RGS-P9160M1 Series

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

Features

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

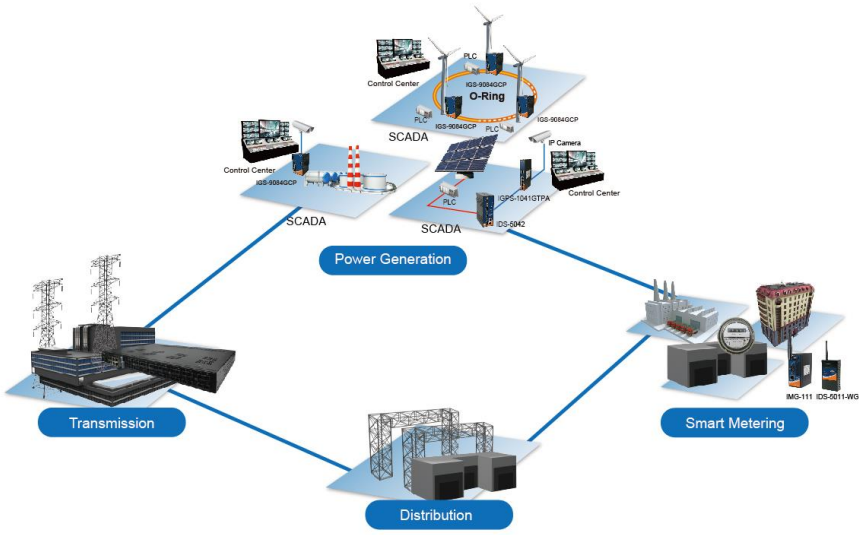
***NOTE: This function is available by request only**

Introduction

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

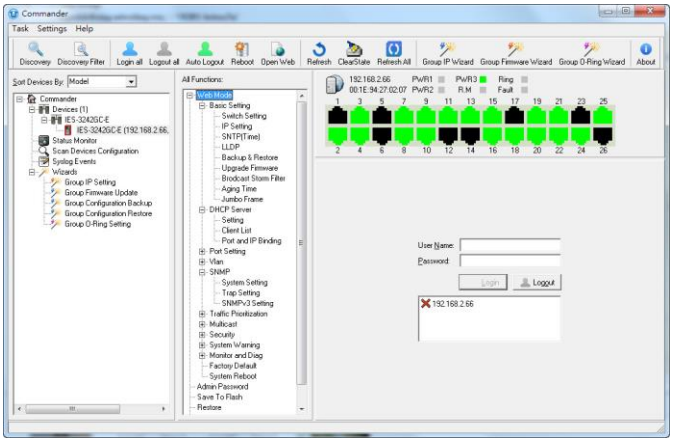
- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain :** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- **MRP*NOTE : Media Redundancy Protocol** (**MRP**) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **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 o4f networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.
- **IEEE 1588V2 Technology :** The IEEE 1588V2 technology can fulfill precision time synchronization requirements for protection and control applications.
- **Modular Designed :** Modular designed can makes network planning easy and allow greater flexibility by letting you install other Ethernet/Optical fiber modular.

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

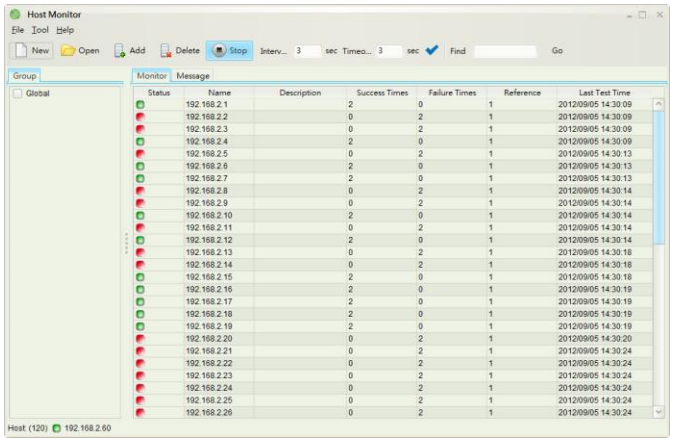


Open-Vision

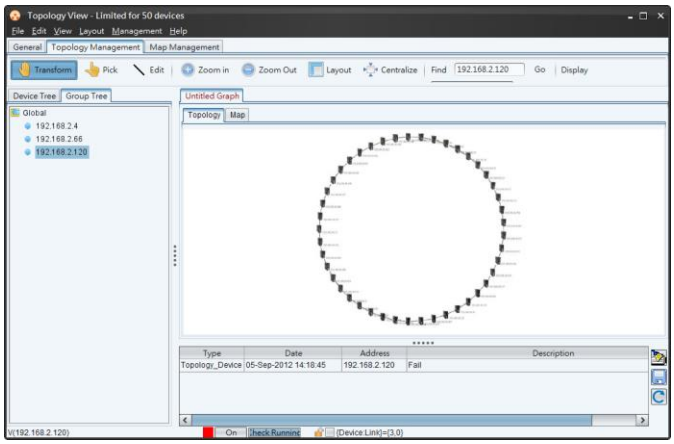
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



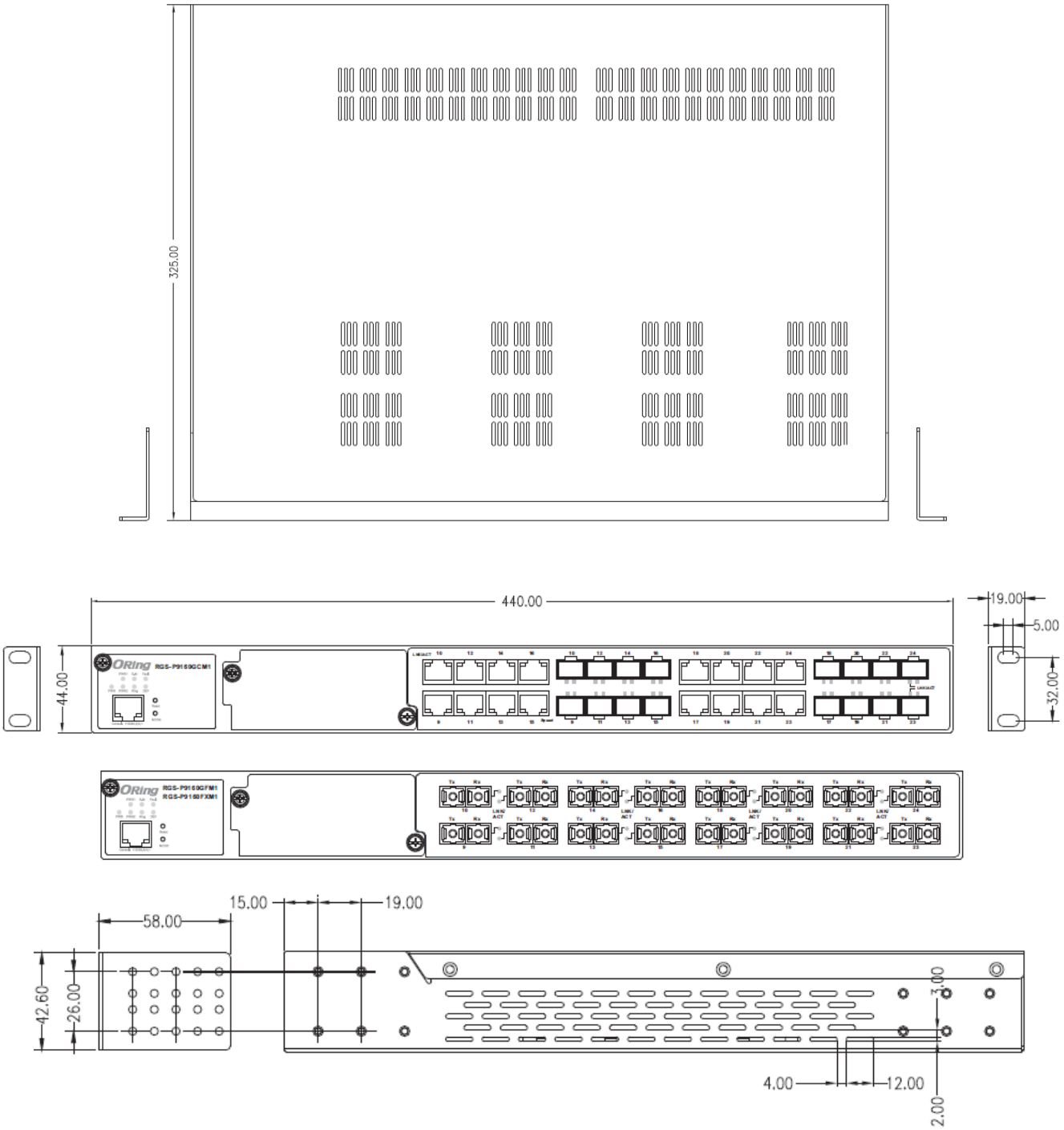
Host Monitor



Topology View

Dimension

Unit=mm



Specifications

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

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

*Note: This function is available by request only

Ordering Information

RGS-9AABCCD 1-EE

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

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

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

- **RGS-P9160M1 series x 1**
- **ORing Tool CD x 1**
- **Quick Installation Guide x 1**
- **Rack-mount Kit x 1**
- **Power Cable x 1**
- **Console Cable x 1**

Optional Accessories

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

Optional Module

SWM-80GT

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

SWM-08GP

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

SWM-04GF-MM/SS-SC

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

SWM-04FX-MM/SS-SC

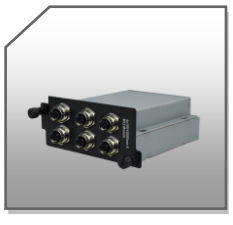
Industrial 4-port fiber module with 4x100Base-FX SC Fiber ports

SWM-04GF-MM/SS-ST

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

SWM-04FX-MM/SS-ST

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



SWM-60GT-M12

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

SWM-40GT-M12

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

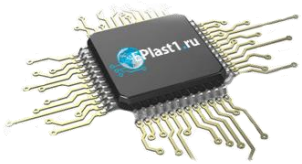
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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