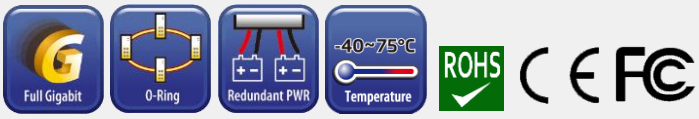
IGS-9168GP-PN

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

Features

- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP** *NOTE (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock Synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client & NTP server
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- Support Universal Plug and Play
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 MIB file & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Support hardware watch dog function
- Support loop guard to solve Ethernet loop issue
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled
- Profinet CC-B v2.40 certified and GSD file provided
- Support PROFINET MRP client (MRC)





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

Introduction

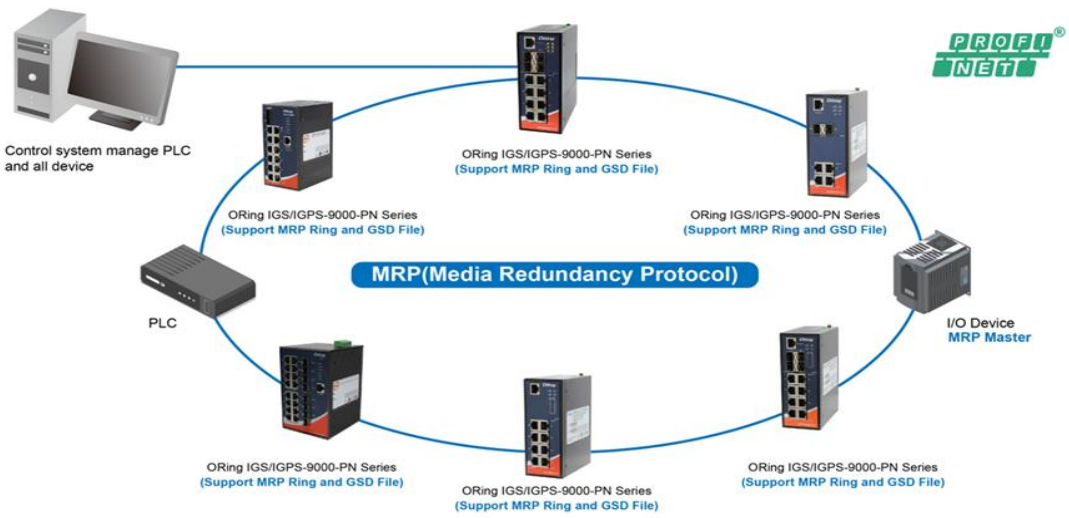
IGS-9168GP-PN is managed redundant ring Ethernet switch with 16x10/100/1000Base-T(X) ports and 8x100/1000Base-X SFP ports, which is designed for various industrial applications, including manufacturing, process automation, transportation, and energy industries. The PROFINET certification of this product line ensures its compliance with rigorous industry standards and seamless communication compatibility with PROFINET systems.

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

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

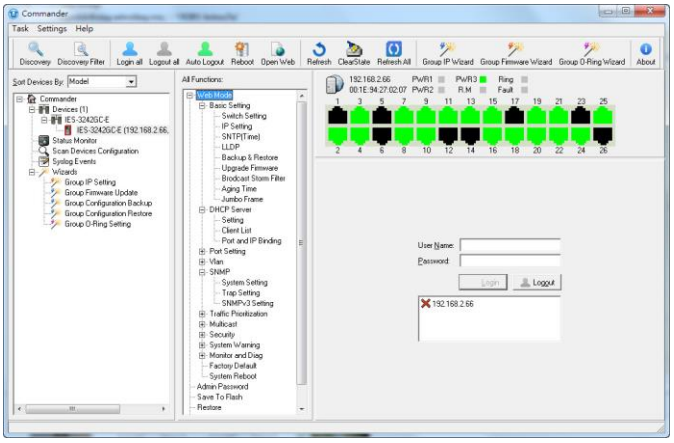
***NOTE: This function is available by request only**



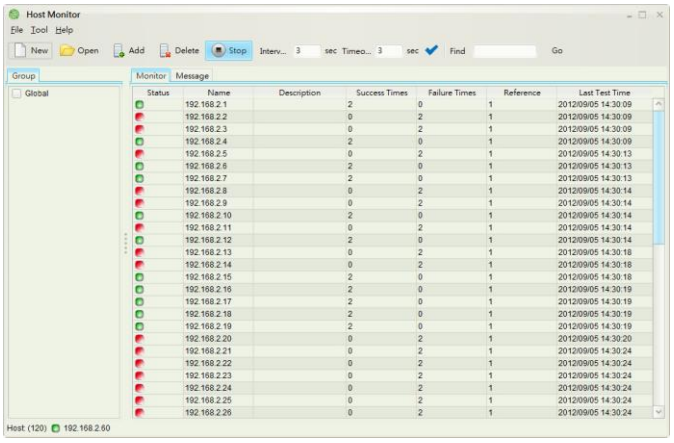
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Open-Vision

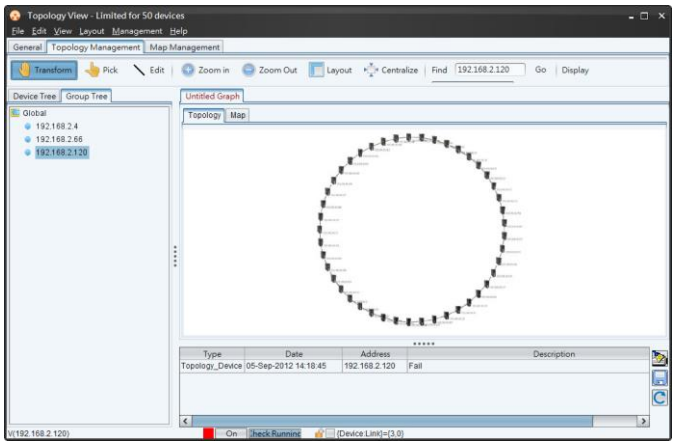
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



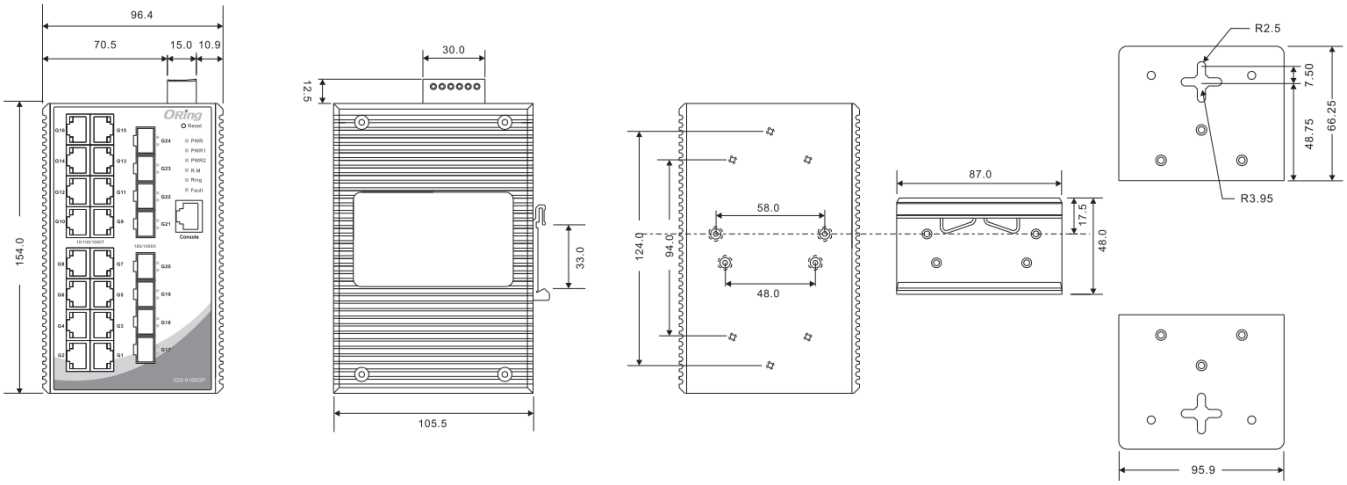
Host Monitor



Topology View

Dimension

Dimension (Unit =mm)



Specifications

ORing Switch Model	IGS-9168GP-PN
Physical Ports	
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	**16**
100/1000Base-X with SFP port	**8**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1Q-2014 MSTP (compatible with STP/RSTP) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	8k
Packet Buffer	4Mbit
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 48Gbps Throughput (packet per second) : 35.71Mpps@64Bytes packet Max. Number of Available VLANs: 4095 VLAN ID Range : VID 1 to 4094 IGMP multicast groups: 256 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 9.6K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security
Software Features	MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP NTP server
Network Redundancy	O-Ring O-Chain MRP***NOTE** MSTP (RSTP/STP compatible)
PROFINET conformance class	Conformance-class B
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicators	
Power Indicator (PWR)	Green : Power LED x 3
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in O-Ring Master mode

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O-Ring Indicator (Ring)	Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicator	Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps, Amber for 100Mbps, Off-light for 10Mbps
100/1000Base-X SFP Port Indicator	Top green for port Link/Act.
Fault Contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Reset Function	
Reset Button	< 5 sec: System reboot, > 5 sec: Factory default
Power	
Redundant Input power	Dual DC inputs. 12~48VDC on 6-pin terminal block
Power consumption (Typ.)	20 Watts (Full loading)
Overload current protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	96.4 (W) x 105.5 (D) x 154 (H)mm (3.8 x 4.15 x 6.06 inch)
Weight (g)	1250 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
EMC	CE EMC (EN 55035, EN 55032), FCC Part 15 B
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A
EMS	IEC/EN 61000-4-2 (ESD) IEC/EN 61000-4-3 (RS) IEC/EN 61000-4-4 (EFT) IEC/EN 61000-4-5 (Surge) IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF),
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	UL61010-1
MTBF	507,660 hours
Warranty	5 years

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

Ordering Information

IGS-9AABCC-PN

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

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

Packing List

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

Optional Accessories

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

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