ORing Industrial Networking Corp.

Version 1.1

GIGABIT PoE SWITCH MANAGED Rack-Mount

Quick Installation Guide

RGS-PR9000 Series

Managed Gigabit PoE Ethernet Switch

Introduction

RGS-PR9000 is a Layer-3 modular managed Ethernet switch with 4 slots, providing you with great operational flexibility. The switch is designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613.

Package Contents

Contents	Pictures	RGS-PR9000-LV	RGS-PR9000-HV_US	RGS-PR9000-HV_EU
Console Cable		X 1	X 1	X 1
CD		X 1	X 1	X 1
QIG		X 1	X 1	X 1
Screw (M3 X4)		X 8	X 8	X 8
Rack-mounted kit (L&R)		X 1	X 1	X 1
Power cord		-	X 2 (US Type)	X 2 (EU Type)

Preparation

Before you begin installing the switch, make sure you have all of the package contents available and a PC with Microsoft Internet Explorer 6.0 or later, for using web-based system management tools.

Safety & Warnings

Elevated Operating Ambient: If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

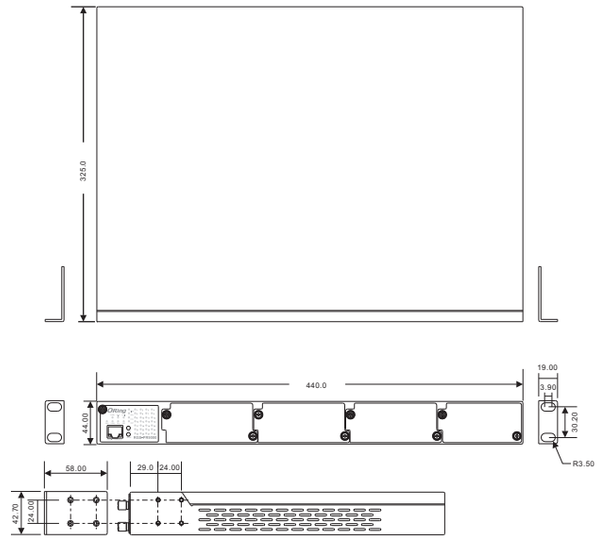
Reduced Air Flow: Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Mechanical Loading: Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

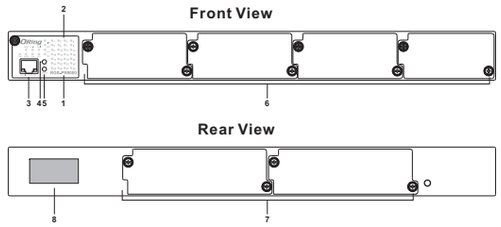
Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

External metal parts of this equipment are extremely hot!! Before touching the equipment, be sure to protect your hands and body from serious injury.

Dimension



Panel Layouts



1. Model name
2. Port status LEDs
3. Serial console port
4. Reset button
5. LED mode button
6. Faster Ethernet modules slots
7. Power input module slots
8. Terminal block

Interface modules

SWM-80-GT	SWM-08GP	SWM-02GP+	SWM-04GP+	SWM-04GF-MM /SS-SC
				
SWM-04FX-MM /SS-SC	**SWM-04GF-MM /SS-LC**	**SWM-04FX-MM /SS-LC**	**SWM-04GF-MM /SS-ST**	**SWM-04FX-MM /SS-ST**
				

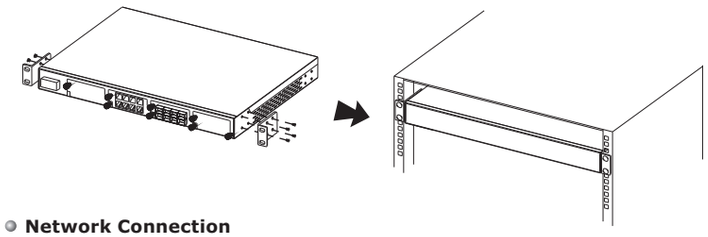
Installation

Rack-mounting

Step 1: Install left and right front mounting brackets to the switch using 4 M3 screws on each side provided with switch.

Step 2: With front brackets orientated in front of the rack, nest front and rear brackets together. Fasten together using remaining M4 screws into counter sunk holes.

Step 3: Fasten the front mounting bracket to the front of the rack.



Network Connection

With 100BASE-TX/10BASE-T cable, pins 1 and 2 are used for transmitting data, and pins 3 and 6 are used for receiving data.

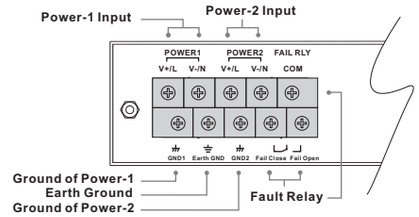
10/100 Base-T RJ-45 Pin Assignments	
Pin Number	Assignment
1	TD+
2	TD-
3	RD+
6	RD-

1000 Base-T RJ-45 Pin Assignments	
Pin Number	Assignment
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC+

Console cable
Use the provided DB-9 to RJ-45 cable (RS-232 cable) to connect the switch to a PC with the RJ-45 connector attached to the switch console port and the DB-9 female connector to the PC.

PC pin out (male) assignment	RS-232 with DB9 female connector	DB9 to RJ 45
Pin #2 RD	Pin #2 TD	Pin #2
Pin #3 TD	Pin #3 RD	Pin #3
Pin #5 GND	Pin #5 GND	Pin #5

Wiring



Power inputs
The RGS-PR9000 series support dual redundant power supplies, Power Supply 1 (PWR1) and Power Supply 2 (PWR2). The connections for PWR1, PWR2 and the RELAY are located on the terminal block.

STEP 1: Remove the transparent protective cover from the terminal block
STEP 2: Insert the negative/positive DC wires into the V-/V+ terminals, respectively.
STEP 3: To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.
STEP4: After wiring is completed, put the transparent cover back to the terminal block.

Relay contact
The switch provides fail open and fail close options for you to form relay circuits based on your needs. If you want the relay device to start operating at power failure, attach the two wires to COM and fail close to form a close circuit, vice versa. The relay contact of the 2-pin terminal block connector will respond to user-configured events according to the wiring.

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Grounding

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screws to the grounding surface prior to connecting devices.

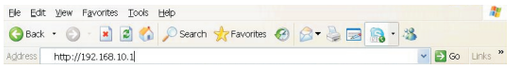
Configurations

After installing the RGS-PR9000 and connecting cables, start the switch by turning on power. The green power LED should turn on.

LED indication table

PWR	Green	System ready
	Blinking	Upgrading firmware
PWR1	Green	Power is being supplied to the main module's power input PWR1
PWR2	Green	Power is being supplied to the main module's power input PWR2
R.M.	Green	O-Ring Master mode activated
Ring	Green	O-Ring mode activated
	Green Blinking	Ring is broken
Fault	Amber	Unexpected event occurs
DEF	Green	System being reset to default configuration
RMT	Green	System is accessed remotely

1. Launch the Internet Explorer and type in IP address of the switch. The default static IP address is **192.168.10.1**



2. Log in with default user name and password (both are **admin**). After logging in, you should see the following screen. For more information on configurations, please refer to the user manual. For information on operating the switch using ORing's Open-Vision management utility, please go to ORing website.

Resetting

To reboot the switch, press the **Reset** button for 5 seconds.

To restore the switch configurations back to the factory defaults, press the **Reset** button for 5 seconds.

Specifications

ORing Switch Model	RGS-PR9000-LV	RGS-PR9000-HV
Physical Ports		
Slot Number	**4 (up to 3 slots for 8x1G ports and 1 slot for 4x10G port)**	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T, IEEE 802.3u for 100Base-TX and 100Base-FX, IEEE 802.3z for 1000Base-X, IEEE 802.3ab for 1000Base-T, IEEE 802.3ae for 10Gigabit Ethernet IEEE 802.3x for Flow control, IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8K	
Priority Queues	4	
Processing	Store-and-Forward	
Switch Properties	Switch latency: 9 us Switch bandwidth: 128Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define	
Jumbo frame	Up to 10K Bytes	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) Single 802.1x and Multiple 802.1x MAC-based authentication QoS assignment Guest VLAN MAC address limit TACACS+ VLAN (802.1Q) to segregate an secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization Authorization (15 levels) IP source guard	
Software Features	Hardware routing, RIP and static routing IEEE 1588v2 clock synchronization IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client DHCP Relay Modbus TCP DNS client proxy SMTP Client	
Network Redundancy	O-Ring, Open-Ring, O-Chain, MRP, MSTP (RST/PSTP compatible)	
RS-232 Serial Console Port	RS-232 in RJ45 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 x2	
Ring Master Indicator (R.M.)	Green : Flashing to indicate system operated 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 Setting Indicator (DEF)	Green : System resets to default configuration	
Supervisor Login Indicator (RMT)	Green : System is accessed remotely	
Smart LED Display system	Link/Act(LK/ACT) / Speed(SPD) / Duplex(FDX) / Remote (RMT) green LED indicator x 4 Mode select Button (MODE) : Link/Act (LNK/ACT) / Speed (SP) / duplex(FDX) / Remote (RMT) mode select button Port 1 ~ 28 Link/Act(LK/ACT) LED show : Green x 28	
Fault contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Overload current protection	Dual 24/48VDC (20~72VDC) power inputs at terminal block	Dual 88~264VAC/ 100~370VDC power inputs at terminal block
Power consumption(Typ.)	46Watts max.	43.5Watts max.
Overload current protection	Present	

Physical Characteristic		
Enclosure	19 inches rack mountable	
Dimension (W x D x H)	6450g	6600g
Weight (g)	440 (W) x 325 (D) x 44 (H) mm (17.32 x 12.8 x 1.73 inches)	
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	10G SFP + module absent: -40 to 70°C (-40 to 158°F) 10G SFP + module used: -20 to 60°C (-4 to 140°F)	
Operating Humidity	5% to 95% Non-condensing	
Regulatory Approvals		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)	
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge),EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Vibration	IEC60068-2-6	
Safety	EN60950-1	
Warranty	5 years	

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