IP-54 EN50155 Switch Industrial

ORing

Quick Installation Guide

TES-W9124GT-M12X-BP2 -24V-IP54

EN50155 Industrial IP-54 managed Ethernet switch

Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial waterproof applications, such as rolling stock, vehicle, and railway applications. **TES-W9124GT-M12X-BP2-24V-IP54** is managed Redundant Ring Ethernet switch with 12x10/100Base-T(X) 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 < 10/30ms over 250 units of connection), O-Chain, MRP 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. **TES-W9124GT-M12X-BP2-24V-IP54** includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. And support wide operating temperature from -40°C to 75°C. **TES-W9124GT-M12X-BP2-24V-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 choices for EN50155 waterproof 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
TES-W9124GT-M12X-BP2 -24V-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

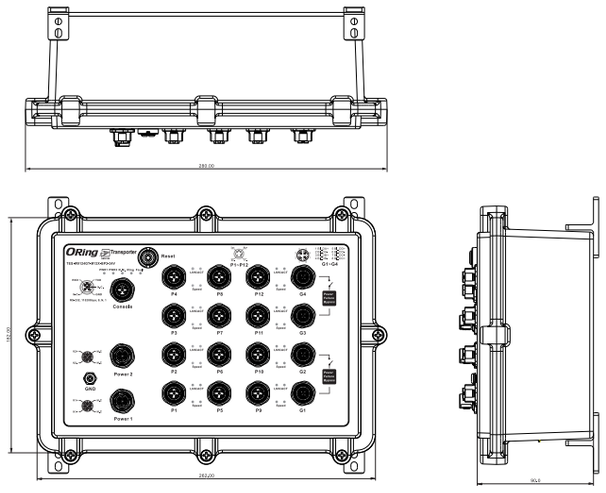
⚠ When installed outdoors, make sure the connectors on the panel are facing down to prevent water intrusion.

⚠ 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.

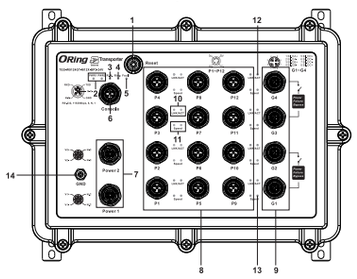
⚠ Do not operate the device near unshielded blasting caps or in an otherwise explosive environment unless the device has been modified for such use by qualified personnel.

Dimension Unit =mm (Tolerance ±0.5mm)



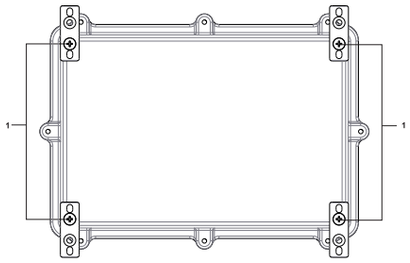
Panel Layouts

Top View



1. Reset button
2. Power LED
3. R.M. status LED
4. Ring status LED
5. Fault LED
6. Console port
7. Power connector
8. Fast Ethernet port
9. Gigabit Ethernet port with bypass
10. Link/ACT LED for Ethernet port
11. Speed LED for Ethernet port
12. Link/ACT LED for Gigabit Ethernet port
13. Speed LED for Gigabit Ethernet port
14. Ground wire

Bottom View

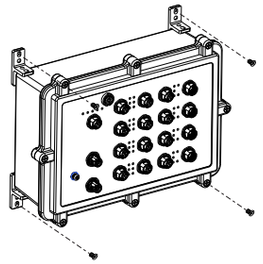


1. Wall-mount screw holes

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 bottom side of the switch. A total of four screws are required.
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

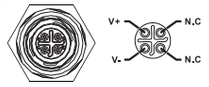
For pin assignments of power and console port, please refer to the following tables.

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.

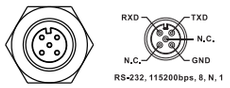
Power port pinouts

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



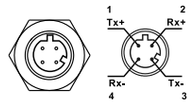
Network Connection

The switch has twelve 10/100Base-T(X) and four 10/100/1000Base-T(X) Ethernet 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.

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 M12 ports, please refer to the following tables.

4-Pin Fast Ethernet Port Definition



10/100Base-T(X) M12 port with D-Coding	
Pin No.	Description
#1	Tx+
#2	Rx+
#3	Tx-
#4	Rx-

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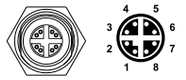
8-Pin Gigabit Port Definition



10/100/1000Base-T(X) M12 port with X-Coding	
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, 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)
10/100Base-T(X) Ethernet ports			
LNK/ACT	Green	On	Port is linked
		Blinking	Transmitting data
Speed	Amber	On	Port is running at 100Mbps
		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 web UI:

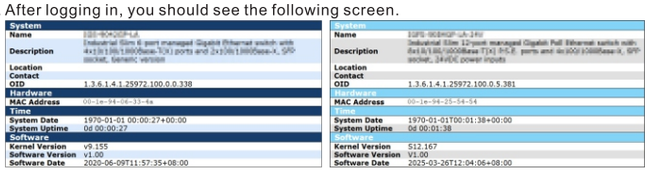
For K9 or K12 Ver.: both are "admin"

S12 cybersecurity Ver.:

Set new password

Used ID "admin" and new set password to log in

3. After logging in, you should see the following screen.



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	**TES-W9124GT-M12X-BP2-24V-IP54**
Physical Ports	
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX	**12 (4-pin female D-coding)**
10/100/1000Base-T(X) ports in M12	**4 (8-pin female X-coding with 2xbypass function included)**
RS-232 Serial Console Port	**RS-232 in M12 connector (female A-coding). Baud rate setting: 115200bps, 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 802.1p 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)
MAC Table	8k
Packet Buffer Size	4Mbits
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching latency: <7 μs Switching bandwidth: 10.4Gbps Throughput (packet per second): 7.738Mpps@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 10/30ms over 250 units **NOTE 1.** Fast Ethernet ports supports less 10ms milliseconds recovery time **NOTE 2.** Gigabit Ethernet ports supports less 30ms milliseconds recovery time 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 MSTP (RSTP/STP compatible)
Reset Function	
Reset Button	< 5 sec: System reboot, > 5 sec: Factory default
Power	
Input Power	Dual 24VDC (power rating: 16.8~30VDC) on dual 4-pin male S-coding connector
Power Consumption(Typ.)	20 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-54
Dimension (W x D x H)	280 (W) x 90 (D) x 182 (H) mm (11.02 x 3.54 x 7.17 inch.)
Weight (g)	3215 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 55035, 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 55035 (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	EN 62368-1 (LVD)
Other	EN 50155(IEC 61373)
MTBF	177,214 hrs
Warranty	5 years

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