EN50155 SWITCH INDUSTRIAL

ORing

Quick Installation Guide

TES-3080-M12 Series

EN50155 8-port managed Ethernet switch

Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. The **TES-3080-M12 series** is a managed Redundant Ring Ethernet switch with 8x10/100Base-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, MRP***NOTE** 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. It is specifically designed for the toughest industrial environments. **TES-3080-M12 series** EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. **TES-3080-M12-BP2** included dual bypass ports, These bypass ports protect the network from failures and Network maintenance by ensuring network integrity during power loss. Each of these bypass ports includes Network ports and Monitor ports. The Network ports are used for connection to main-network connections and provide protection mechanism, and the Monitor ports are used for down-link local networking device. When the power is on, the operating mode of the Bypass ports is set to Normal , and the local networking device is connected with main-network. When power failure occurs, the Bypass ports is swiftly set to bypass mode to isolate the main-network from the local networking device. **TES-3080-M12 series** can be managed centralized and convenient 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. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed 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
TES-3080-M12 or TES-3080-M12-BP2 or TES-3080-M12-BP2-MV or TES-3080-M12-BP2-HV		1
QIG		1
CD		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

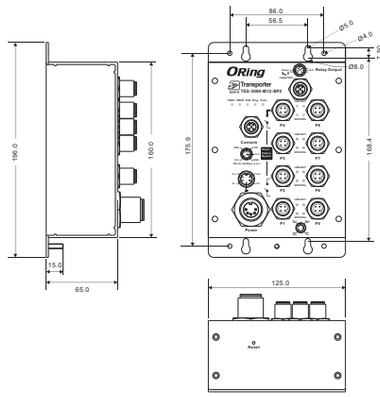
Elevated Operating Ambient: If installed in a closed environment, make sure the operating ambient temperature is compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

Reduced Air Flow: Make sure the amount of air flow required for safe operation of the equipment is not compromised during installation.

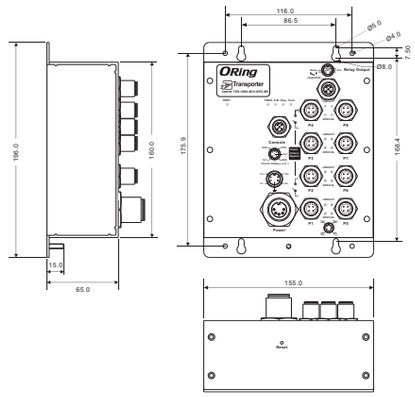
Mechanical Loading: Make sure the mounting of the equipment is not in a hazardous condition due to uneven mechanical loading.

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)



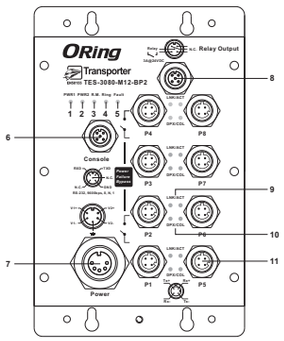
TES-3080-M12/ TES-3080-M12-BP2



TES-3080-M12-BP2-MV/ TES-3080-M12-BP2-HV

Panel Layouts

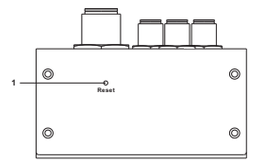
Front View



1. Power1 status LED
2. Power2 status LED
3. R.M. status LED
4. Ring status LED
5. Fault LED
6. Console port
7. Power input port
8. Relay output
9. LNK/ACT LED for LAN ports
10. Duplex/Collision LED for LAN ports
11. Ethernet ports

(P1-P4 of TES-3080-M12-BP2 is bypass ports)

Bottom View

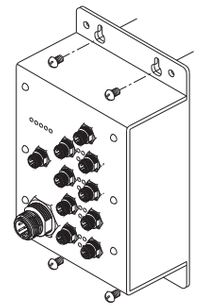


1. Reset button

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

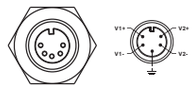
For pin assignments of power, console and relay output ports, please refer to the following tables.

Grounding

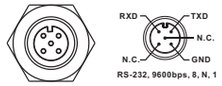
Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the grounding pin on the power connector to the grounding surface prior to connecting devices.

Power port pinouts

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

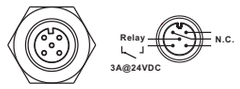


Console port pinouts



Relay output port pinouts

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



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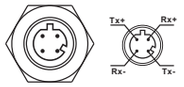
Network Connection

The switch has eight 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)	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

M12/4P Pin Definition

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



Pin No.	Description
#1	RD+
#2	TD+
#3	RD-
#4	TD-

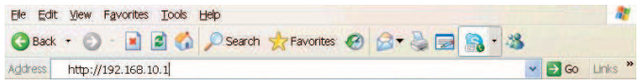
Configurations

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.

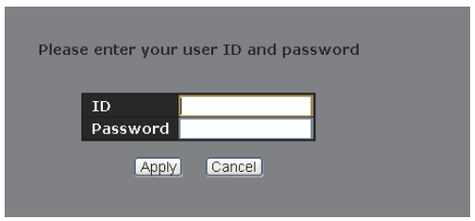
LED	Color	Status	Description
PWR1	Green	On	DC power module 1 activated
PWR2	Green	On	DC power module 2 activated
R.M	Green	On	System running in Ring Master mode
Ring	Green	On	System running in Ring mode
		Blinking	Ring is broken
Fault	Amber	On	Errors occur (power failure or port link down)
10/100Base-T(X) Ports			
LNK/ACT	Green	On	Port is linked
		Blinking	Transmitting data
DPX/COL	Amber	On	Port running in full-duplex mode
		Blinking	Collision occurs
		Off	Port running in half-duplex mode

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.

System Name	TES-3080-M12
System Description	EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X), M12 connector
System Location	
System Contact	
SNMP OID	1.3.6.1.4.1.25972.100.6.0.73
Firmware Version	v1.01
Kernel Version	v3.10
MAC Address	00-1E-94-03-5B-A4
System Uptime	0 Day(s) 0 Hour(s) 2 Min(s) 5 Sec(s)

Specifications

ORing Switch Model	TES-3080-M12	TES-3080-M12-BP2	TES-3080-M12-BP2-MV	TES-3080-M12-BP2-HV
Physical Ports				
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX	**8 x M12 connector (4 pin M12 female D-coding)**			
Bypass Function	-	**2**		
RS-232 Serial Console Port	**RS-232 in M12 connector (5-pin female 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 802.3x 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)			
MAC Table	8192 MAC addresses			
Priority Queues	**4**			
Processing	**Store-and-Forward**			
Switch Properties	Switching latency: 7 μs Switching bandwidth: 1.6Gbps 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 SNMPv3 encrypted authentication and access security			
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant 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 SNTP 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			
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 M12 connector (5-pin M12 female A-coding)			
Power				
Redundant Input Power	Dual 12~48 VDC on 5-pin M23 female connector	Dual 72~144VDC on 5-pin M23 connector	Dual 88~373VDC / 85~264VAC on 5-pin M23 connector	
Power Consumption(Typ.)	5 Watts			
Overload Current Protection	Present			
Reverse Polarity Protection	Present			

Physical Characteristic				
Enclosure	IP-30			
Dimension (W x D x H)	125(W) x 65(D) x 196(H) mm (4.92 x 2.56 x 7.72 inch.)		155(W) x 65(D) x 196(H) mm (6.10 x 2.56 x 7.72 inch.)	
Weight (g)	876 g	894 g	1304 g	1304 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				
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)			
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11			
Shock	IEC60068-2-27			
Free Fall	IEC60068-2-32			
Vibration	IEC60068-2-6			
Safety	EN60950-1			
MTBF	815,272 hrs	772,743 hrs	118,902 hrs	118,934 hrs
Warranty	5 years			

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