SWITCH MANAGED Rack-Mount

ORing

Quick Installation Guide

RES-9242GC

Rack Mount Managed Ethernet Switch

Introduction

The **RES-9242GC** is a rackmount managed Ethernet switch designed for industrial applications, such as rolling stock, vehicle, and railway applications. Featuring twenty-four 10/100Base-T(X) ports and two Gigabit combo ports, the device is able to meet the needs for high port density and high-speed, long-distance transmission. With complete support for Ethernet redundancy protocols such as O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible), the series can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Featuring a wide operating temperature from -40°C to 75°C, the device can be managed centrally and conveniently via Open-Vision, web browsers, Telnet and console (CLI) configuration, making it one of the most reliable choice for highly-managed and Fiber Ethernet power substation and rolling stock application.

Package Contents

The device is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

Contents	Pictures	Number
RES-9242GC		X 1
Console Cable		X 1
CD		X 1
QIG		X 1
Rack-mounted kit (L&R)		X 1
Power Cable		X 2

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

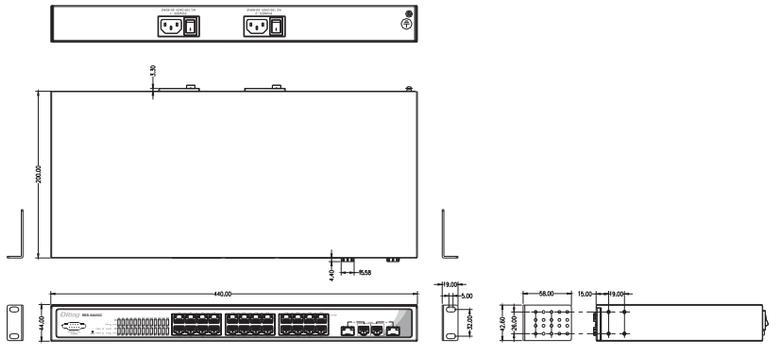
Elevated Operating Ambient: If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature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

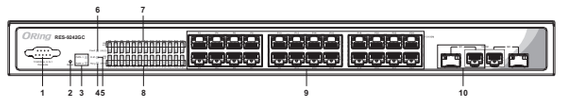
Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this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

Dimension



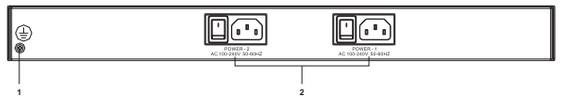
Panel Layouts

Front View



1. Console port
2. Reset button
3. Power indicator
4. Ring status LED
5. R.M status LED
6. Fault LED
7. Link/ACT LED for Ethernet ports and Combo ports
8. Speed LED for Ethernet ports and Combo ports
9. LAN ports
10. Combo ports

Rear View



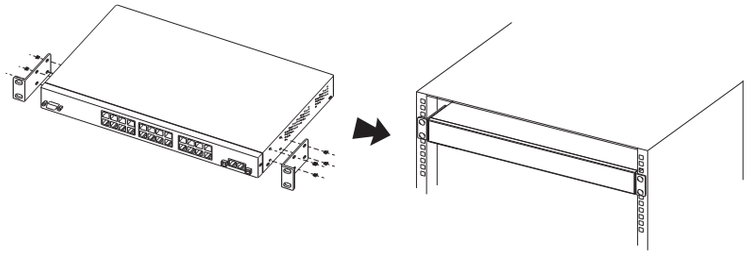
1. Ground screw
2. AC power input (100V~240V / 50~60Hz)

Installation

Rack-mounting

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

Step 2: With front brackets orientated in front of the rack, fasten the brackets to the rack using two more screws.



Network Connection

The device comes with standard Ethernet ports. According to the link type, the switch uses CAT 3, 4, 5,5e UTP cables to connect to any other network devices (PCs, servers, switches, routers, or hubs). Please refer to the following table for cable specifications.

Cable Types and Specifications:

Cable	Type	Max. Length	Connector
10BASE-T	Cat. 3, 4, 5 100-ohm	UTP 100 m (328 ft)	RJ-45
100BASE-TX	Cat. 5 100-ohm UTP	UTP 100 m (328 ft)	RJ-45
1000BASE-T	Cat. 5/Cat. 5e 100-ohm UTP	UTP 100 m (328ft)	RJ-45

For pin assignment, please refer to the following tables.

10/100Base-T(X) RJ-45 Port Pin Assignments	
Pin No.	Assignment
1	TD+
2	TD-
3	RD+
6	RD-

10/100Base-T(X) MDI/MDI-X Pin Assignments		
Pin No.	MDI port	MDI-X port
1	TD+(transmit)	RD+(receive)
2	TD-(transmit)	RD-(receive)
3	RD+(receive)	TD+(transmit)
4	Not used	Not used
5	Not used	Not used
6	RD-(receive)	TD-(transmit)
7	Not used	Not used
8	Not used	Not used

1000Base-T MDI/MDI-X Pin Assignments		
Pin No.	MDI port	MDI-X port
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

Wiring

AC Power Connection

The device can be powered by AC electricity. Simply insert the AC power cable to the power connector at the back of the switch and turn on the power switch. The input voltage is 100V~240V / 50~60Hz.

Grounding

The device provides grounding and wire routing to 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.

RS-232 Console Port Wiring

The device can be managed via the console port using a RS-232 cable which can be found in the package. Connect each end of the RS-232 cable to the switch and a PC respectively.

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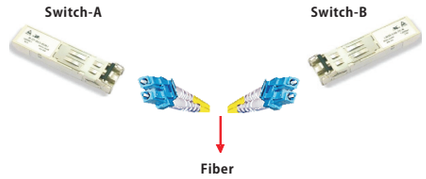
PC pin out (male) assignment	RS-232 with DB9 female connector	DB9 to RJ 45
Pin #2 RD	Pin #2 TD	Pin #2
Pin #3 TD	Pin #3 RD	Pin #3
Pin #5 GD	Pin #5 GD	Pin #5

SFP

The switch comes with two combo ports which include a SFP port that can connect to other devices using SFP modules. The SFP modules are hot-swappable input/output devices that can be plugged into the SFP ports to connect the switch with the fiber-optic network. Remember that the TX port of Switch A should be connected to the RX port of Switch B.

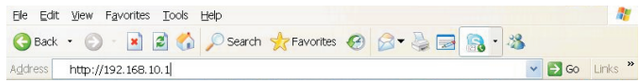


Configurations

After installing the switch and connecting cables, the green power LED should turn on.

LED	Color	Status	Description
PWR	Green	On	System power is on
R.M	Green	On	Port is operated as Ring Master.
Ring	Green	On	Port is operated in Ring mode
Fault	Amber	On	Errors occur (power failure or port malfunctioning)
10/100Base-T(X) RJ45 port			
Link/ACT	Green	On	Port is connected
Speed	Amber	On	Port is running at 100Mbps
		Off	Port is running at 10Mbps
10/100/1000Base-T(X) RJ45 port with Combo port			
Link/ACT	Green	On	Port is connected
Speed	Amber	On	Port is running at 1000Mbps
		Off	Port is running at 10/100Mbps
100/1GBase-X SFP port with Combo port			
Link/ACT	Green	On	Port is connected

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 2-3 seconds.
To restore the switch configurations back to the factory defaults, press the Reset button for 5 seconds.

Specifications

ORing Switch Model	**RES-9242GC**
Physical Ports	
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	**24**
10/100/1000Base-T(X) RJ45 and 100/1000Base-X SFP with combo port	**2**
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 802.3z 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
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 8.8Gbps 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
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 MAC address limit TACACS+ VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security Https / SSH enhance network security Web and CLI authentication and authorization
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 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Client/Server DHCP Relay Modbus TCP SMTP Client NTP server
Network Redundancy	O-Ring Open-Ring O-Chain MRP MSTP (RSTP/STP compatible) Fast Recovery
RS-232 Serial Console Port	RS-232 in DB-9 connector with console cable. 115200bps, 8, N, 1
Power	
Input power	Dual 100~240VAC power inputs
Power consumption (Max)	15.2W
Overload current protection	Present
Physical Characteristic	
Enclosure	19 inches rack mountable
Dimension (W x D x H)	440 x 200 x 44 mm (17.32 x 7.87 x 1.73 inch)
Weight (g)	2695 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	
EMI	FCC Part 15, CISPR (EN55022) class A
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 (compliant, certification, pending)
Warranty	5 years

ORing

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