

Quick Installation Guide

TPS-3162GT-M12X-BP1-MV




EN50155 18-port managed PoE Ethernet switch

Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The **TPS-3162GT-M12X-BP1-MV** is a managed PoE Redundant Ring Ethernet switch with 16x10/100Base-T(X) P.S.E. and 2x10/100/1000Base-T(X) ports which is specifically designed for the toughest and fully compliant with EN50155 requirement. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), O-Chain 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. **TPS-3162GT-M12X-BP1-MV** also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each **TPS-3162GT-M12X-BP1-MV** switch has 16X10/100Base-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 setup. **TPS-3162GT-M12X-BP1-MV** EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. **TPS-3162GT-M12X-BP1-MV** can be managed centralized and convenient by a powerful windows utility ~ Open-Vision. In addition, the wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed PoE Ethernet 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
TPS-3162GT-M12X-BP1-MV		1
CD		1
QIG		1

Preparation

Before you begin installing the device, 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.

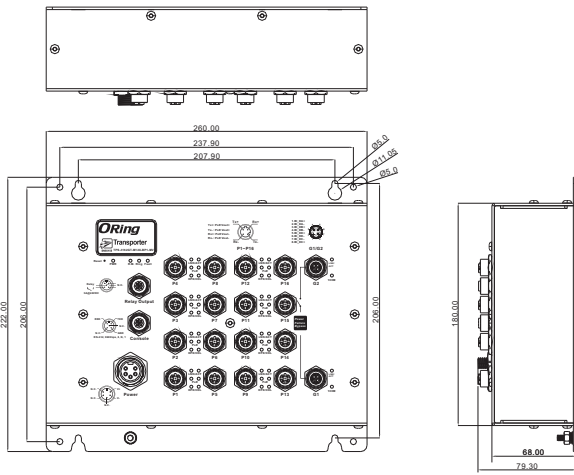
Safety & Warnings

- Elevated Operating Ambient:** If installed in a closed environment, make sure the operating ambient temperature is compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
- Reduced Air Flow:** Make sure the amount of air flow required for safe operation of the equipment is not compromised during installation.
- Mechanical Loading:** Make sure the mounting of the equipment is not in a hazardous condition due to uneven mechanical loading.

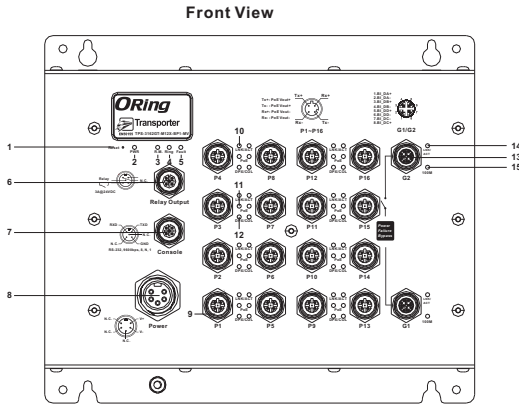


Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this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

- Dimension** Unit =mm (Tolerance ±0.5mm)



- Panel Layouts**

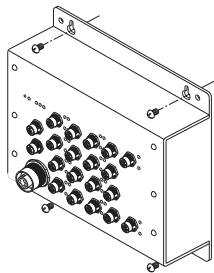


1. Reset button
2. Power status LED
3. R.M. status LED
4. Ring status LED
5. Fault LED
6. Relay output port
7. Console port
8. Power connector
9. PoE Fast Ethernet ports
10. LNK/ACT indicator for PoE Fast Ethernet port
11. PoE status LED for PoE Fast Ethernet ports
12. Duplex/collision indicator for PoE Fast Ethernet port
13. Gigabit Ethernet ports with bypass
14. LNK/ACT indicator for Gigabit Ethernet port
15. Speed indicator for Gigabit Ethernet port

Installation

- Wall-mount**

The device can be fixed to the wall. Follow the steps below to install the device on the wall.
Step 1: Hold the device upright against the wall
Step 2: Insert four screws through the large opening of the keyhole-shaped apertures at the top and bottom of the unit and fasten the screw to the wall with a screwdriver.
Step 3: Slide the device downwards and tighten the four screws for added stability.



Instead of screwing the screws in all the way, it is advised to leave a space of about 2mm to allow room for sliding the switch between the wall and the screws.

- Wiring**

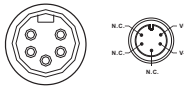
For pin assignments of power, console and relay output ports, please refer to the following tables.

Grounding

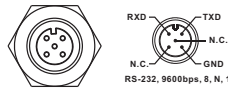
Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the grounding pin on the power connector to the grounding surface prior to connecting devices.

Power port pinouts

The device supports one set of power supplies and uses the 7/8 inch 5-pin male connector on the front panel for the power input.
Step 1: Insert a power cable to the power connector on the device.
Step 2: Rotate the outer ring of the cable connector until a snug fit is achieved. Make sure the connection is tight.



Console port pinouts



Relay output port pinouts

The switch uses the M12 A-coded 5-pin female connector on the front panel for relay output. Use a cable with an M12 A-coded 5-pin female connector to connect the relay. The relay contacts will detect user-configured events and form an open circuit when an event is triggered.



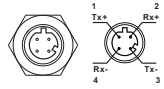
Network Connection

The switch has sixteen 10/100Base-T(X) and two 10/100/1000Base-T(X) Ethernet ports and 1 x bypass included the form of M12 connector. Depending on the link type, the switch uses CAT 3, 4, 5, 5e UTP cables to connect to network devices (PCs, servers, switches, routers, or hubs). Please refer to the following table for cable specifications.

Cable	Type	Max. Length	Connector
10BASE-T	Cat. 3, 4, 5 100-ohm	UTP 100 m (328 ft)	4-pin female M12 D-coding connector
100BASE-TX	Cat. 5 100-ohm UTP	UTP 100 m (328 ft)	4-pin female M12 D-coding connector
1000BASE-T	Cat. 5/Cat. 5e 100-ohm UTP	UTP 100 m (328 ft)	8-pin female M12 X-coding connector

For pin assignments of the LAN ports, please refer to the following tables.

4-Pin PoE Port Definition



10/100Base-T(X) P.S.E. M12 port	
Pin No.	Description
#1	Tx+ with PoE Vout+
#2	Rx+ with PoE Vout-
#3	Tx- with PoE Vout+
#4	Rx- with PoE Vout-

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8-Pin Gigabit Port Definition



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

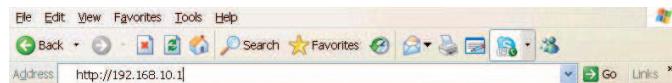
Configurations

After installing the switch and connecting cables, start the device by turning on power. The green power LED should turn on. Please refer to the following tablet for LED indication.

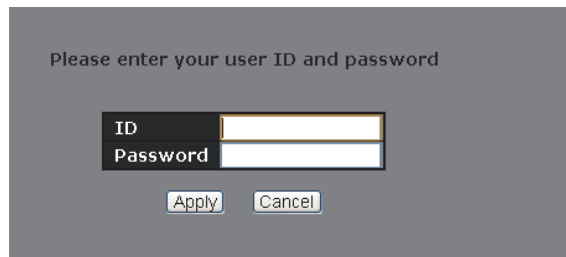
LED	Color	Status	Description
PWR	Green	On	DC power module activated
R.M	Green	On	System running in Ring Master mode
Ring	Green	On	System running in Ring mode
Fault	Amber	On	Errors occur (power failure or port link down)
10/100Base-T(X) Ports			
LNK/ACT	Green	On	Port is linked
		Blinking	Transmitting data
PoE	Green	On	Port providing power to PD
DPX/COL	Amber	On	Port running in full-duplex mode
		Blinking	Collision occurs
10/100/1000Base-T Ports			
LNK/ACT	Green	On	Port is linked
		Blinking	Transmitting data
100M	Green	On	Port speed at 100M

Follow the steps below to log in and access the system:

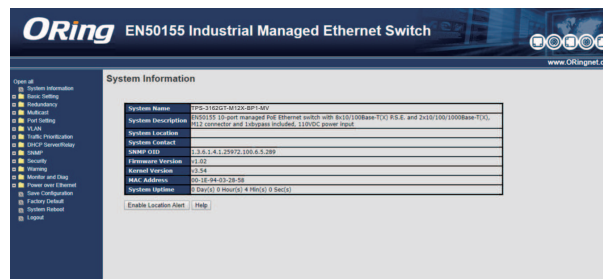
1. Launch the Internet Explorer and type in IP address of the device. The default static IP address is **192.168.10.1**



2. Log in with default user name and password (both are **admin**).



3. 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 device using ORing's Open-Vision management utility, please go to ORing website.



Resetting

To restore the device configurations back to the factory defaults, press the **Reset** button for 5 seconds. Once the power indicator starts to flash, release the button. The device will then reboot and return to factory defaults.

Specifications

ORing Switch Model	TPS-3162GT-M12X-BP1-MV
Physical Ports	
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX with P.S.E.	16 x M12 connector (4-pin D-coding, female)
10/100/1000Base-T(X) ports in M12	2 x M12 connectors (8-pin X-coding, female)
RS-232 Serial Console Port	R5-232 in M12 connector (5-pin A-coding). Baud rate setting: 9600bps, 8, N, 1
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 802.1D 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) IEEE 802.3af PoE specification (up to 15.4 Watts per port for P.S.E.)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us Switching bandwidth: 7.2 Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 1024 Port rate limiting: User Define
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Supports Q-in-Q VLAN for performance & security to expand the VLAN space Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) 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 Port configuration, status, statistics, monitoring, security NTP for synchronizing of clocks over network Support PTP Client (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support Modbus TCP
Network Redundancy	O-Ring O-Chain MRP *NOTE STP RSTP MSTP

Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support
Fault Contact	
Relay	Relay output to carry capacity of 3A at 24VDC on 5-pin A-coding M12 female connector
Power	
Redundant Input Power	72/110 (50.4-137.5) VDC. 7/8 inch 5-pin male connector
Power Consumption(Typ.)	28 watts (PoE power budget not included)
Total PoE budget	90 watts (Max. 90 watts)
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	260 (W) x 68 (D) x222 (H) mm (10.23 x 2.68 x 8.74 inch.)
Weight (g)	2850 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	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B, EN 50155
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
Other	EN 50155
MTBF	261222 hrs
Warranty	5 years

*Note: This function is available by request only.

ORing

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