** (IAP-W420+)
- Support **X-Roaming** < 100 ms
- Support AP/Bridge/Client/AP-Client Mode
- Wireless connecting status monitoring
- HTTPs protocol supported for secured management
- Event Warning by Syslog, Email, SNMP Trap
- Rigid **IP-67** housing design
- Pole-mount enabled

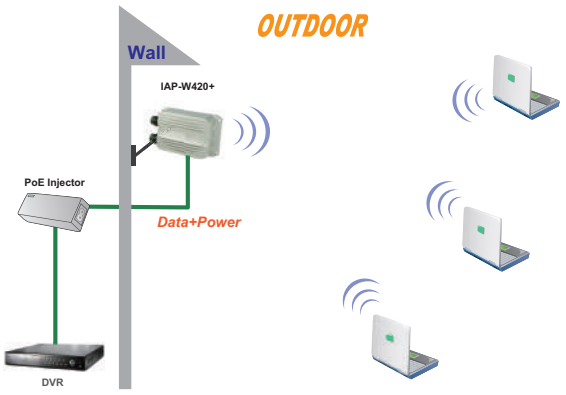
Introduction

IAP-W420+ / W422+ is a reliable IP-67 outdoor IEEE 802.11 b/g/n WLAN Access Point with 1 PoE P.D. Ethernet port. It can be configured to operate in AP/Bridge/AP-Client/Client mode. It is specifically designed for the toughest industrial environments. In combination with its IP-67 design and the superb management functionality, IAP-W420+ / W422+ provides a waterproof, dust-tight connection. In addition, IAP-W420+ provides high power output of 800mw and high throughput up to 80Mbps to satisfy far distance connection. IAP-W422+ provides two N-type connectors, which can install any N-type antennas to extend communication distance. You are able to configure IAP-W420+ / W422+ by WEB interface via LAN port or WLAN interface. In addition, IAP-W420+ / W422+ also provides P.D. feature which is fully compliant with IEEE802.3af PoE P.D. specification to save the layout cost of power line. The IAP-W420+ / W422+ can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network in outdoor. Therefore, IAP-W420+ / W422+ is one of the best outdoor communication solutions for wireless applications.

Application

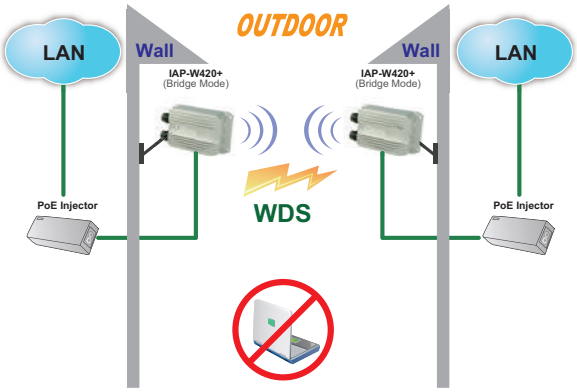
In practical operation of wireless access point, Windows utility (Open-Vision) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial wireless network. In addition, the wireless access point support various kinds of operation modes include AP/ Bridge/AP-Client/Client mode. IAP-W420+ also can connect to each other up to 7,000 meters with built-in panel antenna.

Various Kinds of Operation Modes

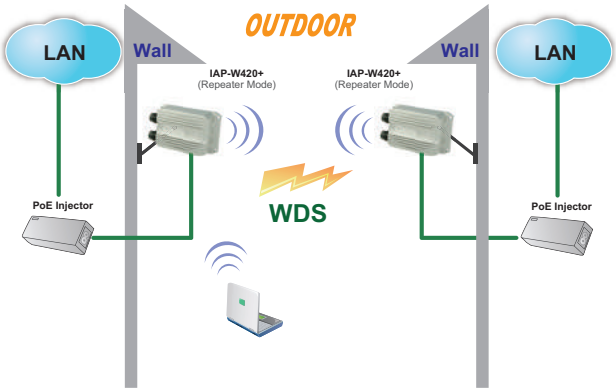


AP Mode

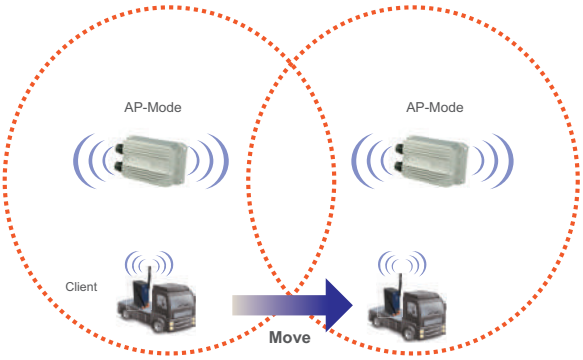
AP-Client Mode



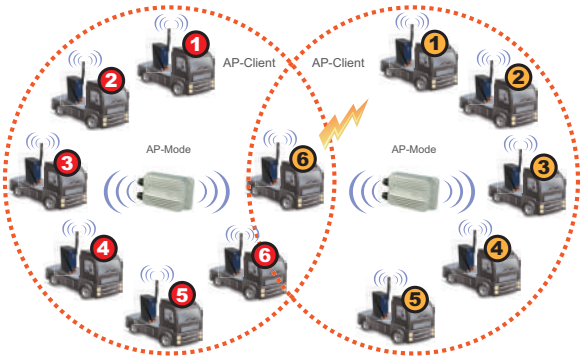
Bridge Mode



Repeater Mode



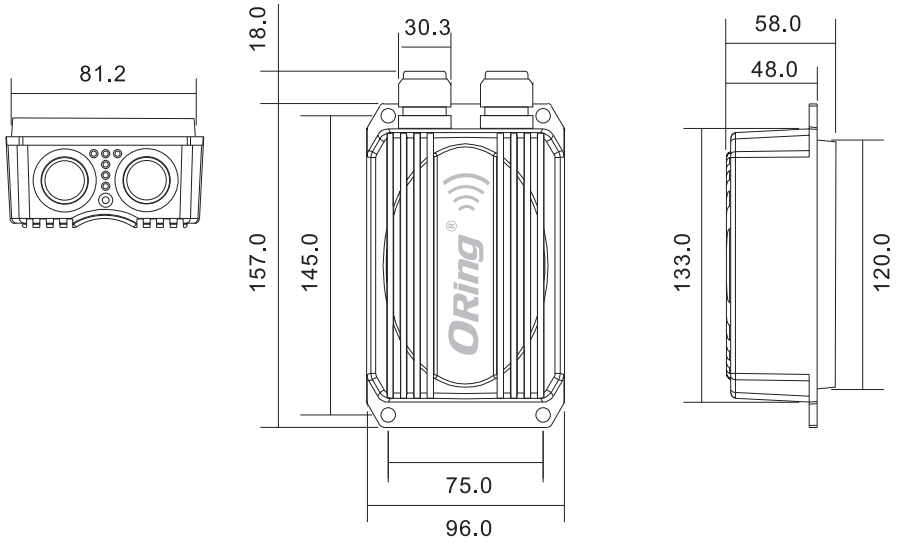
X-Roaming



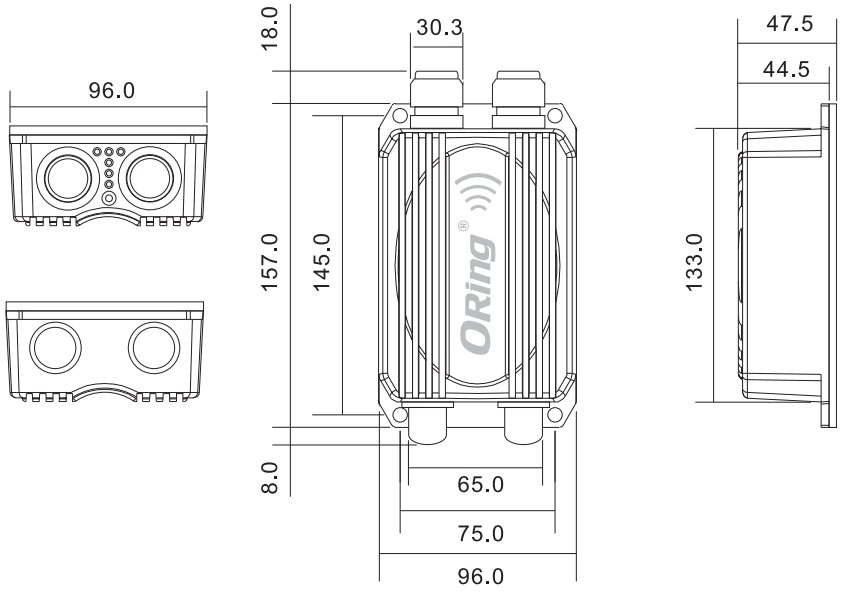
Wireless Load Balance

Dimensions

IAP-W420+



IAP-W422+



Unit=mm

Specifications

ORing WLAN Access Point Model	IAP-W420+	IAP-W422+
Physical Ports		
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2(one port with PoE)	

WLAN Interface		
Operating Mode	AP/Bridge/AP-Client/Client	
Antenna Connector	Build-in 10dBi panel antenna	2 x External N-type antenna connector
Radio Frequency Type	OFDM	
Modulation	IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g/n: OFDM with BPSK, QPSK, 16QAM, 64QAM	
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels)	
Transmission Rate	IEEE802.11b: 11, 5.5, 2, 1 Mbps; IEEE 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps IEEE 802.11n: up to 300Mb	
Transmit Power	800mw Max.	
Receiver Sensitivity	-96dBm ± 2dBi	
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Wireless Security	SSID broadcast disable	
Protocol Support		
Protocol	ARP,BOOTP, DHCP, DNS, HTTPs, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP (IEEE 802.1D)	
LED Indicators		
Power Indicator	1 x LED, Green On: Power(PoE) is on and functioning Normally.	
10/100Base-T(X) RJ45 Port Indicator	G2 x LED, Green On: Port Link / Act, Blinking: data transmission	
WLAN LED	3 x LED, Green for WLAN Strength: 1<30%, 2<60%, 3<90%	
Power		
Input Power	48VDC from P.o.E	
Power Consumption (Typ.)	9 Watts	
Physical Characteristics		
Enclosure	IP-67	
Dimensions (W x D x H)	157(W)x 96(D)x 58(H) mm (6.18x 3.77x 2.28 inch.)	157(W)x 96(D)x 47.5(H) mm (6.18x 3.77x 1.87 inch.)
Weight (g)	720 g	790 g
Environmental		
Storage Temperature	-30 to 85°C (-22 to 185°F)	
Operating Temperature	-20 to 70°C (-4 to 158°F)	
Operating Humidity	0~100% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

IAP-W A B C +

Code Definition	Wireless Mode	10/100Base-T(X) Port Number	Antenna Connector Number
Option	**- 1:** IEEE 802.11 b/g **- 2:** IEEE 802.11 a **- 3:** IEEE 802.11 a/b/g **- 4:** IEEE 802.11 b/g/n **- 5:** IEEE 802.11 a/n **- 6:** IEEE 802.11 a/b/g /n	**-"2"**: 2 port	**-"2"**: 2 connectors

	Model Name	Description
Available Model	IAP-W420+_US	Industrial outdoor IEEE 802.11 b/g/n wireless access point with 2x10/100Base-T(X), IP-67 grade, US band
	IAP-W420+_EU	Industrial outdoor IEEE 802.11 b/g/n wireless access point with 2x10/100Base-T(X), IP-67 grade, EU band
	IAP-W422+_US	Industrial outdoor IEEE 802.11 b/g/n wireless access point with 2x10/100Base-T(X), IP-67 grade, N-type antenna connector, US band
	IAP-W422+_EU	Industrial outdoor IEEE 802.11 b/g/n wireless access point with 2x10/100Base-T(X), IP-67 grade, N-type antenna connector, EU band

Packing List

- IAP- W420+ / W422+
- Pole-Mount Kit
- ORing Tool CD
- Quick Installation Guide
- RJ-45 Rubber Seal
- N-type ANT. Rubber Seal(IAP-W422+)

Optional Accessories (Can be purchased separately)

TGAP-820-M12 Series

TGAP-820-M12 Series

Industrial EN50155 IEEE 802.11 ac/g/n wireless access point with 2x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant wireless access point for rolling stock application
- **High Speed Air Connectivity: WLAN interface support up to 1.3 Gbps link speed by 3x3 MIMO**
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- **Support X-Roaming < 60ms**
- Support external SMA antenna installation
- Support AP/Client Mode
- **Support Multiple-SSID to 4 SSID with QoS**
- Support MAC Filter
- Wireless connecting status monitoring
- 1KV isolation for PoE P.D. port for TGAP-820+-M12
- Secured Management by HTTPS
- Event Warning by Syslog, Email, SNMP Trap, and Relay output
- Rigid IP-40 housing design
- Wall-mount enabled

Introduction

ORing's Transporter™ series access point is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TGAP-820-M12 is a reliable 802.11 ac/g/n WLAN Access Point with 2 Ethernet 10/100/1000 ports. It can be configured to operate in AP/Client Mode. TGAP-820-M12 provides dual Ethernet ports in switch mode, so that you can use Daisy Chain to reduce the usage of Ethernet switch ports. TGAP-820-M12 provides a dust-tight connection and reverses SMA-type connectors that can install any reverse SMA-type antennas to extend communication distance. It is specifically designed for the toughest industrial environments. You are able to configure TGAP-820-M12 by WEB interface via LAN port or WLAN interface. TGAP-820-M12 can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network in outdoor. In addition, TGAP-820+-M12 also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification. Therefore, TGAP-820-M12 is one of the best communication solutions for wireless applications.

Application

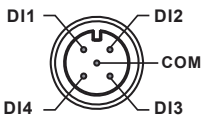
In practical operation of wireless access point, Windows utility (Open-Vision) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network.

In addition, the wireless access point support various kinds of operation modes include AP/Client Mode. You can build up the wireless network easily.

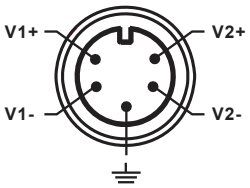
Pin Definition

Relay Output

DO



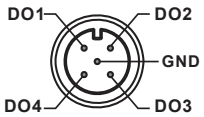
Power



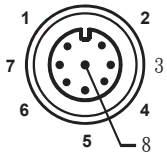
Console

RS-232, 115200bps, 8, N, 1

DI

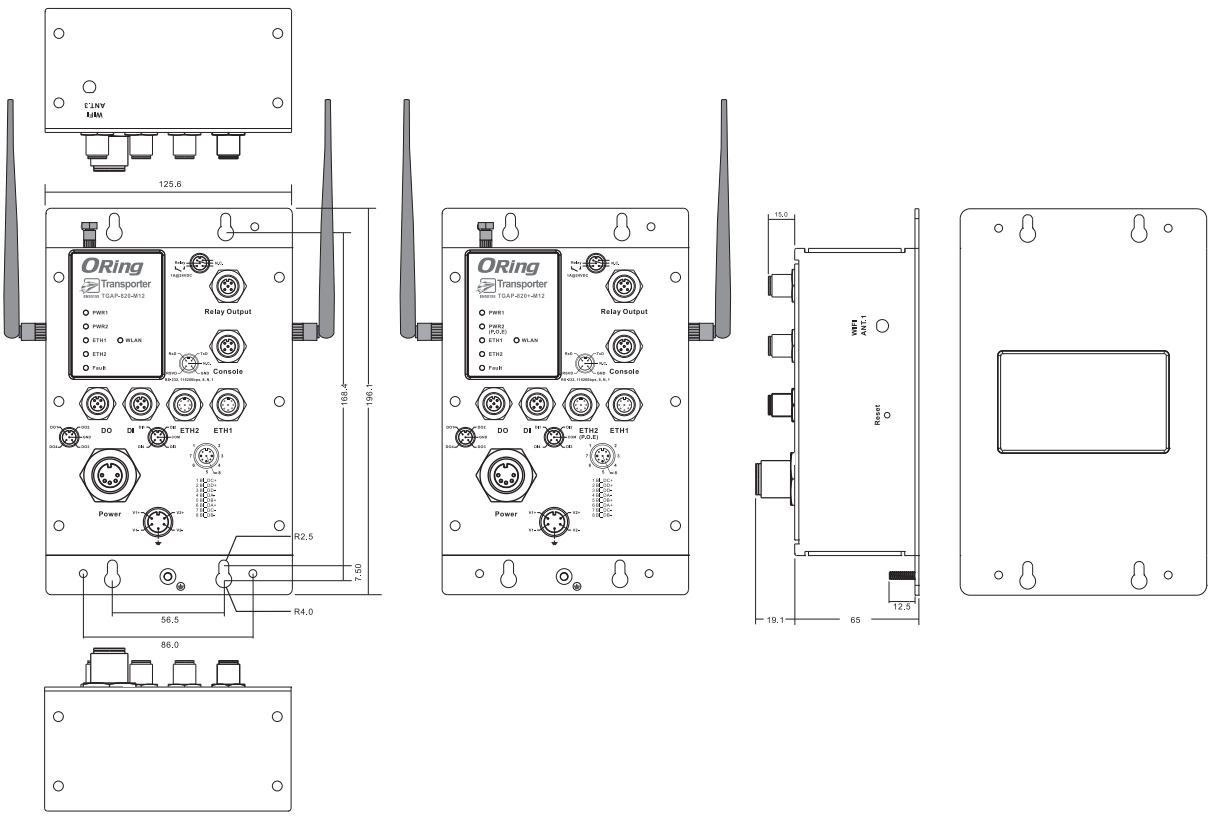


Ethernet



1 BI_DC+
2 BI_DD+
3 BI_DD-
4 BI_DA-
5 BI_DB+
6 BI_DA+
7 BI_DC-
8 BI_DB-

Dimensions



Unit=mm

Specifications

ORing WLAN Access Point Model	TGAP-820-M12	TGAP-820+-M12
Physical Ports		
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	2	2(Present at ETH2 Fully compliant with IEEE 802.3af PoE P.D)
DIDO port in M12 (5-pin A-coding)	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC	
RS-232 Console port in M12 (5-pin A-coding)	115200, 8 ,N ,1	
Relay port in M12 (5-pin A-coding)	1A@24VDC	
WLAN Interface		
Operating Mode	AP/Client	
Antenna Connector	3 x External reverse SMA-type antenna connector (MIMO)	
Radio Frequency Type	OFDM, DSSS	
Modulation	IEEE802.11a: OFDM IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM IEEE802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	
Frequency Band	America/FCC: 2.412~2.462 GHz 5.180~5.240 GHz & 5.745~5.825 GHz Europe CE/ETSI: 2.412~2.472 GHz 5.180~5.240 GHz	
Transmission Rate	802.11b: 11, 5.5, 2, 1 Mbps; 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: up to 450Mbps 802.11ac : up to 1.3Gbps	
Transmit Power	802.11a: 15dBm ± 2dBm@54Mbps 802.11b: 18dBm ± 2dBm@11Mbps 802.11g: 15dBm ± 2dBm@54Mbps 802.11gn HT20: 13dBm ± 2dBm @MCS7 802.11gn HT40: 13dBm ± 2dBm @MCS7 802.11an HT20: 13dBm ± 2dBm @MCS7 802.11an HT40: 12dBm ± 2dBm @MCS7 802.11ac VHT80: 10dBm ± 2dBm @MCS9	
Receiver Sensitivity	802.11a : -65dBm ± 2dBm@54Mbps 802.11b : -76dBm ± 2dBm@11Mbps 802.11g : -65dBm ± 2dBm@54Mbps 802.11gn HT20:-64dBm ± 2dBm@MCS7 802.11gn HT40:-61dBm ± 2dBm@MCS7 802.11an HT20:-64dBm ± 2dBm@MCS7 802.11an HT40:-61dBm ± 2dBm@MCS7 802.11ac VHT80:-51dBm ± 2dBm@MCS9	
Encryption Security	WEP: (64-bit ,128-bit key) WPA/WPA2 PSK :TKIP and AES encryption (802.11i) 802.1X/RADIUS Authentication supported	
Wireless Security	SSID broadcast disable and enable	
Protocol Support		
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP, RSTP,	
LED Indicators		
Power Indicator	2 x LEDs, PW1:Green for DC Power on PW2:Green for DC Power on or power by PoE	
10/100/1000Base-T(X) Indicator	2 x LEDs, Green for port Link/Act	
WLAN LED	1 x LED, Green for WLAN Link/Act	
Fault	1 x LED, Red for Ethernet link down or power down indicator	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC(5-pin M12 A-coding)	

Power		
Redundant Input Power	Dual Power Inputs. 12~48 VDC on 5-pin M23 connector (24 VDC Typ.)	
Power Consumption (Typ.)	8w	8.5w
Overload Current Protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristic		
Enclosure	IP-40	
Dimension (W x D x H)	125.6(W) x 65(D) x 196.1(H) mm (4.94 x 2.55 x 7.72 inch.)	
Weight (g)	980	985
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-25 to 70°C (-13 to 158°F)	
Operating Humidity	5 to 95% Non-condensing	
Regulatory approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27, EN61373	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6, EN61373	
Rail Traffic	EN50155	
Cooling	EN60068-2-1	
Dry Heat	En60068-2-2	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

TGAP-[A][B]0[C]-M12

Code Definition	Wireless Mode	10/100/1000 Base-T(X) Port Number	PoE Identification
Option	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n - **8:** 802.11 a/b/g/n	-**"2":** 2 ports	-**"+":** PoE P.D. present at ETH2

	Model Name	Description
Available Model	TGAP-820-M12_US	Industrial EN50155 IEEE 802.11 ac/g/n wireless access point with 2x10/100/1000 Base-T(X), US band
	TGAP-820-M12_EU	Industrial EN50155 IEEE 802.11 ac/g/n wireless access point with 2x10/100/1000 Base-T(X), EU band
	TGAP-820+-M12_US	Industrial EN50155 IEEE 802.11 ac/g/n wireless access point with 2x10/100/1000 Base-T(X), 1-port PoE P.D, US band
	TGAP-820+-M12_EU	Industrial EN50155 IEEE 802.11 ac/g/n wireless access point with 2x10/100/1000 Base-T(X), 1-port PoE P.D, EU band

Packing List

- TGAP-820(+)-M12 x 1
- 2.4GHz/5GHz Antenna x 3
- CD x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- RF Antenna Base series
- WLAN RF Antenna series
- DR-120 series : 120 Watts power supply
- DR-75 series : 75 Watts power supply
- RF Cable series

TGAP-620-M12 Series

TGAP-620-M12 Series

Industrial EN50155 IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: WLAN interface support up to 300 Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- **Support X-Roaming < 60ms**
- Support external SMA antenna installation
- Support AP/Client /Bridge /AP-Client Mode
- **Support Multiple-SSID to 4 SSID**
- Support MAC Filter
- Wireless connecting status monitoring
- 1KV isolation for PoE P.D. port for TGAP-620+-M12
- Secured Management by HTTPS
- Event Warning by Syslog, Email, SNMP Trap, and Relay output
- Rigid IP-40 housing design
- Wall-mount enabled

Introduction

ORing's Transporter™ series access point is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TGAP-620-M12 is a reliable 802.11 a/b/g/n WLAN Access Point with 2 Ethernet 10/100/1000 ports. It can be configured to operate in AP/Client /Bridge /AP-Client Mode. TGAP-620-M12 provides dual Ethernet ports in switch mode, so that you can use Daisy Chain to reduce the usage of Ethernet switch ports. TGAP-620-M12 provides a dust-tight connection and reverses SMA-type connectors that can install any reverse SMA-type antennas to extend communication distance. It is specifically designed for the toughest industrial environments. You are able to configure TGAP-620-M12 by WEB interface via LAN port or WLAN interface. TGAP-620-M12 can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network in outdoor. In addition, TGAP-620+-M12 also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification. Therefore, TGAP-620-M12 is one of the best communication solutions for wireless applications.

Application

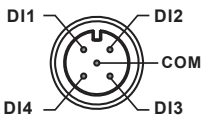
In practical operation of wireless access point, Windows utility (Open-Vision) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network.

In addition, the wireless access point support various kinds of operation modes include AP/Client /Bridge /AP-Client Mode. You can build up the wireless network easily.

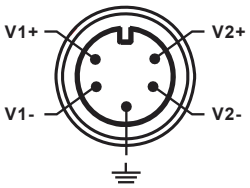
Pin Definition

Relay Output

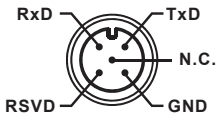
DO



Power

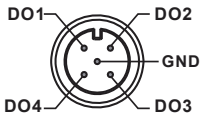


Console

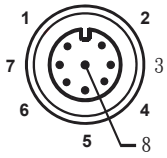


RS-232, 115200bps, 8, N, 1

DI

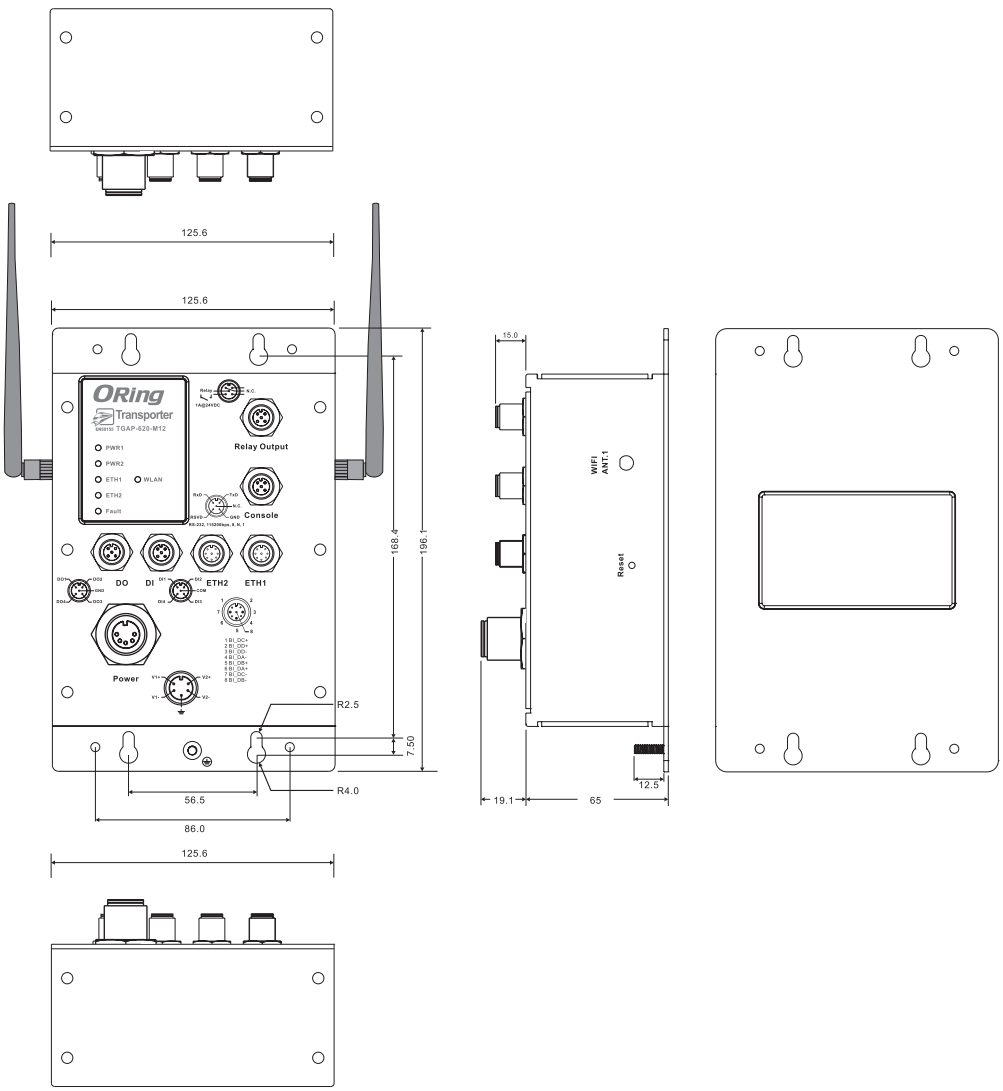


Ethernet



1 BI_DC+
2 BI_DD+
3 BI_DD-
4 BI_DA-
5 BI_DB+
6 BI_DA+
7 BI_DC-
8 BI_DB-

Dimensions



Unit=mm

Specifications

ORing WLAN Access Point Model	TGAP-620-M12	TGAP-620+-M12
Physical Ports		
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	2	2(Present at ETH2 Fully compliant with IEEE 802.3af PoE P.D)
DIDO port in M12 (5-pin A-coding)	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC	
RS-232 Console port in M12 (5-pin A-coding)	115200, 8 ,N ,1	
Relay port in M12 (5-pin A-coding)	1A@24VDC	
WLAN Interface		
Operating Mode	AP/Bridge/Client/AP-Client	
Antenna Connector	2 x External reverse SMA-type antenna connector	
Radio Frequency Type	OFDM, DSSS	
Modulation	IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11a/g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America/FCC: 2.412~2.462 GHz 5.180~5.240 GHz & 5.745~5.825 GHz Europe CE/ETSI: 2.412~2.472 GHz 5.180~5.240 GHz	
Transmission Rate	802.11b: 11, 5.5, 2, 1 Mbps; 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: up to 300Mbps	
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7	
Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7	
Encryption Security	WEP: (64-bit ,128-bit key) WPA/WPA2 PSK :TKIP and AES encryption (802.11i) 802.1X/RADIUS Authentication supported	
Wireless Security	SSID broadcast disable and enable	
Protocol Support		
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP, RSTP,	
LED Indicators		
Power Indicator	2 x LEDs, PW1:Green for DC Power on PW2:Green for DC Power on or power by PoE	
10/100/1000Base-T(X) Indicator	2 x LEDs, Green for port Link/Act	
WLAN LED	1 x LED, Green for WLAN Link/Act	
Fault	1 x LED, Red for Ethernet link down or power down indicator	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC(5-pin M12 A-coding)	
Power		
Redundant Input Power	Dual Power Inputs. 12~48 VDC on 5-pin M23 connector (24 VDC Typ.)	
Power Consumption (Typ.)	8W	8.5W
Overload Current Protection	Present	

Reverse Polarity Protection	Present	
Physical Characteristic		
Enclosure	IP-40	
Dimension (W x D x H)	125.6(W) x 65(D) x 196.1(H) mm (4.94 x 2.55 x 7.72 inch.)	
Weight (g)	955g	960g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-25 to 70°C (-13 to 158°F)	
Operating Humidity	5 to 95% Non-condensing	
Regulatory approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27, EN61373	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6, EN61373	
Rail Traffic	EN50155	
Cooling	EN60068-2-1	
Dry Heat	En60068-2-2	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

TGAP- A B 0 C – M12

Code Definition	Wireless Mode	10/100/1000 Base-T(X) Port Number	PoE Identification
Option	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	-**"2":** 2 ports	**-"+":** PoE P.D. present at ETH2

	Model Name	Description
Available Model	TGAP-620-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000 Base-T(X), US band
	TGAP-620-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000 Base-T(X), EU band
	TGAP-620+-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000 Base-T(X), 1-port PoE P.D, US band
	TGAP-620+-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000 Base-T(X), 1-port PoE P.D, EU band

Packing List

- TGAP-620-M12 x 1
- 2.4GHz/5GHz Antenna x 2
- CD x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- RF Antenna Base series
- WLAN RF Antenna series
- DR-120 series : 120 Watts power supply
- DR-75 series : 75 Watts power supply
- RF Cable series

TGAP-6620-M12

TGAP-6620-M12

Industrial EN50155 Dual IEEE 802.11 a/b/g/n Wireless AP with 2x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: WLAN interface support up to 300 Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- **Support X-Roaming < 60ms**
- Support external SMA antenna installation
- Support AP/Client /Bridge /AP-Client Mode
- **Support Multiple-SSID to 4 SSID**
- Support MAC Filter
- Wireless connecting status monitoring
- Secured Management by HTTPS
- Event Warning by Syslog, Email, SNMP Trap, and Relay output
- Rigid IP-40 housing design
- Wall-mount enabled

EN50155 | Roaming | Full Gigabit | a/b/g/n Dual Wifi | Redundant PWR | -25~70°C Temperature

RoHS Lead Free

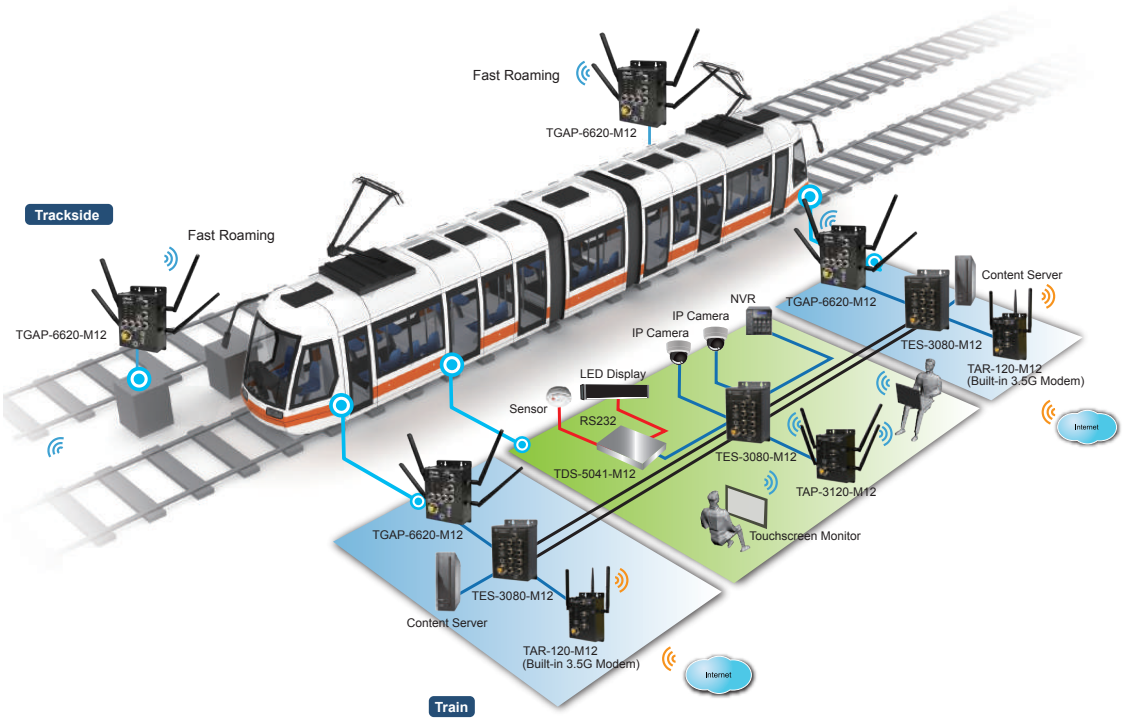
Introduction

TGAP-6620-M12 is a reliable WLAN Access Point with 2 Ethernet Gigabit ports and dual RF in IEEE 802.11 a/b/g/n wireless modules. It can be configured to operate in Dual AP/Dual Client /Bridge /AP-Client Mode. In combination with its IP-40 design and the superb management functionality, TGAP-6620-M12 provides a dust-tight connection and reverse SMA-type connectors, that can install any reverse SMA-type antennas to extend communication distance. It is specifically designed for the toughest industrial environments. You are able to configure TGAP-6620-M12 by WEB interface via LAN port or WLAN interface. TGAP-6620-M12 can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network in outdoor. Therefore, TGAP-6620-M12 is one of the best communication solutions for wireless applications

Application

In practical operation of wireless access point, Windows utility (Open-Version) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network.

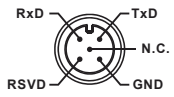
In addition, the wireless access point support various kinds of operation modes include Dual AP/Dual Client /Bridge /AP-Client Mode.



Pin Definition

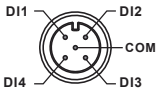
Relay Output

Console

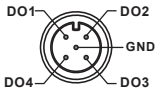


RS-232, 115200bps, 8, N, 1

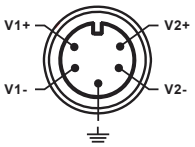
DO



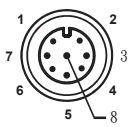
DI



Power

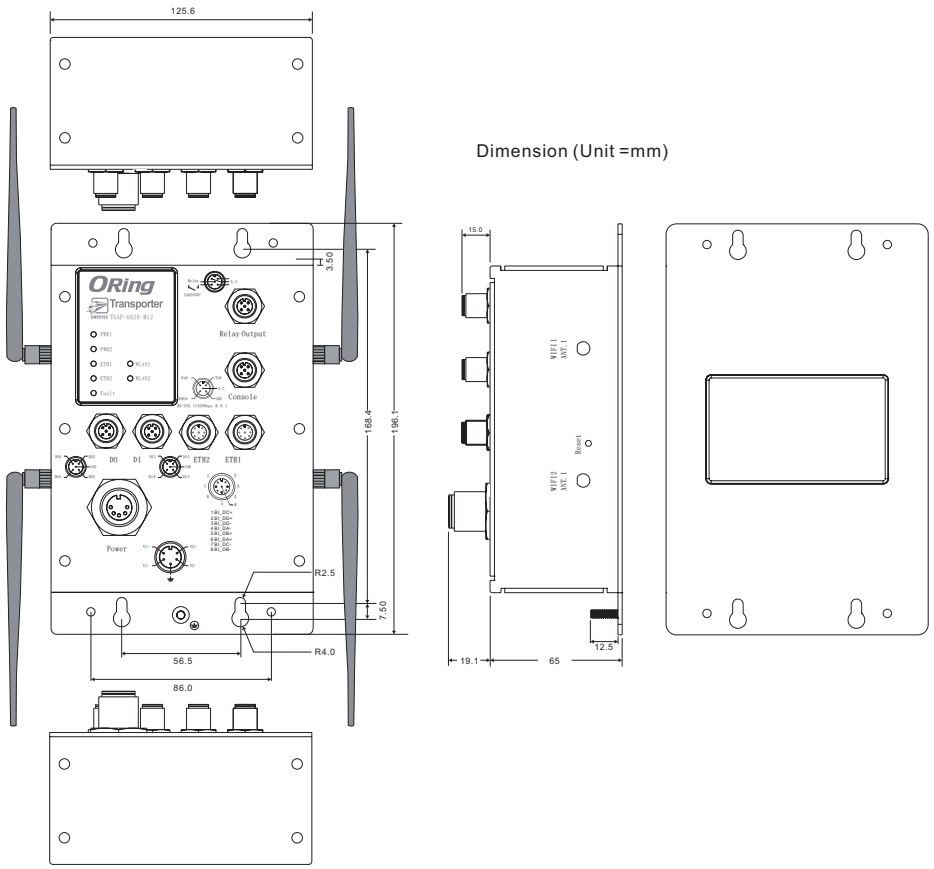


Ethernet



1 BI_DC+
2 BI_DD+
3 BI_DD-
4 BI_DA-
5 BI_DB+
6 BI_DA+
7 BI_DC-
8 BI_DB-

Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAP-6620-M12	TGAP-6620+-M12
Physical Ports		
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	2	2(Present at ETH2 Fully compliant with IEEE 802.3af PoE P.D)
DIDO port in M12 (5-pin A-coding)	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC	
RS-232 Console port in M12 (5-pin A-coding)	115200, 8 ,N ,1	
Relay port in M12 (5-pin A-coding)	1A@24VDC	
WLAN Interface		
Operating Mode	Dual AP/Dual Client /Bridge /AP-Client Mode	
Antenna Connector	4 x External reverse SMA-type antenna connector	
Radio Frequency Type	DSSS, OFDM	
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)	

Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps	
Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11b: 18dBm ± 1.5dBm 802.11g: 15dBm ± 1.5dBm 802.11gn HT20: 13dBm ± 1.5dBm@150Mbps 802.11gn HT40: 12dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 12dBm ± 1.5dBm@300Mbps	
Receiver Sensitivity	802.11a: -68dBm ±2dBm@54Mbps 802.11b: -85dBm ±2dBm@11Mbps 802.11g: -68dBm ±2dBm@54Mbps 802.11gn HT20: -68dBm ±2dBm@150Mbps 802.11gn HT40: -68dBm ±2dBm@300Mbps 802.11an HT20: -68dBm ±2dBm@150Mbps 802.11an HT40: -68dBm ±2dBm@300Mbps	
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Wireless Security	SSID broadcast disable and enable	
Protocol Support		
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP, RSTP,	
LED Indicators		
Power Indicator	2 x LEDs, Green for Power on	
10/100/1000Base-T(X) indicator	2 x LEDs, Green for port Link/Act	
WLAN LED	2 x LEDs, Green for WLAN Link /Act	
10/100/1000Base-T(X) indicator	1 x LED, Red for Ethernet link down or power down indicator	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC(5-pin M12 A-coding)	
Power		
Input power	Dual Power Inputs. 12~48 VDC	
Power Consumption (Typ.)	11 W	11.5Watts
Physical Characteristics		
Enclosure	IP-40	
Dimensions (W x D x H)	125.6(W) x 65(D) x 196.1(H) mm (4.94 x 2.55 x 7.72 inch.)	
Weight (g)	965g	970g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-25 to 70°C (-13 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27, EN61373	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

TGAP-ABC0-M12

Code Definition	Wireless-1 Mode	Wireless-2 Mode	10/100/1000 Base-T(X) Port Number
Option	- **1:** IEEE 802.11 b/g - **2:** IEEE 802.11 a - **3:** IEEE 802.11 a/b/g - **4:** IEEE 802.11 b/g/n - **5:** IEEE 802.11 a/n - **6:** IEEE 802.11 a/b/g/n	- **1:** IEEE 802.11 b/g - **2:** IEEE 802.11 a - **3:** IEEE 802.11 a/b/g - **4:** IEEE 802.11 b/g/n - **5:** IEEE 802.11 a/n - **6:** IEEE 802.11 a/b/g/n	-**"2":** 2 ports

	Model Name	Description
Available Model	TGAP-6620-M12_US	Industrial EN50155 Dual IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000Base-T(X), US band
	TGAP-6620-M12_EU	Industrial EN50155 Dual IEEE 802.11 a/b/g/n wireless access point with 2x10/100/1000Base-T(X), EU band

Packing List

- TGAP-6620-M12
- 2.4GHz/5GHz Antenna
- ORing Tool CD
- Quick Installation Guide
- Wall Mount

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base series
- WLAN RF Antenna series
- RF Cable series

TGAP-W610+ series

TGAP-W610+ series

Industrial EN50155 IEEE 802.11 a/b/g/n AP with 1x10/100/1000Base-T(X) PoE P.D., IP-67 grade

Features

- **High Speed Air Connectivity**: RF in IEEE 802.11 a/b/g/n WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Support **Long Distance Air Connectivity**
- Support **Multiple-SSID to 4 SSID**
- Support X-Roaming < 60 ms
- Support wireless load balance
- Support external N-Type antenna installation
- Support **AP/ Client /Bridge /AP-Client Mode**
- Support **MAC/IP/Port Filter**
- Wireless connecting status monitoring
- Secured Management by HTTPS
- 1KV isolation for PoE P.D.
- Event Warning by Syslog, Email, SNMP Trap, and Relay output
- Rigid IP-67 waterproof housing design

PoE P.D. | EN50155 | IP-67 | Full Gigabit | a/b/g/n Wifi 802.11a/b/g/n | Redundant PWR | -25~70°C Temperature

RoHS Lead Free

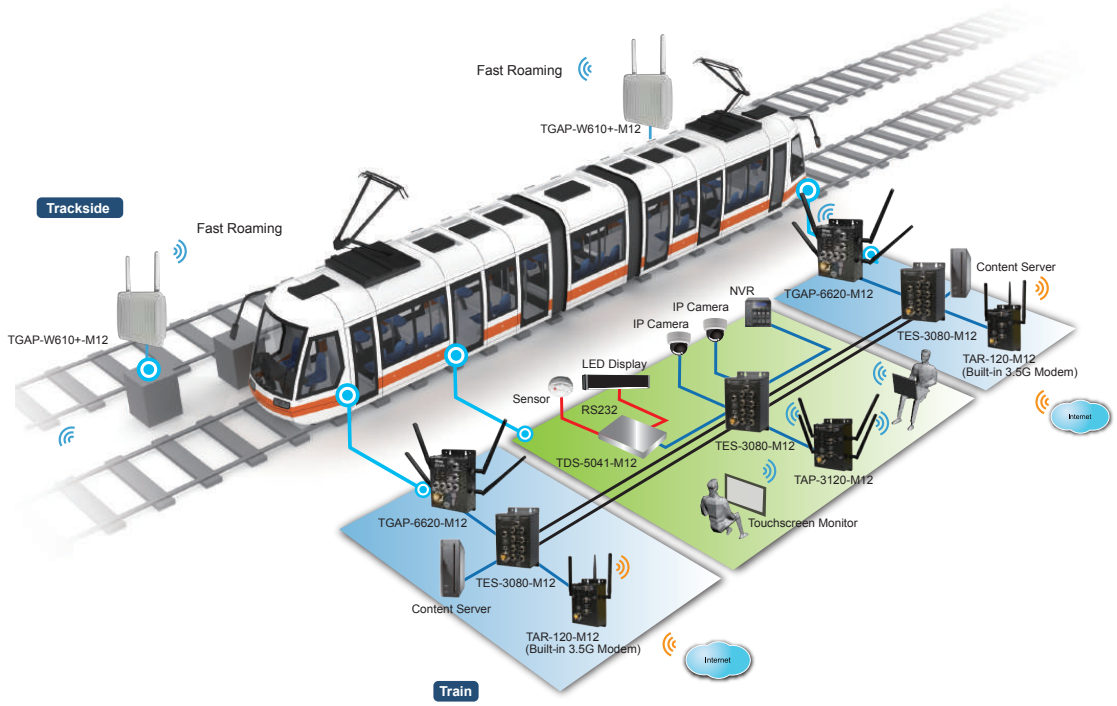
Introduction

TGAP-W610+ is a reliable outdoor wireless Access Point with IEEE 802.11 a/b/g/n wireless modules and 1 Ethernet Gigabit port with PoE P.D.. It can be configured to operate in AP/ Client /Bridge /AP-Client Mode and supports MAC filters for security control. TGAP-W610+ provides a dust-tight connection and four N-Type connectors that can install any N-Type antennas to extend communication distance. It is specifically designed for the toughest industrial environments. You are able to configure TGAP-W610+ by WEB interface via LAN port or WLAN interface. In addition, TGAP-W610+ also provides P.D. feature that is fully compliant with IEEE802.3af PoE P.D. specification to save the layout cost of power line. TGAP-W610+ can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network in outdoor. Therefore, TGAP-W610+ is one of the best communication solutions for wireless applications

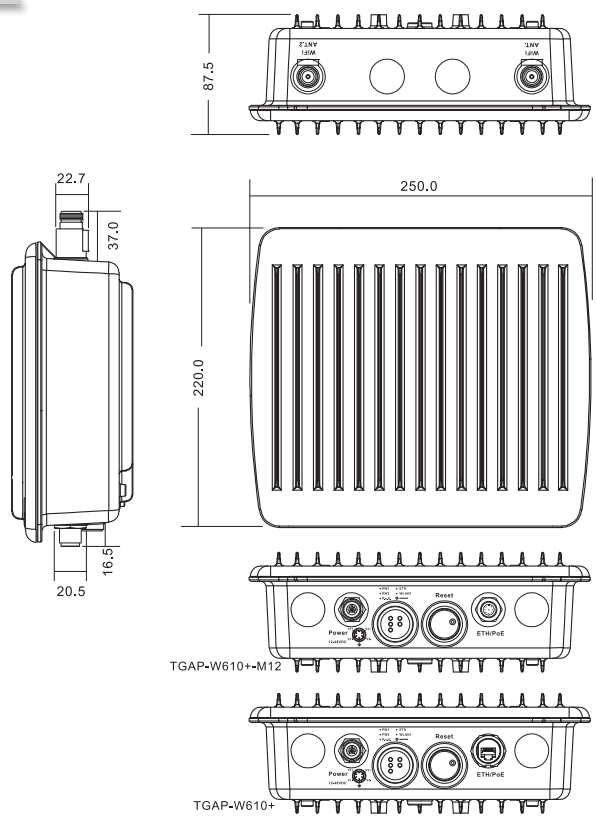
Application

In practical operation of wireless access point, Windows utility (Open-Version) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network.

In addition, the wireless access point support various kinds of operation modes include AP/Dual Client /Bridge /AP-Client Mode.



Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAP-W610+	TGAP-W610+-M12
Physical Ports		
10/100/1000Base-T(X) Port Auto MDI/MDIX	1(RJ45)	1(M12 8-pin A-coding)
PoE P.D. port	Present at ETH Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min	
WLAN Interface		
Operating Mode	AP / Client /Bridge /AP-Client Mode	
Antenna Connector	2 x External N-Type female antenna connector	
Radio Frequency Type	DSSS, OFDM	
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)	
Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps	
Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11b: 17dBm ± 1.5dBm 802.11g: 15dBm ± 1.5dBm 802.11gn HT20: 13dBm ± 1.5dBm@150Mbps 802.11gn HT40: 12dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 12dBm ± 1.5dBm@300Mbps	
Receiver Sensitivity	802.11a: -68dBm ±2dBm@54Mbps 802.11b: -85dBm ±2dBm@11Mbps 802.11g: -68dBm ±2dBm@54Mbps 802.11gn HT20: -68dBm ±2dBm@150Mbps 802.11gn HT40: -68dBm ±2dBm@300Mbps 802.11an HT20: -68dBm ±2dBm@150Mbps 802.11an HT40: -68dBm ±2dBm@300Mbps	
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Wireless Security	SSID broadcast disable and enable	
Protocol Support		
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP, RSTP,	
LED Indicators		
Power Indicator	3 x LEDs, PW1/PW2/PoE Green On : Power is on	
10/100/1000Base-T(X) indicator	1 x LED, Green for port Link/Act	
WLAN LED	1 x LED, Green for WLAN Link /Act	
Power		
Input power	Dual Power Inputs. 12~48 VDC	
Power Consumption (Typ.)	9 W	
Physical Characteristics		
Enclosure	IP-67	

Dimensions (W x D x H)	310 (W) x 310(D) x 87 (H) (12.2 x 12.2 x 3.4 inch)
Weight (g)	3900 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-25 to 70°C (-13 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6, EN61373
Rail Traffic	EN50155
Cooling	EN60068-2-1
Dry Heat	EN60068-2-2
Safety	EN60950-1
Warranty	5 years

Ordering Information

TGAP-WABOC-DD

Code Definition	Wireless-1 Mode	10/100/1000 Base-T(X) Port Number	PoE Identification	PoE Identification
Option	- **1:** IEEE 802.11 b/g - **2:** IEEE 802.11 a - **3:** IEEE 802.11 a/b/g - **4:** IEEE 802.11 b/g/n - **5:** IEEE 802.11 a/n - **6:** IEEE 802.11 a/b/g/n	-**"1":** 1 ports	**+:** PoE P.D.	**None:** RJ45 **M12:** M12 connector .

	Model Name	Description
Available Model	TGAP-W610+_US	Industrial EN50155 IEEE 802.11 a/b/g/n wireless access point with 1x10/100/1000Base-T(X), PoE P.D., IP-67 grade, US band
	TGAP-W610+_EU	Industrial EN50155 IEEE 802.11 a/b/g/n wireless access point with 1x10/100/1000Base-T(X), PoE P.D., IP-67 grade, EU band
	TGAP-W610+-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n wireless access point with 1x10/100/1000Base-T(X), PoE P.D., M12 connector, IP-67 grade, US band
	TGAP-W610+-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n wireless access point with 1x10/100/1000Base-T(X), PoE P.D., M12 connector, IP-67 grade, EU band

Packing List

- TGAP-W610+
- 2.4GHz/5GHz Antenna
- ORing Tool CD
- Quick Installation Guide
- Wall Mount
- Cable Gland x 1(TGAP-W610+)

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base series
- WLAN RF Antenna series
- RF Cable series

TGAP-W6610+ Series

TGAP-W6610+ Series

Industrial EN50155 Dual RF in IEEE 802.11 a/b/g/n AP with 1x10/100/1000Base-T(X) PoE P.D., IP-67 grade

Features

- **High Speed Air Connectivity:** RF in IEEE 802.11 a/b/g/n WLAN interface support up to 300Mbps link speed
- **Dual RF** for redundant wireless communication
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Support **Long Distance Air Connectivity**
- Support **Multiple-SSID to 4 SSID**
- Support X-Roaming < 60 ms
- Support wireless load balance
- Support external N-Type antenna installation
- Support **AP/ Client /Bridge /AP-Client Mode**
- Support **MAC/IP/Port Filter**
- Wireless connecting status monitoring
- Secured Management by HTTPS
- 1KV isolation for PoE P.D.
- Event Warning by Syslog, Email, SNMP Trap, and Relay output
- Rigid IP-67 waterproof housing design

PoE P.D. | EN50155 | IP-67 | Full Gigabit | a/b/g/n Dual 802.11a/b/g/n | Redundant PWR | -25~70°C Temperature

RoHS Lead Free CE FC

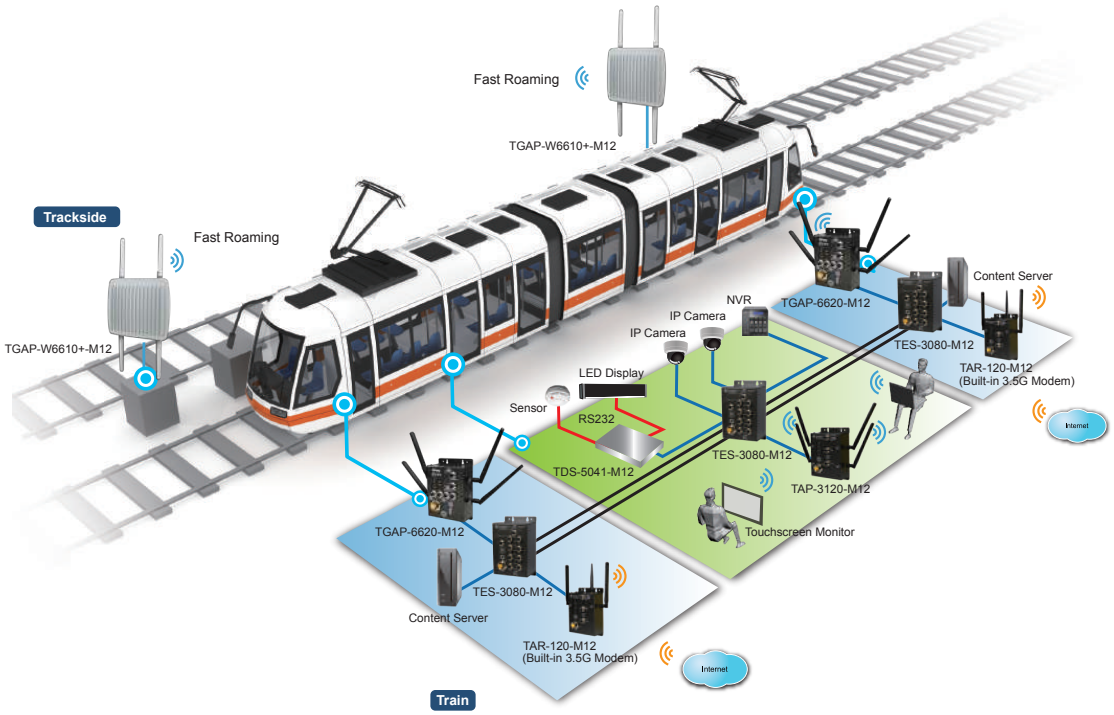
Introduction

TGAP-W6610+ is a reliable outdoor wireless Access Point with dual RF IEEE 802.11 a/b/g/n wireless modules and 1 Ethernet Gigabit port with PoE P.D.. It can be configured to operate in AP/ Client /Bridge /AP-Client Mode and supports MAC filters for security control. TGAP-W6610+ provides a dust-tight connection and four N-Type connectors that can install any N-Type antennas to extend communication distance. It is specifically designed for the toughest industrial environments. You are able to configure TGAP-W6610+ by WEB interface via LAN port or WLAN interface. In addition, TGAP-W6610+ also provides P.D. feature that is fully compliant with IEEE802.3af PoE P.D. specification to save the layout cost of power line. TGAP-W6610+ can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network in outdoor. Therefore, TGAP-W6610+ is one of the best communication solutions for wireless applications.

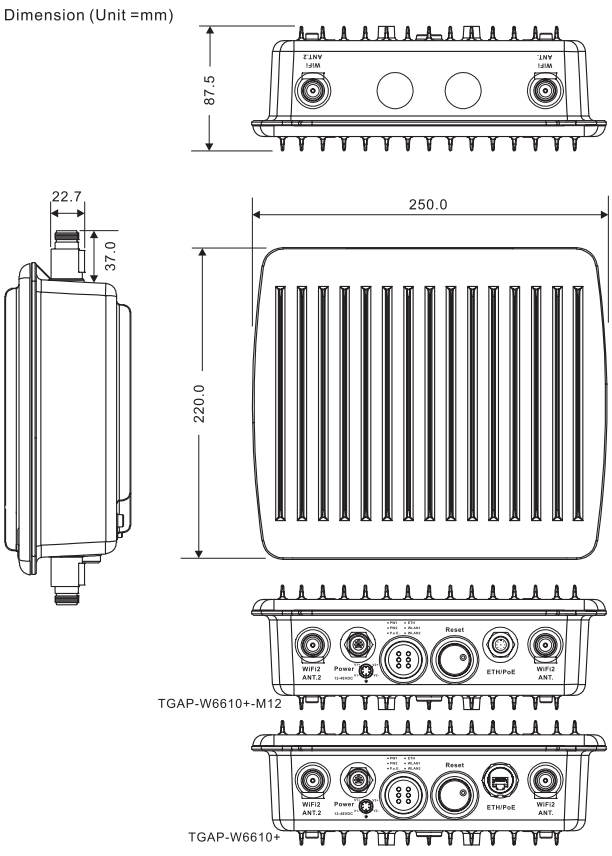
Application

In practical operation of wireless access point, Windows utility (Open-Version) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network.

In addition, the wireless access point support various kinds of operation modes include AP/Dual Client /Bridge /AP-Client Mode.



Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAP-W6610+	TGAP-W6610+-M12
Physical Ports		
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	1(RJ45)	1(M12 8-pin A-coding)
PoE P.D. port	Present at ETH Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min	
WLAN Interface		
Operating Mode	Dual AP/ Client /Bridge /AP-Client Mode	
Antenna Connector	4 x External N-Type female antenna connector	
Radio Frequency Type	DSSS, OFDM	
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)	
Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps	
Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11b: 17dBm ± 1.5dBm 802.11g: 15dBm ± 1.5dBm 802.11gn HT20: 13dBm ± 1.5dBm@150Mbps 802.11gn HT40: 12dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 12dBm ± 1.5dBm@300Mbps	
Receiver Sensitivity	802.11a: -68dBm ±2dBm@54Mbps 802.11b: -85dBm ±2dBm@11Mbps 802.11g: -68dBm ±2dBm@54Mbps 802.11gn HT20: -68dBm ±2dBm@150Mbps 802.11gn HT40: -68dBm ±2dBm@300Mbps 802.11an HT20: -68dBm ±2dBm@150Mbps 802.11an HT40: -68dBm ±2dBm@300Mbps	
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Wireless Security	SSID broadcast disable and enable	
Protocol Support		
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP, RSTP,	
LED Indicators		
Power Indicator	3 x LEDs, PW1/PW2/PoE Green On : Power is on and booting up	
10/100/1000Base-T(X) indicator	1 x LEDs, Green for port Link/Act	
WLAN LED	2 x LEDs, Green for WLAN Link /Act	
Power		
Input power	Dual Power Inputs. 12~48 VDC	
Power Consumption (Typ.)	11 W	
Physical Characteristics		
Enclosure	IP-67	

Dimensions (W x D x H)	310 (W) x 310(D) x 87 (H) (12.2 x 12.2 x 3.4 inch)
Weight (g)	3980 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-25 to 70°C (-13 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6, EN61373
Rail Traffic	EN50155
Cooling	EN60068-2-1
Dry Heat	EN60068-2-2
Safety	EN60950-1
Warranty	5 years

Ordering Information

TGAP-W[A][B][C]0[D]-[EE]

Code Definition	Wireless-1 Mode	Wireless-2 Mode	10/100/1000 Base-T(X) Port Number	PoE Identification	Connector Type
Option	- **1:** IEEE 802.11 b/g - **2:** IEEE 802.11 a - **3:** IEEE 802.11 a/b/g - **4:** IEEE 802.11 b/g/n - **5:** IEEE 802.11 a/n - **6:** IEEE 802.11 a/b/g/n	- **1:** IEEE 802.11 b/g - **2:** IEEE 802.11 a - **3:** IEEE 802.11 a/b/g - **4:** IEEE 802.11 b/g/n - **5:** IEEE 802.11 a/n - **6:** IEEE 802.11 a/b/g/n	-**"1":** 1 ports	**+:** PoE P.D.	**None:** RJ45 **M12:** M12 connector

	Model Name	Description
Available Model	TGAP-W6610+_US	Industrial EN50155 Dual IEEE 802.11 a/b/g/n wireless access point with 1x10/100/1000Base-T(X), PoE P.D., IP-67 grade, EU band
	TGAP-W6610+_EU	Industrial EN50155 Dual IEEE 802.11 a/b/g/n wireless access point with 1x10/100/1000Base-T(X), PoE P.D., IP-67 grade, EU band
	TGAP-W6610+-M12_US	Industrial EN50155 Dual IEEE 802.11 a/b/g/n wireless access point with 1x10/100/1000Base-T(X), PoE P.D., M12 connector , IP-67 grade, EU band
	TGAP-W6610+-M12_EU	Industrial EN50155 Dual IEEE 802.11 a/b/g/n wireless access point with 1x10/100/1000Base-T(X), PoE P.D., M12 connector , IP-67 grade, EU band

Packing List

- TGAP-W6610+-M12
- 2.4GHz/5GHz Antenna
- ORing Tool CD
- Quick Installation Guide
- Wall Mount
- Cable Gland x 1(TGAP-W6610+)

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base series
- WLAN RF Antenna series
- RF Cable series

5 Industrial Cellular VPN Router

Naming Rules

Model Name Symbol Color Legend

BLACK: For the associated sub-category, the symbol is constant for both this Overall List or in the Datasheet(s) of the indicated model(s).

PURPLE: For the associated sub-category, the symbol is variable or optional for this Overall List and is constant or optional for the Datasheet(s) of the indicated model(s).

BLUE: For the associated sub-category, the symbol is variable or optional for both this Overall List and the Datasheet(s) of the indicated model(s).

INDUSTRIAL CELLULAR VPN ROUTER	Industrial DIN-Rail 3.5G Cellular VPN Router
Model Name	IR-7ABUB
Order info & label	IR-7ABUB
Code Definition	**A: 10/100 Base-T(X) Port Number**
	B: Additional Port Number
	U: Additional Port type
	U: USB interface

INDUSTRIAL CELLULAR VPN ROUTER	Industrial DIN-Rail 3.5G WLAN Cellular VPN Router
Model Name	IAR-AB0D
Ordering info & label	IAR-AB0D_EE
Code Definition	**A: Wireless Mode**
	1: IEEE 802.11b/g
	2: IEEE 802.11a
	3: IEEE 802.11a/b/g
	4: IEEE 802.11b/g/n
	5: IEEE 802.11a/n
	6: IEEE 802.11a/b/g/n
	B: 10/100Base-T(X) Port Number
	D: PoE P.D. Feature
	"+": PoE P.D. present at ETH2
	EE: Wireless Band Option
	_US: US band
	_EU: EU band

INDUSTRIAL CELLULAR VPN ROUTER	Industrial EN50155 (Transporter Series) 3.5G WLAN Cellular VPN Router
Model Name	TAR-ABC0-M12D
Ordering info & label	TAR-ABC0-M12D_EE
Code Definition	**A: Wireless Mode (Band 1)**
	1: IEEE 802.11b/g
	2: IEEE 802.11a
	3: IEEE 802.11a/b/g
	4: IEEE 802.11b/g/n
	5: IEEE 802.11a/n
	6: IEEE 802.11a/b/g/n
	B: Wireless Mode (Band 2)
	1: IEEE 802.11b/g
	2: IEEE 802.11a
	3: IEEE 802.11a/b/g
	4: IEEE 802.11b/g/n
	5: IEEE 802.11a/n
	6: IEEE 802.11a/b/g/n
	C: 10/100Base-T(X) Port Number
	DD: Wireless Band Option
	_US: US band
	_EU: EU band

Product Selection Guide

Industrial Cellular VPN Router	DIN-Rail VPN Router		
			
	IGR-20 / IGR-20+	IAR-142(+)-3G	IAR-142(+)-4G
Ethernet Ports			
10/100 Base-T(X) LAN Ports	-	2	2
10/100/1000 Base-T(X) Lan Ports	2	-	-
PoE (P.D.)Support	- / • (LAN Port-2)	• (LAN Port-1)	• (LAN Port-1)
10/100/1000 Base-T(X) Lan Ports	-	-	-
WLAN Interface			
WLAN/Cellular Standard	-	IEEE802.11b/g/n	IEEE802.11b/g/n
Transmit Power	-	19 dBm max.	19 dBm max.
Transmission Rate	-	IEEE802.11b : 11Mbps IEEE802.11g : 54Mbps IEEE802.11n : 150Mbps	IEEE802.11b : 11Mbps IEEE802.11g : 54Mbps IEEE802.11n : 150Mbps
Antenna connector	-	Reverse SMA	Reverse SMA
Antenna	-	2.4GHz :2 dBi 5GHz :2 dBi	2.4GHz :2 dBi 5GHz :2 dBi
WAN Interface			
Cellular Standard	-	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA / LTE(4G)
Transmission Power	-	33 dbm max.	33 dbm max.
SIM Slot	-	1	1
Antenna	-	Multi-Band Antenna	Multi-Band Antenna
Power Redundancy			
Power Connector	2(Terminal Block)	1(Terminal Block)	1(Terminal Block)
Installation			
DIN-Rail Mounting	•	•	•
Wall mounting	•	•	•
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	74.3(W)x109.2(D)x153.6(H)	41(W) x 81(D) x 95(H)	45(W) x 80.6(D) x 95(H)
Operating Temperature			
-10 to 60°C	-	•	•
-10 to 70°C	-	-	-
-20 to 70°C	-	-	-
-40 to 75°C	•	-	-
Network Technology			
Alarm Notification	Relay Output / SNMP Trap / System Log	SNMP Trap / System Log/SMTP	SNMP Trap / System Log/SMTP
Management / Configuration	WEB/Window Utility	WEB / Window Utility	WEB / Window Utility
Warranty	5 years	3 years	

Product Selection Guide

Industrial Cellular VPN Router	DIN-Rail Cellular VPN Router		
			
	IGAR-1062+-3G/4G	IGAR-2062 +-3G/4G	IGAR-1662+-3G/4G
Ethernet Ports			
10/100 Base-T(X) LAN Ports	-	-	-
10/100/1000 Base-T(X) Lan Ports	2	2	2
PoE (P.D.)Support	●(LAN Port-2)	●(LAN Port-2)	●(LAN Port-2)
Ethernet switch/redundant mode support	●	●	●
WLAN Interface			
WLAN Standard	IEEE802.11a/b/g/n	IEEE802.11a/b/g/n	Dual IEEE802.11a/b/g/n Dual RF
Transmit Power	17 dBm max.	17 dBm max.	17 dBm max.
Transmission Rate	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps
Antenna connector	Reverse SMA	Reverse SMA	Reverse SMA
Antenna	2.4GHz :2 dBi 5GHz :2 dBi	2.4GHz :2 dBi 5GHz :2 dBi	2.4GHz :2 dBi 5GHz :2 dBi
WAN Interface			
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA / LTE(4G)	Dual GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA / LTE(4G)	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA / LTE(4G)
Transmission Power	33 dbm max.	33 dbm max.	33 dbm max.
SIM Slot	1	2	1
Antenna	Multi-Band Antenna	Multi-Band Antenna	Multi-Band Antenna
Power Redundancy			
Power Connector	2(Terminal Block)	2(Terminal Block)	2(Terminal Block)
Installation			
DIN-Rail Mounting	●	●	●
Wall mounting	●	●	●
Physical Characteristics			
Casing Protection	IP-30	IP-30	IP-30
Dimensions (mm)	74.3(W) x 109.2(D) x 53.6(H)	74.3(W) x 109.2(D) x 53.6(H)	74.3(W) x 109.2(D) x 53.6(H)
Operating Temperature			
-10 to 60°C	-	-	-
-10 to 70°C	-	-	-
-25 to 70°C	●	●	●
Network Technology			
Alarm Notification	Relay Output / System Log	Relay Output / System Log	Relay Output / System Log
Management / Configuration	WEB	WEB	WEB
Warranty	5 years		

Product Selection Guide

Industrial Cellular VPN Router

EN50155 WLAN Cellular VPN Router

TGAR-1062+-3GS/4GS-M12

TGAR-1662+-3GS/4GS-M12

TGAR-1062+-4G6S-M12

Ethernet Ports						
10/100 Base-T(X) LAN Ports	-		-		-	
10/100/1000 Base-T(X) LAN Ports	**2 (M12)**		**2 (M12)**		**2 (M12)**	
10/100 Base-FX Fiber Ports	-		-		-	
PoE (P.D.)Support	(TGAR-1062+-3GS/4GS-M12)		(TGAR-1662+-3GS/4GS-M12)		(TGAR-1062+-4G6S-M12)	
Ethernet switch/redundant mode support	•		•		•	
WLAN Interface						
WLAN Standard	IEEE802.11a/b/g/n		Dual IEEE802.11a/b/g/n		Dual IEEE802.11a/b/g/n	
Transmit Power	17 dBm max.		17 dBm max.		17 dBm max.	
Transmission Rate	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps		IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps		IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps	
Antenna connector	Reverse SMA	Reverse SMA	Reverse SMA	Reverse SMA	Reverse SMA	
Antenna	2.4GHz :2 dBi 5GHz :3 dBi		2.4GHz :2 dBi 5GHz :3 dBi		2.4GHz :2 dBi 5GHz :3 dBi	
GPS						
Antenna connector	1 x External SMA antenna connector		1 x External SMA antenna connector		1 x External reverse SMA antenna connector	
Frequency	1575.42MHz		1575.42MHz		1575.42MHz	
WAN Interface						
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA / LTE(4G)		GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA / LTE(4G)		GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA / LTE+(4G)	
Transmission Power	33 dbm max.		33 dbm max.		33 dbm max.	
SIM Slot	1		1		1	
Antenna connector	Reverse SMA	SMA	Reverse SMA	SMA	SMA	
Antenna	Multi-Band Antenna		Multi-Band Antenna		Multi-Band Antenna	
WAN Connection Type	Static/Dynamic IP,PPPoE		Static/Dynamic IP,PPPoE		Static/Dynamic IP,PPPoE	
WAN Dial-UP	3G	4G LTE	3G	4G LTE	4G LTE (Cat.6)	
Power Redundancy						
Power Connector	2 (M23)		2 (M23)		2 (M23)	
Installation						
DIN-Rail Mounting	-		-		-	
Wall mounting	•		•		•	
Physical Characteristics						
Casing Protection	IP-40		IP-40		IP-40	
Dimensions (mm)	125(W) x 65(D) x 196(H)		125(W) x 65(D) x 196(H)		125.6(W) x 65(D) x 196.1(H)	
Operating Temperature						
-10 to 60°C	•		-		-	
-20 to 70°C	-		•		-	
-25 to 70°C	•		-		•	
Network Technology						
Alarm Notification	Relay Output / SNMP Trap / System Log/SMTP		Relay Output / SNMP Trap / System Log/SMTP		Relay Output / SNMP Trap / System Log/SMTP	
Management / Configuration	WEB / Window Utility		WEB / Window Utility		WEB / Window Utility	
Warranty	5 years					

Product Selection Guide

Industrial Cellular VPN Router

EN50155 Outdoor Cellular VPN Router

TGAR-2062+-3GS/4GS-M12

TGAR-W1061+-3G/4G

TAR-620-M12-MV

Ethernet Ports			
10/100 Base-T(X) LAN Ports	-	-	1 (M12)
10/100/1000 Base-T(X) LAN Ports	2 (M12)	1 (M12/RJ45)	-
10/100 Base-FX Fiber Ports	-	-	-
PoE (P.D.)Support	(TGAR-2062+-3GS/4GS-M12)	•	-
Ethernet switch/redundant mode support	•	-	•
WLAN Interface			
WLAN Standard	IEEE802.11a/b/g/n	IEEE802.11a/b/g/n	IEEE802.11a/b/g/n
Transmit Power	17 dBm max.	17 dBm max.	17 dBm max.
Transmission Rate	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps	IEEE802.11b : 11Mbps IEEE802.11a/g : 54Mbps IEEE802.11n : 300Mbps	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps
Antenna connector	Reverse SMA	N-Type	Reverse SMA
Antenna	2.4GHz :2 dBi 5GHz :3 dBi	2.4GHz :3 dBi 5GHz :5 dBi	2.4GHz :2 dBi 5GHz :3 dBi
GPS			
Antenna connector	1 x External SMA antenna connector	-	-
Frequency	1575.42MHz	-	-
WAN Interface			
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA / LTE(4G)	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA / LTE(4G)	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA
Transmission Power	33 dbm max.	33 dbm max.	33 dbm max.
SIM Slot	2	1	1
Antenna connector	Reverse SMA / SMA	N-Type	Reverse SMA
Antenna	Multi-Band Antenna	Multi-Band Antenna	Multi-Band Antenna
WAN Connection Type	Static/Dynamic IP,PPPoE	Static/Dynamic IP,PPPoE	Static/Dynamic IP,PPPoE
WAN Dial-UP	Dual 3G / Dual 4G LTE	3G / 4G LTE	3G
Power Redundancy			
Power Connector	2 (M23)	2 (M12)	2 (7/8")
Installation			
DIN-Rail Mounting	-	-	-
Wall mounting	•	•	•
Pillar Mounting	-	•	-
Physical Characteristics			
Casing Protection	IP-40	IP-67	IP-40
Dimensions (mm)	125(W) x 65(D) x 196(H)	310(W) x 310(D) x 87(H)	143(W) x 65(D) x 196.1(H)
Operating Temperature			
-10 to 60°C	-	-	-
-25 to 70°C	•	•	•
Network Technology			
Alarm Notification	Relay Output / SNMP Trap / System Log/SMTP	Relay Output / SNMP Trap / System Log/SMTP	Relay Output / SNMP Trap / System Log/SMTP
Management / Configuration	WEB / Window Utility	WEB / Window Utility	WEB / Window Utility
Warranty	5 years		

Industrial Cellular VPN Overview

ORing's wired, wireless, and wireless EN50155 Industrial Cellular VPN Routers are reliable and cost-effective routers for redirecting wired or wireless network connections to wired or wireless 3.5G modems – very useful for mobile internet connection.

All of ORing's industrial Cellular VPN Routers feature highly advanced security features for internet connection. The wireless models, with support of IEEE 802.11 wireless standard, additionally feature long communication range. Additionally, there are EN50155-certified Transporter series wireless models, making them espcially suitable for rolling stock applications.

Key Technologies

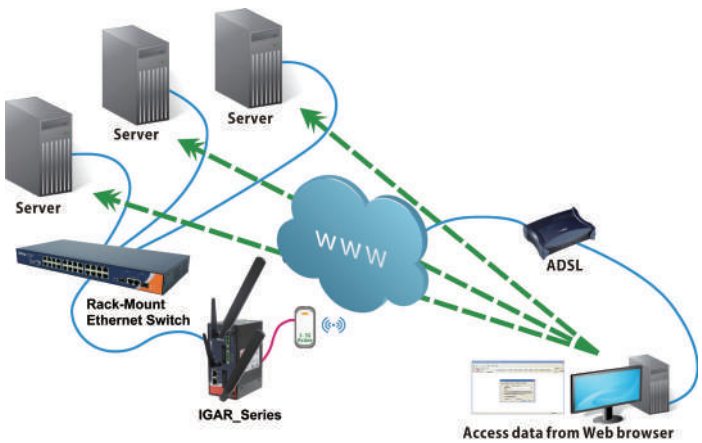
SSL VPN

Technology Description

Secure Sockets Layer virtual private network (SSL VPN) is a kind of VPN that runs on Secure Socket Layers technology and is accessible via https over web browsers. It permits users to establish safe and secure remote access sessions from any Internet connected browser. SSL functions between the Transmission Control Protocol (TCP) layer and application layer protocols. Traditional VPN requires the installation of IPsec client software on a client machine before a connection is established whereas SSL VPN has no such requirement. Corporate users are able to access confidential applications or share files on standard web browsers.

SSL VPN Benefits

The main benefit of SSL VPN technology is that since it is user-based, not device-based. Any authorized user can login from web-enabled PCs for secure, remote access of confidential files. The safety issues are similar to SSL-based credit card online transactions through standard web browsers.



Supporting Products:

ORing's full router series products support SSL VPN function

IGAR-2062+-4G IGR-20+ IAR-142-3G IAR-142+-4G

TGAR-1062+-4G-M12 TGAR-W1061-3G/4G-M12

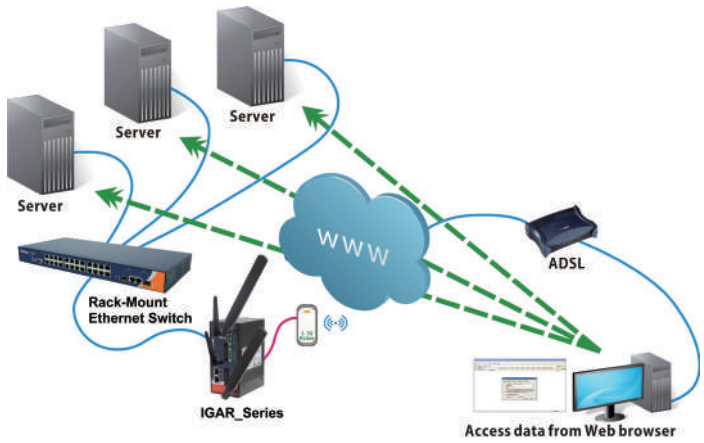
IPsec VPN

Technology Description

Internet Protocol Security (IPsec) is a protocol suite for securing Internet Protocol (IP) communications by authenticating and encrypting each IP packet of a data stream. IPsec also includes protocols for establishing mutual authentication between agents at the beginning of the session and negotiation of cryptographic keys to be used during the session. IPsec can be used to protect data flows between a pair of hosts (e.g. computer users or servers), between a pair of security gateways (e.g. routers or firewalls), or between a security gateway and a host.

IPsec VPN Benefits

IPsec is a dual mode, end-to-end, security scheme operating at the Internet Layer of the Internet Protocol Suite or OSI model Layer 3. IPsec can be used for protecting any application traffic across the Internet.



Supporting Products:

ORing's full AR series products support IPsec VPN Benefits function

IGAR-2062+-4G TGAR-2062+-3G/4G-M12

PPPoE and DDNS for Internet Connection

Technology Description

PPPoE (Point-to-Point Protocol over Ethernet) is a network protocol for encapsulating Point-to-Point Protocol (PPP) frames inside Ethernet frames. It is used mainly with DSL services where individual users connect to the xDSL modem over Ethernet. to build up network connection.

DDNS (Dynamic Domain Name Server) is a method, protocol, or network service that provides the capability for a networked device using the Internet Protocol Suite, such as an IP router or computer system, to notify a domain name server to change, in real time, the active DNS configuration of its configured hostnames, addresses or other information stored in DNS. When getting the connection through PPPoE and the IP address is floated, end users may not configure device server. However, through DDNS method, it's easy for different IP domain users to connect to IR/IAR/TAR series device servers.

PPPoE Benefits

PPPoE enables clients to adopt the traditional dial-up access mode, which allows end users to use the familiar hardware and similar software to access the Internet. Moreover, clients can also use Ethernet adapters to connect PCs and xDSL modems, which allow PCs to share xDSL lines and thus saves investment.

DDNS Benefits

With DDNS, there is no need to go from PC to PC setting up static addresses every time your network infrastructure changes. Moreover, you only need the addresses that would be used simultaneously, rather than having one for every possible user of IP.

Supporting Products: ORing's full AR series products support PPoE and DDNS for Internet Connection function

IGAR-2062+-4G TGAR-2062+-3G/4G-M12

Networking Protection

Technology Description

ORing's industrial routers offer comprehensive security features to keep the network well-protected. First of all, ORing routers support the following data encryption schemes:

WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2 Personal/WPA2 Enterprise

These encryption schemes prevent hackers from deciphering data (and hence steal the contents) during wireless transmission.

HTTPs

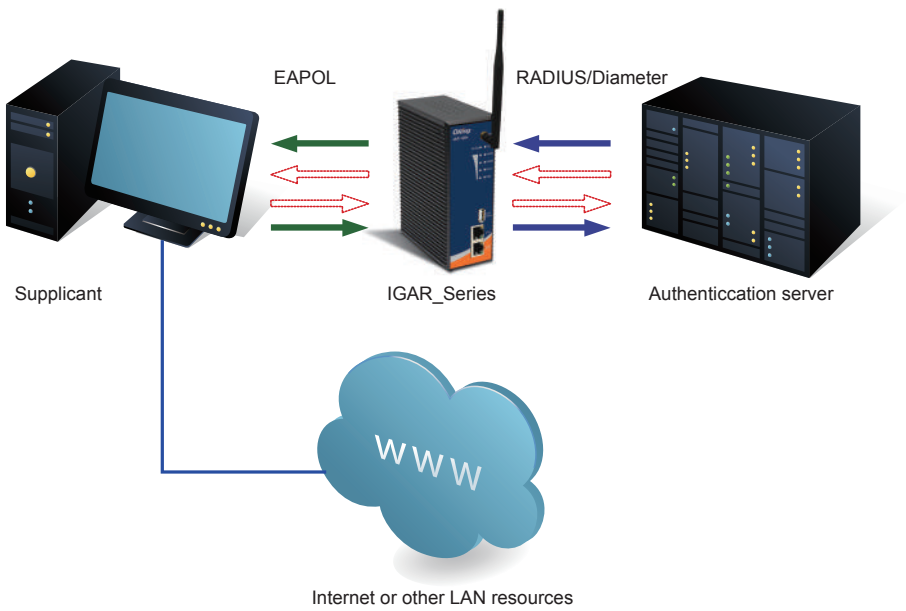
Provides encrypted communication and secure identification of a network web server. HTTPs is very useful for secure network management as well as transmission of sensitive data.

IP Table

Prevents access from unauthorized IP address.

PSK(TKIP,AES)/802.1X Authentication

These schemes act as security guards to the network, supporting service identification and optional point to point encryption over the local LAN segment.



Supporting Products:

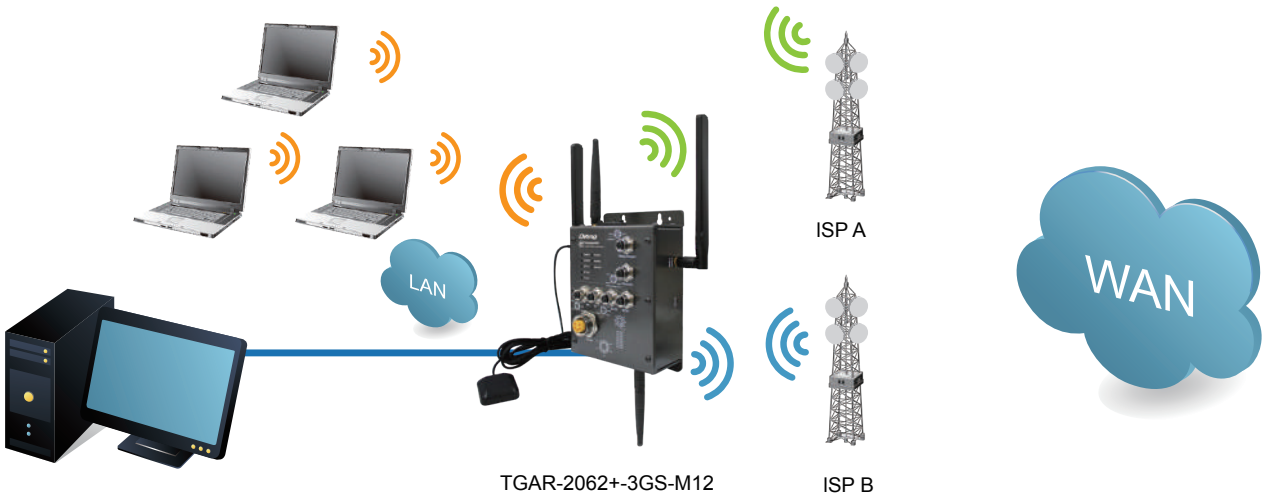
IGAR-2062+-4G

TGAR-2062-3G/4G-M12

Load balance

Technology Description

Load balancing distributes traffic across multiple broadband connections such as multiple 3G/4G links when a single resource is overloaded to enhance the scalability and availability of mission critical, IP-based services. Load balancing can also achieve redundancy when one or more connections fail and hence increase network reliability. Session Load Balancing assigns each session to one of the cellular connections. Normally, all connections are used simultaneously. When one of the connections fails, all traffic is sent over the remaining connections. Once the failed connection recovers, traffic will be returned to that connection.



GPS Function

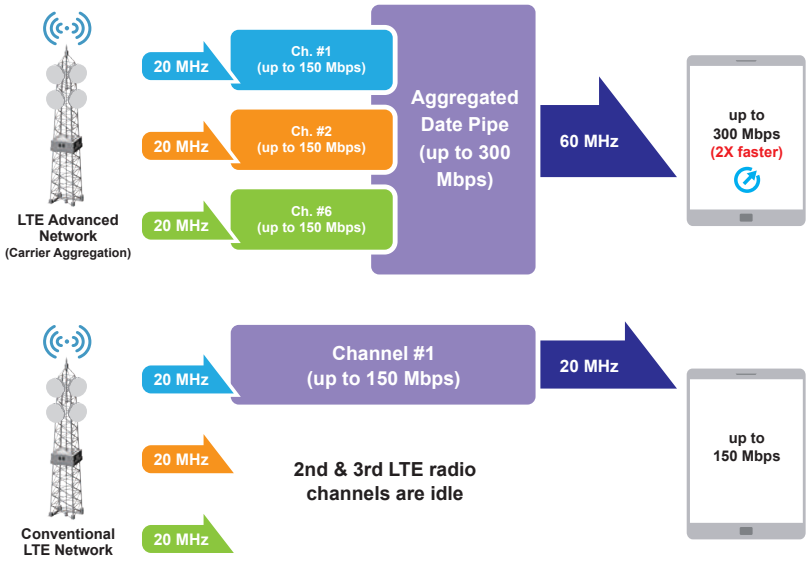
Technology Description

- Supports GPS position function
- Works on 1575.42MHz
- No transmission, only receive
- Three or more satellites obtains obtain an accurate result
- Actives GPS antenna

ORing Launches New Generation 4G LTE Router

LTE has become the mainstream mobile communications standard in many countries. The technology is used not only in mobile devices but also in network communications equipment. Mobile communications technology has moved from the earliest 2G GSM to 3G HSPA, LTE, and the most recent LTE-Advanced (LTE-A), resulting in massive data traffic. In terms of data rate, existing UE (User Equipment) Category 1 – 5 are for LTE standard and UE Category 6 with a uplink/downlink speed of 300/50Mbps are for LTE-A. The key technology of LTE-A is CA (Carrier Aggregation) which aggregates multiple LTE carriers to increase data capacity.

ORing has launched a new generation 4G LTE router featuring a rugged design and 802.11a /b/g/n support. As a Category 6 UE, the router guarantees a faster data rate.



IGR-20 / IGR-20+

IGR-20 / IGR-20+

Industrial Cellular VPN router with 1x10/100Base-T(X), Cellular modem included

Features

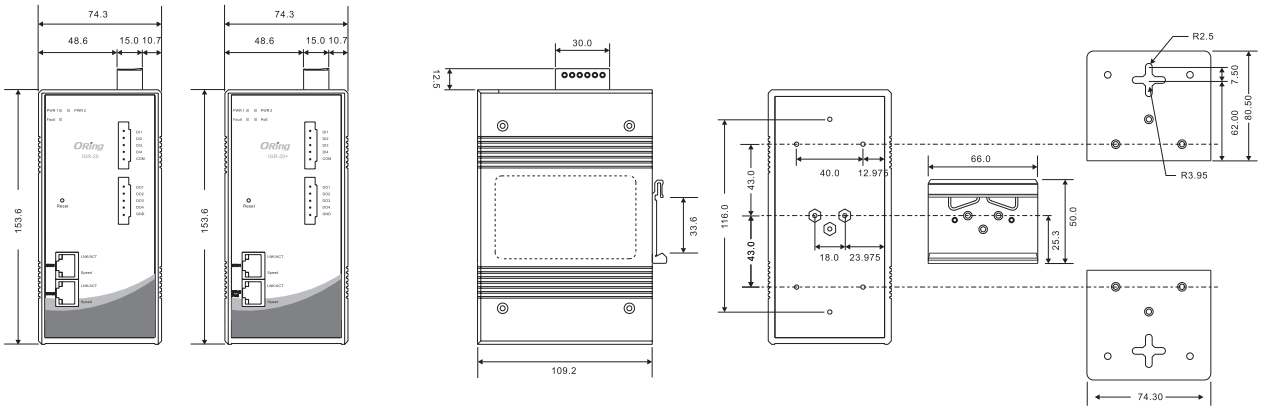
- Provide 2 port 10/100/1000Base-T(X) port
- Secured Management by HTTPs
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE
- IP table to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP, IPSEC, VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Versatile modes & event alarm by e-mail
- 1KV isolation for PoE P.D. port (IGR-20+)
- Event Warning by Syslog, Email, SNMP Trap, Relay and Beeper
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

Full Gigabit | VPN | PoE IEEE802.3af P.D. | Redundant PWR | -40~75°C Temperature | RoHS Lead Free | CE | FC

Introduction

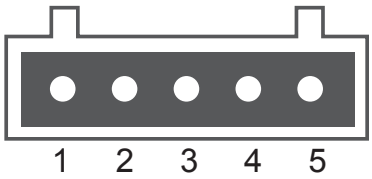
IGR-20 series is a reliable VPN router with 2 ports 10/100/1000Base-T(X) router where ETH1 for LAN and ETH2 for WAN. It supports 802.1X and MAC filter for security control. It could be configured to operate in 2 modes of routing function: Dynamic/Static IP route, PPPoE authentication. In addition, IGR-20+ also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification. This feature extends the layout up to 100 meters. Therefore, IGR-20+ is one of the best solution for applications of VPN connection. io

Dimensions



Unit=mm

DI/DO Definition



Digital Input Pin Definition

PIN	1	2	3	4	5
Function	DI1	DI2	DI3	DI4	COM

Digital Output Pin Definition

PIN	1	2	3	4	5
Function	DO1	DO2	DO3	DO4	GND

Specifications

ORing Router Model	IGR-20	IGR-20+
Physical Ports		
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
Sim Card Slot	-	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 108 ohms min
5-Pin Terminal Block	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC	
LED Indicators		
Power Indicator	3 x LEDs, PWR1(2)(PoE) / Ready: Red On : Power is on and booting up Green On : Power is on and functioning Normal	
10/100/1000T RJ45 port indicator	2 x LEDs, LNK/ACT:Green for port Act. Speed: Green for port Link at 1000Mbps Amber for port Link at 100Mbps. Off for port Link at 10Mbps	
Fault	1 x LED, Red for Ethernet link down or power down indicator	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input power	Dual DC inputs. 12-48VDC on 6-pin terminal block	
Power Consumption	4 Watts	5Watts
Overload current protection	Present	
Reverse polarity protection	Present	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93 x 4.3 x 6.05 inch.)	
Weight (g)	845g	850g
Environmental		
Storage Temperature	-40 to 85°C(-40 to 185°F)	
Operating Temperature	-40 to 75°C (-40 to 167°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	

EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
shock	IEC60068-2-27
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IGR-20+

Code Definition	10/100/1000Base-T(X) Port Number
Option	- **2:** 2port

Available Model	Model Name	Description
	IGR-20/20+	Industrial VPN Router with 2x10/100/1000Base-T(X), 1-Port PoE P.D.

Packing List

- IGR-20/20+
- CD
- DIN-Rail Kit
- Wall-mount Kit
- Quick Installation Guide
- 5-Pin Terminal Block
- 6-Pin Terminal Block
- Dust Cover

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply

IAR-142(+)-3G

IAR-142(+)-3G

IEEE 802.11 b/g/n 3G Cellular Router with 2x10/100Base-T(X)

Features

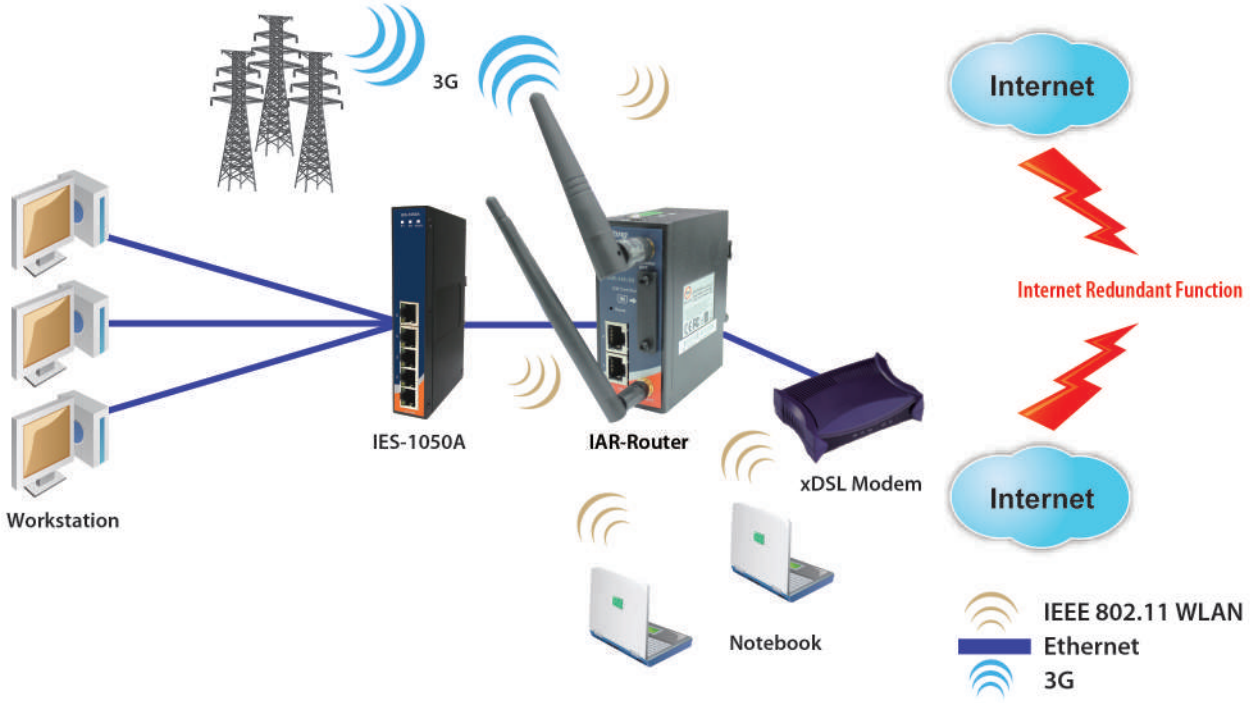
- High Speed Air Connectivity: WLAN interface support up to 150Mbps link speed
- Provide 2 port 10/100Base-T(X) port and 1 sim card slot
- 3.5G HSDPA Modem dial up included
- Provide HNAT enhance LAN to WAN routing performance
- Highly Security Capability: WEP/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem/Dial Up
- IP table to prevent access from unauthorized IP address
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Versatile modes & event alarm by e-mail
- 1KV isolation for PoE P.D. port of IAR-142+-3G
- Event Warning by Syslog, Email, SNMP Trap
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

Introduction

IAR-142(+)-3G is a reliable IEEE 802.11 b/g/n WLAN VPN router with 2 ports 10/100Base-T(X) router where ETH1 for LAN and ETH2 for WAN. It supports 802.1X and MAC filter for security control. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Modem dial up. In the mode of Modem dial up, it support GPRS/3G/3.5G modem by internal 3G module. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modems. In addition, IAR-142+-3G also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification. This feature extends the layout up to 100 meters. Therefore, IAR-142(+)-3G is one of the best solution for applications of wireless communication.

Application

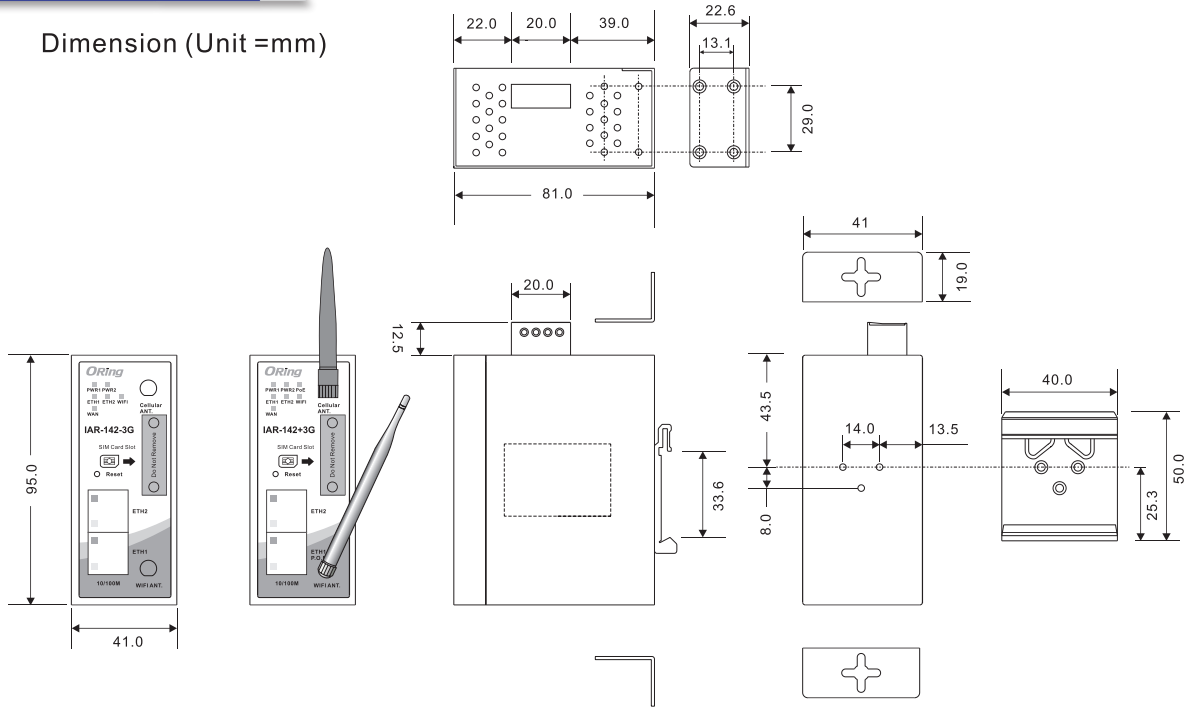
In IAR-142(+)-3G , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. IAR-142(+)-3G also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.



Multiple WAN Devices supported

Dimensions

Dimension (Unit =mm)



Unit=mm

Specifications

ORing AP Router Model	IAR-142-3G	IAR-142+-3G
Physical Ports		
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
PoE P.D. Port	-	Present at ETH1 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 108 ohms min
Sim Card Slot	1	
Cellular Interface		
Antenna Connector	1 x Reverse SMA Female	
Cellualr Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA	
Band Option	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz	
WLAN Interface		
Antenna Connector	1 x Reverse SMA Female	
Modulation	IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11a/g:OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America / FCC: 2.412~2.462 GHz (11 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels)	
Transmission Rate	802.11b: 1/2/5.5/11 Mbps 802.11g: 6/9/12/18/24/36/48/54 Mbps 802.11n(40MHz): UP to 150 Mbps	
Transmit Power	802.11b: 19dBm ±1.5dBm 802.11g: 17dBm ±1.5dBm 802.11n(2.4G@20MHz): 16.5dBm ±1.5dBm 802.11n(2.4G@40MHz): 14.5dBm ±1.5dBm	
Receiver Sensitivity	802.11b: -90dBm ±2dBm@1Mbps 802.11g: -72dBm ±2dBm@54Mbps 802.11n(2.4G@40MHz,MCS7): -68dBm ±2dBm	
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Wireless Security	SSID broadcast disable	
LED Indicators		
Power Indicator	3 x LEDs, PWR1(2)(PoE) / Ready: Green On: Power is on and functioning Normally.	
10/100T RJ45 port indicator	2 x LEDs, Green for port Link/Act at 100Mbps.	
WLAN LEDs	1 x LED, Green blinking: WLAN Link /ACT	
WAN LEDs:	1 x LED, Green blinking : Power is on and functioning Normal	
Power		
Redundant Input Power	Dual DC inputs. 12-48VDC on 6-pin terminal block	
Power Consumption (Typ.)	5 Watts	
Overload Current Protection	Present	
Reverse Polarity Protection	Present on terminal block	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	41(W)x81(D)x95(H) mm	
Weight (g)	400 g	410 g

Environmental	
Storage Temperature	-40 to 85°C(-40 to 185°F)
Operating Temperature	-10 to 60°C(14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IGAR-14ABCC

Code Definition	Giga Ethernet Port Number	PoE Identification	Cellular Generation
Option	- **2**: 2 ports	**+ :** PoE P.D. present at ETH2	**3G :**UMTS

	Model Name	Description
Available Model	IAR-142-3G_US	IEEE 802.11 b/g/n 3G Cellular Router with 2x10/100Base-T(X), US Band
	IAR-142-3G_EU	IEEE 802.11 b/g/n 3G Cellular Router with 2x10/100Base-T(X), EU Band
	IAR-142+-3G_US	IEEE 802.11 b/g/n 3G Cellular Router with 2x10/100Base-T(X), US Band, 1-port PoE P.D., US band
	IAR-142+-3G_EU	IEEE 802.11 b/g/n 3G Cellular Router with 2x10/100Base-T(X), EU Band, 1-port PoE P.D., EU band

Packing List

- IAR-142(+)-3G
- DIN-Rail Kit
- Wall-mount Kit
- Antenna
- ORing Tool CD
- Quick Installation Guide
- 2.4GHz/5GHz Antenna
- 3G Antenna
- Dust Cover
- 4-Pin Terminal Block

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- WLAN RF Antenna (Omni-directional) series
- RF Antenna Base (Magnetic) series
- RF Cable series

IAR-142(+)-4G

IAR-142(+)-4G

IEEE 802.11 b/g/n 4G LTE Cellular Router with 2x10/100Base-T(X)

Features

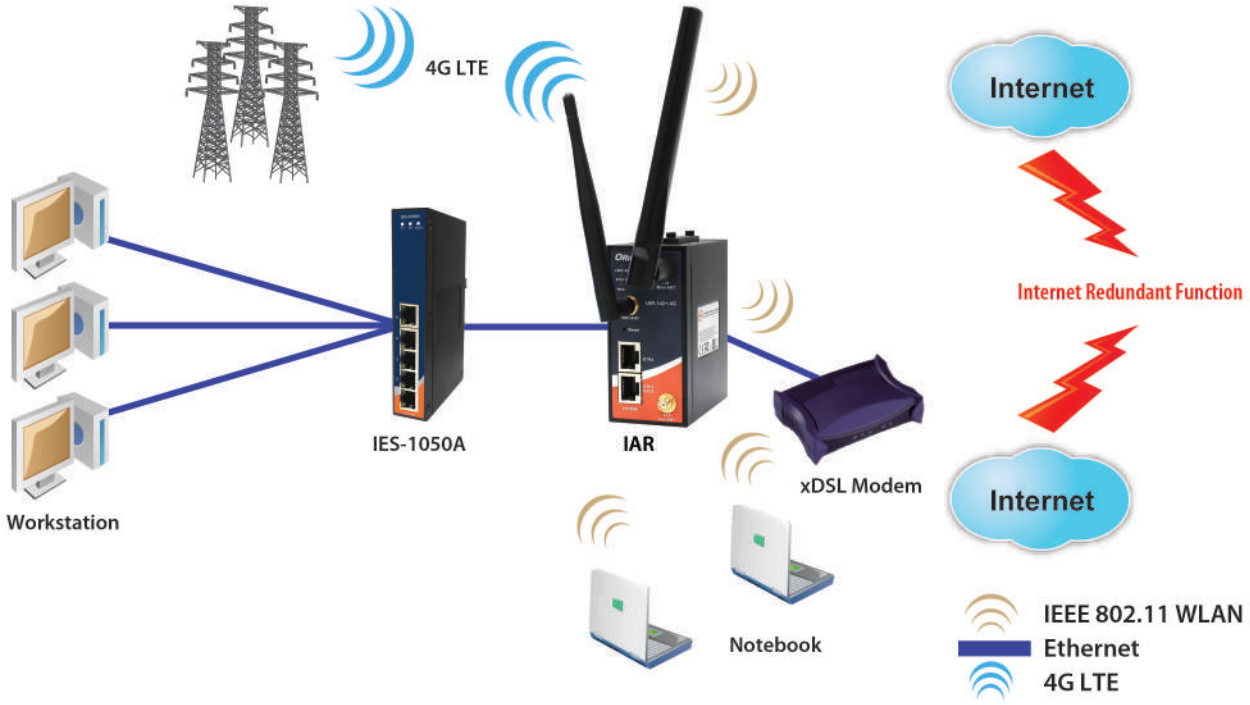
- High Speed Air Connectivity: WLAN interface support up to 150Mbps link speed
- Provide 2 port 10/100Base-T(X) port and 1 sim card slot
- 4G LTE Modem dial up included
- Provide HNAT enhance LAN to WAN routing performance
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem/Dial Up
- IP table to prevent access from unauthorized IP address
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Versatile modes & event alarm by e-mail
- 1KV isolation for PoE P.D. port of IAR-142+-4G
- Event Warning by Syslog, Email, SNMP Trap
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

Introduction

IAR-142(+)-4G is a reliable IEEE 802.11 b/g/n WLAN VPN router with 2 ports 10/100Base-T(X) router where ETH1 for LAN and ETH2 for WAN. It supports 802.1X and MAC filter for security control. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Modem dial up. In the mode of Modem dial up, it support GPRS/3G/3.5G/LTE modem by internal 4G LTE module. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modems. In addition, IAR-142+-4G also provides P.D. feature on ETH1 which is fully compliant with IEEE802.3af PoE P.D. specification. This feature extends the layout up to 100 meters. Therefore, IAR-142+-4G is one of the best solution for applications of wireless communication.

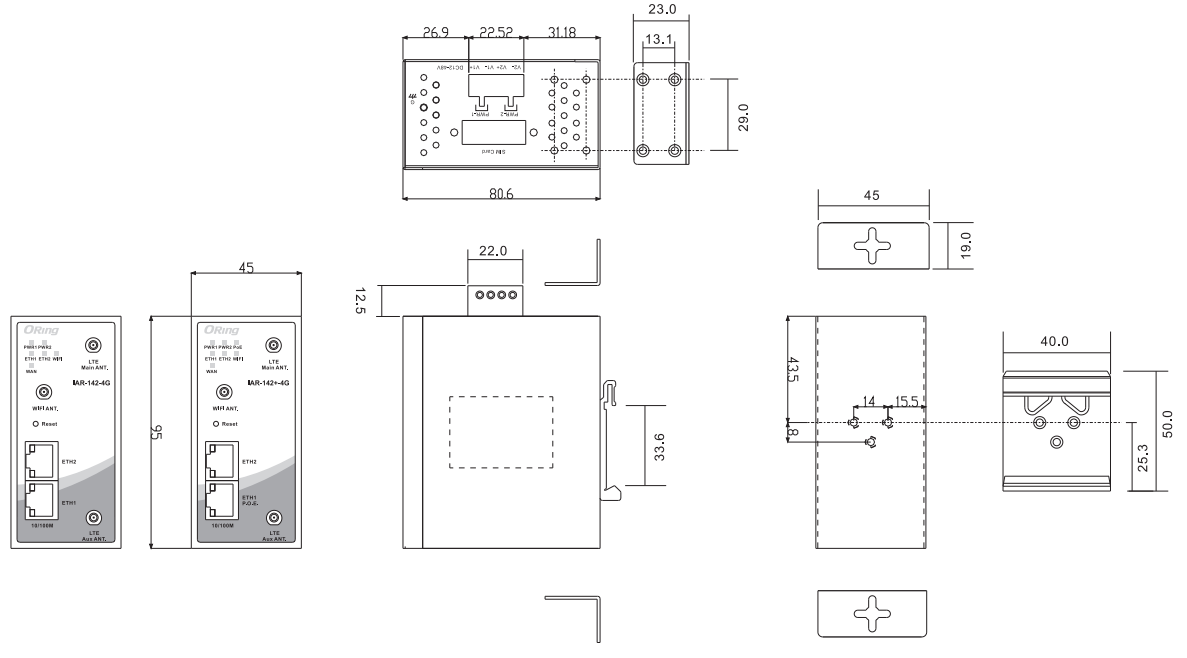
Application

In IAR-142(+)-4G , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. IAR-142(+)-4G also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.



Multiple WAN Devices supported

Dimensions



Unit=mm

Specifications

ORing AP Router Model	IAR-142-4G	IAR-142+-4G
Physical Ports		
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	**2**	
PoE P.D. port		Present at ETH1 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min
Sim Card Slot	**1**	
Cellular Interface		
Antenna Connector	2 x SMA Female	
Cellualr Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA /LTE	
Band Option	**America(US grade)** LTE: 1900(B2)/1700(B4)/850(B5)/700(B13)/700(B17)/1900(B25) MHz CDMA/EVDO rev. a/b: 800/1900 UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 850/900/1700/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz **Europe(EU grade)** LTE: 2100(B1)/1800(B3)/2600(B7)/900(B8)/800(B20) MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/900/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz	
WLAN Interface		
Antenna Connector	1 x Reverse SMA Female	
Modulation	IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America / FCC: 2.412~2.462 GHz (11 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels)	
Transmission Rate	802.11b: 1/2/5.5/11 Mbps 802.11g: 6/9/12/18/24/36/48/54 Mbps 802.11n(40MHz): UP to 150 Mbps	
Transmit Power	802.11b: 19dBm ±1.5dBm 802.11g: 17dBm ±1.5dBm 802.11n(2.4G@20MHz): 16dBm ±1.5dBm 802.11n(2.4G@40MHz): 14dBm ±1.5dBm	
Receiver Sensitivity	802.11b: -90dBm ±2dBm@1Mbps 802.11g: -72dBm ±2dBm@54Mbps 802.11n(2.4G@40MHz,MCS7): -68dBm ±2dBm	
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Wireless Security	SSID broadcast disable	
LED Indicators		
Power indicator	3 x LEDs, PWR1(2)(PoE) Green On: Power is on and functioning Normally.	
10/100T RJ45 port indicator	2 x LEDs, Green for port Link/Act at 100Mbps.	
WLAN LED	1 x LED, Green: WLAN Link /ACT	
WAN LED	1 x LED, Green On : Power is on and functioning Normal	
Power		
Redundant Input power	Dual DC inputs. 12-48VDC on 4-pin terminal block	

Power consumption	3W	
Overload current protection	Present	
Reverse polarity protection	Present	
Physical Characteristics		
Enclosure	IP-30	
Dimension (W x D x H)	45(W)x80.6(D)x95(H) mm	
Weight (g)	360g	365g
Environmental		
Storage Temperature	-40 to 85°C(-40 to 185°F)	
Operating Temperature	-10 to 60°C(14 to 140°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	3 years	

Ordering Information

IAR-14 A B - CC

Code Definition	Giga Ethernet Port Number	PoE Identification	Cellular Generation
Option	**2**: 2 ports	**+** : PoE P.D. present at ETH1	**4G** : LTE

	Model Name	Description
Available Model	IAR-142-4G_US	IEEE 802.11 b/g/n 4G LTE Cellular Router with 2x10/100Base-T(X), US Band
	IAR-142-4G_EU	IEEE 802.11 b/g/n 4G LTE Cellular Router with 2x10/100Base-T(X), EU Band
	IAR-142+-4G_US	IEEE 802.11 b/g/n 4G LTE Cellular Router with 2x10/100Base-T(X), 1-port PoE P.D., US band
	IAR-142+-4G_EU	IEEE 802.11 b/g/n 4G LTE Cellular Router with 2x10/100Base-T(X), 1-port PoE P.D., EU band

Packing List

- IAR-142(+)-4G
- 2.4GHz Antenna x 1
- LTE Antenna x 2
- CD x 1
- Din-Rail Kit x 1
- 4-Pin Terminal Block x 1
- Quick Installation Guide x 1
- Wall-Mount Kit x 2
- Dust Cover x 2

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base (Magnetic) series
- DR-75 series : 75 Watts power supply
- WLAN RF Antenna (Omni-directional) series
- RF Cable series

IGAR-2062+-3G

IGAR-2062+-3G

Industrial IEEE 802.11 a/b/g/n Dual 3G Cellular Router with 2x10/100/1000Base-T(X)

Features

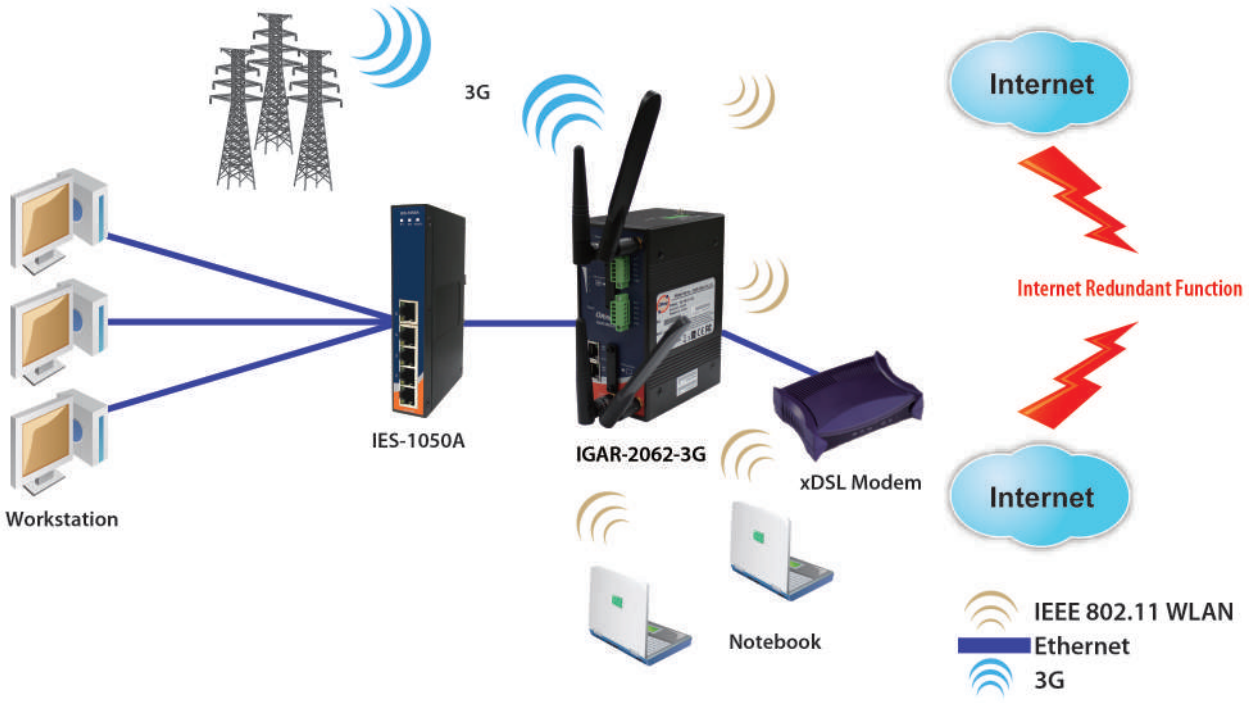
- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Provide 2 port 10/100/1000Base-T(X) port and 2 sim card slot
- **Support dual 3.5G HSDPA dial up backup and land balance**
- Provide HNAT enhance LAN to WAN routing performance
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Support STP(802.1D) for wireless redundancy
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem/Dial Up
- Support client operating mode
- IP table to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- 3G Modem signal information display (un-connecting status)
- Wireless connecting status monitoring
- Versatile modes & event alarm by e-mail
- 1KV isolation for PoE P.D. port
- Event Warning by Syslog, Email, SNMP Trap, Relay and Beeper
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

Introduction

IGAR-2062(+)-3G is a reliable IEEE 802.11 a/b/g/n WLAN VPN router with 2 ports 10/100/1000Base-T(X) router where ETH1 for LAN and ETH2 for WAN. It supports 802.1X and MAC filter for security control. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Modem (56K/GPRS/3G/3.5G Modem) dial up. In the mode of Modem dial up, it support both traditional 56K modem and GPRS/3G/3.5G modem by internal 3G module. Users can set up WLAN environment to fulfill demands of various applications rapidly by dual SIM dialing up cellular modems. In addition, IGAR-2062+-3G provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification. This feature extends the layout up to 100 meters. Therefore, IGAR-2062+-3G is one of the best solution for applications of wireless communication.

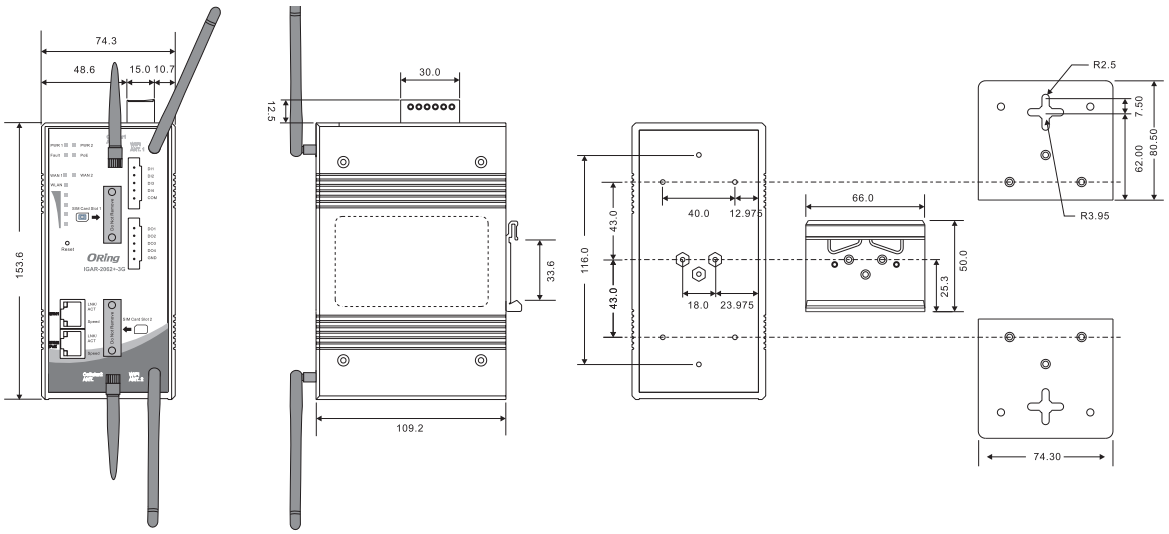
Application

In IGAR-2062+-3G , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. IGAR-2062+-3G also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.



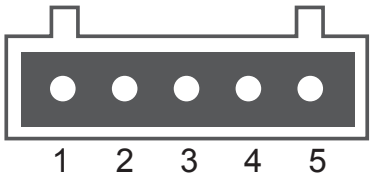
Multiple WAN Devices supported

Dimensions



Unit=mm

DI/DO Definition



Digital Input Pin Definition

PIN	1	2	3	4	5
Function	DI1	DI2	DI3	DI4	COM

Digital Output Pin Definition

PIN	1	2	3	4	5
Function	DO1	DO2	DO3	DO4	GND

Specifications

ORing AP Model	IGAR-2062+-3G
Physical Ports	
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2
5-Pin Terminal Block	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC
PoE P.D. Port	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 108 ohms min
Sim Card Slot	2
Cellular Interface	
Antenna Connector	2 x Reverse SMA Female
Cellualr Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA
Band Option	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz
WLAN Interface	
WAN Connection Type	Static/Dynamic IP ,PPPoE ,Modem/(56K/GPRS/3G/3.5G Modem) dial up
Antenna Connector	2 x Reverse SMA Female
Modulation	IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11a/g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM
Frequency Band	America / FCC: 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels) 5.180~5.240 GHz (4 channels)
Transmission Rate	802.11b: 1/2/5.5/11 Mbps 802.11a/g: 6/9/12/18/24/36/48/54 Mbps 802.11n(40MHz): UP to 300 Mbps
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7
Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7

Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption
Wireless Security	SSID broadcast disable
LED Indicators	
Power Indicator	3 x LEDs, PWR1(2)(PoE) / Ready: Red On : Power is on and booting up Green On : Power is on and functioning Normal
10/100/1000Base-T(X) RJ45 Port Indicator	2 x LEDs, Green for port Link/ Act at 1000Mbps Amber for port Link/ Act at 100Mbps.
WLAN LEDs	Green Solid On: RF on, Blink: data transmitting Green for WLAN Strength: 1<25%, 2<50%, 3<75%, 4<100%
WAN LEDs:	2 x LEDs, Green On : Power is on and functioning Normal
Fault	1 x LED, Red for Ethernet link down or power down indicator
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12-48VDC on 6-pin terminal block
Power Consumption (Typ.)	11 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present on terminal block
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93 x 4.3 x 6.05 inch.)
Weight (g)	1155 g
Environmental	
Storage Temperature	-40 to 85°C(-40 to 185°F)
Operating Temperature	-10 to 60°C(14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	3 years

Ordering Information

IGAR-ABCDE-FF

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation
Option	- **1:** One SIM - **2:** Dual SIM	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	- **2**: 2 ports	**+ :** PoE P.D. present at ETH2	**3G :**UMTS

	Model Name	Description
Available Model	IGAR-2062+-3G_US	Industrial IEEE 802.11 a/b/g/n Dual 3G Cellular router with 2x10/100/1000Base-T(X), 1-port PoE P.D., US band
	IGAR-2062+-3G_EU	Industrial IEEE 802.11 a/b/g/n Dual 3G Cellular router with 2x10/100/1000Base-T(X), 1-port PoE P.D., EU band

Packing List

- IGAR-2062+-3G
- DIN-Rail Kit
- Wall-mount Kit
- ORing Tool CD
- Quick Installation Guide
- 2.4GHz/5GHz Antenna
- 3G Antenna
- 5-Pin Terminal Block
- Dust Cover
- 6-Pin Terminal Block

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- WLAN RF Antenna (Omni-directional) series
- RF Antenna Base (Magnetic) series
- RF Cable series

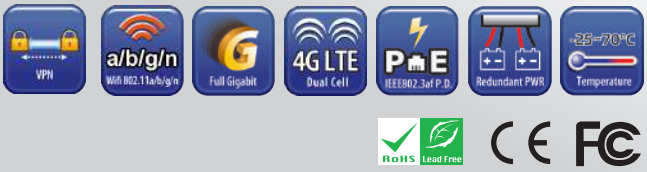
IGAR-2062+-4G

IGAR-2062+-4G

Industrial IEEE 802.11 a/b/g/n Dual 4G LTE Cellular Router with 2x10/100/1000Base-T(X)

Features

- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Provide 2 port 10/100/1000Base-T(X) port and 2 sim card slot
- **Support dual 4G LTE dial up backup and load blance**
- Provide HNAT enhance LAN to WAN routing performance
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Support STP(802.1D) for wireless redundancy
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem/Dial Up
- Support client operating mode
- IP table to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP VPN, IPSEC VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- 3G Modem signal information display (un-connecting status)
- Wireless connecting status monitoring
- Versatile modes & event alarm by e-mail
- 1KV isolation for PoE P.D. port
- Event Warning by Syslog, Email, SNMP Trap, Relay and Beeper
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

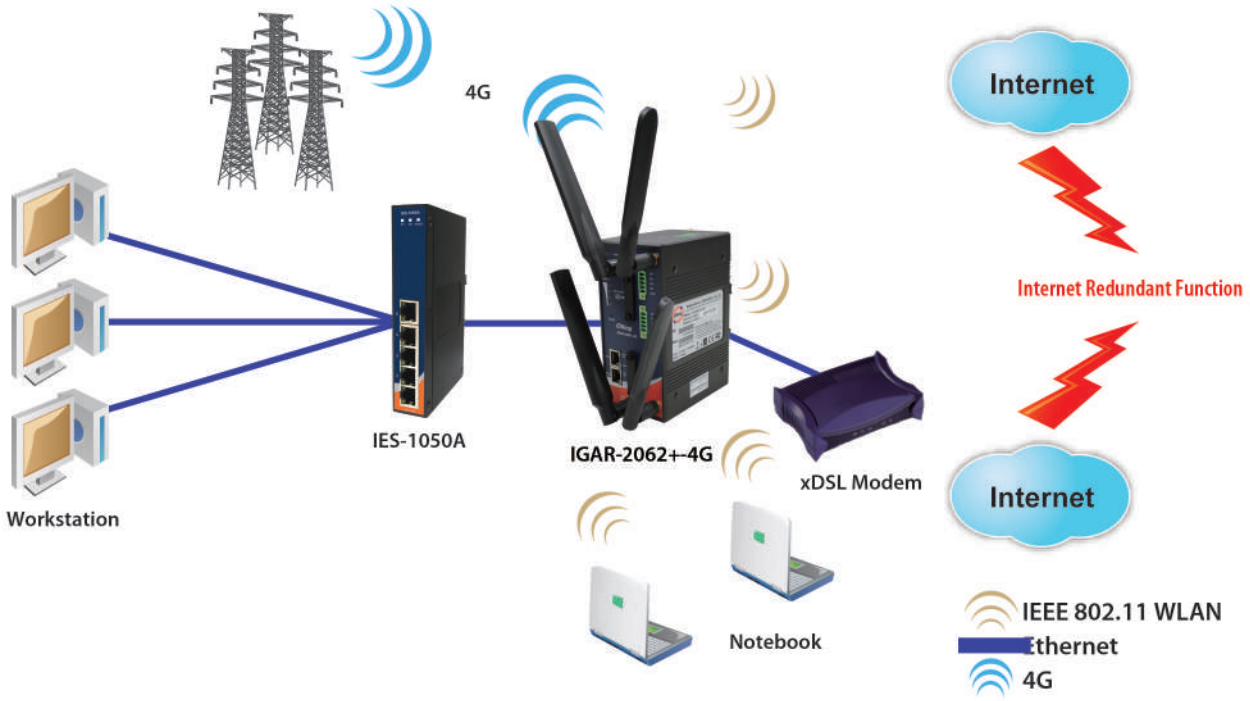


Introduction

IGAR-2062+-4G is a reliable IEEE 802.11 a/b/g/n WLAN VPN router with 2 ports 10/100/1000Base-T(X) router where ETH1 for LAN and ETH2 for WAN. It supports 802.1X and MAC filter for security control. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Modem dial up. In the mode of Modem dial up, it support GPRS/3G/3.5G/LTE modem by internal cellular module. Users can set up WLAN environment to fulfill demands of various applications rapidly by dual SIM dialing up cellular modems. In addition, IGAR-2062+-4G also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification. This feature extends the layout up to 100 meters. Therefore, IGAR-2062+-4G is one of the best solution for applications of wireless communication.

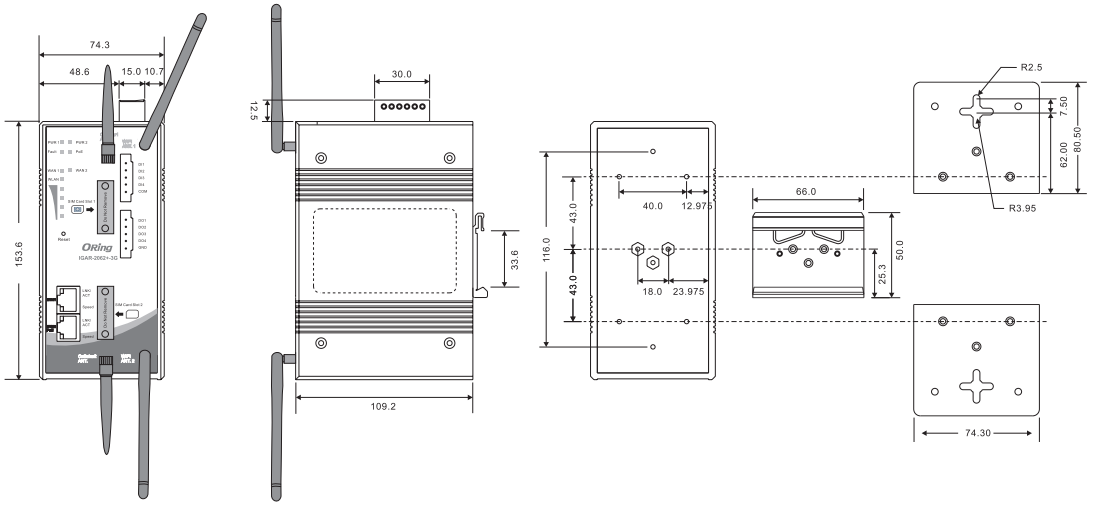
Application

In IGAR-2062+-4G , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. IGAR-2062+-4G also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.



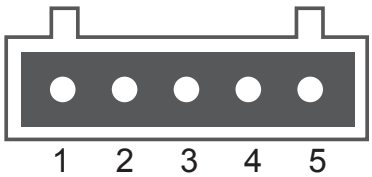
Multiple WAN Devices supported

Dimensions



Unit=mm

DI/DO Definition



Digital Input Pin Definition

PIN	1	2	3	4	5
Function	DI1	DI2	DI3	DI4	COM

Digital Output Pin Definition

PIN	1	2	3	4	5
Function	DO1	DO2	DO3	DO4	GND

Specifications

ORing AP Model	IGAR-2062+-4G
Physical Ports	
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2
5-Pin Terminal Block	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC
PoE P.D. Port	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min
Sim Card Slot	2
Cellular Interface	
Antenna Connector	2 x SMA Female
Cellualr Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA /HSPA+ /LTE
Band Option	**America(US grade)** LTE: 1900(B2)/1700(B4)/850(B5)/700(B13)/700(B17)/1900(B25) MHz CDMA/EVDO rev. a/b: 800/1900 UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 850/900/1700/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz **Europe(EU grade)** LTE: 2100(B1)/1800(B3)/2600(B7)/900(B8)/800(B20) MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/900/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz
WLAN Interface	
Antenna Connector	2 x Reverse SMA Female
Modulation	IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11a/g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM
Frequency Band	America / FCC: 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels) 5.180~5.240 GHz (4 channels)
Transmission Rate	802.11b: 1/2/5.5/11 Mbps 802.11a/g: 6/9/12/18/24/36/48/54 Mbps 802.11n(40MHz): UP to 300 Mbps
Transmit Power	802.11a: 12dBm ± 1.5dBm@802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7
Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption
Wireless Security	SSID broadcast disable
LED Indicators	
Power Indicator	3 x LEDs, PWR1(2)(PoE) / Ready: Red On : Power is on and booting up Green On : Power is on and functioning Normal

10/100/1000Base-T(X) RJ45 Port Indicator	2 x LEDs, LNK/ACT:Green for port Act. Speed: Green for port Link at 1000Mbps Amber for port Link at 100Mbps. Off for port Link at 10Mbps.
WLAN LEDs	Green Solid On: RF on, Blink: data transmitting Green for WLAN Strength: 1<25%, 2<50%, 3<75%, 4<100%
WAN LEDs:	2 x LEDs, Green On : Power is on and functioning Normal
Fault	1 x LED, Red for Ethernet link down or power down indicator
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12-48VDC on 6-pin terminal block
Power Consumption (Typ.)	15 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93 x 4.3 x 6.05 inch.)
Weight (g)	1155 g
Environmental	
Storage Temperature	-40 to 85°C(-40 to 185°F)
Operating Temperature	25 to 70°C (-13 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	5 years

Ordering Information

IGAR-ABCDE-FF

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation
Option	- **1:** One SIM - **2:** Dual SIM	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	- **2**: 2 ports	**+ :** PoE P.D. present at ETH2	**4G :**LTE

	Model Name	Description
Available Model	IGAR-2062+-4G_US	Industrial IEEE 802.11 a/b/g/n Dual 4G LTE Cellular router with 2x10/100/1000Base-T(X), 1-port PoE P.D., US band
	IGAR-2062+-4G_EU	Industrial IEEE 802.11 a/b/g/n Dual 4G LTE Cellular router with 2x10/100/1000Base-T(X), 1-port PoE P.D., EU band

Packing List

- IGAR-2062+-4G
- Wall-mount Kit
- Quick Installation Guide
- 2.4GHz/5GHz Antenna
- LTE Antenna
- 5-Pin Terminal Block
- Dust Cover
- 6-Pin Terminal Block
- DIN-Rail Kit
- ORing Tool CD

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- WLAN RF Antenna (Omni-directional) series
- RF Antenna Base (Magnetic) series
- RF Cable series

IGAR-1662+-3G

IGAR-1662+-3G

Industrial IEEE Dual 802.11 a/b/g/n 3G Cellular Router with 2x10/100/1000Base-T(X)

Features

- **High Speed Air Connectivity: Dual RF** in IEEE 802.11 a/b/g/n WLAN interface support up to 300Mbps link speed
- Dual RF for redundant wireless communication
- Provide 2 port 10/100/1000Base-T(X) port and 1 sim card slot
- **3.5G HSDPA Modem dial up included**
- Provide HNAT enhance LAN to WAN routing performance
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem/Dial Up
- Support client operating mode
- IP table to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP, IPSEC, VPN)
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- Versatile modes & event alarm by e-mail
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- Event Warning by Syslog, Email, SNMP Trap, Relay and Beeper
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

Introduction

IGAR-1662+-3G is a reliable dual RF in IEEE 802.11 a/b/g/n WLAN VPN router with 2 ports 10/100/1000Base-T(X) router where ETH1 for LAN and ETH2 for WAN. It supports 802.1X and MAC filter for security control. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Modem (GPRS/3G/3.5G Modem) dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modems. In addition, IGAR-1662+-3G provides PoE P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE specification. This feature extends the layout up to 100 meters. Therefore, IGAR-1662+-3G is one of the best solution for applications of wireless communication.

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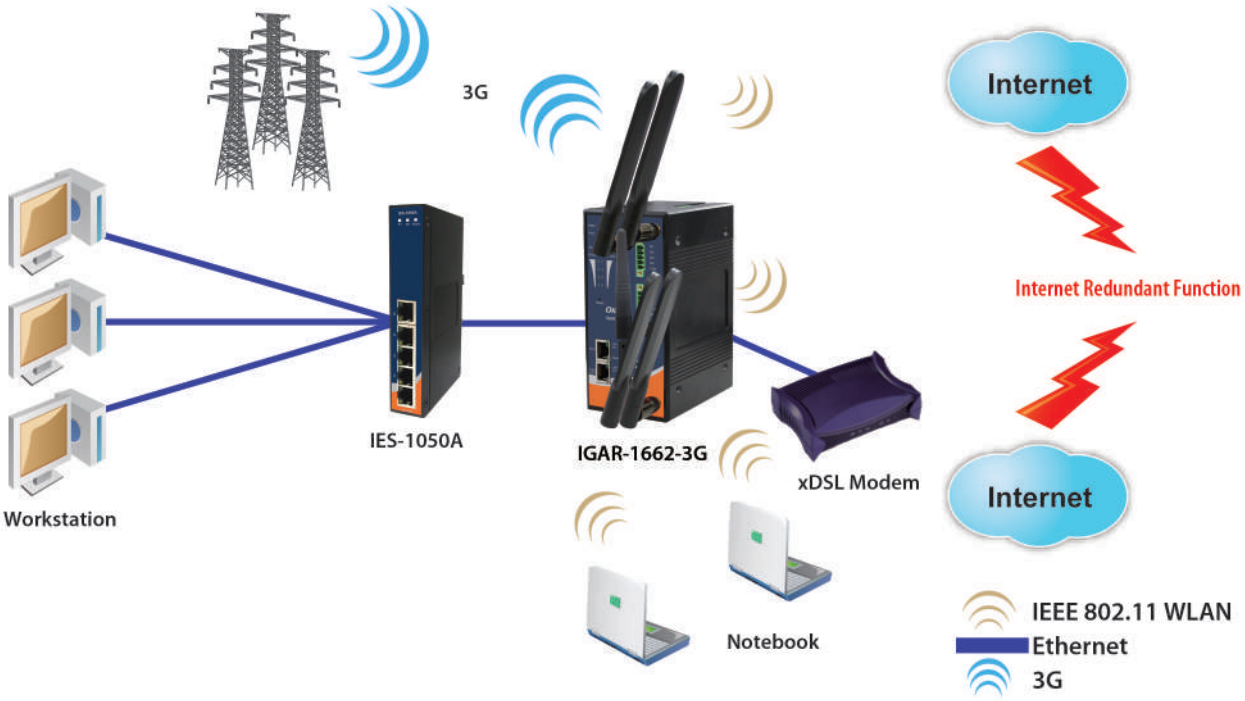
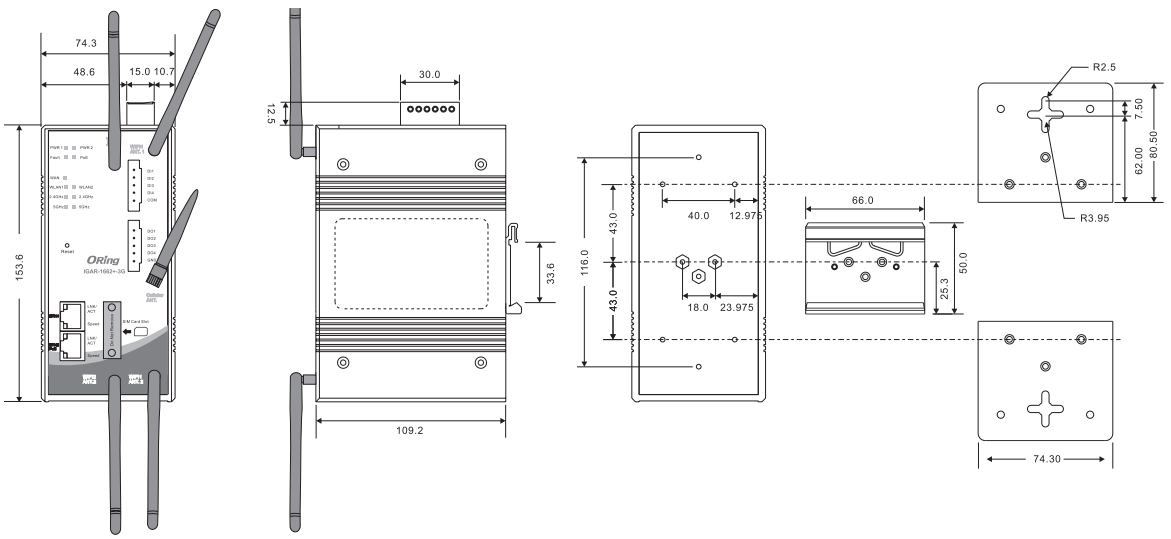


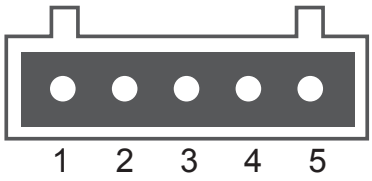
Multiple WAN Devices supported

Dimensions



Unit=mm

DI/DO Definition



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Digital Output Pin Definition

PIN	1	2	3	4	5
Function	DO1	DO2	DO3	DO4	GND

Specifications

ORing AP Model	IGAR-1662+-3G
Physical Ports	
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2
5-Pin Terminal Block	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC
PoE P.D. Port	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 108 ohms min
Sim Card Slot	1
Cellular Interface	
Antenna Connector	1x Reverse SMA Female
Cellualr Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA
Band Option	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz
WLAN Interface	
Antenna Connector	4 x Reverse SMA Female
Modulation	IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11a/g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM
Frequency Band	America / FCC: 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels) 5.180~5.240 GHz (4 channels)
Transmission Rate	802.11b: 1/2/5.5/11 Mbps 802.11a/g: 6/9/12/18/24/36/48/54 Mbps 802.11n(40MHz): UP to 300 Mbps
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7

Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption
Wireless Security	SSID broadcast disable
LED Indicators	
Power Indicator	3 x LEDs, PWR1(2)(PoE) / Ready: Red On : Power is on and booting up Green On : Power is on and functioning Normal
10/100/1000Base-T(X) RJ45 Port Indicator	2 x LEDs, Green for port Link/ Act at 1000Mbps Amber for port Link/ Act at 100Mbps.
WLAN LEDs	2 x LEDs, Green Solid On: RF on, Blink: data transmitting 2 x LEDs, Green for WLAN work on 2.4GHz 2 x LEDs, Green for WLAN work on 5GHz
WAN LEDs:	Green On : Power is on and functioning Normal
Fault	1 x LED, Red for Ethernet link down or power down indicator
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Redundant Input Power	Dual DC inputs. 12-48VDC on 6-pin terminal block
Power Consumption (Typ.)	15Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93 x 4.3 x 6.05 inch.)
Weight (g)	1190 g
Environmental	
Storage Temperature	-40 to 85°C(-40 to 185°F)
Operating Temperature	-10 to 60°C(14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	3 years

Ordering Information

IGAR-ABCDE-FF

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation
Option	- **1:** One SIM - **2:** Dual SIM	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	- **2**: 2 ports	**+ :** PoE P.D. present at ETH2	**3G :**UMTS

	Model Name	Description
Available Model	IGAR-1662+-3G_US	Industrial dual IEEE 802.11 a/b/g/n 3G Cellular router with 2x10/100/1000Base-T(X), 1-port PoE P.D., US band
	IGAR-1662+-3G_EU	Industrial dual IEEE 802.11 a/b/g/n 3G Cellular router with 2x10/100/1000Base-T(X), 1-port PoE P.D., EU band

Packing List

- IGAR-1662+-3G
- DIN-Rail Kit
- Wall-mount Kit
- ORing Tool CD
- Quick Installation Guide
- 2.4GHz/5GHz Antenna
- 3G Antenna
- 5-Pin Terminal Block
- Dust Cover
- 6-Pin Terminal Block

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply
- WLAN RF Antenna (Omni-directional) series
- RF Antenna Base (Magnetic) series
- RF Cable series

IGAR-1062(+)-3G

IGAR-1062(+)-3G

Industrial IEEE 802.11 a/b/g/n 3G Cellular Router with 2x10/100/1000Base-T(X)

Features

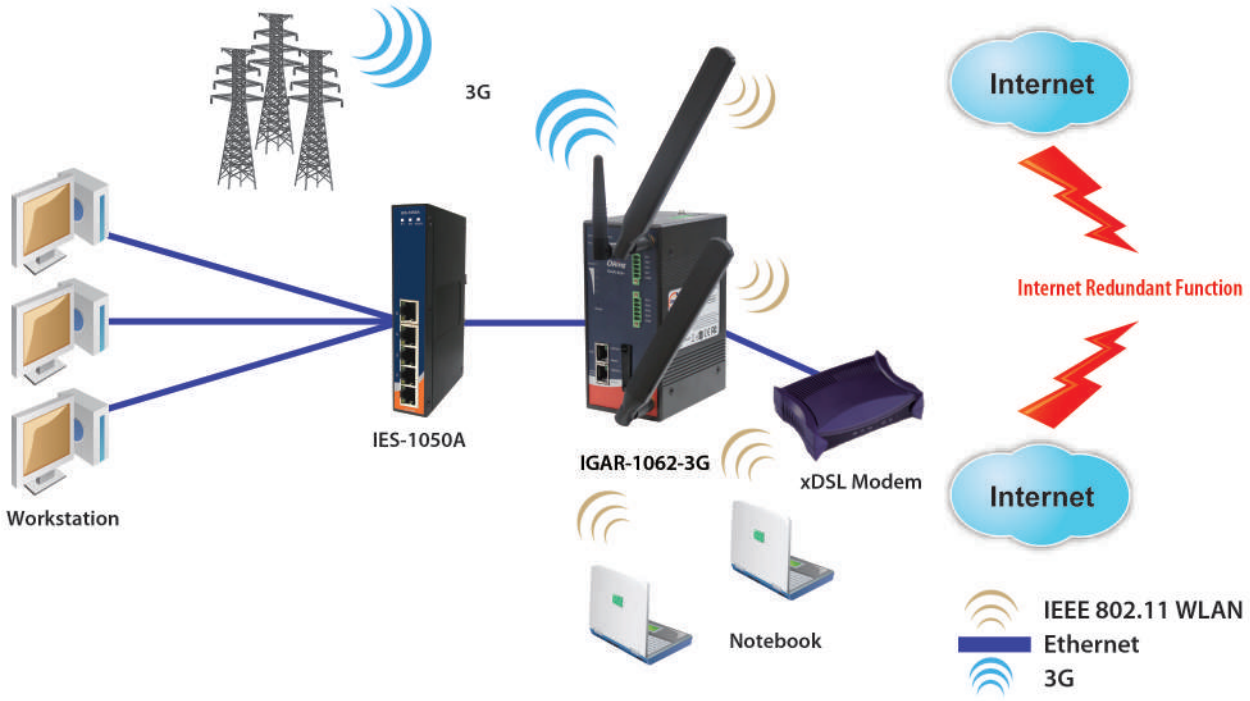
- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Provide 2 port 10/100/1000Base-T(X) port and 1 sim card slot
- 3.5G HSDPA Modem dial up included
- Provide HNAT enhance LAN to WAN routing performance
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem/Dial Up
- Support client operating mode
- IP table to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP, IPSEC, VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- 3G Modem signal information display (un-connecting status)
- Wireless connecting status monitoring
- Versatile modes & event alarm by e-mail
- 1KV isolation for PoE P.D. port of IGAR-1062+-3G
- Event Warning by Syslog, Email, SNMP Trap, Relay and Beeper
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

Introduction

IGAR-1062(+)-3G is a reliable IEEE 802.11 a/b/g/n WLAN VPN router with 2 ports 10/100/1000Base-T(X) router where ETH1 for LAN and ETH2 for WAN. It supports 802.1X and MAC filter for security control. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Modem (56K/GPRS/3G/3.5G Modem) dial up. In the mode of Modem dial up, it support both traditional 56K modem and GPRS/3G/3.5G modem by internal 3G module. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modems. In addition, IGAR-1062+-3G also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification. This feature extends the layout up to 100 meters. Therefore, IGAR-1062(+)-3G is one of the best solution for applications of wireless communication.

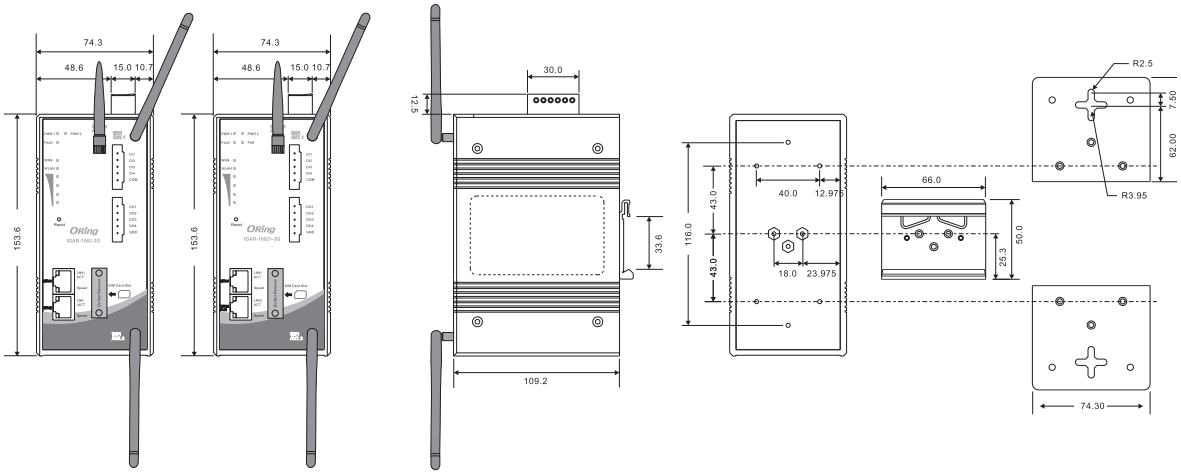
Application

In IGAR-1062(+)-3G , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. IGAR-1062(+)-3G also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.



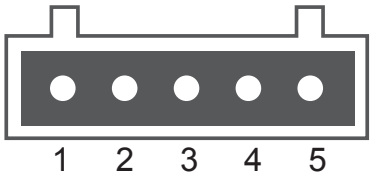
Multiple WAN Devices supported

Dimensions



Unit=mm

DI/DO Definition



Digital Input Pin Definition

PIN	1	2	3	4	5
Function	DI1	DI2	DI3	DI4	COM

Digital Output Pin Definition

PIN	1	2	3	4	5
Function	DO1	DO2	DO3	DO4	GND

Specifications

ORing AP Model	IGAR-1062-3G	IGAR-1062+-3G
Physical Ports		
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
5-Pin Terminal Block	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC	
PoE P.D. Port	-	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min
Cellular Interface		
Antenna Connector	1 x Reverse SMA Female	
Cellualr Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA	
Band Option	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz	
WLAN Interface		
Antenna Connector	2 x Reverse SMA Female	
Modulation	IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11a/g:OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America / FCC: 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels) 5.180~5.240 GHz (4 channels)	
Transmission Rate	802.11b: 1/2/5.5/11 Mbps 802.11a/g: 6/9/12/18/24/36/48/54 Mbps 802.11n(40MHz): UP to 300 Mbps	
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7	802.11b: 17dBm ± 1.5dBm@11Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7
Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7	
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	

Wireless Security	SSID broadcast disable	
LED Indicators		
Power Indicator	3 x LEDs, PWR1(2)(PoE) / Ready: Red On : Power is on and booting up Green On : Power is on and functioning Normal	
10/100/1000Base-T(X) RJ45 Port Indicator	2 x LEDs, Green for port Link/ Act at 1000Mbps Amber for port Link/ Act at 100Mbps.	
WLAN LEDs	Green Solid On: RF on, Blink: data transmitting Green for WLAN Strength: 1<25%, 2<50%, 3<75%, 4<100%	
WAN LEDs:	Green On : Power is on and functioning Normal	
Fault	1 x LED, Red for Ethernet link down or power down indicator	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input Power	Dual DC inputs. 12-48VDC on 6-pin terminal block	
Power Consumption (Typ.)	9 Watts	
Overload Current Protection	Present	
Reverse Polarity Protection	Present on terminal block	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93 x 4.3 x 6.05 inch.)	
Weight (g)	1150 g	1155 g
Environmental		
Storage Temperature	-40 to 85°C(-40 to 185°F)	
Operating Temperature	-10 to 60°C(14 to 140°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	3 years	

Ordering Information

IGAR-ABCDE-FF

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation
Option	- **1:** One SIM - **2:** Dual SIM	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	- **2**: 2 ports	**+ :** PoE P.D. present at ETH2	**3G :**UMTS

	Model Name	Description
Available Model	IGAR-1062-3G_US	Industrial IEEE 802.11 a/b/g/n 3G Cellular router with 2x10/100/1000Base-T(X), US band
	IGAR-1062-3G_EU	Industrial IEEE 802.11 a/b/g/n 3G Cellular router with 2x10/100/1000Base-T(X), EU band
	IGAR-1062+-3G_US	Industrial IEEE 802.11 a/b/g/n 3G Cellular router with 2x10/100/1000Base-T(X), 1-port PoE P.D., US band
	IGAR-1062+-3G_EU	Industrial IEEE 802.11 a/b/g/n 3G Cellular router with 2x10/100/1000Base-T(X), 1-port PoE P.D., EU band

Packing List

- IGAR-1062(+)-3G
- DIN-Rail Kit
- Wall-mount Kit
- Antenna
- ORing Tool CD
- Quick Installation Guide
- 2.4GHz/5GHz Antenna
- 3G Antenna
- 5-Pin Terminal Block
- Dust Cover
- 6-Pin Terminal Block

Optional Accessories (Can be purchased separately)

- DR-45 series, 45W DIN-Rail power supply
- DR-75 series, 75W DIN-Rail power supply
- DR-120 series, 120W DIN-Rail power supply
- WLAN RF Antenna (Omni-directional) series
- RF Antenna Base (Magnetic) series
- RF Cable series

IGAR-1062+-4G

IGAR-1062+-4G

Industrial IEEE 802.11 a/b/g/n 4G LTE Cellular Router with 2x10/100/1000Base-T(X)

Features

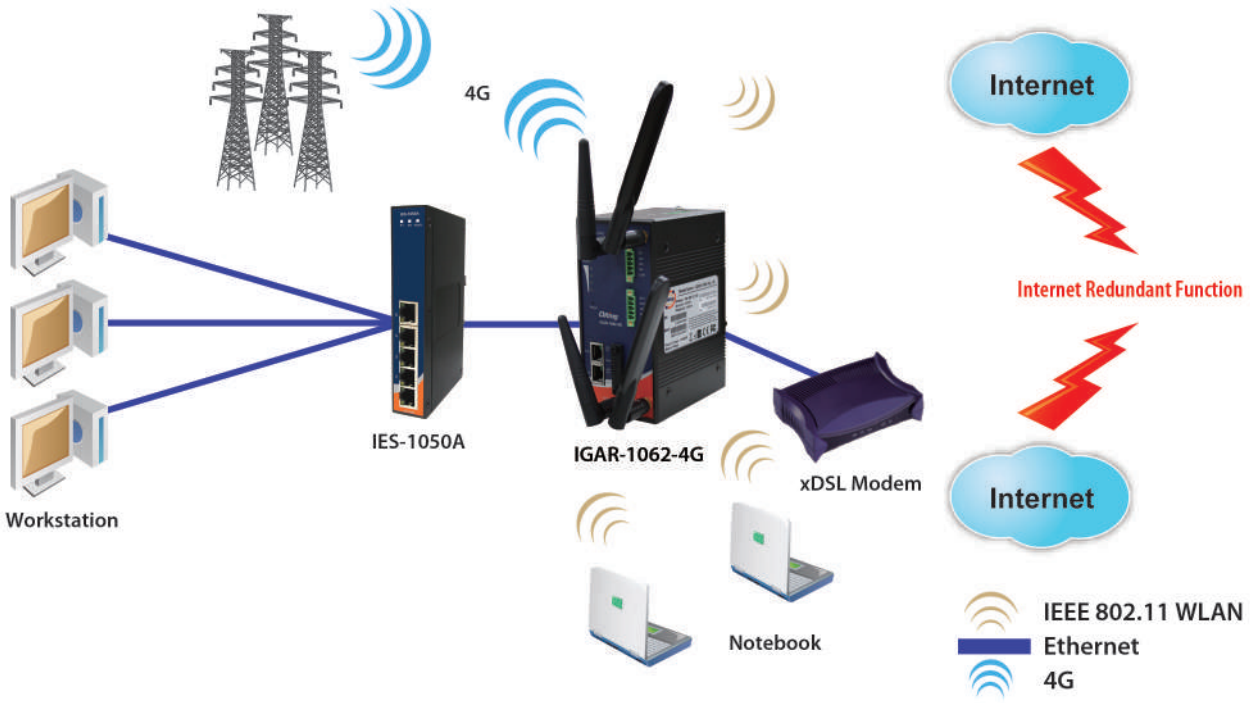
- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Provide 2 port 10/100/1000Base-T(X) port and 1 sim card slot
- 4G LTE Modem dial up included
- Provide HNAT enhance LAN to WAN routing performance
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem/Dial Up
- Support client operating mode
- IP table to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP, IPSEC, VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Wireless connecting status monitoring
- Versatile modes & event alarm by e-mail
- 1KV isolation for PoE P.D.
- Event Warning by Syslog, Email, SNMP Trap, Relay and Beeper
- Rigid IP-30 housing design
- DIN-Rail and Wall-mount enabled

Introduction

IGAR-1062+-4G is a reliable IEEE 802.11 a/b/g/n WLAN VPN router with 2 ports 10/100/1000Base-T(X) router where ETH1 for LAN and ETH2 for WAN. It supports 802.1X and MAC filter for security control. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Modem (GPRS/3G/3.5G /LTE Modem) dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modems. In addition, IGAR-1062+-4G provides PoE P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE specification. This feature extends the layout up to 100 meters. Therefore, IGAR-1062+-4G is one of the best solution for applications of wireless communication.

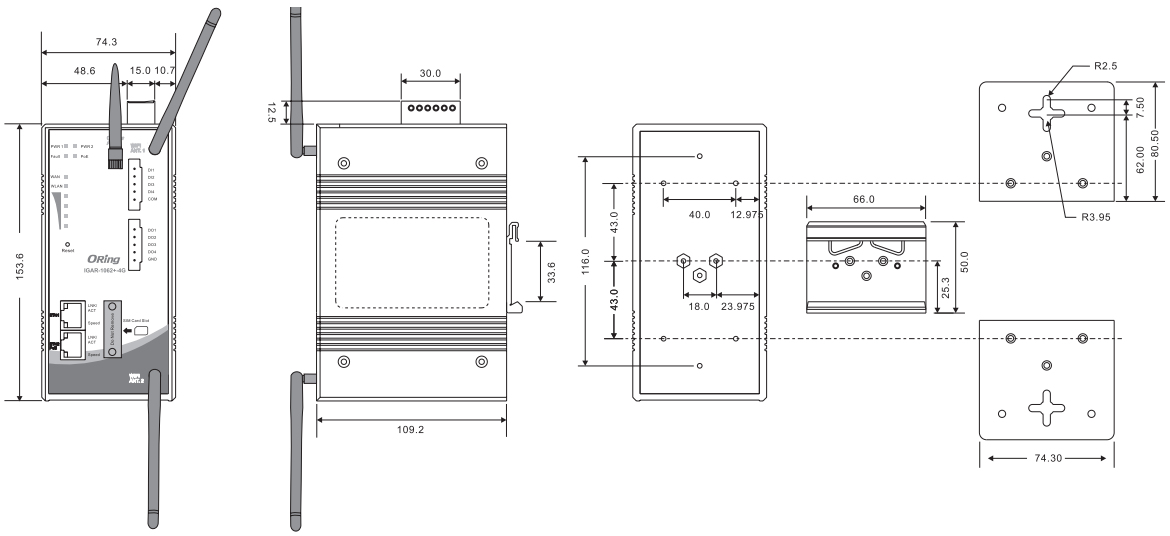
Application

In IGAR-1062+-4G , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. IGAR-1062+-4G also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.



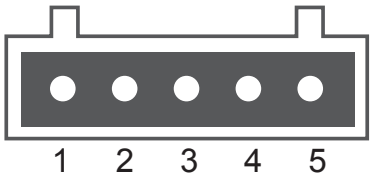
Multiple WAN Devices supported

Dimensions



Unit=mm

DI/DO Definition



Digital Input Pin Definition

PIN	1	2	3	4	5
Function	DI1	DI2	DI3	DI4	COM

Digital Output Pin Definition

PIN	1	2	3	4	5
Function	DO1	DO2	DO3	DO4	GND

Specifications

ORing AP Model	IGAR-1062+-4G
Physical Ports	
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2
5-Pin Terminal Block	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC
PoE P.D. Port	Present at ETH2 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 10^8 ohms min
Sim Card Slot	1
Cellular Interface	
Antenna Connector	1 x Reverse SMA Female
Cellualr Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA /HSPA+ /LTE
Band Option	**America(US grade)** LTE: 1900(B2)/1700(B4)/850(B5)/700(B13)/700(B17)/1900(B25) MHz CDMA/EVDO rev. a/b: 800/1900 UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 850/900/1700/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz **Europe(EU grade)** LTE: 2100(B1)/1800(B3)/2600(B7)/900(B8)/800(B20) MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/900/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz
WLAN Interface	
Antenna Connector	2 x Reverse SMA Female
Modulation	IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM IEEE802.11a/g: OFDM
Frequency Band	America / FCC: 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels) 5.180~5.240 GHz (4 channels)
Transmission Rate	802.11b: 1/2/5.5/11 Mbps 802.11n(40MHz): UP to 300 Mbps 802.11a/g: 6/9/12/18/24/36/48/54 Mbps
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7

Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7	802.11b : -85dBm ± 2dBm@11Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA-PSK (256-bit key pre-shared key supported) TKIP encryption	WPA/WPA2 :802.11i(WEP and AES encryption) 802.1X Authentication supported
Wireless Security	SSID broadcast disable	
LED Indicators		
Power Indicator	3 x LEDs, PWR1(2)(PoE) / Ready: Red On : Power is on and booting up Green On : Power is on and functioning Normal	
10/100/1000Base-T(X) RJ45 Port Indicator	2 x LEDs, LNK/ACT:Green for port Act. Speed: Green for port Link at 1000Mbps Amber for port Link at 100Mbps. Off for port Link at 10Mbps	
WLAN LEDs	Green Solid On: RF on, Blink: data transmitting Green for WLAN Strength: 1<25%, 2<50%, 3<75%, 4<100%	
WAN LEDs:	Green On : Power is on and functioning Normal	
Fault	1 x LED, Red for Ethernet link down or power down indicator	
Fault Contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Redundant Input Power	Dual DC inputs. 12-48VDC on 6-pin terminal block	
Power Consumption (Typ.)	11 Watts	
Overload Current Protection	Present	
Reverse Polarity Protection	Present on terminal block	
Physical Characteristics		
Enclosure	IP-30	
Dimensions (W x D x H)	74.3(W) x 109.2(D) x 153.6(H) mm (2.93 x 4.3 x 6.05 inch.)	
Weight (g)	1155 g	
Environmental		
Storage Temperature	-40 to 85°C(-40 to 185°F)	
Operating Temperature	-25 to 70°C(-13 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

Ordering Information

IGAR-ABCDE-FF

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation
Option	- **1:** One SIM - **2:** Dual SIM	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	- **1:** 802.11 b/g - **2:** 802.11 a - **3:** 802.11 a/b/g - **4:** 802.11 b/g/n - **5:** 802.11 a/n - **6:** 802.11 a/b/g/n	- **2**: 2 ports	**+ :** PoE P.D. present at ETH2	**4G :**LTE

	Model Name	Description
Available Model	IGAR-1062+-4G_US	Industrial IEEE 802.11 a/b/g/n 4G LTE Cellular router with 2x10/100/1000Base-T(X), 1-port PoE P.D., US band
	IGAR-1062+-4G_EU	Industrial IEEE 802.11 a/b/g/n 4G LTE Cellular router with 2x10/100/1000Base-T(X), 1-port PoE P.D., EU band

Packing List

- IGAR-1062+-4G
- DIN-Rail Kit
- Wall-mount Kit
- ORing Tool CD
- Quick Installation Guide
- 2.4GHz/5GHz Antenna
- LTE Antenna
- 5-Pin Terminal Block
- Dust Cover
- 6-Pin Terminal Block

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply
- WLAN RF Antenna (Omni-directional) series
- RF Antenna Base (Magnetic) series
- RF Cable series

TGAR-2062-3G-M12 series

TGAR-2062-3G-M12 series

Industrial EN50155 IEEE 802.11 a/b/g/n Dual 3G Cellular Router With 2x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- **Support dual 3.5G HSDPA dial up backup and load balance**
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem Dial Up
- IP table configurable to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Support DHCP forwarding through PPTP function
- Wireless connecting status monitoring
- Event Warning by Syslog, Email, SNMP Trap and Relay output
- Ultra rugged enclosure for toughest industrial usages
- Wall mounting enabled

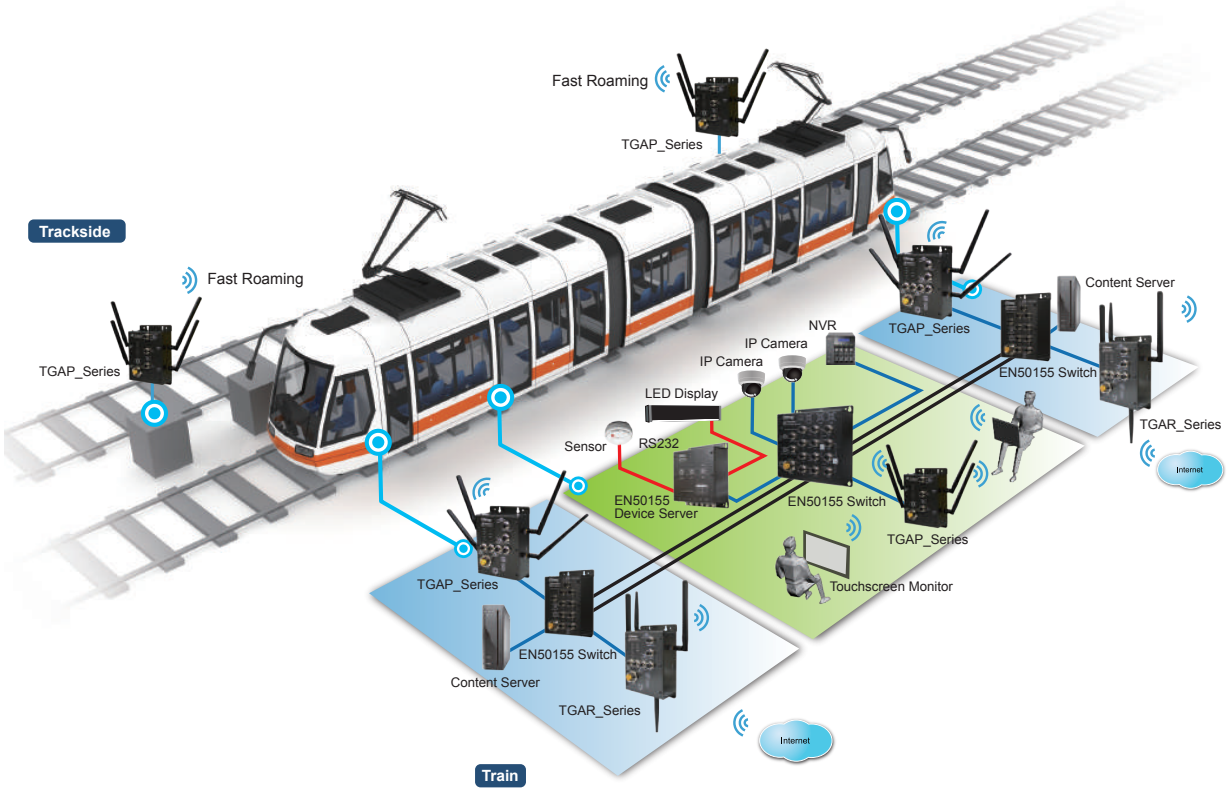
RoHS Lead free P.D. PoE GPS EN50155 3.5G Dual Cell a/b/g/n Wifi 802.11a/b/g/n Full Gigabit Redundant PWR VPN -25~70°C Temperature

Introduction

ORing's Transporter™ series cellular router is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TGAR-2062-3G-M12 is reliable IEEE802.11 a/b/g/n router with 2 ports LAN which is fully compliant with EN50155 certification. It supports 802.1X and MAC filter for security control. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Cellular modem dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modem. TGAR-2062-3G-M12 EN50155 cellular VPN router use M-series connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, TGAR-2062+-3G-M12 also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification and TGAR-2062+-3GS-M12 supports GPS function. Therefore, TGAR-2062-3G-M12 is one of the most reliable choices for rolling stock applications on the wireless network.

Application

In TGAR-2062-3G-M12 , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. TGAR-2062-3G-M12 also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.

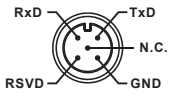


Pin Definition

Relay Output

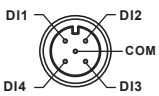
1A@24VDC

Console

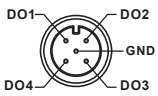


RS-232, 115200bps, 8, N, 1

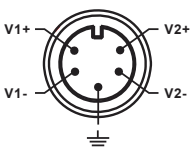
DI



DO



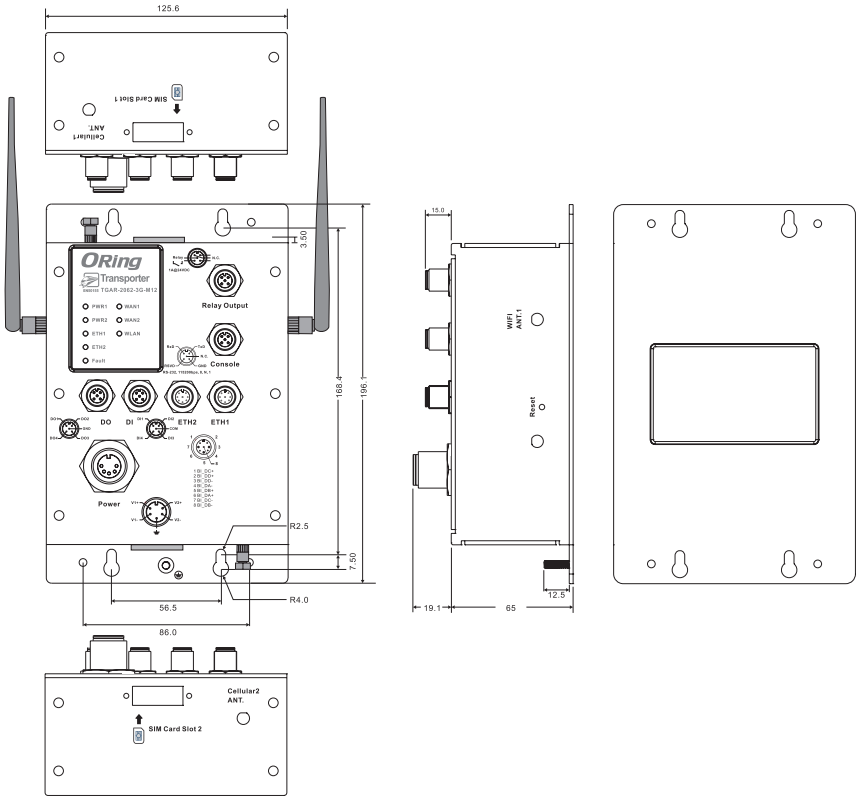
Power



Ethernet

1 BI_DC+
2 BI_DD+
3 BI_DD-
4 BI_DA-
5 BI_DB+
6 BI_DA+
7 BI_DC-
8 BI_DB-

Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAR-2062-3G-M12	TGAR-2062+-3G-M12	TGAR-2062+-3GS-M12
Physical Ports			
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	**2**	**2**(Present at ETH2 Fully compliant with IEEE 802.3af PoE P.D)	
DIDO port in M12 (5-pin A-coding)	**2(DI x 4** and **DO x 4) :** Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC		
RS-232 Console port in M12(5-pin A-coding)	**115200, 8 ,N ,1**		
Relay port in M12 (5-pin A-coding)	**1A@24VDC**		
SIM Card Slot	**2**		
GPS (-3GS model only)			
Antenna Connector	1 x External reverse SMA antenna connector		
Frequency	1575.42MHz		
WLAN Interface			
Antenna Connector	2 x Reverse SMA Female		
Radio Frequency Type	DSSS, OFDM		
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM		
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)		

Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps		
Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11b: 18dBm ± 1.5dBm 802.11g: 15dBm ± 1.5dBm 802.11gn HT20: 13dBm ± 1.5dBm@150Mbps 802.11gn HT40: 12dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 12dBm ± 1.5dBm@300Mbps		
Receiver Sensitivity	802.11a: -68dBm ±2dBm@54Mbps 802.11b: -85dBm ±2dBm@11Mbps 802.11g: -68dBm ±2dBm@54Mbps 802.11gn HT20: -68dBm ±2dBm@150Mbps 802.11gn HT40: -68dBm ±2dBm@300Mbps 802.11an HT20: -68dBm ±2dBm@150Mbps 802.11an HT40: -68dBm ±2dBm@300Mbps		
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption		
Wireless Security	SSID broadcast disable		
Cellular Interface			
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA		
Antenna Connector	2 x Reverse SMA Female		
Band Option	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz		
Protocol Support			
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE		
LED Indicators			
Power Indicator	2 x LEDs, PW1:Green for DC Power on PW2:Green for DC Power on or power by PoE		
10/100/1000Base-T(X) port Indicator	2 x LEDs, Green for port Link/Act		
WLAN LED	1 x LED, Green for WLAN Link/Act		
WAN LED	2 x LEDs, Green for functioning normal		
Fault Indicator	1 x LED, Red for Ethernet link down or power down indicator		
Fault Contact			
Relay	Relay output to carry capacity of 1A at 24VDC		
Power			
Redundant Input Power	Dual Power Inputs. 12~48 VDC on M23 connector (24 VDC Typ.)		
Power Consumption (Typ.)	13 Wait	14 Wait	14.2 Wait
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristic			
Enclosure	IP-40		
Dimension (W x D x H)	125.6(W) x 65(D) x 196.1(H) mm (4.94 x 2.55 x 7.72 inch.)		
Weight (g)	1030g	1035g	1035g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-25 to 70°C (-13 to 158°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory Approvals			
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)		

EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6, EN61373
Rail Traffic	EN50155
Cooling	EN60068-2-1
Dry Heat	EN60068-2-2
Safety	EN60950-1
Warranty	5 years

Ordering Information

TGAR-ABCDE-FFG-M12

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless- Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation	GPS Function
Option	**1**: One SIM **2**: Dual SIM	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**2**: 2 ports	**-"+"**: PoE P.D. present at ETH2	**3G** :UMTS	**S**:GPS

	Model Name	Description
Available Model	TGAR-2062-3G-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, US band
	TGAR-2062+-3G-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, US band
	TGAR-2062+-3GS-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 3G cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, US band
	TGAR-2062-3G-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, EU band
	TGAR-2062+-3G-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, EU band
	TGAR-2062+-3GS-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 3G cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, EU band

Packing List

- TGAR-2062(+)-3G(S)-M12 x 1
- 2.4GHz/5GHz Antenna x 2
- CD x 1
- 3G Antenna x 2
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base series
- DR-75 series : 75 Watts power supply
- WLAN RF Antenna series
- RF Cable series

TGAR-2062-4G-M12 series

TGAR-2062-4G-M12 series

Industrial EN50155 IEEE 802.11 a/b/g/n Dual 4G LTE Cellular Router With 2x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- **Support dual 4G LTE dial up backup and load balance**
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem Dial Up
- IP table configurable to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Support DHCP forwarding through PPTP function
- Wireless connecting status monitoring
- Provide Digital Input and Digital Output
- Event Warning by Syslog, Email, SNMP Trap and Relay output
- Ultra rugged enclosure for toughest industrial usages
- Wall mounting enabled

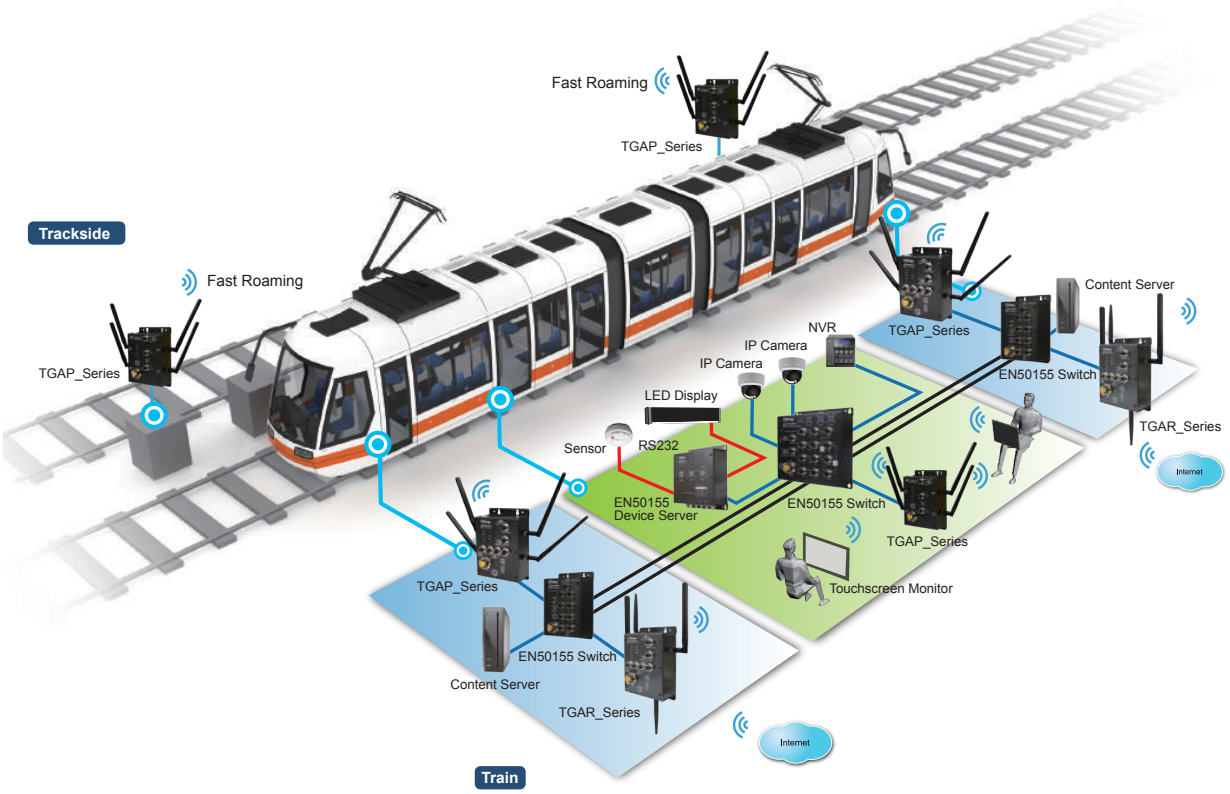
RoHS Lead Free CE FC PoE P.D. GPS EN50155 4G LTE Dual Cell a/b/g/n Wifi 802.11a/b/g/n Full Gigabit Redundant PWR VPN -25~70°C Temperature

Introduction

ORing's Transporter™ series cellular router is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TGAR-2062-4G-M12 is reliable IEEE802.11 a/b/g/n router with 2 ports LAN which is fully compliant with EN50155 certification. It supports 802.1X and MAC filter for security control. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Cellular modem dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modem. TGAR-2062-4G-M12 EN50155 cellular VPN router use M-series connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, TGAR-2062+-4G-M12 also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification and TGAR-2062+-4GS-M12 supports GPS function. Therefore, TGAR-2062-4G-M12 is one of the most reliable choices for rolling stock applications on the wireless network.

Application

In TGAR-2062-4G-M12 , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. TGAR-2062-4G-M12 also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.



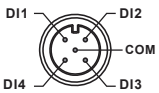
Pin Definition

Relay Output

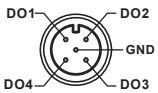
Console

RS-232, 115200bps, 8, N, 1

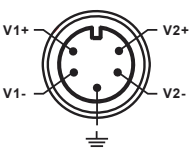
DI



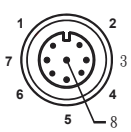
DO



Power

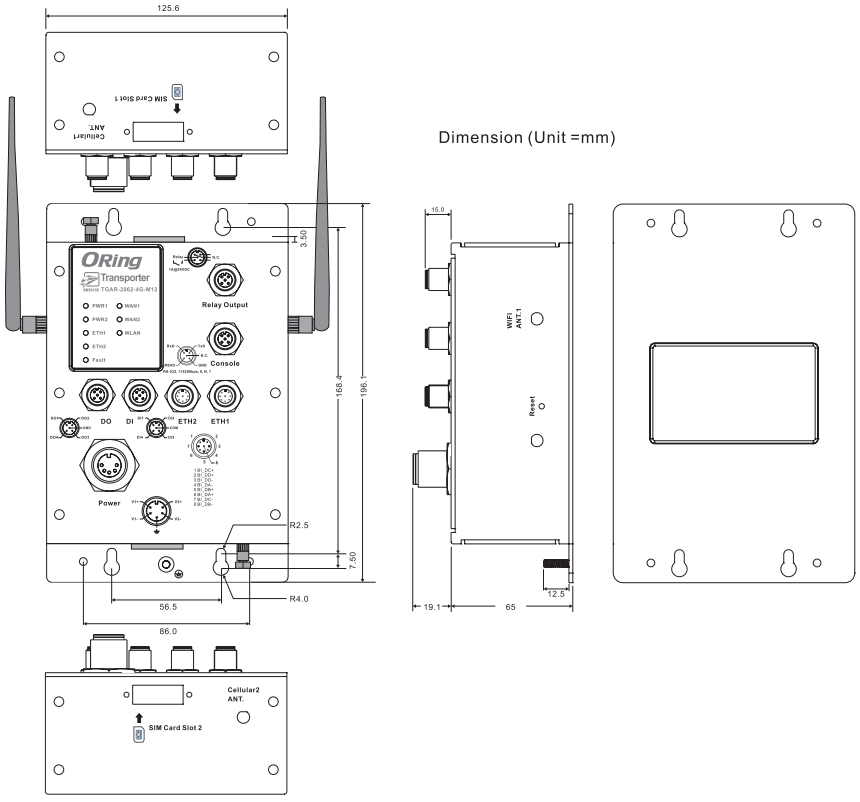


Ethernet



1 BI_DC+
2 BI_DD+
3 BI_DD-
4 BI_DA-
5 BI_DB+
6 BI_DA+
7 BI_DC-
8 BI_DB-

Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAR-2062-4G-M12	TGAR-2062+-4G-M12	TGAR-2062+-4GS-M12
Physical Ports			
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	**2**	**2**(Present at ETH2 Fully compliant with IEEE 802.3af PoE P.D)	
DIDO port in M12 (5-pin A-coding)	**2(DI x 4** and **DO x 4) :** Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC		
RS-232 Console port in M12(5-pin A-coding)	**115200, 8 ,N ,1**		
Relay port in M12 (5-pin A-coding)	**1A@24VDC**		
SIM Card Slot	**2**		
GPS (-4GS model only)			
Antenna Connector	1 x External reverse SMA antenna connector		
Frequency	1575.42MHz		
WLAN Interface			
WAN Connection Type	Static/Dynamic IP 、PPPoE 、3G Modem dial up		
Antenna Connector	2 x Reverse SMA Female		
Radio Frequency Type	DSSS, OFDM		
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM		
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)		

Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps		
Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11b: 18dBm ± 1.5dBm 802.11g: 15dBm ± 1.5dBm 802.11gn HT20: 13dBm ± 1.5dBm@150Mbps 802.11gn HT40: 12dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 12dBm ± 1.5dBm@300Mbps		
Receiver Sensitivity	802.11a: -68dBm ±2dBm@54Mbps 802.11b: -85dBm ±2dBm@11Mbps 802.11g: -68dBm ±2dBm@54Mbps 802.11gn HT20: -68dBm ±2dBm@150Mbps 802.11gn HT40: -68dBm ±2dBm@300Mbps 802.11an HT20: -68dBm ±2dBm@150Mbps 802.11an HT40: -68dBm ±2dBm@300Mbps		
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption		
Wireless Security	SSID broadcast disable		
Cellular Interface			
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA /HSPA+ /LTE		
Antenna Connector	2 x SMA Female		
Band Option	**America(US)** LTE: 1900(B2)/1700(B4)/850(B5)/700(B13)/700(B17)/1900(B25) MHz CDMA/EVDO rev. a/b: 800/1900 UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 850/900/1700/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz **Europe(EU)** LTE: 2100(B1)/1800(B3)/2600(B7)/900(B8)/800(B20) MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/900/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz		
Protocol Support			
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE		
LED Indicators			
Power Indicator	2 x LEDs, PW1:Green for DC Power on PW2:Green for DC Power on or power by PoE		
10/100/1000Base-T(X) port Indicator	2 x LEDs, Green for port Link/Act		
WLAN LED	1 x LED, Green for WLAN Link/Act		
WAN LED	2 x LEDs, Green for functioning normal		
Fault Indicator	1 x LED, Red for Ethernet link down or power down indicator		
Fault Contact			
Relay	Relay output to carry capacity of 1A at 24VDC		
Power			
Redundant Input Power	Dual Power Inputs. 12~48 VDC on M23 connector (24 VDC Typ.)		
Power Consumption (Typ.)	15 Wait	16 Wait	16.2 Wait
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristic			
Enclosure	IP-40		
Dimension (W x D x H)	125.6(W) x 65(D) x 196.1(H) mm (4.94 x 2.55 x 7.72 inch.)		
Weight (g)	1030g	1035g	1035g

Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-25 to 70°C (-13 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6, EN61373
Rail Traffic	EN50155
Cooling	EN60068-2-1
Dry Heat	EN60068-2-2
Safety	EN60950-1
Warranty	5 years

Ordering Information

TGAR-ABCDE-FFG-M12

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless- Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation	GPS Function
Option	**1**: One SIM **2**: Dual SIM	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**2**: 2 ports	**-"+"**: PoE P.D. present at ETH2	**4G** :LTE	**S**:GPS

	Model Name	Description
Available Model	TGAR-2062-4G-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, US band
	TGAR-2062+-4G-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, US band
	TGAR-2062+-4GS-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 4G LTE cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, US band
	TGAR-2062-4G-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, EU band
	TGAR-2062+-4G-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, EU band
	TGAR-2062+-4GS-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n Dual 4G LTE cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, EU band

Packing List

- TGAR-2062(+)-4G(S)-M12 x 1
- 2.4GHz/5GHz Antenna x 2
- CD x 1
- LTE Antenna x 2
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base series
- DR-75 series : 75 Watts power supply
- WLAN RF Antenna series
- RF Cable series

TGAR-1662-3G-M12 series

TGAR-1662-3G-M12 series

Industrial EN50155 Dual IEEE 802.11 a/b/g/n 3G Cellular Router With 2x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: Dual RF in IEEE 802.11 a/b/g/n WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Support 3.5G HSDPA dial up
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem Dial Up
- IP table configurable to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Support DHCP forwarding through PPTP function
- GPS support for GPS model
- 1KV isolation for PoE P.D. port for PoE model.
- Provide Digital Input and Digital Output
- Event Warning by Syslog, Email, SNMP Trap and Relay output
- Ultra rugged enclosure for toughest industrial usages
- Wall mounting enabled

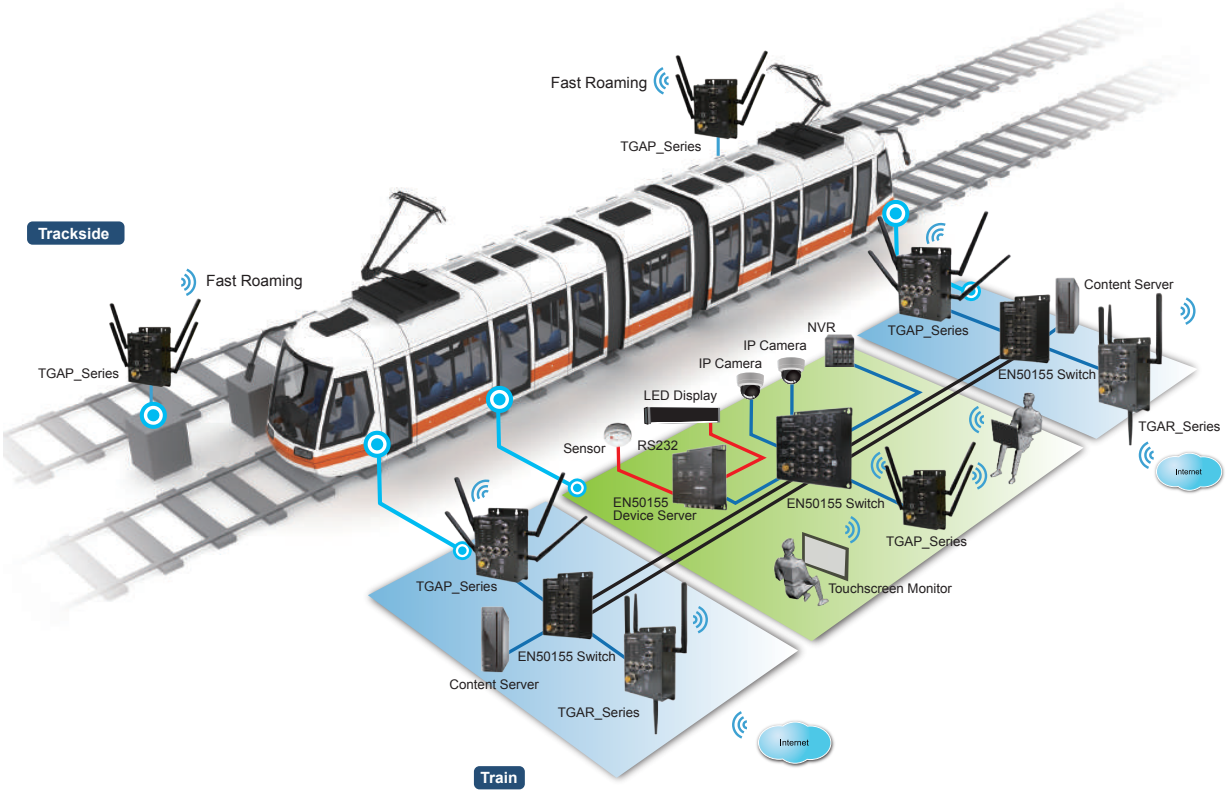
RoHS Lead Free CE FC PoE P.D. PoE GPS EN50155 3.5G a/b/g/n Dual 802.11a/b/g/n Full Gigabit Redundant PWR VPN -25~70°C Temperature

Introduction

ORing's Transporter™ series cellular router is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TGAR-1662-3G-M12 is reliable IEEE802.11 a/b/g/n router with 2 ports LAN which is fully compliant with EN50155 certification. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Cellular modem dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modem. TGAR-1662-3G-M12 EN50155 cellular VPN router use M-series connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, TGAR-1662+-3G-M12 also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification and TGAR-1662+-3GS-M12 supports GPS function. Therefore, TGAR-1662-3G-M12 is one of the most reliable choices for rolling stock applications on the wireless network.

Application

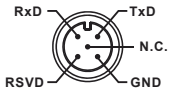
In TGAR-1662-3G-M12 , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. TGAR-1662-3G-M12 also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.



Pin Definition

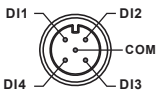
Relay Output

Console

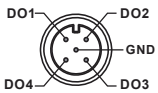


RS-232, 115200bps, 8, N, 1

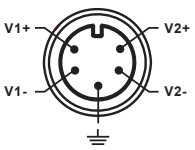
DI



DO



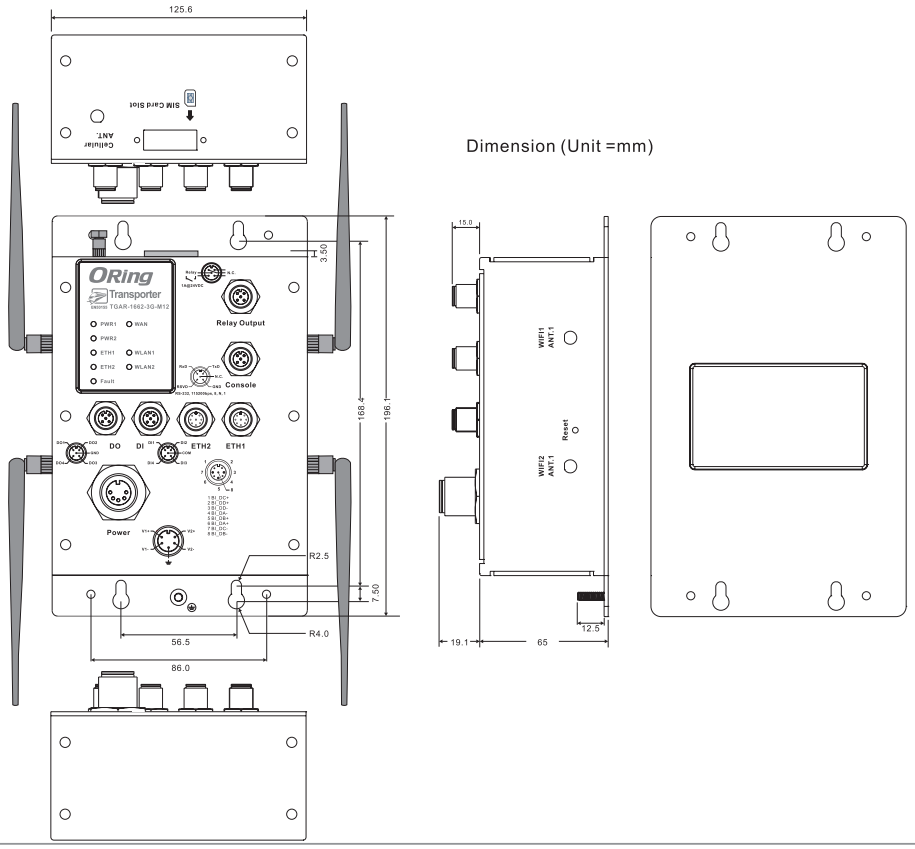
Power



Ethernet

1 BI_DC+
2 BI_DD+
3 BI_DD-
4 BI_DA-
5 BI_DB+
6 BI_DA+
7 BI_DC-
8 BI_DB-

Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAR-1662-3G-M12	TGAR-1662+-3G-M12	TGAR-1662+-3GS-M12
Physical Ports			
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	**2**	**2**(Present at ETH2 Fully compliant with IEEE 802.3af PoE P.D)	
DIDO port in M12 (5-pin A-coding)	**2(DI x 4** and **DO x 4) :** Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC		
RS-232 Console port in M12(5-pin A-coding)	**115200, 8 ,N ,1**		
Relay port in M12 (5-pin A-coding)	**1A@24VDC**		
SIM Card Slot	**1**		
GPS (-3GS model only)			
Antenna Connector	1 x External reverse SMA antenna connector		
Frequency	1575.42MHz		
WLAN Interface			

Antenna Connector	4 x Reverse SMA Female		
Radio Frequency Type	DSSS, OFDM		
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM		
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)		
Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps		
Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11b: 18dBm ± 1.5dBm 802.11g: 15dBm ± 1.5dBm 802.11gn HT20: 13dBm ± 1.5dBm@150Mbps 802.11gn HT40: 12dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 12dBm ± 1.5dBm@300Mbps		
Receiver Sensitivity	802.11a: -68dBm ±2dBm@54Mbps 802.11b: -85dBm ±2dBm@11Mbps 802.11g: -68dBm ±2dBm@54Mbps 802.11gn HT20: -68dBm ±2dBm@150Mbps 802.11gn HT40: -68dBm ±2dBm@300Mbps 802.11an HT20: -68dBm ±2dBm@150Mbps 802.11an HT40: -68dBm ±2dBm@300Mbps		
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption		
Wireless Security	SSID broadcast disable		
Cellular Interface			
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA /HSPA+		
Antenna Connector	1 x Reverse SMA Female		
Band Option	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz		
Protocol Support			
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE		
LED Indicators			
Power Indicator	2 x LEDs, PW1:Green for DC Power on PW2:Green for DC Power on or power by PoE		
10/100/1000Base-T(X) Indicator	2 x LEDs, Green for port Link/Act		
WLAN LED	2 x LED, Green for WLAN Link/Act		
WAN LED	1 x LEDs, Green for functioning normal		
Fault Indicator	1 x LED, Red for Ethernet link down or power down indicator		
Fault Contact			
Relay	Relay output to carry capacity of 1A at 24VDC		
Power			
Redundant Input Power	Dual Power Inputs. 12~48 VDC on M23 connector (24 VDC Typ.)		
Power Consumption (Typ.)	13 Wait	14 Wait	14.2 Wait
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristic			
Enclosure	IP-40		
Dimension (W x D x H)	125.6(W) x 65(D) x 196.1(H) mm (4.94 x 2.55 x 7.72 inch.)		

Weight (g)	1030g	1035g	1035g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-25 to 70°C (-13 to 158°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory Approvals			
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)		
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11		
Shock	IEC60068-2-27, EN61373		
Free Fall	IEC60068-2-31		
Vibration	IEC60068-2-6, EN61373		
Rail Traffic	EN50155		
Cooling	EN60068-2-1		
Dry Heat	EN60068-2-2		
Safety	EN60950-1		
Warranty	5 years		

Ordering Information

TGAR- A B C D E - FF G -M12

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless- Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation	GPS Function
Option	**1**: One SIM **2**: Dual SIM	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**2**: 2 ports	**-"+"**: PoE P.D. present at ETH2	**3G** :UMTS	**S**:**GPS**

	Model Name	Description
Available Model	TGAR-1662-3G-M12_US	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, US band
	TGAR-1662+-3G-M12_US	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, US band
	TGAR-1662+-3GS-M12_US	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 3G cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, US band
	TGAR-1662-3G-M12_EU	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, EU band
	TGAR-1662+-3G-M12_EU	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, EU band
	TGAR-1662+-3GS-M12_EU	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 3G cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, EU band

Packing List

- TGAR-1662(+)-3G(S)-M12 x 1
- 2.4GHz/5GHz Antenna x 4
- CD x 1
- 3G Antenna x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base series
- DR-75 series : 75 Watts power supply
- WLAN RF Antenna series
- RF Cable series

TGAR-1662-4G-M12 series

TGAR-1662-4G-M12 series

Industrial EN50155 Dual IEEE 802.11 a/b/g/n 4G LTE Cellular Router With 2x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: **Dual RF in IEEE 802.11 a/b/g/n** WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- **Support 4G LTE dial up**
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem Dial Up
- IP table configurable to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Support DHCP forwarding through PPTP function
- GPS support for GPS model
- 1KV isolation for PoE P.D. port for PoE model.
- Wireless connecting status monitoring
- Provide Digital Input and Digital Output
- Event Warning by Syslog, Email, SNMP Trap and Relay output
- Ultra rugged enclosure for toughest industrial usages
- Wall mounting enabled

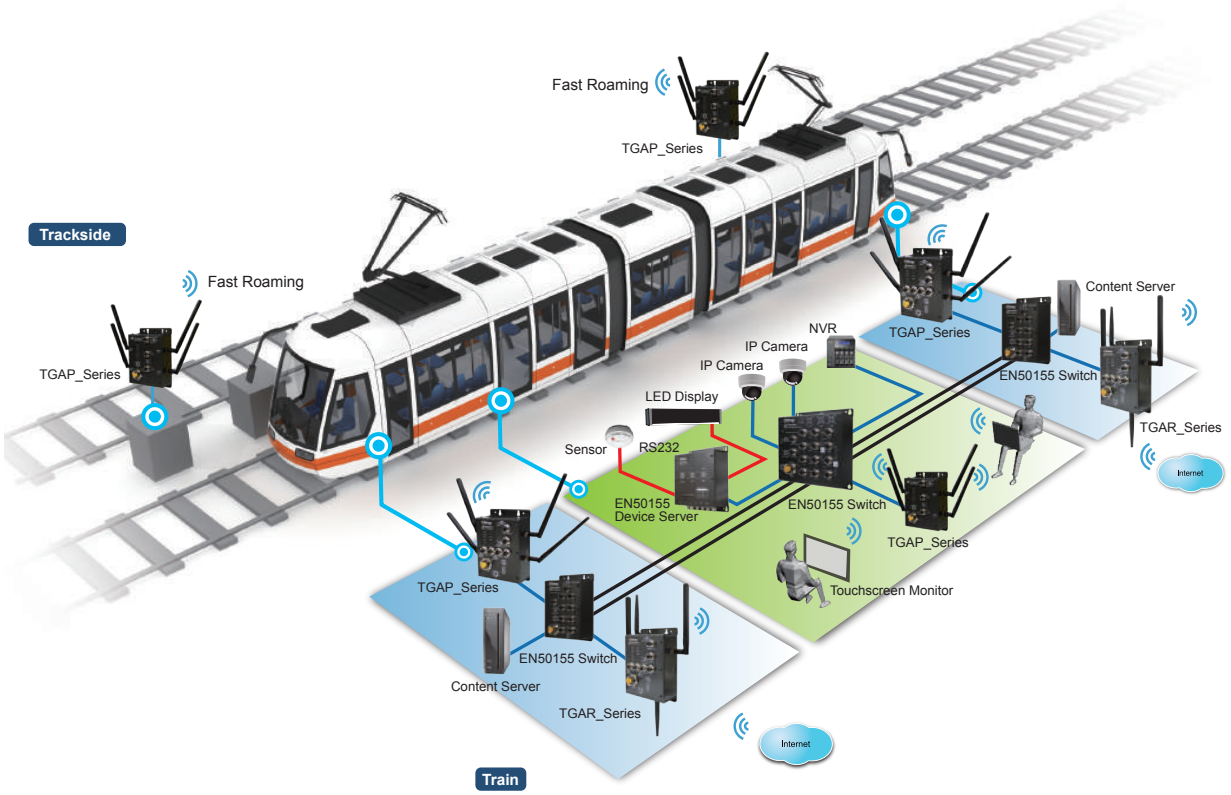
RoHS Lead Free CE FC PoE P.D. PoE GPS EN50155 4G LTE a/b/g/n Dual 802.11a/b/g/n Full Gigabit Redundant PWR VPN -25~70°C Temperature

Introduction

ORing's Transporter™ series cellular router is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TGAR-1662-4G-M12 is reliable IEEE802.11 a/b/g/n router with 2 ports LAN which is fully compliant with EN50155 certification. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Cellular modem dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modem. TGAR-1662-4G-M12 EN50155 cellular VPN router use M-series connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, TGAR-1662+-4G-M12 also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification and TGAR-1662+-4GS-M12 supports GPS function. Therefore, TGAR-1662-4G-M12 is one of the most reliable choices for rolling stock applications on the wireless network.

Application

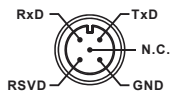
In TGAR-1662-4G-M12 , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. TGAR-1662-4G-M12 also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.



Pin Definition

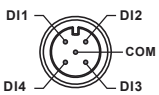
Relay Output

Console



RS-232, 115200bps, 8, N, 1

DI



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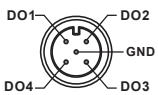
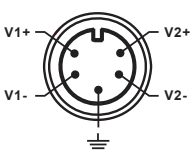
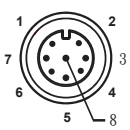


Power

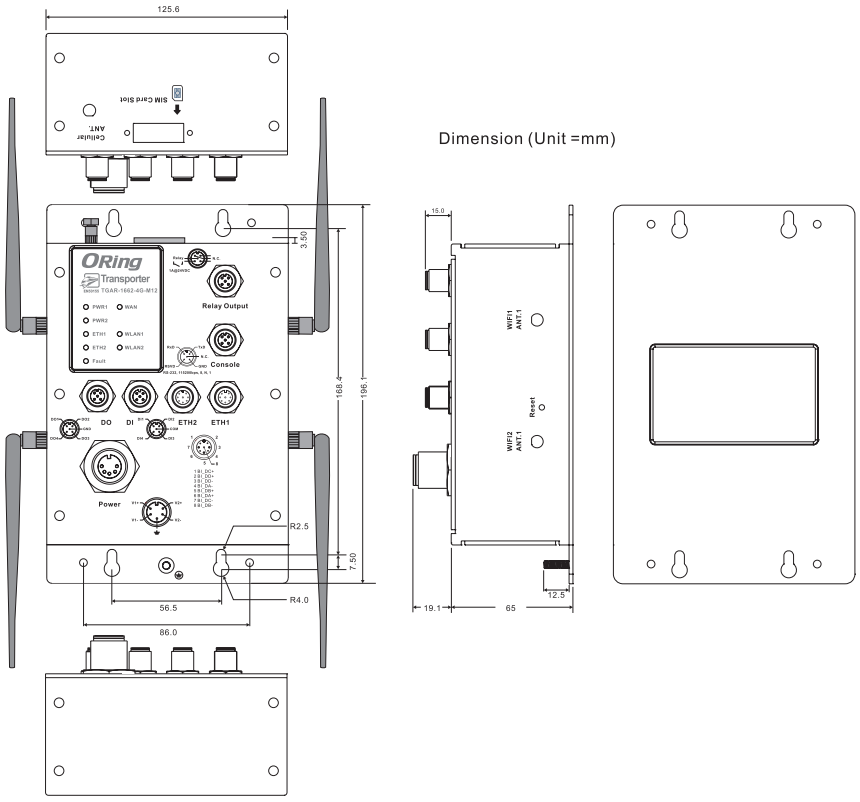


Ethernet



1 BI_DC+
2 BI_DD+
3 BI_DD-
4 BI_DA-
5 BI_DB+
6 BI_DA+
7 BI_DC-
8 BI_DB-

Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAR-1662-4G-M12	TGAR-1662+-4G-M12	TGAR-1662+-4GS-M12
Physical Ports			
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	**2**	**2**(Present at ETH2 Fully compliant with IEEE 802.3af PoE P.D)	
DIDO port in M12 (5-pin A-coding)	**2(DI x 4** and **DO x 4) :** Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC		
RS-232 Console port in M12(5-pin A-coding)	**115200, 8 ,N ,1**		
Relay port in M12 (5-pin A-coding)	**1A@24VDC**		
SIM Card Slot	**1**		
GPS (-4GS model only)			
Antenna Connector	1 x External reverse SMA antenna connector		
Frequency	1575.42MHz		
WLAN Interface			
Antenna Connector	4 x Reverse SMA Female		
Radio Frequency Type	DSSS, OFDM		
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM		
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)		

Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps		
Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11b: 18dBm ± 1.5dBm 802.11g: 15dBm ± 1.5dBm 802.11gn HT20: 13dBm ± 1.5dBm@150Mbps 802.11gn HT40: 12dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 12dBm ± 1.5dBm@300Mbps		
Receiver Sensitivity	802.11a: -68dBm ±2dBm@54Mbps 802.11b: -85dBm ±2dBm@11Mbps 802.11g: -68dBm ±2dBm@54Mbps 802.11gn HT20: -68dBm ±2dBm@150Mbps 802.11gn HT40: -68dBm ±2dBm@300Mbps 802.11an HT20: -68dBm ±2dBm@150Mbps 802.11an HT40: -68dBm ±2dBm@300Mbps		
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption		
Wireless Security	SSID broadcast disable		
Cellular Interface			
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA /HSPA+ /LTE		
Antenna Connector	1 x SMA Female		
Band Option	**America(US)** LTE: 1900(B2)/1700(B4)/850(B5)/700(B13)/700(B17)/1900(B25) MHz CDMA/EVDO rev. a/b: 800/1900 UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 850/900/1700/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz **Europe(EU)** LTE: 2100(B1)/1800(B3)/2600(B7)/900(B8)/800(B20) MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/900/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz		
Protocol Support			
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE		
LED Indicators			
Power Indicator	2 x LEDs, PW1:Green for DC Power on PW2:Green for DC Power on or power by PoE		
10/100/1000Base-T(X) port Indicator	2 x LEDs, Green for port Link/Act		
WLAN LED	2 x LED, Green for WLAN Link/Act		
WAN LED	1 x LEDs, Green for functioning normal		
Fault Indicator	1 x LED, Red for Ethernet link down or power down indicator		
Fault Contact			
Relay	Relay output to carry capacity of 1A at 24VDC		
Power			
Redundant Input Power	Dual Power Inputs. 12~48 VDC on M23 connector (24 VDC Typ.)		
Power Consumption (Typ.)	14 Watts	15 Watts	15.2 Watts
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristic			
Enclosure	IP-40		
Dimension (W x D x H)	125.6(W) x 65(D) x 196.1(H) mm (4.94 x 2.55 x 7.72 inch.)		

Weight (g)	1030g	1035g	1035g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-25 to 70°C (-13 to 158°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory Approvals			
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)		
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11		
Shock	IEC60068-2-27, EN61373		
Free Fall	IEC60068-2-31		
Vibration	IEC60068-2-6, EN61373		
Rail Traffic	EN50155		
Cooling	EN60068-2-1		
Dry Heat	EN60068-2-2		
Safety	EN60950-1		
Warranty	5 years		

Ordering Information

TGAR-ABCDE-FFG-M12

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless- Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation	GPS Function
Option	**1**: One SIM **2**: Dual SIM	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**2**: 2 ports	**-"+"**: PoE P.D. present at ETH2	**4G** :LTE	**S**:GPS

	Model Name	Description
Available Model	TGAR-1662-4G-M12_US	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, US band
	TGAR-1662+-4G-M12_US	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, US band
	TGAR-1662+-4GS-M12_US	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 4G LTE cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, US band
	TGAR-1662-4G-M12_EU	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, EU band
	TGAR-1662+-4G-M12_EU	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, EU band
	TGAR-1662+-4GS-M12_EU	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 4G LTE cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, EU band

Packing List

- TGAR-1662(+)-4G(S)-M12 x 1
- 2.4GHz/5GHz Antenna x 4
- CD x 1
- LTE Antenna x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base series
- DR-75 series : 75 Watts power supply
- WLAN RF Antenna series
- RF Cable series

TGAR-1062-3G-M12 series

TGAR-1062-3G-M12 series

Industrial EN50155 IEEE 802.11 a/b/g/n 3G Cellular Router With 2x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem Dial Up
- IP table configurable to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Support DHCP forwarding through PPTP function
- 3.5G HSDPA Modem dial up included
- GPS support for GPS model
- 1KV isolation for PoE P.D. port for PoE model.
- Event Warning by Syslog, Email, SNMP Trap and Relay output
- Ultra rugged enclosure for toughest industrial usages
- Wall mounting enabled

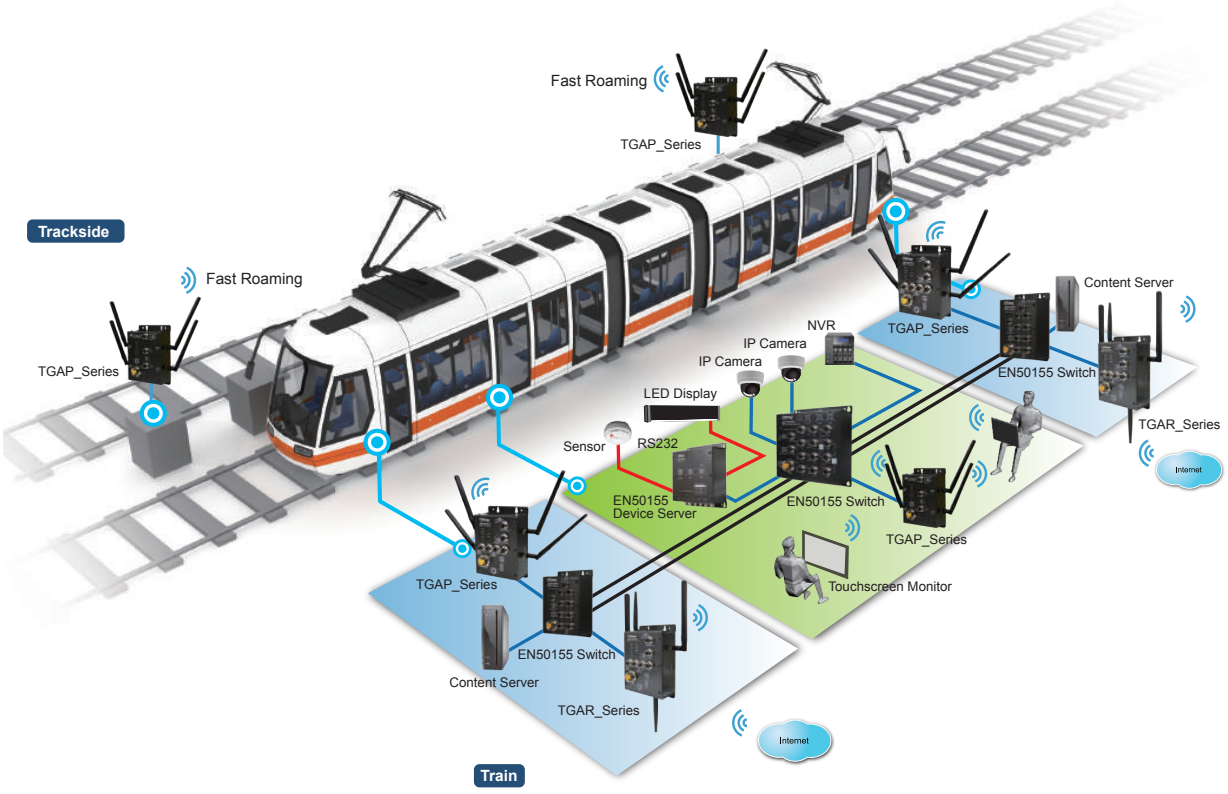
RoHS Lead Free CE FC PoE IEEE802.3af P.D. GPS EN50155 3.5G a/b/g/n Wifi 802.11a/b/g/n Full Gigabit Redundant PWR VPN -25~70°C Temperature

Introduction

ORing's Transporter™ series cellular router is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TGAR-1062-3G-M12 is reliable IEEE802.11 a/b/g/n router with 2 ports LAN which is fully compliant with EN50155 certification. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Cellular modem dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modem. TGAR-1062-3G-M12 EN50155 cellular VPN router use M-series connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, TGAR-1062+-3G-M12 also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification and TGAR-1062+-3GS-M12 supports GPS function. Therefore, TGAR-1062-3G-M12 is one of the most reliable choices for rolling stock applications on the wireless network.

Application

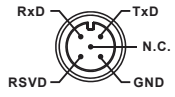
In TGAR-1062-3G-M12 , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. TGAR-1062-3G-M12 also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.



Pin Definition

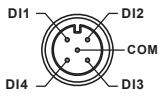
Relay Output

Console

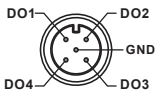


RS-232, 115200bps, 8, N, 1

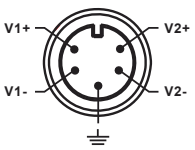
DI



DO



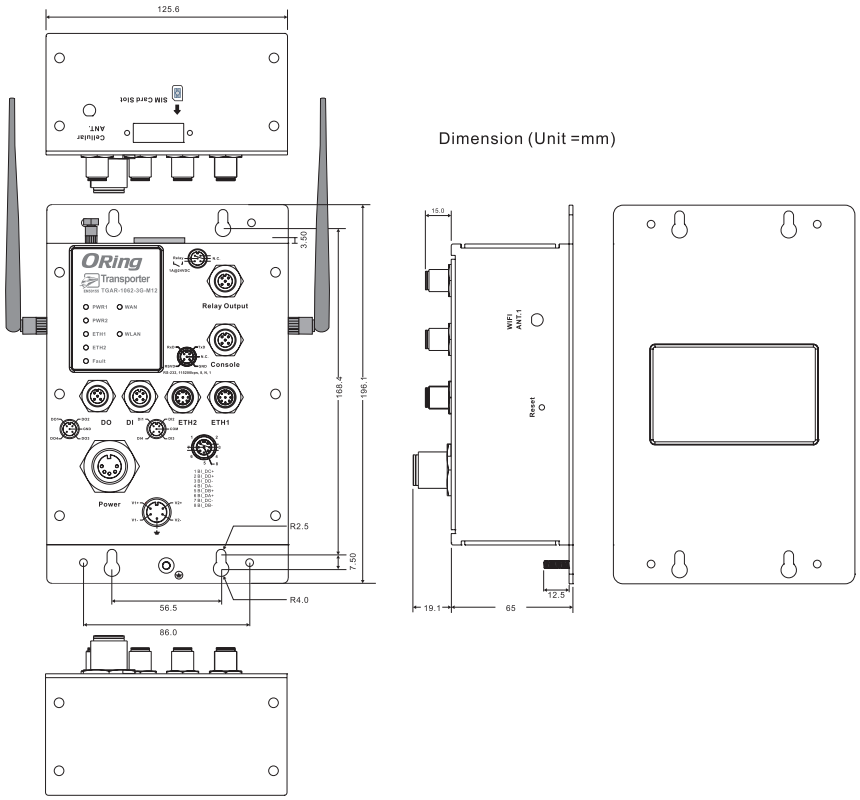
Power



Ethernet

1 BI_DC+
2 BI_DD+
3 BI_DD-
4 BI_DA-
5 BI_DB+
6 BI_DA+
7 BI_DC-
8 BI_DB-

Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAR-1062-3G-M12	TGAR-1062+-3G-M12	TGAR-1062+-3GS-M12
Physical Ports			
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	**2**	**2**(Present at ETH2 Fully compliant with IEEE 802.3af PoE P.D)	
DIDO port in M12 (5-pin A-coding)	**2(DI x 4** and **DO x 4) :** Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC		
RS-232 Console port in M12(5-pin A-coding)	**115200, 8 ,N ,1**		
Relay port in M12 (5-pin A-coding)	**1A@24VDC**		
SIM Card Slot	**1**		
GPS (-3GS model only)			
Antenna Connector	1 x External reverse SMA antenna connector		
Frequency	1575.42MHz		
WLAN Interface			
Antenna Connector	2 x External reverse SMA-type antenna connector		
Radio Frequency Type	DSSS, OFDM		
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM		
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)		

Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps		
Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11b: 18dBm ± 1.5dBm 802.11g: 15dBm ± 1.5dBm 802.11gn HT20: 13dBm ± 1.5dBm@150Mbps 802.11gn HT40: 12dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 12dBm ± 1.5dBm@300Mbps		
Receiver Sensitivity	802.11a: -68dBm ±2dBm@54Mbps 802.11b: -85dBm ±2dBm@11Mbps 802.11g: -68dBm ±2dBm@54Mbps 802.11gn HT20: -68dBm ±2dBm@150Mbps 802.11gn HT40: -68dBm ±2dBm@300Mbps 802.11an HT20: -68dBm ±2dBm@150Mbps 802.11an HT40: -68dBm ±2dBm@300Mbps		
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption		
Wireless Security	SSID broadcast disable		
Cellular Interface			
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA		
Antenna Connector	1 x Reverse SMA Female		
Band Option	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz		
Protocol Support			
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE		
LED Indicators			
Power Indicator	2 x LEDs, PW1:Green for DC Power on PW2:Green for DC Power on or power by PoE		
10/100/1000Base-T(X) Indicator	2 x LEDs, Green for port Link/Act		
WLAN LED	1 x LED, Green for WLAN Link/Act		
WAN LED	1 x LED, Green for Cellular modem Link/ Act		
Fault Indicator	1 x LED, Red for Ethernet link down or power down indicator		
Fault Contact			
Relay	Relay output to carry capacity of 3A at 24VDC		
Power			
Redundant Input Power	Relay output to carry capacity of 1A at 24VDC(5-pin M12 A-coding)		
Power Consumption (Typ.)	9 Watts	10 Watts	10.2 Watts
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristic			
Enclosure	IP-40		
Dimension (W x D x H)	125.6(W) x 65(D) x 196.1(H) mm (4.94 x 2.55 x 7.72 inch.)		
Weight (g)	985g	990g	990g
Environmental			
Storage Temperature	-40 to 85°C (-40 to 185°F)		
Operating Temperature	-25 to 70°C (-13 to 158°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory Approvals			
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)		

EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6, EN61373
Rail Traffic	EN50155
Cooling	EN60068-2-1
Dry Heat	EN60068-2-2
Safety	EN60950-1
Warranty	5 years

Ordering Information

TGAR- A B C D E - FF G -M12

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless- Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation	GPS Function
Option	**1**: One SIM **2**: Dual SIM	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**2**: 2 ports	**-"+"**: PoE P.D. present at ETH2	**3G** :UMTS	**S**:GPS

	Model Name	Description
Available Model	TGAR-1062-3G-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, US band
	TGAR-1062+-3G-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D,US band
	TGAR-1062+-3GS-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D,US band
	TGAR-1062-3G-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, EU band
	TGAR-1062+-3G-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D,EU band
	TGAR-1062+-3GS-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D,EU band

Packing List

- TGAR-1062(+)-3G(S)-M12 x 1
- 2.4GHz/5GHz Antenna x 2
- CD x 1
- 3G Antenna x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base series
- DR-75 series : 75 Watts power supply
- WLAN RF Antenna series
- RF Cable series

TGAR-1062-4G-M12 series

TGAR-1062-4G-M12 series

Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE Cellular Router With 2x10/100/1000Base-T(X), M12 connector

Features

- Leading EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem Dial Up
- IP table configurable to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Support DHCP forwarding through PPTP function
- 4G LTE Modem dial up included
- GPS support for GPS model.
- 1KV isolation for PoE P.D. port for PoE model.
- Event Warning by Syslog, Email, SNMP Trap and Relay output
- Ultra rugged enclosure for toughest industrial usages
- Wall mounting enabled

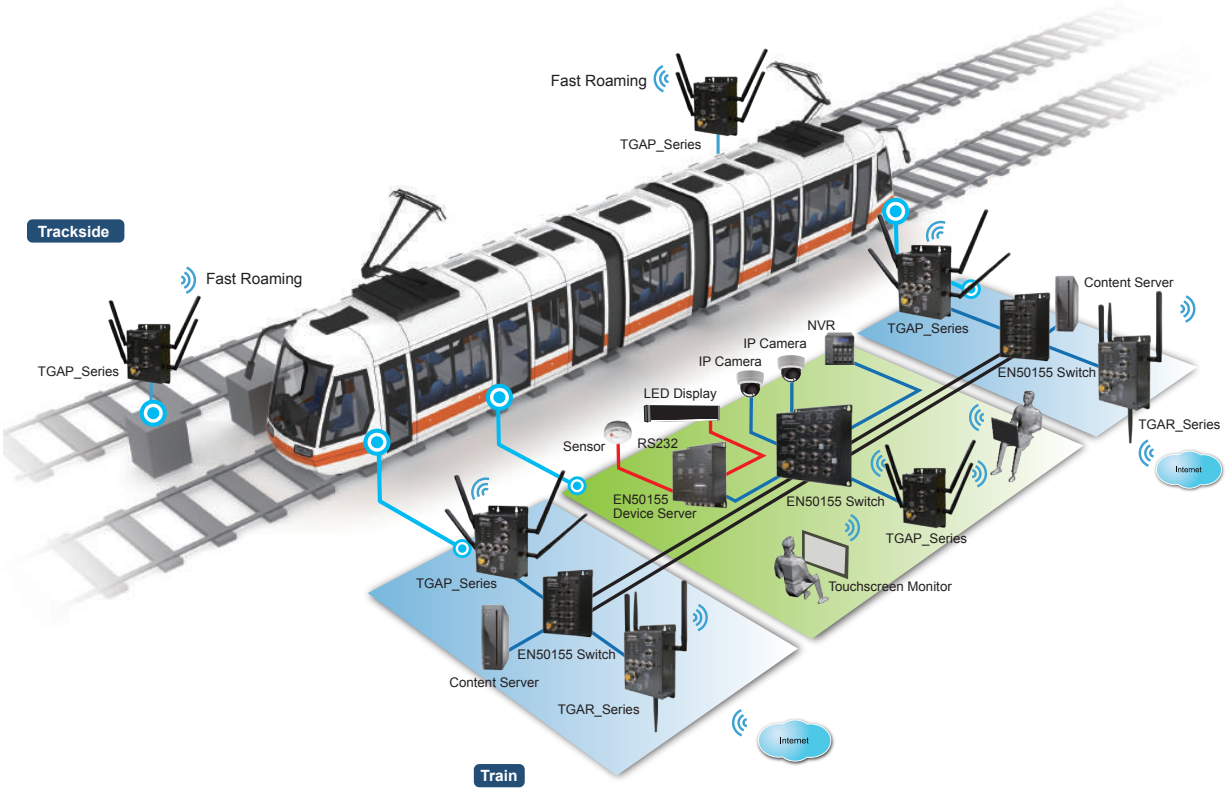
RoHS Lead Free CE FC PoE IEEE802.3af P.D. GPS EN50155 4G LTE a/b/g/n Wifi 802.11a/b/g/n Full Gigabit Redundant PWR VPN -25~70°C Temperature

Introduction

ORing's Transporter™ series cellular router is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TGAR-1062-4G-M12 is reliable IEEE802.11 a/b/g/n router with 2 ports LAN which is fully compliant with EN50155 certification. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Cellular modem dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modem. TGAR-1062-4G-M12 EN50155 cellular VPN router use M-series connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, TGAR-1062+-4G-M12 also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification and TGAR-1062+-4GS-M12 supports GPS function. Therefore, TGAR-1062-4G-M12 is one of the most reliable choices for rolling stock applications on the wireless network.

Application

In TGAR-1062-4G-M12 , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. TGAR-1062-4G-M12 also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.

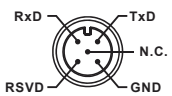


Pin Definition

Relay Output

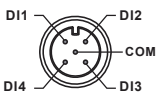
1A@24VDC

Console

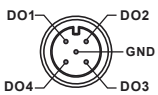


RS-232, 115200bps, 8, N, 1

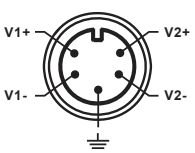
DI



DO



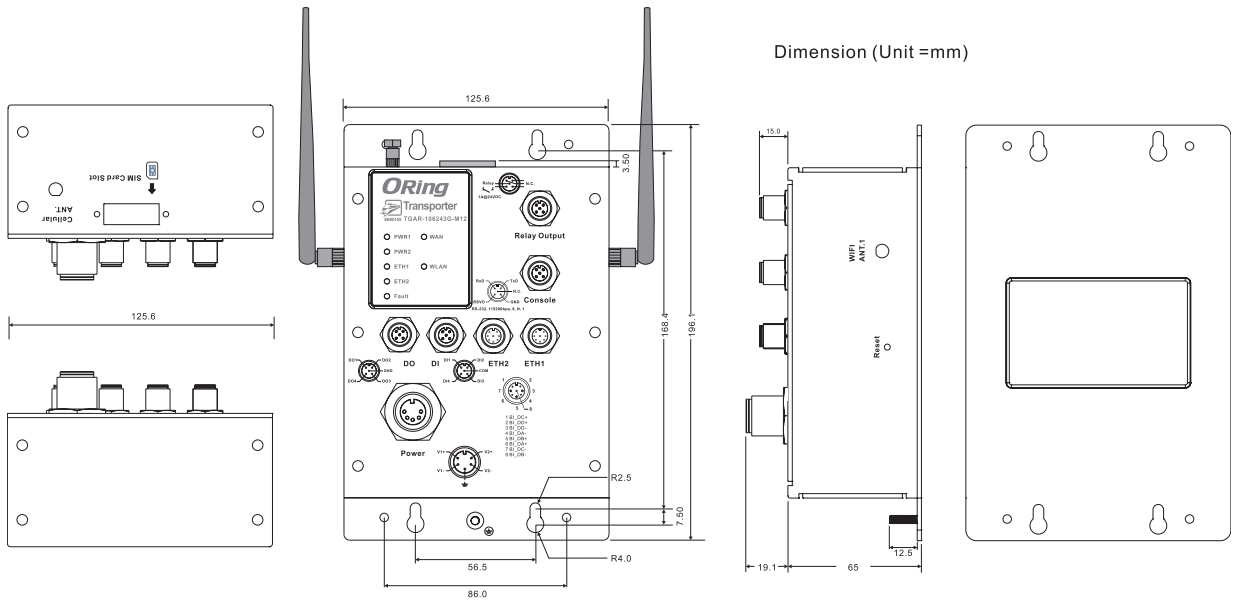
Power



Ethernet

1 BI_DC+
2 BI_DD+
3 BI_DD-
4 BI_DA-
5 BI_DB+
6 BI_DA+
7 BI_DC-
8 BI_DB-

Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAR-1062-4G-M12	TGAR-1062+-4G-M12	TGAR-1062+-4GS-M12
Physical Ports			
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	**2**	**2**(Present at ETH2 Fully compliant with IEEE 802.3af PoE P.D)	
DIDO port in M12 (5-pin A-coding)	**2(DI x 4** and **DO x 4) :** Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC		
RS-232 Console port in M12(5-pin A-coding)	**115200, 8 ,N ,1**		
Relay port in M12 (5-pin A-coding)	**1A@24VDC**		
SIM Card Slot	**1**		
GPS (-4GS model only)			
Antenna Connector	1 x External reverse SMA antenna connector		
Frequency	1575.42MHz		
WLAN Interface			
Antenna Connector	2 x External reverse SMA-type antenna connector		
Radio Frequency Type	DSSS, OFDM		
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM		
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)		
Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps		

Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11b: 18dBm ± 1.5dBm 802.11g: 15dBm ± 1.5dBm 802.11gn HT20: 13dBm ± 1.5dBm@150Mbps 802.11gn HT40: 12dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 12dBm ± 1.5dBm@300Mbps		
Receiver Sensitivity	802.11a: -68dBm ±2dBm@54Mbps 802.11b: -85dBm ±2dBm@11Mbps 802.11g: -68dBm ±2dBm@54Mbps 802.11gn HT20: -68dBm ±2dBm@150Mbps 802.11gn HT40: -68dBm ±2dBm@300Mbps 802.11an HT20: -68dBm ±2dBm@150Mbps 802.11an HT40: -68dBm ±2dBm@300Mbps		
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption		
Wireless Security	SSID broadcast disable		
Cellular Interface			
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA /HSPA+ /LTE		
Antenna Connector	1 x SMA Female		
Band Option	**America(US)** LTE: 1900(B2)/1700(B4)/850(B5)/700(B13)/700(B17)/1900(B25) MHz CDMA/EVDO rev. a/b: 800/1900 UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 850/900/1700/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz **Europe(EU)** LTE: 2100(B1)/1800(B3)/2600(B7)/900(B8)/800(B20) MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/900/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz		
Protocol Support			
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE		
LED Indicators			
Power Indicator	2 x LEDs, PW1:Green for DC Power on PW2:Green for DC Power on or power by PoE		
10/100/1000Base-T(X) Indicator	2 x LEDs, Green for port Link/Act		
WLAN LED	1 x LED, Green for WLAN Link/Act		
WAN LED	1 x LED, Green for Cellular modem Link/ Act		
Fault Indicator	1 x LED, Red for Ethernet link down or power down indicator		
Fault Contact			
Relay	Relay output to carry capacity of 3A at 24VDC		
Power			
Redundant Input Power	Dual Power Inputs. 12~48 VDC on M23 connector (24 VDC Typ.)		
Power Consumption (Typ.)	9.5W	10.5 Watts	10.7 Watts
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristic			
Enclosure	IP-40		
Dimension (W x D x H)	125.6(W) x 65(D) x 196.1(H) mm (4.94 x 2.55 x 7.72 inch.)		
Weight (g)	968g	977g	977g

Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-25 to 70°C (-13 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6, EN61373
Rail Traffic	EN50155
Cooling	EN60068-2-1
Dry Heat	EN60068-2-2
Safety	EN60950-1
Warranty	5 years

Ordering Information

TGAR-ABCDE-FFG-M12

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless- Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation	GPS Function
Option	**1**: One SIM **2**: Dual SIM	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**2**: 2 ports	**-"+"**: PoE P.D. present at ETH2	**4G** :LTE	**S**:GPS

	Model Name	Description
Available Model	TGAR-1062-4G-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, US band
	TGAR-1062+-4G-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, US band
	TGAR-1062+-4GS-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, US band
	TGAR-1062-4G-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, EU band
	TGAR-1062+-4G-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, EU band
	TGAR-1062+-4GS-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D, EU band

Packing List

- TGAR-1062(+)-4G(S)-M12 x 1
- 2.4GHz/5GHz Antenna x 2
- CD x 1
- LTE Antenna x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base series
- DR-75 series : 75 Watts power supply
- WLAN RF Antenna series
- RF Cable series

TGAR-1062+-4G6S-M12

TGAR-1062+-4G6S-M12

Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE Cellular Router With 2x10/100/1000Base-T(X), 1-port PoE P.D, M12 connector

Features

- Leading EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem Dial Up
- IP table configurable to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Support DHCP forwarding through PPTP function
- Category 6 LTE Modem dial up included
- GPS support for GPS model.
- 1KV isolation for PoE P.D. port
- Event Warning by Syslog, Email, SNMP Trap and Relay output
- Ultra rugged enclosure for toughest industrial usages
- Wall mounting enabled

RoHS Lead Free CE FC PoE IEEE802.3af P.D. GPS EN50155 4G LTE a/b/g/n Wifi 802.11a/b/g/n Full Gigabit Redundant PWR VPN -25~70°C Temperature

Introduction

ORing's TransporterTM series cellular router is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TGAR-1062+-4G6S-M12 is reliable IEEE802.11 a/b/g/n router with 2 ports LAN which is fully compliant with EN50155 certification. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Cellular modem dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modem. TGAR-1062+-4G6S-M12 EN50155 cellular VPN router use M-series connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, TGAR-1062+-4G6S-M12 also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification and TGAR-1062+-4GS-M12 supports GPS function. Therefore, TGAR-1062+-4G6S-M12 is one of the most reliable choices for rolling stock applications on the wireless network.

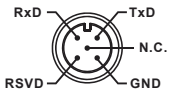
Application

In TGAR-1062+-4G6S-M12 , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. TGAR-1062+-4G6S-M12 also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.

Pin Definition

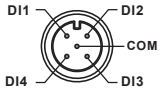
Relay Output

Console

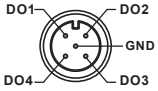


RS-232, 115200bps, 8, N, 1

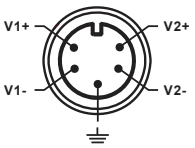
DI



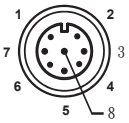
DO



Power

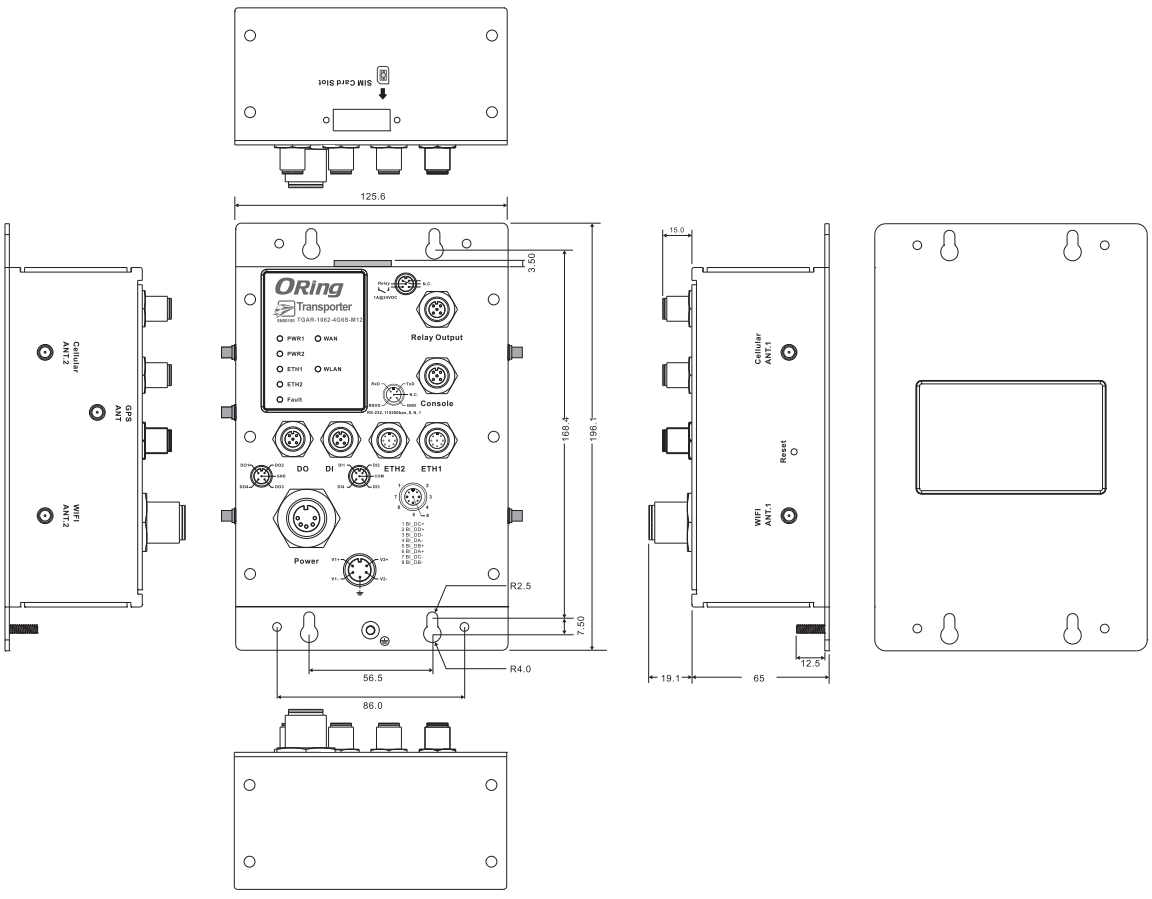


Ethernet



1 BI_DC+
2 BI_DD+
3 BI_DD-
4 BI_DA-
5 BI_DB+
6 BI_DA+
7 BI_DC-
8 BI_DB-

Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAR-1062+-4G-M12
Physical Ports	
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	**2**(Present at ETH2 Fully compliant with IEEE 802.3af PoE P.D)
DIDO port in M12 (5-pin A-coding)	**2(DI x 4** and **DO x 4)** : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC
RS-232 Console port in M12	**115200, 8 ,N ,1**
(5-pin A-coding)	**1A@24VDC**
Relay port in M12 (5-pin A-coding)	**1 (Mini SIM only without adapter)**
GPS (-4GS model only)	
Antenna Connector	1 x External reverse SMA antenna connector
Frequency	1575.42MHz
WLAN Interface	
Antenna Connector	2 x Reverse SMA Female
Radio Frequency Type	DSSS, OFDM
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)
Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7
Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption
Wireless Security	SSID broadcast disable
Cellular Interface	
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA /HSPA+ /LTE
Antenna Connector	2 x SMA Female

Band Option	**Asia/Australia** LTE: FDD:B1/B3/B5/B7/B8/B18/B19/B21/B28 Band TDD:B38/B39/B40/B41 Band TD-SCDMA: B39 Band UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: B1/B5/B6/B8/B9/B19 Band **American/Europe** LTE: FDD:B1/B2/B3/B4/B5/B7/B8/B12/B13/B20/B25/B26/B29/B30 Band TDD:B41 Band UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: B1/B2/B3/B4/B5/B8 Band
Protocol Support	
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE
LED Indicators	
Power Indicator	2 x LEDs, PW1:Green for DC Power on PW2:Green for DC Power on or power by PoE
10/100/1000Base-T(X) port Indicator	2 x LEDs, Green for port Link/Act
WLAN LED	1 x LED, Green for WLAN Link/Act
WAN LED	1 x LED, Green for functioning normal
Fault Indicator	1 x LED, Red for Ethernet link down or power down indicator
Fault Contact	
Relay	Relay output to carry capacity of 3A at 24VDC
Power	
Redundant Input Power	Dual Power Inputs with M23 connector. Nominal 24/48Vdc(12~48Vdc)
Power Consumption (Typ.)	10.5Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-40
Dimension (W x D x H)	125.6(W) x 65(D) x 196.1(H) mm (4.94 x 2.55 x 7.72 inch.)
Weight (g)	980g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-25 to 70°C (-13 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6, EN61373
Rail Traffic	EN50155
Cooling	EN60068-2-1
Dry Heat	EN60068-2-2
Safety	EN60950-1
Warranty	5 years

Ordering Information

TGAR- A B C D E - FFF G -M12

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless- Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation / Category	GPS Function
Option	**1**: One **2**: Dual	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**1**: 802.11 b/g **2**: 802.11 a **3**: 802.11 a/b/g **4**: 802.11 b/g/n **5**: 802.11 a/n **6**: 802.11 a/b/g/n	**2**: 2 ports	**-"+"**: PoE P.D. present at ETH2	**4G** :LTE under Category 6 **4G6**:LTE Category 6	**S**:GPS

	Model Name	Description
Available Model	TGAR-1062+-4G6S-M12_US	Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE Cellular Router With 2x10/100/1000Base-T(X), 1-port PoE P.D, M12 connector, US Band
	TGAR-1062+-4G6S-M12_EU	Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE Cellular Router With 2x10/100/1000Base-T(X), 1-port PoE P.D, M12 connector, EU Band
	TGAR-1062+-4G6S-M12_CN	Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE Cellular Router With 2x10/100/1000Base-T(X), 1-port PoE P.D, M12 connector, CN Band
	TGAR-1062+-4G6S-M12_TW	Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE Cellular Router With 2x10/100/1000Base-T(X), 1-port PoE P.D, M12 connector, TW Band

Packing List

- TGAR-1062+-4G6S-M12 x 1
- 2.4GHz/5GHz Antenna x 2
- CD x 1
- LTE Antenna x 2
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base series
- DR-75 series : 75 Watts power supply
- WLAN RF Antenna series
- RF Cable series

TGAR-W1061+-3G series

TGAR-W1061+-3G series

Industrial EN50155 IEEE 802.11 a/b/g/n 3G Cellular Router with 1x10/100/1000Base-T(X) PoE P.D., IP-67

Features

- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Provide 1 port 10/100/1000Base-T(X) port with PoE P.D.
- **3.5G HSDPA Modem dial up included**
- Provide HNAT enhance LAN to WAN routing performance
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem/Dial Up
- Support client operating mode
- IP table to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP, IPSEC, VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- 1KV isolation for PoE P.D.
- Wireless connecting status monitoring
- Versatile modes & event alarm by e-mail
- Event Warning by Syslog, Email, SNMP Trap
- Rigid IP-67 waterproof housing design

PoE IEEE802.3af P.D. | IP-67 | EN50155 | 3.5G | a/b/g/n Wifi 802.11a/b/g/n | Full Gigabit | Redundant PWR | VPN | -25~70°C Temperature

RoHS Lead Free CE FC

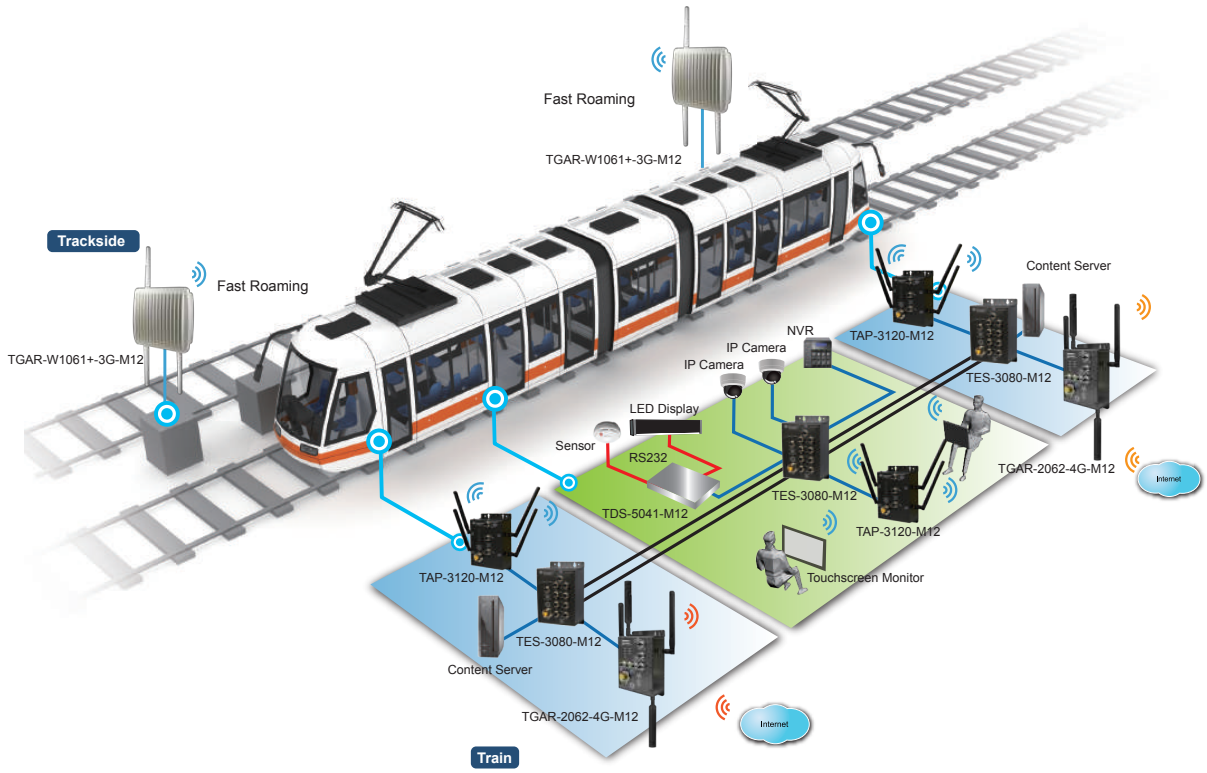
Introduction

TGAR-W1061+-3G is a reliable IEEE 802.11 a/b/g/n WLAN VPN router with 1 ports 10/100/1000Base-T(X) router where ETH1 for LAN. It supports 802.1X and MAC filter for security control. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Modem (GPRS/3G/3.5G Modem) dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modems. In addition, TGAR-W1061+-3G also provides P.D. feature which is fully compliant with IEEE802.3af PoE P.D. specification. This feature extends the layout up to 100 meters. Therefore, TGAR-W1061+-3G is one of the best solution for applications of wireless communication.

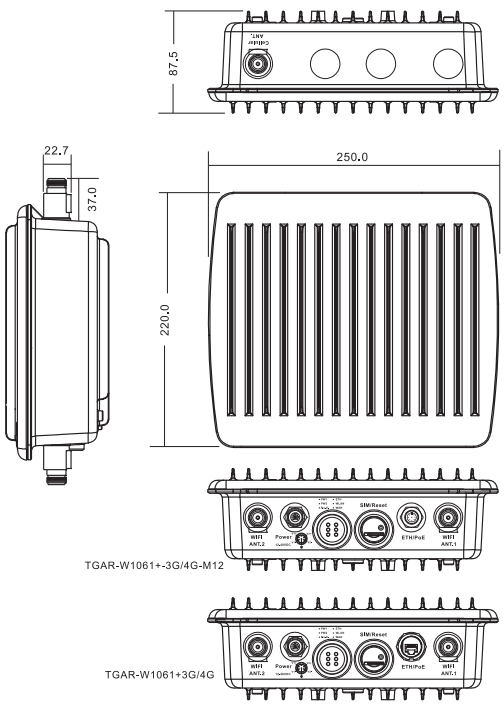
Application

In practical operation of wireless access point, Windows utility (Open-Version) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network.

In addition, the wireless access point support various kinds of operation modes include AP/Dual Client /Bridge /AP-Client Mode.



Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAR-W1061+-3G	TGAR-W1061+-3G-M12
Physical Ports		
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	1 (RJ45)	1 (M12 8-pin A-coding female)
PoE P.D. port	Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 108 ohms min	
Sim Card Slot	1	
Cellular Interface		
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA	
Antenna Connector	1 x External N-Type female antenna connector	
Band Option	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz	
WLAN Interface		
Antenna Connector	2 x External N-Type female antenna connector	
Modulation	IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11a/g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America / FCC: 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels) 5.180~5.240 GHz (4 channels)	
Transmission Rate	802.11b: 1/2/5.5/11 Mbps 802.11a/g: 6/9/12/18/24/36/48/54 Mbps 802.11n(40MHz): UP to 300 Mbps	
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7	
Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7	
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Wireless Security	SSID broadcast disable	
LED Indicators		
Power Indicator	3 x LEDs, PW1/PW2/PoE Green On : Power is on and booting up	
10/100/1000Base-T(X) port Indicator	1 x LED, Green for port Link/ Act at 1000Mbps	
WLAN LED	1 x LED, Green for WLAN Link /Act	
WAN LED	1 x LED, Green for WAN is on and functioning Normal	

Power	
Redundant Input Power	Dual DC inputs. 12-48VDC on M12 connector
Power Consumption(Typ.)	10 W
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-67
Dimensions (W x D x H)	310 (W) x 310(D) x 87 (H) (12.2 x 12.2 x 3.4 inch)
Weight (g)	3990 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-25 to 70°C (-13 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6, EN61373
Rail Traffic	EN50155
Cooling	EN60068-2-1
Dry Heat	EN60068-2-2
Safety	EN60950-1
Warranty	5 years

Ordering Information

TGAR-W A B C D E - FF - GG

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless- Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation	Connector Type
Option	**1**: One SIM	**1:** IEEE 802.11 b/g **2:** IEEE 802.11 a **3:** IEEE 802.11 a/b/g **4:** IEEE 802.11 b/g/n **5:** IEEE 802.11 a/n **6:** IEEE 802.11 a/b/g/n	**1:** IEEE 802.11 b/g **2:** IEEE 802.11 a **3:** IEEE 802.11 a/b/g **4:** IEEE 802.11 b/g/n **5:** IEEE 802.11 a/n **6:** IEEE 802.11 a/b/g/n	**1:** 1 ports	**+**: PoE P.D. present at ETH	**3G**: UMTS	**None**:RJ45 **M12**:M12 connector

	Model Name	Description
Available Model	TGAR-W1061+-3G_US	Industrial IEEE 802.11 a/b/g/n 3G Cellular router with 1x10/100/1000Base-T(X), PoE P.D., IP-67 grade, US band
	TGAR-W1061+-3G_EU	Industrial IEEE 802.11 a/b/g/n 3G Cellular router with 1x10/100/1000Base-T(X), PoE P.D., IP-67 grade, EU band
	TGAR-W1061+-3G-M12_US	Industrial IEEE 802.11 a/b/g/n 3G Cellular router with 1x10/100/1000Base-T(X), PoE P.D., M12 connector, IP-67 grade, US band
	TGAR-W1061+-3G-M12_EU	Industrial IEEE 802.11 a/b/g/n 3G Cellular router with 1x10/100/1000Base-T(X), PoE P.D., M12 connector, IP-67 grade, EU band

Packing List

- TGAR-W1061+-3G
- 2.4GHz/5GHz Antenna
- ORing Tool CD
- Wall Mount Kit
- Quick Installation Guide
- 3G Antenna

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply
- WLAN RF Antenna series
- RF Antenna Base series
- RF Cable series

TGAR-W1061+-4G series

TGAR-W1061+-4G series

Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE Cellular Router with 1x10/100/1000Base-T(X) PoE P.D., IP-67

Features

- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Provide 1 port 10/100/1000Base-T(X) port with PoE P.D.
- **4G LTE Modem dial up included**
- Provide HNAT enhance LAN to WAN routing performance
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem/Dial Up
- Support client operating mode
- IP table to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP, IPSEC, VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- 1KV isolation for PoE P.D.
- Wireless connecting status monitoring
- Versatile modes & event alarm by e-mail
- Event Warning by Syslog, Email, SNMP Trap, Relay and Beeper
- Rigid IP-67 waterproof housing design

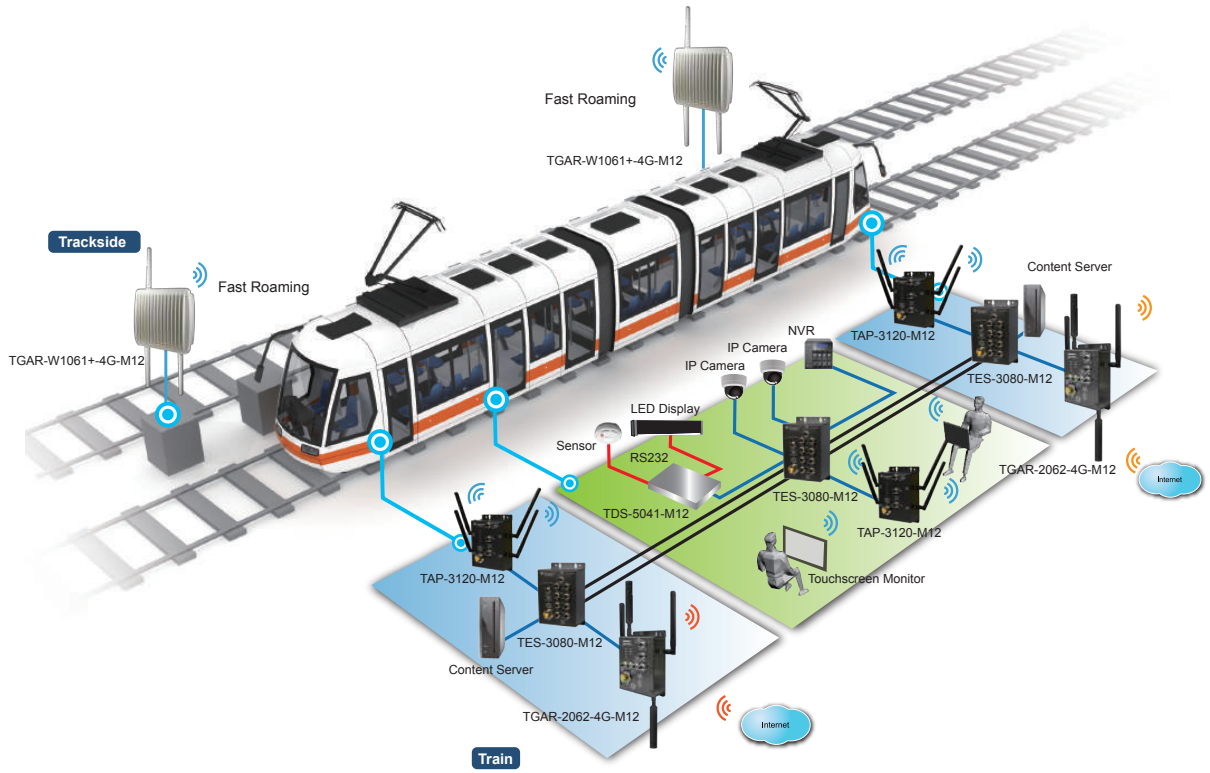
Introduction

TGAR-W1061+-4G is a reliable IEEE 802.11 a/b/g/n WLAN VPN router with 1 ports 10/100/1000Base-T(X) router where ETH1 for LAN. It supports 802.1X and MAC filter for security control. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Modem (GPRS/3G/3.5G /LTE Modem) dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modems. In addition, TGAR-W1061+-4G also provides P.D. feature which is fully compliant with IEEE802.3af PoE P.D. specification. This feature extends the layout up to 100 meters. Therefore, TGAR-W1061+-4G is one of the best solution for applications of wireless communication.

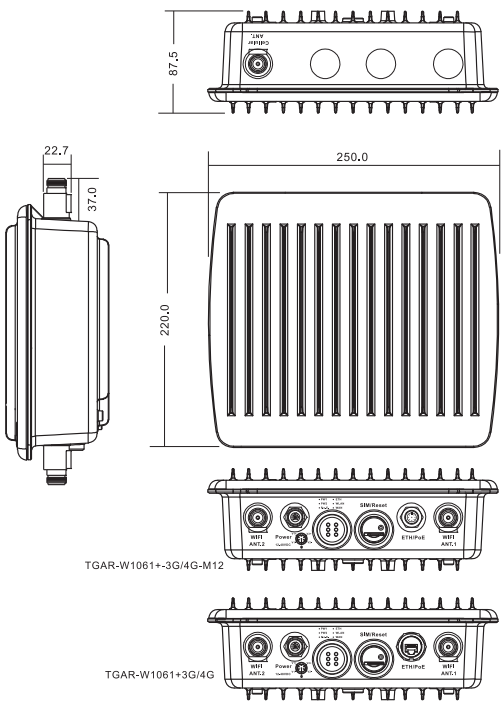
Application

In practical operation of wireless access point, Windows utility (Open-Version) is supported. This utility is very helpful for you to search and configure IP of access point on the industrial network.

In addition, the wireless access point support various kinds of operation modes include AP/Dual Client /Bridge /AP-Client Mode.



Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TGAR-W1061+-4G	TGAR-W1061+-4G-M12
Physical Ports		
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	1 (RJ45)	1 (M12 8-pin A-coding female)
PoE P.D. port	Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance : 108 ohms min	
Sim Card Slot	1	
Cellular Interface		
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA /HSPA+ /LTE	
Antenna Connector	1 x External N-Type female antenna connector	
Band Option	**America(US)** LTE: 700/1700/2100/ MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz **Europe(EU)** LTE: 800/900/1800/2100/2600 MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 900/2100 MHz GSM/GPRS/EDGE: 900/1800/1900 MHz	
WLAN Interface		
Antenna Connector	2 x External N-Type female antenna connector	
Modulation	IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11a/g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America / FCC: 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI: 2.412~2.472 GHz (13 channels) 5.180~5.240 GHz (4 channels)	
Transmission Rate	802.11b: 1/2/5.5/11 Mbps 802.11a/g: 6/9/12/18/24/36/48/54 Mbps 802.11n(40MHz): UP to 300 Mbps	
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7	
Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7	
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Wireless Security	SSID broadcast disable	
LED Indicators		
Power Indicator	3 x LEDs, PW1/PW2/PoE Green On : Power is on and booting up	
10/100/1000T RJ45 port indicator	1 x LED, Green for port Link/ Act at 1000Mbps	
WLAN LEDs:	1 x LED, Green for WLAN Link /Act	
WAN LED	1 x LED, Green for WAN is on and functioning Normal	

Power	
Redundant Input Power	Dual DC inputs. 12-48VDC on M12 connector
Power Consumption(Typ.)	9.5 W
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Enclosure	IP-67
Dimensions (W x D x H)	310 (W) x 310(D) x 87 (H) (12.2 x 12.2 x 3.4 inch)
Weight (g)	3990 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-25 to 70°C (-13 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6, EN61373
Rail Traffic	EN50155
Cooling	EN60068-2-1
Dry Heat	EN60068-2-2
Safety	EN60950-1
Warranty	5 years

Ordering Information

TGAR-W A B C D E - FF - GG

Code Definition	Cellular Module Number	2nd Wireless Mode	1st Wireless- Mode	Giga Ethernet Port Number	PoE Identification	Cellular Generation	Connector Type
Option	**1**: One SIM	**1:** IEEE 802.11 b/g **2:** IEEE 802.11 a **3:** IEEE 802.11 a/b/g **4:** IEEE 802.11 b/g/n **5:** IEEE 802.11 a/n **6:** IEEE 802.11 a/b/g/n	**1:** IEEE 802.11 b/g **2:** IEEE 802.11 a **3:** IEEE 802.11 a/b/g **4:** IEEE 802.11 b/g/n **5:** IEEE 802.11 a/n **6:** IEEE 802.11 a/b/g/n	**1:** 1 ports	**+**: PoE P.D. present at ETH	**4G**: LTE	**None**:RJ45 **M12**:M12 connector

	Model Name	Description
Available Model	TGAR-W1061+-4G_US	Industrial IEEE 802.11 a/b/g/n 4G LTE Cellular router with 1x10/100/1000Base-T(X), PoE P.D., IP-67 grade, US band
	TGAR-W1061+-4G_EU	Industrial IEEE 802.11 a/b/g/n 4G LTE Cellular router with 1x10/100/1000Base-T(X), PoE P.D., IP-67 grade, EU band
	TGAR-W1061+-4G-M12_US	Industrial IEEE 802.11 a/b/g/n 4G LTE Cellular router with 1x10/100/1000Base-T(X), PoE P.D., IP-67 grade, M12 connector, US band
	TGAR-W1061+-4G-M12_EU	Industrial IEEE 802.11 a/b/g/n 4G LTE Cellular router with 1x10/100/1000Base-T(X), PoE P.D., IP-67 grade, M12 connector, EU band

Packing List

- TGAR-W1061+-4G
- 2.4GHz/5GHz Antenna
- ORing Tool CD
- Wall Mount Kit
- Quick Installation Guide
- LTE Antenna

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-75 series : 75 Watts power supply
- DR-120 series : 120 Watts power supply
- WLAN RF Antenna series
- RF Antenna Base series
- RF Cable series

TAR-620-M12-MV

TAR-620-M12-MV

Industrial EN50155 IEEE 802.11 a/b/g/n 3G Cellular Router With 2x10/100Base-T(X), M12 connector

Features

- Leading EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: Dual RF in IEEE 802.11 a/b/g/n WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPs
- Support 4G LTE dial up
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem Dial Up
- IP table configurable to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Support DHCP forwarding through PPTP function
- GPS support for GPS model
- 1KV isolation for PoE P.D. port for PoE model.
- Wireless connecting status monitoring
- Provide Digital Input and Digital Output
- Event Warning by Syslog, Email, SNMP Trap and Relay output
- Ultra rugged enclosure for toughest industrial usages
- Wall mounting enabled

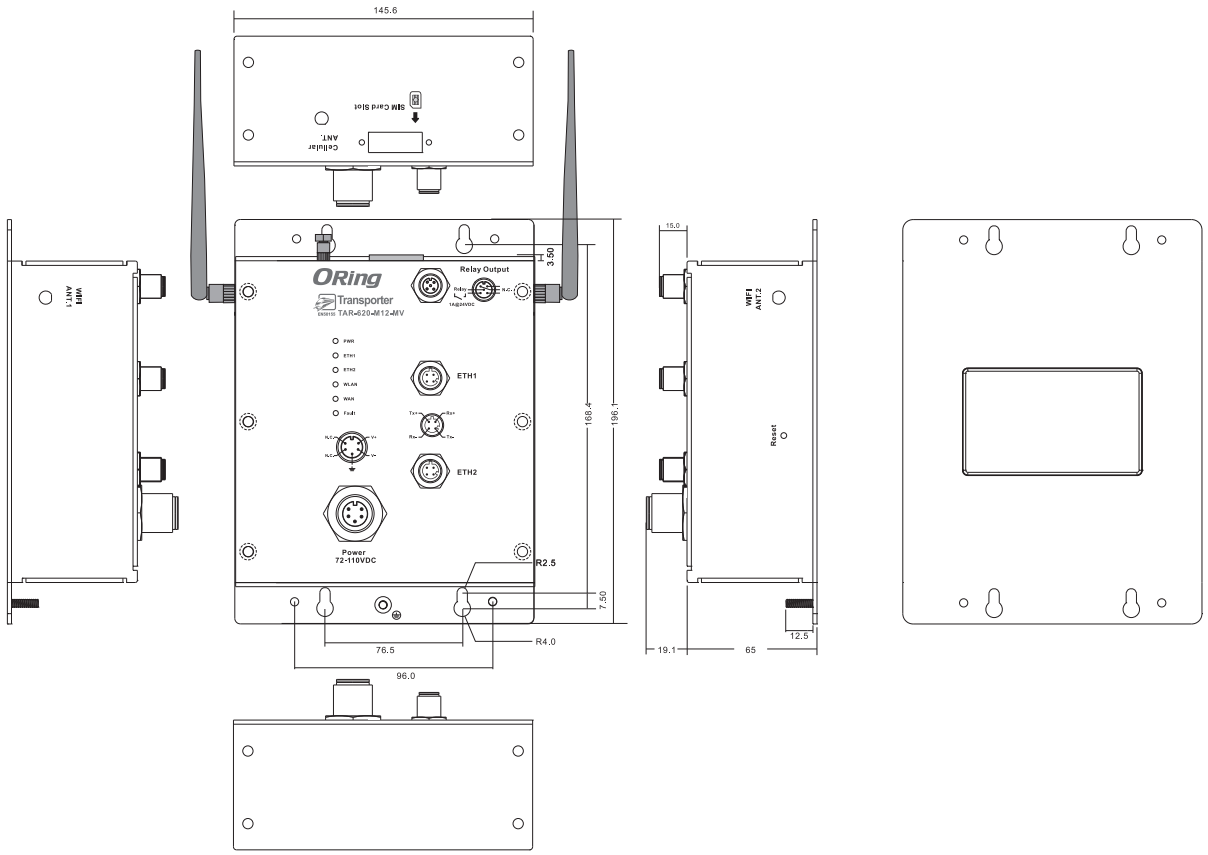
Introduction

ORing's TransporterTM series cellular router is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TAR-620-M12-MV is reliable IEEE802.11 a/b/g/n router with 2 ports LAN which is fully compliant with EN50155 certification. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Cellular modem dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modem. TAR-620-M12-MV EN50155 cellular VPN router use M-series connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, TAR-620-3G-M12 also provides 60Vdc to 160Vdc power input by M23 connector. Therefore, TAR-620-M12-MV is one of the most reliable choices for rolling stock applications on the wireless network.

Application

In TAR-620-M12-MV , there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. TAR-620-M12-MV also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.

Dimensions



Unit=mm

Specifications

ORing EN50155 WLAN Access Point Router Model	TAR-620-M12-MV
Physical Ports	
10/100Base-T(X) Ports in M12 Auto MDI/MDIX (4-pin D-coding)	**2**
SIM Card Slot	**1**
WLAN Interface	
Antenna Connector	2 x External reverse SMA-type antenna connector
Radio Frequency Type	DSSS, OFDM
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)
Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7

Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption
Wireless Security	SSID broadcast disable
Cellular Interface	
Antenna Connector	1 x External reverse SMA-type antenna connector
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA
Band Option	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz
Protocol Support	
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE
LED Indicators	
Power Indicator	1 x LED, PWD:Green for DC Power on
10/100Base-T(X) Indicator	2 x LEDs, Green for port Link/Act
WLAN LED	1 x LED, Green for WLAN Link/Act
WAN LED	1 x LED, Green for Cellular modem Link/ Act
Fault Indicator	1 x LED, Red for Ethernet link down or power down indicator
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Input Power	Single Power Inputs. 72-110 VDC (43~160 VDC) on 5-pin 7/8" male a-coding connector
Power Consumption (Typ.)	12 Watts Max.
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-40
Dimension (W x D x H)	143(W) x 65(D) x 196.1(H) mm (5.62 x 2.55 x 7.72 inch.)
Weight (g)	1550g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-25 to 70°C (-13 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6, EN61373
Rail Traffic	EN50155
Cooling	EN60068-2-1
Dry Heat	EN60068-2-2
Safety	EN60950-1
Warranty	5 years

Ordering Information

	Model Name	Description
Available Model	TAR-620-M12-MV_US	Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100Base-T(X), M12 connector, US band
	TAR-620-M12-MV_EU	Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100Base-T(X), M12 connector, EU band

Packing List

- TAR-620-M12-MV x 1
- 2.4GHz/5GHz Antenna x 2
- CD x 1
- 3G Antenna x 1
- Quick Installation Guide x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- DR-120 series : 120 Watts power supply
- RF Antenna Base series
- DR-75 series : 75 Watts power supply
- WLAN RF Antenna series
- RF Cable series

6 Industrial M2M Gateway

Naming Rules

Model Name Symbol Color Legend

BLACK: For the associated sub-category, the symbol is constant for both this Overall List or in the Datasheet(s) of the indicated model(s).

PURPLE: For the associated sub-category, the symbol is variable or optional for this Overall List and is constant or optional for the Datasheet(s) of the indicated model(s).

BLUE: For the associated sub-category, the symbol is variable or optional for both this Overall List and the Datasheet(s) of the indicated model(s).

INDUSTRIAL M2M Gateway	Industrial Media gateway
Model Name	IMG-ABC
Order info & label	IMG-ABC
Code Definition	**A: Serial Type**
	1: RS-232 Only
	B: Serial port Number
	C: Ethernet port number

INDUSTRIAL M2M Gateway	Industrial WLAN Media gateway
Model Name	IMG-ABCDE
Order info & label	IMG-ABCDE
Code Definition	**A: IP-67 Feature**
	B: Wireless mode
	1:IEEE 802.11 b/g
	C: Serial Type
	1:RS-232 Only
	2:RS-422 / 485
	3:RS-232 / 422 / 485
	D: Serial port number
	E: Ethernet port number

Product Selection Guide

Industrial M2M Gateway

Industrial Media Gateway

M2M Gateway

IMG-6322GT-3G/4G

IMG-W6121+-3G/4G-M12

Ethernet Ports				
10/100/1000 Base-T(X) LAN Ports	2		-	
10/100/1000 Base-T(X) Port with PoE P.D	-		1	
Serial Port				
Serial port Numbers	2		2	
Serial Mode	RS-232/422/485x1+RS-422/485x1		RS-232	
Serial Port Connector	DB9 (male)x1+Terminal Blockx1		M12 (male)	
Serial Baud Rate	110 bps to 921.6Kbps		110 bps to 460.8 Kbps	
WLAN Interface				
WLAN Standard	IEEE802.11a/b/g/n		IEEE802.11a/b/g/n	
Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11b: 17dBm ± 1.5dBm 802.11g: 16dBm ± 1.5dBm 802.11gn HT20: 15dBm ± 1.5dBm@150Mbps 802.11gn HT40: 14dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 11dBm ± 1.5dBm@300Mbps		802.11a: 12dBm ± 1.5dBm 802.11b: 17dBm ± 1.5dBm 802.11g: 15dBm ± 1.5dBm 802.11gn HT20: 13dBm ± 1.5dBm@150Mbps 802.11gn HT40: 12dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 12dBm ± 1.5dBm@300Mbps	
Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps		IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps	
Antenna connector	Reverse SMA Female connector x2		N-Type	
Antenna	2		Wi-Fi ANT x2	
Cellular Interface				
Cullular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA	GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA / HSUPA/LTE	GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA / HSUPA	GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA / HSUPA/LTE
Band Option	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz	America(US) LTE: 700/1700/2100/ MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz Europe(EU) LTE: 800/900/1800/2100/2600 MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 900/2100 MHz GSM/GPRS/EDGE: 900/1800/1900 MHz	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz	America(US) LTE: 700/1700/2100/ MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz Europe(EU) LTE: 800/900/1800/2100/2600 MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 900/2100 MHz GSM/GPRS/EDGE: 900/1800/1900 MHz
Power Redundancy				
DC Terminal Block	2		-	
Installation				
DIN-Rail Mounting	●		-	
Wall mounting	●		●	
Physical Characteristics				
Casing Protection	IP-30		IP-67	
Dimensions (mm)	74.3(W) x 109.2(D) x 153.6(H)		310(W) x 310(D) x 87(H)	
Operating Temperature				
-40 to 70°C	●		●	
Network Technology				
Operating Modes	Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP		Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP	
Windows O.S.Supported	Windows NT/2000/XP/2003/ VISTA 64-Bit/ Windows 7 64-Bit		Windows NT/2000/XP/2003/ VISTA 64-Bit/ Windows 7 64-Bit	
Multiple Link	5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP		5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP	
Event Notification	Syslog / SMTP/ SNMP trap		Syslog / SMTP/ SNMP trap / Beeper	
Warranty	3 years			

Product Line Overview

ORing's industrial media gateways are reliable and cost-effective for redirecting wired or wireless network connections to wired or wireless 3.5G modems in mobile internet connection. The media gateways offer up to 2 serial ports with interfaces of copper and wireless LAN, also support various operation modes: TCP server, TCP client, UDP and Virtual COM on serial ports. In this series, free-bundled management utility – DS-Tool with Virtual COM drivers is included.

All of ORing's industrial media gateways feature highly advanced security features for internet connection. The wireless models with IEEE802.11 wireless standard offer long communication range.

Key Technologies

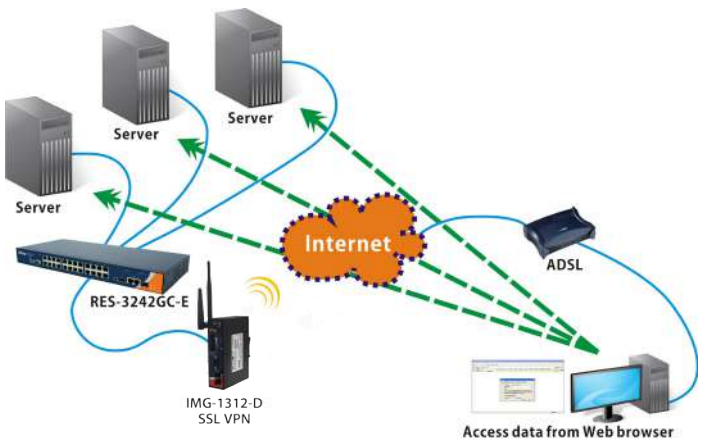
SSL VPN

Technology Description

Secure Sockets Layer virtual private network (SSL VPN) is a kind of VPN that runs on Secure Socket Layers technology and is accessible via https over web browsers. It permits users to establish safe and secure remote access sessions from any Internet connected browser. SSL functions between the Transmission Control Protocol (TCP) layer and application layer protocols. Traditional VPN requires the installation of IPsec client software on a client machine before a connection is established whereas SSL VPN has no such requirement. Corporate users are able to access confidential applications or shared files on standard web browsers.

SSL VPN Benefits

The main benefit of SSL VPN technology is that since it is user-based, not device-based. Any authorized user can login from web-enabled PCs for secure, remote access of confidential files. The safety issues are similar to SSL-based credit card online transactions through standard web browsers.



Supporting Products:

IMG-111 IMG-1312-D IMG-W6121+-4G-M12

PPPoE and DDNS for Internet Connection

Technology Description

PPPoE (Point-to-Point Protocol over Ethernet) is a network protocol for encapsulating Point-to-Point Protocol (PPP) frames inside Ethernet frames. It is used mainly with DSL services where individual users connect to the xDSL modem over Ethernet. IR/IAR/TAR series products features PPPoE to build up a connection a network through xDSL modem from intranet to Internet without router.

DDNS (Dynamic Domain Name Server) is a method, protocol, or network service that provides the capability for a networked device using the Internet Protocol Suite, such as an IP router or computer system, to notify a domain name server to change, in real time, the active DNS configuration of its configured hostnames, addresses or other information stored in DNS. When getting the connection through PPPoE and the IP address is floated, end users may not configure device serrer. However, through DDNS method, it's easy for different IP domain users to connect to IR/IAR/TAR series device servers.

PPPoE Benefits

PPPoE enables clients to adopt the traditional dial-up access mode, which allows end users to use the familiar hardware and similar software to access the Internet. Moreover, clients can also use Ethernet adapters to connect PCs and xDSL modems, which allows PCs to share xDSL lines and thus saves investment.

DDNS Benefits

With DDNS, there is no need to go from PC to PC setting up static addresses every time your network infrastructure changes. Moreover, you only need addresses that would be used simultaneously, rather than having one for every possible user of IP.

Supporting Products

IMG-111 IMG-1312-D IMG-W6121+-4G-M12

Networking Protection

Technology Description

ORing's industrial routers offer comprehensive security features to keep the network well-protected. First of all, ORing routers support the following data encryption schemes:

WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2/WPA2-

These encryption schemes prevent hackers from deciphering data (and hence steal the contents) during wireless transmission.

HTTPs

Provides encrypted communication and secure identification of a network web server. HTTPs is very useful for secure network management as well as transmission of sensitive data.

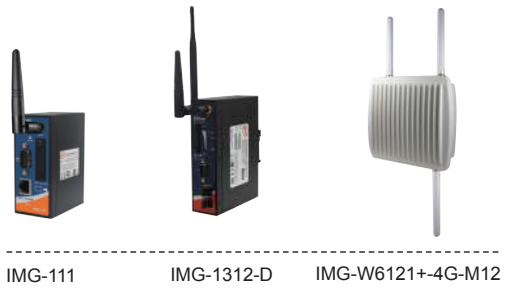
IP Table

Prevents access from unauthorized IP address.

PSK(TKIP,AES)/802.1X Authentication

These schemes act as security guards to the network, supporting service identification and optional point to point encryption over the local LAN segment.

Supporting Products:



SSL Data Encryption

Technology Description

Handshaking

The client asks the server to identify itself. The server hands a "digital certificate" (public encryption key included) to the client. If the "digital certificate" is trustworthy, the client sends confirmation to the server. Now the client and server have "shaked hands".

Data Transmission

The client encrypts data with public encryption key and sends encrypted data to the server. The server decrypts received data with its **secret** private decryption key and retrieves the data. With strong encryption (128-bits or higher), the required decipher time & effort may far exceed any hacker's lifetime.

SSL Data Encryption Benefits

SSL data encryption provides several benefits. It enforces data privacy via strongly designed data encryption schemes. Additionally, it allows identity establishment, i.e. each client has his or her own unique "digital certificate" . Moreover, SSL data encryption is a trust-based data communication scheme. Data communications exist if and only if the server and the client formally trust each other.

Supporting Products:

IMG-111 IMG-1312-D IMG-W6121+-4G-M12

IMG-6322GT

IMG-6322GT

Industrial Cellular M2M Gateway with IEEE 802.11 a/b/g/n and 1 Port RS-422/485, 1 port RS-232/422/485 & 2x10/100/1000Base-T(X) Gateway

Features

- Provide 2 x 10 / 100/1000 Base –T(X) port and SIM card slot
- 3.5G/4G LTE modem dial up included
- Support Open VPN, PPTP VPN
- High Speed Air Connectivity: WLAN interface support up to 300 Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2 / WPA2-PSK (TKIP, AES) / 802.1x Authentication supported
- Versatile modes & event alarm by e-mail.
- Event warning by Syslog, Email, SNMP Trap, Relay output
- Redundant multiple host devices:

  5 host devices: TCP Server, TCP Client mode;

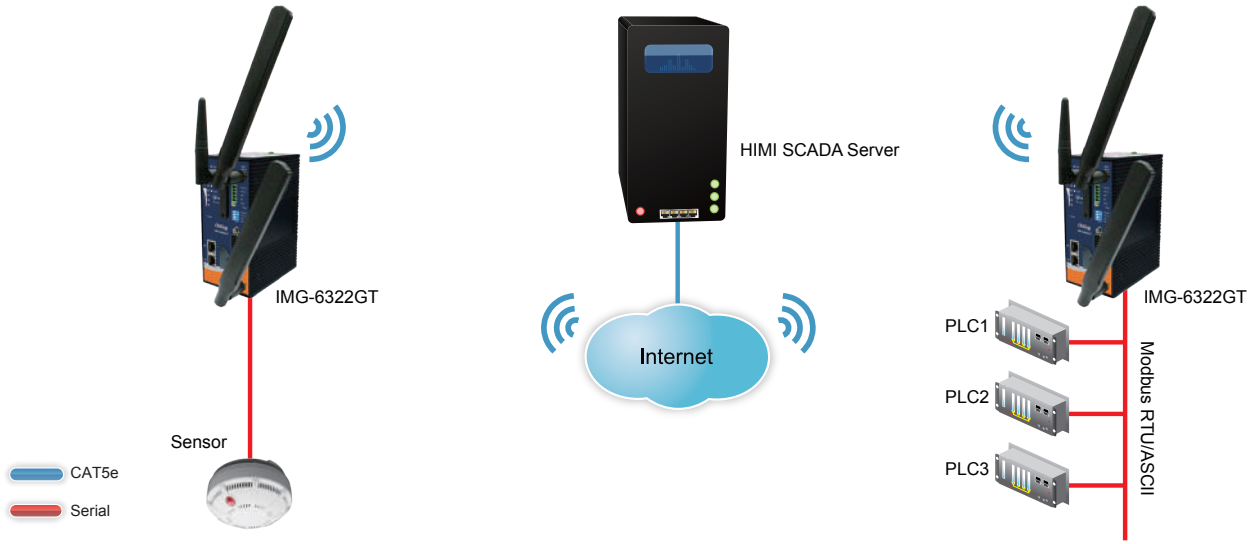
  4 IP ranges: UDP
- Modbus Protocol conversion between Modbus TCP and Modbus RTU
- Dual Power inputs 12~48VDC
- Rugged IP-30 casing design

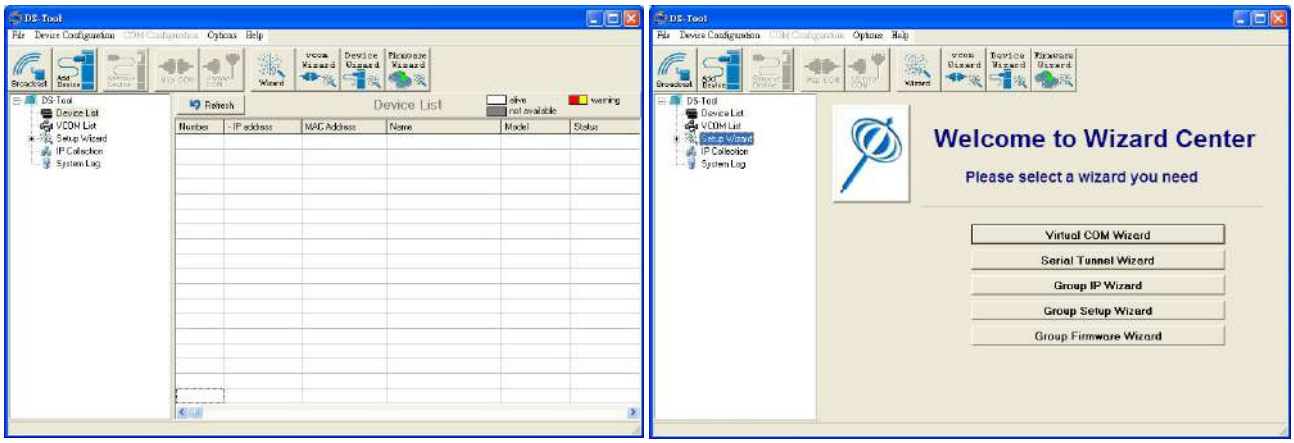
Introduction

IMG-6322GT is an innovative 1 port RS-422/485, 1 port RS-232/422/485 and IEEE802.11 a/b/g/n VPN gateway with 2 ports 10/100/1000Base-T(X) ports. It could be configured to connect to the internet by dialing up 3.5G/4G cellular modem to fulfill demands of various applications rapidly and construct the WLAN environment. IMG-6322GT is also able to act as Modbus Gateway to convert in between different Modbus protocol such as Modbus TCP and Modbus RTU via wired or wireless interface. In TCP Server mode, IMG-6322GT can also transfer SSL encryption data into 5 host PCs simultaneously for backup purposes. Therefore, IMG-6322GT is one of the best solutions for applications of wireless and serial communication.

Application

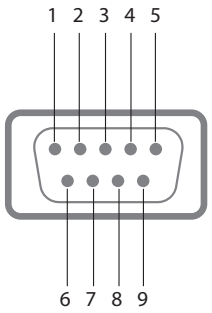
IMG-6322GT, it supports 3.5G/4G Modem dial up. The utility M2M-Tool which is used to manage and monitor all of the serial ports on IMG-6322GT.





Monitoring and Configuration interface

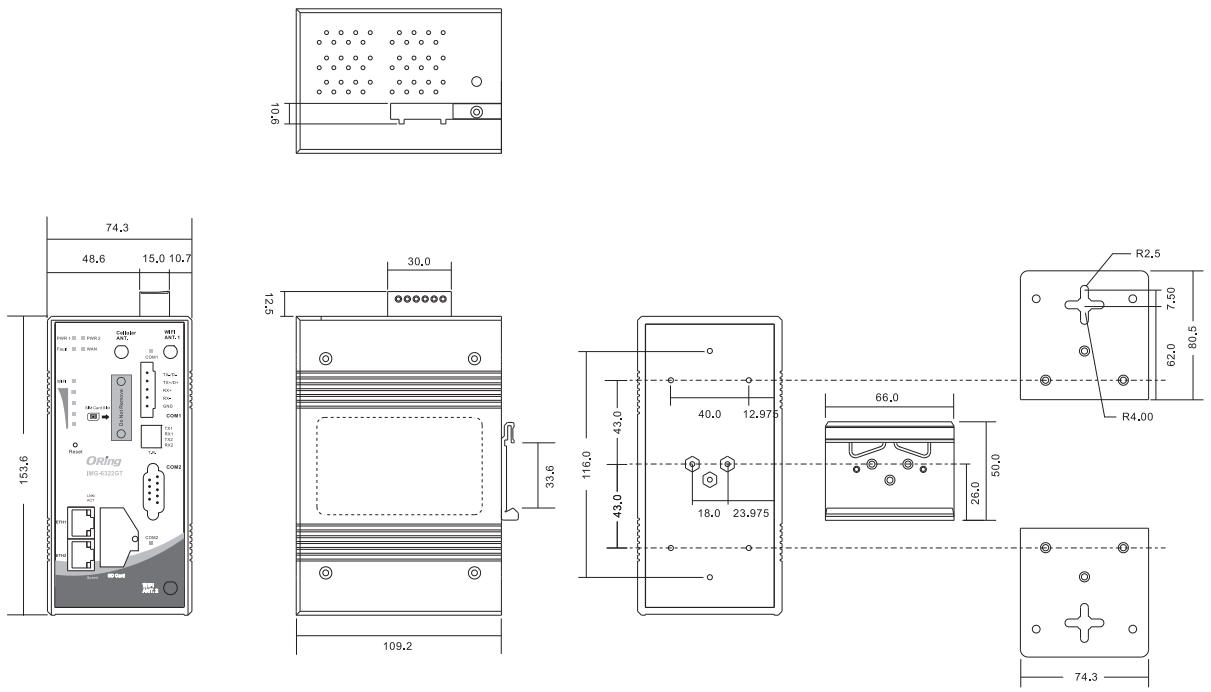
Pin Assignment



DB9 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	DCD	TX-	TX-	DATA -
2	RXD	TX+	TX+	DATA +
3	TXD	RX+	RX+	-
4	DTR	RX-	RX-	-
5	GND	GND	GND	-
6	DSR	-	-	-
7	RTS	-	-	-
8	CTS	-	-	-
9	RI	-	-	-

Dimensions



(Unit=mm)

Specifications

ORing M2M Model	IMG-6322GT-3G	IMG-6322GT-4G
Physical Ports		
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	2	
SIM card slot	1	
Cellular interface		
Cellular Standard	GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA / HSUPA	GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA / HSUPA/ HSPA+/LTE
Band options	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz	America(US) LTE: 700/1700/2100/ MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz Europe(EU) LTE: 800/900/1800/2100/2600 MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 900/2100 MHz GSM/GPRS/EDGE: 900/1800/1900 MHz
Antenna Connector (Reverse SMA Female)	1	-
Antenna Connector (SMA Female)	-	1
WLAN Feature		
Antenna Connector	Reverse SMA Female connector x2	
Radio Frequency Type	DSSS, OFDM	
Modulation	IEEE802.11a/g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM	

Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)	
Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps	
Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11b: 17dBm ± 1.5dBm 802.11g: 16dBm ± 1.5dBm 802.11gn HT20: 15dBm ± 1.5dBm@150Mbps 802.11gn HT40: 14dBm ± 1.5dBm@300Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps 802.11an HT40: 11dBm ± 1.5dBm@300Mbps	
Receiver Sensitivity	802.11a: -76dBm ± 2dBm@54Mbps 802.11b: -85dBm ± 2dBm@11Mbps 802.11g: -76dBm ± 2dBm@54Mbps 802.11gn HT20: -75dBm ± 2dBm@150Mbps 802.11gn HT40: -72dBm ± 2dBm@300Mbps 802.11an HT20: -74dBm ± 2dBm@150Mbps 802.11an HT40: -71dBm ± 2dBm@300Mbps	
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Wireless Security	SSID broadcast disable and enable	
Serial Ports		
Connector	Terminal Block x 1 (Port 1), DB9 male x 1 (Port 2)	
Operation Mode	Port 1 : RS-422/RS-485(2W/4W), Which can be configured by utility Port 2 : RS-232/RS-422/RS-485(2W/4W). Which can be configured by utility	
Serial Baud Rate	110 bps to 921.6 Kbps	
Data Bits	7, 8	
Parity	odd, even, none, mark, space	
Stop Bits	1, 1.5, 2	
Serial signals	RS-232 : TxD, RxD, DCD, RTS, CTS, DSR, DTR, RI, GND RS-422 : TX+, TX-, RX+, RX-, GND RS-485 (2W): D+, D- RS-485 (4W): TX+, TX-, RX+, RX-, GND	
LED Indicators		
Power indicator	PWR 1(2) / Ready: Green On: Power is on	
10/100/1000Base-T(X) RJ45 port indicator	2 x LEDs, LNK/ACT: Green for port LNK/ACT Speed: Green for port Link at 1000Mbps Amber for port Link at 100Mbps. Off for port Link at 10Mbps	
WLAN indicator	Green Solid On: RF on, Blink: data transmitting Green for WLAN Strength: 1<25%, 2<50%, 3<75%, 4<100%	
Fault	Power failure or port disconnected	
WAN	Green on : Modem module detected Green blinking : Modem module being activated	Green on : Modem module detected Green blinking : Modem module being activated
Serial TX/RX LED	Red : Receiving data Green : Transmitting data	
Power		
Power Input	Dual DC inputs. 12-48VDC on 6-pin terminal block	
Power consumption (Typ.)	10 Watts	10.5 Watts
Overload current protection	Present	
Reverse polarity protection	Present	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	74.3 (W) x 109.2 (D) x 153.6 (H) mm (2.93x4.30x6.05 inch)	
Weight (g)	1050 g	

Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-40 to 70°C (-13 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
MTBF	283297.3193 hours	US : 261406.4413 hours EU : 266562.8536 hours
Warranty	5 years	

Ordering Information

IMG- A B C D EE - FF

Code Definition	Wireless Mode	Serial Port Type	Serial Port Number	Ethernet Port Number	Ethernet Port Type	Cellular Interface
Option	**1:** 802.11 b/g **2:** 802.11 a **3:** 802.11 a/b/g **4:** 802.11 b/g/n **5:** 802.11 a/n **6:** 802.11 a/b/g/n	**- 1:** RS-232 only **- 2:** RS-422/485 only **- 3:** RS-232/422/485	**- 2:** 2 port	**- 2:** 2 port	**-GT:** Gigabit Ethernet Port	**- 3G:** HSUPA **- 4G:** LTE

	Model Name	Description
Available Model	IMG-6322GT-3G_US	Industrial 3.5G M2M Gateway with IEEE 802.11 a/b/g/n and 1 Port RS-422/485, 1 port RS-232/422/485 & 2x10/100/1000Base-T(X) Gateway, US band
	IMG-6322GT-3G_EU	Industrial 3.5G M2M Gateway with IEEE 802.11 a/b/g/n and 1 Port RS-422/485, 1 port RS-232/422/485 & 2x10/100/1000Base-T(X) Gateway, EU band
	IMG-6322GT-4G_US	Industrial 4G LTE M2M Gateway with IEEE 802.11 a/b/g/n and 1 Port RS-422/485, 1 port RS-232/422/485 & 2x10/100/1000Base-T(X) Gateway, US band
	IMG-6322GT-4G_EU	Industrial 4G LTE M2M Gateway with IEEE 802.11 a/b/g/n and 1 Port RS-422/485, 1 port RS-232/422/485 & 2x10/100/1000Base-T(X) Gateway, EU band

Packing List

- IMG-6322GT x 1
- Wall Mount Kit x 1
- Din-Rail Kit x 1
- CD x 1
- 2.4GHz/5GHz Antenna x 2
- Quick Installation Guide x 1
- Cellular Antenna x 1

Optional Accessories (Can be purchased separately)

- DR-45 series : 45 Watts power supply
- WLAN RF Antenna Series
- DR-75 series : 75 Watts power supply
- RF Antenna Base Series
- DR-120 series : 120 Watts power supply
- RF Cable series

IMG-1312-D

IMG-1312-D

Industrial 802.11 b/g 3.5G VPN Router with 1 Ports RS-232/422/485 & 4 DI/DO Gateway

Features

- Provide 2 x 10 / 100 Base –T(X) port and SIM card slot
- 3.5G HSUDPA modem included
- Support Open VPN, PPTP VPN
- High Speed Air Connectivity: WLAN interface support up to 54Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2 / WPA2-PSK (TKIP, AES) / 802.1x / Radius supported
- Versatile modes & event alarm by e-mail.
- Event warning by Syslog, Email, SNMP Trap, Relay output
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP
- 4 digital inputs and 4 digital output
- 12~48VDC power input on M12 connector.
- Rugged IP-40 casing design

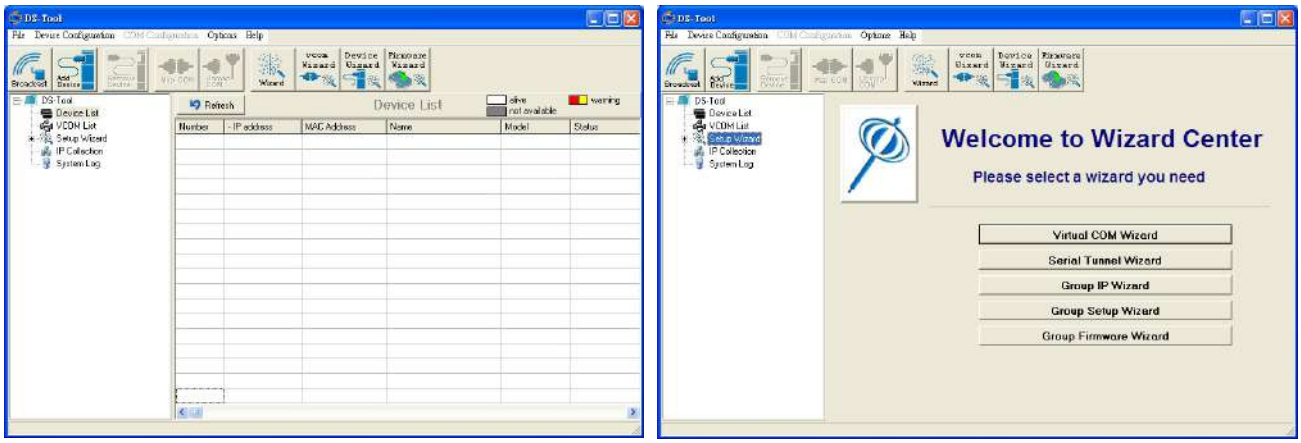
Introduction

IMG-1312-D is an innovative 1 port RS232/422/485 and IEEE802.11 b/g WLAN Access Point VPN gateway with 2 ports 10/100Base-T(X) ports. It could be configured to connect to the internet by dialing up 3.5G cellular modem to fulfill demands of various applications rapidly and construct the WLAN environment. IMG-1312-D is also equipped with four 5V TTL Digital Inputs and four Digital Outputs for general purpose of demand. In addition, IMG-1312-D can also transfer SSL encryption data into 5 host PCs simultaneously for backup purposes. Therefore, IMG-1312-D is one of the best solutions for applications of wireless and serial communication.

Application

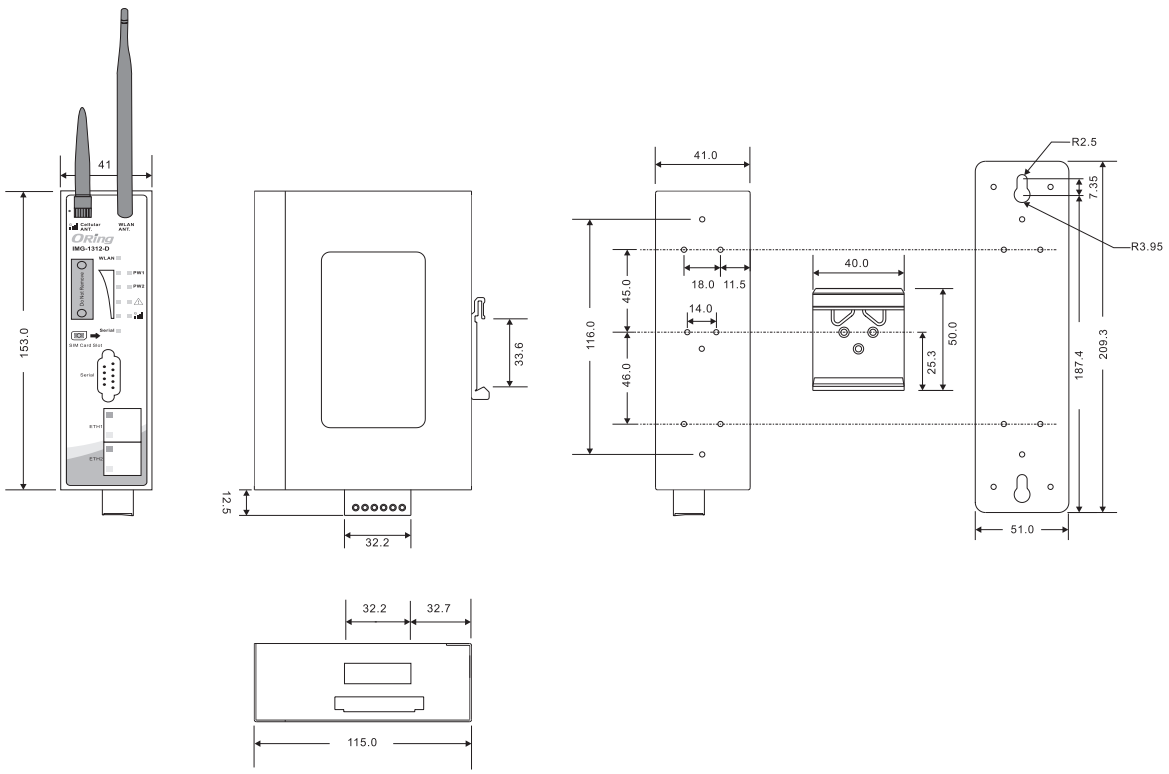
IMG-1312-D, it supports 3.5G HSUPA Modem dial up. The utility- M2M-Tool which is used to manage and monitor all of the serial ports on IMG-1312-D.

M2M Gateway Connection



Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing M2M Model	IMG-1312-D
Physical Ports	
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX with PoE P.D.	2
SIM card slot	1
Cellular Interface	
Cellular Standard	GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA / HSUPA
Band options	Dual band : HSUDPA 1900 / 2100 MHz Quad band : GSM / GPRS / EDGE 850 / 900 / 1800 / 1900 MHz / WCDMA / HSDPA 850 / 900 / 1900 / 2100MHz
Antenna Connector	Reverse SMA connector x1
Antenna	GSM/DCS/UMT 3G antenna x1
WLAN Feature	
Antenna Connector	Reverse SMA connector x1
Antenna	2.4GHz Wi-Fi ANT x1
Radio Frequency Type	DSSS
Modulation	IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM
Frequency Band	America/FCC: 2.412~2.462 GHz (11 channels) Europe CE/ETSI: 2.412~2.472 GHz (13 channels)
Transmission Rate	IEEE802.11b: 1/ 2/ 5.5/ 11 Mbps IEEE802.11g: 6/ 9/ 12/ 18/ 24/ 36/ 48/ 54 Mbps
Transmit Power	IEEE802.11b/g: 18dBm
Receiver Sensitivity	-81dBm @ 11Mbps, PER< 8% -64dBm @ 54Mbps, PER< 10%
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA: WPA2 : 802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X and Radius supported TKIP encryption
Wireless Security	SSID broadcast disable
Serial Ports	
Connector	DB9 Male x 1
Operation Mode	RS-232/RS-422/RS-485(2W/4W). Which can be configured by utility
Serial Baud Rate	110 bps to 460.8 Kbps
Data Bits	5, 6, 7, 8
Parity	odd, even, none, mark, space
Stop Bits	1, 1.5, 2
Serial signals	RS-232 : TxD, RxD, DCD, RTS, CTS, DSR, DTR, RI, GND RS-422 : TX+, TX-, RX+, RX-, GND RS-485 (2W): D+, D-, GND RS-485 (4W): TX+, TX-, RX+, RX-, GND
Digital Input / output	
Digital input	4 digital inputs on terminal block. Power input voltage: 5V TTL
Digital output	4 digital outputs on terminal block. Power output voltage: 5V TTL
LED Indicators	
Power Indicator	Green On: Power is on and functioning Normally.
10/100TX RJ45 port indicator	Green for port Link/Act.
WLAN indicator	WLAN Link /ACT: Green: Link

Power	
Power input	Dual DC inputs. 12-48VDC on 6-pin terminal block
Power consumption (Typ.)	6.5 Watts
Overload current protection	Present
Reverse polarity protection	Present
Physical Characteristics	
Enclosure	IP-40
Dimension (W x D x H)	40 (W)x 115 (D)x154 (H) mm (1.61 x4.48 x6.02 inch.)
Weight (g)	602 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-10 to 60°C (14 to 140°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	3years

Ordering Information

IMG-A B C D -D

Code Definition	WLAN Identification	Serial Port Type	Serial Port Number	Ethernet Port Number
Option	**-1**: IEEE802.11 b/g mode **-2**: IEEE802.11 a mode **-3**: IEEE802.11 a/b/g mode	**-1**: RS-232 only **-2**: RS-422/485 only **-3**: Support RS-232/422/485	**-1**: 1 port	**-2**: 2 port

	Model Name	Description
Available Model	IMG-1312-D_US	Industrial 802.11 b/g 3.5G VPN Router with 1 Ports RS-232/422/485 & 4 DI/DO Gateway, US band
	IMG-1312-D_EU	Industrial 802.11 b/g 3.5G VPN Router with 1 Ports RS-232/422/485 & 4 DI/DO Gateway, EU band

Packing List

- IMG-1312-D
- ORing Tool CD
- Quick Installation Guide

Optional Accessories (Can be purchased separately)

IMG-W6121+-M12

IMG-W6121+-M12

Industrial Cellular M2M Gateway with IEEE802.11 a/b/g/n, 1x10/100/1000Base-T(X) PoE P.D. and 2xRS-232

Features

- Provide 1x10/100 /1000Base–T(X) port with PoE P.D.
- 3.5G HSUDPA or 4G LTE modem included
- Provide 2xRS-232 serial ports
- Support Open VPN, PPTP VPN
- High Speed Air Connectivity: WLAN interface support up to 300 Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/ WPA2 / WPA2-PSK (TKIP, AES) / 802.1x / Radius supported
- Event warning by Syslog, Email, SNMP Trap.
- Versatile modes with redundant multiple host devices: 5 host devices: Virtual COM, TCP Server, TCP Client mode; 4 IP ranges: UDP
- IP-67 grade waterproof casing

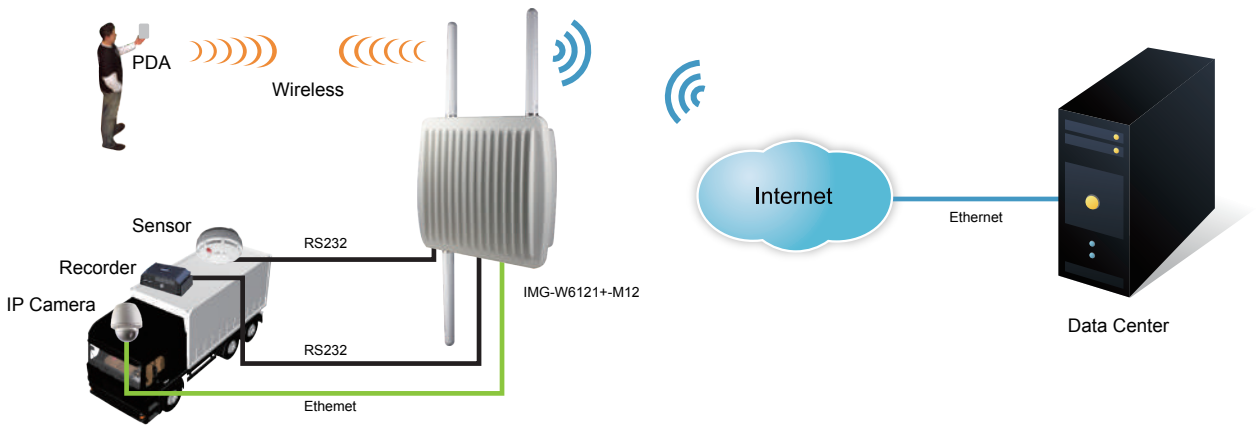
P.D. PoE | a/b/g/n Wifi 802.11a/b/g/n | 4G LTE | 3.5G | X Roaming | IP-67 | -20~70°C Temperature | RoHS Lead Free | CE | FC

Introduction

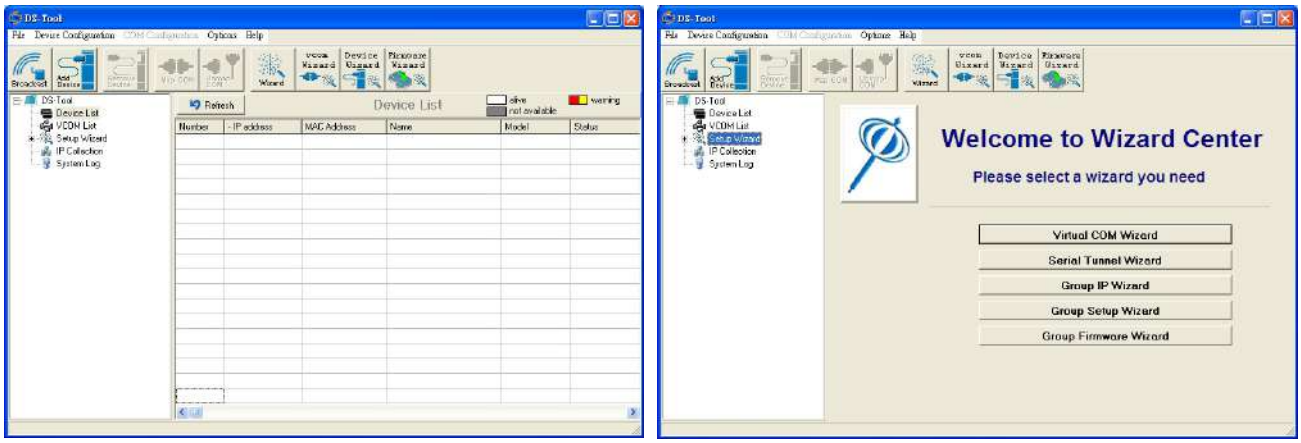
IMG-W6121+-M12 is an innovative 2 port RS-232 and IEEE802.11 a/b/g/n WLAN Access Point VPN gateway with 1 port 10/100/1000Base-T(X) ports. It could be configured to connect to the internet by dialing up 3.5G/4G cellular modem to fulfill demands of various applications rapidly and construct the WLAN environment. IMG-W6121+-M12 has IP-67 grade waterproof casing and PoE power input which enables IMG-W6121+-M12 to be deployed in any outdoor environment to fulfill customer's requirement. In addition, IMG-W6121+-M12 can also transfer SSL encryption data into 5 host PCs simultaneously for backup purposes. Therefore, IMG-W6121+-M12 is one of the best solutions for applications of wireless and serial communication.

Application

IMG-W6121+-M12, it support 3.5G HSUPA / 4G LTE Modem dial up. The utility-DS-Tool which is used to manage and monitor all of the serial ports on IMG-W6121+-M12.

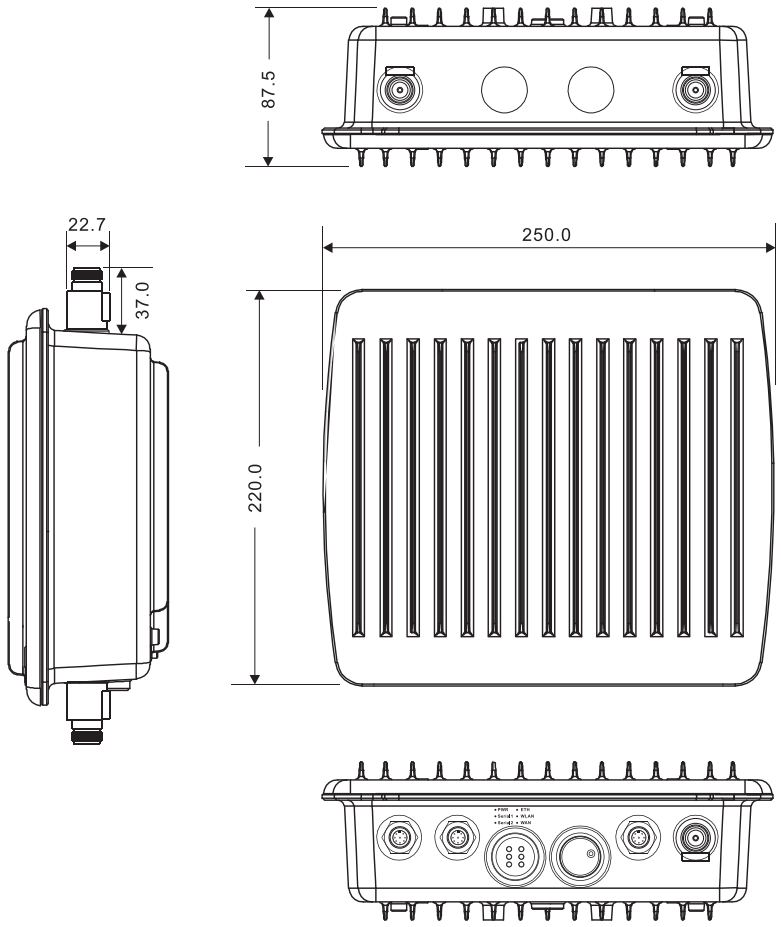


M2M Gateway Connection



Monitoring and Configuration interface

Dimensions



(Unit=mm)

Specifications

ORing M2M Model	IMG-W6121+-3G-M12	IMG-W6121+-4G-M12
Physical Ports		
10/100/1000 Base-T(X) Ports in M12 Auto MDI/MDIX with PoE P.D.	**1 (4-pin M12 D-coding connector)**	
SIM card slot	**1**	
Cellular Interface		
Cellular Standard	GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA / HSUPA	GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA / HSUPA/ LTE
Band options	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz	**America(US)** LTE: 700/1700/2100/ MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz **Europe(EU)** LTE: 800/900/1800/2100/2600 MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 900/2100 MHz GSM/GPRS/EDGE: 900/1800/1900 MHz
Antenna Connector	N-type Female	
Antenna	GSM/DCS/UMT 3G antenna x1	GSM/DCS/UMT/LTE 4G antenna x1
WLAN Feature		
Antenna Connector	N-type Female	
Antenna	Wi-Fi ANT x2	
Radio Frequency Type	DSSS, OFDM	
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM	IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz (9 channels) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)	
Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE801.11n: up to 300Mbps	IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps
Transmit Power	802.11a: 12dBm ± 1.5dBm 802.11g: 15dBm ± 1.5dBm 802.11gn HT40: 12dBm ± 1.5dBm@300Mbps 802.11an HT40: 12dBm ± 1.5dBm@300Mbps	802.11b: 17dBm ± 1.5dBm 802.11gn HT20: 13dBm ± 1.5dBm@150Mbps 802.11an HT20: 12dBm ± 1.5dBm@150Mbps
Receiver Sensitivity	802.11a: -68dBm ± 2dBm@54Mbps 802.11g: -68dBm ± 2dBm@54Mbps 802.11gn HT40: -68dBm ± 2dBm@300Mbps 802.11an HT40: -68dBm ± 2dBm@300Mbps	802.11b: -85dBm ± 2dBm@11Mbps 802.11gn HT20: -68dBm ± 2dBm@150Mbps 802.11an HT20: -68dBm ± 2dBm@150Mbps
Encryption Security	WEP: (64-bit ,128-bit key supported) WPAPSK (256-bit key pre-shared key supported) TKIP encryption	WPA/WPA2 : 802.11i(WEP and AES encryption) 802.1X and Radius supported
Wireless Security	SSID broadcast disable	
Serial Ports		
Connector	2 (8-pin M12 A-coding Male connector)	
Operation Mode	RS-232	
Serial Baud Rate	110 bps to 115.2 Kbps	
Data Bits	5, 6, 7, 8	
Parity	odd, even, none, mark, space	
Stop Bits	1, 1.5, 2	
Serial signals	RS-232 : TxD, RxD, DCD, RTS, CTS, DSR, DTR, GND	
LED Indicators		
Power indicator	Green On: Power is on and functioning Normally.	
10/100/1000T M12 port indicator	Green for port Link/Act.	

WLAN indicator	WLAN Link /ACT: Green: Link
Power	
Power Input	48VDC on PoE port compliant with IEEE802.3af standard
Power consumption (Typ.)	6.5 Watts
Overload current protection	Present
Physical Characteristic	
Enclosure	IP-67
Dimension (W x D x H)	310 (W) x 310(D) x 87 (H) (12.2 x 12.2 x 3.4 inch)
Weight (g)	2653
Environmental	
Storage Temperature	-40 to 85oC (-40 to 185oF)
Operating Temperature	-25 to 70oC (-13 to 158oF)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
Warranty	3 years

Ordering Information

IMG-W A B C D +- EE -M12

Code Definition	WLAN Identification	Serial Port Type	Serial Port Number	Ethernet Port Number	PoE Identification	Cellular Interface
Option	- 1: 802.11 b/g - 2: 802.11 a - 3: 802.11 a/b/g - 4: 802.11 b/g/n - 5: 802.11 a/n - 6: 802.11 a/b/g/n	**-1**: RS-232 only **-2**: RS-422/485 only **-3**: Support RS-232/422/485	**- 2**: 2 port	**- 1**: 1 port	- +: PoE P.D. supported	**- 3G**: HSUPA **- 4G**: LTE

	Model Name	Description
Available Model	IMG-W6121+-3G-M12_US	Industrial 3.5G M2M Gateway with IEEE802.11a/b/g/n, 1x10/100/1000Base-T(X) PoE P.D. and 2xRS-232, US band
	IMG-W6121+-3G-M12_EU	Industrial 3.5G M2M Gateway with IEEE802.11 a/b/g/n, 1x10/100/1000Base-T(X) PoE P.D. and 2xRS-232, EU band
	IMG-W6121+-4G-M12_US	Industrial 4G M2M Gateway with IEEE802.11a/b/g/n, 1x10/100/1000Base-T(X) PoE P.D. and 2xRS-232, US band
	IMG-W6121+-4G-M12_EU	Industrial 4G M2M Gateway with IEEE802.11 a/b/g/n, 1x10/100/1000Base-T(X) PoE P.D. and 2xRS-232, EU band

Packing List

- MG-W6121+-M12 x 1
- Wall Mount Kit x 1
- CD x 1
- 2.4GHz/5GHz Antenna x 2
- Quick Installation Guide x 1
- Cellular Antenna x 1

Optional Accessories (Can be purchased separately)

- WLAN RF Antenna Series
- RF Antenna Base Series
- DB9 to M12 Cable

7 Accessories

Product Line Overview

ORing has all the industrial networking components for all the small but indispensable industrial networking needs: antennas, cables, fiber patch cords, adapters, and attenuators, power supplies and adapters, surge protectors, plus Ethernet SFP+, SFP and BIDI-SFP modules.

Product Selection Guide

Accessories





Fiber Patch Cord(FPC)/ Fiber Patch Adapter(FCA)/ Fiber Attenuator(FAT)					
Model Name	Optical Connector	Multi-mode	Single-mode	Diameter	Specification
FPC-SCSC-MM3M	SC / SC	•		62.5/125 μm	3 m
FPC-SCSC-SS3M	SC / SC		•	9/125 μm	3 m
FPC-SCLC-MM3M	SC / LC	•		62.5/125 μm	3 m
FPC-SCLC-SS3M	SC / LC		•	9/125 μm	3 m
FPC-SCST-MM3M	SC / ST	•		62.5/125 μm	3 m
FPC-SCST-SS3M	SC / ST		•	9/125 μm	3 m
FPC-LCLC-MM3M	LC / LC	•		62.5/125 μm	3 m
FPC-LCLC-SS3M	LC / LC		•	9/125 μm	3 m
FCA-SC-MM	SC / SC	•		62.5/125 μm	-
FCA-SC-SS	SC / SC		•	9/125 μm	-
FAT-LC-SS05	LC / LC		•	9/125 μm	5 db
FAT-LC-SS10	LC / LC		•	9/125 μm	10 db
FAT-LC-SS15	LC / LC		•	9/125 μm	15 db
FAT-LC-SS20	LC / LC		•	9/125 μm	20 db



DIN-Rail Power Supply	
Regular Type	
Model Name	Description
DR-4512	45W DIN-Rail 12VDC/3.5A Power Supply with universal 100 to 240VAC input, -10~50℃
DR-4524	45W DIN-Rail 24VDC/2A Power Supply with universal 100 to 240VAC input, -10~50℃
DR-75-12	75W DIN-Rail 12VDC/6.3A Power Supply with universal 100 to 240VAC input, -10~60℃
DR-75-24	75W DIN-Rail 24VDC/3.2A Power Supply with universal 100 to 240VAC input, -10~60℃
DR-75-48	75W DIN-Rail 48VDC/1.6A Power Supply with universal 100 to 240VAC input, -10~60℃
DR-120-12	120W DIN-Rail 12VDC/10A Power Supply with 100 to 120VAC / 220 to 240VAC input , -10~60℃
DR-120-24	120W DIN-Rail 24VDC/5A Power Supply with 100 to 120VAC / 220 to 240VAC input , -10~60℃
DR-120-48	120W DIN-Rail 48VDC/2.5A Power Supply with 100 to 120VAC / 220 to 240VAC input , -10~60℃
SDR-240-48	240W DIN-Rail 48VDC/5A Power Supply with 100 to 240VAC input , -25~70℃
SDR-480-48	480W DIN-Rail 48VDC/10A Power Supply with 100 to 240VAC input , -25~70℃
Extended Type	
Model Name	Description
DRP024V060W1BN	60W DIN-Rail 24VDC/2.5A Power Supply with universal 100 to 240VAC input, extended type, -25~80℃
DRP024V120W1BN	120W DIN-Rail 24VDC/5A Power Supply with universal 100 to 240VAC input, extended type, -25~80℃
DRP024V240W1BN	240W DIN-Rail 24VDC/10A Power Supply with universal 100 to 240VAC input, extended type, -25~80℃
DRP024V480W1BN	480W DIN-Rail 24VDC/20A Power Supply with universal 100 to 240VAC input, extended type, -25~80℃
DRP048V060W1BN	60W DIN-Rail 48VDC/1.25A Power Supply with universal 100 to 240VAC input, extended type, -25~80℃
DRP048V120W1BN	120W DIN-Rail 48VDC/2.5A Power Supply with universal 100 to 240VAC input, extended type, -25~80℃
DRP048V240W1BN	240W DIN-Rail 48VDC/5A Power Supply with universal 100 to 240VAC input, extended type, -25~80℃
DRP048V480W1BN	480W DIN-Rail 48VDC/10A Power Supply with universal 100 to 240VAC input, extended type, -25~75℃

Product Selection Guide

Power Cord with Ferrule terminal (For Din-Rail Power Supply)	
Model Name	Description
PCF-AU	Power Cord with Ferrule terminal, AU plug
PCF-UK	Power Cord with Ferrule terminal, UK plug
PCF-US	Power Cord with Ferrule terminal, US plug
PCF-EU	Power Cord with Ferrule terminal, EU plug
PCF-JP	Power Cord with Ferrule terminal, JP plug

Power Adapter	
Model Name	Description
PAA-121000	12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, US plug, 0~40°C
PAE-121000	12VDC/1000mA 12W Power Adapter with universal 100 to 240VAC input, EU plug, 0~40°C
PAA-123750	12VDC/3750mA 45W Power Adapter with universal 100 to 240VAC input, US plug, -40~75°C
PAE-123750	12VDC/3750mA 45W Power Adapter with universal 100 to 240VAC input, EU plug, -40~75°C
PAA-482500	48VDC/2500mA 120W Power Adapter with universal 100 to 240VAC input, US power cord, -30~70°C
PAE-482500	48VDC/2500mA 120W Power Adapter with universal 100 to 240VAC input, EU power cord, -30~70°C
PAA-502400	50VDC/2400mA 120W Power Adapter with universal 100 to 240VAC input, US power cord, -10~50°C
PAE-502400	50VDC/2400mA 120W Power Adapter with universal 100 to 240VAC input, EU power cord, -10~50°C

*Note: Other plugs upon request.

M-Series Cables and connectors		
Model Name	Description	Cable Length
M12C-4M4M-300	4-pin M12 Male to 4-pin M12 Male IP-67 Ethernet Cable, 3m, A-coding	3 m
M12C-4M4F-1000	4-pin M12 Male to 4-pin M12 Female IP-67 Ethernet Cable, 10m, A-coding	10 m
M12C-4M4F-3000	4-pin M12 Male to 4-pin M12 Female IP-67 Ethernet Cable, 30m, A-coding	30 m
M12C-4MRJ-300	4-pin M12 Male to RJ45 plug Ethernet Cable, 3m, A-coding	3 m
M12C-4M4M-300D	4-pin M12 Male to 4-pin M12 Male IP-67 Ethernet Cable, 3m, D-coding	3 m
M12C-4M4F-1000D	4-pin M12 Male to 4-pin M12 Female IP-67 Ethernet Cable,10m, D-coding	10 m
M12C-4M4F-3000D	4-pin M12 Male to 4-pin M12 Female IP-67 Ethernet Cable, 30m, D-coding	30 m
M12C-4MRJ-300D	4-pin M12 Male to RJ45 Plug Ethernet Cable, 3m, D-coding	3 m
M12C-5MDB9-300	5-pin M12 Male to DB9 console Cable, 3m, A-coding	3 m
M12C-5M00-300	5-pin M12 Male to Tin-plated Bare Wire Power Cable, 3m, A-coding	3 m
M12C-5M5F-1000	5-pin M12 Male to 5-pin M12 Female IP-67 Cable, 10m, A-coding	10 m
M12C-5M5F-3000	5-pin M12 Male to 5-pin M12 Female IP-67 Cable, 30m, A-coding	30 m
M12C-8M8M-300	8-pin M12 Male to 8-pin M12 Male IP-67 Ethernet Cable, 3m, A-coding	3 m
M12C-8M8F-1000	8-pin M12 Male to 8-pin M12 Female IP-67 Ethernet Cable, 10m, A-coding	10 m
M12C-8M8F-3000	8-pin M12 Male to 8-pin M12 Female IP-67 Ethernet Cable, 30m, A-coding	30 m
M12C-8MRJ-300	8-pin M12 Male to RJ45 plug Ethernet Cable, 3m, A-coding	3 m
M12C-8M8M-300X	8-pin M12 Male to 8-pin M12 Male IP-67 Ethernet Cable, 3m, X-coding	3 m
M12C-8M8F-1000X	8-pin M12 Male to 8-pin M12 Female IP-67 Ethernet Cable, 10m, X-coding	10 m
M12C-8M8F-3000X	8-pin M12 Male to 8-pin M12 Female IP-67 Ethernet Cable, 30m, X-coding	30 m
M12C-8MRJ-300X	8-pin M12 Male to RJ45 plug Ethernet Cable, 3m, X-coding	3 m
M23C-5M00-300	5-pin M23 Male to Tin-plated Bare Wire Power Cable, 3m, A-coding	3 m
7/8C-5F00-300	5-pin 7/8 inch Female to Tin-plated Bare Wire Power Cable, 3m, A-coding	3 m
M12P-4MD	4-pin M12 Male Assembled Plug, Soldering type, D-coding	-
M12P-4MD-C	4-pin M12 Male Assembled Plug, IDC type, D-coding	-
M12P-4FS-S	4-pin M12 Female Assembled Plug, Screw type, S-coding	-
M12P-5MA	5-pin M12 Male Assembled Plug, Soldering type, A-coding	-

Product Selection Guide

M12P-5MA-C	5-pin M12 Male Assembled Plug, IDC type, A-coding	-
M12P-5FA	5-pin M12 Female Assembled Plug, Soldering type, A-coding	-
M12P-5FA-C	5-pin M12 Female Assembled Plug, IDC type, A-coding	-
M12P-8MA	8-pin M12 Male Assembled Plug, Soldering type, A-coding	-
M12P-8MA-C	8-pin M12 Male Assembled Plug, IDC type, A-coding	-
M12P-8FA	8-pin M12 Female Assembled Plug, Soldering type, A-coding	-
M12P-8FA-C	8-pin M12 Female Assembled Plug, IDC type, A-coding	-
M12P-8MX-C	8-pin M12 Male Assembled Plug, IDC type, X-coding	-
M23P-5MA	5-pin M23 Male Assembled Plug, Soldering type, A-coding	-
M23P-5MAR-S	5-pin M23 Male Assembled Plug, Screw type, A-coding,right angled	-
7/8P-5FA	5-pin 7/8 inch Female Assembled Plug, Soldering type, A-coding	-
7/8P-5FAR-S	5-pin 7/8 inch Female Assembled Plug, Screw type, A-coding, right angled	-

RF Antenna Base (Magnetic)

Model Name	Description	Cable Length
RFB-M2-150	N Female Magnetic WLAN RF Antenna Base, Cable length 1.5m, with SMA Male RS connector	1.5 m
RFB-M2-1000	N Female Magnetic WLAN RF Antenna Base, Cable length 10m, with SMA Male RS connector	10 m
RFB-M3-150	SMA Female RS Magnetic WLAN RF Antenna Base, Cable length 1.5m, with SMA Male RS connector	1.5m

RF Cable

Model Name	Description	Cable Length
RFC-SFR-SMR-1000	Low loss RF Cable, Cable length 10m, RP-SMA Female to RP-SMA Male connector	10 m
RFC-SF-SMR-150	Low loss RF Cable, Cable length 1.5m, SMA Female to RP-SMA Male connector	1.5 m
RFC-SM-SMR-150	Low loss RF Cable, Cable length 1.5m, SMA Male to RP-SMA Male connector	1.5 m
RFC-NM-SMR-150	Low loss RF Cable, Cable length 1.5m, N Male to RP-SMA Male connector	1.5 m
RFC-NM-SMR-500	Low loss RF Cable, Cable length 5m, N Male to RP-SMA Male connector	5m
RFC-NM-SMR-1000	Low loss RF Cable, Cable length 10m, N Male to RP-SMA Male connector	10 m
RFC-NF-NM-50	Low loss RF Cable, Cable length 0.5m, N Female to N Male connector	0.5 m
RFC-NF-NM-500	Low loss RF Cable, Cable length 5m, N Female to N Male connector	5 m
RFC-NF-NM-1000	Low loss RF Cable, Cable length 10m, N Female to N Male connector	10 m
RFC-NM-NM-150	Low loss RF Cable, Cable length 1.5m, N Male to N Male connector	1.5m

RF Surge Protector

Model Name	Description
RFP-NF-NM-WAG	High-power RF Surge Protector, 0~6GHz, N Female to N Male connector

WLAN RF Antenna (Outdoor Panel Type)

Model Name	Description
RFA-P12-WG	Outdoor High-gain Panel Antenna, 2.4GHz, 12dbi max, N Female connector
RFA-P14-WA	Outdoor High-gain Panel Antenna, 5GHz, 14dbi max, N Female connector

Product Selection Guide

WLAN RF Antenna (Omni - Directional)	
Model Name	Description
RFA-O7-NM-WG	Omni-directional High-gain Dipole Antenna, 2.4GHz, 7dBi max, N Male connector
RFA-O9-NM-WG	Omni-directional High-gain Dipole Antenna, 2.4GHz, 9dBi max, N Male connector
RFA-O5-NM-WA	Omni-directional High-gain Dipole Antenna, 5GHz, 5dBi max, N Male connector
RFA-O10-NM-WA	Omni-directional High-gain Dipole Antenna, 5GHz, 10dBi max, N Male connector
RFA-O12-NF-WA	Omni-directional High-gain Dipole Antenna, 5GHz, 12dBi max, N Female connector with wall-mount bracket
RFA-O8-NM-WAG	Omni-directional High-gain Dipole Antenna, 2.4/5GHz, 6/8dBi max, N Male connector

RF Antenna (Dome Type)	
Model Name	Description
RFA-D9-SM-WG	WLAN RF Dome Antenna 2.4GHz, 9dbi max, 2.4GHz, SMA Male connector
RFA-D28-SM-AG-3M	GPS Active Antenna,1575 MHz, 28dBi max, Magnetic with 3m SMA Male cable

RF Antenna (Roof Type)	
Model Name	Description
RFA-O5-NF3-W3GGS-028	Omni-derectional Roof Antenna, 2G/3G/4G,Wifi and GPS applications, 5dBi max, N Female connector

Product Selection Guide

Accessories

Fast Ethernet SFP modules

Specifications

	Model name				
Characteristics	SFP100-MM/-I	SFP100-SS30/-I	SFP100-SS60/-I	SFP100-SS100/-I	✻ SFP100-SS120/-I
Fiber mode	multi-mode	single-mode	single-mode	single-mode	single-mode
Typical Distance	2 km	30 km	60 km	100 km	120 km
Operating Temperature	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)
Wavelength	1310 nm	1310 nm	1310 nm	1550 nm	1550 nm
Optical Output Power 9/125 µm fiber (Max. TX)	-	-8 dBm	0 dBm	0 dBm	5 dBm
Optical Output Power 9/125 µm fiber (Min. TX)	-	-15 dBm	-5 dBm	-5 dBm	0 dBm
Optical Output Power 62.5/125 µm fiber (Max. TX)	-14 dBm	-	-	-	-
Optical Output Power 62.5/125 µm fiber (Min. TX)	-20 dBm	-	-	-	-
Optical Output Power 50/125 µm fiber (Max. TX)	-14 dBm	-	-	-	-
Optical Output Power 50/125 µm fiber (Min. TX)	-23.5 dBm	-	-	-	-
Optical Input Power-minimum (Sensitivity)	-31 dBm	-34 dBm	-35 dBm	-35 dBm	-35 dBm
Optical Input Power-maximum (Saturation)	-8 dBm	0 dBm	0 dBm	0 dBm	0 dBm
Link Budget	7.5 dB	19 dB	30 dB	30 dB	35 dB

✻ If two SFP transceivers are connected to each other in a short distance and the received optical power is greater than the listed specification of the received SFP transceiver, please add an optical attenuator(Please refer to FAT-LC series accessories) to avoid any possible damages.

Ordering Information

Model Name	Description
SFP100-MM	100Mbps SFP optical transceiver, multi-mode / 2km, 1310nm, 0 ~ 70℃
SFP100-MM-I	100Mbps SFP optical transceiver, multi-mode / 2km, 1310nm, industrial grade, -40 ~ 85℃
SFP100-SS30	100Mbps SFP optical transceiver, single-mode / 30km, 1310nm, 0 ~ 70℃
SFP100-SS30-I	100Mbps SFP optical transceiver, single-mode / 30km, 1310nm, industrial grade, -40 ~ 85℃
SFP100-SS60	100Mbps SFP optical transceiver, single-mode / 60km, 1310nm, 0 ~ 70℃
SFP100-SS60-I	100Mbps SFP optical transceiver, single-mode / 60km, 1310nm, industrial grade, -40 ~ 85℃
SFP100-SS100	100Mbps SFP optical transceiver, single-mode / 100km, 1550nm, 0 ~ 70℃
SFP100-SS100-I	100Mbps SFP optical transceiver, single-mode / 100km, 1550nm, industrial grade, -40 ~ 85℃
SFP100-SS120	100Mbps SFP optical transceiver, single-mode / 120km, 1550nm, 0 ~ 70℃
SFP100-SS120-I	100Mbps SFP optical transceiver, single-mode / 120km, 1550nm, industrial grade, -40 ~ 85℃

Product Selection Guide

Accessories

Fast Ethernet BIDI-SFP modules

Specifications

	Model Name							
Characteristics	SFP100B3-MM/-I	SFP100B5-MM/-I	SFP100B3-SS20/-I	SFP100B5-SS20/-I	SFP100B3-SS40/-I	SFP100B5-SS40/-I	SFP100B3-SS60/-I	SFP100B5-SS60/-I
Fiber mode	Multi-mode	Multi-mode	single-mode	single-mode	single-mode	single-mode	single-mode	single-mode
Typical Distance	2 km	2 km	20 km	20 km	40 km	40 km	60 km	60 km
Operating Temperature	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)
Wavelength	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm
Optical Output Power 9/125 μm fiber (Max. TX)	0 dBm	0 dBm	-8 dBm	-8 dBm	0 dBm	0 dBm	0 dBm	0 dBm
Optical Output Power 9/125 μm fiber (Min. TX)	-10 dBm	-10 dBm	-14 dBm	-14 dBm	-8 dBm	-8 dBm	-5 dBm	-5 dBm
Optical Input Power-minimum (Sensitivity)	-28 dBm	-28 dBm	-32 dBm	-32 dBm	-34 dBm	-34 dBm	-34 dBm	-34 dBm
Optical Input Power-maximum (Saturation)	0 dBm	0 dBm	0 dBm	0 dBm	0 dBm	0 dBm	0 dBm	0 dBm
Link Budget	18 dB		18 dB		26 dB		29 dB	

Ordering Information

Model Name	Description
SFP100B3-MM	100Mbps SFP optical Transceiver, Multi-mode BIDI / 2KM, TX1310nm / RX1550nm, 0 ~ 70℃
SFP100B3-MM-I	100Mbps SFP optical Transceiver, Multi-mode BIDI / 2KM, TX1310nm / RX1550nm, industrial grade, -40 ~ 85℃
SFP100B5-MM	100Mbps SFP optical Transceiver, Multi-mode BIDI / 2KM, TX1550nm / RX1310nm, 0 ~ 70℃
SFP100B5-MM-I	100Mbps SFP optical Transceiver, Multi-mode BIDI / 2KM, TX1550nm / RX1310nm, industrial grade, -40 ~ 85℃
SFP100B3-SS20	100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, 0 ~ 70℃
SFP100B3-SS20-I	100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85℃
SFP100B5-SS20	100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, 0 ~ 70℃
SFP100B5-SS20-I	100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85℃
SFP100B3-SS40	100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, 0 ~ 70℃
SFP100B3-SS40-I	100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85℃
SFP100B5-SS40	100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, 0 ~ 70℃
SFP100B5-SS40-I	100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85℃
SFP100B3-SS60	100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1310nm, RX1550nm, 0 ~ 70℃
SFP100B3-SS60-I	100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85℃
SFP100B5-SS60	100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1550nm, RX1310nm, 0 ~ 70℃
SFP100B5-SS60-I	100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85℃

Product Selection Guide

Accessories

Gigabit Ethernet SFP modules

Specifications

	Model Name									
Characteristics	SFP1G-SX/-I	SFP1G-MLX/-I	SFP1G-LX10/-I	✻SFP1G-LX20/-I	✻SFP1G-LHX30/-I	✻SFP1G-LHX40/-I	✻SFP1G-XD50/-I	✻SFP1G-ZX70/-I	✻SFP1G-ZX80/-I	✻SFP1G-EZX120/-I
Fiber mode	multi-mode	multi-mode	single-mode	single-mode	single-mode	single-mode	single-mode	single-mode	single-mode	single-mode
Typical Distance	550 m	62.5/125 : 2km 50/125 : 1km	10 km	20 km	30 km	40 km	50 km	70 km	80 km	120 km
Operating Temperature	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)
Wavelength	850 nm	1310 nm	1310 nm	1310 nm	1310 nm	1310 nm	1550 nm	1550 nm	1550 nm	1550 nm
Optical Output Power 9/125 µm fiber (Max. TX)	-	-	-3 dBm	-2 dBm	1 dBm	1 dBm	1 dBm	5 dBm	5 dBm	5 dBm
Optical Output Power 9/125 µm fiber (Min. TX)	-	-	-9.5 dBm	-8 dBm	-4 dBm	-4 dBm	-4 dBm	0 dBm	0 dBm	0 dBm
Optical Output Power 62.5/125 µm fiber (Max. TX)	-4 dBm	-1 dBm	-	-	-	-	-	-	-	-
Optical Output Power 62.5/125 µm fiber (Min. TX)	-9.5 dBm	-9 dBm	-	-	-	-	-	-	-	-
Optical Output Power 50/125 µm fiber (Max. TX)	-4 dBm	-1 dBm	-	-	-	-	-	-	-	-
Optical Output Power 50/125 µm fiber (Min. TX)	-9.5 dBm	-9 dBm	-	-	-	-	-	-	-	-
Optical Input Power-minimum (Sensitivity)	-18 dBm	-19 dBm	-20 dBm	-23 dBm	-24 dBm	-24 dBm	-24 dBm	-24 dBm	-24 dBm	-32 dBm
Optical Input Power-maximum(Saturration)	0 dBm	-1 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-8 dBm
Link Budget	8.5 dB	10 dB	10.5 dB	15 dB	20 dB	20 dB	20 dB	24 dB	24 dB	32 dB

✻ If two SFP transceivers are connected to each other in a short distance and the received optical power is greater than the listed specification of the received SFP transceiver, please add an optical attenuator(Please refer to FAT-LC series accessories) to avoid any possible damages.

Ordering Information

Model Name	Description
SFP1G-SX	1Gbps SFP optical transceiver, multi-mode / 550m, 850nm, 0 ~ 70℃
SFP1G-SX-I	1Gbps SFP optical transceiver, multi-mode / 550m, 850nm, industrial grade, -40 ~ 85℃
SFP1G-MLX	1Gbps SFP optical transceiver, multi-mode / 2km, 1310nm, 0 ~ 70℃
SFP1G-MLX-I	1Gbps SFP optical transceiver, multi-mode / 2km, 1310nm, industrial grade, -40 ~ 85℃
SFP1G-LX10	1Gbps SFP optical transceiver, single-mode / 10km, 1310nm, 0 ~ 70℃
SFP1G-LX10-I	1Gbps SFP optical transceiver, single-mode / 10km, 1310nm, industrial grade, -40 ~ 85℃
SFP1G-LX20	1Gbps SFP optical transceiver, single-mode / 20km, 1310nm, 0 ~ 70℃
SFP1G-LX20-I	1Gbps SFP optical transceiver, single-mode / 20km, 1310nm, industrial grade, -40 ~ 85℃
SFP1G-LHX30	1Gbps SFP optical transceiver, single-mode / 30km, 1310nm, 0 ~ 70℃
SFP1G-LHX30-I	1Gbps SFP optical transceiver, single-mode / 30km, 1310nm, industrial grade, -40 ~ 85℃
SFP1G-LHX40	1Gbps SFP optical transceiver, single-mode / 40km, 1310nm, 0 ~ 70℃
SFP1G-LHX40-I	1Gbps SFP optical transceiver, single-mode / 40km, 1310nm, industrial grade, -40 ~ 85℃
SFP1G-XD50	1Gbps SFP optical transceiver, single-mode / 50km, 1550nm, 0 ~ 70℃
SFP1G-XD50-I	1Gbps SFP optical transceiver, single-mode / 50km, 1550nm, industrial grade, -40 ~ 85℃
SFP1G-ZX70	1Gbps SFP optical transceiver, single-mode / 70km, 1550nm, 0 ~ 70℃
SFP1G-ZX70-I	1Gbps SFP optical transceiver, single-mode / 70km, 1550nm, industrial grade, -40 ~ 85℃
SFP1G-ZX80	1Gbps SFP optical transceiver, single-mode / 80km, 1550nm, 0 ~ 70℃
SFP1G-ZX80-I	1Gbps SFP optical transceiver, single-mode / 80km, 1550nm, industrial grade, -40 ~ 85℃
SFP1G-EZX120	1Gbps SFP optical transceiver, single-mode / 120km, 1550nm, 0 ~ 70℃
SFP1G-EZX120-I	1Gbps SFP optical transceiver, single-mode / 120km, 1550nm, industrial grade, -40 ~ 85℃

Product Selection Guide

Accessories

Gigabit Ethernet BIDI-SFP modules

Specifications

Characteristics	Model Name									
	SFP1GB3-LX10/-I	SFP1GB5-LX10/-I	SFP1GB3-LX20/-I	SFP1GB5-LX20/-I	* SFP1GB3-LX40/-I	* SFP1GB5-LX40/-I	* SFP1GB3-LX60/-I	* SFP1GB5-LX60/-I	* SFP1GB4-LX80/-I	* SFP1GB5-LX80/-I
Fiber mode	single-mode	single-mode	single-mode	single-mode	single-mode	single-mode	single-mode	single-mode	single-mode	single-mode
Typical Distance	10 km	10 km	20 km	20 km	40 km	40 km	60 km	60 km	80 km	80 km
Operating Temperature	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)
Wavelength	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1490 nm RX : 1550 nm	TX : 1550 nm RX : 1490 nm
Optical Output Power 9/125 µm fiber (Max. TX)	-3 dBm	-3 dBm	-2 dBm	-2 dBm	2 dBm	2 dBm	5 dBm	4 dBm	4 dBm	4 dBm
Optical Output Power 9/125 µm fiber (Min. TX)	-9 dBm	-9 dBm	-8 dBm	-8 dBm	-3 dBm	-3 dBm	0 dBm	-2 dBm	-2 dBm	-2 dBm
Optical Input Power-minimum (Sensitivity)	-21 dBm	-21 dBm	-23 dBm	-23 dBm	-23 dBm	-23 dBm	-24 dBm	-25 dBm	-25 dBm	-25 dBm
Optical Input Power-maximum (Saturation)	-1 dBm	-1 dBm	-1 dBm	-1 dBm	-1 dBm	-1 dBm	-1 dBm	-1 dBm	-3 dBm	-3 dBm
Link Budget	12 dB		15 dB		20 dB		22 dB		23 dB	

* If two SFP transceivers are connected to each other in a short distance and the received optical power is greater than the listed specification of the received SFP transceiver, please add an optical attenuator(Please refer to FAT-LC series accessories) to avoid any possible damages.

Ordering Information

Model Name	Description
SFP1GB3-LX10	1Gbps SFP optical transceiver, single-mode BIDI / 10km, TX1310nm, RX1550nm, 0 ~ 70℃
SFP1GB3-LX10-I	1Gbps SFP optical transceiver, single-mode BIDI / 10km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85℃
SFP1GB5-LX10	1Gbps SFP optical transceiver, single-mode BIDI / 10km, TX1550nm, RX1310nm, 0 ~ 70℃
SFP1GB5-LX10-I	1Gbps SFP optical transceiver, single-mode BIDI / 10km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85℃
SFP1GB3-LX20	1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, 0 ~ 70℃
SFP1GB3-LX20-I	1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85℃
SFP1GB5-LX20	1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, 0 ~ 70℃
SFP1GB5-LX20-I	1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85℃
SFP1GB3-LX40	1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, 0 ~ 70℃
SFP1GB3-LX40-I	1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85℃
SFP1GB5-LX40	1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, 0 ~ 70℃
SFP1GB5-LX40-I	1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85℃
SFP1GB3-LX60	1Gbps SFP optical transceiver, single-mode BIDI / 60km, TX1310nm, RX1550nm, 0 ~ 70℃
SFP1GB3-LX60-I	1Gbps SFP optical transceiver, single-mode BIDI / 60km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85℃
SFP1GB5-LX60	1Gbps SFP optical transceiver, single-mode BIDI / 60km, TX1550nm, RX1310nm, 0 ~ 70℃
SFP1GB5-LX60-I	1Gbps SFP optical transceiver, single-mode BIDI / 60km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85℃
SFP1GB4-LX80	1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1490nm, 1550nm, 0 ~ 70℃
SFP1GB4-LX80-I	1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1490nm, 1550nm, industrial grade, -40 ~ 85℃
SFP1GB5-LX80	1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1550nm, 1490nm, 0 ~ 70℃
SFP1GB5-LX80-I	1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1550nm, 1490nm, industrial grade, -40 ~ 85℃

Product Selection Guide

Accessories

10G Ethernet SFP+ modules with Diagnostic Monitoring

Specifications

	Model Name				
Characteristics	SFP10G-MM/-I	SFP10G-LR10/-I	SFP10G-LR20/-I	✻ SFP10G-ER40/-I	✻ SFP10G-ZR80/-I
Fiber mode	multi-mode	single-mode	single-mode	single-mode	single-mode
Typical Distance	62.5/125um : 33m 50/125um(OM2) : 82m 50/125um(OM3) : 300m	10 km	20 km	40 km	80 km
Operating Temperature	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)	0~70℃ -40~85℃ (-I model)
Wavelength	850 nm	1310 nm	1310 nm	1550 nm	1550 nm
Optical Output Power 9/125 µm fiber (Max. TX)	-	0.5 dBm	0.5 dBm	4 dBm	4 dBm
Optical Output Power 9/125 µm fiber (Min. TX)	-	-8 dBm	-4 dBm	-4.7 dBm	0 dBm
Optical Output Power 62.5/125 µm fiber (Max. TX)	-1 dBm	-	-	-	-
Optical Output Power 62.5/125 µm fiber (Min. TX)	-6.5 dBm	-	-	-	-
Optical Output Power 50/125 µm fiber (Max. TX)	-1 dBm	-	-	-	-
Optical Output Power 50/125 µm fiber (Min. TX)	-6.5 dBm	-	-	-	-
Optical Input Power-minimum (Sensitivity)	-9.9 dBm	-14.4 dBm	-15 dBm	-15.8 dBm	-23 dBm
Optical Input Power-maximum (Saturation)	-1 dBm	0.5 dBm	0.5 dBm	-1 dBm	-7 dBm
Link Budget	3.4 dB	6.4 dB	11 dB	11.1 dB	23 dB

✻ If two SFP transceivers are connected to each other in a short distance and the received optical power is greater than the listed specification of the received SFP transceiver, please add an optical attenuator(Please refer to FAT-LC series accessories) to avoid any possible damages.

Ordering Information

Model Name	Description
SFP10G-MM	10Gbps SFP+ optical transceiver, multi-mode / 300m, 850nm, 0 ~ 70℃
SFP10G-MM-I	10Gbps SFP+ optical transceiver, multi-mode / 300m, 850nm, industrial grade, -40 ~ 85℃
SFP10G-LR10	10Gbps SFP+ optical transceiver, single-mode / 10km, 1310nm, 0 ~ 70℃
SFP10G-LR10-I	10Gbps SFP+ optical transceiver, single-mode / 10km, 1310nm, industrial grade, -40 ~ 85℃
SFP10G-LR20	10Gbps SFP+ optical transceiver, single-mode / 20km, 1310nm, 0 ~ 70℃
SFP10G-LR20-I	10Gbps SFP+ optical transceiver, single-mode / 20km, 1310nm, industrial grade, -40 ~ 85℃
SFP10G-ER40	10Gbps SFP+ optical transceiver, multi-mode / 40km, 1550nm, 0 ~ 70℃
SFP10G-ER40-I	10Gbps SFP+ optical transceiver, multi-mode / 40km, 1550nm, industrial grade, -40 ~ 85℃
SFP10G-ZR80	10Gbps SFP+ optical transceiver, single-mode / 80km, 1550nm, 0 ~ 70℃
SFP10G-ZR80-I	10Gbps SFP+ optical transceiver, single-mode / 80km, 1550nm, industrial grade, -40 ~ 85℃

Product Selection Guide

Accessories

Gigabit Ethernet SFP-RJ45 modules

Specifications

	Model Name		
Characteristics	SFP1GRJ	SFP1GRJ-I	SFP10GRJ
Operating Temperature	0~70℃	-40~85℃	0~70℃
RJ45 Operation mode	1000Base-T ✻	1000Base-T ✻	10GBase-T ★
SFP Interface	SERDES, 1000Base-X	SERDES,1000Base-X	SERDES, 10GBase-X

✻ 1. Please notice 10/100Base-T(X) modes are not supported.
2. Link length up to 100m with Cat5 UTP cable or better.

★ 1. Please notice 10/100/1000Base-T modes are not supported.
2. Link length up to 30m with Cat6a/7 cable.

Ordering Information

Model Name	Description
SFP1GRJ	1Gbps SFP to 1000 Base-T transceirer, 0 ~ 70℃
SFP1GRJ-I	1Gbps SFP to 1000 Base-T transceirer, industrial grade, -40 ~ 85℃
SFP10GRJ	10Gbps SFP+ to 10G - Base-T transceirer, 0 ~ 70℃

10G Ethernet SFP+ Copper Cable

Specifications

	Model Name			
Characteristics	SFPC10G-50	SFPC10G-100	SFPC10G-300	SFPC10G-500
Max.Speed	10 Gbps	10 Gbps	10 Gbps	10 Gbps
Wire Guage	30 AWG	30 AWG	30 AWG	24 AWG
Low Smoke Zero Halogen	•	•	•	•
Cable length	0.5 m	1 m	3 m	5 m
Operating temperature	-40 ~ 85℃	-40 ~ 85℃	-40 ~ 85℃	-40 ~ 85℃

Ordering Information

Model Name	Description	Cable length
SFPC10G-50	10Gbps SFP+ copper cable 30AWG, 0.5 m, -40 ~ 85℃	0.5 m
SFPC10G-100	10Gbps SFP+ copper cable 30AWG, 1 m, -40 ~ 85℃	1 m
SFPC10G-300	10Gbps SFP+ copper cable 30AWG, 3 m, -40 ~ 85℃	3 m
SFPC10G-500	10Gbps SFP+ copper cable 24AWG, 5 m, -40 ~ 85℃	5 m

8 Network Management Software

Product Line Overview

For facilitated and user-friendly network administration, ORing proudly presents the powerful Network Management Software — Open-Vision v3.6, which is the outstanding suite of 3 humanized network management tools: ORing Commander, ORing Topology View (with integrated ORing MAP), and ORing Host Monitoring.

With Open-Vision v3.6, the network administrator can enjoy centralized configuration, visualized management, and complete network monitoring with early warning system, as these features help the network administrator maintain stable and reliable industrial network.

Key Technologies

DMG-S15

DMG-S15 Description

ORing cloud server DMG-S15 is a router-based network appliance integrated with management features such as VPN server and device topology view. Designed as a control server to provide centralized management, the DMG-S15 can operate as a VPN server which allows registration of multiple VPN clients to form a virtual and private data exchange network. The DMG-S15 can either be managed locally via the USB ports or the LCD module or remotely via the Web using the WAN or LAN port.

DMG-S15 Benefit

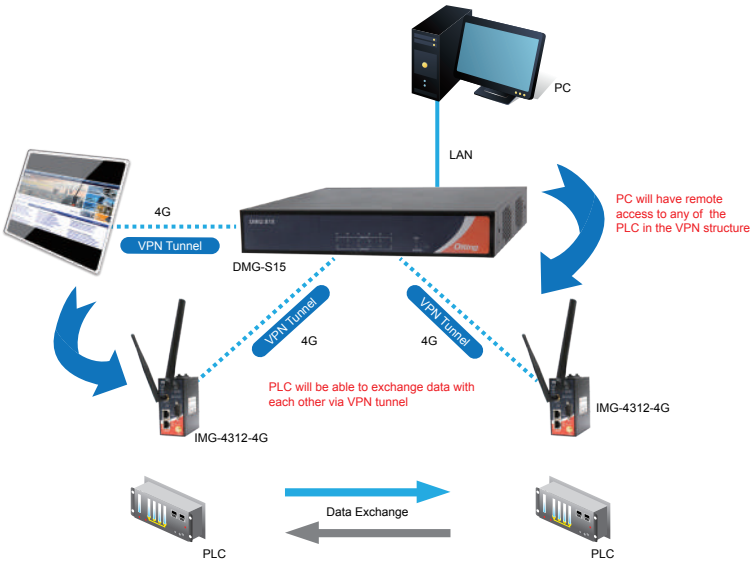
Remote accessibility: PLCs can be accessed via WAN without being restricted by LAN or RS-485 connections.

Centralized management: All data is integrated in the server to facilitate monitoring.

Easy and cost-effective setup: All routings can be done by the cloud server and only one public IP address is required in the structure.

High security data exchange: Higher data exchange security by using VPN tunnels.

AAA Server & Captive Portal: To redirect connections to the APs managed by the DMG-S15 to an AAA server and will not allow access until the connections are authenticated. DMG-S15 also support web-based user management and monitoring functions, allowing the administrator to check existing connections, MAC addresses, source routers, and network utilization and status in real time.



Network Management Server

DMG-S15

Specifications

Port Number	
10/100/1000Base-T(X) Ports	6
Power Redundancy	
AC Power adapter with power cord	1(100~240VAC)
Installation	
Rack Mounting	●
Physical Characteristics	
Casing Protection	IP-20
Dimensions (mm)	260(W)x178(D)x44(H)
Operating Temperature	
0 to 40°C	●
Management and Control	
VPN Server	●
Firewall	●
Multi-level login	admin / user
Wireless Management	●
Built in Router	●
Topology View	●
DDNS	●
Event Notification	SYSLOG / SNMP Trap/ Relay
DHCP	Server / Client
Management / Configuration	WEB
Captive Portal	●
AAA Server	●
Warranty	3 years

Ordering Information

Model Name	Description
DMG-S15	ORing Rack mount multi-functional Device Management Gateway with 1xGbE WAN port, 5x GbE LAN ports

Open-Vision v3.6

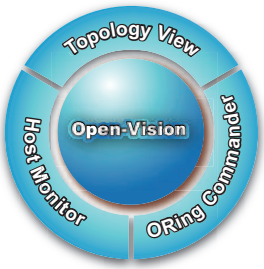
Open-Vision

Powerful Network Management Windows Utility Suite

Features

- Device configuration scan
- IP setting group wizard, firmware upgrade group wizard, and redundant ring (O-Ring) setting wizard
- Status Monitoring and Alarm
- Network analysis function
- Draw the whole network topology automatically and path management available
- Devices can be grouped and managed by different IP ranges
- ORing MAP technology can show network device locations on Google MAP
- The health status of connections are automatically checked
- IP scan for detection of all of the ORing switches in the local network
- No limitation on the number of devices to be monitored

Introduction



A powerful management utility is important for administrators to monitor and manage all devices in a local network. ORing is proud to announce Open-Vision v3.6, which is a powerful Network Management Software suite including four different features that can meet various demands from network monitor and managements in a wide range of industrial applications. For the four basic functions – Centralized management / Visualized management / Complete monitor / Early system, Open-Vision v3.6 provides intelligent advantages which surpass the prior one in different aspects. Only through the advanced monitoring features and various warning systems, the users can be informed of any accidental situations in the local network and recover the network immediately. Hence, the stability and reliability of the local network can be assured.

Centralized Management

Open-Vision v3.6 helps the administrator in configuring all ORing's Ethernet switches at once within a few steps by powerful application wizards in ORing Commander: IP Setting Wizard, Firmware Upgrade Wizard, and Redundant Ring (O-Ring) Group Wizard (in ORing Commander). The administrators do not need to configure the managed switches one by one anymore.

Distributed Management

Centralized Batch Management

Visualized Management

ORing's Topology View can show up the complex topologies of all of ORing's Ethernet switches in the local network. Further, different switches can be grouped by different IPs and to be shown in different topology windows. Thus, administrators need not to monitor all of the switches in the local network at once, which makes the job of monitoring easier and more efficient. On the other hand, the health status of the connections will be shown on by different colors. ORing topology view helps the administrators to do the management visualizely, intuitively, and more efficiently.

Complete Monitor

ORing-Vision v3.6 has various mechanisms to monitor the statuses of ORing's switches, including event log, and SNMP traps. The administrators will be informed the occurrences of any abnormal events by email, and the list of event log can be exported as an excel file. Moreover, the configurations of all ORing's switches can be saved and the status of configurations of all switches in local network can be scanned regularly to detect any changes of the configurations. Hence, administrators can know any unexpected changes of the configurations of switches. On the other hand, ORing Host monitor can automatically ping and check the health statuses of connections among all IP-based devices in local area network. Host Monitor also features IP categorized function, and all of IP-based devices can be grouped by the different IPs and to be monitored.

Early Warning

Based on the various monitor mechanisms, if any failure is occurred in the network, administrators can be informed at a very early stage.

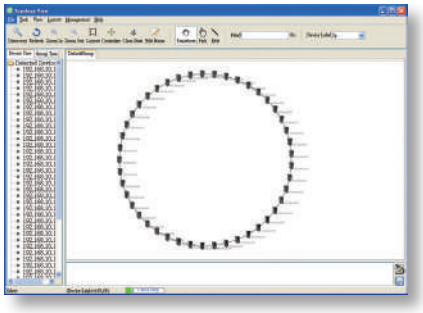
System Requirements

Software Requirements	
Operating System	Windows 2000/2003/XP/Vista/Win7
Browser	IE 6.0 Service Pack 1 or higher version
Hardware Requirement	
CPU	Intel Core 2 Duo 2.4 GHz or above
RAM	1G or above
Hard Disk Space	1G or above

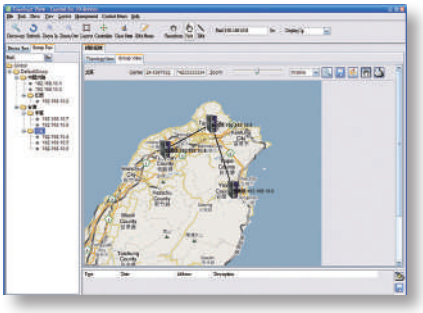
Specifications

ORing Topology View

- The topology views show the topology of connections among all of the switches in the local network.
- IP categorized function
- Configure the switches into different IP domains, and there is no limitation of the nodes to be configured by ORing Topology View.
- Visualized warning system of the health statuses of the connections among the switches
- Traffic flow analysis of each node
- Event log that can be exported as an Excel file.
- The administrator can plan the future topology manually in "Edit" operation mode.

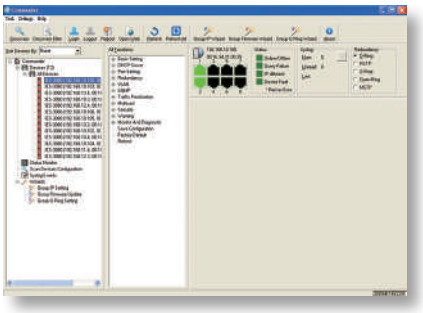


- **ORing MAP :** Displays topology of connections on Google Map
  - Automatic device discovery
  - Device status monitoring
  - Syslog events
  - Scan device configuration



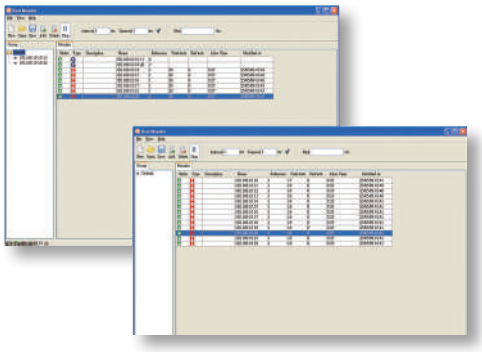
ORing Commander

- Automatic device discovery
- Device status monitoring
- Syslog events
- Scan device configuration
- IP setting Group Wizard, Firmware Upgrade Group Wizard, and Redundant Ring (O-Ring) Group Wizard



ORing Host Monitor

- IP scan to detect all of the IP-based devices in the local network.
- To check the health statuses of connections of all IP-based devices
- All of IP-based devices can be grouped and managed by different IP ranges.



Ordering Information

Available Model	Model Name	Description
	Open-Vision M500	Powerful Network Management Windows Utility Suite, 500 IP devices

Packing List

- Open-Vision CD
- USB Key-pro License

9 Industrial IOT Product

Product Selection Guide

		Smart Lighting Controller ZigBee Series			
		Master		Slave	
Industrial IOT Product					
		OLM-Z01ND	**OLM-Z01NT**	**OLS-Z01ND**	**OLS-Z01NT**
NEMA Socket Connected					
Pin define		7pin NEMA socket (Follow ANSI C136.41 Receptacle)			
Technology					
DC Dimmable Function		DALI	AO(0-10V)	DALI	AO(0-10V)
Measurement		Vrms(V) 、Irms(I) 、Power Factor(PF) 、Frequency(Hz) 、Power(W)			
Lighting Control	ON	•	•	•	•
	OFF	•	•	•	•
Uplink Interface					
Working Mode		3G 4G	3G 4G		
Network Interface					
Working Mode		WIFI ZigBee	WIFI ZigBee	ZigBee	ZigBee
RF Spectrum		2.4GHz	2.4GHz	2.4GHz	2.4GHz
Electrical Specification					
Input Power Supply Voltage		110-240Vac			
Load Capacity		2A			
Power Consumption		1.35W(Max)			
DALI supply current		10mA		10mA	
AO supply current			1mA		1mA
Physical Characteristics					
Enclosure		IP54			
Dimensions		Φ90 x 87mm			
Weight		190g			
Environmental					
Storage Temperature		-40˚C to +80˚C			
Operating Temperature		-30˚C to +70˚C			
Operating Humidity		0 to 95%			

Product Selection Guide

		Smart Lighting Controller LoRa Series			
		Master		Slave	
Industrial IOT Product					
		OLM-L01ND	**OLM-L01NT**	**OLS-L01ND**	**OLS-L01NT**
NEMA Socket Connected					
Pin define		7pin NEMA socket (Follow ANSI C136.41 Receptacle)			
Technology					
DC Dimmable Function		DALI	AO(0-10V)	DALI	AO(0-10V)
Measurement		Vrms(V) 、Irms(I) 、Power Factor(PF) 、Frequency(Hz) 、Power(W)			
Lighting Control	ON	•	•	•	•
	OFF	•	•	•	•
Uplink Interface					
Working Mode		3G 4G	3G 4G		
Network Interface					
Working Mode		WIFI LoRa	WIFI LoRa	LoRa	LoRa
RF Spectrum		902-928MHz	902-928MHz	902-928MHz	902-928MHz
		863-870MHz	863-870MHz	863-870MHz	863-870MHz
		779-787MHz	779-787MHz	779-787MHz	779-787MHz
		433MHz	433MHz	433MHz	433MHz
Electrical Specification					
Input Power Supply Voltage		110-240Vac			
Load Capacity		2A			
Power Consumption		1.35W(Max)			
DALI supply current		10mA		10mA	
AO supply current			1mA		1mA
Physical Characteristics					
Enclosure		IP54			
Dimensions		Φ90 x 87mm			
Weight		190g			
Environmental					
Storage Temperature		-40°C to +80°C			
Operating Temperature		-30°C to +70°C			
Operating Humidity		0 to 95%			

Product Selection Guide

		Smart Lighting Controller NBIoT Series	
		NBIoT Lighting Controller	
Industrial IOT Product			
		OL-NB01ND	**OL-NB01NT**
NEMA Socket Connected			
Pin define		7pin NEMA socket (Follow ANSI C136.41 Receptacle)	
Technology			
DC Dimmable Function		DALI	AO(0-10V)
Measurement		Vrms(V) 、Irms(I) 、Power Factor(PF) 、Frequency(Hz) 、Power(W)	
Lighting Control	ON	•	•
	OFF	•	•
Network Interface			
Working Mode		NB-IoT	NB-IoT
RF Spectrum		Band4(1700MHz)	Band4(1700MHz)
		Band5(850MHz)	Band5(850MHz)
		Band8(900MHz)	Band8(900MHz)
		Band20(800MHz)	Band20(800MHz)
		Band28(700MHz)	Band28(700MHz)
Electrical Specification			
Input Power Supply Voltage		110-240Vac	
Load Capacity		2A	
Power Consumption		1.35W(Max)	
DALI supply current		10mA	
AO supply current			1mA
Physical Characteristics			
Enclosure		IP54	
Dimensions		Φ90 x 87mm	
Weight		190g	
Environmental			
Storage Temperature		-40˚C to +80˚C	
Operating Temperature		-30˚C to +70˚C	
Operating Humidity		0 to 95%	

Industrial IOT Overview

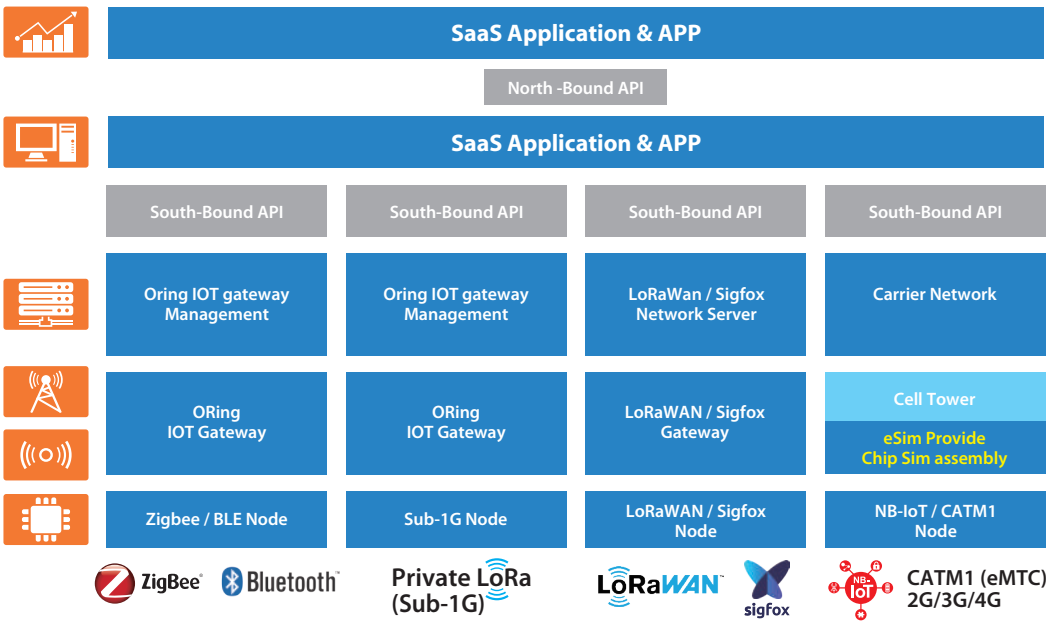
The Industrial Internet of Things (IIoT) is the key object in the past two years. What is IIoT ? What are the differences between IoT and IIoT ? At first, we should specify the IoT before making a statement about the IIoT. The IoT is composed by a network of intelligent computers, devices, and huge amounts of collecting data. The collected data is sent to the cloud central service where can be amounted to other data and then provided to end users with an optimizing solution. The IoT will connect each autonomous device in homes, schools, stores and industries.

The application of the IoT to the field of manufacturing industry is called IIoT. The IIoT will be the revolution in the manufacturing industry. It can greatly improve connectivity, efficiency, scalability, time and cost saving for the industrial organizations. The most important thing, IIoT networks of intelligent devices provides industrial organizations to break open data silos and connect all of their data and processes from factory to offices. Trough IIoT data analyzing also helps business development to clarify how their enterprise is doing, which makes them to do the better decisions.

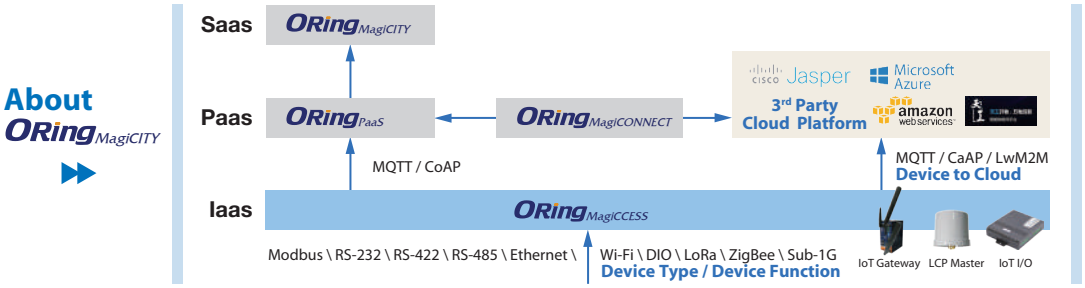
The IIoT is considered to be an up-going trend in the future. **ORing Industrial Networking Corp.** is based on our strong experience of developing wireless communication technology. We incorporated our technological strength with our products – gateways, I/O modules, smart antennas, cloud service platform and APP to provide a total IIoT solution. Potential environmental IIoT applications are growing such as Wi-Fi hotspots, PM2.5 air quality detection, urban marketing, and real-time surveillance systems. More business opportunities can be found in tremendous IIoT solutions and we are looking forward to inviting our ambitious customers to join us.

Key Technologies

ORing Solution for variant IIoT technologies



ORing IIoT Platform Technologies



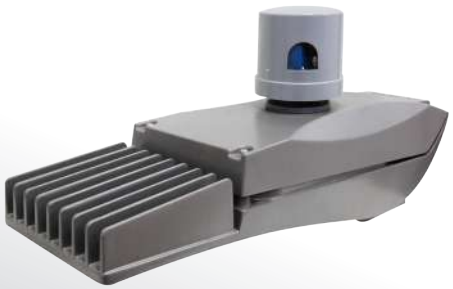
Smart Lighting Controller ZigBee Slave Series

ZigBee Slave Series

Lighting system, corresponding with LWAN technology
Lighting Slave utilized ZigBee communication protocol

Features

- Designed and optimized by Local Wireless Area Network (LWAN) with LoRa network technology
- NEMA socket connected (ANSI C136.41)
- Smart Control function (ON/OFF/Dimming)
- Smart power saving mode
- Electrical parameters monitoring
- Fault detection
- Intelligent operation based on predestinate schedule
- Wild operating temp range -30°C to +70°C
- Platform connection - supporting MQTT and CoAP transfer protocol
- Supporting Content management system (CMS)
- Supporting integrated ambient light sensor and accelerometer



Introduction

ORing's smart lighting series managed wireless transporting is designed for street lamp. OLS-Z series stands as cell controller in the smart street lamp application. It is proposed to connect on the top of LED lamp device with standard NEMA socket (ANSI C136.41), which is compliant with DALI (Digital Addressable Lighting Interface) dimming control function, is according to international standard design. The advantage of digital dimming is that fixtures are addressable. You can also have many more different levels of light output when using digital dimming. The benefits of DALI dimming control are lower energy cost to user, higher level of maintenance to the facility manager, and more flexible sensor controlled dimming and switching. On the other hand, OLS-Z series is also compliant with traditional 0-10V dimming control function. It is based on analogue signal percentage increased or decreased as the voltage on the analog signal increases or decreases.

In addition, OLS-Z series supports **electrical parameters monitoring - Vrms(V), Irms(I), Power Factor(PF), Frequency(Hz), Power(W)**. According to above monitored parameters, it also provides fault detection information – **Over/under voltage, Over/under current, Lamp/Driver fault, Device failure.** Furthermore, it is the autonomous sensing device, which is **dimming with sunrise time, smart dimming procedure through analyzing data**, and so on.

OLS-Z series is designed by the whole intelligent system, including smart power saving mode, fault detection, intelligent operating based on predestinate schedule, dimming control, turn-on, turn-off, and so on. Moreover, each lighting controller is easily managed through content management system (CMS). For the reason that ORing Industrial Networking Corp. also provides users to apply to the intelligent products easily, proposing **ORing IIoT MagiCity**, which is based on MQTT and CoAP architecture implementation and is going to realize economic data more clearly. Let users operate each device reliably in the whole world, only get the certification from **ORing IIoT MagiCity**.

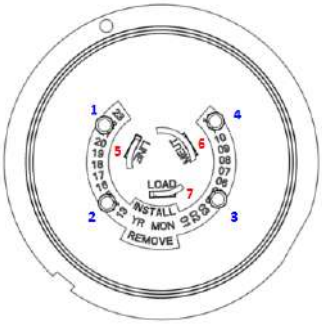
NEMA Socket Exterior

BOTTOM VIEW

TOP VIEW

Pin Definitions

- Dimensional requirements following ANSI C136.41 Dimming Receptacle
- 7 position: 3 power contacts + 4 dimming/signal contacts



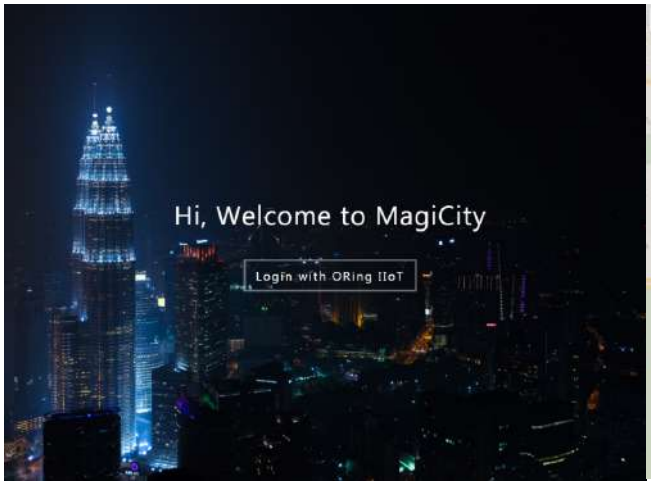
Pin No.	Description
1	DALI + / 0-10V DIMMING CONTACT
2	N/A
3	N/A
4	DALI - / GND DIMMING CONTACT
5	POWER CONTACT - LINE
6	POWER CONTACT - NEUT
7	POWER CONTACT - LOAD

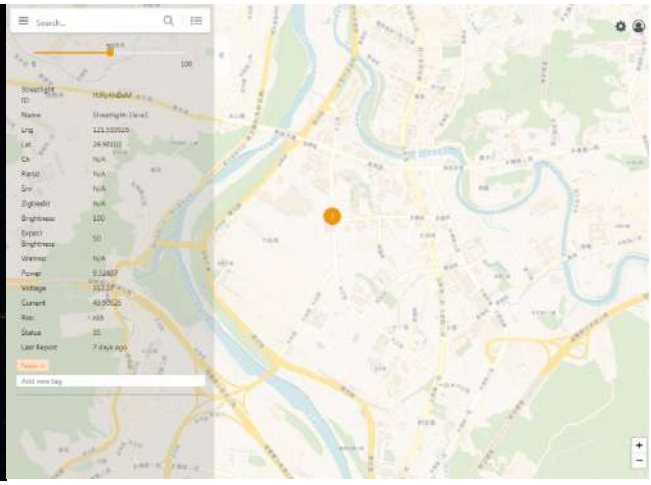
Specifications

ORing Lighting Model		OLS-Z SERIES	
NEMA Socket connected			
Pin Define		7pin NEMA socket (Follow ANSI C136.41 Receptacle)	
Controller Feature			
Dimmable Function Feature		DALI	AO(0-10Vdc)
Electrical parameters monitor		Vrms(V) 、Irms(I) 、Power Factor(PF) 、Frequency(Hz) 、Power(W)	
Lighting Control	ON	•	
	OFF	•	
Network Interface			
Working Mode		ZigBee(IEEE802.15.4)	
Frequency Bandwidth		2.4GHz	
ZigBee Technology(IEEE802.15.4)			
Specification		Slave	

Transmission Distance		Up tp 200m (open space)
Data Rate		250Kbps(TYP.)
TX Power Gain Range		Typ. : 7dBm ; Max. : 21dBm
RX Sensitivity		-99dBm
Security		128-bit AES encryption algorithms
Electrical Specification		
AC Input Voltage		90-264Vac
Output Load Current		Max. 2A
Power Consumption		Max. 1.35W
Supply Current	DALI	10mA
	AO(0-10Vdc)	1mA
Protection		
Inrush Current Protection		5A@10ms pulse
Surge Protection		1kV
Physical Characteristic		
Enclosure		IP54
Dimensions		Φ90 x 87mm
Weight(g)		190g
Environmental		
Storage Temperature		-40˚C to +80˚C
Operating Temperature		-30˚C to +70˚C
Operating Humidity		0 to 95%

Pin Definitions





Ordering Information

OLS-Z[AA]N[B]-[CC]

Code Definition	RF Band	Dimming Control Type	-Sensor Support*
Option	**01:** 2.4GHz	**D:**DALI **T:**0-10V	**G:**Accelerometer **P:**Ambient light Sensor **GP:**Accelerometer & Ambient light Sensor

*No Sensor Support place - [CC] empty

	Model Name	Description
Available Model	OLS-Z01ND	ORing Lighting Controller ZigBee Slave, 2.4GHz, NEMA Receptacle, DALI, OLS-Z01ND
	OLS-Z01ND-G	ORing Lighting Controller ZigBee Slave, 2.4GHz,NEMA, DALI,with G-Sensor,OLS-Z01ND-G
	OLS-Z01ND-P	ORing Lighting Controller ZigBee Slave, 2.4GHz,NEMA, DALI,with Photo-Sensor,OLS-Z01ND-P
	OLS-Z01ND-GP	ORing Lighting Controller ZigBee Slave, 2.4GHz,NEMA, DALI,with GP-sensor,OLS-Z01ND-GP
	OLS-Z01NT	ORing Lighting Controller ZigBee Slave, 2.4GHz, NEMA Receptacle, 0-10V, OLS-Z01NT
	OLS-Z01NT-G	ORing Lighting Controller ZigBee Slave, 2.4GHz,NEMA, 0-10V,with G-Sensor,OLS-Z01NT-G
	OLS-Z01NT-P	ORing Lighting Controller ZigBee Slave, 2.4GHz,NEMA, 0-10V,with Photo-Sensor,OLS-Z01NT-P
	OLS-Z01NT-GP	ORing Lighting Controller ZigBee Slave, 2.4GHz,NEMA, 0-10V,with GP-sensor,OLS-Z01NT-GP

Packing List

- OLS-Z Cell Controller x1
- 2.4GHz RF Antenna x1
- ZigBee Module x1
- 0-10V AO/DALI Dimming Control module x1
- ANSI C136.41 Standard NEMA Socket & Cover x1

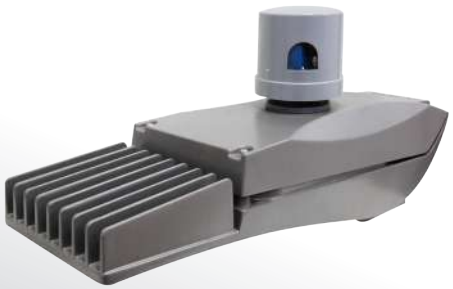
Smart Lighting Controller LoRa Slave Series

LoRa Slave Series

Lighting system, corresponding with LPWAN technology
Lighting Slave utilized LoRa communication protocol

Features

- Designed and optimized by Low Power Wild Area Network (LPWAN) with LoRa network technology
- NEMA socket connected (ANSI C136.41)
- Smart Control function (ON/OFF/Dimming)
- Smart power saving mode
- Electrical parameters monitoring
- Fault detection
- Intelligent operation based on predestinate schedule
- Wild operating temp range -30°C to +70°C
- Platform connection - supporting MQTT and CoAP transfer protocol
- Supporting Content management system (CMS)
- Supporting integrated ambient light sensor and accelerometer



Introduction

ORing's smart lighting series managed wireless transporting is designed for street lamp. OLS-L series stands as cell controller in the smart street lamp application. It is proposed to connect on the top of LED lamp device with standard NEMA socket (ANSI C136.41), which is compliant with DALI (Digital Addressable Lighting Interface) dimming control function, is according to international standard design. The advantage of digital dimming is that fixtures are addressable. You can also have many more different levels of light output when using digital dimming. The benefits of DALI dimming control are lower energy cost to user, higher level of maintenance to the facility manager, and more flexible sensor controlled dimming and switching. On the other hand, OLS-L series is also compliant with traditional 0-10V dimming control function. It is based on analogue signal percentage increased or decreased as the voltage on the analog signal increases or decreases.

In addition, OLS-L series supports **electrical parameters monitoring - Vrms(V), Irms(I), Power Factor(PF), Frequency(Hz), Power(W)**. According to above monitored parameters, it also provides fault detection information – **Over/under voltage, Over/under current, Lamp/Driver fault, Device failure**. Furthermore, it is the autonomous sensing device, which is **dimming with sunrise time, smart dimming procedure through analyzing data**, and so on.

OLS-L series is designed by the whole intelligent system, including smart power saving mode, fault detection, intelligent operating based on predestinate schedule, dimming control, turn-on, turn-off, and so on. Moreover, each lighting controller is easily managed through content management system (CMS). For the reason that ORing Industrial Networking Corp. also provides users to apply to the intelligent products easily, proposing **ORing IIoT MagiCity**, which is based on MQTT and CoAP architecture implementation and is going to realize economic data more clearly. Let users operate each device reliably in the whole world, only get the certification from **ORing IIoT MagiCity**.

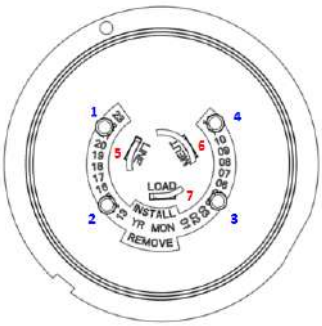
NEMA Socket Exterior

BOTTOM VIEW

TOP VIEW

Pin Definitions

- Dimensional requirements following ANSI C136.41 Dimming Receptacle
- 7 position: 3 power contacts + 4 dimming/signal contacts



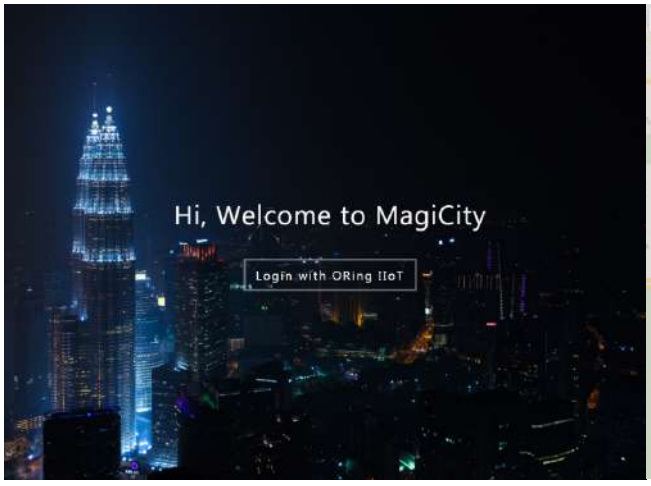
Pin No.	Description
1	DALI + / 0-10V DIMMING CONTACT
2	N/A
3	N/A
4	DALI - / GND DIMMING CONTACT
5	POWER CONTACT - LINE
6	POWER CONTACT - NEUT
7	POWER CONTACT - LOAD

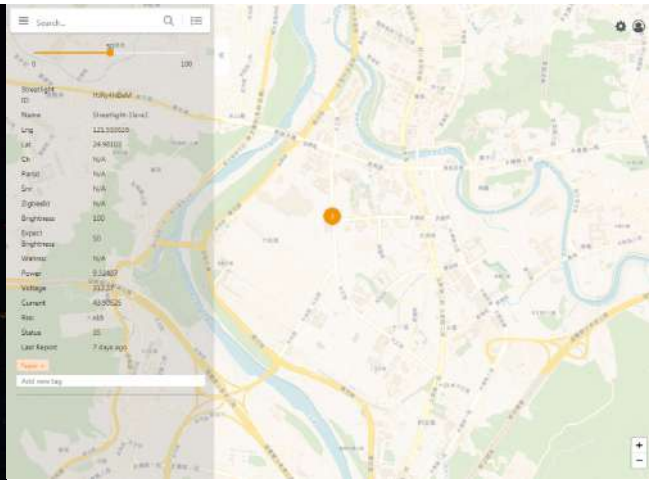
Specifications

ORing Lighting Model		OLS-L SERIES	
NEMA Socket connected			
Pin Define		7pin NEMA socket (Follow ANSI C136.41 Receptacle)	
Controller Feature			
Dimmable Function Feature		DALI	AO(0-10Vdc)
Electrical parameters monitor		Vrms(V) 、Irms(I) 、Power Factor(PF) 、Frequency(Hz) 、Power(W)	
Lighting Control	ON	•	
	OFF	•	
LoRa Technology			
Specification		Slave	
Transmission Distance		Up to 1.5km (open space)	
Data Rate		1-37.5kbps (programmable), 1kbps(Typ.)	
TX Power Gain Range		Typ. : 14dBm ; Max. : 20dBm	

RX Sensitivity		Up to -137dBm
Security		128-bit AES encryption algorithms
Network Interface		
Working Mode		LoRa
Frequency Bandwidth		902-928MHz
		863-870MHz
		779-787MHz
		433MHz
Electrical Specification		
AC Input Voltage		90-264Vac
Output Load Current		Max. 2A
Power Consumption		Max. 1.35W
Supply Current	DALI	10mA
	AO(0-10Vdc)	1mA
Protection		
Inrush Current Protection		5A@10ms pulse
Surge Protection		1kV
Physical Characteristic		
Enclosure		IP54
Dimensions		Φ90 x 87mm
Weight(g)		190g
Environmental		
Storage Temperature		-40˚C to +80˚C
Operating Temperature		-30˚C to +70˚C
Operating Humidity		0 to 95%

Pin Definitions





Ordering Information

OLS-[A][BB]N[C]-[DD]

Code Definition	RF Band	RF Band	Dimming Control Type	-Sensor Support*
Option	**L:**LoRa P2P **W:**LoRaWAN	**01:**902-928MHz **02:**863-870MHz **03:**779-787MHz **04:**433MHz	**D:**DALI **T:**0-10V	**G:**Accelerometer **P:**Ambient light Sensor **GP:**Accelerometer & Ambient light Sensor

*No Sensor Support place - [DD] empty

	Model Name	Description
Available Model	OLS-L01ND	ORing Lighting Controller LoRa Slave, 920MHz, NEMA Receptacle, DALI, OLS-L01ND
	OLS-L01ND-G	ORing Lighting Controller LoRa Slave, 920MHz, NEMA, DALI, with G-sensor, OLS-L01ND-G
	OLS-L01ND-P	ORing Lighting Controller LoRa Slave, 920MHz, NEMA, DALI, with Photo-Sensor, OLS-L01ND-P
	OLS-L01ND-GP	ORing Lighting Controller LoRa Slave, 920MHz,NEMA, DALI,with GP-sensor,OLS-L01ND-GP
	OLS-L01NT	ORing Lighting Controller LoRa Slave, 920MHz, NEMA Receptacle, 0-10V, OLS-L01NT
	OLS-L01NT-G	ORing Lighting Controller LoRa Slave, 920MHz, NEMA, 0-10V, with G-Sensor, OLS-L01NT-G
	OLS-L01NT-P	ORing Lighting Controller LoRa Slave, 920MHz, NEMA, 0-10V, with Photo-Sensor, OLS-L01NT-P
	OLS-L01NT-GP	ORing Lighting Controller LoRa Slave, 920MHz,NEMA, 0-10V,with GP-sensor,OLS-L01NT-GP

Packing List

- OLS-L Series Cell Controller x1
- RF Antenna x1(RF Band optional)
- LoRa RF Module x1
- 0-10V AO/DALI Dimming Control module x1
- ANSI C136.41 Standard NEMA Socket & Cover x1

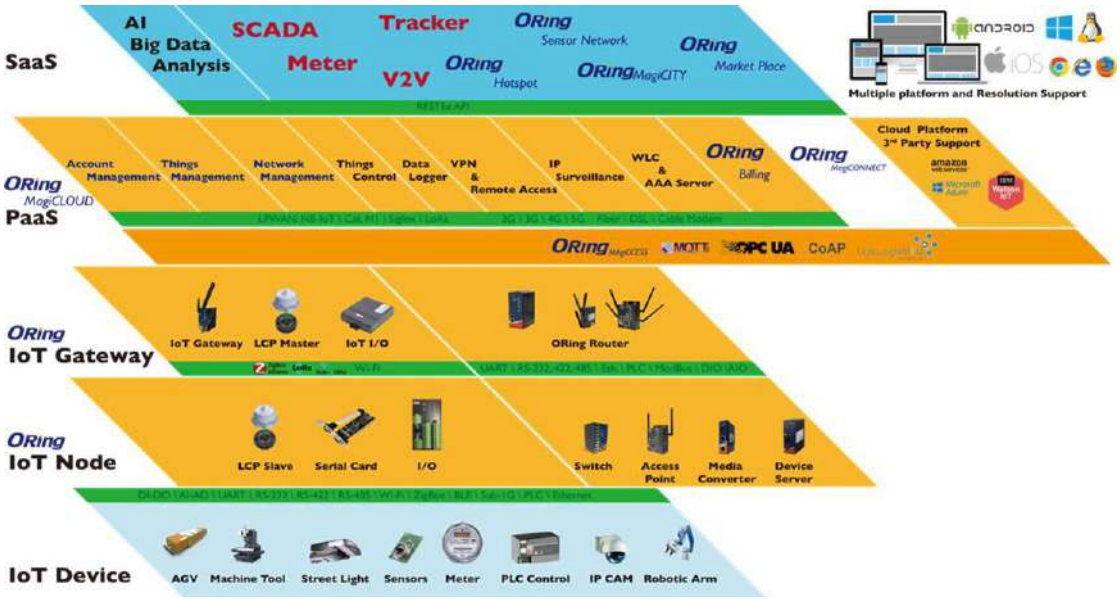
10 ORing MagiCloud

ORing MagiCloud Overview

The ORing MagiCloud is a powerful managed cloud platform designed for industrial applications. With support for Modbus-RTU and ModBus-TCP, you can easily connect your devices to the platform and interact with cloud applications and other devices.

The ORing MagiCloud supports billions of devices and routes data to applications or other devices securely and reliably. Along with the ORing IIoT, REST API will be provided to help you track your device connectivity and access data from all of your devices anytime, even if they are offline.

ORing IIoT Roadmap



Functional Block

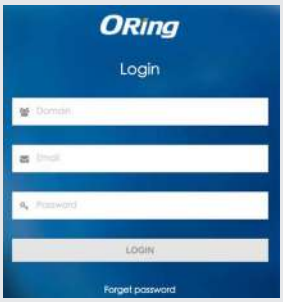
Key Technologies

Dashboard Embedded

■ Clear Dashboard and notifications tell you what you should do today

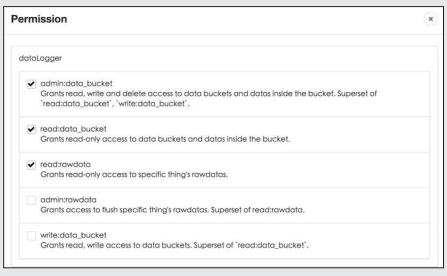
Organization Based

■ Each organization owns one domain name, login your domain to manage your organization



Simple Authorization Management

■ ORing Account Management is built with ACL and OAuth 2.0 which keeps account management, permission setup and authorization more easily.

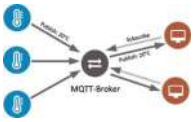


Connect, Just in a Finger

■ With ORing PaaS device management, view the device status and much more information, just at a glance.

Multiple IoT Protocol Supported

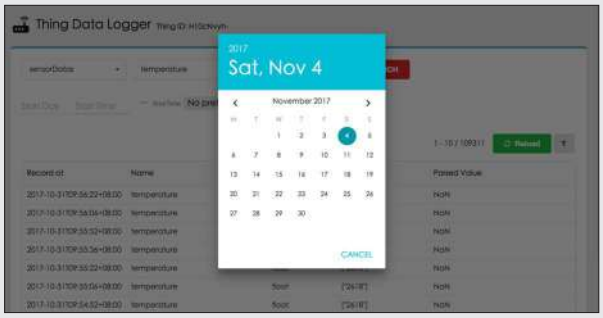
■ HTTPs, Socket, WebSocket, MQTT, CoAP and LwM2M

CoAP 

Websockets
LightweightM2M specified at oma
https://

Data, No More Confusion

■ ORing Data Logger assists you to collect and organize your precious data, and also help you synchronize data to your database.



Multiple IoT Protocol Supported

■ SQL and NoSQL database

MySQL mongoDB

Cross Platform Multiple Resolution Support

- Support PC, Laptop, Pad, smart phone and even your smart watch
- Support Linux, MAC, Windows, iOS and android

Connect your device to ORing PaaS

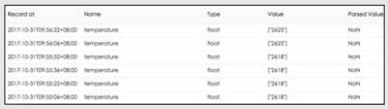
- Just three steps, create, link and you can see your data on ORing PaaS

Create

Link

MQTT CoAP

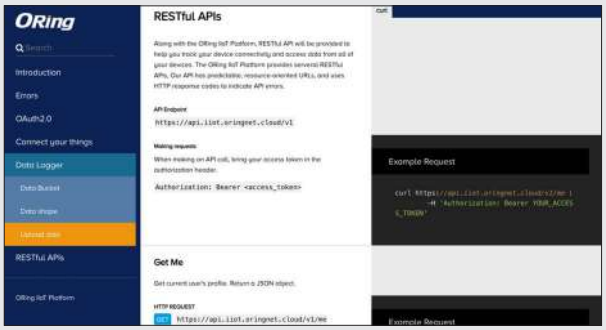
Upload



Developer Portal

- Powerful API let you develop your own application in a short time

ORing MagiCITY
ORing Market Place
ORing Sensor Network
ORing Hotspot

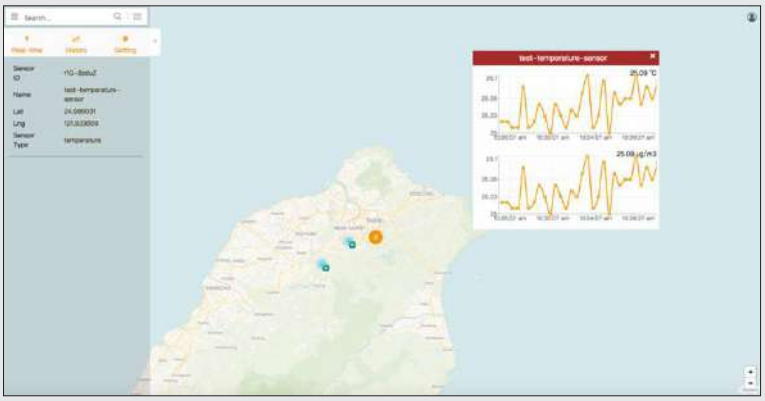


ORing MagiCity

ORing MagiCITY is designed for Smart City Management. MagiCity integrates all the devices you need to interactively manage your smart city, such as smart lighting controls, sensor data loggers, smart meters, and smart trackers. MagiCity has a simple and clear user interface that make it easy for busy city managers to keep their smart city safe and cost efficient.

Sensor, Monitor, Log and Threshold

- Real time monitoring you data
- Export data or data base migration
- Set threshold value to alarm nearby citizen



Tracker, Period, Path and S-Zone

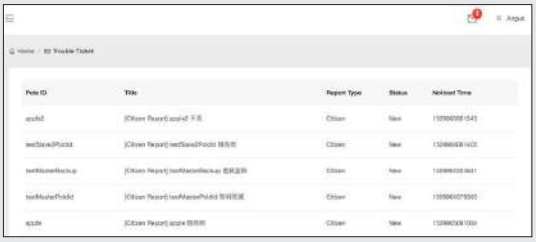
- Periodically report GPS
- Draw the path on your map
- Set S-Zone, Security zone to prevent target ran out of the range

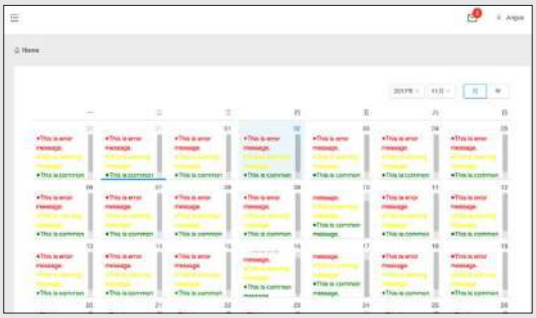
Street Light, Install, Adjust and Repair

- Powerful, process-based solution for your city's streetlight, from site survey, Construction map, power management, adjustment to repairing process

Street Light, Issue Report System

- Every time when you login to system, At calendar, it tells you what should be done within today. When you manipulate system, it will appears notification when something happend





The Needs of Your Citizen, Gas, Water and Meter

- Remote meter monitoring
- Can be implemented on a "per-customer" basis
- Data can be synchronized to your other city programs and generate bill automatically

Powerful Search Mechanism, Easier to Find Your Device

- Support ID search and Tag Search
- One device can have up to 10 tags
- Multi-Dimension array algorithm, reduce the searching time

Easy Way to Fetch, Organizing Data

- A user-friendly interface, keep you fetch your data and sort it to report in a short time.