TPS-3044TX-M12

EN50155 8-port managed PoE Ethernet switch with
4x10/100Base-T(X) P.S.E. and 4x10/100Base-T(X), M12 connector

Features

- Leading EN50155-compliant Ethernet switch for rolling stock application
- 4 ports P.S.E. fully compliant with IEEE802.3af standard, provide up to 25W Watts per port of total power output up to 100W
- Provide **PoE power on delay** function, users can define delay time for PoE power supply
- 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** allow multiple redundant network rings
- Support standard IEC 62439-2 **MRP** (Media Redundancy Protocol) function
- STP/RSTP/MSTP supported
- Support **PTP Client** (Precision Time Protocol) clock synchronization
- Support Modbus/TCP protocol
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Port Trunking for easy of bandwidth management
- SNMP v1/v2c/v3 support for secured network management
- RMON for traffic monitoring
- Support 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**) support centralized management and configurable by Web-based ,Telnet, and Console (CLI)
- M12 connectors to guarantee reliable operation against environmental disturbances
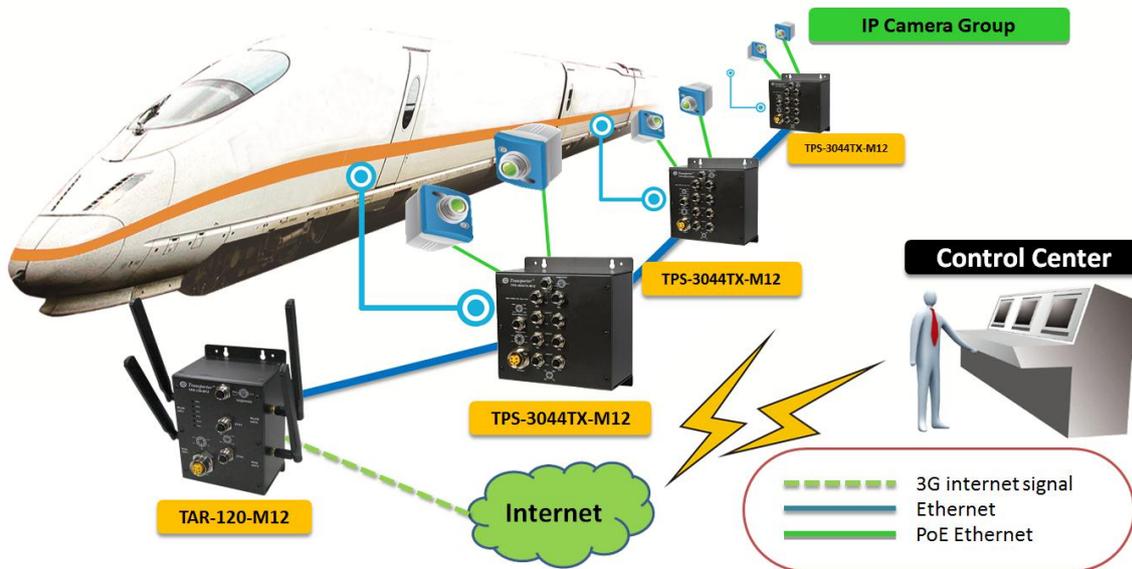- Wall mounting enabled

Introduction

ORing's Transporter™ series managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications.   The TPS-3044TX-M12 is a managed Redundant Ring PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 4x10/100Base-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), Open-Ring, 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.   Another Open-Ring technology is also supported which can applied for other vendor's proprietary ring.   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
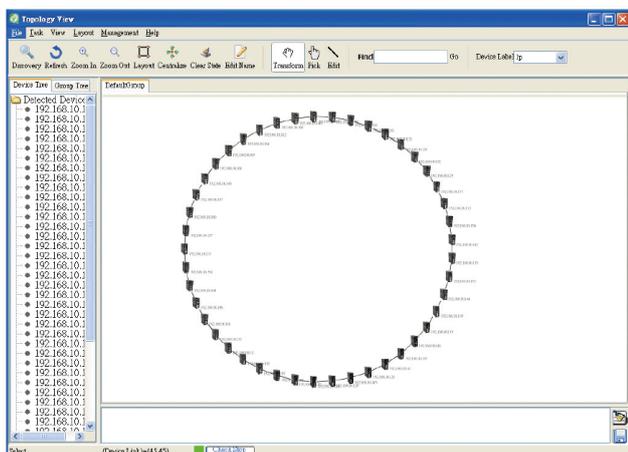
compound network topology.   O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.   TPS-3044TX-M12 also supports Power over Ethernet, a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network.   Each TPS-3044TX-M12 switch has 4X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup.   It is specifically designed for the toughest industrial environments.   TPS-3044TX-M12 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TPS-3044TX-M12 can be managed centralized and convenient by a powerful windows utility ~ Open-Vision.   In addition, the wide operating temperature range from -40 $^{\circ}$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 PoE Ethernet application.
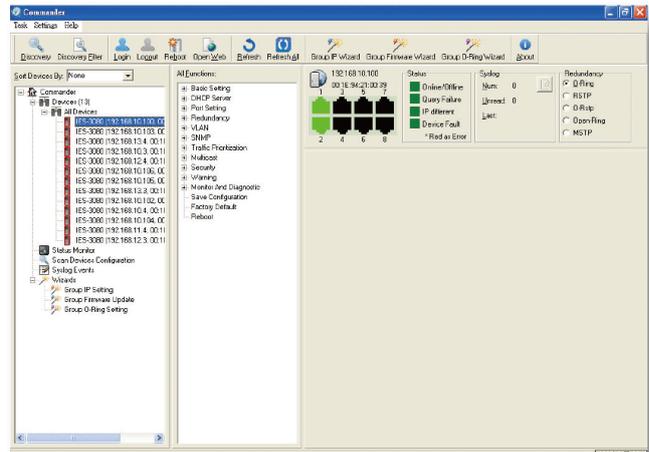
Open-Vision

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.
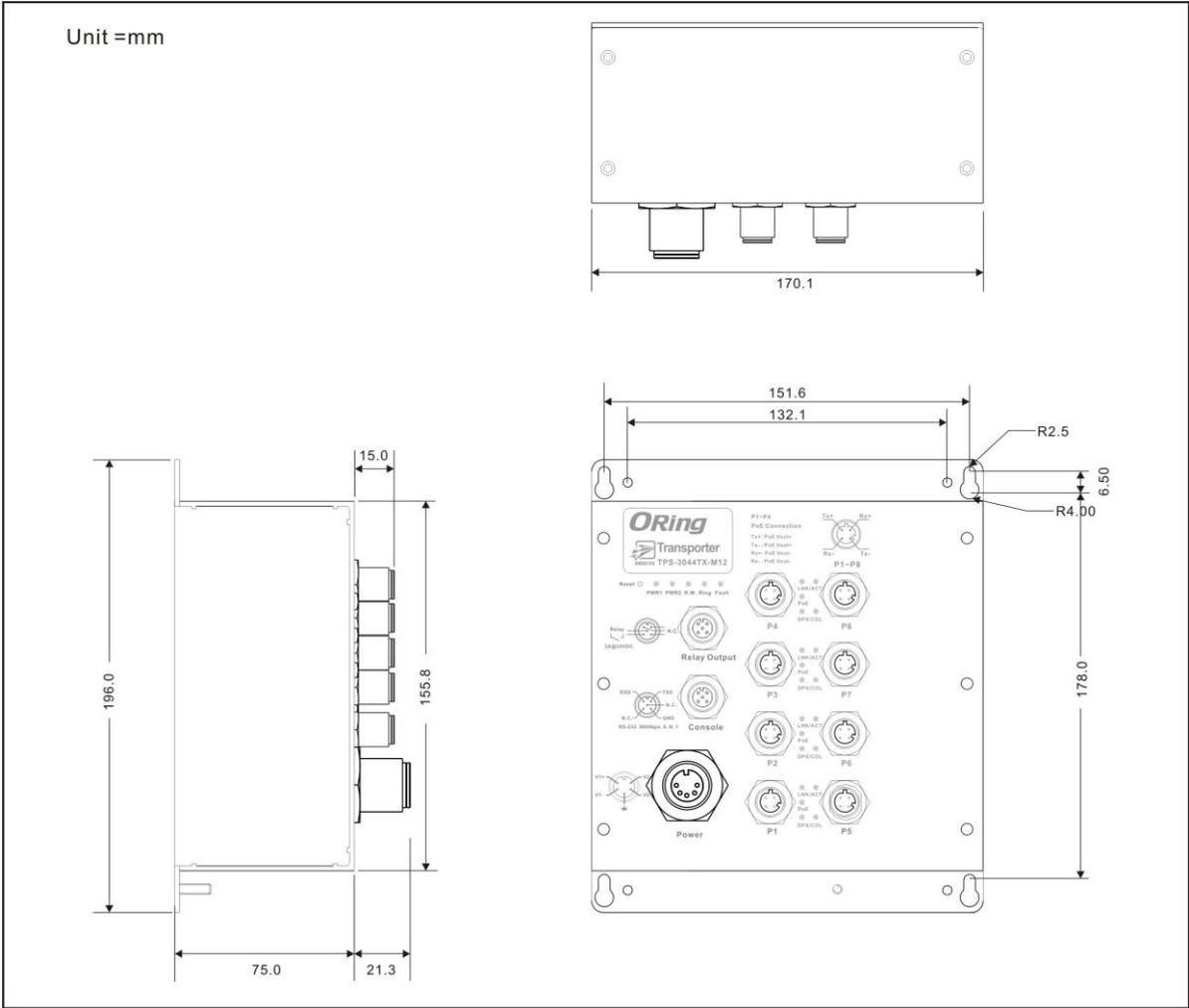

Network connection

Topology View

Monitoring and Configuration interface

Dimension

Unit =mm

170.1

151.6

132.1

R2.5

6.50

R4.00

178.0

15.0

155.8

196.0

75.0

21.3

ORing
Transporter
TPS-3044TX-M12

PoE Pin Definition

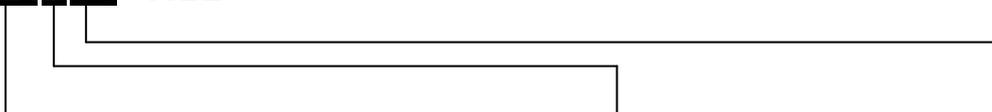| RJ-45 Pin Definition	
Pin No.	Description
#1	TD+ with PoE Power input +
#2	TD- with PoE Power input +
#3	RD+ with PoE Power input -
#6	RD- with PoE Power input -

Specifications

ORing Switch Model	TPS-3044TX-M12
Physical Ports	
10/100 Base-T(X) Ports **P.S.E.** on M12 Auto MDI/MDIX	**4 (M12 D-coding)**
10/100 Base-T(X) Ports on M12 Auto MDI/MDIX	**4 (M12 D-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 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) IEEE 802.3af PoE specification (up to 15.4 Watts per port for P.S.E.)
MAC Table	8192 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching latency: 7 us 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 SNMP v1/v2c/v3 encrypted authentication and access security
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-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 Modbus TCP
Network Redundancy	O-Ring Open-Ring O-Chain MRP 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
LED Indicators	
Power Indicator	Green : Power LED x 2
R.M. Indicator	Green : Indicate system operated in O-Ring Master mode

* All specifications are subject to change without notice.

O-Ring Indicator	Green : Indicate system operated in O-Ring mode
Fault Indicator	Amber : Indicate unexpected event occurred
10/100Base-T(X) M12 P.S.E. Port Indicator (Port1 ~ 4)	Top Green LED for port Link/Act. Middle Green LED for PoE indicator. Bottom Amber LED for port Duplex/Collision
10/100Base-T(X) M12 Port Indicator (Port5 ~ 8)	Green for port Link/Act. Amber for Duplex/Collision
Fault contact	
Relay	Relay output to carry capacity of 3A at 24VDC on M12 connector (A-coding)
Power	
Redundant Input Power	Dual 48VDC on 5-pin M23 connector
Power Consumption (Typ.)	8.16 Watts (P.S.E. output not included)
Overload Current Protection	Present
Reverse Polarity Protection	NOT Present
Physical Characteristic	
Enclosure	IP-40
Dimension (W x D x H)	170.1 (W) x 96.3 (D) x 196 (H) mm
Weight (g)	1345 g
Environmental	
Storage Temperature	-40 to 85ºC (-40 to 185ºF)
Operating Temperature	-40 to 70ºC (-40 to 158ºF)
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

TPS-3AABCC–M12

Code Definition	10/100Base-T(X) P.S.E. Port Number	Additional Port Number	Additional Port Type
Option	**- 04:** 4 ports	**- 4:** 4 ports	**-TX:** 10/100Base-T(X) port

Available Model	Model Name	Description
	TPS-3044TX-M12	EN50155 8-port managed PoE Ethernet switch with 4x10/100Base-T(X) P.S.E. and 4x10/100/base-T(X), M12 connector

Packing List

- TPS-3044TX-M12 x 1
- ORing Tool CD x 1
- Quick Installation Guide x 1
- Console Cable x 1

Optional Accessories

- Open-Vision M500 : Powerful Network
  Management Windows utility Suit, 500 IP devices
- Console cable

- DR-75-48 : 75 Watts DIN-Rail power supply
- DR-120-48 : 120 Watts DIN-Rail power supply
- M12C : M12 cable accessories