RES-P9242GCL Series

Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket

Features

- Designed for Power substation application and fully compliant with the IEC 61850-3 and IEEE 1613
- Support **O-Ring** (recovery time < 30ms) 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
- Support IEEE 802.3az **Energy-Efficient Ethernet** technology
- Provided HTTPS/SSH protocol to enhance network security
- Support SMTP client and NTP server protocol
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL and 802.1x User Authentication for security
- SFP socket support DDM function
- Multiple notification for warning of unexpected event
- Support **backup unit device DBU-01** for quickly backup/restore configuration
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- LED in front and Line in back design
- 19 inches rack mountable design

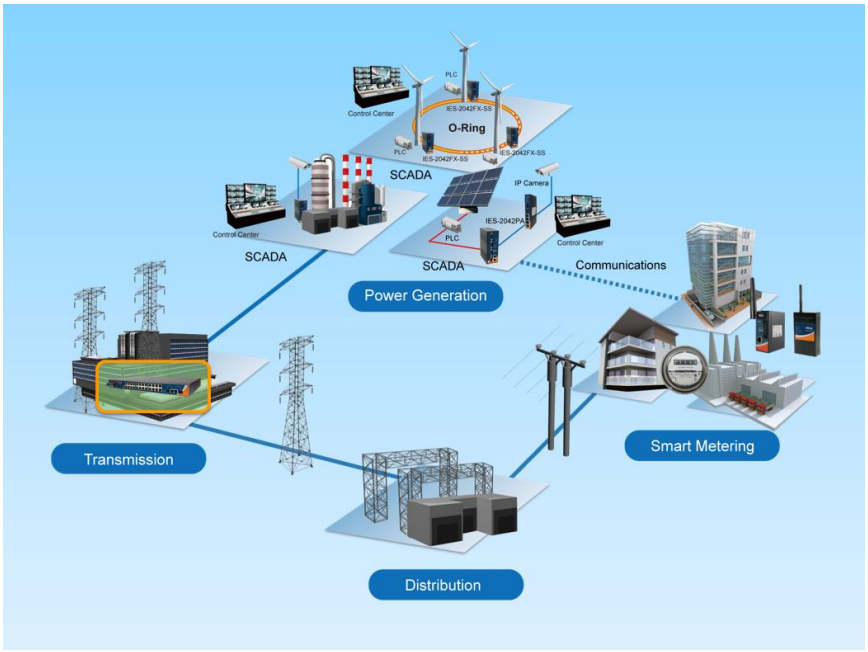
***NOTE: This function is available by request only**

Introduction

RES-P9242GCL series are 26-port rack mount managed redundant ring Ethernet switch with 24x10/100Base-T(X) and 2xGigabit Combo ports, SFP socket. These switches are designed for power substation application, and it is fully compliant with the requirement of IEC 61850-3 and IEEE 1613. These switches 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. RES-P9242GCL 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 application.

- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 10 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.
- **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.
- **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.

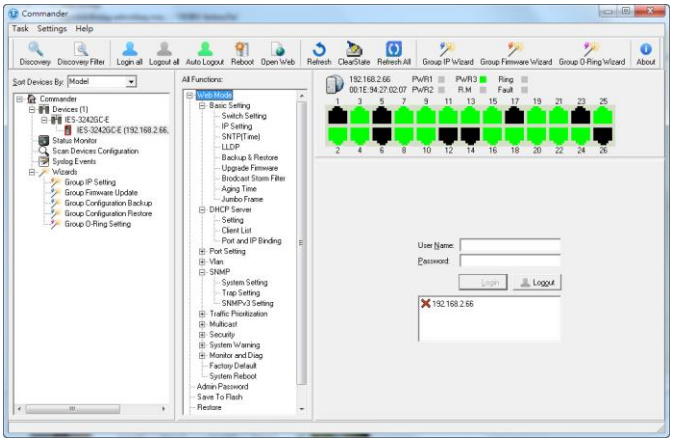
***NOTE: This function is available by request only**



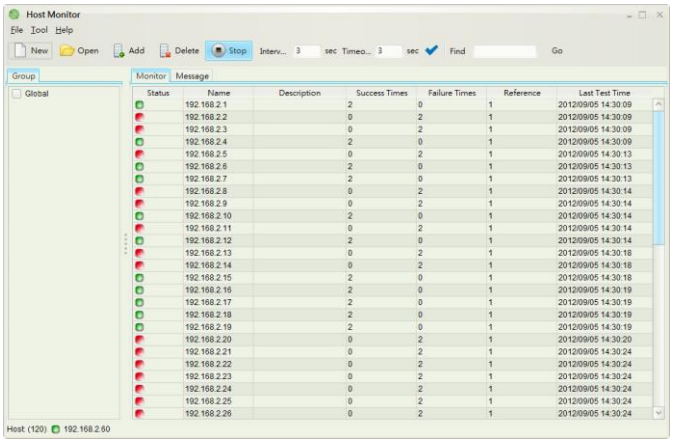
Network connection

Open-Vision

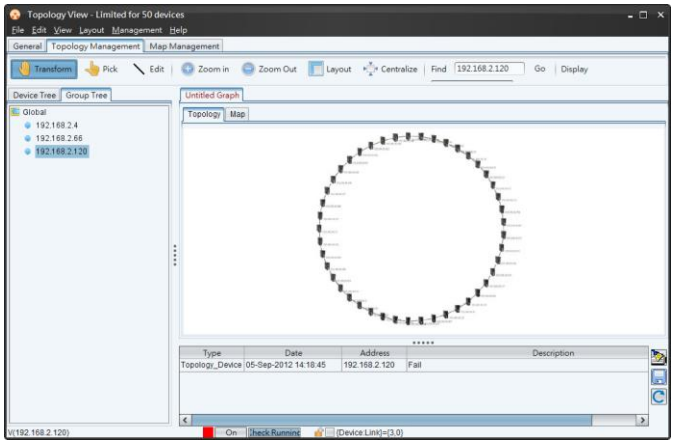
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



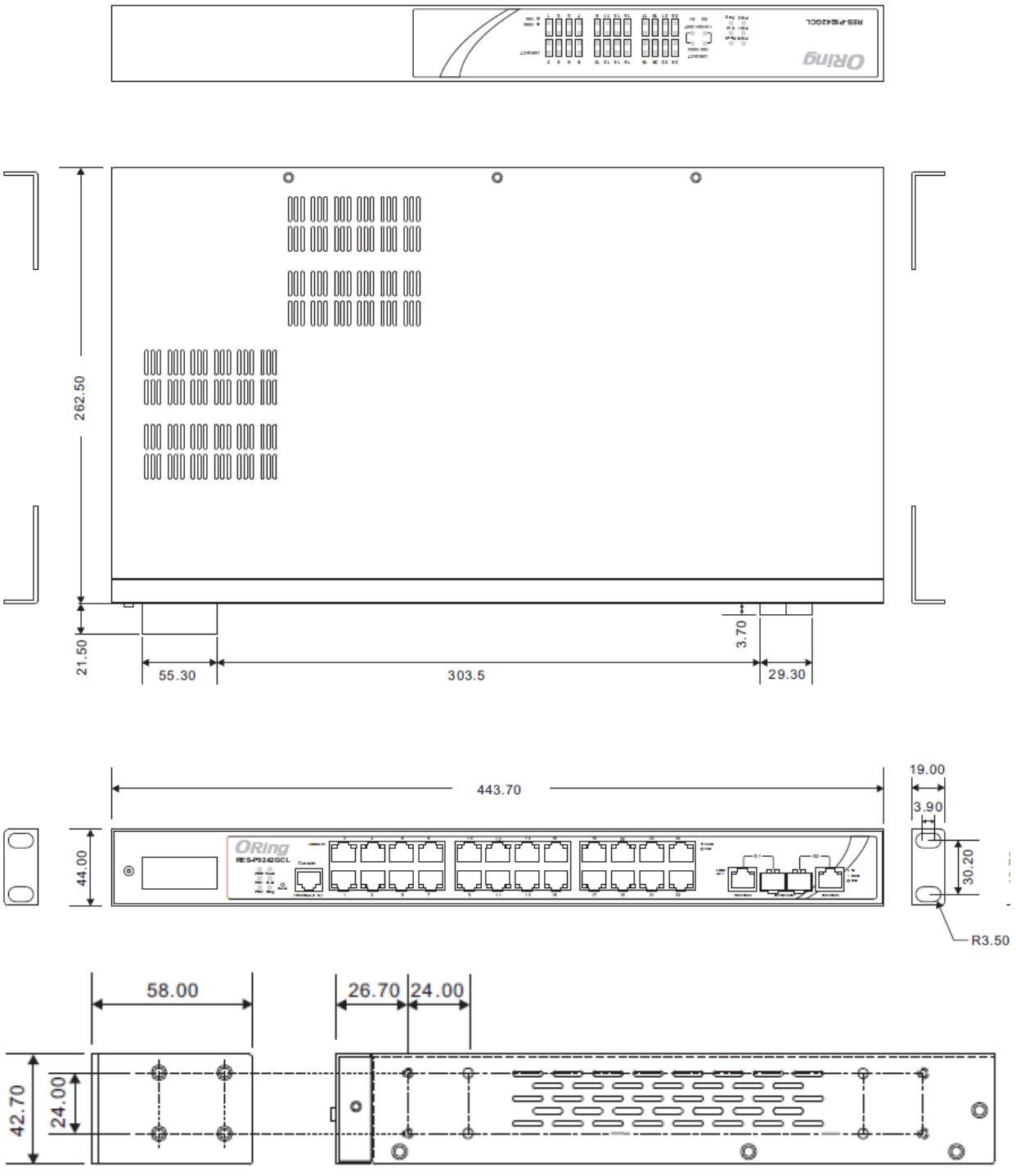
Host Monitor



Topology View

Dimension

Unit = mm



Specifications

ORing Switch Model	RES-P9242GCL-LV	RES-P9242GCL-HV
Physical Ports		
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	**24**	
Gigabit combo port with 10/100/1000Base-T(X) and 1000Base-X SFP	**2**	
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX 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 802.1D for STP (Spanning Tree 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) MAC-based authentication (802.1x) Guest VLAN 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 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) MSTP (RSTP/STP compatible) 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 SMTP Client NTP server	
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		
Power Indicator	Green : Power LED x 3	
Ring Master Indicator	Green : Indicates that the system is operating in O-Ring Master mode	
O-Ring Indicator	Green : Indicates that the system operating in O-Ring mode Green Blinking: Indicates that the Ring is broken.	
Fault Indicator	Amber : Indicate unexpected event occurred	
10/100Base-T(X) RJ45 port indicator	Green at left for port Link/Act. Amber at right for speed indicator (On for 100Mbps, Off for 10Mbps indicator)	
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 port Link/Act.	
Fault contact		
Relay	Relay output to carry capacity of 1A at 24VDC	
Power		
Power Input	Dual 24/48VDC (24~72VDC) power inputs at terminal block	Dual 125~370VDC / 100~240VAC power inputs
Power consumption (Typ.)	19W	19.8W
Overload current protection	Present	
Reverse Polarity Protection	Present	
Physical Characteristic		
Enclosure	19 inches rack mountable	
Dimension (W x D x H)	443.7(W) x 262.7(D) x 44(H) mm (17.46x10.34x1.73 inch)	
Weight (g)	3,535g	4,050g
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/ IEEE1613	
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B 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/ IEEE1613	
MTBF	297,924 hrs	262,968 hrs
Warranty	5 years	

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

Ordering Information

RES-P9AABCCL-DD

Code Definition	10/100Base-T(X) Port Number	Additional Port Number	Additional Port Type	Model Type
Option	**- 24:** 24 ports	**- 2:** 2 ports	**- GC:** gigabit combo port	**-LV :** Dual 24/48VDC (24~72VDC) power inputs **-HV :** Dual 100~370VDC/ 100~240VAC power inputs

	Model Name	Description
Available Model	**RES-P9242GCL-LV**	Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket, low-voltage power inputs
	RES-P9242GCL-HV_US	Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket, high-voltage power inputs, US power cord
	RES-P9242GCL-HV_UK	Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket, high-voltage power inputs, UK power cord
	RES-P9242GCL-HV_EU	Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket, high-voltage power inputs, EU power cord
	RES-P9242GCL-HV_JP	Industrial IEC 61850-3 26-port rack mount managed Ethernet switch with 24x10/100Base-T(X) and 2xGigabit combo ports, SFP socket, high-voltage power inputs, JP power cord

Packing List

- **RES-P9242GCL-LV/HV x 1**
- **ORing Tool CD x 1**
- **Quick Installation Guide x 1**
- **Rack-mount Kit x 1**
- **Power Cable (for HV model only) x 2**
- **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**
- **DBU-01: Data backup unit device**
- **DR/SDR/DRP Series DIN-Rail power supply for LV model**