

Quick Installation Guide

TES-250-M12



EN50155 5-port lite-managed Ethernet switch

Introduction

ORing's Transporter™ series Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. **TES-250-M12** is a lite-managed redundant ring Ethernet switch with 5x10/100Base-T(X) ports which is compliant with EN50155 request. With completely support of Ethernet redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), O-Chain and STP/RSTP (IEEE802.1w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technologies. It is specifically designed for the toughest industrial environments. **TES-250-M12** EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. **TES-250-M12** can be managed centralized by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. The **TES-250-M12** can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network. Therefore, the switch is one of the most reliable choices for rolling stock and 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-250-M12		1
QIG		1

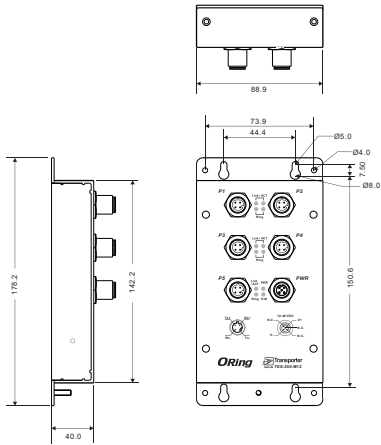
Preparation

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.

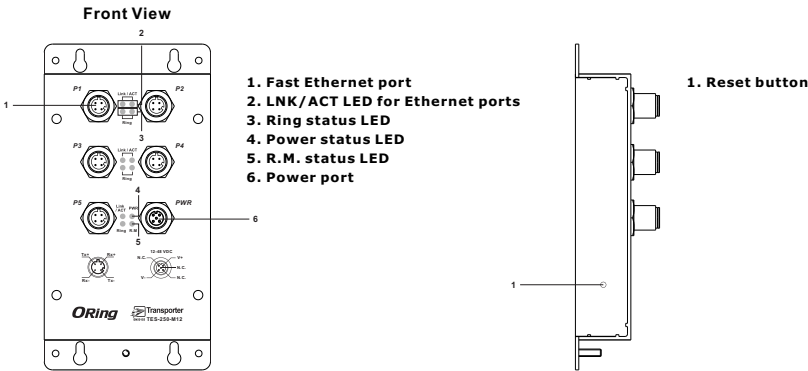
Safety & Warnings

-  **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)



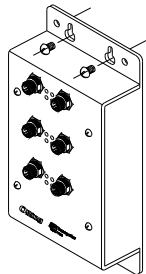
Panel Layouts




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 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

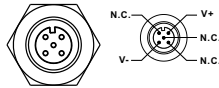
For pin assignments of power, console and relay output ports, please refer to the following tables.

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 switch provides one set of power supply on a M12 5-pin female A-coding connector. Insert the power cable to the power connector on the device and rotate the outer ring of the cable connector until a snug fit is achieved. Make sure the connection is tight.



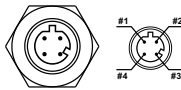
Network Connection

The switch has five 10/100Base-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)	M12 D-coding connector
100BASE-TX	Cat. 5 100-ohm UTP	UTP 100 m (328 ft)	M12 D-coding connector

Pin Definition

10/100Base-T(X) D-coding M12 port	
Pin No.	Description
#1	TX+
#2	RX+
#3	TX-
#4	RX-



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 table for LED indication.

LED	Color	Status	Description
Power	Green	On	Power is on
R.M	Green	On	Device operating in Ring Master mode
Ring	Green	On	O-Ring enabled
		Blinking	O-Ring structure is broken
10/100Base-T(X) M12 ports			
LNK/ACT	Green	On	Port is linked
		Off	Port is linked-down
		Blinking	Transmitting data

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TES-250-M12

EN50155 5-port lite-managed
Ethernet switch

Specifications

ORing Switch Model	TES-250-M12
Physical Ports	
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX	5 x M12 connector (4-pin M12 female D-coding)
Technology	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	2K
Packet Buffer Size	1Mbits
Processing	Store-and-Forward
Switch Properties	Switching latency: <7 μ s Switching bandwidth: 1Gbps Throughput (packet per second): 744Kpps@64Bytes packet VLAN: port-based
Security Features	Enable/Disable ports VLAN to segregate and secure network traffic SNMP v3 encrypted authentication and access security
Software Features	STP/RSTP (IEEE 802.1D/w) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units Port configuration, status, statistics, monitoring, security
Network Redundancy	O-Ring O-Chain Fast recovery STP RSTP
LED Indicators	
Power Indicator (PWR)	Green: Power LED x 1
Ring Master Indicator (R.M.)	Green: Indicate system operated in O-Ring Master mode
10/100Base-T(X) M12 Port Indicator	Top Green LED for Link/Act indicator: Green for link-up, Off for link-down, Blinking for Act. Bottom Green LED for O-Ring function indicator: Green for O-Ring enabled, Off for O-Ring disabled, Blinking for Ring is broken
Reset Function	
Reset Button	< 5 sec: System reboot, > 5 sec: Factory default
Power	
Input Power	12-48VDC on 5-pin female A-coding M12 connector
Power Consumption(Typ.)	3Watts@12VDC/0.25A, 48VDC/0.062A
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	88.9(W) x40(D) x 178.2(H) mm (3.5 x 1.57 x 7.02 inch.)
Weight (g)	454 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	CE EMC (EN 55024, EN 55022), 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 4KV), IEC/EN 61000-4-3 (RS 80MHz to 1GHz: 3V/m 1kHz 80% AM), IEC/EN 61000-4-4 (EFT Power 0.5KV, Signal 0.5KV), IEC/EN 61000-4-5 (Surge: Power 0.5KV, RJ45 1KV), IEC/EN 61000-4-6 (CS 150K-80MHz: 3Vrms 1kHz 80% AM), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP)) EN 50121-3-2 (IEC/EN 61000-4-2 (ESD: Contact 6KV), IEC/EN 61000-4-3 (RS 80MHz to 1G/2.1G/2.5GHz: 20V/10V/5V/m 1kHz 80% AM), IEC/EN 61000-4-4 (EFT Power 2KV, Signal 2KV), IEC/EN 61000-4-5 (Surge: Power 1KV), IEC/EN 61000-4-6 (CS 150K-80MHz: 10Vrms 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	EN 60950-1 compliant
Other	EN 50155 (IEC 61373)
MTBF	1,437,990 hrs.
Warranty	5 years

ORing

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