IP-54 EN50155 Switch Industrial

ORing

Quick Installation Guide

TGPS-W9082GF-MM-M12X -QS-MV-IP54

EN50155 Industrial IP-54 managed Gigabit PoE Ethernet switch

Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications such as rolling stock, vehicle, and railway. The **TGPS-W9082GF-MM-M12X-QS-MV-IP54**, which is compliant with the EN50155 standard, is a managed Gigabit Redundant Ring Ethernet switch with 8x10/100/1000Base-T(X) P.S.E. and 2x1000Base-SX Q-ODC 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 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. **TGPS-W9082GF-MM-M12X-QS-MV-IP54** EN50155 Ethernet switch uses M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. **TGPS-W9082GF-MM-M12X-QS-MV-IP54** 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-W9082GF-MM-M12X-QS-MV-IP54** 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. While **TGPS-W9082GF-MM-M12X-QS-MV-IP54** complies with EN50155, the switch supports wide operating temperature from -40°C to 75°C. **TGPS-W9082GF-MM-M12X-QS-MV-IP54** 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.

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

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-W9082GF-MM-M12X -QS-MV-IP54		1
CD		1
Wall-mount Kit		4
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

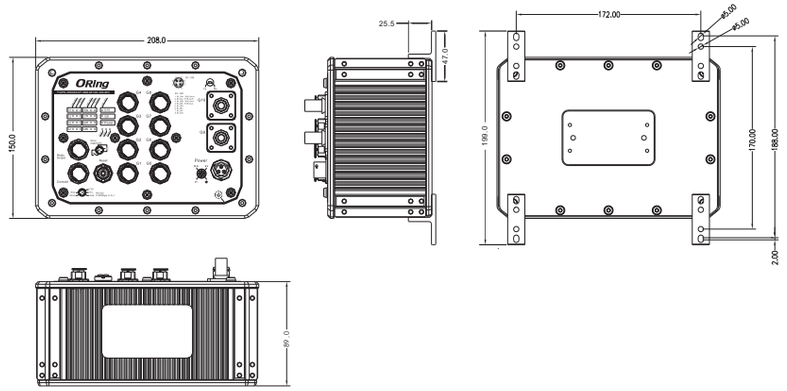
When installed outdoors, make sure the connectors on the panel are facing down to prevent water intrusion.

Do not remove the water-proof casing, and do not touch or move the device when the antennas are transmitting or receiving signals.

When installing the device, make sure to keep the radiating at a minimum distance of 20 cm (7.9 inches) from all persons to minimize the potential for human contact during normal operation.

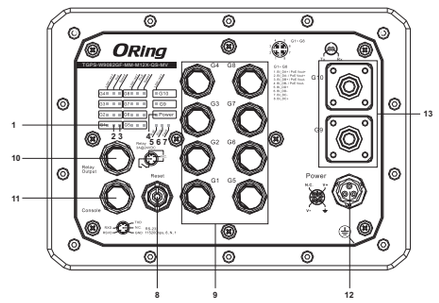
Do not operate the device near unshielded blasting caps or in an otherwise explosive environment unless the device has been modified for such use by qualified personnel.

Dimension Unit =mm (Tolerance ±0.5mm)



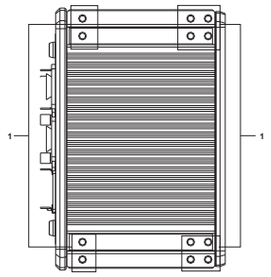
Panel Layouts

Front Panel



1. Link/ACT LED for PoE-enabled Gigabit ports
2. PoE indicator for PoE-enabled Gigabit ports
3. Speed LED for PoE-enabled Gigabit ports
4. Power status LED
5. R.M. status LED
6. Ring status LED
7. Fault LED
8. Reset button
9. PoE-enabled Gigabit Ethernet ports
10. Relay output port
11. Console port
12. Power connector
13. Q-ODC connector fiber ports

Side Panel

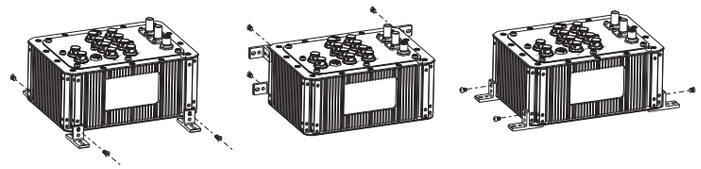


1. Wall-mount screw holes

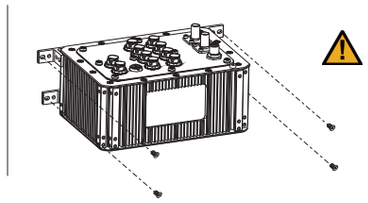
Installation

Wall-mount

Follow the steps below to install the device to the wall.
Step 1: Screw the Four pieces of wall-mount kits onto both sides of the switch. A total of eight screws are required, The plate can be attached vertically or horizontally to the device depending on the space available. as shown below.



Step 2: Hold the device upright against the wall.
Step 3: Insert four screws through the holes at the top of the plate and fasten the screws to the wall.



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

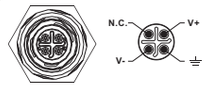
For pin assignments of power, console and relay output ports, please refer to the following tables.

Grounding

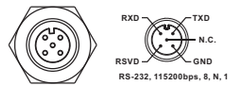
Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the grounding pin on the power connector to the grounding surface prior to connecting devices.

Power port pinouts

The device supports one set of power supply and uses the M12 S-coded 4-pin male connector on the front panel for 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.

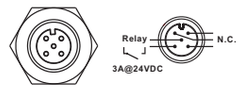


Console port pinouts



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 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 switch has eight 10/100/1000Base-T(X) PoE Ethernet ports and two 1000Base-SX Q-ODC ports in 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.

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Cable	Type	Max. Length	Connector
10BASE-T	Cat. 3, 4, 5 100-ohm	UTP 100 m (328 ft)	8-pin female M12 X-coding connector
100BASE-TX	Cat. 5 100-ohm UTP	UTP 100 m (328 ft)	8-pin female M12 X-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 Ethernet ports, please refer to the following tables.

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

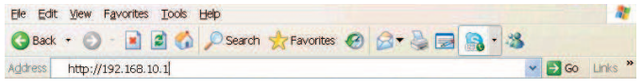
Configurations

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

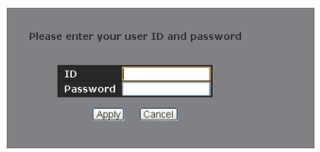
LED	Color	Status	Description
PWR	Green	On	DC power module activated
R.M	Green	On	Device operating in Ring Master mode
Ring	Green	On	Ring enabled
		Blinking	Ring structure is broken
Fault	Red	On	Errors occur (i.e. power failure or port malfunctioning)
10/100/1000Base-T(X) P.S.E Ethernet ports			
LNK/ACT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

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		TGPS-W9082GF-MM-M12X-QS-MV-IP54
Physical Ports		
10/100/1000 Base-T(X) Ports in M12 Auto MDI/MDIX with P.S.E.		**8 (8-pin female X-coding connector)**
1000Base-X Fiber Ports in Q-ODC connector		**2 x Q-ODC connector (Multi-mode)**
RS-232 Serial Console Port		**RS-232 in M12 connector (female A-coding). Baud rate setting: 115200bps, 8, N, 1**
Fiber Ports Specification	Fiber Ports Number	**2**
	Fiber Ports Standard	1000BASE-SX
	Fiber Mode	Multi-mode
	Fiber Diameter (μm)	62.5/125 μm @ 50/125 μm
	Fiber Optical Connector	Q-ODC
	Typical Distance (Km)	0.55 Km
	Wavelength (nm)	850 nm
	Max. Output Optical Power (dbm)	-4 dbm
	Min. Output Optical Power (dbm)	-9.5 dbm
	Max. Input Optical Power (Saturation)	0 dbm
	Min. Input Optical Power (Sensitivity)	-18 dbm
	Link Budget (db)	8.5 db
Technology		
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3z for 1000Base-X 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
Packet buffer		4Mbits
Priority Queues		8
Processing		Store-and-Forward
Switch Properties		Switching latency: <4.7 us Switching bandwidth: 20 Gbps Throughput (packet per second): 17.856Mpps@64Bytes packet Max. Number of Available VLANs: 4095 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define
Jumbo frame		Up to 9.6K 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 MRP* ***NOTE** MSTP (RSTP/STP compatible)
Fault Contact	
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin female A-coding connector)
Reset Function	
Reset Button	< 5 sec: System reboot, > 5 sec: Factory default
Power	
Redundant Input Power	72/110 (50.4~137.5) VDC on 4-pin male S-coding connector
Power Consumption(Typ.)	17 Watts (PoE output not include)
Total PoE budget	95 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-54
Dimension (W x D x H)	208 (W) x 89 (D) x 150 (H) mm (8.19 x 3.5 x 5.9 inch.)
Weight (g)	3300 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(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: Contact 8KV, Air 10KV), IEC/EN 61000-4-3 (RS 80MHz to 1GHz: 3V/m 1kHz 80% AM), IEC/EN 61000-4-4 (EFT Power 2KV, Signal 2KV), IEC/EN 61000-4-5 (Surge: Power 4KV, RJ45 2KV), IEC/EN 61000-4-6 (CS 150K-80MHz: 3Vrms 1kHz 80% AM), 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(LVD)
Other	EN 50155 (IEC 61373)
MTBF	258060 hours
Warranty	5 years

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

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