



IGS-9122GPM

# IGS-9122GPM

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

## Features

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



## Introduction

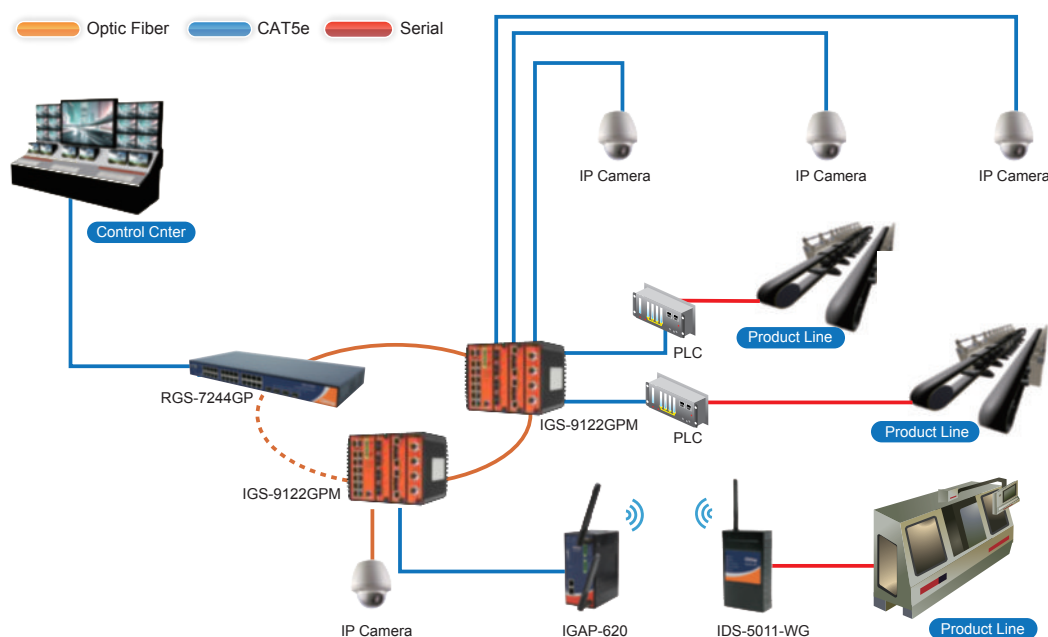
IGS-9122GPM is Din-Rail modular managed redundant ring Ethernet switch with 12x10/100/1000Base-T(X) and 2x100/1000Base-X SFP ports. Also, it supports 3 slots for install switch module to expander Ethernet ports. It is hot-swappable so there is no need to power off switch while replace the module. With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

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

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

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

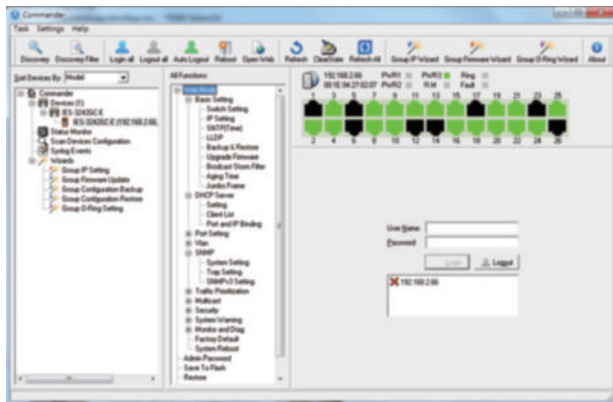
- **O-Chain** : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound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



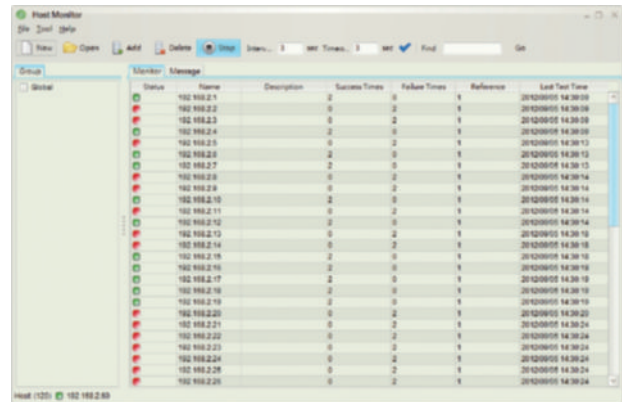
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## Open-Vision

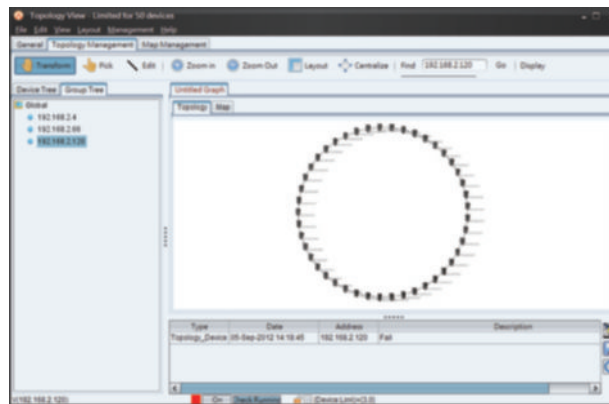
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

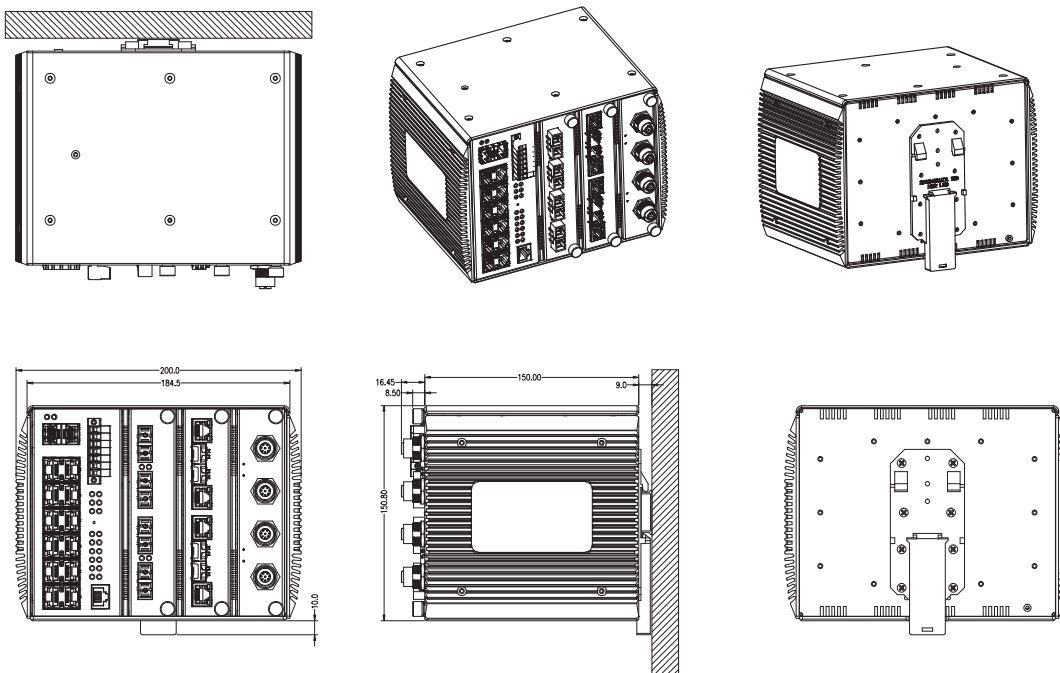


Host Monitor



Topology View

## Dimensions



(Unit=mm)

## Optional Switch Module

**SWM-04GC-D**

Industrial 4-port Gigabit Ethernet switch module with 4x1G combo ports.

Weight	412g
MTBF	3,948,727hrs

**SWM-04GF-SS/MM-SC-D**

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

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

**SWM-04FX-SS/MM-SC-D**

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

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

**SWM-40GT-M12-D**

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

Weight	462g
MTBF	628,407hrs

**BSM-02X-D**

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

Weight	TBD
MTBF	TBD

**BSM-20GT-D**

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

Weight	TBD
MTBF	TBD

**BSM-20GT-M12-D**

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

Weight	TBD
MTBF	TBD

## Specifications

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

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

\*NOTE: This function is available by request only

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

## Ordering Information

IGS-9 **AA** **B** **CC** **D**

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

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

## Optional Slot Module

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

### Packing List

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

### Optional Accessories

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