# TES-3080-M12(-BP2) SERIES

ORing WEB-site

**▶ ▶** *EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X), M12 connector and 2xbypass included*

## Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- Supports O-Ring (recovery time < 10ms over 250 units of connection) and MSTP/RSTP/STP for Ethernet Redundancy
- O-Chain allow multiple redundant network rings
- Supports standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function
- Supports Modbus TCP protocol
- Supports PTP Client (Precision Time Protocol) clock synchronization
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Supports SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Supports LLDP Protocol
- Port lock to prevent access from unauthorized MAC address
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (Open-Vision) supports centralized management and configurable by Web-based, Telnet, and Console (CLI
- M12 connectors to guarantee reliable operation against environmental disturbances
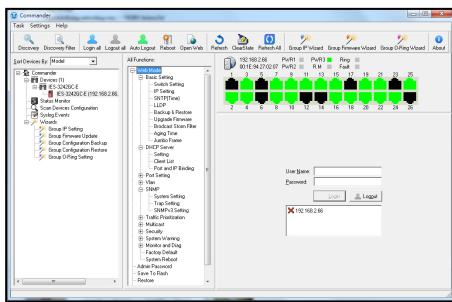- Built-in 2 sets of bypass ports (-BP2 model only)
- Wall mounting enabled

EN50155 | O-Ring | O-Chain | Redundant PWR | -40~75°C Temperature | CE | FC | LEAD FREE

## Introduction

ORing's Transporter**TM** series managed Ethernet switches are designed for industrial applications such as rolling stock, vehicle, and railway. The TES-3080-M12(-BP2) series, which is compliant with the EN50155 standard, is a managed Redundant Ring Ethernet switch with 8x10/100Base-T(X) ports. With complete 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. O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology. TES-3080-M12(-BP2) series EN50155 Ethernet switch uses M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TES-3080-M12-BP2 includes 2 sets of bypass ports that protect the network from failures and Network maintenance by ensuring network integrity during power loss. TES-3080-M12(-BP2) 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 75°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
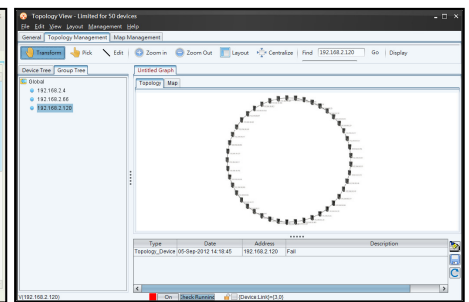
## Open-Vision

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of Windows Utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.
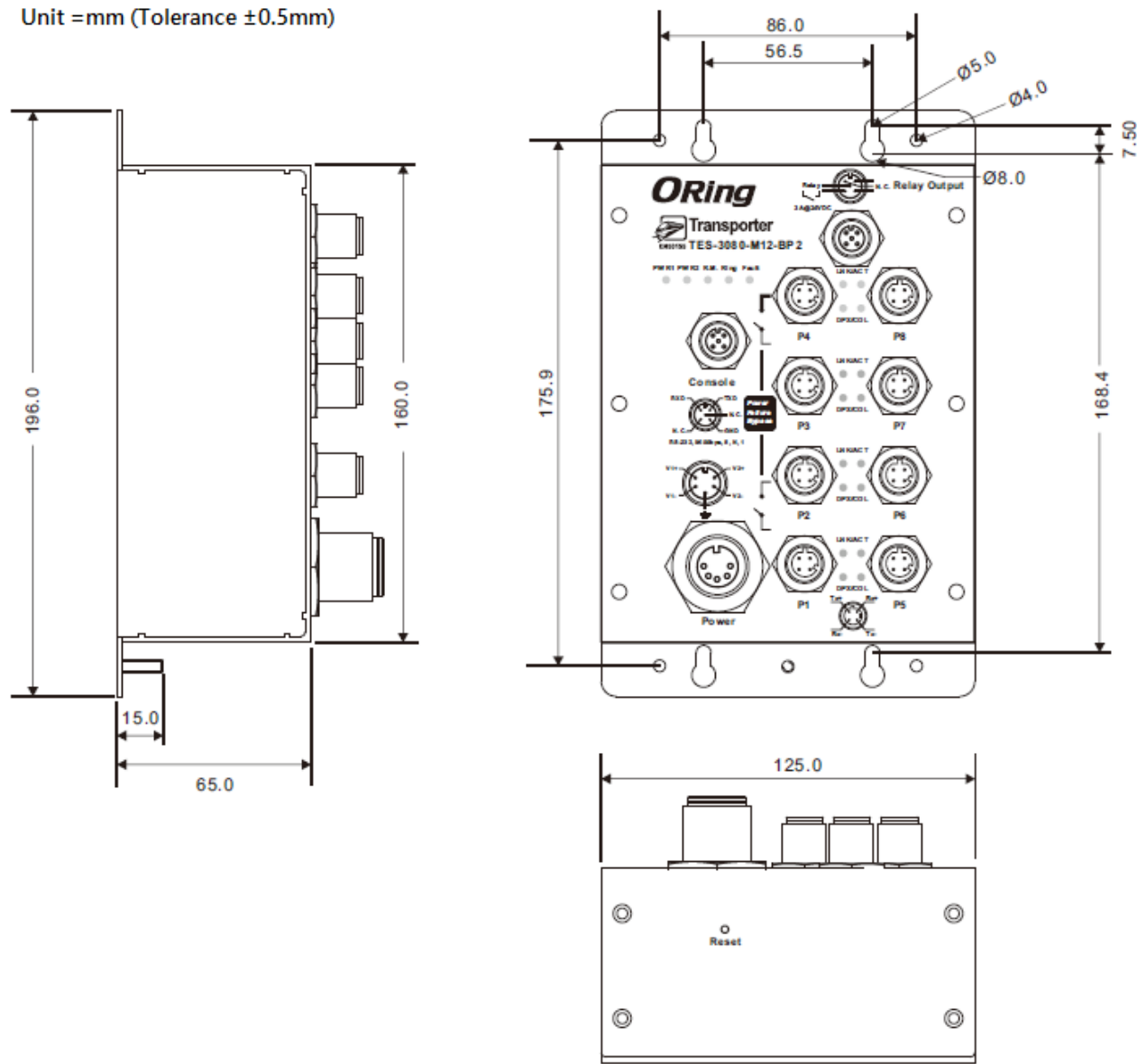




Commander

Host Monitor

Topology View



**Open-Vision 4.0**

**Powerful Network Management Windows Utility**

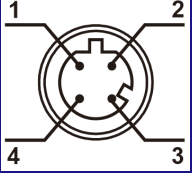- Multi-link topology
- Centralized management view
- Traffic monitoring

## Dimensions

Unit =mm (Tolerance ±0.5mm)



## Pin Definition



**D-Coding M12**

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

## Specifications

| ORing Switch Model | TES-3080-M12-BP2 | TES-3080-M12 |
|---|---|---|
| **Physical Ports** | | |
| 10/100Base-T(X) Ports in M12 Auto MDI/MDIX | 8 (4-pin female D-coding with 2 * bypass included) | 8 (4-pin female D-coding) |
| **Technology** | | |
| Ethernet Standards | IEEE 802.3 for 10Base-T<br>IEEE 802.3u for 100Base-TX<br>IEEE 802.3x for Flow control<br>IEEE 802.3ad for LACP (Link Aggregation Control Protocol)<br>IEEE 802.1D for STP (Spanning Tree Protocol)<br>IEEE 802.1p for COS (Class of Service)<br>IEEE 802.1Q for VLAN Tagging<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) | |
| MAC Table | 8k | |
| Packet Buffer Size | 1Mbit | |
| Priority Queues | 4 | |
| Processing | Store-and-Forward | |
| Switch Properties | Switching latency: 7us<br>Switching bandwidth: 1.6 Gbps<br>Max. Number of Available VLANs: 4096<br>IGMP multicast groups: 1024<br>Port rate limiting: User Define | |
| Security Features | 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>Supports Q-in-Q VLAN for performance & security to expand the VLAN space<br>Radius centralized password management<br>SNMP v1/v2c/v3 encrypted authentication and access security | |
| Software Features | STP/RSTP/MSTP (IEEE 802.1D/w/s)<br>Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units<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 for multicast filtering<br>Port configuration, status, statistics, monitoring, security<br>SNTP for synchronizing of clocks over network<br>Support PTP Client (Precision Time Protocol) clock synchronization<br>DHCP Server / Client support<br>Port Trunk support<br>MVR (Multicast VLAN Registration) support | |
| Network Redundancy | O-Ring<br>O-Chain<br>MRP*NOTE<br>STP/RSTP/MSTP | |
| Warning / Monitoring System | Relay output for fault event alarming<br>Syslog server / client to record and view events<br>Include SMTP for event warning notification via email<br>Event selection support | |
| **LED Indicators** | | |
| Power Indicator (Power) | Green: Power LED x 2 | |
| Ring Master Indicator (R.M.) | Green: Indicates that the system is operating in O-Ring Master mode | |
| O-Ring Indicator (Ring) | Green: Indicates that the system operating in O-Ring mode<br>Green Blinking: Indicates that the Ring is broken. | |
| Fault Indicator (Fault) | Red: Indicate unexpected event occurred | |
| 10/100Base-T(X) M12 Port Indicator | Green for port Link/Act: On for link-up, Off for link-down, Blinking for Act.<br><br>Amber for Duplex/Collision: On for Full-Duplex, Off for Half-Duplex, Blinking for Half-Duplex and collision occurs | |
| **Fault Contact** | | |
| Relay | Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding, female connector) | |

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

| Reset Function | |
|---|---|
| Reset Button | < 5 sec: System reboot, > 5 sec: Factory default |

| Power | |
|---|---|
| Input Power | Dual 12-48VDC on 5-pin M23 female connector<br>**\*NOTICE: For EN50155 applications, it supports 24VDC power input only.** |
| 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<br>4.92 (W) x 2.56 (D) x 7.72 (H) inch |
| Weight (g) | 894 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 55022), FCC Part 15 B, EN 50155(EN 50121-1, EN 50121-3-2) | |
| EMI | EN 55022, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B 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(PFMF), IEC/EN 61000-4-11 (DIP)) | |
| Shock | IEC60068-2-27 | |
| Free Fall | IEC60068-2-31 | |
| Vibration | IEC60068-2-6 | |
| Safety | EN 60950-1 | |
| Other | EN 50155 (IEC 61373) | |
| MTBF | 772743.7657 hrs. | 815272.4837 hrs. |
| Warranty | 5 years | |

## Ordering Information

| Available Model | Model Name | Description |
|---|---|---|
| | TES-3080-M12-BP2 | EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X), M12 connector and 2xbypass included |
| | TES-3080-M12 | EN50155 8-port managed Ethernet switch with 8x10/100Base-T(X), M12 connector |

**Packing List**
- TES-3080-M12(-BP2) x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1

**Optional Accessories**
- Open-Vision M500: Powerful Network Management Windows Utility Suit, 500 IP devices
- M12 cable series
- Power supply series

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