

# Quick Installation Guide

## TGPS-9168GT-M12-BP2-24V




## EN50155 24-port managed Gigabit PoE Ethernet switch

### Introduction

ORing's Transporter™ series managed PoE Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. **TGPS-9168GT-M12-BP2-24V** is managed Redundant Ring Ethernet switch with 16x10/100/1000Base-T(X) P.S.E. and 8x10/100/1000Base-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 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. **TGPS-9168GT-M12-BP2-24V** 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 **TGPS-9168GT-M12-BP2-24V** switch has 16x10/100/1000Base-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. **TGPS-9168GT-M12-BP2-24V** 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.

### 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 |
|-------------------------|---|--------|
| TGPS-9168GT-M12-BP2-24V |  | 1      |
| CD                      |  | 1      |
| QIG                     |  | 1      |

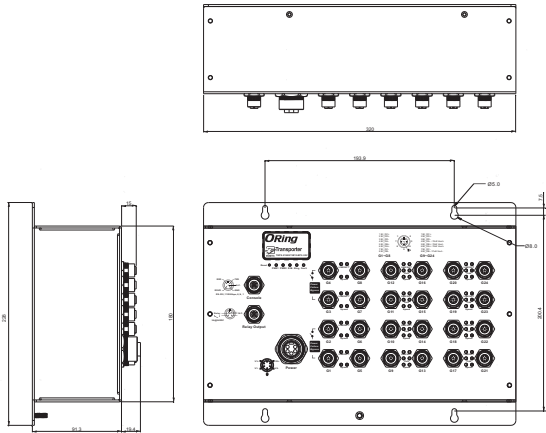
### Preparation

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.

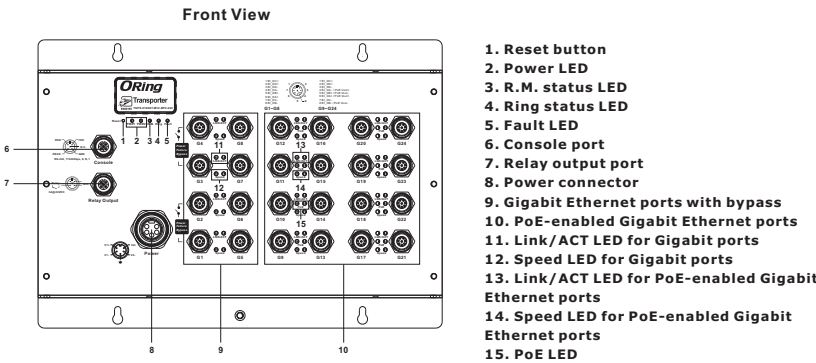
#### Safety & Warnings

-  **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)



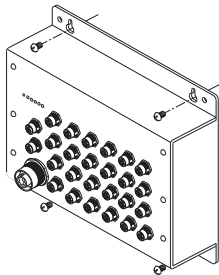
#### Panel Layouts




### 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 screws 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

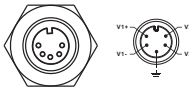
For pin assignments of power, console and relay output ports, please refer to the following tables.

#### 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.

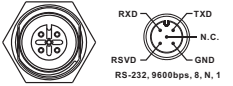
#### Power port pinouts

The device supports two sets of power supplies and uses the M23 5-pin female connector on the front panel for dual power inputs.  
**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

 The switch has one RS-232 (M12 5pin) console port, located on the front panel. Use a M12-to-DB9 console cable to connect the console port to your PC's COM port.



#### 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 male connector to connect the relay. The relay contacts will detect user-configured events and form an close circuit when an event is triggered.



#### Network Connection

The device provides Ethernet ports in M12 connector type. 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      | Type                       | Max. Length        | Connector              |
|------------|----------------------------|--------------------|------------------------|
| 10BASE-T   | Cat. 3, 4, 5 100-ohm       | UTP 100 m (328 ft) | M12 A-coding connector |
| 100BASE-TX | Cat. 5 100-ohm UTP         | UTP 100 m (328 ft) | M12 A-coding connector |
| 1000BASE-T | Cat. 5/Cat. 5e 100-ohm UTP | UTP 100 m (328 ft) | M12 A-coding connector |

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



| 8-Pin Gigabit Non-PoE Port Definition |            |
|---------------------------------------|------------|
| PIN                                   | Definition |
| 1                                     | BI_DC+     |
| 2                                     | BI_DD+     |
| 3                                     | BI_DD-     |
| 4                                     | BI_DA-     |
| 5                                     | BI_DB+     |
| 6                                     | BI_DA+     |
| 7                                     | BI_DC-     |
| 8                                     | BI_DB-     |

| 8-Pin Gigabit PoE Port Definition |                       |
|-----------------------------------|-----------------------|
| PIN                               | Definition            |
| 1                                 | BI_DC+                |
| 2                                 | BI_DD+                |
| 3                                 | BI_DD-                |
| 4                                 | BI_DA- with PoE Vout+ |
| 5                                 | BI_DB+ with PoE Vout- |
| 6                                 | BI_DA+ with PoE Vout+ |
| 7                                 | BI_DC-                |
| 8                                 | BI_DB- with PoE Vout- |

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EN50155 24-port managed  
Gigabit PoE Ethernet switch

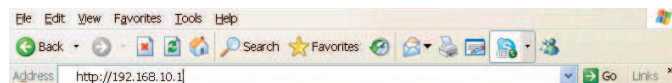
## Configurations

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

| LED                                       | Color       | Status   | Description  |
|---|-------------|----------|--|
| PWR1                                      | Green       | On       | DC power module 1 activated                              |
| PWR2                                      | Green       | On       | DC power module 2 activated                              |
| R.M                                       | Green       | On       | Device operating in Ring Master mode                     |
| Ring                                      | Green       | On       | Ring enabled   |
|   |             | Blinking | Ring structure is broken                                 |
| Fault                                     | Amber       | On       | Errors occur (i.e. power failure or port malfunctioning) |
| 10/100/1000Base-T(X) P.S.E Ethernet ports |             |          |  |
| LNK/ACT                                   | Green       | On       | Port is linked   |
|   |             | Blinking | Transmitting data  |
| PoE                                       | Green       | On       | Power supplied over Ethernet                             |
|   | Green       | On       | Port is running at 1000Mbps                              |
| Speed                                     | Amber       | On       | Port is running at 100Mbps                               |
|   | Green/Amber | Off      | Port is running at 10Mbps                                |
| 10/100/1000Base-T(X) Ethernet ports       |             |          |  |
| LNK/ACT                                   | Green       | On       | Port is linked   |
|   |             | Blinking | Transmitting data  |
| Speed                                     | Green       | On       | Port is running at 1000Mbps                              |
|   | Amber       | On       | Port is running at 100Mbps                               |
|   | Green/Amber | Off      | Port is running at 10Mbps                                |

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**).

Please enter your user ID and password

ID

Password

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.

| Information Message   |  |
|-----------------------|--|
| <b>System</b>         |  |
| Name                  | TGPS-9168GT-M12  |
| Description           | EN50155 24-port managed Gigabit PoE Ethernet switch with 16x10/100/1000Base-T(X) P.S.E. ports and 8x10/100/1000Base-T(X) M12 connector |
| Location              |  |
| Contact               |  |
| OID                   | 1.3.6.1.4.1.25972.100.6.5.300  |
| <b>Hardware</b>       |  |
| MAC Address           | 00-1e-94-03-73-00  |
| <b>Time</b>           |  |
| System Date           | 1970-01-01 00:00:21+00:00  |
| System Uptime         | 0d 00:00:21  |
| <b>Software</b>       |  |
| Kernel Version        | v9.56  |
| Software Version      | v1.00  |
| Software Date         | 2017-04-10T10:05:02+08:00  |
| Auto-refresh          | <input type="checkbox"/> Refresh   |
| Enable Location Alert | <input type="checkbox"/>   |

## Resetting

To reboot the switch, press the **Reset** button less than 5 seconds.

To restore the switch configurations back to the factory defaults, press the **Reset** button more than 5 seconds.

## Specifications

| ORing Switch Model   | TGPS-9168GT-M12-BP2-24V  |
|--|--|
| <b>Physical Ports</b>  |  |
| 10/100/1000 Base-T(X) with P.S.E. Ports in M12 Auto MDI/MDIX | 16 x M12 connector (8 pin female A-coding)   |
| 10/100/1000Base-T(X) ports in M12 Auto MDI/MDIX              | 8 x M12 connector (8-pin female A-coding with 2 x bypass function included)  |
| <b>Technology</b>  |  |
| Ethernet Standards   | IEEE 802.3 for 10Base-T<br>IEEE 802.3u for 100Base-TX<br>IEEE 802.3ab for 1000Base-T<br>IEEE 802.3x for Flow control<br>IEEE 802.3ad for LACP (Link Aggregation Control Protocol)<br>IEEE 802.1p for COS (Class of Service)<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1d for STP (Spanning Tree Protocol)<br>IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol)<br>IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol)<br>IEEE 802.1x for Authentication<br>IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)<br>IEEE 802.3af/at PoE specification |
| MAC Table  | 8K   |
| Priority Queues  | 8  |
| Processing   | Store-and-Forward  |
| Switch Properties  | Switching latency: 7 us<br>Switching bandwidth: 48 Gbps<br>Max. Number of Available VLANs: 4095<br>IGMP multicast groups: 128 for each VLAN<br>Port rate limiting: User Define   |
| Jumbo frame  | Up to 9.6K Bytes   |
| Security Features  | Device Binding security feature<br>Enable/disable ports, MAC based port security<br>Port based network access control (802.1x)<br>VLAN (802.1Q) to segregate and secure network traffic<br>Radius centralized password management<br>SNMPv3 encrypted authentication and access security<br>Https / SSH enhance network security   |
| Software Features  | STP/RSTP/MSTP (IEEE 802.1D/w/s)<br>Redundant Ring (O-Ring) with recovery time less than 30ms over 250units<br>TOS/Diffserv supported<br>Quality of Service (802.1p) for real-time traffic<br>VLAN (802.1Q) with VLAN tagging and GVRP supported<br>IGMP Snooping<br>IP-based bandwidth management<br>Application-based QoS management<br>DOS/DDOS auto prevention<br>Port configuration, status, statistics, monitoring, security<br>DHCP Server / Client support<br>SNTP, NTP for synchronizing of clocks over network<br>SMTP Client<br>Modbus TCP         |
| Network Redundancy   | O-Ring<br>O-Chain<br>MRP(*Note)<br>MSTP (RSTP/STP compatible)  |
| RS-232 Serial Console Port                                   | RS-232 in M12 (5-pin M12 female A-coding) connector with console cable. 115200bps, 8, N, 1   |
| <b>Fault Contact</b>   |  |
| Relay  | Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin M12 female A-coding)   |
| <b>Power</b>   |  |
| Redundant Input Power  | Dual DC inputs. 24 (16.8~30VDC) on 5-pin M23 female connector  |
| Power Consumption(Typ.)                                      | 26 Watts (power consumption of P.S.E. is not included)   |
| PoE Output Power   | <24VDC@75Watts max.<br>≥24VDC@120Watts max.  |
| Overload Current Protection                                  | Present  |
| Reverse Polarity Protection                                  | Present  |
| <b>Physical Characteristic</b>                               |  |
| Enclosure  | IP-30  |
| Dimension (W x D x H)  | 320(W) x 91.3(D) x 228(H) mm (12.6 x 3.59 x 8.98 inch.)  |
| Weight (g)   | 3463 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 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(PFME), 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                  | 161,351 hrs  |
| Warranty              | 5 years  |

\*Note: This function is available by request only

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