

ORing

Guidebook

Industrial Networking solution



EN 50155
EN 50121



IEC 60945
EN 60945



IEC 61850



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 certified 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

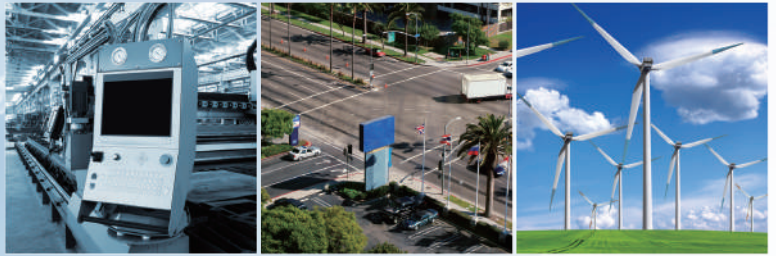


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Accessories

Open-Vision v4.0

Device Configuration Backup Unit

Industrial IOT Product

Company Information

Company Profile

Founded in 2005, ORing specializes in developing innovative own-branded products for industrial settings. Over the years, ORing has accumulated abundant experience in wired and wireless network communications industry. In line with the commercialization of 5G, ORing has stretched its arm into the IIoT field, helping customers realize all kinds of IIoT applications such as smart manufacturing, smart city, and industrial automation. With high product quality and best customer services in mind, ORing has continued to launch cutting-edge products catering to customer needs. ORing's products have been widely adopted in surveillance, rail transport, industrial automation, power substations, renewable energy, and marine industries with offices worldwide to address customer needs in real time. For more information, please contact us at sales_all@oringnet.com.



Milestone



- 2021
 - Joined ITxPT
 - Launched the first industrial WiFi 6 AP

- 2020
 - ORing has launched a work-from-home solution consisting of MagiCollect, MagiConnect, and ConnectGateway to help enterprises support their employees working at home.

- 2019
 - Passed TAICS' IoT Cybersecurity Certification and launched KEMA-certified products
 - Weidmüller acquired a minor stake in ORing

- 2018
 - NB-IOT/CAT-M1 product release massive deployment with our IOT products

- 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.

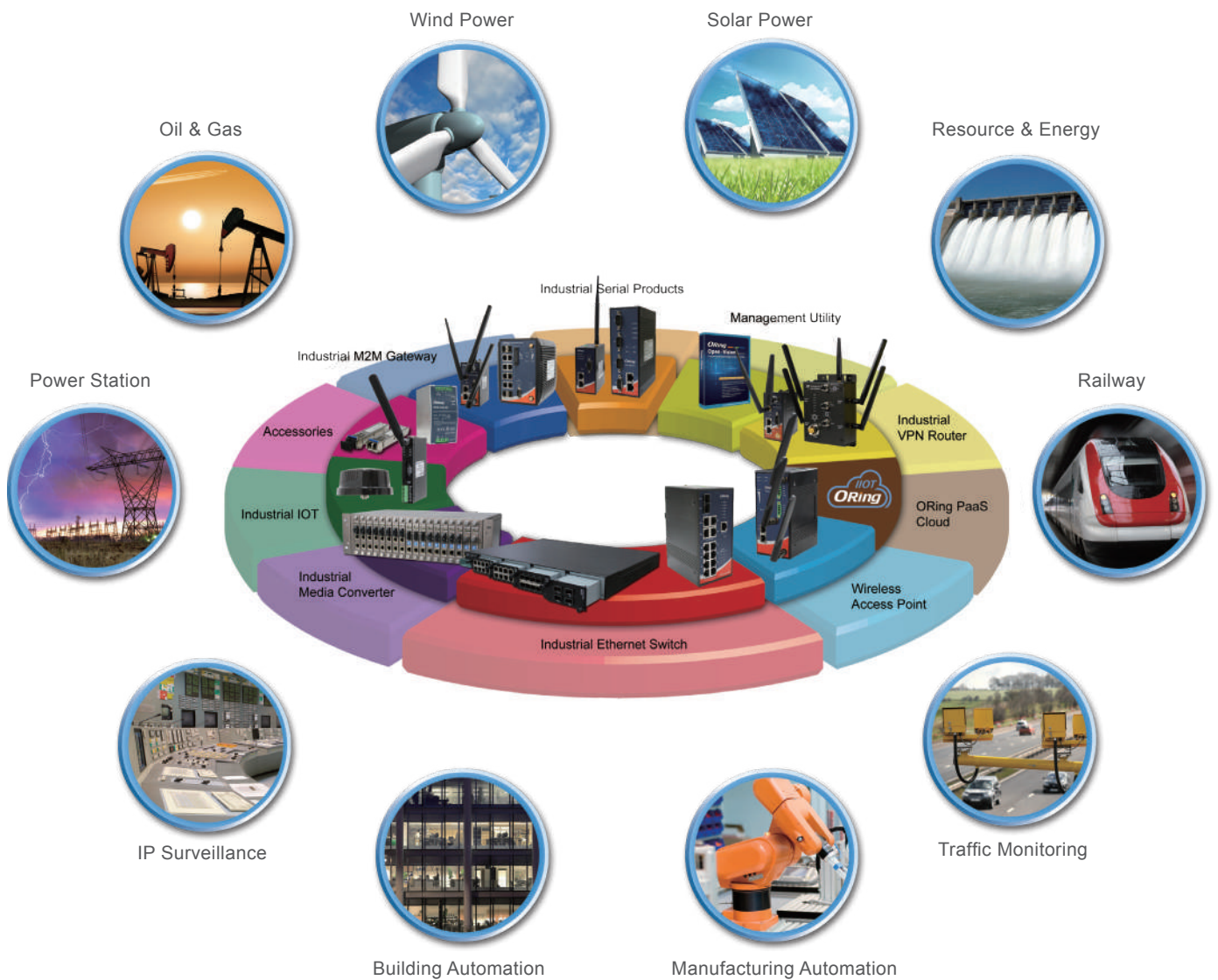
- 2012
 - Launched IEC 61850-3 certified products for substations and introduced device servers supporting Windows 7 and 8.hes.

- 2011
 - Launched EN50155 Transporter Series products and teamed up with AXIS Communication to develop the IP surveillance market.

Product Coverage

ORing provides a wide variety of networking products and solutions to meet different needs and address various industrial usage scenarios. Our products range from industrial Ethernet switches to media converters, device servers, wireless access points, cellular VPN routers, network management utility, and IIoT products. We also provide vertical markets with high cost efficiency and one-stop shopping experience through comprehensive solutions.

With industrial-grade design, all of our products are proven to withstand various harsh conditions and can meet requirements for high network reliability and security. Our products come in different configuration to cater for individual needs. For example, you can choose by network speed (Gigabit, fast, etc.), mounting options (rack-mount, DIN-rail, wall-mount, as well as other special-installation types), types of data paths (regular Ethernet, weatherproof Ethernet, PoE, wireless LAN, USB, etc.), industry-specific applications (as shown below), 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.

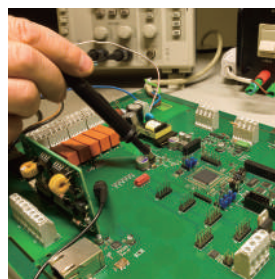
Idea Stage



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



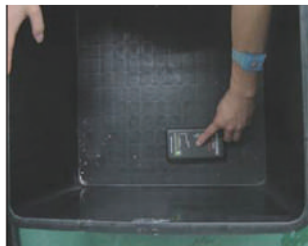
Stencil Cleaner



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 attest 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.

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.

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..

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), Polybrominated Diphenyl Ethers (PBDE).

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.

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.

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 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.

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 has established branches across the world, including the US, China, Europe, and India to address worldwide customers' needs more efficiently. ORing has also built long-term partnerships with regional distributors to provide products, customer services, and technical support in real time. Besides a solid understanding of our offerings and applications, ORing's well-trained sales representatives and channel partners have constantly stayed on top of the latest market industry trends. Therefore, we can help users make the most out of ORing's products and solutions to address their current and future needs. With the support of the internal R&D team, our sales team can help customers with technical problems related to a product or service immediately.

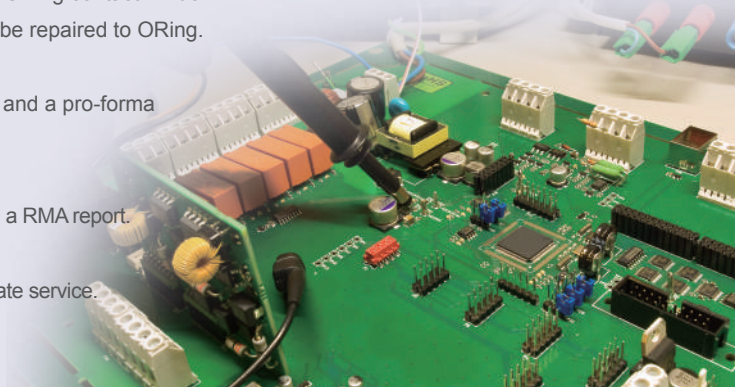
For more information, please contact ORing directly by email at sales@oring-networking.com or through our worldwide distributors. You can also visit ORing's website at www.oringnet.com

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.







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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 Device Server

- Industrial Device Server
- Industrial Slim Type Device Server
- Industrial EN50155 Device Server
- Industrial Rack-Mount Device Server

• Industrial Wireless Access Point

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

• Industrial Cellular VPN Router

- Industrial DIN-Rail VPN Router
- Industrial DIN-Rail 4G LTE WLAN Cellular VPN Router
- Industrial EN50155 4G WLAN Cellular VPN Router

• Industrial M2M Gateway

- Industrial DIN-Rail M2M Gateway
- Industrial Dual 4G LTE M2M IoT Gateway

• Network Management Software & Device

- Open-Vision v4.0
- Device Configuration Backup Unit

• Accessories

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

• Industrial IOT Product

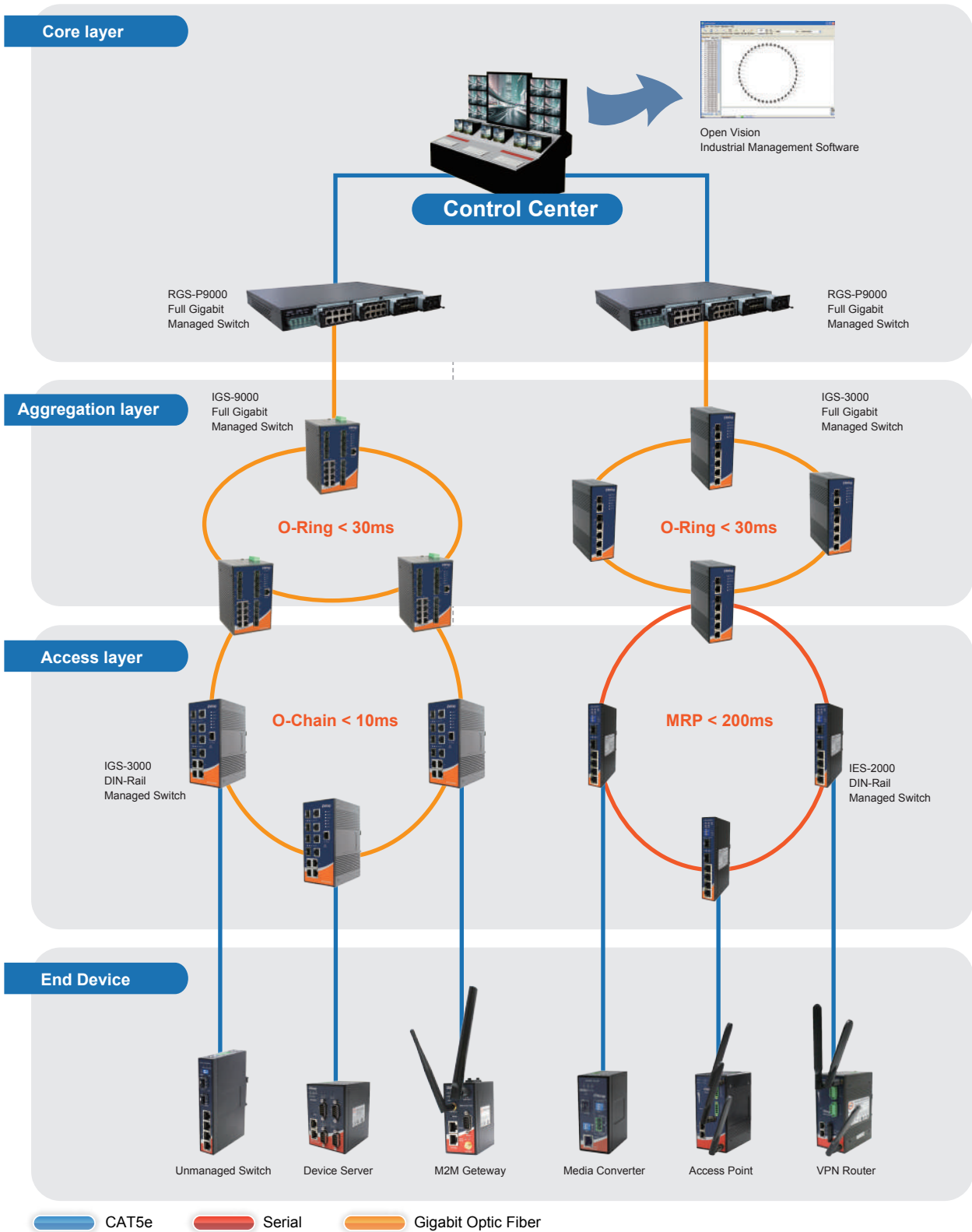
- Wireless Remote I/O (ORIO)
- Smart Meter (ORGate)
- Street Light Controller (Zigbee/LoRa/NB-IoT/CMS 1.0)

• ORing Cloud

- ORing PaaS Products
- ORing SaaS Product



ORing Product Topology



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



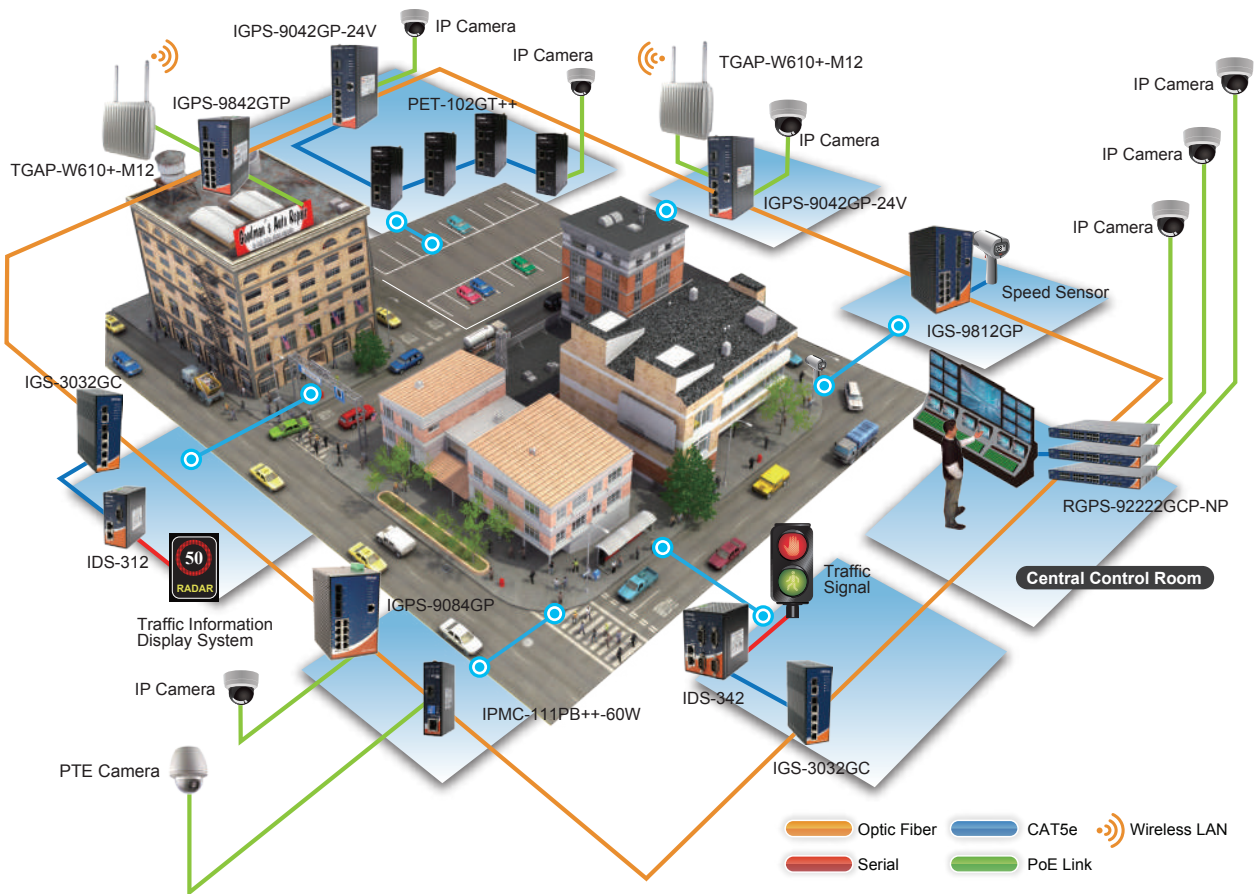
DGS-9812GP-AIO_S

Industrial 20-port Desktop Managed Gigabit Bypass Ethernet Switch

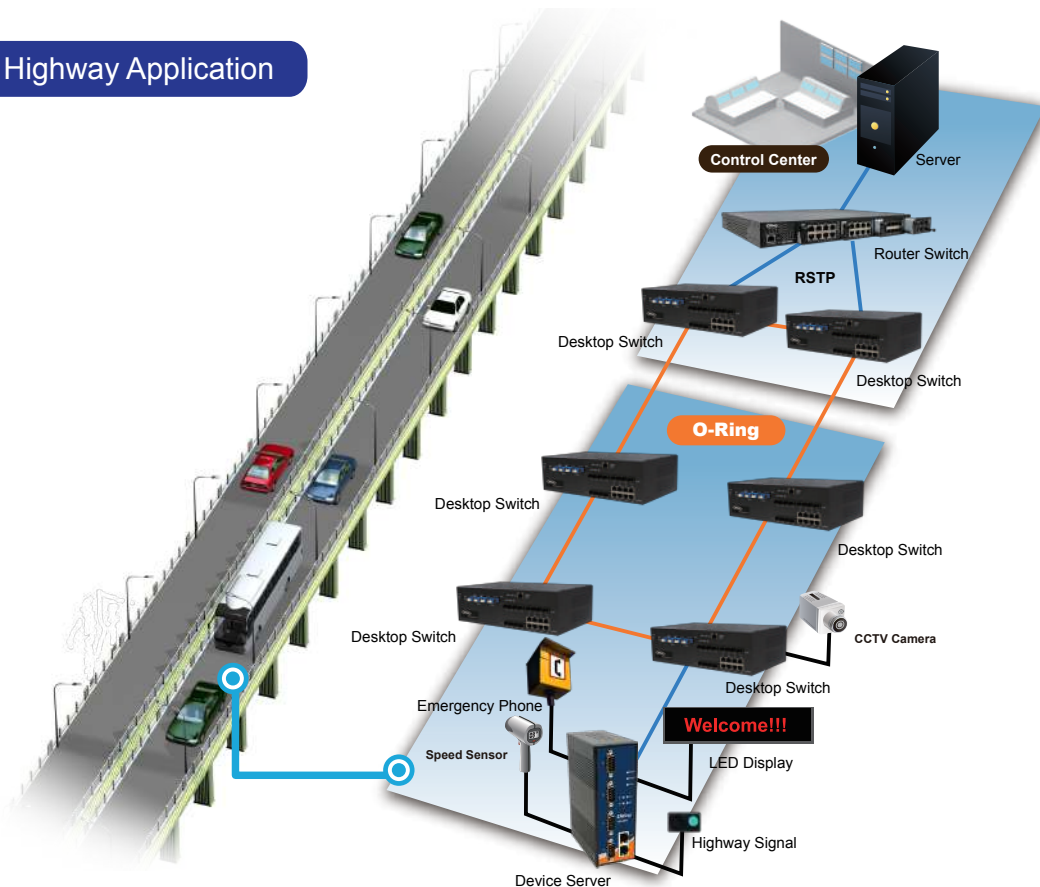
- Supports 8x10/100/100Base-T(X) ports and 12x100/100Base-X SFP ports
- Supports Jumbo frame up to 9.6K bytes
- Supports O-Ring (recovery time < 30ms over 250 units of connection), MSTP/RSTP/STP (IEEE 802.1s/w/D) for Ethernet redundancy

*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 indispensable 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

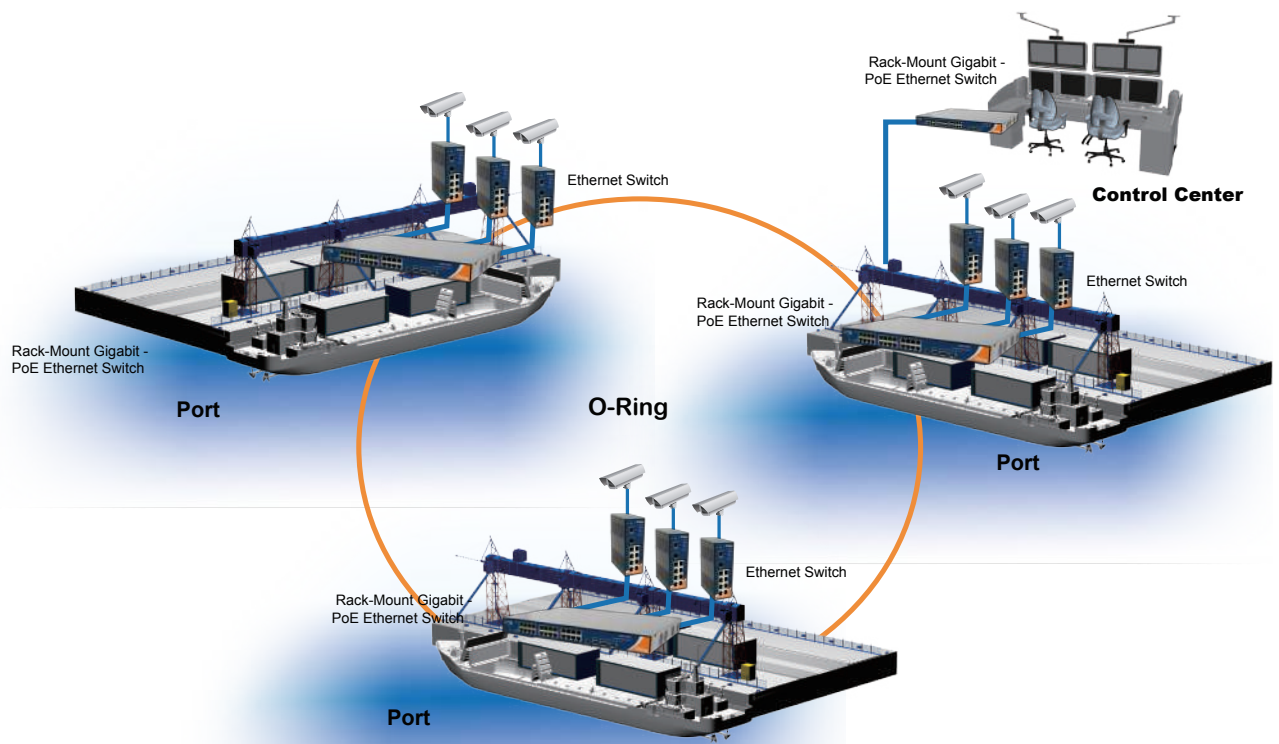
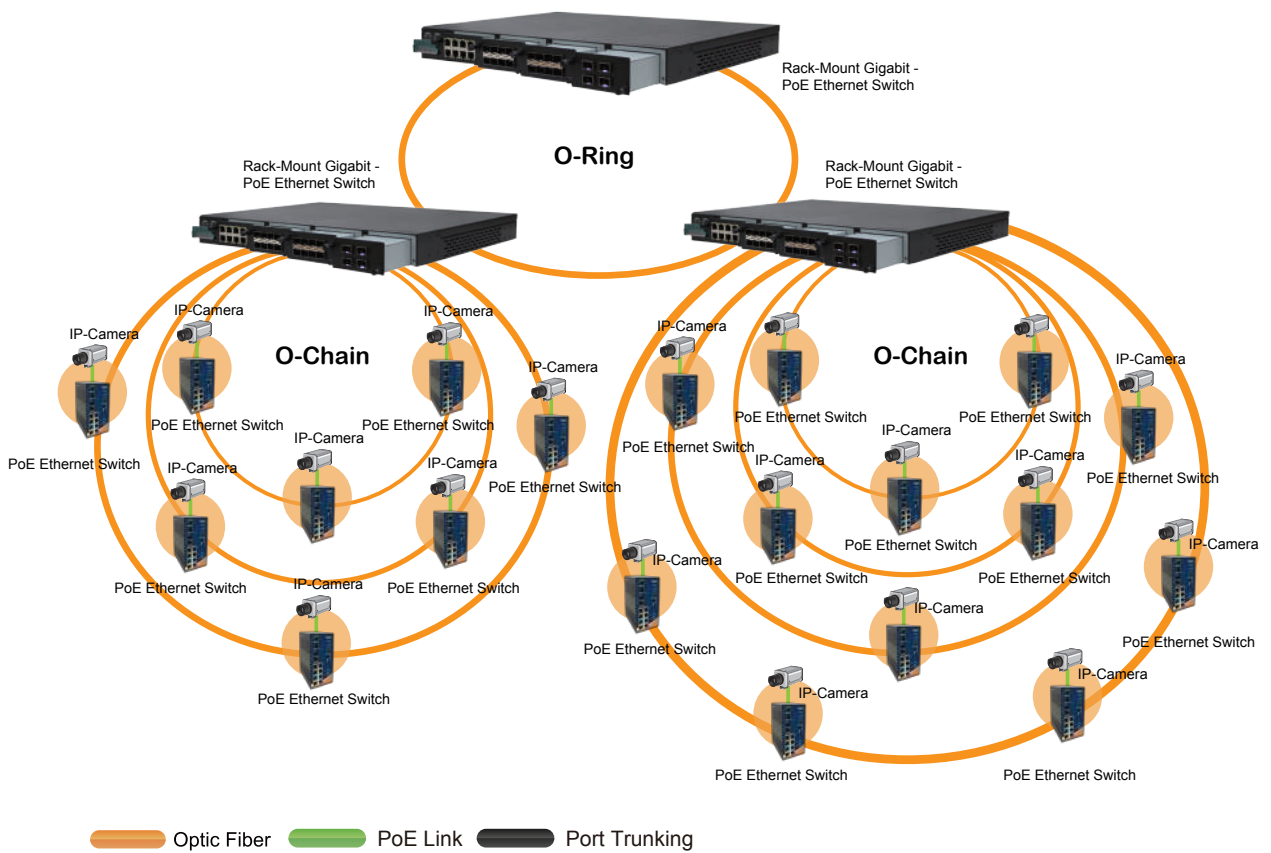
Industrial 14-port Managed Gigabit PoE Ethernet Switch



- 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-M12X-BP1-MV

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 IEEE802.3at standard, provide up to 30 Watts per port
- World's fastest Redundant Ethernet Ring: O-Ring (recovery time < 10ms over 250 units of connection)
- HW Bypass with two Gigabit ports



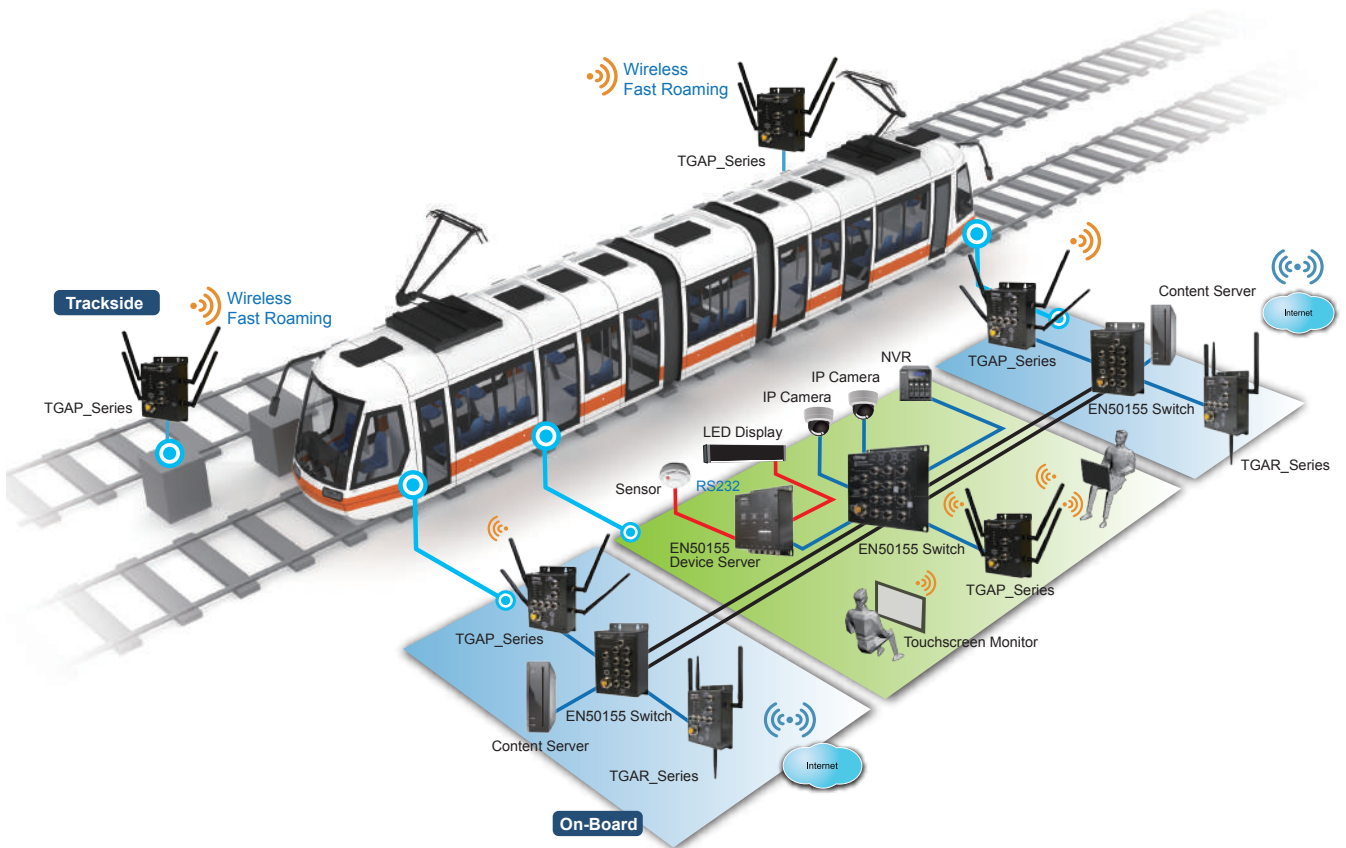
TGAR-2062+-4GS-M12

Industrial EN50155 IEEE 802.11 a/b/g/n 4G LTE Cellular GPS 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
- Secured Management by HTTPs

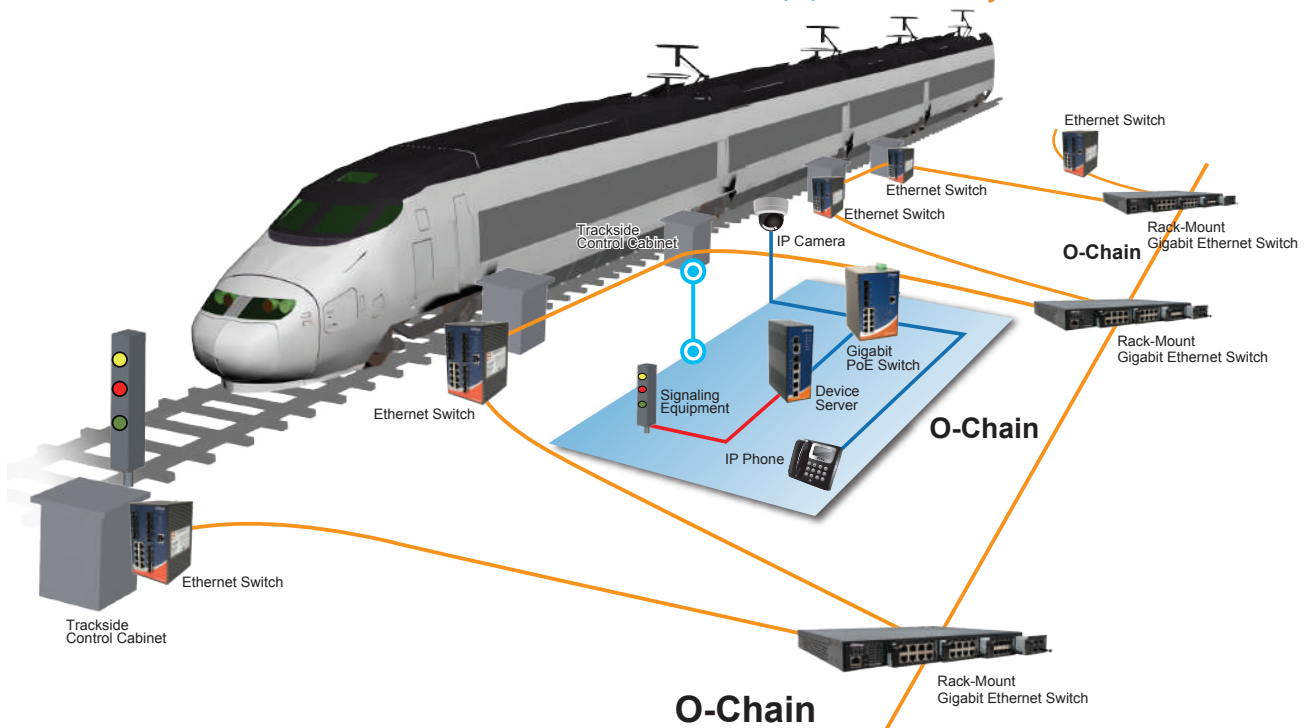
*NOTE: This function is available by request only

Railway Application



Trackside Application

— Port Trunk
 — Optic Fiber
 — CAT5e
 — Serial
(•••) Cellular Interface
(•••) Wireless LAN



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



IGAP-W612H+

Industrial outdoor IEEE 802.11 a/b/g/n wireless access point with 10/100/1000Base-T(X) PoE P.D., IP-67 grade

- High data throughput with HT40 2x2 MIMO
- High transmission power(27 dBm Max.)
- Support X-Roaming < 100 ms

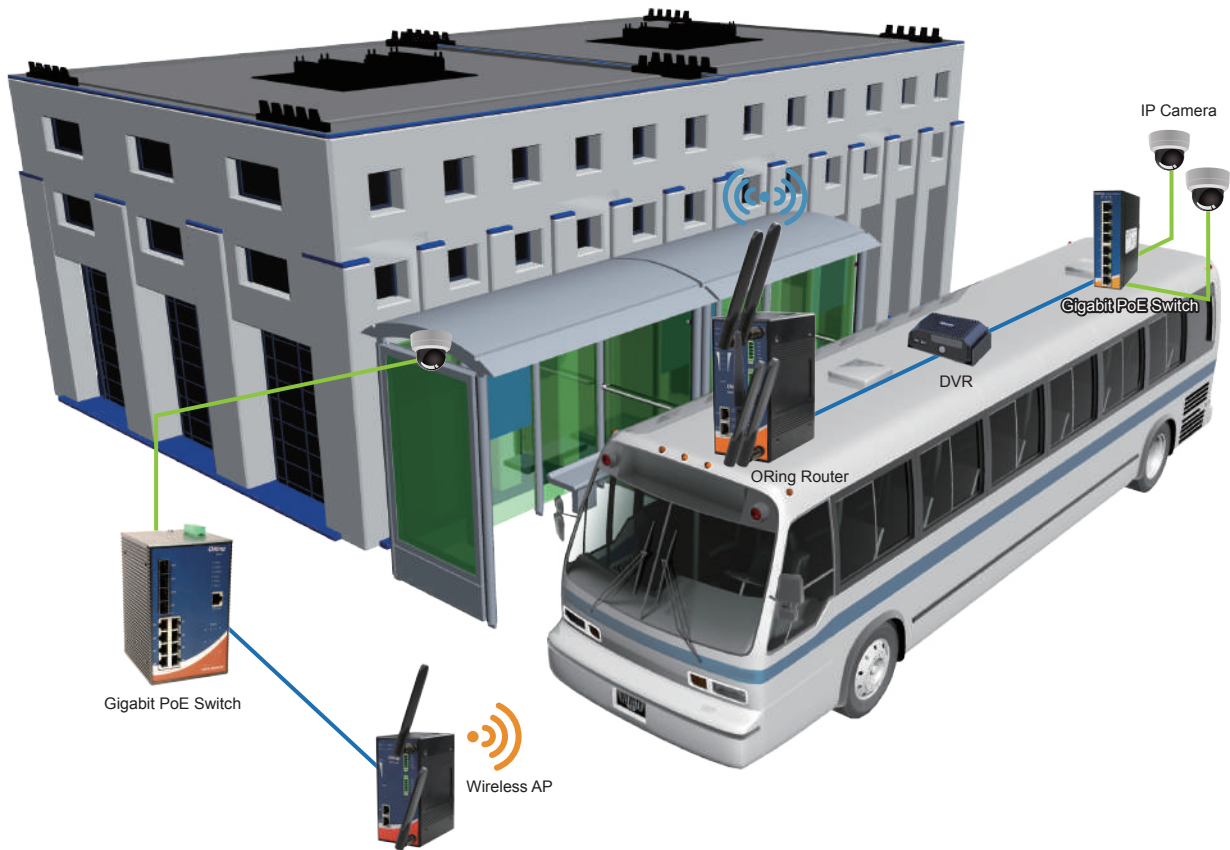


IGPS-9042GP-24V

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



— CAT5e — PoE Link ((••)) Cellular Interface (••) Wireless LAN

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-6620+

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

- Dual RF for redundant wireless communication
- Support Long Distance Air Connectivity
- Support X-Roaming < 60 ms



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



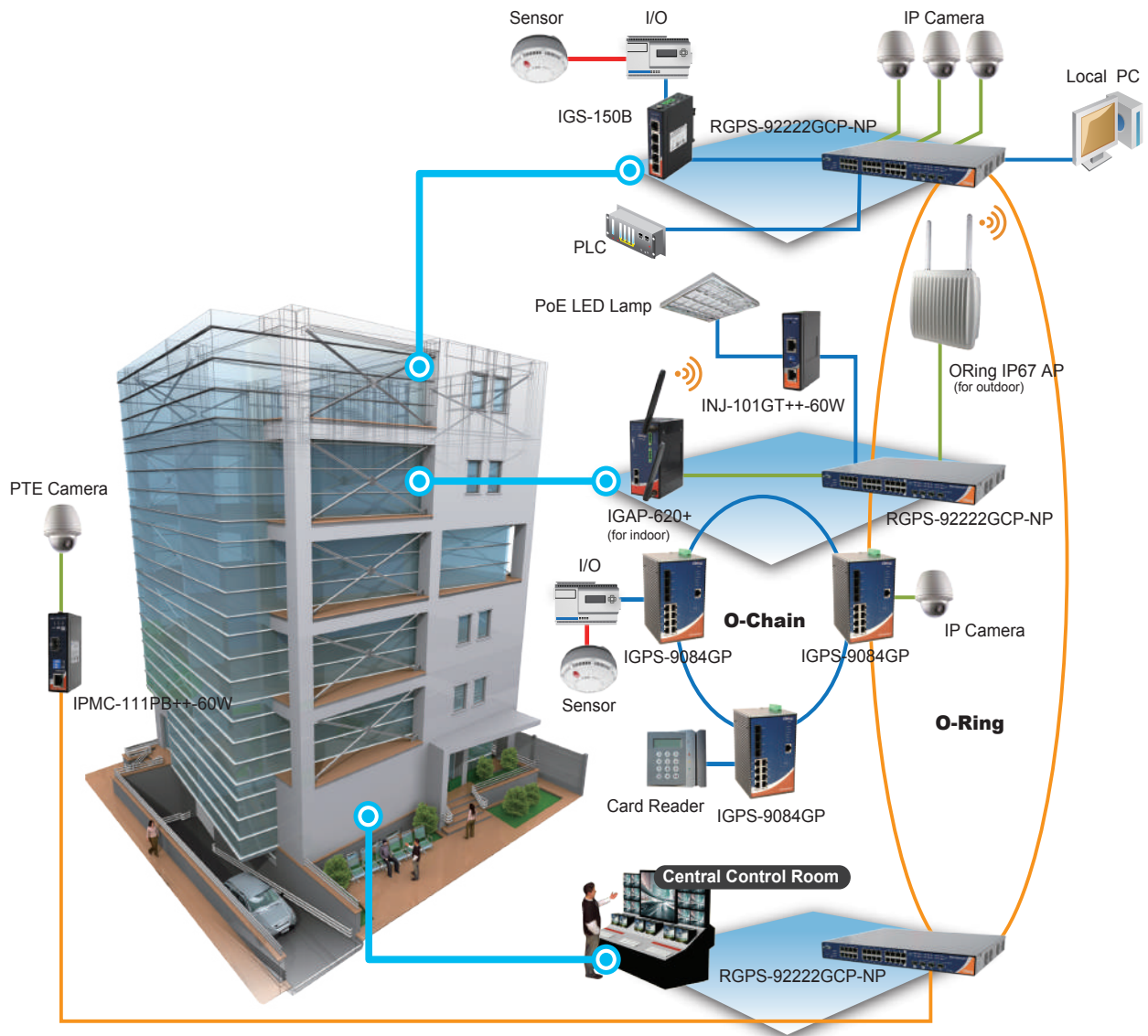
IGAP-W612H+

Industrial outdoor IEEE 802.11 a/b/g/n wireless access point with 10/100/1000Base-T(X) PoE P.D., IP-67 grade

- High data throughput with HT40 2x2 MIMO
- High transmission power(27 dBm Max.)
- Support X-Roaming < 100 ms

Building Automation

- Optic Fiber
- CAT5e
- Serial
- PoE Link
- Wireless LAN



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



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

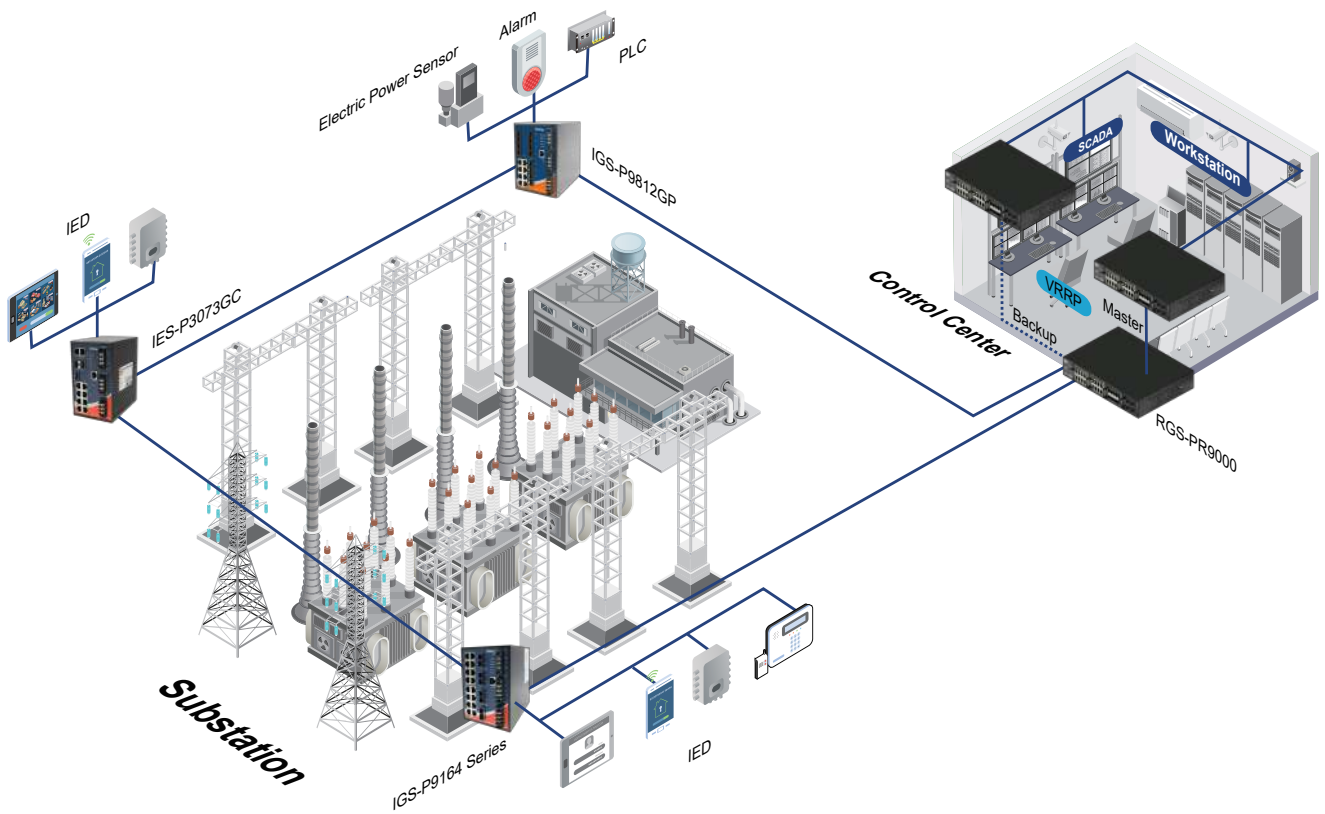


IES-P3073GC Series

Industrial IEC 61850-3 10-port managed Ethernet switch

- 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

Power Substation



CAT5e

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



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

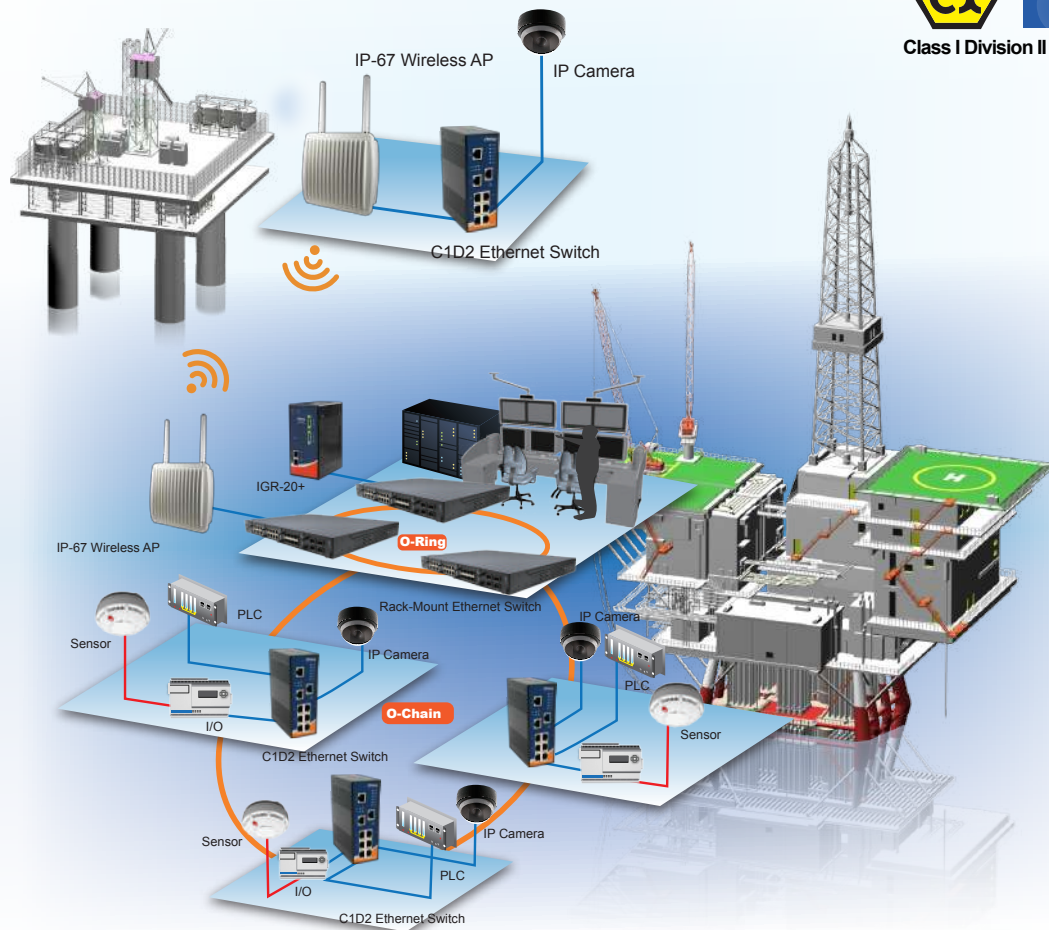
- Supports Layer 3 static routing, RIP and VRRP function
- Supports standard IEC 62439-2 MRP***NOTE** (Media Redundancy Protocol) function
- 24 ports P.S.E. fully compliant with IEEE802.3at standard, provide up to 30 watts per port
- Supports PoE schedule configuration and PoE auto-ping check function

*NOTE: This function is available by request only

Oil Field Application



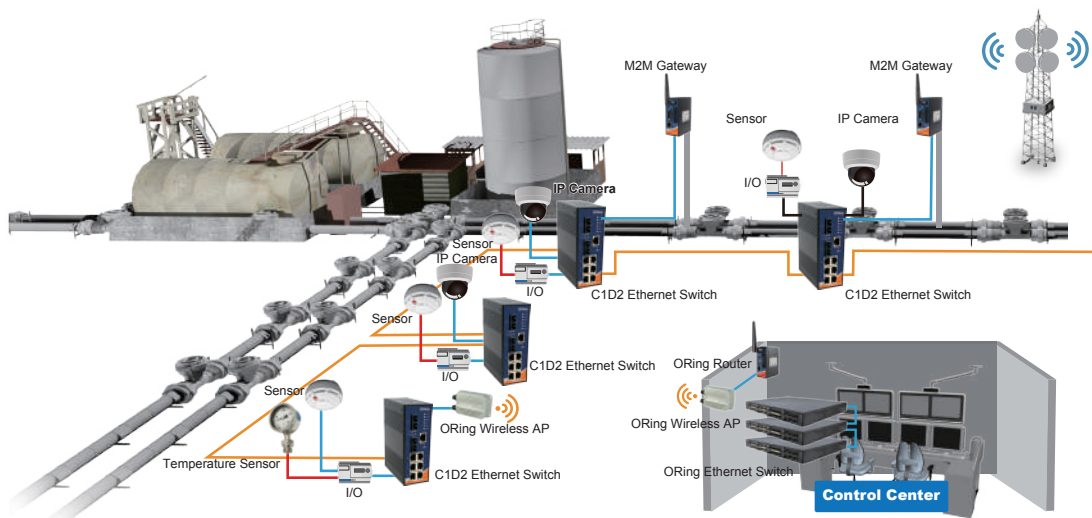
Class I Division II Hazardous



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



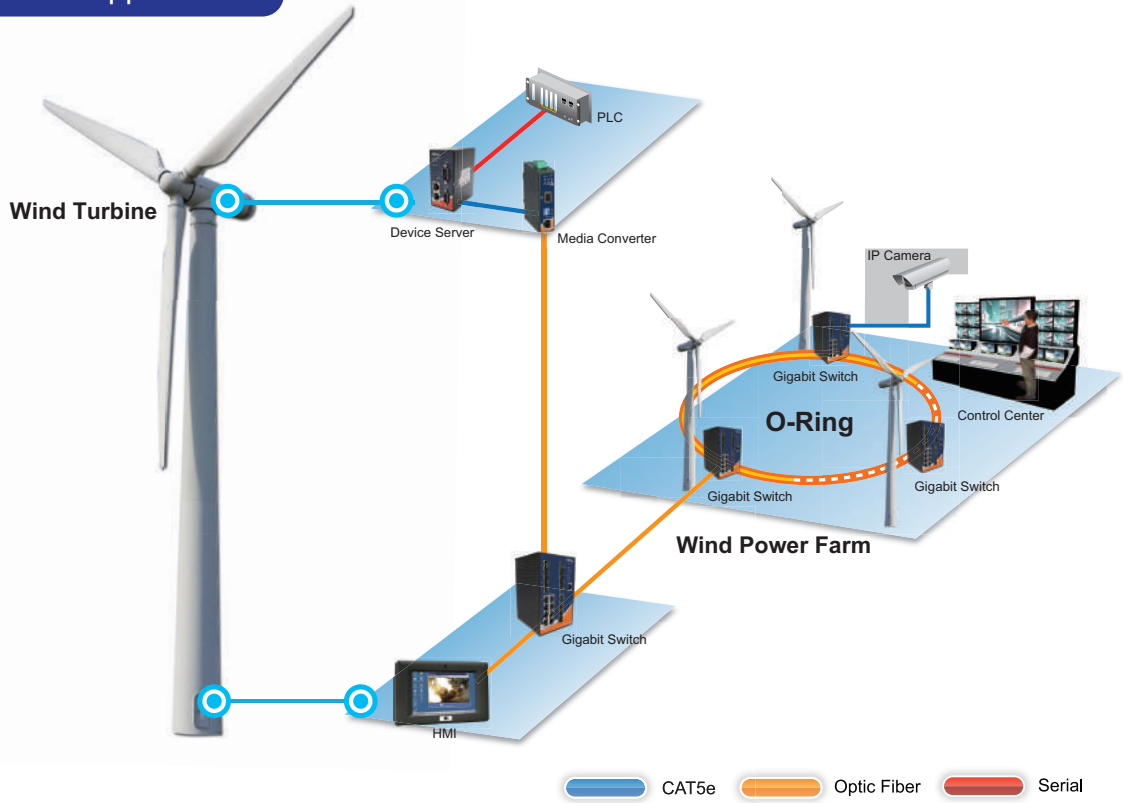
RGS-P9000

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

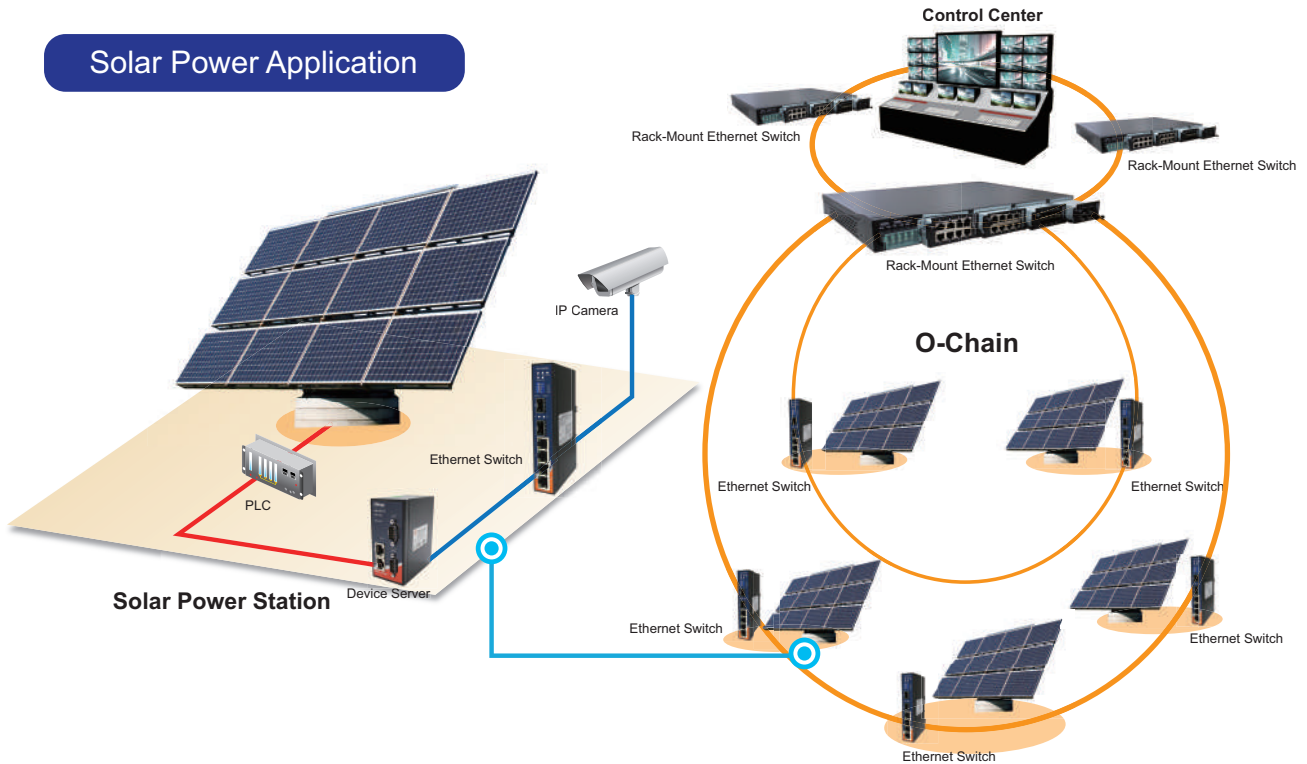
- Design for power substation / railway applications and fully compliant with the requirements of IEC 61850-3 and IEEE 1613
- Modular design makes network planning easy
- Supports IEEE 1588v2 clock synchronization

*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



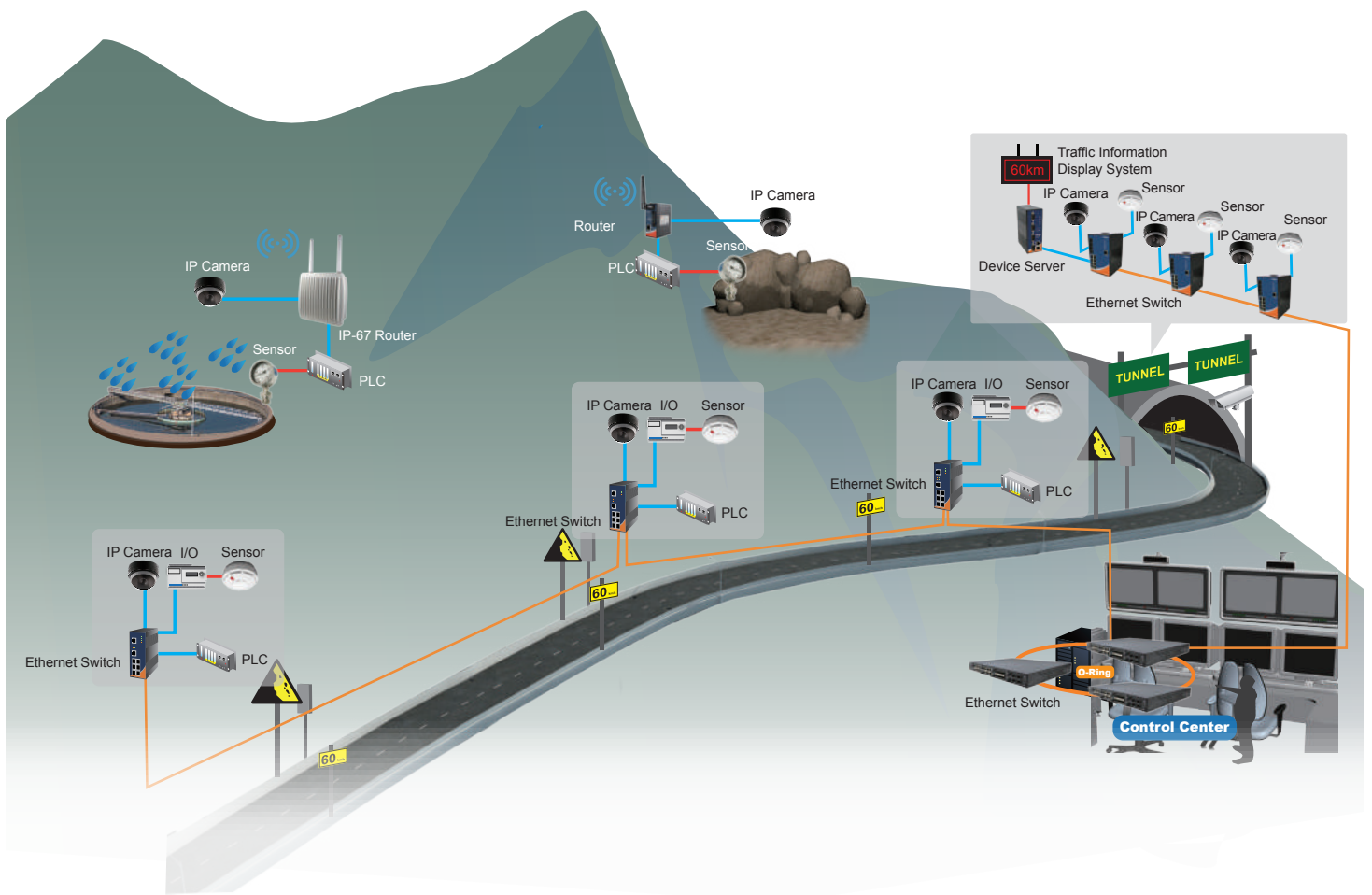
IBS-102FX

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

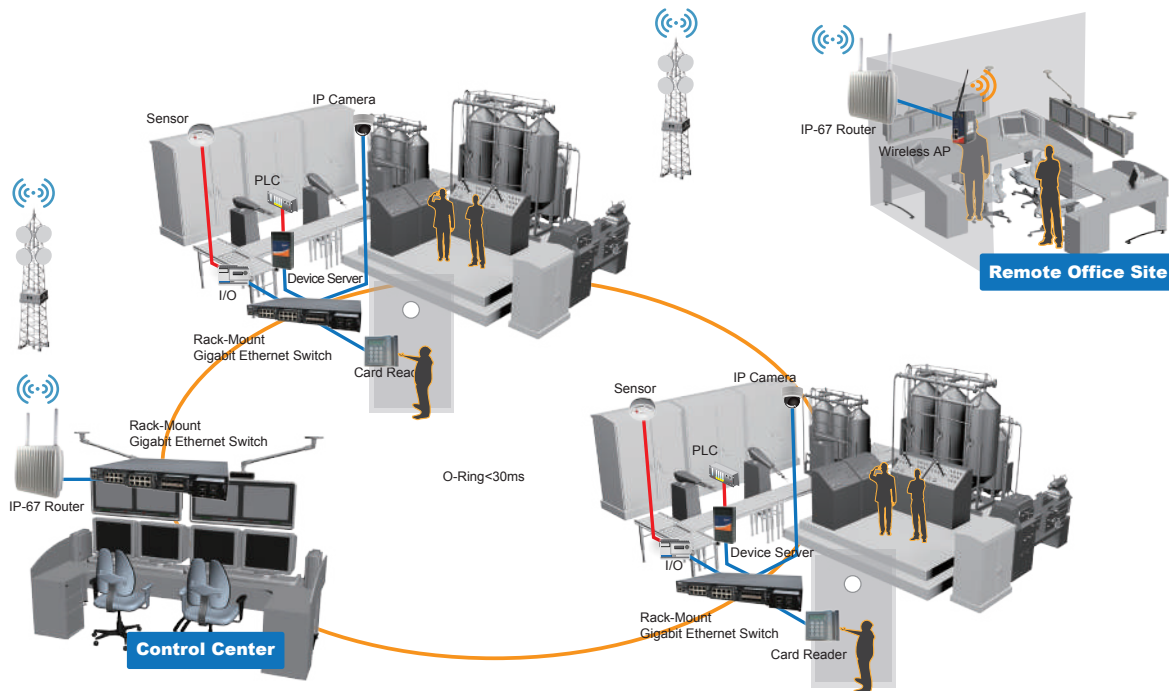
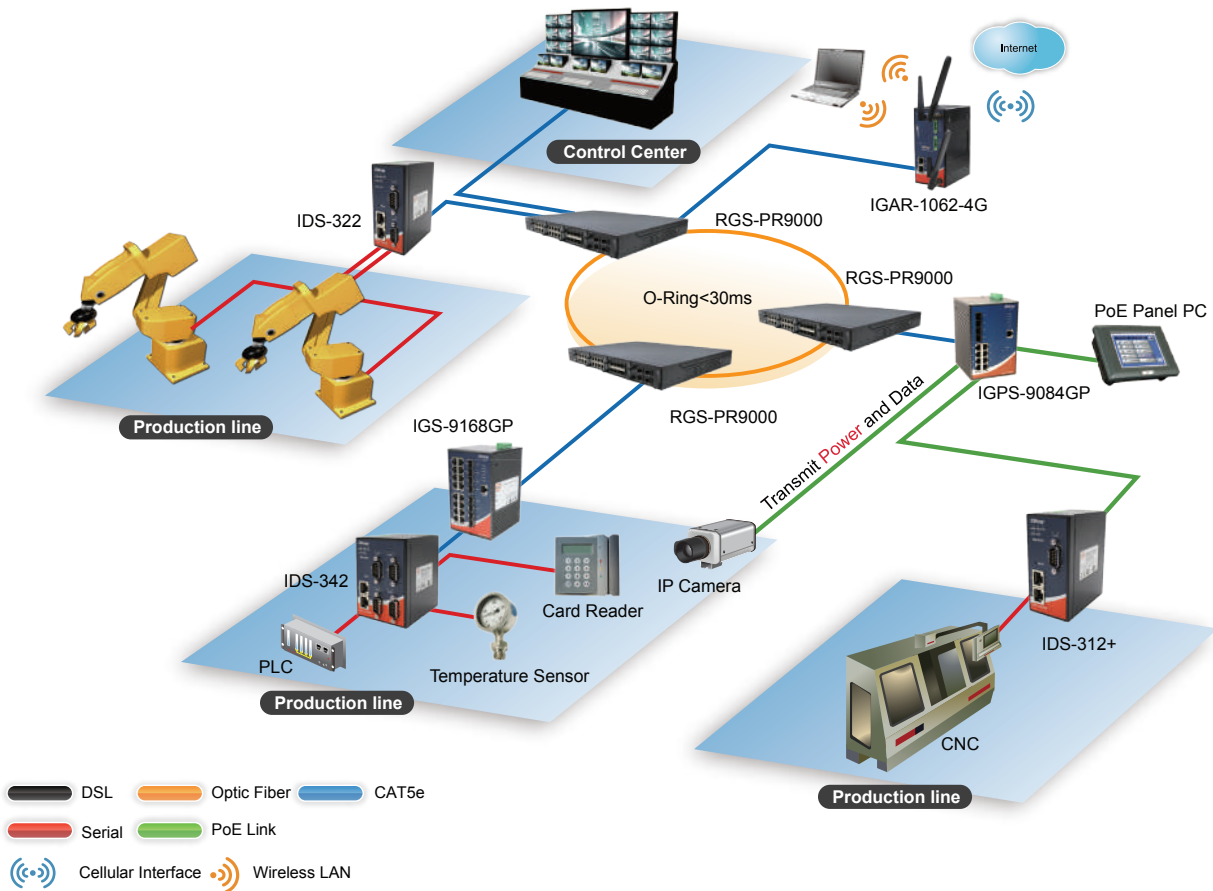


RGPS-R9244GP+-P

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



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 efficiency 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 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



OL-N2 Series

Lighting system, corresponding with LPWAN technology NB-IoT/CATM1 communication protocol

- Designed and optimized by Low Power Wide Area Network (LPWAN) with NB-IoT/CATM1 network technology
- Smart Control function (ON/OFF/Dimming)
- Supporting Logic Signal Input (LSI)



OL-Z-NB Series

Lighting Controller, Zhaga, NB-IOT/LTE-M, Dali2, G Sensor, Light Sensor, Band3/8/20/28

- Universal luminaire compatibility via standard Zhaga Book 18 socket
- Support Cat.NB1/Cat.NB2/Cat.M1 communication with optional 2G fallback
- Smart Control dimming function compatible with DALI2 protocol



OL-B-NB series

Lighting system, corresponding with NB-IoT/CATM1 communication protocol

- Designed and optimized by Low Power Wide Area Network (LPWAN) with NB-IoT network technology
- Smart Control function (ON/OFF/Dimming)
- Smart power saving mode



| | | | | | | | |
|--|--------------------------|---------------------------------------|--|--|--|--|---|
| | | | <p>LoRa P2P Cell Controller / NB-IoT Street Light Controller</p> | | | | <p>Smart City Communication Backbone a. Fiber Switch b. 3G/4G Gateway c. 3G/4G Router d. Wifi Hot-Spot</p> |
| <p>LoRa P2P Gateway with Wifi Hotspot a. 1: 80 Gateway b. Coverage : 1.5km c. Installation Height : 6m (Light Pole)</p> | <p>LoRa Repeater</p> | <p>LoRa / NB-IoT Alarm button</p> | <p>IP Surveillance 4G / Optical Fiber</p> | <p>LoRa / NB-IoT Sensor and Meter IO</p> | | | |

Product Overview & Selection Guide

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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 request.

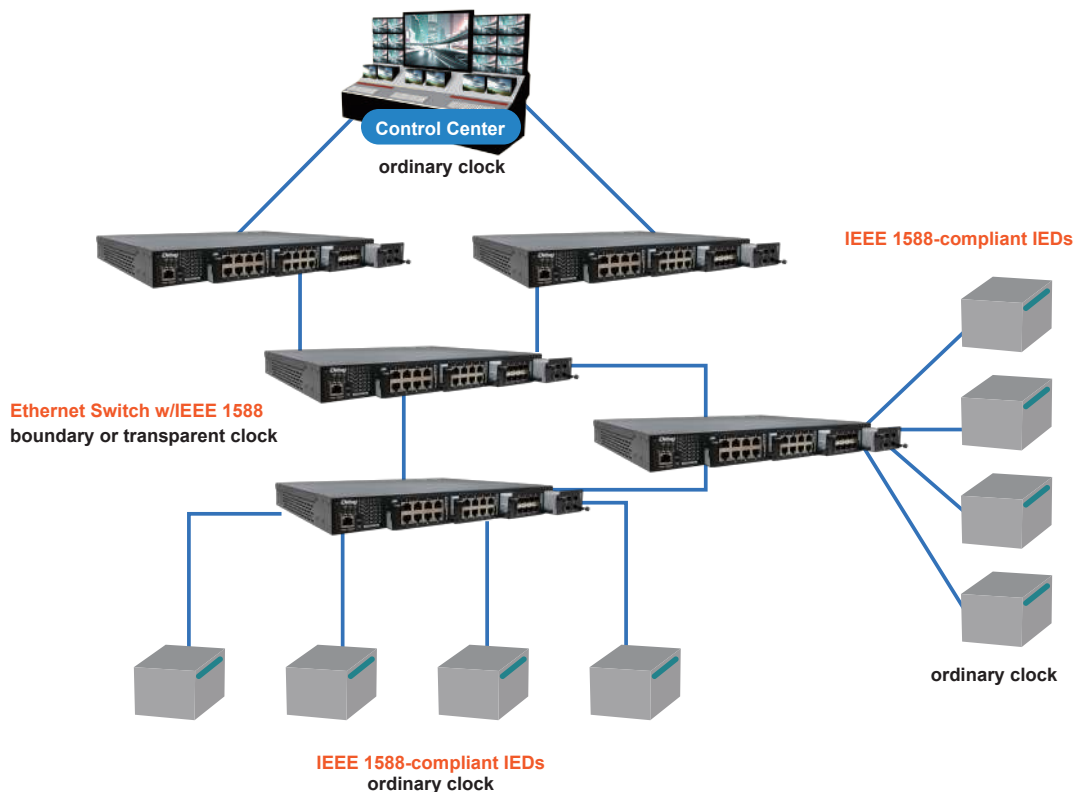
*NOTE: This function is available by request only

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 1588v2 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.

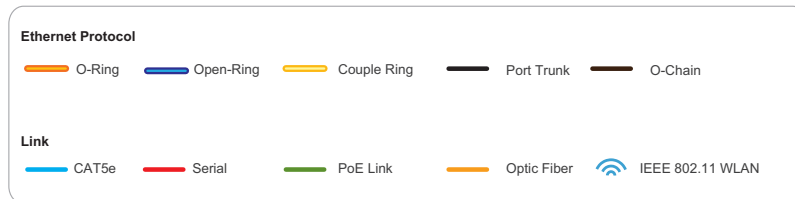
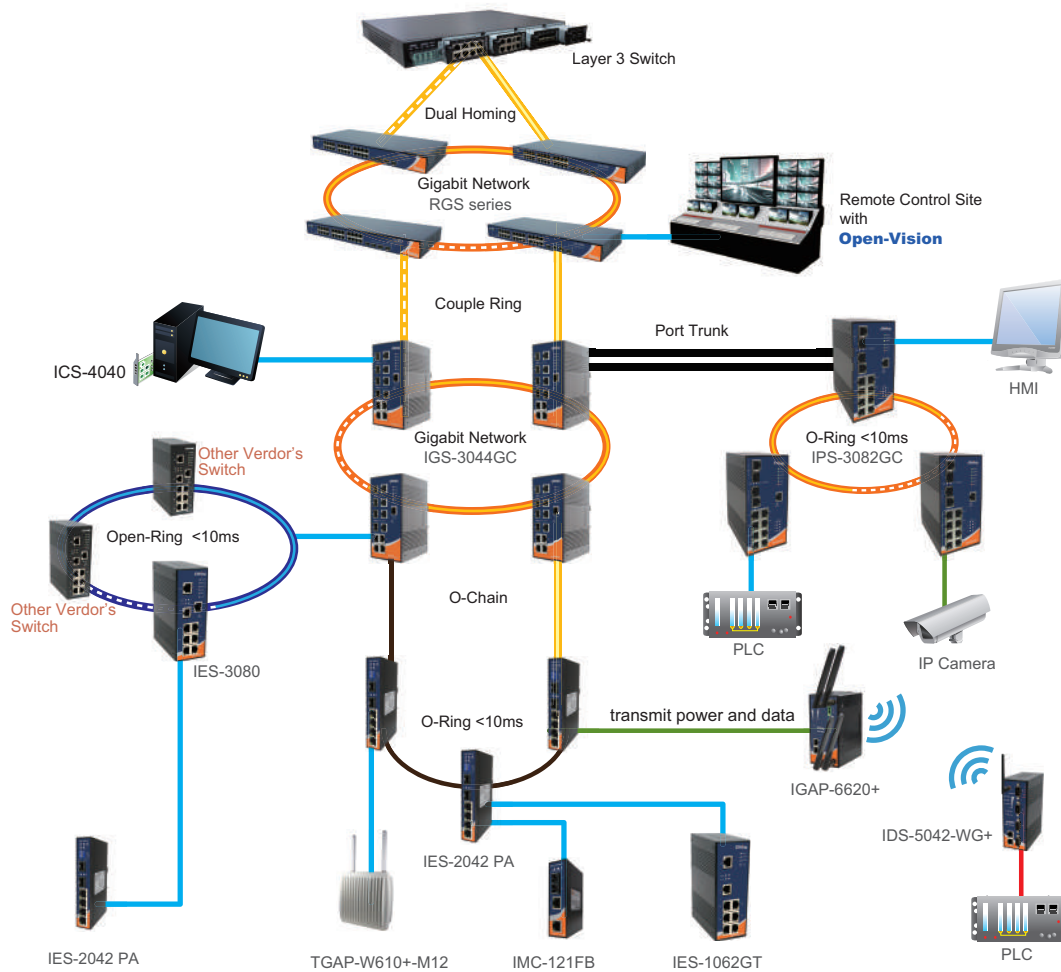
Support for IEEE Standard Redundant Technologies

- 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**



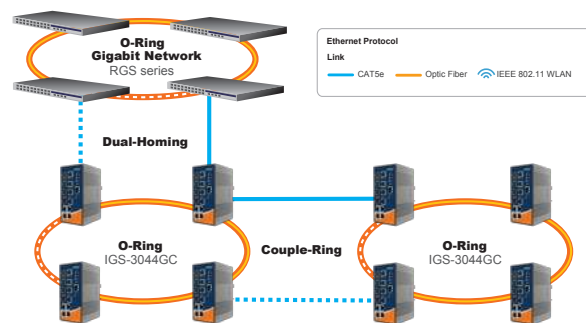
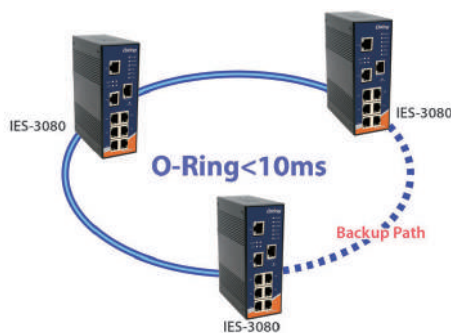
Network Redundancy Comparison Table

| 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 <i>(Note: Recovery time is unpredictable if there are more than 9 nodes)</i> | 80 <i>(Note: Recovery time is unpredictable if there are more than 9 nodes)</i> | 20 <i>(Note: Recovery time is unpredictable if there are more than 9 nodes)</i> | 250 | 250 | 250 |
| Per VLAN STP | NO | NO | NO | YES | NO | NO | NO |

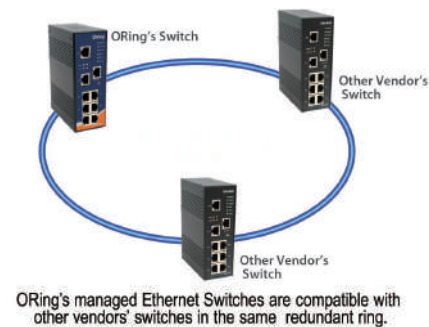
Comparison Table of Redundant Technologies

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.



MRP^{NOTE}: All of ORing's Ethernet switches come with Media Redundancy 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 seamless data transmission. Therefore, it is suitable to most Industrial 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.

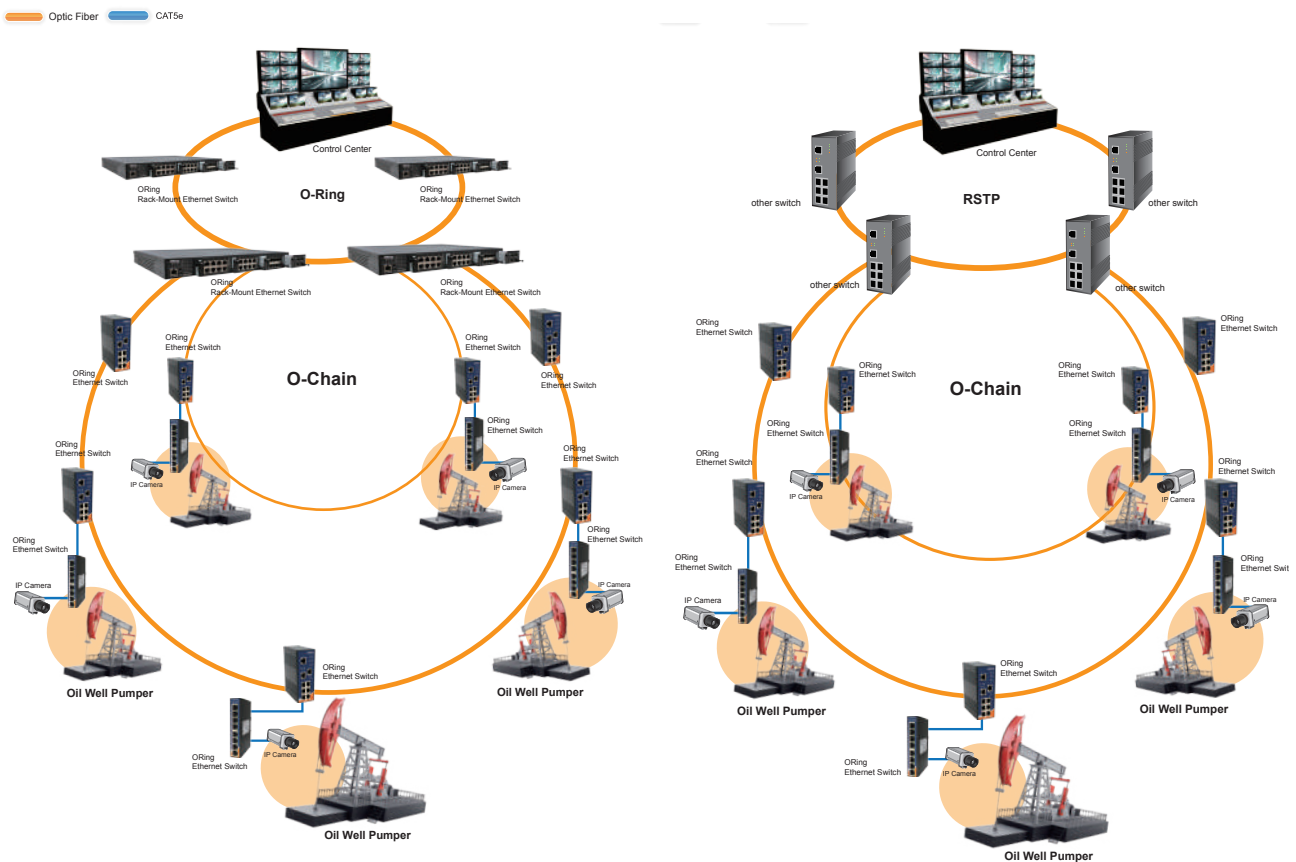
O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology, i.e. the creation of multiple redundant networks beyond the limitations of current redundant ring technology.

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)

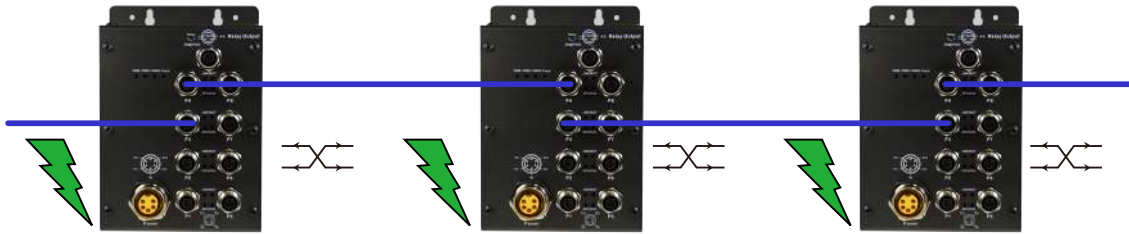


ORing's Hardware Bypass redundancy technology naturally and effectively avoids single-point power failure in daisy chain topology or multi-point power failures. For conventional wired Ethernet network, there is the Copper Interface Bypass. An ORing Ethernet switch with Copper Interface Bypass would have 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.

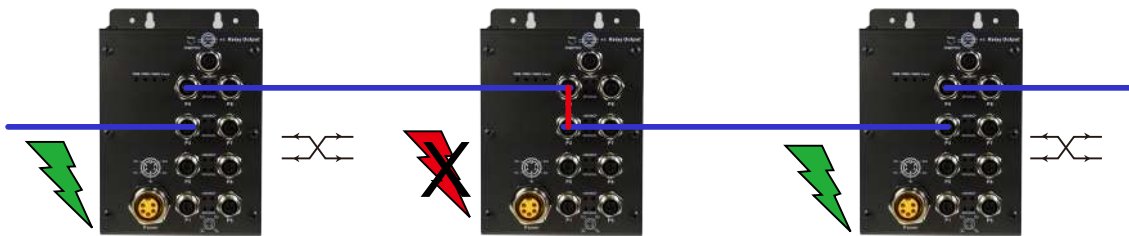
Copper Interface Bypass - TES series



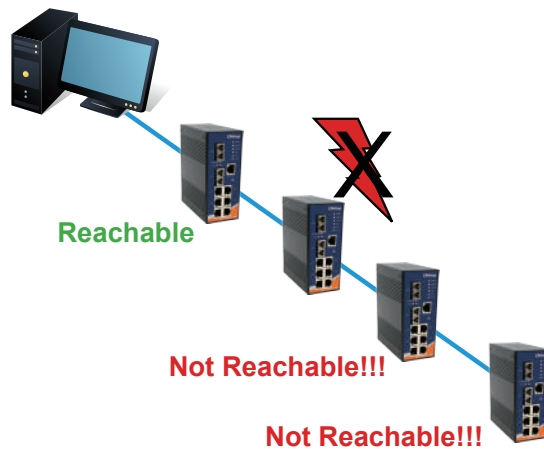
► Normal Communication



► 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.

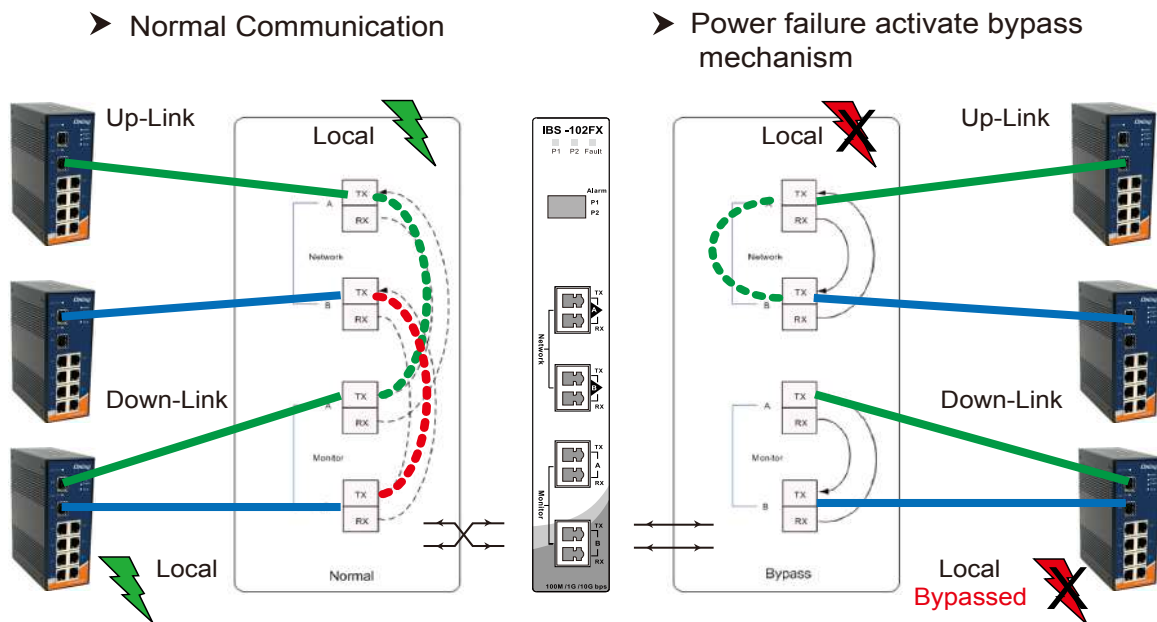


ORing also has the optical solution for hardware bypass network redundancy – Optical Interface Bypass in a dedicated optical bypass switch such as one from the IBS-102FX series. In normal operations, the Bypass switch diverts data from the Network ports to the Monitor ports. When power failure occurs, 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.



Supporting Product(s):

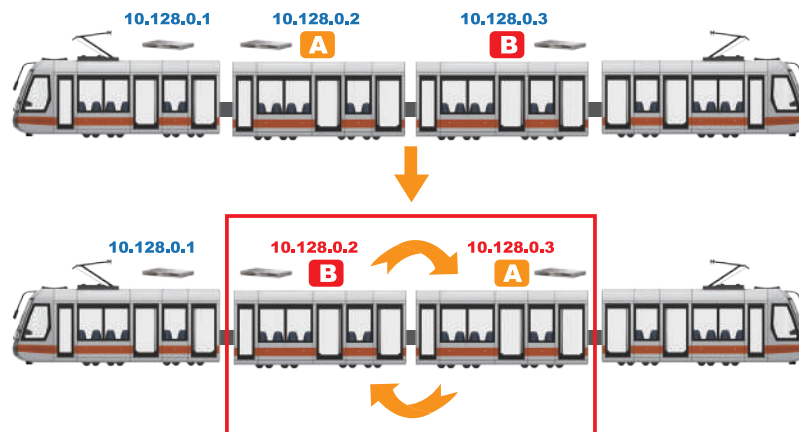
All of ORing's industrial managed and lite-managed Ethernet switch products support O-Ring, Open-Ring, and redundancy technologies. Ethernet switches with the -BP2 suffix support Copper Interface Bypass, while the IBS-102FX Series support Optical Interface Bypass.

TTDP(Train Topology Discovery Protocol)

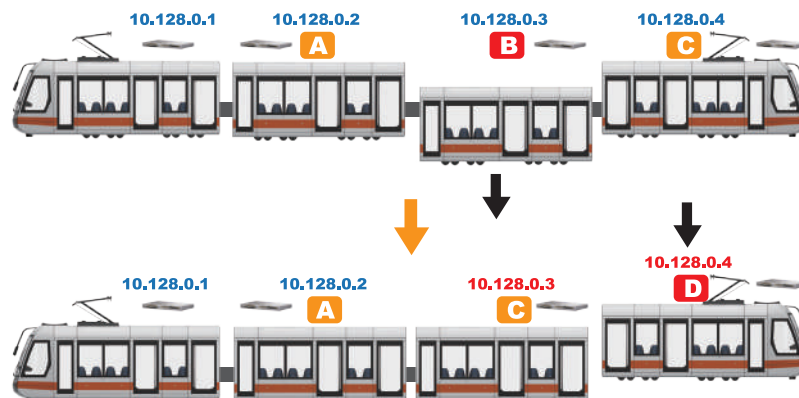
Train topology is dynamic and frequently changes since carriages are constantly added, removed, or replaced. Every time the order of the carriages changes, the network must be reconfigured, which is very time-consuming and prone to errors if it's done manually.

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.

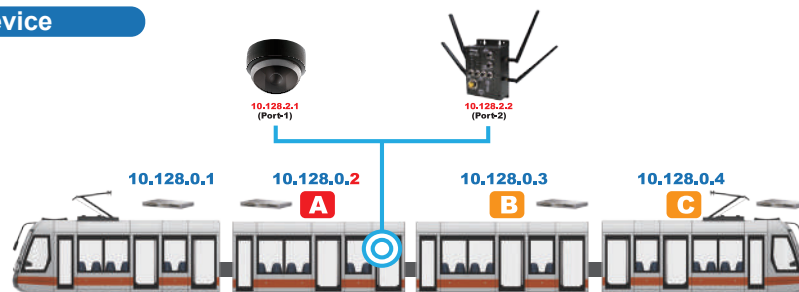
Exchange



Remove & Add

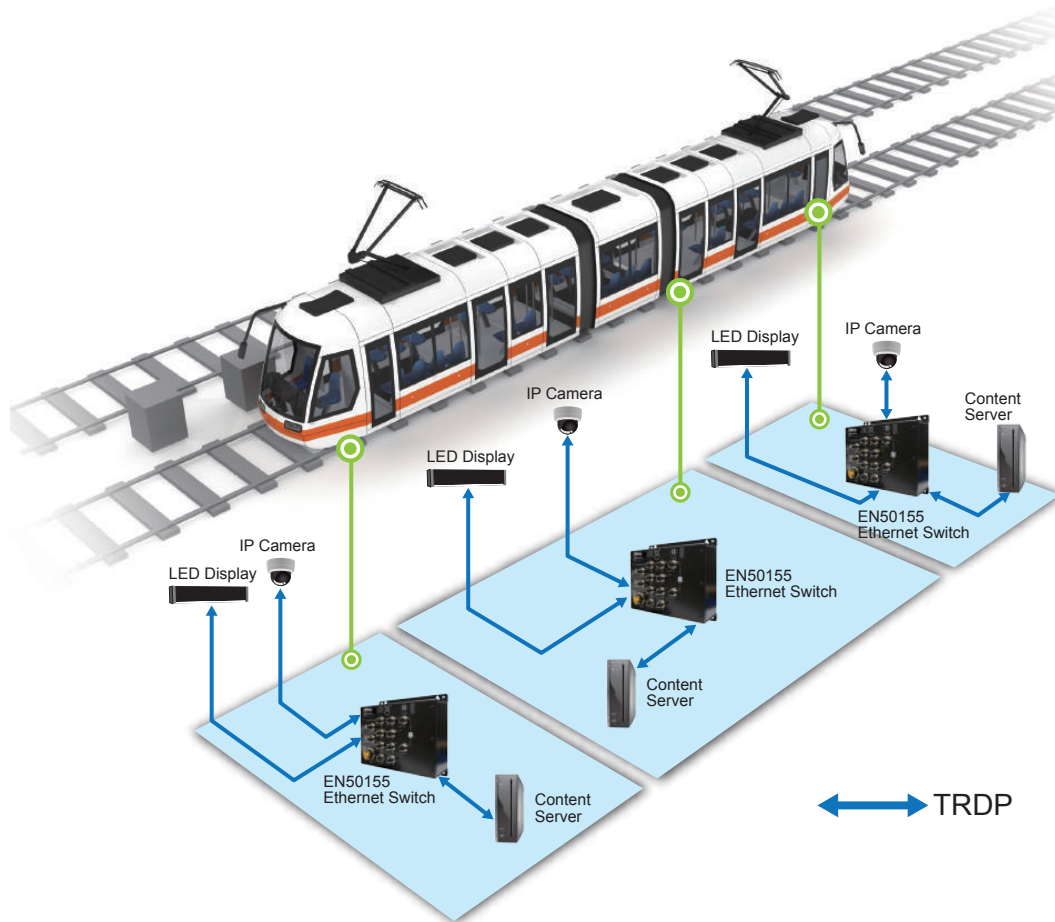


Add Device



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

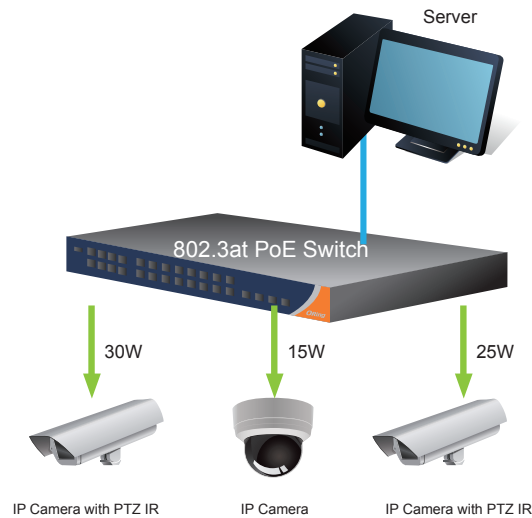
Train Real-time Data Protocol (TRDP) is a protocol for communication and control solutions on board of rolling stock. Railway industries created this new protocol with the aim to improve data communication on board of trains.



Power over Ethernet with Power Management

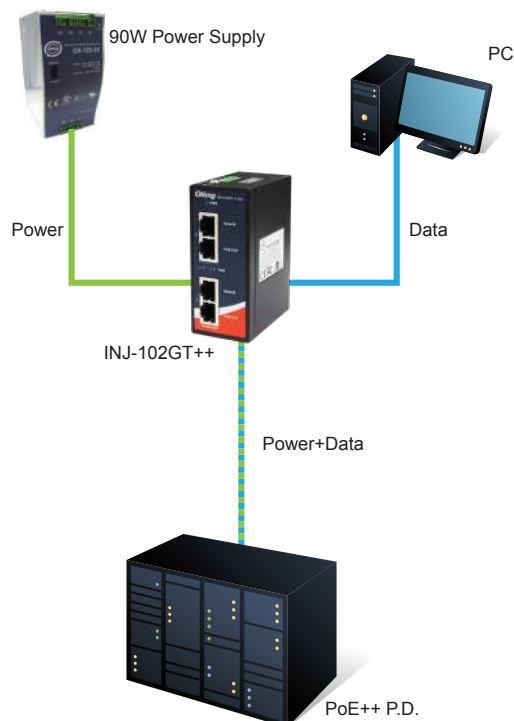
Power over Ethernet (IEEE 802.3at) with PoE+

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.



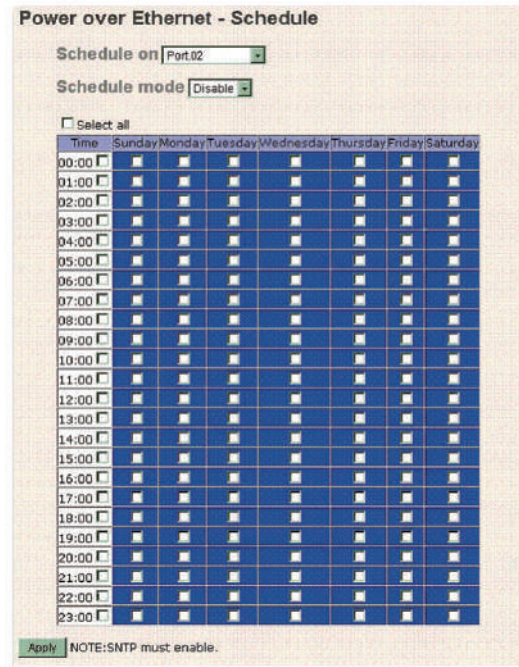
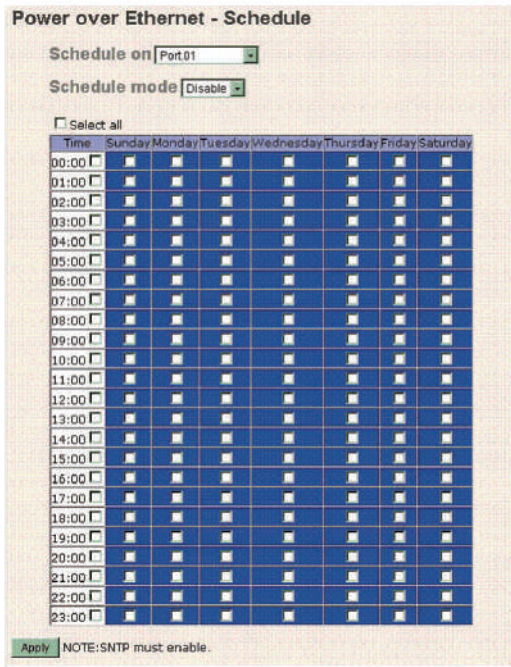
Power over Ethernet with PoE++

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 been 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 |
| # 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 data 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.

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

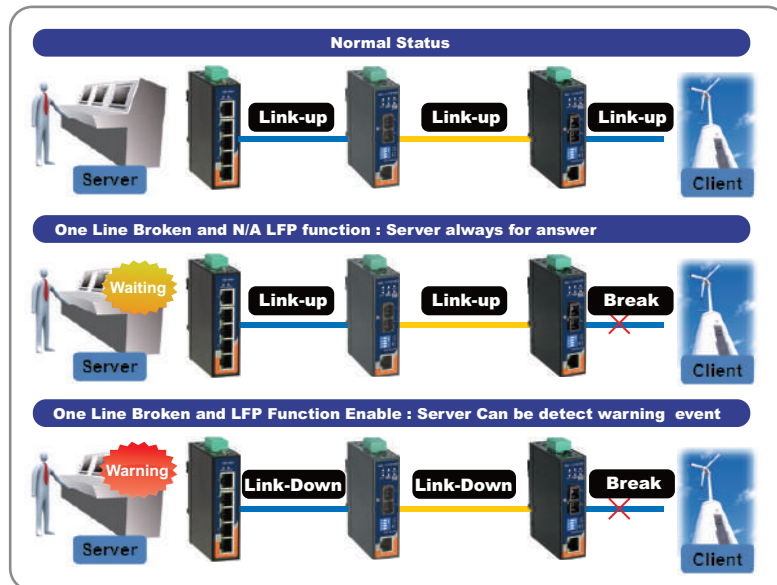
LFP (Link Fault Pass-Through)

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

Industrial Device Server/M2M Gateway Overview

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.

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.

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.

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.

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:

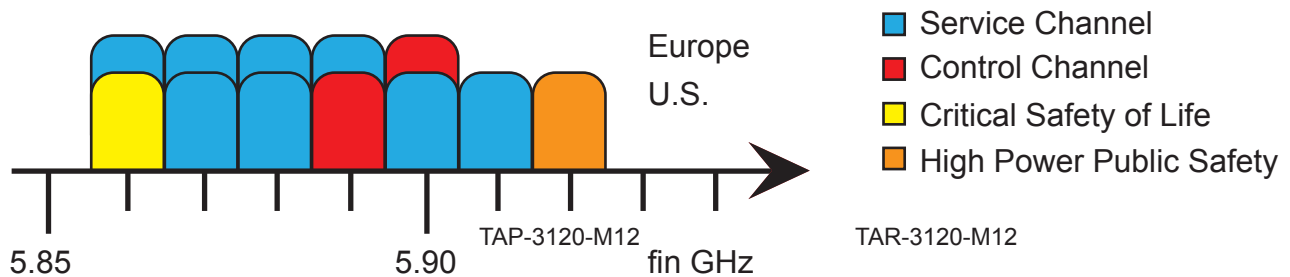
Dual Wifi : IGAP-6620+, TGAP-6620-M12 , TGAP-W6610+-M12 , TGAR-1662+-3G/4G-M12 , IGAR-1662+-3G

Dual Cellular : TGAR-2062+-3G-M12 , TGAR-2062+-4G-M12 , IGAR-2062+-3G

802.11P

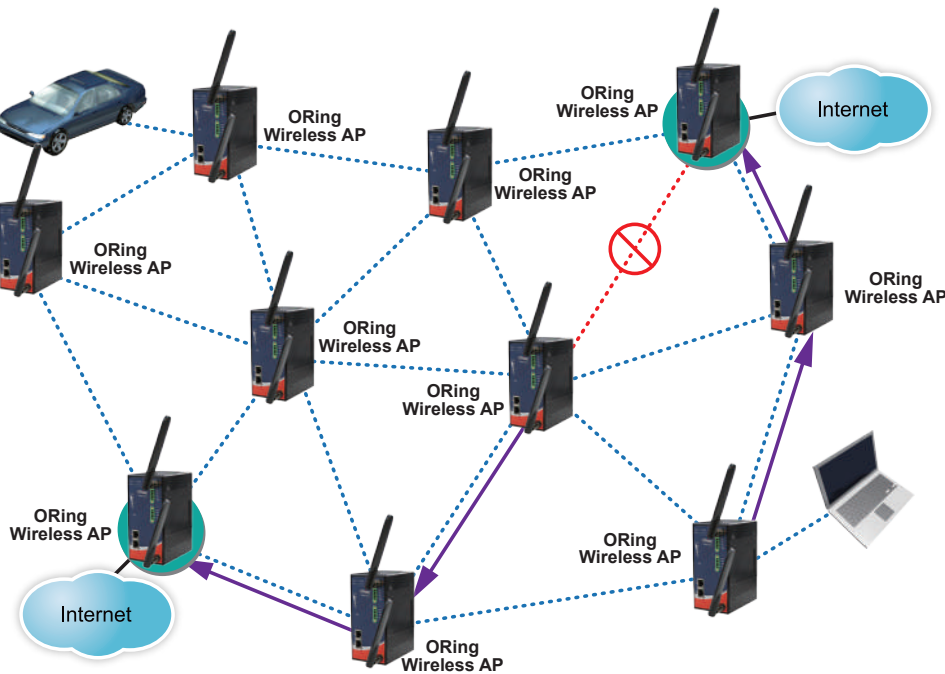
Technology Description

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

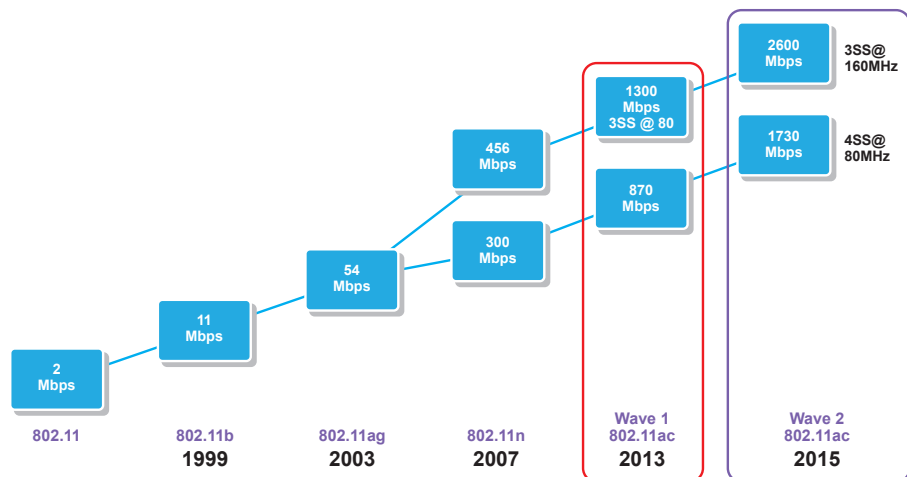
A wireless mesh network consists of several radio nodes in a mesh topology where nodes can communicate with each other even when one node ceases to operate. When a link is down, back-end system will find an available route automatically to ensure signals are transmitted to the destination. Wireless Mesh 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.



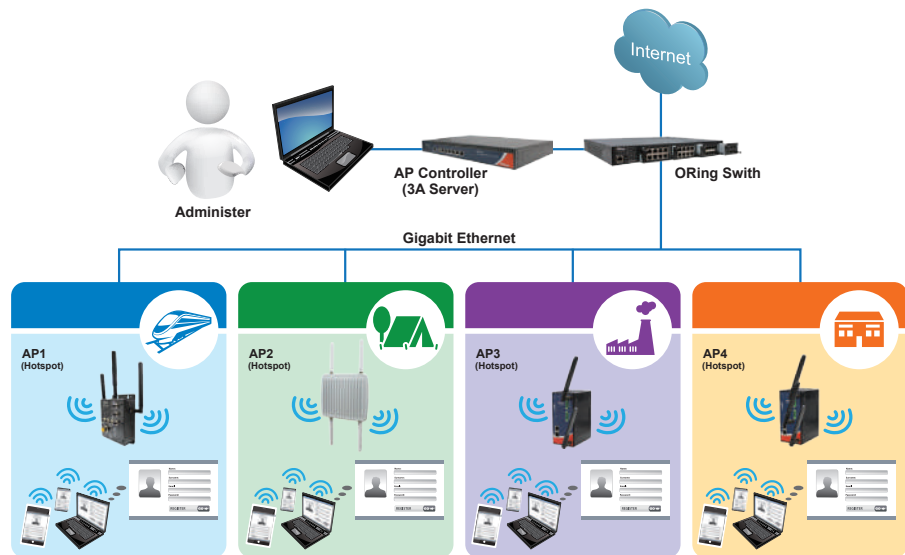
Access Point Controller

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.



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 especially suitable for rolling stock applications.

Key Technologies

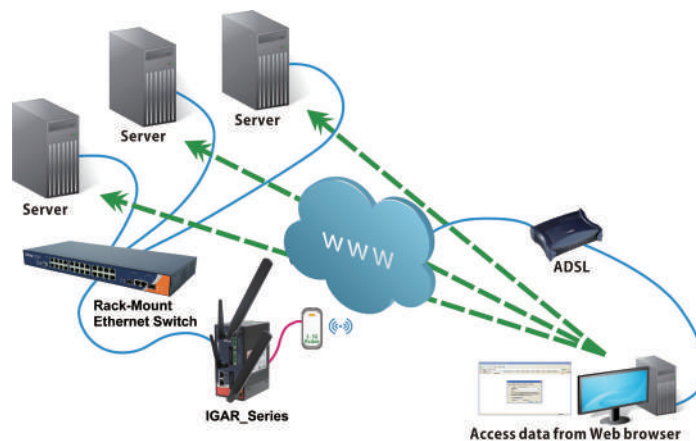
SSL VPN

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.



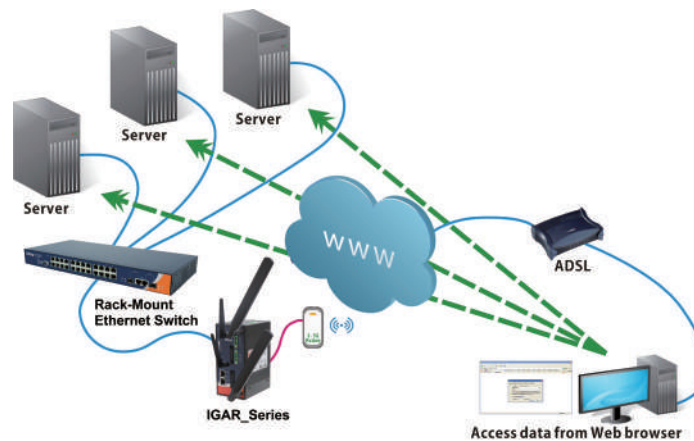
IPsec VPN

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.



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.

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

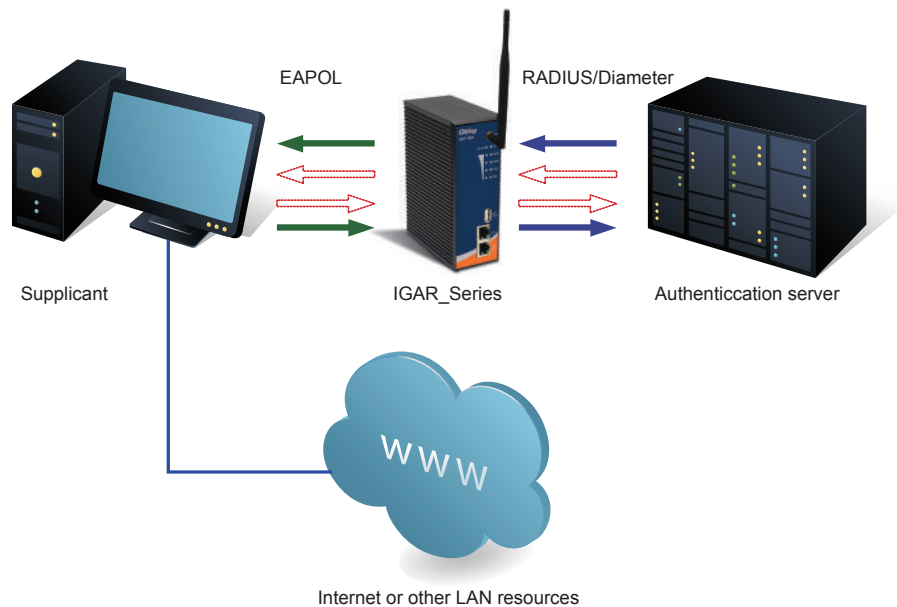
Provides encrypted communication and secure identification of a network web server. HTTPs is very useful for secure network management as well as transmission of sensitive data.

IP Table

Prevents access from unauthorized IP address.

PSK(TKIP,AES)/802.1X Authentication

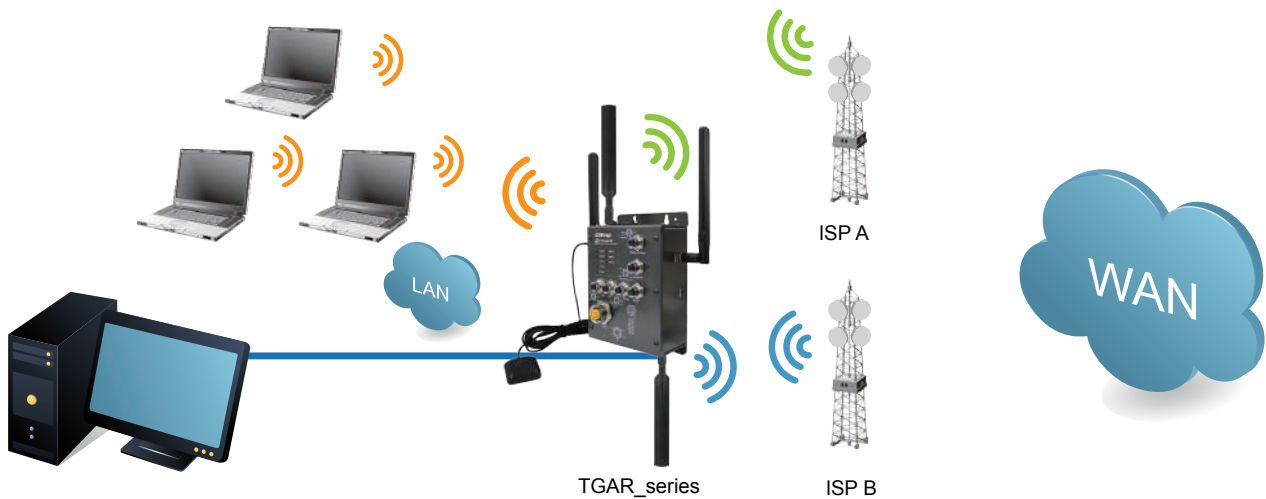
These schemes act as security guards to the network, supporting service identification and optional point to point encryption over the local LAN segment.



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

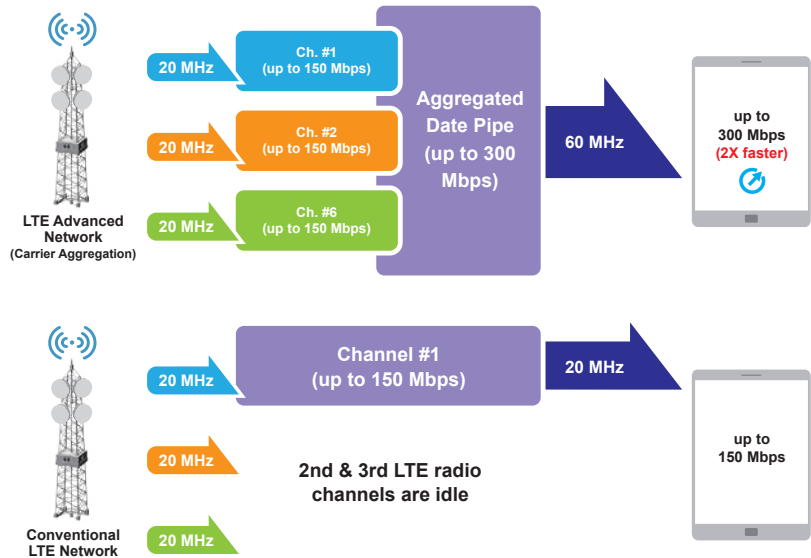
- Supports GPS position function
- Works on 1575.42MHz
- No transmission, only receive
- Three or more satellites obtain an accurate result
- Active GPS antenna



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.



Accessories Overview

ORing has all the industrial networking components for all the small but indispensable industrial networking needs: antennas, cables, fiber patch cords and adapters, connectors, power supplies and adapters, surge protectors, plus Ethernet SFP and BIDI-SFP modules.

Network Management Software & Controller Overview

For facilitated and user-friendly network administration, ORing proudly presents the powerful Network Management Software — Open-Vision, which is the outstanding suite of 3 humanized network management tools: ORing Commander, ORing Topology View (with integrated ORing MAP), and ORing Host Monitoring.

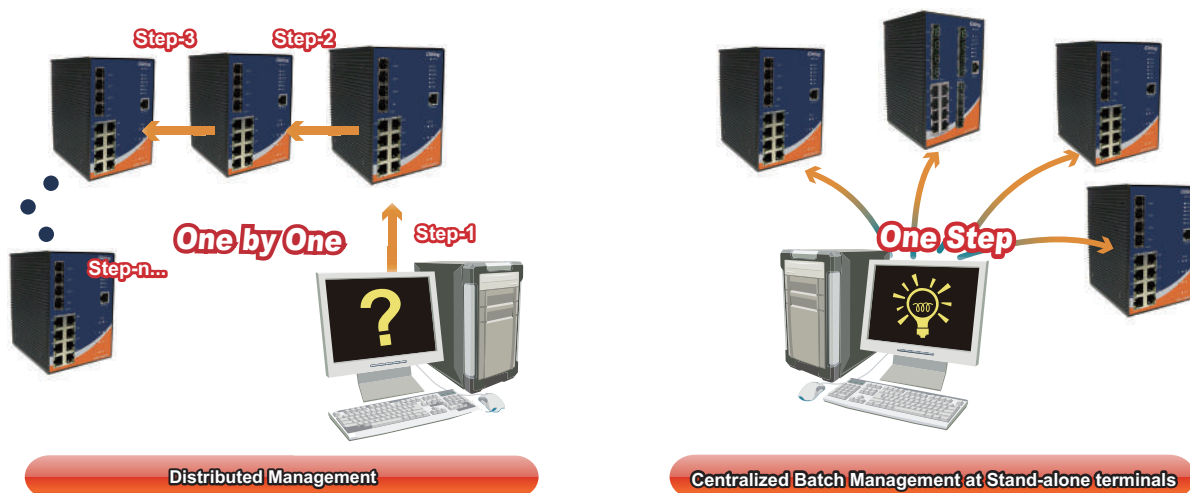
With Open-Vision, the network administrator can enjoy centralized configuration, visualized management, and complete network monitoring with early warning system, as these features help the network administrator maintain stable and reliable industrial network.

Key Technologies

Centralized Management

Technology Description

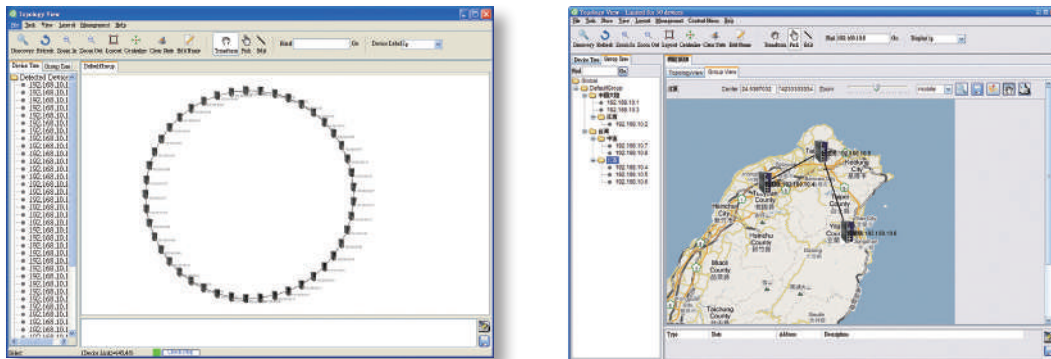
Open-Vision helps the administrator in configuring all ORing's Ethernet switches at once within a few steps by powerful application wizards in ORing Commander: IP Setting Wizard, Firmware Upgrade Wizard, and Redundant Ring (O-Ring) Group Wizard (in ORing Commander). The administrators do not need to configure the managed switches one by one anymore.



Visualized Management

Technology Description

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.

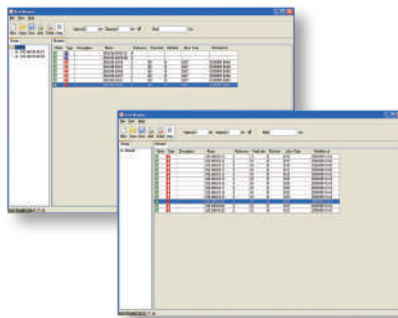


Complete Monitor

Technology Description

ORing-Vision 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 could 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 could 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.

The topology view function has been integrated in the DMG-S15 cloud server which will detect device status automatically and show the topology of all connected switches on the network.



Early Warning

Technology Description

Based on the various monitor mechanisms, if any failure is occurred in the network, administrators can be informed at a very early stage.

Industrial IOT Overview

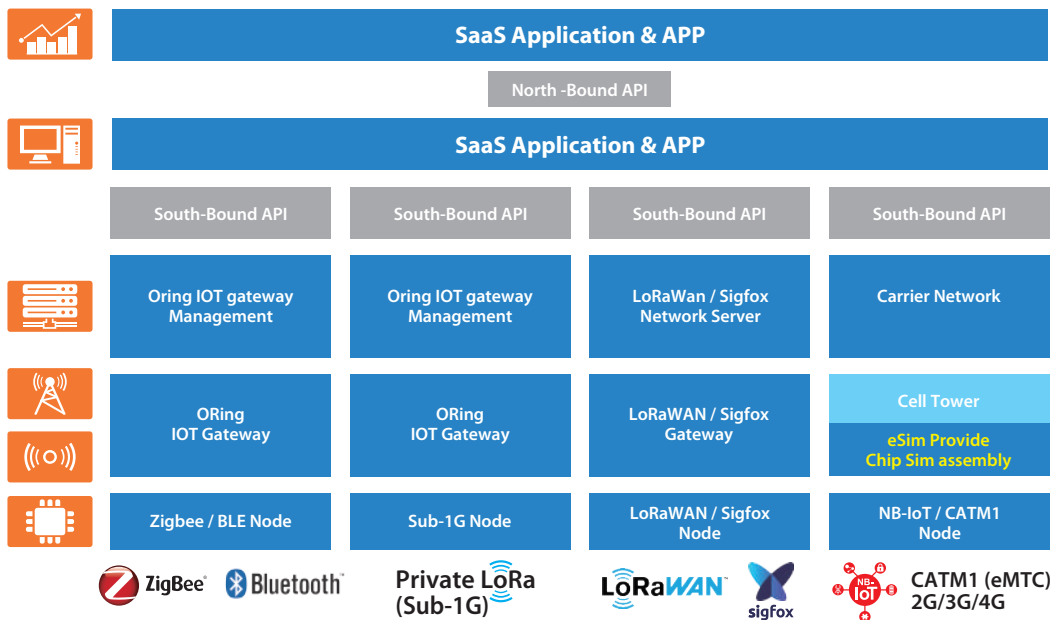
The Industrial Internet of Things (IIoT) is the key object in the past two years. What is IIoT ? What are the differences between IoT and IIoT ? At first, we should specify the IoT before making a statement about the IIoT. The IoT is composed by a network of intelligent computers, devices, and huge amounts 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.

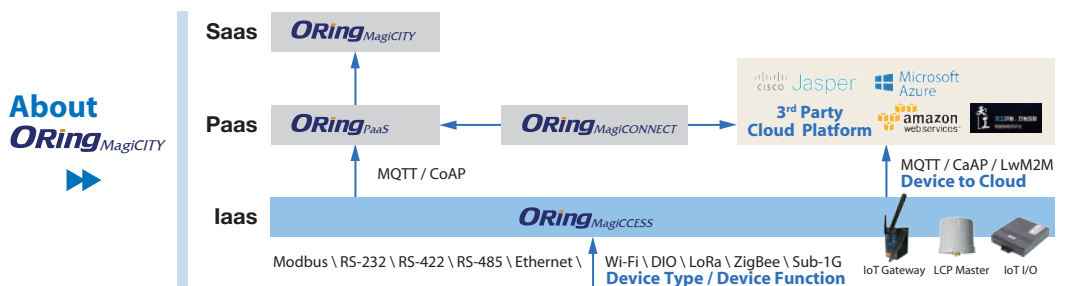
The IIoT is considered to be an up-going trend in the future. **ORing Industrial Networking Corp.** is based on our strong experience of developing wireless communication technology. We incorporated our technological strength with our products – gateways, I/O modules, smart antennas, cloud service platform 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



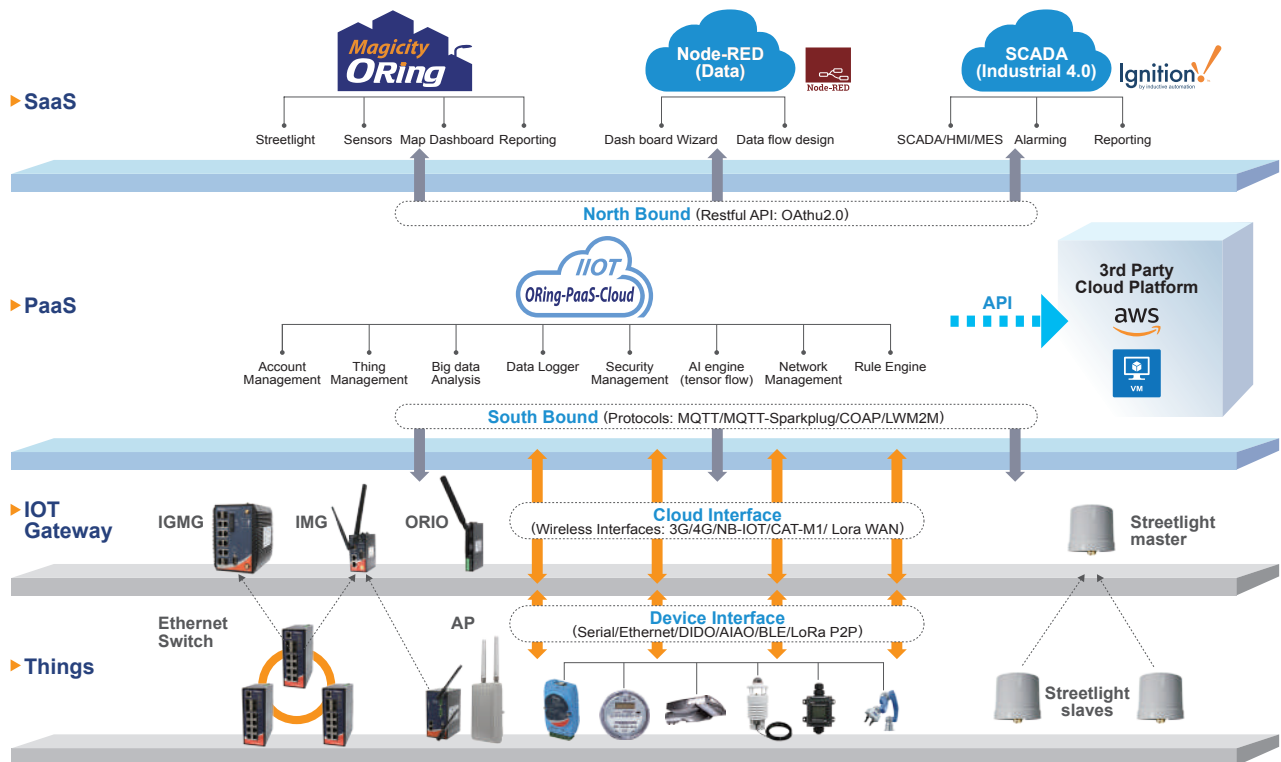
About
ORing MagiCITY

ORing MagiCloud Overview

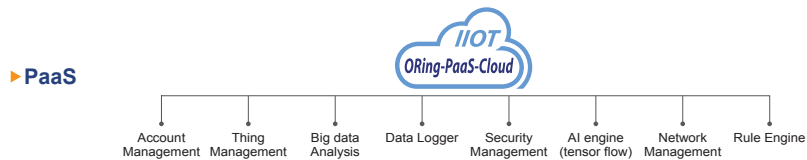
The ORing MagiCloud is a powerful managed cloud platform designed for industrial applications. With support for Modbus-RTU and ModBus-TCP, you can easily connect your devices to the platform and interact with cloud applications and other devices.

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

| Name | Email | Role | Job Title |
|-------|--------------------|--------|-----------|
| Angie | angie@oringnet.com | Admin | CEO |
| Benny | benny@oringnet.com | Member | PM |
| KFC | kfc@oringnet.com | Member | PM |
| Jacob | jacob@oringnet.com | Member | FAE |
| eric | eric@oringnet.com | Member | none |

The login page is a dark blue interface with the ORing logo at the top. It includes a 'Login' section with input fields for 'Domain', 'Email', and 'Password'. A 'LOGIN' button is positioned below the password field, and a 'Forgot password' link is located at the bottom of the form.

Simple Authorization Management

- ORing Account Management is built with ACL and OAuth 2.0 which keeps account management, permission setup and authorization more easily.



| Permission |
|--|
| <input checked="" type="checkbox"/> admin:data_bucket Grants read, write and delete access to data buckets and data inside the bucket. Superset of 'read:data_bucket', 'write:data_bucket'. |
| <input checked="" type="checkbox"/> read:data_bucket Grants read-only access to data buckets and data inside the bucket. |
| <input checked="" type="checkbox"/> read:rowdata Grants read-only access to specific thing's rowdatas. |
| <input type="checkbox"/> admin:rowdata Grants access to flush specific thing's rowdatas. Superset of read:rowdata. |
| <input type="checkbox"/> write:data_bucket Grants read, write access to data buckets. Superset of 'read:data_bucket'. |

Connect, Just in a Finger

- With ORing PaaS device management, view the device status and much more information, just at a glance.

The interface shows a 'Category: Show all' dropdown menu. Below it, there is a list of devices with columns for Name, ID, Secret Key, Category, Data Logger, and Status. Each device entry has a 'Start' button and a 'Cancel all' button.

| Name | ID | Secret Key | Category | Data Logger | Status |
|-------------------|------------|----------------|----------------|-------------|--------|
| MIG-6323-Q1 | 18D6Nvylh- | qNylYUzQDZWSI | magicly-sensor | Data Logger | acti |
| Jacob DRD Sensor1 | 8y3lhw7h- | p1E3qAPUZZJvD | magicly-sensor | Data Logger | acti |
| Jacob DRD Sensor2 | Hyb3QZ3E | 11smxZV738LA | magicly-sensor | Data Logger | acti |
| test1 | 3m-zWtp- | 1WZ7YU7Hy3K3 | magicly-sensor | Data Logger | acti |
| demo-logger1 | 1o33t9tW | 1TMMq285aJvYdP | magicly-logger | Data Logger | acti |
| test-sensor2 | vDUvNGT6 | C468xCP5m17WCU | magicly-sensor | Data Logger | active |

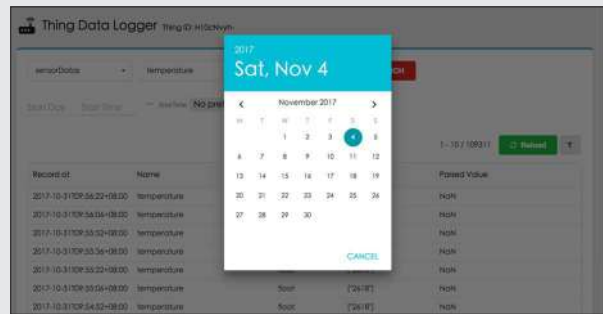
Multiple IoT Protocol Supported

- HTTPs, Socket, WebSocket, MQTT, CoAP and LwM2M



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



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



Upload

| Record ID | Name | Type | Value | Forward Value |
|---------------------------|-------------|-------|---------|---------------|
| 2017-10-31 10:54:22-08:00 | temperature | float | [24.05] | NULL |
| 2017-10-31 10:54:04-08:00 | temperature | float | [24.05] | NULL |
| 2017-10-31 10:53:52-08:00 | temperature | float | [24.05] | NULL |
| 2017-10-31 10:53:34-08:00 | temperature | float | [24.05] | NULL |
| 2017-10-31 10:53:20-08:00 | temperature | float | [24.05] | NULL |
| 2017-10-31 10:53:04-08:00 | temperature | float | [24.05] | NULL |

Developer Portal

- Powerful API let you develop your own application in a short time

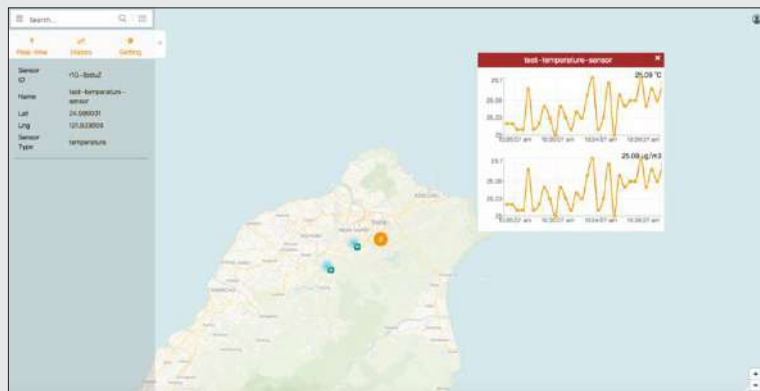


ORing MagiCity

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.

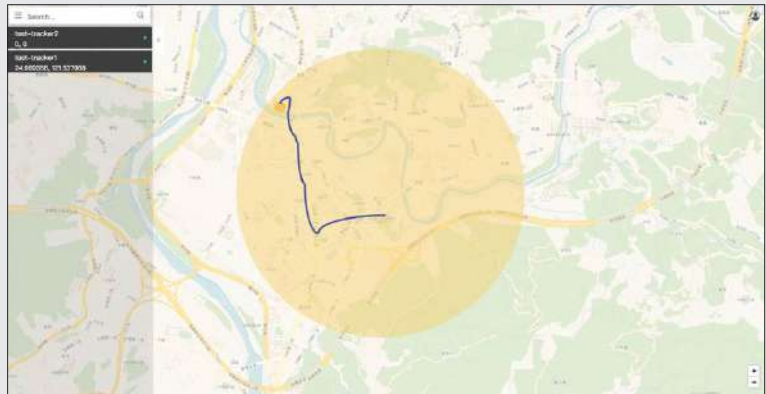
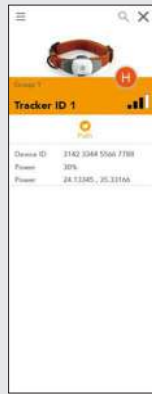
Sensor, Monitor, Log and Threshold

- 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

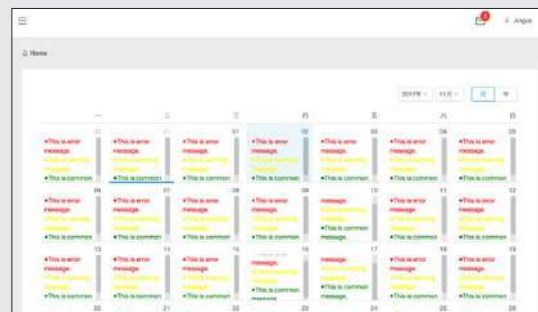
- Powerful, process-based solution for your city's streetlight, from site survey, Construction map, power management, adjustment to repairing process



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

| Issue ID | Title | Request Type | Status | MidSend Time |
|------------|----------------------------------|--------------|--------|---------------|
| asdfsdf | {Citizen Report}asdfsdf 123 | Citizen | New | 1310000000000 |
| helloworld | {Citizen Report}helloworld 45678 | Citizen | New | 1310000000000 |
| helloworld | {Citizen Report}helloworld 98765 | Citizen | New | 1310000000000 |
| helloworld | {Citizen Report}helloworld 12345 | Citizen | New | 1310000000000 |
| apple | {Citizen Report}apple 67890 | Citizen | New | 1310000000000 |



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



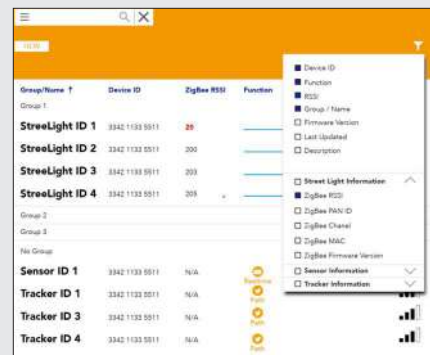
Powerful Search Mechanism, Easier to Find Your Device

- 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.



Product Selection Guide

Industrial Rack-Mount Gigabit/Fast Ethernet Switch

Managed Switch

Industrial Ethernet Switch



RGS-92222GCP-NP / RGS-92222GCP-NP-E RGS-9168GCP / RGS-9168GCP-E RGS-9244GP / RGS-9244GP-E RES-9242GC

| Port Number | RGS-92222GCP-NP / RGS-92222GCP-NP-E | | RGS-9168GCP / RGS-9168GCP-E | RGS-9244GP / RGS-9244GP-E | RES-9242GC |
|---------------------------------|--|----------------------------|--|--|--|
| Number of ports | 26 | | 24 | 28 | 26 |
| 10/100Base-T(X) RJ45 Ports | - | | - | - | 24 |
| 10/100/1000Base-T(X) Ports | 22 | | - | 24 | - |
| 100Base-FX Fiber Ports | - | | - | - | - |
| 1000Base-X Fiber Ports | - | | - | - | - |
| 100Base-FX SFP Ports | - | | - | - | - |
| 100/1000Base-X SFP Ports | 2 | | 8 | 4 | - |
| Gigabit Combo Ports | 2 | | 16 | - | 2 |
| Power Redundancy | | | | | |
| DC Terminal Block | - | 2 (-E) | 2 (-E) | 2 (-E) | - |
| DC Power Jack | - | | - | - | - |
| AC Power Cord | 1 | 1 | 1 | 1 | 2 |
| Installation | | | | | |
| DIN-Rail Mounting | - | | - | - | - |
| Wall Mounting | - | | - | - | - |
| Rack Mounting | ● | | ● | ● | ● |
| Physical Characteristics | | | | | |
| Casing Protection | IP-20 | | 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) | 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 | | | | | |
| 0-Ring | ● | | ● | ● | ● |
| Open-Ring | ● | | - | - | ● |
| 0-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 / Relay | SYSLOG / SNMP Trap |
| DHCP | Server / Client | | Server / Client | Server / Client | Server / Client |
| VLAN | 802.1Q | | 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) | 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

Industrial Ethernet Switch



RES-P9242GCL Series

IGS-9122GPM

| Port Number | RES-P9242GCL Series | IGS-9122GPM |
|----------------------------|--|--|
| Number of ports | 26 | Max:26 |
| 10/100Base-T(X) RJ45 Ports | 24 | - |
| 10/100/1000Base-T(X) Ports | - | 12 |
| 100Base-FX SFP Ports | - | - |
| 100/1000Base-X SFP Ports | - | 2 |
| Gigabit Combo Ports | 2 | - |
| Power Redundancy | | |
| DC Terminal Block | 2(AC/DC) | 2 |
| DC Power Jack | - | - |
| AC Power Cord | - | - |
| 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 | | |
| 0-Ring | • | • |
| Open-Ring | • | • |
| 0-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 Ethernet Switch

Managed Switch

Industrial Ethernet Switch



RGS-PR9000

RGS-P9000

| Port Number | RGS-PR9000 | RGS-P9000 |
|---------------------------------|--|--|
| Number of ports | Max:28 | Max:28 |
| 10/100/1000Base-T(X) Ports | - | - |
| 100Base-FX Fiber Ports | - | - |
| 1000Base-X Fiber Ports | - | - |
| 100/1000Base-X SFP Ports | - | - |
| 1G/10G SFP+ Ports | - | - |
| Gigabit Combo Ports | - | - |
| 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 | - | - |
| Rack Mounting | • | • |
| Physical Characteristics | | |
| Casing Protection | IP-30 | IP-30 |
| Dimensions (mm) | 440(W) x 356(D) x 44(H) | 440(W) x 356(D) x 44(H) |
| Operating Temperature | | |
| -20 to 60°C | - | - |
| -40 to 70°C | - | - |
| -40 to 85°C | • | • |
| Network Redundancy | | |
| 0-Ring | • | • |
| Open-Ring | • | • |
| 0-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 |
| 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 Rack-Mount Modular Ethernet Switch

Managed Switch

Industrial Ethernet Switch



RGS-P9160GCM1

RGS-P9160GFM1

| Port Number | RGS-P9160GCM1 | RGS-P9160GFM1 |
|---------------------------------|--|--|
| Number of ports | Max:24 | Max:24 |
| 10/100/1000Base-T(X) Ports | - | - |
| 100Base-FX Fiber Ports | - | - |
| 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 |
| Dimensions (mm) | 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 |
| DHCP | Server / Client | Server / Client |
| VLAN | 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) |
| Warranty | 5 years | |

Product Selection Guide

Industrial Rack-Mount Modular Ethernet Switch

Managed Switch

Industrial Ethernet Switch



RGS-P9160GCM2

RGS-P9160GFM2

| Port Number | RGS-P9160GCM2 | RGS-P9160GFM2 |
|---------------------------------|--|--|
| Number of ports | Max:20 | Max:20 |
| 10/100/1000Base-T(X) Ports | - | - |
| 100Base-FX Fiber Ports | - | - |
| 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) |
| DC Power Jack | - | - |
| AC Power Cord | 2(HV) | 2(HV) |
| Installation | | |
| DIN-Rail Mounting | - | - |
| Wall Mounting | - | - |
| Rack Mounting | • | • |
| Physical Characteristics | | |
| Casing Protection | IP-30 | IP-30 |
| Dimensions (mm) | 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 |
| DHCP | Server / Client | Server / Client |
| VLAN | 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) |
| Warranty | 5 years | |

*NOTE: This function is available by request only

Product Selection Guide

Industrial Rack-Mount Modular Ethernet Switch

Managed Switch

Industrial Ethernet Switch



RGS-R9244GP+/-E

RGS-R9004GP+ME

| Port Number | RGS-R9244GP+/-E | | RGS-R9004GP+ME |
|-----------------------------|--|-------|--|
| Number of ports | 28 | | Max:52 |
| 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(-E) | 2(-LV model) |
| DC Power Jack | - | - | - |
| AC Power Cord | 1 | 1 | 2(-HV model) |
| Installation | | | |
| DIN-Rail Mounting | - | | - |
| Wall Mounting | - | | - |
| Rack Mounting | • | | • |
| Physical Characteristics | | | |
| Casing Protection | IP-30 | | IP-30 |
| Dimensions (mm) | 431 (W) x 342 (D) x 44 (H) | | 444.5 (W) x 422 (D) x 86.2 (H) |
| Operating Temperature | | | |
| -20 to 60°C | • | | - |
| 0 to 60°C | - | | • |
| -40 to 85°C | - | | - |
| Network Redundancy | | | |
| O-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 |
| 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 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 | | | | |
| 0-Ring | - | - | - | - |
| Open-Ring | - | - | - | - |
| 0-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 | | | |

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 µm fiber (Max. TX) | -14dbm | -14dbm | - | - |
| Optical Output Power 62.5/125 µm fiber (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 µm fiber (Max. TX) | -4dbm | -4dbm | - | - |
| Optical Output Power 62.5/125 µm fiber (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 Din-Rail Gigabit Ethernet Switch

Managed Switch

Industrial Ethernet Switch



IGS-9844GPF/IGS-9844GPFX



IGS-9822DGP+



IGS-9812GP



IGS-9168GP

| Port Number | IGS-9844GPF/IGS-9844GPFX | | IGS-9822DGP+ | IGS-9812GP | IGS-9168GP |
|---------------------------------|---|---|---|---|---|
| Number of ports | 16 | | 12 | 20 | 24 |
| 10/100Base-T(X) RJ45 Ports | - | | - | - | - |
| 10/100/1000Base-T(X) Ports | 8 | | 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 |
| 100/1G/2.5GBase-X SFP Ports | - | | 2 | - | - |
| 1G/10GBase-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 | • | | • | • | • |
| Physical Characteristics | | | | | |
| Casing Protection | IP-30 | | IP-30 | IP-30 | IP-30 |
| Dimensions (mm) | 96.4(W)x105.5(D)x154(H) | | 74.3(W)x125(D)x153.6(H) | 96.4(W)x105.5(D)x154(H) | 96.4(W)x105.5(D)x154(H) |
| Operating Temperature | | | | | |
| -20 to 60°C | - | | - | - | - |
| -40 to 75°C | • | | • | • | • |
| Network Redundancy | | | | | |
| 0-Ring | • | | • | • | • |
| 0-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 | SYSLOG/ SNMP Trap / Relay |
| DHCP | Server / Client/ Relay | | 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 | 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) | 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-9164GF/FX Series



IGS-9122GP



IGS-9084GP

| Port Number | IGS-9164GF/FX Series | | IGS-9122GP | IGS-9084GP |
|---------------------------------|--|----------------------|--|--|
| 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 | | | | |
| 0-Ring | • | | • | • |
| Open-Ring | • | | • | • |
| 0-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 Din-Rail Gigabit Ethernet Switch

Managed Switch

Industrial Ethernet Switch



IGS-9084GP-FB2 Series



IGS-9084GP-LA

| Port Number | IGS-9084GP-FB2 Series | IGS-9084GP-LA |
|---------------------------------|--|--|
| Number of ports | 12 | 12 |
| 10/100Base-T(X) RJ45 Ports | - | - |
| 10/100/1000Base-T(X) Ports | 8 | 8 |
| 100Base-FX Fiber Ports | - | - |
| Fiber bypass Ports | 2 | - |
| 1000Base-FX SFP Ports | - | - |
| 100/1000Base-X SFP Ports | 4 | 4 |
| 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)x105.5(D)x154(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 | | |
| 0-Ring | • | • |
| Open-Ring | • | • |
| 0-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 |
| 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-9080

IGS-9042GP

IGS-R9812GP

IGS-RX164GP+

| Port Number | IGS-9080 | IGS-9042GP | IGS-R9812GP | IGS-RX164GP+ |
|---------------------------------|---|---|---|-----------------------|
| Number of ports | 8 | 6 | 20 | 20 |
| 10/100Base-T(X) RJ45 Ports | - | - | - | - |
| 10/100/1000Base-T(X) Ports | 8 | 4 | 8 | 16 |
| 100Base-FX Fiber Ports | - | - | - | - |
| 1000Base-X Fiber Ports | - | - | - | - |
| 1000Base-FX SFP Ports | - | - | - | - |
| 100/1000Base-X SFP Ports | - | 2 | 12 | - |
| 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) | 54.3(W)x108.5(D)x145.1(H) | 54.3(W)x108.5(D)x145.1(H) | 96.4(W)x145.5(D)x154(H) | 96.4(W)x170(D)x180(H) |
| Operating Temperature | | | | |
| -40 to 60°C | - | - | - | • |
| -40 to 70°C | - | - | - | - |
| -40 to 75°C | • | • | • | - |
| Network Redundancy | | | | |
| 0-Ring | • | • | • | • |
| Open-Ring | • | • | • | - |
| 0-Chain | • | • | • | • |
| MRP ^{*NOTE} | • | • | • | - |
| MSTP/RSTP/STP | • | • | • | • |
| Management and Control | | | | |
| Static Routing/RIP/VRRP | - | - | 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 | 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 Din-Rail Gigabit Ethernet Switch

Managed Switch

Industrial Ethernet Switch



IGS-P9812GP Series



IGS-P9164GF / FX / GC Series

| Port Number | IGS-P9812GP Series | | IGS-P9164GF / FX / GC Series | |
|---------------------------------|--|--|--|---|
| 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 | IGS-3044GC | IGS-3032GC | IGS-1082GP |
|---------------------------------|--|--|---------------------------|
| 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 | | | |
| 0-Ring | • | • | - |
| Open-Ring | • | • | - |
| 0-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

Managed Switch

Unmanaged Switch

Industrial Ethernet Switch



IGS-182GP

IGS-C1050

IGS-C1080

| Port Number | IGS-182GP | IGS-C1050 | IGS-C1080 |
|---------------------------------|-------------------------------|-------------------------|-------------------------|
| Number of ports | 8 | 5 | 8 |
| 10/100Base-T(X) RJ45 Ports | - | - | - |
| 10/100/1000Base-T(X) Ports | 8 | 5 | 8 |
| 100Base-FX Fiber Ports | - | - | - |
| 1000Base-X Fiber Ports | - | - | - |
| 1000Base-X SFP Ports | - | - | - |
| 100/1000Base-X SFP Ports | 2 | - | - |
| Gigabit Combo Ports | - | - | - |
| Power Redundancy | | | |
| DC Terminal Block | 2 | 1 | 1 |
| DC Power Jack | - | - | - |
| AC Power Cord | - | - | - |
| Installation | | | |
| DIN-Rail Mounting | • | • | • |
| Wall Mounting | • | • | • |
| Physical Characteristics | | | |
| Casing Protection | IP-30 | IP-40 | IP-40 |
| Dimensions (mm) | 41 (W) x 89.8 (D) x 127 (H)mm | 26(W)× 103(D)× 64 mm(H) | 26(W)× 103(D)× 64 mm(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 | - | - | - |
| DHCP | - | - | - |
| VLAN | - | - | - |
| Management / Configuration | - | - | - |
| 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 | IGS-1080A | | IGS-1041GPA / 1050A | | IGS-1042GPA | IGS-150B |
|---------------------------------|--------------------------|--|--------------------------|---|--------------------------|---------------------|
| 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 75°C | • | | • | | • | • |
| -40 to 85°C | - | | - | | - | - |
| Network Redundancy | | | | | | |
| 0-Ring | - | | - | | - | - |
| Open-Ring | - | | - | | - | - |
| 0-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 DIN-Rail Fast Ethernet Switch

Managed Switch

Industrial Ethernet Switch



IES-3240



IES-3162GC



IES-3160



IES-P3073GC Series



IES-3073GC

| Port Number | IES-3240 | IES-3162GC | IES-3160 | IES-P3073GC Series | IES-3073GC |
|---------------------------------|--|--|--|--|--|
| 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 | | | | | |
| 0-Ring | • | • | • | • | • |
| Open-Ring | • | • | • | • | • |
| 0-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 DIN-Rail Fast Ethernet Switch

Managed Switch

Industrial Ethernet 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 | | | | |
| 0-Ring | • | • | • | |
| Open-Ring | • | • | • | |
| 0-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 | IES-2060 / 2042FX Series | | IES-2042PA | IES-2050A | IES-1240 | IES-1162GC | IES-1160 |
|---------------------------------|---|-----------------------|---|---|-------------------------|-------------------------|---------------------------|
| 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 | • | | • | • | - | - | - |
| -40 to 75°C | - | | - | - | • | • | • |
| Network Redundancy | | | | | | | |
| 0-Ring | • | | • | • | - | - | - |
| Open-Ring | • | | • | • | - | - | - |
| 0-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 DIN-Rail Fast Ethernet Switch

Unmanaged Switch

Industrial Ethernet Switch



IES-1142P



IES-1082GP



IES-1062 Series / IES-1080



IES-1050A / 1080A

| Port Number | IES-1142P | | IES-1082GP | | IES-1062 Series / IES-1080 | | IES-1050A / 1080A | |
|---------------------------------|---------------------|--|-------------------------|--|----------------------------|--|--------------------------|--|
| Number of ports | 16 | | 10 | | 8 | | 5 | |
| 10/100Base-T(X) RJ45 Ports | 14 | | 8 | | 6 | | 5 | |
| 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 75°C | • | | • | | • | | • | |
| Network Redundancy | | | | | | | | |
| 0-Ring | - | | - | | - | | - | |
| Open-Ring | - | | - | | - | | - | |
| 0-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 | IES-1041FX / 1042FX | | IES-150B | IES-180B |
|---------------------------------|--------------------------|--------------------------|---------------------|-------------------|
| 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 | - | | - | - |
| -40 to 75°C | • | | • | • |
| Network Redundancy | | | | |
| 0-Ring | - | | - | - |
| Open-Ring | - | | - | - |
| 0-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 DIN-Rail Fast Ethernet Switch

Unmanaged Switch

Industrial Ethernet Switch



IES-C1050

IES-C1080

IES-162FX-L Series

| Port Number | IES-C1050 | IES-C1080 | IES-162FX-L Series |
|----------------------------|-------------------------|-------------------------|-------------------------|
| Number of ports | 5 | 8 | 8 |
| 10/100Base-T(X) RJ45 Ports | 5 | 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 | 1 |
| DC Power Jack | - | - | - |
| AC Power Cord | - | - | - |
| Installation | | | |
| DIN-Rail Mounting | • | • | • |
| Wall Mounting | • | • | • |
| Rack Mounting | - | - | - |
| Physical Characteristics | | | |
| Casing Protection | IP-40 | IP-40 | IP-30 |
| Dimensions (mm) | 26(W)× 103(D)× 64 mm(H) | 26(W)× 103(D)× 64 mm(H) | 41(W)× 83.98(D)× 115(H) |
| Operating Temperature | | | |
| -20 to 60°C | - | - | - |
| -40 to 75°C | • | • | • |
| Network Redundancy | | | |
| 0-Ring | - | - | - |
| Open-Ring | - | - | - |
| 0-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-A10_S Series

DGS-9168GP-A10_S Series

DGS-R9812GP-A10_S

| Port Number | DGS-9812GP-A10_S Series | DGS-9168GP-A10_S Series | DGS-R9812GP-A10_S |
|---------------------------------|--|--|--|
| 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 | DES-3082GP-AIO_S Series | DES-3082GP-P | DES-3073GC-P |
|---------------------------------|--|--|--|
| 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-9222GCP-NP/LP/P Series

RGPS-9084GP-P

| Port Number | RGPS-R9244GP+-LP/P | | RGPS-9222GCP-NP/LP/P Series | | RGPS-9084GP-P |
|---------------------------------|---|--|---|--|---|
| 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 |
| 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 | | | | | |
| 0-Ring | • | | • | | • |
| Open-Ring | • | | • | | • |
| 0-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 Gigabit PoE Ethernet Switch Managed DIN-Rail Switch



Industrial Ethernet Switch



IGPS-9842GTP-24V

IGPS-9822DGP+

| Port Number | IGPS-9842GTP-24V | IGPS-9822DGP+ |
|---------------------------------|---|---|
| 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 (max 240W /30W per port) |
| 100Base-FX Fiber Ports | - | - |
| 100/1000Base-X SFP Ports | 2 | - |
| 100/1G/2.5GBase-X SFP Ports | - | 2 |
| 1G/10GBase-X SFP Ports | - | 2 |
| 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) | 74.3(W)x125(D)x153.6(H) |
| Operating Temperature | | |
| -20 to 60°C | - | - |
| -40 to 75°C | • | • |
| Network Redundancy | | |
| O-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 Gigabit PoE Ethernet Switch

Managed DIN-Rail Switch

Industrial Ethernet Switch



IGPS-9084GP



IGPS-9084GP-60W



IGPS-9084GP-LA

| Port Number | IGPS-9084GP | IGPS-9084GP-60W | IGPS-9084GP-LA |
|---------------------------------|---|---|---|
| Number of ports | 12 | 12 | 12 |
| 10/100Base-T(X) RJ45 Ports | - | - | - |
| 10/100/1000Base-T(X) Ports | 8 (P.S.E.) IEEE 802.3 at | 8 (P.S.E. 60W) 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 | 4 | 4 | 4 |
| 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) | 96.4(W)x105.5(D)x154(H) | 96.4(W)x105.5(D)x154(H) | 54.3(W)x108.3(D)x145.1(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 | 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 Gigabit PoE Ethernet Switch

Managed DIN-Rail Switch



Industrial Ethernet 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/RRRP | - | - | • |
| 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

Unmanaged DIN-Rail Switch

Industrial Ethernet 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 75°C | • | • | • | • |
| Network Redundancy | | | | |
| 0-Ring | - | - | - | - |
| Open-Ring | - | - | - | - |
| 0-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 Gigabit PoE Ethernet Switch

Unmanaged DIN-Rail Switch

Industrial Ethernet 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 | | | | |
| 0-Ring | - | - | - | - |
| Open-Ring | - | - | - | - |
| 0-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 | Managed Switch | | Lite-Managed Switch | | Unmanaged Switch | | |
|---------------------------------|--|--|--|-------------------------------|--|----------------------------|----------------------------|
| Number of ports | 10 | 6 | 6 | 6 | 8 | 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) | 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 75°C | • | • | • | • | • | • | |
| Network Redundancy | | | | | | | |
| 0-Ring | • | • | • | - | - | - | |
| Open-Ring | • | • | • | - | - | - | |
| 0-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 | | | | | | |
| Page | 1-185/188 | 1-191 | 1-194 | 1-197/200 | 1-202 | 1-205 | |

*NOTE: This function is available by request only

Product Selection Guide

Card-Type Ethernet Switch

Industrial CompactPCI Ethernet Switch

Industrial Ethernet Switch



CPS-3080-C

| Port Number | |
|----------------------------|---|
| Number of ports | 8 |
| 10/100Base-T(X) RJ45 Ports | 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 | - |
| 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 20.9 (D) x 130.7 (H) |
| Operating Temperature | |
| -10 to 60°C | - |
| -20 to 70°C | - |
| -40 to 70°C | • |
| Network Redundancy | |
| 0-Ring | • |
| Open-Ring | • |
| 0-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/802.1Q/Q-in-Q/GVRP |
| Management / Configuration | WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet/Console(CLI) |
| Warranty | |

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 | | | | |
| 0-Ring | • | • | • | • |
| Open-Ring | • | • | • | • |
| 0-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 | 5years | | | |

*NOTE: This function is available by request only

Product Selection Guide

Card-Type Ethernet Switch

Managed Switch Industrial CompactPCI Ethernet Switch

Industrial 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 | | |
| 0-Ring | • | • |
| Open-Ring | • | • |
| 0-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

Optical / PoE Network Accessories

Optical Bypass Switch

PoE Injector



IBS-102FX-MM/SS-LC

INJ-102GT/24V

INJ-102GT++/24V

| Port Number | IBS-102FX-MM/SS-LC | | INJ-102GT/24V | | INJ-102GT++/24V | |
|---------------------------------|--------------------------|--|---------------------|--|-------------------|--|
| Number of ports | 4 | | 4 | | 4 | |
| 10/100Base-T(X) RJ45 Ports | - | | - | | - | |
| 10/100/1000Base-T(X) RJ45 Ports | - | | 2 | | 2 | |
| PoE+(30 Watts) Output Ports | - | | 2 (P.S.E.) | | - | |
| PoE++(60 Watts) Output Ports | - | | - | | - | |
| 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 | |
| DC Power Jack | 1 | | - | | - | |
| Operating Voltage | - | | 50-57VDC | | 12-57VDC | |
| Output Power | - | | 30 Watts Per Port | | 90 Watts per port | |
| | | | | | 90 Watts in total | |
| Installation | | | | | | |
| DIN-Rail Mounting | • | | • | | • | |
| Wall Mounting | • | | • | | • | |
| PCIe Slot | - | | - | | - | |
| 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) | | 40(W)x70(D)x95(H) | |
| Operating Temperature | | | | | | |
| -20 to 70°C | - | | - | | • | |
| -40 to 70°C | • | | - | | - | |
| -40 to 75°C | - | | • | | - | |
| Network Redundancy | | | | | | |
| 0-Ring | - | | - | | - | |
| Open-Ring | - | | - | | - | |
| 0-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

Optical / PoE Network Accessories

PoE Injector

Industrial Ethernet Switch



INJ-101GT++-100W

INJ-101GT++-60W

INJ-101GT++-60W-24V

| Port Number | | | |
|---------------------------------|--------------------------|---------------------|-------------------|
| Number of ports | 1 | 1 | 1 |
| 10/100Base-T(X) RJ45 Ports | - | - | - |
| 10/100/1000Base-T(X) RJ45 Ports | 1 | 1 | 1 |
| PoE+(30 Watts) Output Ports | - | - | - |
| PoE++(60 Watts) Output Ports | 1(P.S.E.) | 1(P.S.E.) | 1(P.S.E.) |
| PoE++(90 Watts) Output Ports | - | - | - |
| 100/1G/10G Fiber Ports | - | - | - |
| Optical Bypass ports | - | - | - |
| Power Redundancy | | | |
| DC Terminal Block | 1 | 1 | 1 |
| DC Power Jack | - | - | - |
| Operating Voltage | 50-57VDC | 50-57VDC | 9 to 57VDC |
| Output Power | 100 Watts | 60 Watts | 60 Watts |
| Installation | | | |
| DIN-Rail Mounting | • | • | • |
| Wall Mounting | • | • | • |
| PCIe Slot | - | - | - |
| 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)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 | - | - | - |
| DHCP | - | - | - |
| VLAN | - | - | - |
| Management / Configuration | - | - | - |
| Warranty | 5 years | | |

Product Selection Guide

Optical / PoE Network Accessorie

PoE Splitter

EN50155 PoE Injector

Industrial Ethernet Switch



SPL-101GT/-12V

SPL-101GT++-12V/24V

TINJ-101GT-M12-24V

TINJ-101-M12/24V

| Port Number | SPL-101GT/-12V | | SPL-101GT++-12V/24V | | TINJ-101GT-M12-24V | | TINJ-101-M12/24V | |
|---------------------------------|-------------------------------------|--|-------------------------------------|--|------------------------|--|------------------------|--|
| 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 | 1 (24VDC output) 1 (12VDC output) | | 1 (24VDC output) 1 (12VDC output) | | 1 | | 1 | |
| DC Terminal Block | - | | - | | - | | - | |
| 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 | | 24V@2.5A MAX 12V@5A MAX | | 30 Watts Max.PerPort | | 30 Watts Max.PerPort | |
| Installation | • | | • | | • | | • | |
| DIN-Rail Mounting | • | | • | | • | | • | |
| Wall Mounting | - | | - | | - | | - | |
| PCIe Slot | - | | - | | - | | - | |
| Physical Characteristics | IP-30 | | IP-30 | | IP-30 | | IP-30 | |
| Casing Protection | 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) | |
| Dimensions (mm) | - | | - | | - | | - | |
| 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 Rack-Mount EN50155 Ethernet Switch

Managed Switch

Industrial Ethernet Switch



TRGPS-9084GT-M12X-BP2-MV

TRGPS-9084TG-M12X-BP2-MV

| Port Number | TRGPS-9084GT-M12X-BP2-MV | TRGPS-9084TG-M12X-BP2-MV |
|--|---|---|
| Number of ports | 12 | 12 |
| 10/100/1000Base-T(X) M12 X-Coding P.S.E. Ports | 8 | 8 |
| 1G/2.5G/5G/10G Base-T(X) M12 X-Coding Ports | - | 4(2-pair bypass) |
| 10/100/1000Base-T(X) M12 X-Coding Ports | 4(2-pair bypass) | - |
| 100Base-FX Fiber Ports | - | - |
| 1000Base-X Fiber Ports | - | - |
| Gigabit Combo Ports | - | - |
| Power Redundancy | | |
| On M12 Connector | • | 1 |
| On M23 Connector | - | - |
| Installation | | |
| Wall Mounting | - | - |
| Rack Mounting | • | • |
| Physical Characteristics | | |
| Casing Protection | IP-30 | IP-30 |
| Dimensions (mm) | 438(W) x 250 (D) x 44 (H) | 438 (W) x 250 (D) x 44 (H) mm |
| Operating Temperature | | |
| -40 to 70°C | - | - |
| -40 to 75°C | • | • |
| Network Redundancy | | |
| O-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 |
| 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 Ethernet Switch

Lite Managed Switch

Unmanaged Switch

Industrial Ethernet Switch



TES-3080-M12 / -BP2

TES-250-M12

TES-1080-M12 / -BP2

| Port Number | | | | |
|---|---|------------------|---|--|
| Number of ports | 8 | | 5 | |
| 10/100Base-T(X) M12 D-Coding Ports | 8 | 8(2-pair bypass) | 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) | |
| On M23 Connector | 2(M23) | | - | |
| Installation | | | | |
| Wall Mounting | ● | | - | |
| Rack Mounting | - | | ● | |
| Physical Characteristics | | | | |
| Casing Protection | IP-30 | | IP-30 | |
| Dimensions (mm) | 125(W) x 65(D) x 196(H) | | 89(W) x 40(D) x 178(H) | |
| Operating Temperature | | | | |
| -40 to 70°C | ● | | ● | |
| -40 to 75°C | - | | - | |
| Network Redundancy | | | | |
| O-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 | | SYSLOG / SMTP / SNMP Trap | |
| DHCP | Server / Client / Relay | | Client | |
| VLAN | Port-Based/802.1Q/Q-in-Q/GVRP | | Port-Based | |
| Management / Configuration | WEB / Windows Utility / SNMP v1,v2c,v3 / Telnet / Console (CLI) | | 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-3162GT-M12X-BP1-MV



TPS-3082GT-M12X-BP1-MV

| Port Number | | |
|---|---|---|
| Number of ports | 18 | 10 |
| 10/100Base-T(X) M12 D-Coding Ports | 16 (P.S.E.) IEEE 802.3 at | 8 (P.S.E.) IEEE 802.3 af |
| 10/100/1000Base-T(X) M12 X-Coding Ports | 2 | 2 |
| 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 7/8" Connector | 1 | 1 |
| Installation | | |
| DIN-Rail Mounting | - | - |
| Wall Mounting | • | • |
| Physical Characteristics | | |
| Casing Protection | IP-30 | IP-30 |
| Dimensions (mm) | 260 (W) x 79.3 (D) x 222 (H) mm | 260 (W) x 79.3 (D) x 222 (H) mm |
| Operating Temperature | | |
| -40 to 70°C | - | - |
| -40 to 75°C | • | • |
| Network Redundancy | | |
| O-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 |
| 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



TXPS-1080-M12-BP2-24V



TXPS-1080-M12-24V

| Port Number | TXPS-1080-M12-BP2-24V | TXPS-1080-M12-24V |
|---|--|---|
| Number of ports | 8 | 8 |
| 10/100/500Base-T(X) M12 D-Coding Ports | 8 (P.S.E.)(2-pair bypass) IEEE 802.3 at (max.120W) | 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 | - | - |
| 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 | | |
| -40 to 75°C | • | • |
| -40 to 70°C | - | - |
| Network Redundancy | | |
| O-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 Ethernet Switch

Managed Switch

Unmanaged Switch



TGS-9200-M12 /-BP2



TGS-1080-M12 / -BP2



TGS-1080-M12-MV / -BP2-MV

| Port Number | | | |
|---|---|-------------------------|---------------------------|
| Number of ports | 20 | 8 | 8 |
| 10/100Base-T(X) M12 D-Coding Ports | - | - | - |
| 10/100/1000Base-T(X) M12 A-Coding Ports | 20/20(2-Pair HW bypass) | 8/8(2-Pair HW bypass) | 8/8(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) | 260(W) x 91.3(D) x 216(H) | 125(W) x 65(D) x 196(H) | 125 (W) x 65 (D) x196 (H) |
| Operating Temperature | | | |
| -10 to 60°C | - | - | - |
| -40 to 70°C | • | • | • |
| Network Redundancy | | | |
| O-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 | Relay | Relay |
| DHCP | Server / Client / Relay | - | - |
| VLAN | Port-Based/802.1Q/Q-in-Q/GVRP | - | - |
| Management / Configuration | 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

Managed Switch

Industrial Ethernet Switch



TGPS-9080-M12A-MV



TGPS-W9442GF-MM-M12X-QS-MV-IP67



TGPS-W9082GF-MM-M12X-QS-MV-IP54

| Port Number | | | |
|--|---|---|---|
| Number of ports | 8 | 10 | 10 |
| 10/100/1000Base-T(X) M12 A-Coding P.S.E. Ports | 8 | 4 (X-coding) | 8 (X-coding) |
| 10/100/1000Base-T(X) M12 A-Coding Ports | - | - | - |
| 10/100/500 /1000Base-T(X) M12 A-Coding Ports | - | - | - |
| 10/100/1000Base-T(X) M12 X-Coding Ports | - | 4 | - |
| 100Base-FX Fiber Ports | - | - | - |
| 1000Base-X Fiber Ports | - | 2 | 2 |
| Gigabit Combo Ports | - | - | - |
| Power Redundancy | | | |
| On M12 Connector | - | 1 | 1 |
| On M23 Connector | - | - | - |
| 7/8 inch male connector | 1 | - | - |
| Installation | | | |
| DIN-Rail Mounting | - | - | - |
| Wall Mounting | • | • | • |
| Physical Characteristics | | | |
| Casing Protection | IP-30 | IP-67 | IP-54 |
| Dimensions (mm) | 205(W) x 99(D)x 175(H) | 208 (W) x 89 (D) x 150 (H) | 208 (W) x 89 (D) x 150 (H) |
| Operating Temperature | | | |
| -10 to 60°C | - | - | - |
| -40 to 70°C | - | - | - |
| -40 to 75°C | • | • | • |
| Network Redundancy | | | |
| O-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 | SYSLLOG /SMTP /SNMP Trap /Relay | SYSLLOG /SMTP /SNMP Trap /Relay | SYSLLOG /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 EN50155 Gigabit PoE Ethernet Switch

Managed Switch

Industrial Ethernet Switch



TGPS-9168GT-M12-BP2-24V

TGPS-9164GT-M12X-BP2-24V/MV

TGPS-9084GT-M12X-BP2-24V

| Port Number | TGPS-9168GT-M12-BP2-24V | | TGPS-9164GT-M12X-BP2-24V/MV | | TGPS-9084GT-M12X-BP2-24V |
|--|---|--|---|---|---|
| Number of ports | 16 | | 16 | | 8 |
| 10/100/1000Base-T(X) M12 A-Coding P.S.E. Ports | 16 (8-pin female A-coding) | | 16 (8-pin female X-coding) | | 8 (8-pin female X-coding) |
| 10/100/1000Base-T(X) M12 A-Coding Ports | - | | - | | - |
| 10/100/500 /1000Base-T(X) M12 A-Coding Ports | - | | - | | - |
| 10/100/1000Base-T(X) M12 X-Coding Ports | 8 (8-pin female A-coding with 2xbypass function included) | | 4 (8-pin female X-coding with 2xbypass function included) | | 4 (8-pin female X-coding with 2xbypass function included) |
| 100Base-FX Fiber Ports | - | | - | | - |
| 1000Base-X Fiber Ports | - | | - | | - |
| Gigabit Combo Ports | - | | - | | - |
| Power Redundancy | | | | | |
| On M12 Connector | - | | 2 | 1 | 2 |
| On M23 Connector | 2 | | - | | - |
| 7/8 inch male connector | - | | - | | - |
| 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 89.6 (D) x 216 (H) mm | | 260 (W) x 89.6 (D) x 216 (H) mm |
| Operating Temperature | | | | | |
| -10 to 60°C | - | | - | | - |
| -40 to 70°C | - | | - | | - |
| -40 to 75°C | ● | | ● | | ● |
| Network Redundancy | | | | | |
| 0-Ring | ● | | ● | | ● |
| 0-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 | | | | |

Product Selection Guide

Industrial EN50155 Gigabit PoE Ethernet Switch

Unmanaged Switch

Industrial Ethernet Switch



TGXPS-1080-M12-24V Series



TGXS-1080-M12 Series

| Port Number | TGXPS-1080-M12-24V Series | TGXS-1080-M12 Series |
|--|--|------------------------------|
| Number of ports | 8 | 8 |
| 10/100Base-T(X) M12 D-Coding Ports | - | - |
| 10/100/500 Base-T(X) M12 D-Coding Ports | - | - |
| 10/100/500 /1000Base-T(X) M12 A-Coding Ports | 8 (P.S.E.)/ 8 (P.S.E.),(2-pair HW Bypass)IEEE 802.3 at(Max.120W) | 8 |
| 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 | - |
| 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) x196 (H) mm |
| Operating Temperature | | |
| -10 to 60°C | - | - |
| -40 to 70°C | • | - |
| -40 to 75°C | - | • |
| Network Redundancy | | |
| O-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 Ethernet Switch



TGXPS-141GX-M12-24V/MV



TXPS-141XT-M12-24V/MV

| Port Number | TGXPS-141GX-M12-24V/MV | | TXPS-141XT-M12-24V/MV | |
|--|----------------------------|----------------------------|----------------------------|----------------------------|
| Number of ports | 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 | 4 (P.S.E.) IEEE 802.3 at+1 | | - | |
| 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 | - | | - | |
| Installation | | | | |
| DIN-Rail Mounting | - | | - | |
| Wall Mounting | ● | | ● | |
| Physical Characteristics | | | | |
| Casing Protection | IP-30 | | IP-30 | |
| Dimensions (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 | | | | |
| 0-Ring | - | | - | |
| 0-Chain | - | | - | |
| MRP* <small>NOTE</small> | - | | - | |
| 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 | - | | - | |
| *MSTP/RSTP/STP configuration request only | - | | - | |
| Warranty | | | | |

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 | TSPL-101GT-M12 Series | | TINJ-101GT-M12 series | | TINJ-101-M12 series | |
|---------------------------------|------------------------|--------|------------------------|----------|------------------------|----------|
| 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 | | | | | | |
| 0-Ring | - | | - | | - | |
| Open-Ring | - | | - | | - | |
| 0-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 C1D2 DIN-Rail Fast Ethernet Switch

Managed Switch

Unmanaged Switch

Industrial Ethernet Switch



IES-A3162GC



IES-A3062 Series / IES-A3080



IES-A1062 Series / IES-A1080

| Port Number | Managed Switch | | Unmanaged Switch | |
|---------------------------------|--|--|-------------------------|-----------------------|
| Number of ports | 18 | 8 | 8 | |
| 10/100Base-T(X) RJ45 Ports | 16 | 6 | 8 | 6 |
| 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 | | | | |
| 0-Ring | • | • | - | |
| Open-Ring | • | • | - | |
| 0-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

Product Selection Guide

Industrial Rack-Mount Ethernet to Fiber Media Converter

Chassis

Card type Ethernet to fiber

Industrial Media Converter



RMC-1000

RGMC-111GPB

RMC-121FB

RMC-111FB / 111PB

| Port Number | RMC-1000 | | RGMC-111GPB | | RMC-121FB | | RMC-111FB / 111PB | |
|-----------------------------------|--------------------------|--|----------------------------|--|-----------------------|--|---------------------------------|--|
| 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) | | - | | - | | - | |
| Installation | | | | | | | | |
| DIN-Rail Mounting | - | | - | | - | | - | |
| Wall mounting | - | | - | | - | | - | |
| Rack-Mount | • | | • (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) | | 21.8(W) 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 | IMC-121FB | | IMC-111FB / 111PB | | IMC-B111ETB-TB | IMC-B111ETB-RJ45 |
|-----------------------------------|-------------------------|-----------------------|-------------------------|---------|-----------------------------|-------------------------|
| 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 (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/--BT-24V

| Port Number | IGMC-1011GF / 1011GP | | IGMC-111GP | IGPMC-111GP/--BT-24V | |
|-----------------------------------|------------------------------|---------|-----------------------|-----------------------|------------|
| Chassis Slots | - | | - | - | |
| 10/100Base-T(X) RJ45 Ports | - | | - | - | |
| 10/100/1000Base-T(X) RJ45 Ports | 1 | | 1 | 1(P.S.E.) | 1(90W PoE) |
| 100Base-FX Fiber Ports | - | | - | - | |
| 1000Base-X Fiber Ports | 1 (Multi/Single-Mode) | 1 (SFP) | 1 | 1 | 1 (SFP) |
| 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 | IGMC-111GPB | | IMC-P111FX/P-LV / HV | | IMC-P111FX/P-M12-LV / HV | |
|-----------------------------------|-------------------------|--|-------------------------------|---------|-------------------------------|---------|
| 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 |

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

Serial Media Converters

Serial to Serial

Industrial Media Converter



ISC-1112-I

| Port Number | |
|-----------------------------------|--|
| 10/100Base-T(X) RJ45 Ports | - |
| 10/100/1000Base-T(X) RJ45 Ports | - |
| Fiber Ports | - |
| 1000Base-X Fiber Ports | - |
| USB Port | - |
| RS-232 Serial Port | 1 |
| RS-422/485 Serial Port | 1 |
| RS-232/422/485 Serial Port | - |
| Serial Port Feature | |
| Baud Rate | 300 ~ 115.2Kbps |
| Signals | RS-232 : TX, RX, GND RS-422 : TX+, TX-, RX+, RX- RS-485 : Data+, Data- |
| Power Redundancy | |
| DC Terminal Block | 1 |
| DC Power Jack | - |
| USB Bus Power | - |
| Installation | |
| DIN-Rail Mounting | • |
| Wall mounting | • |
| Physical Characteristics | |
| Casing Protection | IP-30 |
| Dimensions (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 |
| Warranty | 5 years |

Product Selection Guide

Serial to Fiber

Industrial Serial Products



ISC-1310FB-MM



ISC-1310FB-SS

| Port Number | |
|-----------------------------------|--|
| Fiber Port Number | 1 |
| Fiber Optical Connector | SC |
| Fiber Mode | Multi-mode |
| Typical Distance (km) | 2 Km |
| Fiber Mode | Single-mode |
| Typical Distance (km) | 30 Km |
| Serial Port | |
| Serial Baud Rate | 50 bps to 921.6 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 |
| RS-422 | Tx+,Tx-, Rx+, Rx-,GND |
| RS-485 (4-wire) | Tx+,Tx-, Rx+, Rx-,GND |
| Power Redundancy | |
| DC Back Plane | - |
| DC Terminal Block | 1 |
| DC Power Jack | by cable |
| AC Power Cord | - |
| USB Bus Power | - |
| Installation | |
| DIN-Rail Mounting | • |
| Wall mounting | • |
| Rack-Mount | - |
| Physical Characteristics | |
| Casing Protection | IP-30 |
| Dimensions (mm) | 26.1 (W) x 70 (D) x 95 (H)mm (1.03 x 2.76 x 3.74 inch) |
| Operating Temperature | |
| -10 to 60°C | - |
| -20 to 60°C | - |
| -40 to 70°C | • |
| Protection | |
| Power Reverse Polarity Protection | • |
| Serial Isolation Protection | - |
| Warranty | |
| | 5 years |

Product Selection Guide

Industrial Device Server

Device Server

Industrial Device Server



IDS-342GT



IDS-322

| Serial Port | | |
|---|--|--|
| Serial port Numbers | IGPMC-111GP-BT | 2 |
| Serial Mode | RS-232/422/485 | RS-232/422/485 |
| Serial Port Connector | DB9 (male) | DB9 (male) |
| Serial Port with 2KV Isolation | - | - |
| Serial Baud Rate | 110 bps to 460.8 Kbps | 110 bps to 460.8 Kbps |
| Ethernet Port | | |
| 10/100Base-T(X) in RJ45 Ports | 2 | 2 |
| 10/100/1000Base-T(X) in RJ45 Ports | - | - |
| Wireless LAN Interface | IEEE 802.11b/g/n | - |
| Support PoE (IEEE 802.3af compliant) | • (ETH1) | • |
| Ethernet Switch mode / Fast Recovery Mode supported | - | - |
| Power Redundancy | | |
| DC Terminal Block | 1 (4-pin) | 2 |
| DC Power Jack | - | - |
| Installation | | |
| DIN-Rail Mounting | • | • |
| Wall mounting | • | • |
| Physical Characteristics | | |
| Casing Protection | IP-30 | IP-30 |
| Dimensions (mm) | 45(W) x 81(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, UD |
| Windows O.S.Supported | 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 |
| 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 |
| 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



IDS-312L



IDS-141A

| | IDS-312L | IDS-141A |
|---|---|---|
| Serial Port | | |
| Serial port Numbers | 1 | 4 |
| Serial Mode | RS-232/422/485 | RS-232 |
| Serial Port Connector | DB9 (male) | DB62 (female, DB62 to DB9 cable attached) |
| Serial Port with 2KV Isolation | - | - |
| Serial Baud Rate | 110 bps to 460.8 Kbps | 1200 bps to 115.2 Kbps |
| Ethernet Port | | |
| 10/100Base-T(X) in RJ45 Auto MDI/MDIX Ports | 2 | 1 |
| 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 | 2 |
| DC Power Jack | - | 1 |
| Installation | | |
| DIN-Rail Mounting | • | • |
| Wall mounting | • | • |
| Physical Characteristics | | |
| Casing Protection | IP-30 | IP-30 |
| Dimensions (mm) | 26(W) x 75(D) x 110(H) mm | 94.9(W) x 23(D) x 144.3(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 / 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 | | |

Product Selection Guide

Industrial Device Server

Device Server

Industrial Device Server



RDS-3166G

RDS-3086G

| | 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 | |

Product Selection Guide

DIN-Rail WLAN Access Point

Industrial Wireless Access Point



IAP-420/420+



IGAP-610H+

| Ethernet Ports | | |
|--|--|--|
| 10/100 Base-T(X) LAN Ports | 2 | - |
| 10/100 /1000 Base-T(X) LAN Ports | - | 1 |
| PoE(P.D.) Support | - | LAN Port |
| Ethernet Switch / Redundant Mode Support | • | - |
| WLAN Interface | | |
| WLAN Standard | IEEE802.11b/g/n | Dual IEEE802.11a/b/g/n |
| Transmit Power | 19 dBm max. | 27 dBm max. |
| Transmission Rate | IEEE802.11b: 11Mbps IEEE802.11g: 54Mbps IEEE802.11n: 150Mbps | IEEE802.11b: 11Mbps IEEE802.11a/g: 54Mbps IEEE802.11n: 300Mbps |
| Antenna Connector | Reverse SMA | Reverse SMA |
| Antenna | 2.4GHz :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) | 41(W)x81(D)x95(H) | 45(W)x95(D)x115(H) |
| Operating Temperature | | |
| -10 to 60°C | • | - |
| -10 to 70°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 | 5years | |

Product Selection Guide

Industrial Wireless Access Point

Industrial IP-67 WLAN Access Point



IGAP-6620+



IGAP-W612H+



IGAP-W99110GP+

| Ethernet Ports | | | |
|--|---|---|--|
| 10/100 Base-T(X) LAN Ports | - | - | - |
| 10/100 /1000 Base-T(X) LAN Ports | 2 | 1 (RJ45) | 1 (RJ45) |
| PoE(P.D.) Support | • (LAN Port-2) | LAN Port | LAN Port |
| Ethernet Switch / Redundant Mode Support | • | - | - |
| 1000 Base-X SFP Ports | - | - | 1 |
| WLAN Interface | | | |
| WLAN Standard | Dual IEEE802.11a/b/g/n | IEEE802.11a/b/g/n | IEEE802.11a/b/g/n/ac/ax |
| Transmit Power | 17 dBm max. | 27 dBm max. | 28 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 IEEE802.11ac : 867Mbps IEEE802.11ax : 1200Mbps |
| Antenna Connector | Reverse SMA | Reverse SMA | - |
| Antenna | 2.4GHz :2 dBi 5GHz :2 dBi | 2.4GHz :4 dBi 5GHz :6 dBi | Build-in 9dBi |
| Power Redundancy | | | |
| Power Connector | 2(Terminal Block) | - | 1(DC Jack) |
| Installation | | | |
| DIN-Rail Mounting | • | - | - |
| Wall Mounting | • | • | • |
| Pillar-Mounting | - | • | • |
| Physical Characteristics | | | |
| Casing Protection | IP-30 | IP-67 | IP-68 |
| Dimensions (mm) | 74.3(W)x109.2(D)x153.6(H) | 220(W)x127(D)x75(H) | 251 x 168 × 64 mm |
| Operating Temperature | | | |
| -10 to 70°C | - | • | - |
| -25 to 70°C | • | - | - |
| -40 to 65°C | - | - | • |
| Network Technology | | | |
| Alarm Notification | Relay Output / SNMP Trap / System Log | Relay Output / SNMP Trap / System Log | SNMP Trap/ System Log |
| Management / Configuration | WEB/Window Utility | WEB/Window Utility | WEB/Console |
| Warranty | | | |
| | 5 years | | 3 years |

Product Selection Guide

EN50155 WLAN Access Point

Industrial Wireless Access Point



TGAP-620+-M12



TGAP-6620+-M12

| Ethernet Ports | | |
|---------------------------------|---|---|
| 10/100 Base-T(X) LAN Ports | - | - |
| 10/100/1000 Base-T(X) LAN Ports | 2 (M12) | 2 (M12) |
| PoE(P.D.) Support | • | • |
| WLAN Interface | | |
| WLAN Standard | IEEE802.11a/b/g/n | Dual IEEE802.11a/b/g/n |
| Transmit Power | 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 |
| Antenna Connector | Reverse SMA | Reverse SMA |
| Antenna | 2.4GHz:2 dBi 5GHz:2 dBi | 2.4GHz:2 dBi 5GHz:3 dBi |
| Power Redundancy | | |
| Power Connector | 2 (M23) | 2 (M23) |
| Installation | | |
| DIN-Rail Mounting | - | - |
| Wall Mounting | • | • |
| Pillar-Mounting | - | - |
| Physical Characteristics | | |
| Casing Protection | IP-40 | IP-40 |
| Dimensions (mm) | 125(W)x65(D)x196(H) | 125(W)x65(D)x196(H) |
| Operating Temperature | | |
| -10 to 70°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

DIN-Rail VPN Router

Industrial Cellular VPN Router



IGR-20 / IGR-20+



IAR-142-3G



IAR-142(+)-4G

| | 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-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

DIN-Rail Cellular VPN Router

Industrial Cellular VPN Router



IGAR-1062+-4G



IGAR-2062 +-4G

| 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 | IEEE802.11a/b/g/n | IEEE802.11a/b/g/n |
| Transmit Power | 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 |
| 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 / LTE(4G) | Dual GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA / LTE(4G) |
| Transmission Power | 33 dbm max. | 33 dbm max. |
| SIM Slot | 1 | 2 |
| Antenna | Multi-Band Antenna | Multi-Band Antenna |
| Power Redundancy | | |
| Power Connector | 2(Terminal Block) | 2(Terminal Block) |
| Installation | | |
| DIN-Rail Mounting | • | • |
| Wall mounting | • | • |
| Physical Characteristics | | |
| Casing Protection | 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) |
| 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 |
| Management / Configuration | WEB | WEB |
| Warranty | 5 years | |

Product Selection Guide

EN50155 WLAN Cellular VPN Router

Industrial Cellular VPN Router



TGAR-1062+-4GS-M12



TGAR-2062+-4GS-M12

| | TGAR-1062+-4GS-M12 | TGAR-2062+-4GS-M12 |
|--|---|---|
| Ethernet Ports | | |
| 10/100 Base-T(X) LAN Ports | - | - |
| 10/100/1000 Base-T(X) LAN Ports | 2 (M12) | 2 (M12) |
| 10/100 Base-FX Fiber Ports | - | - |
| PoE (P.D.)Support | (TGAR-1062+-3GS/4GS-M12) | (TGAR-2062+-3GS/4GS-M12) |
| Ethernet switch/redundant mode support | • | • |
| WLAN Interface | | |
| WLAN Standard | IEEE802.11a/b/g/n | IEEE802.11a/b/g/n |
| Transmit Power | 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 |
| Antenna connector | Reverse SMA | Reverse SMA |
| Antenna | 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 |
| Frequency | 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 |
| Transmission Power | 33 dbm max. | 33 dbm max. |
| SIM Slot | 1 | 2 |
| Antenna connector | Reverse SMA SMA | SMA |
| Antenna | Multi-Band Antenna | Multi-Band Antenna |
| WAN Connection Type | Static/Dynamic IP,PPPoE | Static/Dynamic IP,PPPoE |
| WAN Dial-UP | 4G LTE | Dual 4G LTE |
| Power Redundancy | | |
| Power Connector | 2 (M23) | 2 (M23) |
| Installation | | |
| DIN-Rail Mounting | - | - |
| Wall mounting | • | • |
| Physical Characteristics | | |
| Casing Protection | IP-40 | IP-40 |
| Dimensions (mm) | 125(W) x 65(D) x 196(H) | 125(W) x 65(D) x 196(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 |
| Management / Configuration | WEB / Window Utility | WEB / Window Utility |
| Warranty | 5 years | |

Product Selection Guide

Industrial Media Gateway

M2M Gateway

Industrial M2M Gateway



IMG-4312D+-D4G



IMG-4312+-4G

| Ethernet Ports | | |
|---|--|---|
| 10/100/1000 Base-T(X) LAN Ports | 2 | 2 |
| 10/100/1000 Base-T(X) Port with PoE P.D | - | - |
| Serial Port | | |
| Serial port Numbers | 1 | 1 |
| Serial Mode | RS-232/422/485 | RS-232/422/485 |
| Serial Port Connector | DB9 | DB9 |
| Serial Baud Rate | 110 bps to 115.2Kbps | 110 bps to 115.2Kbps |
| PIDO | 1 | - |
| WLAN Interface | | |
| WLAN Standard | Industrial IEEE 802.11 b/g/n | Industrial IEEE 802.11 b/g/n |
| 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 | 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 |
| 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 | 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 |
| Antenna connector | 1 x RP-SMA Female | 1 x RP-SMA Female |
| Antenna | 1 | 1 |
| Cellular Interface | | |
| Cellular Standard | GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA / HSUPA/LTE | GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA / HSUPA/LTE |
| Band Option | America (US grade) LTE: FDD:1900(B2)/1700(B4)/850(B5)/700(B12)/700(B13)/700(B14)/1700(B66)/600(B71) MHz UMS/HSDPA/HSUPA/HSPA+: 1900/1700/850 MHz Europe (EU grade) LTE: FDD:2100(B1)/1800(B3)/2600(B7)/900(B8)/800(B20) MHz TDD:TDD:2600(B38)/2300(B40)/2500(B41) MHz UMS/HSDPA/HSUPA/HSPA+: 2100(B1)/900(B8) MHz GSM/GPRS/EDGE: 900/850 MHz | America(US grade) LTE: 1900(B2)/1700(B4)/850(B5)/700(B13)/700(B17)/1900(B25) MHz CDMA/EVDO rev. a/b: 800/1900 UMS/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 UMS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/900/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz |
| Dual Sim | 2 | 2 |
| Power Redundancy | | |
| DC Terminal Block | 2 | 2 |
| Installation | | |
| DIN-Rail Mounting | • | • |
| Wall mounting | • | • |
| Physical Characteristics | | |
| Casing Protection | IP-30 | IP-30 |
| Dimensions (mm) | 45(W)x80.6(D)x95(H) | 45(W)x80.6(D)x95(H) mm |
| 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 |
| Warranty | | |
| | 5 years | |

Product Selection Guide

Industrial Media Gateway

M2M Gateway

Industrial M2M Gateway



IMG-311DL-4GS

IMG-311DL-MN

| | IMG-311DL-4GS | IMG-311DL-MN |
|--|--|---|
| Physical Ports | | |
| 10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX | 1 | 1 |
| Sim card slot | 1 | 1 |
| SD card slot | 1 | 1 |
| GNSS Support | | |
| Antenna Connector | 1 x External reverse SMA antenna connector | - |
| Frequency | GPS 1575.42± 1.023 MHz | - |
| Serial Ports | | |
| Connector | DB9 x 1 | |
| Operation Mode | RS-232/422/485 | |
| Serial Baud Rate | 110 bps to 115.2 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 | |
| Cellular Interface | | |
| LTE Connector | 2 x SMA Female | 1 x SMA Female |
| Cellular Standard | GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA /LTE | LTE Cat-M1, Cat-NB1 |
| Download/Upload Rate | 100 /50 Mbps | LTE Cat-M1:300 / 375 Kbps LTE Cat-NB1: 32 / 70 Kbps |
| Band Option | EU grade LTE: FDD:B1/B3/B7/B8/B20/B28 UMTS/HSDPA/HSUPA:B1/B8 GSM/GPRS/EDGE:900/1800 MHz US grade LTE: FDD:B2/B4/B5/B12/B13 UMTS/HSDPA/HSUPA:B2/B4/B5 | LTE Cat-M1/NB : LTE FDD:B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/ |
| SIM | 1 | 1 |
| Power | | |
| Input power | DC inputs. 12-48VDC | DC inputs. 12-48VDC |
| Installation | | |
| DIN-Rail Mounting | • | • |
| Wall mounting | • | • |
| Physical Characteristics | | |
| Casing Protection | IP-30 | |
| Dimensions (mm) | 26.1(W) x 94.9(D) x 144.3(H) mm | |
| Operating Temperature | | |
| -10 to 60°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 |
| Warranty | 5 years | |

Product Selection Guide

Industrial Media Gateway

M2M IoT Gateway

Industrial M2M Gateway

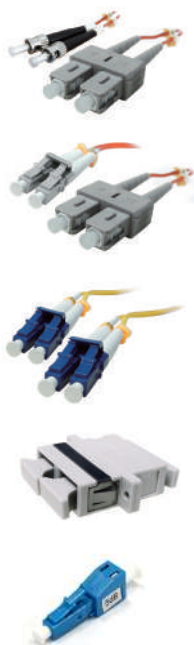


IGMG-P83244GC+-D4G

| | |
|---|--|
| Ethernet Ports | |
| 10/100/1000 Base-T(X) LAN Ports | 4 |
| 10/100/1000 Base-T(X) Port with PoE P.D | 4 |
| Serial Port | |
| Serial port Numbers | 2 |
| Serial Mode | Port 1 : RS-422/RS-485 Port 2 : RS-232/RS-422/RS-485 |
| Serial Port Connector | Port 1 : Terminal Block Port 2 : DB9 male |
| Serial Baud Rate | 110 bps to 921.6 Kbps |
| WLAN Interface | |
| WLAN Standard | - |
| Transmit Power | - |
| Transmission Rate | - |
| Antenna connector | - |
| Antenna | - |
| Cellular Interface | |
| Cellular Standard | GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA+ / HSUPA/LTE |
| 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: FDD:2100(B1)/1800(B3)/2600(B7)/900(B8)/800(B20) MHz TDD:2600(B38)/2300(B40)/2500(B41) MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+/2100(B1)/900(B8) MHz GSM/GPRS/EDGE: 900/850 MHz |
| SIM Card slot | 2 |
| Storage | |
| SSD | Support 64GB SSD storage for data logging(128/256GB option) |
| Power Redundancy | |
| DC Terminal Block | 2 |
| Application | |
| Enhance App | Node-RED, Ignition EDGE |
| Installation | |
| DIN-Rail Mounting | • |
| Wall mounting | • |
| Physical Characteristics | |
| Casing Protection | IP-30 |
| Dimensions (mm) | 116.4mm(W) x 170mm(D) x 154mm(H) |
| Operating Temperature | |
| -40 to 70°C | • |
| Network Technology | |
| Operating Modes | TCP Server, TCP Client, UDP, Virtual Com, Serial Tunnel |
| David Multiple Link | 5 host devices : Virtual COM, TCP Server, TCP Client mode; 4 IP ranges : UDP |
| Event Notification | Syslog / SMTP/ SNMP trap |
| Warranty | 5 years |

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 |
| NDR-75-12 | 475W DIN-Rail 12VDC/6.3A (voltage adjustable 12~14VDC) Power Supply with universal 100 to 240VAC input, -20~70°C |
| NDR-75-24 | 75W DIN-Rail 24VDC/3.2A (voltage adjustable 24~28VDC) Power Supply with universal 100 to 240VAC input, -20~70°C |
| NDR-75-48 | 775W DIN-Rail 48VDC/1.6A (voltage adjustable 48~55VDC) Power Supply with universal 100 to 240VAC input, -20~70°C |
| NDR-120-12 | 120W DIN-Rail 12VDC/10A (voltage adjustable 12~14VDC) Power Supply with universal 100 to 240VAC input, -20~70°C |
| NDR-120-24 | 120W DIN-Rail 24VDC/5A (voltage adjustable 24~28VDC) Power Supply with universal 100 to 240VAC input, -20~70°C |
| NDR-120-48 | 120W DIN-Rail 48VDC/2.5A (voltage adjustable 48~55VDC) Power Supply with universal 100 to 240VAC input, -20~70°C |
| SDR-240-48 | 240W DIN-Rail 48VDC/5A Power Supply with 100 to 240VAC input, -25~70°C |
| SDR-480-48 | 480W DIN-Rail 48VDC/10A Power Supply with 100 to 240VAC input, -25~70°C |
| Extended Type | |
| Model Name | Description |
| DRP024V060W1BN | 60W DIN-Rail 24VDC/2.5A Power Supply with universal 100 to 240VAC input, extended type, -25~80°C |
| DRP024V120W1BN | 120W DIN-Rail 24VDC/5A Power Supply with universal 100 to 240VAC input, extended type, -25~80°C |
| DRP024V240W1BN | 240W DIN-Rail 24VDC/10A Power Supply with universal 100 to 240VAC input, extended type, -25~80°C |
| DRP024V480W1BN | 480W DIN-Rail 24VDC/20A Power Supply with universal 100 to 240VAC input, extended type, -25~80°C |
| DRP048V060W1BN | 60W DIN-Rail 48VDC/1.25A Power Supply with universal 100 to 240VAC input, extended type, -25~80°C |
| DRP048V120W1BN | 120W DIN-Rail 48VDC/2.5A Power Supply with universal 100 to 240VAC input, extended type, -25~80°C |
| DRP048V240W1BN | 240W DIN-Rail 48VDC/5A Power Supply with universal 100 to 240VAC input, extended type, -25~80°C |
| DRP048V480W1BN | 480W DIN-Rail 48VDC/10A Power Supply with universal 100 to 240VAC input, extended type, -25~75°C |



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 |



| RF Adapter | |
|----------------|--|
| Model Name | Description |
| RFC-SF-SM-OR | RF Right Angle Adapter, SMA Female to SMA Male connector |
| RFC-SFR-SM-0 | RF Adapter, RP SMA Female to SMA Male connector |
| RFC-SFR-SMR-OR | RF Right Angle Adapter, RP-SMA Female to RP-SMA Male connector |
| RFC-SM-NF-0 | RF Adapter, SMA Male to N Female connector |
| RFC-SMR-NF-0 | RF Adapter, RP-SMA Male to N Female connector |
| RFC-SM-NM-0 | RF Adapter, SMA Male to N type Male connector |

Product Selection Guide



WLAN RF Antenna (Outdoor Panel Type)

| Model Name | Description |
|----------------|---|
| RFA-P14-NF2-WA | Outdoor High-gain Panel Antenna, MIMO,5GHz, 14dbi max., N Female connector x2 |
| RFA-P12-NF-WG | Outdoor High-gain Panel Antenna, 2.4GHz, 12dbi max., N Female connector |
| RFA-P14-NF-WA | Outdoor High-gain Panel Antenna, 5GHz, 14dbi max., N Female connector |
| RFA-P13-NF2-WG | Outdoor High-gain Panel Antenna, 2.4GHz, 13dBi max, N-Female connector X2 |

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 |

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-SM-W4G | Rooftop/Outdoor High Performance Omni Antenna for 3G/4G applications 5dBi max, SMA Male connector |
| RFA-O4-SMR-WG | Rooftop/Outdoor High Performance Omni Antenna, 2.4GHz, 4dBi max, RP-SMA Male connector |
| RFA-O5-SMR-WA | Rooftop/Outdoor High Performance Omni Antenna, 5 GHz, 5dBi max, RP-SMA Male connector |
| RFA-O4-SMR2-WG | Rooftop/Outdoor High Performance Omni Antenna, MIMO 2.4GHz, 4dBi max, RP-SMA Male connector x2 |
| RFA-O5-SMR2-WA | Rooftop/Outdoor High Performance Omni Antenna, MIMO 5GHz, 5dBi max.,RP-SMA Male connector x2 |
| RFA-O5-NF3-W3GGS-028 | Rooftop/Outdoor High Performance Omni Antenna , 3G/4G, GPS/GLONASS applications, 5dBi max, N Female connector |

Product Selection Guide

Accessories Fast Ethernet SFP modules



Specifications

| Characteristics | Model name | | | | |
|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| | 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°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-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°C |
| SFP100-MM-I | 100Mbps SFP optical transceiver, multi-mode / 2km, 1310nm, industrial grade, -40 ~ 85°C |
| SFP100-SS30 | 100Mbps SFP optical transceiver, single-mode / 30km, 1310nm, 0 ~ 70°C |
| SFP100-SS30-I | 100Mbps SFP optical transceiver, single-mode / 30km, 1310nm, industrial grade, -40 ~ 85°C |
| SFP100-SS60 | 100Mbps SFP optical transceiver, single-mode / 60km, 1310nm, 0 ~ 70°C |
| SFP100-SS60-I | 100Mbps SFP optical transceiver, single-mode / 60km, 1310nm, industrial grade, -40 ~ 85°C |
| SFP100-SS100 | 100Mbps SFP optical transceiver, single-mode / 100km, 1550nm, 0 ~ 70°C |
| SFP100-SS100-I | 100Mbps SFP optical transceiver, single-mode / 100km, 1550nm, industrial grade, -40 ~ 85°C |
| SFP100-SS120 | 100Mbps SFP optical transceiver, single-mode / 120km, 1550nm, 0 ~ 70°C |
| SFP100-SS120-I | 100Mbps SFP optical transceiver, single-mode / 120km, 1550nm, industrial grade, -40 ~ 85°C |

Product Selection Guide

Accessories Fast Ethernet BIDI-SFP modules



Specifications

| Characteristics | Model Name | | | | | | | |
|---|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| | 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°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-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°C |
| SFP100B3-MM-I | 100Mbps SFP optical Transceiver, Multi-mode BIDI / 2KM, TX1310nm / RX1550nm, industrial grade, -40 ~ 85°C |
| SFP100B5-MM | 100Mbps SFP optical Transceiver, Multi-mode BIDI / 2KM, TX1550nm / RX1310nm, 0 ~ 70°C |
| SFP100B5-MM-I | 100Mbps SFP optical Transceiver, Multi-mode BIDI / 2KM, TX1550nm / RX1310nm, industrial grade, -40 ~ 85°C |
| SFP100B3-SS20 | 100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, 0 ~ 70°C |
| SFP100B3-SS20-I | 100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C |
| SFP100B5-SS20 | 100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, 0 ~ 70°C |
| SFP100B5-SS20-I | 100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C |
| SFP100B3-SS40 | 100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, 0 ~ 70°C |
| SFP100B3-SS40-I | 100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C |
| SFP100B5-SS40 | 100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, 0 ~ 70°C |
| SFP100B5-SS40-I | 100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C |
| SFP100B3-SS60 | 100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1310nm, RX1550nm, 0 ~ 70°C |
| SFP100B3-SS60-I | 100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C |
| SFP100B5-SS60 | 100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1550nm, RX1310nm, 0 ~ 70°C |
| SFP100B5-SS60-I | 100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C |

Product Selection Guide

Accessories

Gigabit Ethernet SFP modules



Specifications

| Characteristics | Model Name | | | | | | | | | |
|--|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| | 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°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-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(Saturation) | 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°C |
| SFP1G-SX-I | 1Gbps SFP optical transceiver, multi-mode / 550m, 850nm, industrial grade, -40 ~ 85°C |
| SFP1G-MLX | 1Gbps SFP optical transceiver, multi-mode / 2km, 1310nm, 0 ~ 70°C |
| SFP1G-MLX-I | 1Gbps SFP optical transceiver, multi-mode / 2km, 1310nm, industrial grade, -40 ~ 85°C |
| SFP1G-LX10 | 1Gbps SFP optical transceiver, single-mode / 10km, 1310nm, 0 ~ 70°C |
| SFP1G-LX10-I | 1Gbps SFP optical transceiver, single-mode / 10km, 1310nm, industrial grade, -40 ~ 85°C |
| SFP1G-LX20 | 1Gbps SFP optical transceiver, single-mode / 20km, 1310nm, 0 ~ 70°C |
| SFP1G-LX20-I | 1Gbps SFP optical transceiver, single-mode / 20km, 1310nm, industrial grade, -40 ~ 85°C |
| SFP1G-LHX30 | 1Gbps SFP optical transceiver, single-mode / 30km, 1310nm, 0 ~ 70°C |
| SFP1G-LHX30-I | 1Gbps SFP optical transceiver, single-mode / 30km, 1310nm, industrial grade, -40 ~ 85°C |
| SFP1G-LHX40 | 1Gbps SFP optical transceiver, single-mode / 40km, 1310nm, 0 ~ 70°C |
| SFP1G-LHX40-I | 1Gbps SFP optical transceiver, single-mode / 40km, 1310nm, industrial grade, -40 ~ 85°C |
| SFP1G-XD50 | 1Gbps SFP optical transceiver, single-mode / 50km, 1550nm, 0 ~ 70°C |
| SFP1G-XD50-I | 1Gbps SFP optical transceiver, single-mode / 50km, 1550nm, industrial grade, -40 ~ 85°C |
| SFP1G-ZX70 | 1Gbps SFP optical transceiver, single-mode / 70km, 1550nm, 0 ~ 70°C |
| SFP1G-ZX70-I | 1Gbps SFP optical transceiver, single-mode / 70km, 1550nm, industrial grade, -40 ~ 85°C |
| SFP1G-ZX80 | 1Gbps SFP optical transceiver, single-mode / 80km, 1550nm, 0 ~ 70°C |
| SFP1G-ZX80-I | 1Gbps SFP optical transceiver, single-mode / 80km, 1550nm, industrial grade, -40 ~ 85°C |
| SFP1G-EZX120 | 1Gbps SFP optical transceiver, single-mode / 120km, 1550nm, 0 ~ 70°C |
| SFP1G-EZX120-I | 1Gbps SFP optical transceiver, single-mode / 120km, 1550nm, industrial grade, -40 ~ 85°C |

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°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-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°C |
| SFP1GB3-LX10-I | 1Gbps SFP optical transceiver, single-mode BIDI / 10km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C |
| SFP1GB5-LX10 | 1Gbps SFP optical transceiver, single-mode BIDI / 10km, TX1550nm, RX1310nm, 0 ~ 70°C |
| SFP1GB5-LX10-I | 1Gbps SFP optical transceiver, single-mode BIDI / 10km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C |
| SFP1GB3-LX20 | 1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, 0 ~ 70°C |
| SFP1GB3-LX20-I | 1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C |
| SFP1GB5-LX20 | 1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, 0 ~ 70°C |
| SFP1GB5-LX20-I | 1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C |
| SFP1GB3-LX40 | 1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, 0 ~ 70°C |
| SFP1GB3-LX40-I | 1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C |
| SFP1GB5-LX40 | 1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, 0 ~ 70°C |
| SFP1GB5-LX40-I | 1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C |
| SFP1GB3-LX60-I | 1Gbps SFP optical transceiver, single-mode BIDI / 60km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C |
| SFP1GB5-LX60-I | 1Gbps SFP optical transceiver, single-mode BIDI / 60km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C |
| SFP1GB4-LX80 | 1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1490nm, 1550nm, 0 ~ 70°C |
| SFP1GB4-LX80-I | 1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1490nm, 1550nm, industrial grade, -40 ~ 85°C |
| SFP1GB5-LX80 | 1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1550nm, 1490nm, 0 ~ 70°C |
| SFP1GB5-LX80-I | 1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1550nm, 1490nm, industrial grade, -40 ~ 85°C |

Product Selection Guide

Accessories

10G Ethernet SFP+ modules with Diagnostic Monitoring



Specifications

| Characteristics | Model Name | | | | |
|--|---|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| | 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°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-I model) | 0~70°C -40~85°C (-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) | - | -6 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 | 8.4 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°C |
| SFP10G-MM-I | 10Gbps SFP+ optical transceiver, multi-mode / 300m, 850nm, industrial grade, -40 ~ 85°C |
| SFP10G-LR10 | 10Gbps SFP+ optical transceiver, single-mode / 10km, 1310nm, 0 ~ 70°C |
| SFP10G-LR10-I | 10Gbps SFP+ optical transceiver, single-mode / 10km, 1310nm, industrial grade, -40 ~ 85°C |
| SFP10G-LR20 | 10Gbps SFP+ optical transceiver, single-mode / 20km, 1310nm, 0 ~ 70°C |
| SFP10G-LR20-I | 10Gbps SFP+ optical transceiver, single-mode / 20km, 1310nm, industrial grade, -40 ~ 85°C |
| SFP10G-ER40 | 10Gbps SFP+ optical transceiver, multi-mode / 40km, 1550nm, 0 ~ 70°C |
| SFP10G-ER40-I | 10Gbps SFP+ optical transceiver, multi-mode / 40km, 1550nm, industrial grade, -40 ~ 85°C |
| SFP10G-ZR80 | 10Gbps SFP+ optical transceiver, single-mode / 80km, 1550nm, 0 ~ 70°C |
| SFP10G-ZR80-I | 10Gbps SFP+ optical transceiver, single-mode / 80km, 1550nm, industrial grade, -40 ~ 85°C |

Product Selection Guide

Accessories

Gigabit Ethernet SFP-RJ45 modules



Specifications

| Characteristics | Model Name | | |
|-----------------------|--------------------|--------------------|-------------------|
| | SFP1GRJ | SFP1GRJ-I | SFP10GRJ |
| Operating Temperature | 0~70°C | -40~85°C | 0~70°C |
| 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 transceiver, 0 ~ 70°C |
| SFP1GRJ-I | 1Gbps SFP to 1000 Base-T transceiver, industrial grade, -40 ~ 85°C |
| SFP10GRJ | 10Gbps SFP+ to 10G - Base-T transceiver, 0 ~ 70°C |



10G Ethernet SFP+ Copper Cable

Specifications

| Characteristics | Model Name | | | |
|---------------------------|------------|-------------|-------------|-------------|
| | SFPC10G-50 | SFPC10G-100 | SFPC10G-300 | SFPC10G-500 |
| Max.Speed | 10 Gbps | 10 Gbps | 10 Gbps | 10 Gbps |
| Wire Gauge | 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°C | -40 ~ 85°C | -40 ~ 85°C | -40 ~ 85°C |

Ordering Information

| Model Name | Description | Cable length |
|-------------|---|--------------|
| SFPC10G-50 | 10Gbps SFP+ copper cable 30AWG, 0.5 m, -40 ~ 85°C | 0.5 m |
| SFPC10G-100 | 10Gbps SFP+ copper cable 30AWG, 1 m, -40 ~ 85°C | 1 m |
| SFPC10G-300 | 10Gbps SFP+ copper cable 30AWG, 3 m, -40 ~ 85°C | 3 m |
| SFPC10G-500 | 10Gbps SFP+ copper cable 24AWG, 5 m, -40 ~ 85°C | 5 m |

Product Selection Guide

Network Management Software

Open-Vision v4.0



Ordering Information

| Model Name | Description |
|-----------------|---|
| Open-Vision 4.0 | Powerful Network Management Windows Utility Suit, 50 IP devices |

Device Configuration Backup Unit

DBU-01 Series



Specifications

| Model | DBU-01-DB9 | DBU-01-RJ45 | DBU-01-M12 |
|--------------------------------|---|-------------|--------------------|
| Physical Ports | | | |
| Connector | DB9 | RJ-45 | M12(Spin A-coding) |
| Switch | 2 pole DIP switch | - | 16 |
| LED indicators | | | |
| Power Indicator | 1 x LED, Green On : Power is on and device ready | | |
| Transmit Indicator | 1 x LED, Amber blinking: data transmitting. | | |
| Status Indicator | 1 x LED, Green On : function successful Red On : function fail | | |
| Power | | | |
| Input power | 5~12VDC (via RS-232 RTS port) | | |
| Physical Characteristic | | | |
| Enclosure | IP-40, PC molding | | |
| Dimension (W x D x H) | 32(W)x14.5(D)x90(H)mm (1.25 x 0.57 x 3.5 inch.) (cable length:172mm) | | |
| Weight (g) | 53g | 33g | 43g |
| 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 | | | |
| EMC | CE EMC (EN 55024, EN 55032), EN50121-4 (compliant), 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: Contact 4KV, Air 8KV), IEC/EN 61000-4-3 (RS: 3V), IEC/EN 61000-4-4 (EFT Power 0.5KV, Signal 0.5KV), IEC/EN 61000-4-5 (Surge: Power 0.5KV, Signal 1KV), IEC/EN 61000-4-6 (CS: 3V), IEC/EN 61000-4-8(PFME), IEC/EN 61000-4-11 (DIP)) | | |
| Shock | IEC60068-2-27 | | |
| Free Fall | IEC60068-2-31 | | |
| Vibration | IEC60068-2-6 | | |
| MTBF | | | |
| Warranty | 3 years | | |

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*Specifications are subject to change without prior notice.