TRGPS-9084GT-M12X-BP2-MV

EN50155 Industrial 12-port rack mount managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), X-coding M12 Connector and 2xbypass included, 110VDC power input

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Supports **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) for Ethernet **O-Chain** allow multiple redundant network rings
- Supports IEEE 802.3af/at compliant PoE
- Support PoE scheduled configuration and PoE auto-ping check function
- Support IEEE 1588v2 clock synchronization
- VLAN unaware: Supports priority-tagged frames to be received by specific IEDs
- Provided HTTPS/SSH protocol to enhance network security
- Supports IEEE 802.3az Energy-Efficient Ethernet technology
- Supports SMTP client and NTP 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 port mirror function to monitor port data
- Support ACL and 802.1x User Authentication for security
- Supports 9.6K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- 19 inches rack mountable design





Introduction

ORing's Transporter™ series managed PoE Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TRGPS-9084GT-M12X-BP2-MV is managed Redundant Ring Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. The switch support Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection), O-Chain, MRP*NOTE and MSTP/RSTP/STP (IEEE 802.1s/w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. TRGPS-9084GT-M12X-BP2-MV also support Power over Ethernet, a system to transmit electrical power up to **30 watts**, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each TRGPS-9084GT-M12X-BP2-MV switch has 8x10/100/1000Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE connection. TRGPS-9084GT-M12X-BP2-MV includes 2 sets of bypass ports that protect the

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

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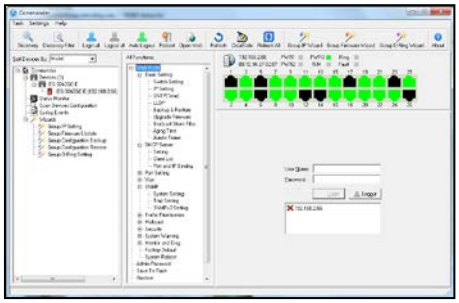
network from failures and Network maintenance by ensuring network integrity during power loss. And support wide operating temperature from -40℃ to 75℃. TRGPS-9084GT-M12X-BP2-MV can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choices for EN50155 highly-managed Ethernet application.

- **O-Ring:** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds. 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 supports 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.

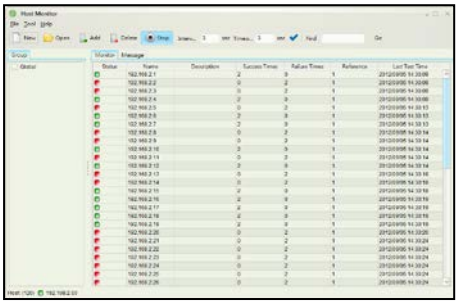
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Open-Vision

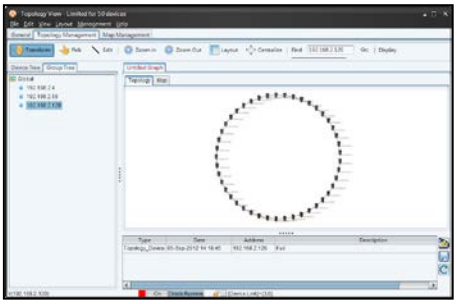
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



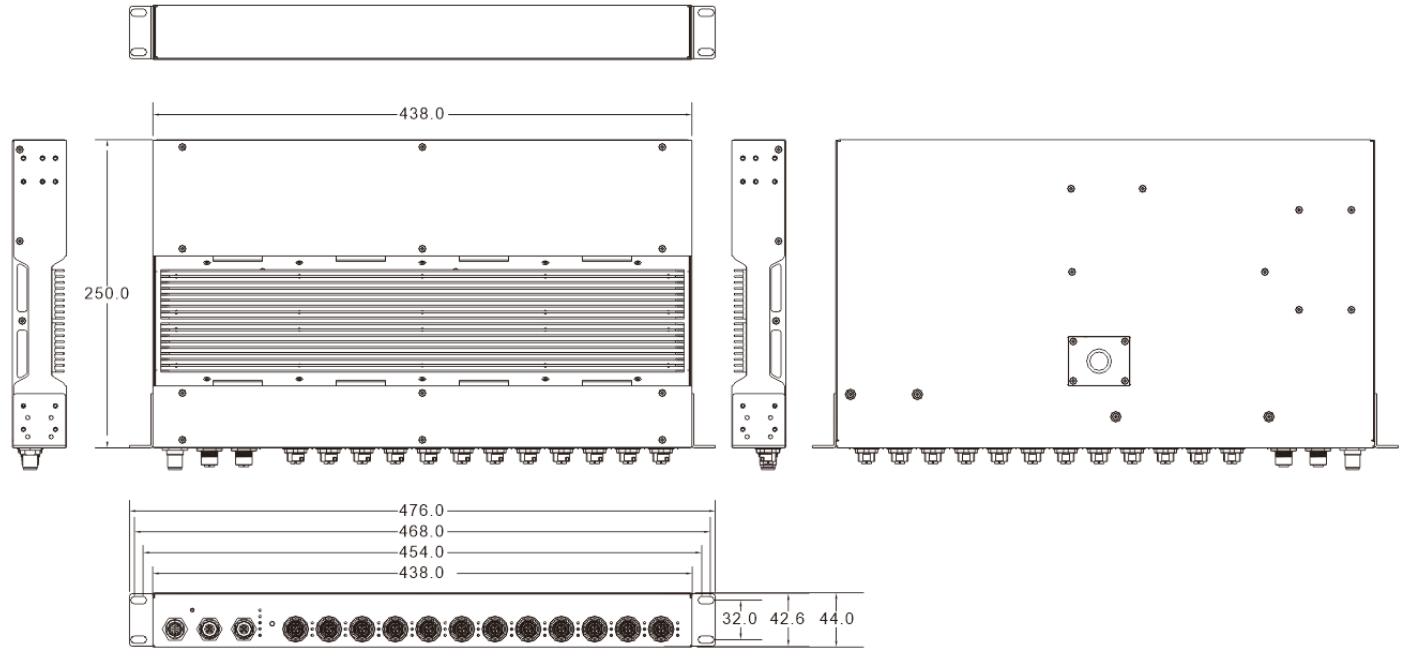
Host Monitor



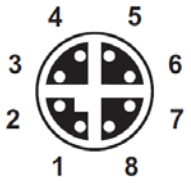
Topology View

Dimension

Unit =mm (Tolerance ±0.5mm)



Pin Definition



X-Coding M12

10/100/1000Base-T(X) M12 port		**10/100/1000Base-T(X) P.S.E. M12 port**	
Pin No.	Description	Pin No.	Description
#1	BI_DA+	#1	BI_DA+ with PoE Vout+
#2	BI_DA-	#2	BI_DA- with PoE Vout+
#3	BI_DB+	#3	BI_DB+ with PoE Vout-
#4	BI_DB-	#4	BI_DB- with PoE Vout-
#5	BI_DD+	#5	BI_DD+
#6	BI_DD-	#6	BI_DD-
#7	BI_DC-	#7	BI_DC-
#8	BI_DC+	#8	BI_DC+

Specifications

ORing Switch Model	TRGPS-9084GT-M12X-BP2-MV
Physical Ports	
10/100/1000Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	**8 (8-pin female X-coding)**
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX	**4 (8-pin female X-coding)**

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Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T 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) IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.) IEEE 802.3af PoE specification (up to 15.4 Watts per port for P.S.E.)
MAC Table	8k
Jumbo frame	Up to 9.6K Bytes
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 24 Gbps Max. Number of Available VLANs: 4095 VLAN ID range: VID 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 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) 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 Guest VLAN IGMP v2/v3 Snooping Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	O-Ring O-Chain MRP*NOTE MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in 5-pin M12 female A-coding connector with optional console cable which can be purchased separately. 115200bps, 8, N, 1
LED Indicators	
Power Indicator (PWR)	Green: Power LED x 1
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) M12 P.S.E. Port Indicator	Top dual color LED for Ethernet speed indicator: Green LED for 1000Mbps, Amber for 100Mbps, Off for 10Mbps Middle Green LED for PoE enable indicator Bottom Green LED for port Link/Act indicator
10/100/1000Base-T(X) M12 Port Indicator	Top dual color LED for Ethernet speed indicator: Green LED for 1000Mbps, Amber for 100Mbps, Off for 10Mbps Bottom Green LED for Link/Act indicator
Fault Contact	

Relay	Relay output to carry capacity of 3A at 30VDC on 5-pin M12 female A-coding connector
Power	
power input	72/110 (50.4-137.5) VDC on 4-pin M12 male S-coding connector
PoE Output Power	60Watts
Power consumption (Typ.)	20Watts (not include PoE output)
Overload current protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Weight (g)	3,185 g
Dimension (W x D x H)	438 (W) x 250 (D) x 44 (H) mm (17.24x9.84x1.73 inch)
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	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B, EN 50155 (EN 50121-1, EN 50121-3-2)
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	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Other	EN 50155 (IEC 61373)
MTBF	298,128 hours
Warranty	5 years

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Ordering Information

TRGPS-9AABCC-M12X-BP2-MV

Code Definition	10/100/1000Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 08:** 8 ports	**- 4:** 4 ports	**-GT:** 10/100/1000Base-T(X) ports

	Model Name	Description
Available Model	**TRGPS-9084GT-M12X-BP2-MV**	EN50155 Industrial 12-port rack mount managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 4x10/100/1000Base-T(X), X-coding M12 Connector and 2xbypass included, 110VDC power input

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Packing List

- **TRGPS-9084GT-M12X-BP2-MV x 1**
- **ORing Tool CD x 1**
- **Quick Installation Guide x 1**
- **Rack-mount Kit x 1**

Optional Accessories

- **Open-Vision M500: Powerful Network Management Windows Utility Suit, 500 IP devices**
- **DBU-01: backup unit device**
- **M12 console cable**
- **M12C: M12 cable accessories**

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