# TES-3162GT-M12-BP1

## EN50155 Ethernet Switch

> ### EN50155 18-port managed Ethernet switch with 16x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included
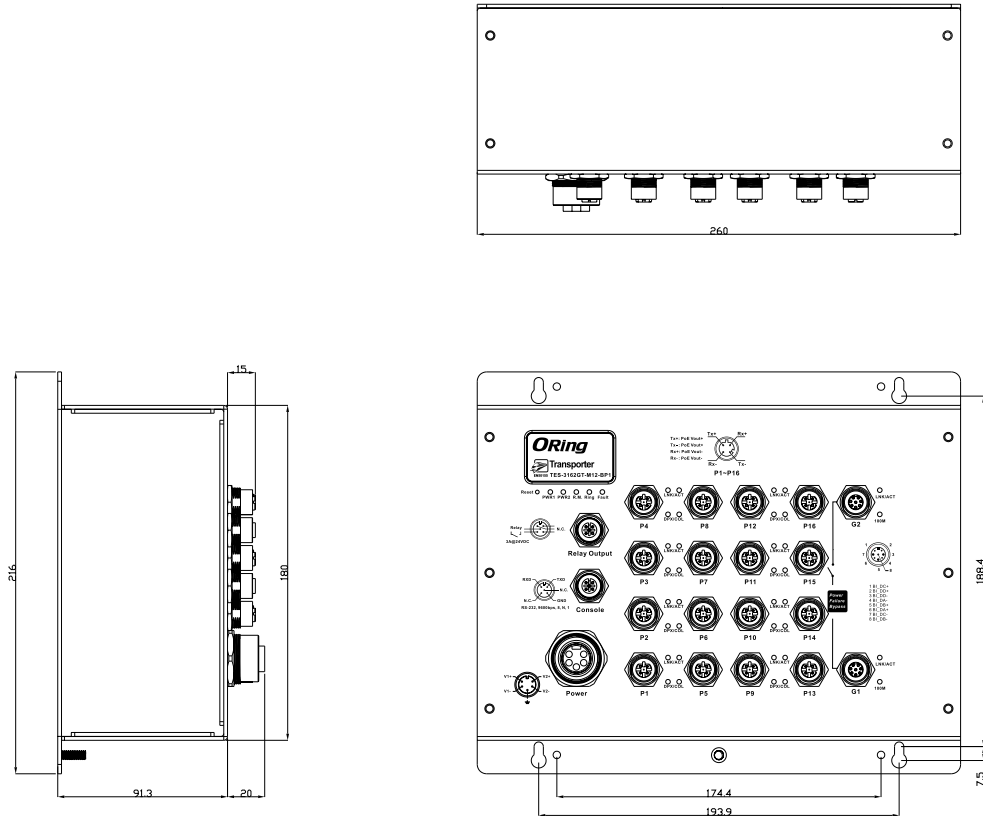
### Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- World's fastest Redundant Ethernet Ring: **O-Ring** (recovery time < 10ms over 250 units of connection)
- **Open-Ring** support the other vendor's ring technology in open architecture
- **O-Chain** support applications with multiple redundant rings topology
- Support standard IEC 62439 **MRP*NOTE** (Media Redundancy Protocol) function
- STP/RSTP:2004/MSTP supported
- Support IPV6 new internet protocol version
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Provided HTTPS/SSH protocol to enhance network security
- Support Modbus TCP protocol
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support VLAN and LLDP protocol
- Support TACACS+ and 802.1x User Authentication for security
- DHCP assign each Equipment IP by each Port
- Provided Relay bypass function with two gigabit ports
- Event notification through Syslog, Email, SNMP trap, and Relay Output
- Windows utility (**Open-Vision**) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
- Wall mounting enabled

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## Dimensions



(Unit=mm)

## PoE Pin Definition

| 10/100Base-T(X) M12 port | |
|---|---|
| **M12 D-coding Pin Definition** | |
| **Pin No.** | **Description** |
| #1 | TD+ |
| #2 | TD- |
| #3 | RD+ |
| #4 | RD- |

| 10/100/1000Base-T(X) M12 port | |
|---|---|
| **M12 Pin Definition** | |
| **Pin No.** | **Description** |
| #1 | BI_DC+ |
| #2 | BI_DD+ |
| #3 | BI_DD- |
| #4 | BI_DA- |
| #5 | BI_DB+ |
| #6 | BI_DA+ |
| #7 | BI_DC- |
| #8 | BI_DB- |

# TES-3162GT-M12-BP1

## EN50155 Ethernet Switch

## Specifications

| ORing Switch Model | TES-3162GT-M12-BP1 |
|---|---|
| **Physical Ports** | |
| 10/100Base-T(X) Ports in M12 Auto MDI/MDIX | 16 x M12 connector (4-pin D-coding) |
| 10/100/1000Base-T(X) ports in M12 | 2 x M12 connector (8-pin A-coding) |
| RS-232 Serial Console Port | RS-232 in M12 connector (A-coding).  Baud rate setting: 9600bps, 8, N, 1 |
| **Technology** | |
| Ethernet Standards | IEEE 802.3 for 10Base-T<br>IEEE 802.3u for 100Base-TX<br>IEEE 802.3ab for 1000Base-T<br>IEEE 802.3x for Flow control<br>IEEE 802.3ad for LACP (Link Aggregation Control Protocol )<br>IEEE 802.1p for COS (Class of Service)<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1D for STP (Spanning Tree Protocol)<br>IEEE 802.1D-2004 for RSTP:2004 (Rapid Spanning Tree Protocol 2004)<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 | 8192 MAC addresses |
| Priority Queues | 4 |
| Processing | Store-and-Forward |
| Switch Properties | Switching latency: 7 us<br>Switching bandwidth: 7.2Gbps<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<br>Https / SSH enhance network security |
| Software Features | STP/RSTP:2004/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<br>Modbus TCP |
| Network Redundancy | O-Ring    Open-Ring<br>O-Chain    MRP*NOTE<br>STP    RSTP:2004<br>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 | Green : Power LED x 2 |
| R.M. Indicator | Green : Indicates that the system is operating in O-Ring Master mode |
| O-Ring Indicator | Green : Indicates that the system is operating in O-Ring mode |

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## EN50155 Ethernet Switch

| | |
|---|---|
| Fault Indicator | Amber : Indicates unexpected event occurred |
| 10/100Base-T(X) M12 Port Indicator | Green for port Link/Act.  Amber for Duplex/Collision |
| 10/100/1000Base-T(X) M12 Port Indicator | Green for Link/Act.  Amber for 100Mbps indicator |
| **Fault Contact** | |
| Relay | Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding) |
| **Power** | |
| Redundant Input Power | Dual DC inputs. 12~48VDC on 5-pin M23 connector |
| Power Consumption (Typ.) | 12.48 Watts |
| Overload Current Protection | Present |
| Reverse Polarity Protection | Not Present |
| **Physical Characteristics** | |
| Enclosure | IP-40 |
| Dimensions (W x D x H) | 260 (W) x 91.3 (D) x216 (H) mm |
| Weight (g) | 2020 g |
| **Environmental** | |
| Storage Temperature | –40 to 85℃ (-40 to 185℉) |
| Operating Temperature | –40 to 70℃ (-40 to 158℉) |
| 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 |
| Warranty | 5 years |

## Ordering Information

**TES-3** `AA` `B` `CC` **-M12**

| Code Definition | 10/100Base-T(X) Port Number | Additional Port Number | Additional Port Number |
|---|---|---|---|
| **Option** | **- 16:** 16 ports | **- 2:** 2 port | **- GT:** 10/100/1000Base-T(X) port |

| Available Model | Model Name | Description |
|---|---|---|
| | TES-3162GT-M12-BP1 | EN50155 18-port managed Ethernet switch with 16x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included |

**Packing List**
- TES-3162GT-M12-BP1
- ORing Tool CD
- Quick Installation Guide
- Console cable

**Optional Accessories (Can be purchased separately)**
- Open-Vision M500, Powerful Network Management Windows Utility Suite, 500 IP devices
- DR-75 series : 75 Watts DIN-Rail power supply
- DR-120 series : 120 Watts DIN-Rail power supply
- M12C : M12 cable accessories

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