

TN-5524-8PoE Series

EN 50155 24-port managed Ethernet switches with 8 PoE ports



- IEEE 802.3af compliant PoE ports
- Provides up to 15.4 watts at 48 VDC per PoE port
- Isolated power inputs with universal 24 VDC power supply
- Essential compliance with EN 50155*
- -40 to 75°C operating temperature range (T models)
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy

*Moxa defines "essential compliance" to include those EN 50155 requirements that make products more suitable for rolling stock railway applications.



EN 50155



EN 50121



Introduction

The ToughNet TN-5500 series M12 PoE managed Ethernet switches are designed for railway applications, such as rolling stock, and wayside installations. The TN series switches use M12 and other circular connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. The TN-5524-8PoE series Ethernet switches provide 24 Fast Ethernet M12 ports with 8 IEEE 802.3af compliant PoE (Power-over-Ethernet) ports. The PoE switches are classified as power source equipment (PSE) and provide up to 15.4 watts of power

per port, and can be used to power IEEE 802.3af compliant powered devices (PDs) (such as surveillance cameras, wireless access points, and IP phones). Wide temperature models with an extended operating temperature range of -40 to 75°C are available. The TN-5500-PoE series Ethernet switches are compliant with essential sections of EN 50155, covering operating temperature, power input voltage, surge, ESD, and vibration, as well as conformal coating and power insulation, making the switches suitable for a variety of industrial applications.

Features and Benefits

- Advanced PoE management function
- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- Leading EN50155-compliant PoE switches for rolling stock applications
- DHCP Option 82 for IP address assignment with different policies
- EtherNet/IP and Modbus/TCP industrial Ethernet protocol supported
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
- IGMP snooping and GMRP for filtering multicast traffic
- Port-based VLAN, IEEE 802.1Q VLAN, and GVRP to ease network planning
- QoS (IEEE 802.1p/1Q and TOS/DiffServ) to increase determinism
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- TACACS+, SNMPv3, IEEE 802.1X, HTTPS, and SSH to enhance network security
- SNMPv1/v2c/v3 for different levels of network management
- RMON for efficient network monitoring and proactive capability
- Bandwidth management prevents unpredictable network status
- Lock port allows access by only authorized MAC addresses
- Port mirroring for online debugging
- Automatic warning by exception through email, relay output
- Line-swap fast recovery
- Automatic recovery of connected device's IP addresses
- LLDP for automatic topology discovery in network management software
- Configurable by web browser, Telnet/serial console, CLI, and Windows utility
- Panel mounting installation capability

Specifications

Technology

Standards:

IEEE 802.3af for Power-over-Ethernet
 IEEE 802.3 for 10BaseT
 IEEE 802.3u for 100BaseT(X)
 IEEE 802.3x for Flow Control
 IEEE 802.1D-2004 for Spanning Tree Protocol
 IEEE 802.1w for Rapid STP
 IEEE 802.1s for Multiple Spanning Tree Protocol
 IEEE 802.1Q for VLAN Tagging
 IEEE 802.1p for Class of Service
 IEEE 802.1X for Authentication
 IEEE 802.3ad for Port Trunk with LACP

Protocols: IGMPv1/v2, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 66/67/82, BootP, TFTP, SNTP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SSH, Syslog, EtherNet/IP, Modbus/TCP, SNMP Inform, LLDP, IEEE 1588 PTP V2, IPv6, NTP Server/Client, TACACS+

MIB: MIB-II, Ethernet-like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

Flow Control: IEEE802.3x flow control, back pressure flow control

Switch Properties

Priority Queues: 4

Max. Number of Available VLANs: 64

VLAN ID Range: VID 1 to 4094

IGMP Groups: 256

Interface

Fast Ethernet: Front cabling, M12 connector, 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection

Console Port: M12 A-coding 5-pin male connector

System LED Indicators: PWR1, PWR2, FAULT, MSTR/HEAD, CPLR/ TAIL

Port LED Indicators: 10/100M (Fast Ethernet port), PoE

Alarm Contact: 2 relay outputs in one M12 A-coding 5-pin male connector with current carrying capacity of 3 A @ 30 VDC

Power Requirements

Input Voltage: 24 VDC (16.8 to 30 VDC)

Input Current: Max. 8.4 @ 24 VDC

Overload Current Protection: Present

Connection: M23 connector

Reverse Polarity Protection: Present

Physical Characteristics

Housing: Metal, IP40 protection (optional protective caps available for unused ports)

Dimensions: 390 x 132 x 122.3 mm (15.35 x 5.20 x 4.81 in)

Weight: TN-5524-8PoE series: 3,506 g

Installation: Panel mounting kit

Environmental Limits

Operating Temperature: -40 to 75°C (-40 to 167°F)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Altitude: Up to 2000 m

Please contact Moxa if you require products guaranteed to function at higher altitudes

Standards and Certifications

Safety: UL 508 (Pending)

EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A

EMS:

EN 61000-4-2 (ESD) Level 3

EN 61000-4-3 (RS) exceeds Level 3

EN 61000-4-4 (EFT) Level 3

EN 61000-4-5 (Surge) Level 3

EN 61000-4-6 (CS) Level 3

EN 61000-4-8

Rail Traffic: (for panel mounting installations)

EN 50155 (essential compliance*), EN 50121-4

*Please contact Moxa or a Moxa distributor for details.

Shock: IEC 61373

Freefall: IEC 60068-2-32

Vibration: IEC 61373

Note: Please check Moxa's website for the most up-to-date certification status.

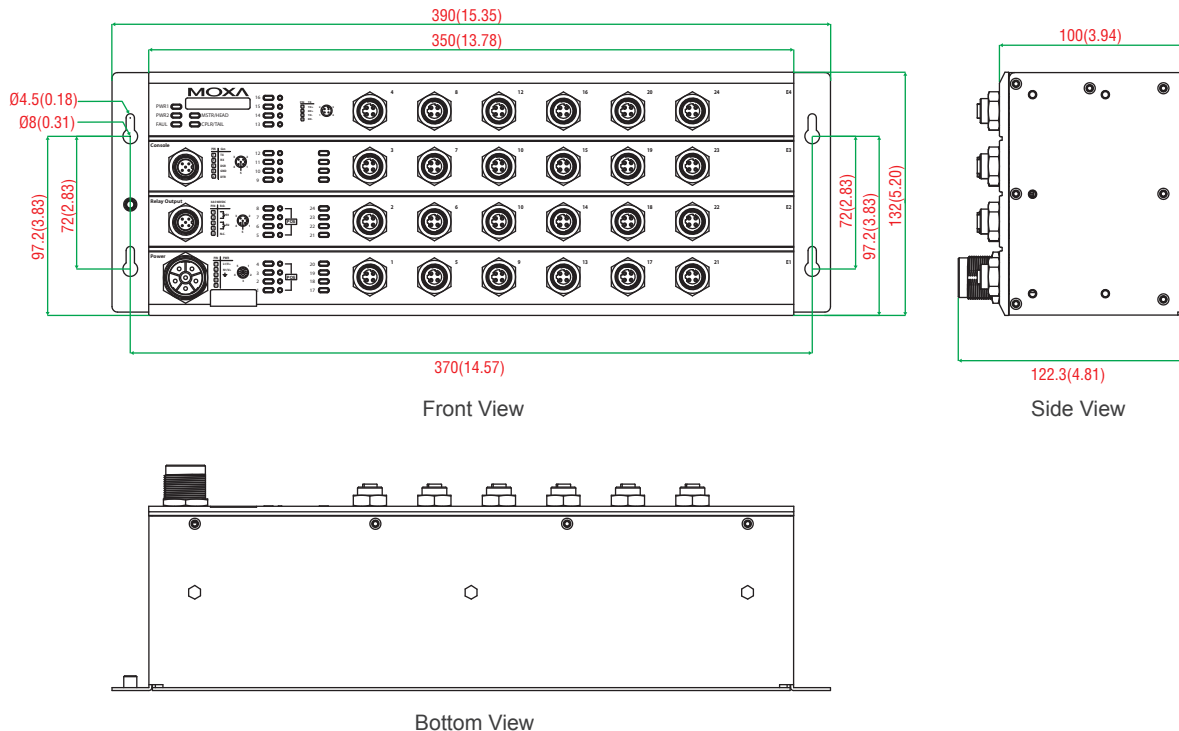
Warranty

Warranty Period: 5 years

Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



: Ordering Information

Available Models	Port Interface				Power Supply				
	PoE, 10/100 BaseT(X), M12 Connector	10/100 BaseT(X), M12 Connector	10/100/1000 BaseT(X), M12 Connector	1000 Mbps Fiber Optic Q-ODC	P24 VDC (16.8 to 30 V)	PLV: 36/48 VDC (25.2 to 60 VDC)	PMV: 72/96/110 VDC (50.4 to 137.5 VDC)	WV: 24/36/48/72/96/110 VDC	Conformal Coating
TN-5524-8PoE-P24-T	8	16	–	–	1	–	–	–	–
TN-5524-8PoE-P24-CT-T	8	16	–	–	1	–	–	–	✓

Optional Accessories (must be purchased separately)

Power Cords, M12 Connectors, Protective Caps: See page 2-29

MXview: Moxa industrial network management software with 50, 100, 250, 500, 1000, or 2000 nodes

EDS-SNMP OPC Server Pro: OPC server software that works with all SNMP devices

ABC-01-M12: Configuration backup and restoration tool for TN series managed Ethernet switches, 0 to 60°C operating temperature

Package Checklist

- TN-5524-8PoE switch
- M12-to-DB9 console port cable
- 2 protective caps for console and relay output ports
- Panel mounting kit
- Documentation and software CD
- Hardware installation guide
- Warranty card

EN 50155 Switch Accessories

: M12/M23 Power Cords

CBL-M12D(MM4P)/RJ45-100 IP67

1-meter M12-to-RJ45 Cat-5C UTP Ethernet cable with IP67-rated 4-pin male D-coded M12 connector



CBL-M12(FF5P)/OPEN-100 IP67

1-meter M12-to-5-pin power cable with IP67-rated 5-pin female A-coded M12 connector



CBL-M23(FF6P)/Open-BK-100 IP67

1-meter M23-to-6-pin power cable with IP67-rated 6-pin female M23 connector



: M12 Connectors

M12D-4P-IP68

Field-installable M12 D-coded screw-in sensor connector, 4-pin male, IP68-rated



M12A-5P-IP68

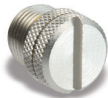
Field-installable M12 A-coded screw-in sensor connector, 5-pin female, IP68-rated



: M12 IP67 Protective Caps

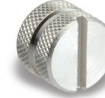
A-CAP-M12F-M

Metal cap for M12 female connector



A-CAP-M12M-M

Metal cap for M12 male connector



: M23 Connectors

A-PLG-WPM23-01

M23 cable connector, 6-pin female, crimp type

