TRGPS-9084TG-M12X-BP2-MV

EN50155 12-port managed 10G PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x1G/2.5G/5G/10GBase-T, X-coded M12 connector and 2xbypass included, 110VDC power input

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Support **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- **O-Chain** allow multiple redundant network rings
- Supports IEEE 802.3af/at compliant PoE and total power budget is 60Watts with maximum 15.4/30Watts per port
- Support PoE scheduled configuration and PoE auto-ping check function
- 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
- Support IP-based bandwidth management
- 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
- Supports 10.2K Bytes Jumbo Frame
- Multiple notification for warning of unexpected event
- Web-based ,Telnet, Console (CLI), and Windows utility (**Open-Vision**) configuration
- Support LLDP Protocol
- 19” Rack-mounting installation

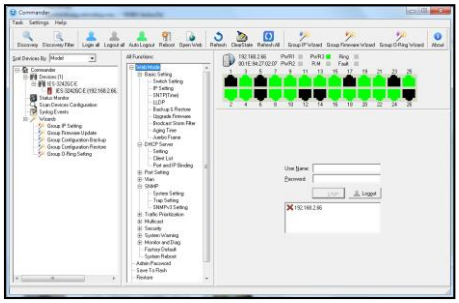
Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications such as rolling stock, vehicle, and railway. The TRGPS-9084TG-M12X-BP2-MV, which is compliant with the EN50155 standard, is a managed 10G Redundant Ring Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x1G/2.5G/5G/10GBase-T 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 and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. It is specifically designed for the toughest industrial environments. TRGPS-9084TG-M12X-BP2-MV EN50155 Ethernet switch uses M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock.
TRGPS-9084TG-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-9084TG-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. And support wide operating temperature from -40 oC to 75 oC. TRGPS-9084TG-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 choice for highly-managed and Ethernet application.

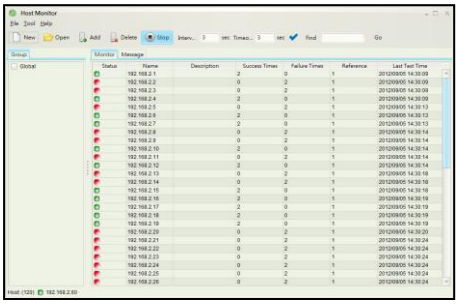
- **O-Ring:** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **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.
- **IP-based Bandwidth Management:** The switch provides advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **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.
- **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.

Open-Vision

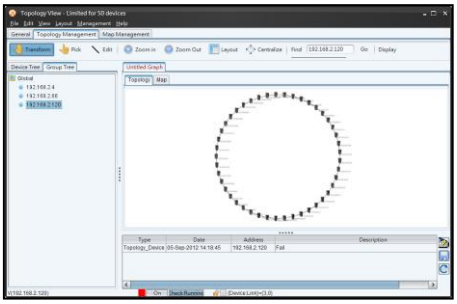
ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander



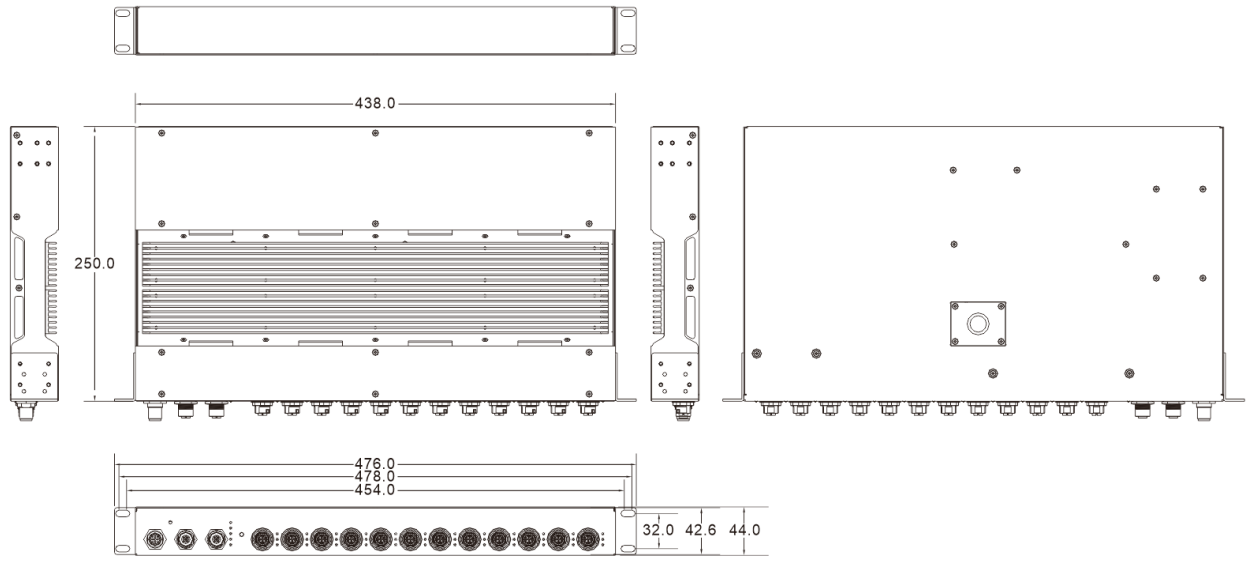
Host Monitor



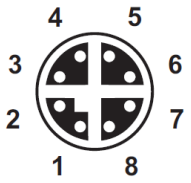
Topology View

Dimension

Unit =mm (Tolerance ±0.5mm)



Pin Definition



X-Coding M12

10/100/1000Base-T(X) P.S.E. M12 port		1G/2.5G/5G/10GBase-T M12 port	
Pin No.	Description	Pin No.	Description
#1	BI_DA+ with PoE Vout+	#1	BI_DA+
#2	BI_DA- with PoE Vout+	#2	BI_DA-
#3	BI_DB+ with PoE Vout-	#3	BI_DB+
#4	BI_DB- with PoE Vout-	#4	BI_DB-
#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-9084TG-M12X-BP2-MV**
Physical Ports	
10/100/1000Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX	**8 (8-pin X-coding, female connector)**
1G/2.5G/5G/10GBase-T Ports in M12 Auto MDI/MDIX	**4 (8-pin X-coding, female connector)**
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3bz for 2.5G/5GBase-T IEEE 802.3an for 10GBase-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	32k
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 96Gbps Max. Number of Available VLANs: 4095 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define
Jumbo frame	Up to 10.2K Bytes
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (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

Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) 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 and GVRP supported IGMP Snooping IP-based bandwidth management 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 MSTP (RSTP/STP compatible)
RS-232 Serial Console Port	RS-232 in M12 A-coding, female connector with console cable. 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 1Gbps, Amber for 100Mbps, Off for 10Mbps Middle Green LED for PoE enable indicator Bottom Green LED for port Link/Act indicator
1G/2.5G/5G/10GBase-T M12 Port Indicator	Top dual color LED for Ethernet speed indicator: Green LED for 10Gbps, Amber for 1Gbps Middle dual color LED for Ethernet speed indicator: Green LED for 5Gbps, Amber for 2.5Gbps Bottom Green LED for port Link/Act indicator
Fault contact	
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (A-coding, female connector)
Power	
Redundant Input power	110 (50.4-154) VDC on 4-pin M12 S-coding, male connector
Power consumption (Typ.)	41 Watts (power consumption of P.S.E. is not included)
PoE Total Power Budget	60W
Overload current protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	438 (W) x 250 (D) x 44 (H) mm (17.2 x 9.8 x 1.7 inch)
Weight (g)	3919g
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 15 B, EN 50155(EN 50121-1, EN 50121-3-2)
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	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
Fire protection	EN 45545-2

Other	EN 50155 (IEC 61373)
MTBF	150,865 hours
Warranty	5 years

NOTE. The 10Gbps speed connection distance is recommended to be Max. 50m. (Cat6A)

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	**-TG:** 10GBase-T ports

	Model Name	Description
Available Model	**TRGPS-9084TG-M12X-BP2-MV**	EN50155 12-port managed 10G PoE Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. ports and 4x1G/2.5G/5G/10GBase-T, X-coded M12 connector and 2xbypass included, 110VDC power input

Packing List

- **TRGPS-9084TG-M12X-BP2-MV x 1**
- **ORing Tool CD x 1**
- **Quick Installation Guide x 1**

Optional Accessories

- **Open-Vision M500: Powerful Network Management Windows Utility Suit, 500 IP devices**
- **M12C: M12 cable accessories**
- **M12 Console cable**