

# TN-5508-4PoE/5516-8PoE Series

**EN 50155 8/16-port IEEE 802.3af PoE managed Ethernet switches**



- > 4 or 8 IEEE 802.3af compliant PoE and Ethernet combo ports
- > Provides up to 15.4 watts at 48 VDC per PoE port
- > Isolated redundant power inputs with universal 24/48 VDC, or 110/220 VDC/VAC power supply range
- > Compliant with essential sections of 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



EN 50155



EN 50121



## Introduction

The ToughNet TN-5500 series M12 PoE managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway. 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-5500-PoE series Ethernet switches provide 8 or 16 Fast Ethernet M12 ports with 4 or 8 IEEE 802.3af compliant PoE (Power-over-Ethernet) ports. The 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) when AC power is not readily available or is cost-prohibitive to provide locally for rolling stock. In addition, the 24/48 VDC, or 110/220 VDC/VAC dual, redundant power supply increases the reliability of your communications and saves on cabling/wiring costs. Wide temperature models with an extended operating temperature range of -40 to 75°C are also available. The TN-5500-PoE series Ethernet switches are compliant with the essential sections of EN 50155, covering operating temperature, power input voltage, surge, ESD and vibration, making the switches suitable for a variety of industrial applications.

## Features and Benefits

- Advanced PoE management function
- Three rotary switches for setting the last 3 digits of the IP address makes maintenance even easier
- 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 or DIN-Rail 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 802.3ab for 1000BaseT(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

**Rotary Switches:** For setting the last 3 digits of the IP address

**Power Requirements**

**Input Voltage:**

- 24 VDC (16.8 to 30 V)
- 48 VDC (46 to 50 V)
- 110/220 VDC/VAC (88 to 300 VDC, 85 to 264 VAC)

Note: Compliant with EN 50155 on 24/110 VDC

**Input Current:**

- TN-5508-4PoE Series
  - Max. 3.5 A @ 24 VDC
  - Max. 1.8 A @ 48 VDC
  - Max. 0.92/0.47 A @ 110/220 VDC
  - Max. 0.77/0.39 A @ 110/220 VAC
- TN-5516-8PoE Series
  - Max. 7.5 A @ 24 VDC
  - Max. 3 A @ 48 VDC
  - Max. 1.95/0.975 A @ 110/220 VDC
  - Max. 1.83/0.91 A @ 110/220 VAC

**Overload Current Protection:** Present

**Connection:** M23 connector

**Reverse Polarity Protection:** Present

**Physical Characteristics**

**Housing:** Metal, IP54 protection (optional protective caps available for unused ports)

**Dimensions:**

TN-5508-4PoE series: 185 x 175.8 x 110 mm (7.28 x 6.92 x 4.33 in)

TN-5516-8PoE series: 250 x 175.8 x 110 mm (9.84 x 6.92 x 4.33 in)

**Weight:**

TN-5508-4PoE Series: 2140 g

TN-5516-8PoE Series: 4000 g

**Installation:** Panel mounting, DIN-Rail mounting (with optional kit)

**Environmental Limits**

**Operating Temperature:**

Standard Models: -25 to 60°C (32 to 140°F)

Wide Temp. Models: -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)

**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 61000-4-3 (RS) Level 4,

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,

EN 61000-4-11

**Rail Traffic:** (for panel mounting installations)

EN 50155, EN 50121-4

**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**

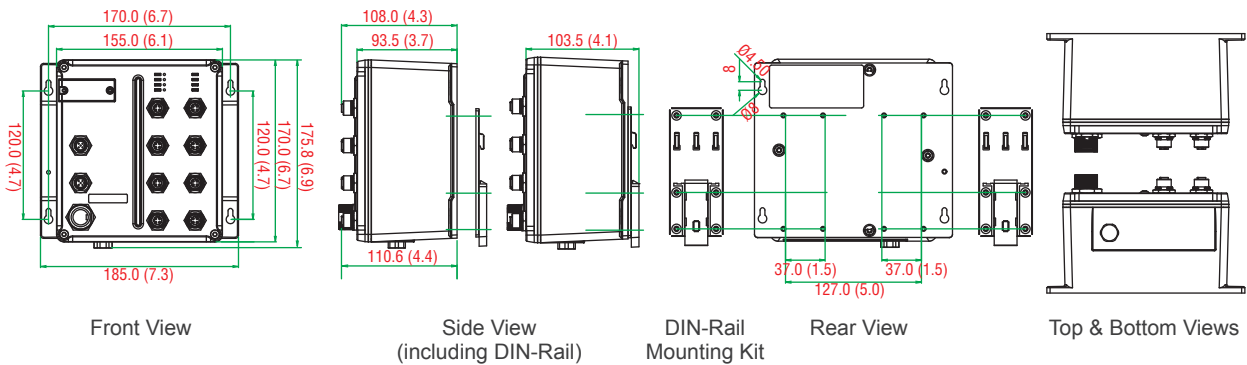
**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

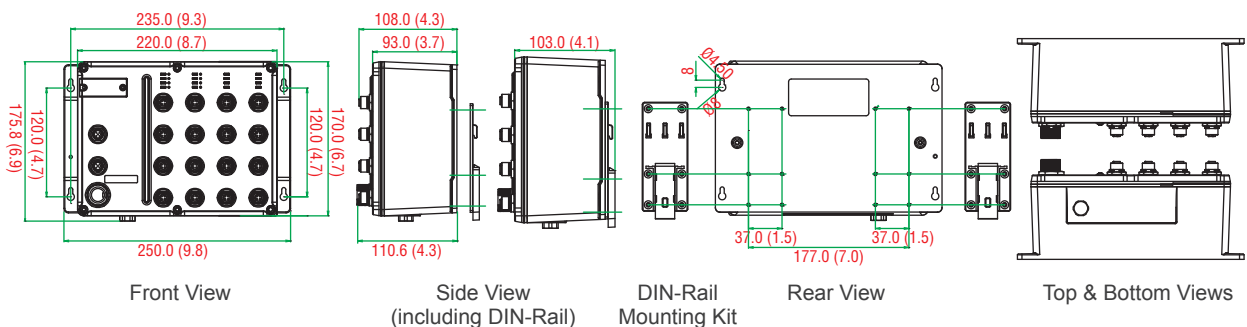
**Dimensions**

Unit: mm (inch)

**TN-5508-4PoE Series**



**TN-5516-8PoE Series**



## Ordering Information

Available Models		Port Interface		Power Supply					
Standard Temperature (-25 to 60°C)	Wide Temperature (-40 to 75°C)	PoE, 10/100BaseT(X), M12 Connector	10/100BaseT(X), M12 Connector	Power Supply 1			Power Supply 2		
				24 VDC (16.8 to 30 V)	48 VDC (46 to 50 V)	HV: 88 to 300 VDC and 85 to 264 VAC	24 VDC (16.8 to 30 V)	48 VDC (46 to 50 V)	HV: 88 to 300 VDC and 85 to 264 VAC
<b>TN-5508-4PoE Series</b>									
TN-5508-4PoE-24	TN-5508-4PoE-24-T	4	4	1	–	–	–	–	–
TN-5508-4PoE-48	TN-5508-4PoE-48-T	4	4	–	1	–	–	–	–
TN-5508-4PoE-HV	TN-5508-4PoE-HV-T	4	4	–	–	1	–	–	–
<b>TN-5516-8PoE Series</b>									
TN-5516-8PoE-24	TN-5516-8PoE-24-T	8	8	1	–	–	–	–	–
TN-5516-8PoE-24-24	TN-5516-8PoE-24-24-T	8	8	1	–	–	1	–	–
TN-5516-8PoE-24-48	TN-5516-8PoE-24-48-T	8	8	1	–	–	–	1	–
TN-5516-8PoE-24-HV	TN-5516-8PoE-24-HV-T	8	8	1	–	–	–	–	1
TN-5516-8PoE-48	TN-5516-8PoE-48-T	8	8	–	1	–	–	–	–
TN-5516-8PoE-48-48	TN-5516-8PoE-48-48-T	8	8	–	1	–	–	1	–
TN-5516-8PoE-48-HV	TN-5516-8PoE-48-HV-T	8	8	–	1	–	–	–	1
TN-5516-8PoE-HV	TN-5516-8PoE-HV-T	8	8	–	–	1	–	–	–
TN-5516-8PoE-HV-HV	TN-5516-8PoE-HV-HV-T	8	8	–	–	1	–	–	1

Note: Comformal coating is available on request.

### Optional Accessories (must be purchased separately)

**Power Cords, M12 Connectors, Protective Caps:** See page 2-22

**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-5508-4PoE or TN-5516-8PoE 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

# 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**

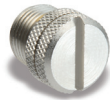
Field-installable M12 A-coded screw-in sensor connector, 5-pin female, IP68-rated



## : M12 IP67 Protective Caps

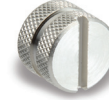
### **A-CAP-M12F-M**

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

