

# TN-4900 Series

## EN 50155 Gigabit Security Router



### Features and Benefits

- 8 Gigabit ports and up to 12 PoE ports
- IEC 61375 ETBN functionality (ETBN models)
- Dual bypass relay
- Isolated power input range from 24 to 110 VDC
- Complies with all EN 50155 mandatory test items<sup>1</sup>
- -40 to 70°C operating temperature range
- Complies with IEC 62443-4-2:2019<sup>2</sup>

### Certifications



## Introduction

The ToughNet TN-4900 Series, designed for rolling stock Ethernet networks, is a set of high-performance M12 routers with 8 Gigabit ports and up to four bypass relay ports. These routers feature firewall, ETBN, and routing functionality to facilitate the deployment of applications across networks. The TN-4900 Series routers use M12 and other circular connectors to ensure tight, robust connections that guarantee reliability against environmental disturbances, such as vibration and shock.

The TN-4900 Series supports a wide power input range of 24 to 110 VDC and can operate in temperatures of -40 to 70°C for extended periods of time. Furthermore, these routers are compliant with the mandatory requirements of EN 50155, making them suitable for a variety of industrial applications.

### Additional Features and Benefits

- IEC 61375-2-3, 61375-2-5-compliant ETBN
- IEC 62443-4-2:2019-compliant cybersecurity features
- Firewall to protect the network and filter untrusted network traffic
- Routing functionality to divide a large network into hierarchical subnets and allow data and information to communicate across networks
- NAT makes IP management easier as end devices in different carriages can use the same IP addresses
- Leading EN 50155 Ethernet router for rolling stock applications
- Turbo Ring and RSTP/STP for network redundancy
- Panel mounting installation
- 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, and CLI Windows utility

## Specifications

### Ethernet Interface

10/100/1000BaseT(X) Ports (M12 X-coded 8-pin female connector)	TN-4908 Series non-PoE non-ETBN models: 8 TN-4908 Series non-PoE ETBN models: 4 TN-4908 Series PoE non-ETBN models: 4 TN-4916 Series PoE non-ETBN models: 4
10/100/1000BaseT(X) Ports (M12 X-coded 8-pin female connector with bypass relay)	TN-4908 Series ETBN models: 4 TN-4916 Series ETBN models: 4
PoE Ports (10/100BaseT(X), M12 D-coded 4-pin female connector)	TN-4916 Series PoE models: 8

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: [www.moxa.com/doc/specs/EN\\_50155\\_Compliance.pdf](http://www.moxa.com/doc/specs/EN_50155_Compliance.pdf)  
2. Expected to be ready by the end of Q4, 2021.

PoE Ports (100/1000BaseT(X), M12 X-coded 8-pin female connector)	TN-4908 Series PoE models: 4 TN-4916 Series PoE models: 4
Standards	IEEE 802.1Q for VLAN Tagging IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.3af/at for PoE/PoE+ output IEEE 802.3ab for 1000BaseT(X) IEEE 802.1X for authentication IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.3x for flow control IEEE 802.3u for 100BaseT(X) IEEE 802.1p for Class of Service IEEE 802.3 for 10BaseT

#### Ethernet Software Features

Configuration Options	Command Line Interface (CLI) through Serial/Telnet/SSH, Web Console (HTTP/HTTPS), Windows Utility
Filter	IGMP v1/v2, Static Multicast, 802.1Q
Management	Back Pressure Flow Control, SNMP Inform, LLDP, Syslog, HTTP, Flow control, SMTP, QoS/CoS/ToS, Port Mirror, SNMP Trap, SNMPv1/v2c/v3, IPv4, Telnet, DHCP server, TFTP, RARP, Account Management
Redundancy Protocols	RSTP, Static Port Trunk, Turbo Ring v2, STP
Routing Redundancy	VRRP
Security	Port Lock, SSH, Broadcast storm protection, TACACS+, Local Account Accessibility, HTTPS/SSL
Time Management	SNTP, NTP Server/Client
Unicast Routing	RIPV1/V2, OSPF, Static Route
Multicast Routing	Static Route

#### DoS and DDoS Protection

Technology	NMAP-ID Scan, ARP-Flood, SYN/FIN Scan, Null Scan, ICMP-Death, FIN Scan, SYN-Flood, NEWWithout-SYN Scan, Xmas Scan, NMAP-Xmas Scan, SYN/RST Scan
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#### Firewall

Filter	ICMP, MAC address, Ethernet protocols, Ports, IP address, DDoS
Quick Automation Profiles	Telnet, HTTP, RADIUS, PROFINET, EtherCAT, IPsec, SSH, PPTP, IEC 60870-104, FOUNDATION Fieldbus, L2TP, EtherNet/IP, LonWorks, DNP, Modbus TCP, FTP
Stateful Inspection	Router firewall Transparent (bridge) firewall
Throughput	Max. 500,000 packets per second

#### Switch Properties

IGMP Groups	256
MAC Table Size	16 K
Max. No. of VLANs	16
VLAN ID Range	VID 1 to 4094

#### LED Interface

LED Indicators	STATE, PWR1, PWR2, FAULT, 10/100/1000M, PoE
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<b>NAT</b>	
Features	1-to-1, Port forwarding, N-to-1
<b>Serial Interface</b>	
Console Port	RS-232 (M12 B-coded 5-pin female connector)
<b>USB Interface</b>	
M12 Connector	M12 A-coded 5-pin female (for ABC-02 USB storage)
<b>Power Parameters</b>	
Input Current	TN-4908 Series non-PoE models: 0.65 A @ 24 V TN-4908 Series PoE models: 3.4 A @ 24 V TN-4916 Series PoE models: 5.9 A @ 24 V
Input Voltage	24/36/48/72/96/110 VDC, Redundant dual inputs, No. of power inputs: 2
Operating Voltage	16.8 to 137.5 VDC
Overload Current Protection	Supported
Power Connector	M12 K-coded 5-pin male connector
Reverse Polarity Protection	Supported
<b>Physical Characteristics</b>	
Housing	Metal
Dimensions	TN-4908 Series non-PoE models: 160 x 115 x 70 mm (6.30 x 4.53 x 2.76 in) TN-4908 Series PoE models: 160 x 115 x 100 mm (6.30 x 4.53 x 3.94 in) TN-4916 Series PoE models: 206 x 115 x 100 mm (8.10 x 4.53 x 3.94 in)
IP Rating	IP40
Weight	TN-4908 Series non-PoE models: 1120 g (2.47 lb) TN-4908 Series PoE models: 1640 g ( 3.62 lb) TN-4916 Series PoE models: 1990 g ( 4.39 lb)
Installation	Wall mounting
Protection	Optional PCB conformal coating
<b>Environmental Limits</b>	
Operating Temperature	-40 to 70°C (-40 to 158°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
<b>Standards and Certifications</b>	
EMC	EN 55032, EN 55035
EMS	IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Freefall	IEC 60068-2-31
Radio Frequency	FCC
Railway	EN 50121-4, EN 50155, IEC 60571

Railway Fire Protection	EN 45545-2
Safety	IEC 62368, UL 62368
Shock	IEC 60068-2-27, IEC 61373, EN 50155
Vibration	IEC 60068-2-64, IEC 61373, EN 50155

#### Declaration

Green Product	RoHS, CRoHS, WEEE
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#### MTBF

Time	TN-4908 Series non-PoE models: 795,840 hrs TN-4908 Series non-PoE ETBN models: 648,903 hrs TN-4908 Series PoE models: 644,898 hrs TN-4908 Series PoE ETBN models: 545,021 hrs TN-4916 Series PoE models: 550,148 hrs TN-4916 Series PoE ETBN models: 472,578 hrs
Standards	Telcordia SR332

#### Warranty

Warranty Period	5 years
Details	See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>

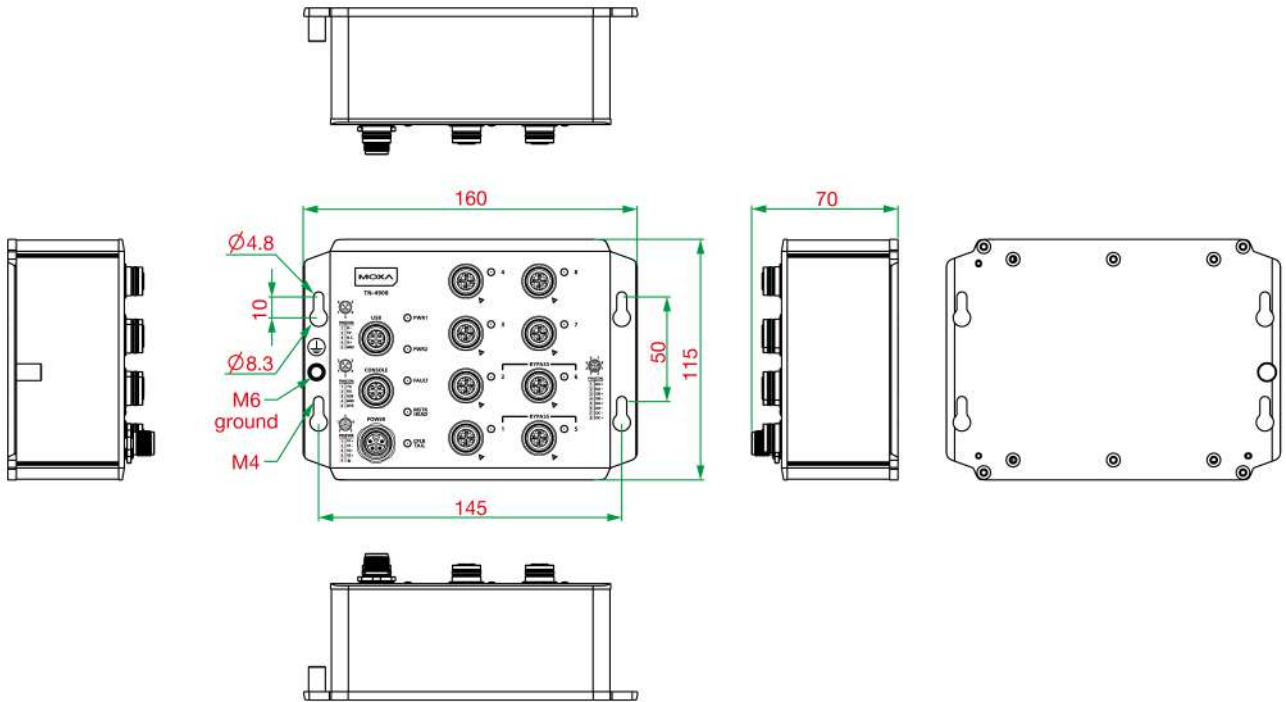
#### Package Contents

Device	1 x TN-4900 Series router
Installation Kit	2 x cap, male, metal, for M12 port (Console and USB storage ports, fixed on switch) 4/8 x cap, male, metal, for M12 port (Ethernet ports, fixed on switch) 1 x wall-mounting kit
Documentation	1 x quick installation guide 1 x warranty card

## Dimensions

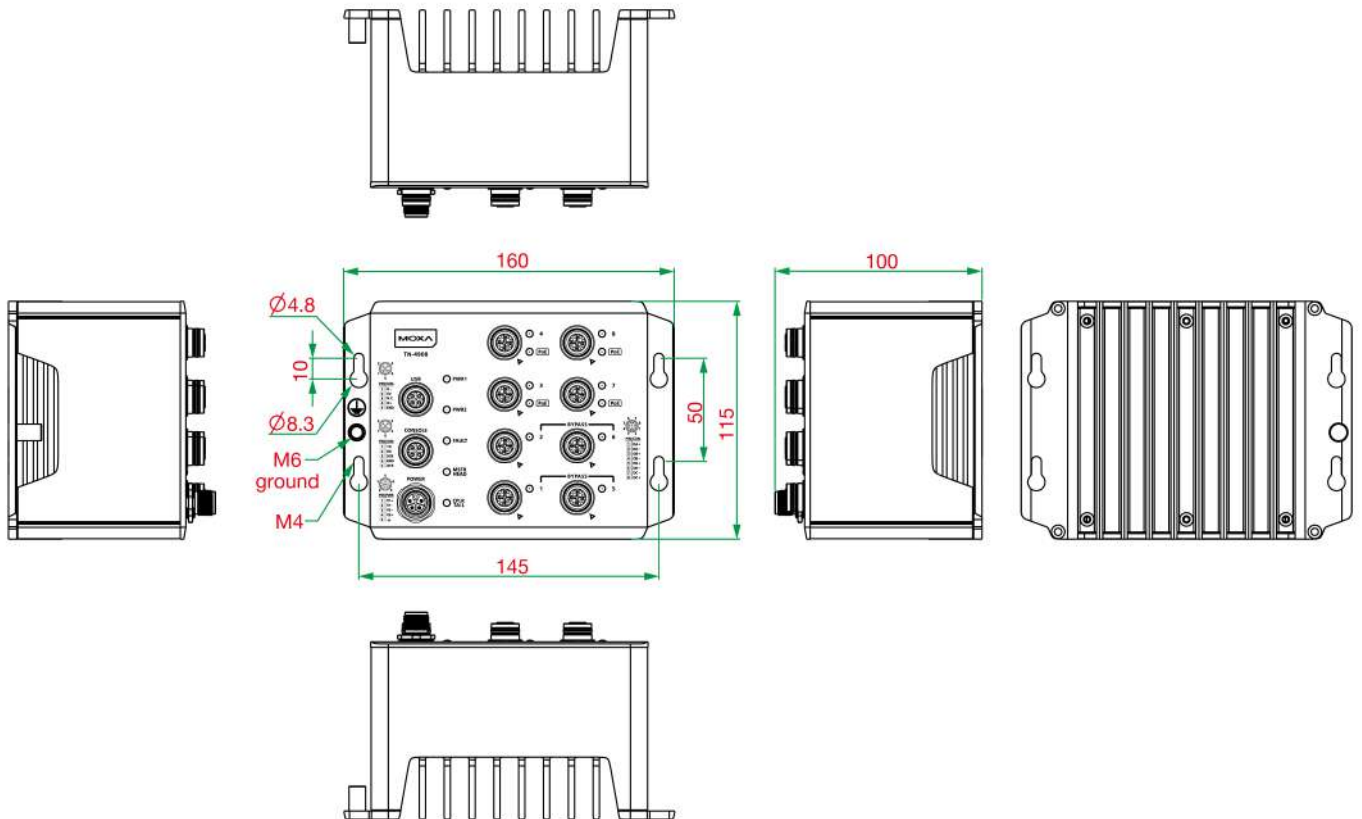
### TN-4908 Non-PoE Models

Unit: mm



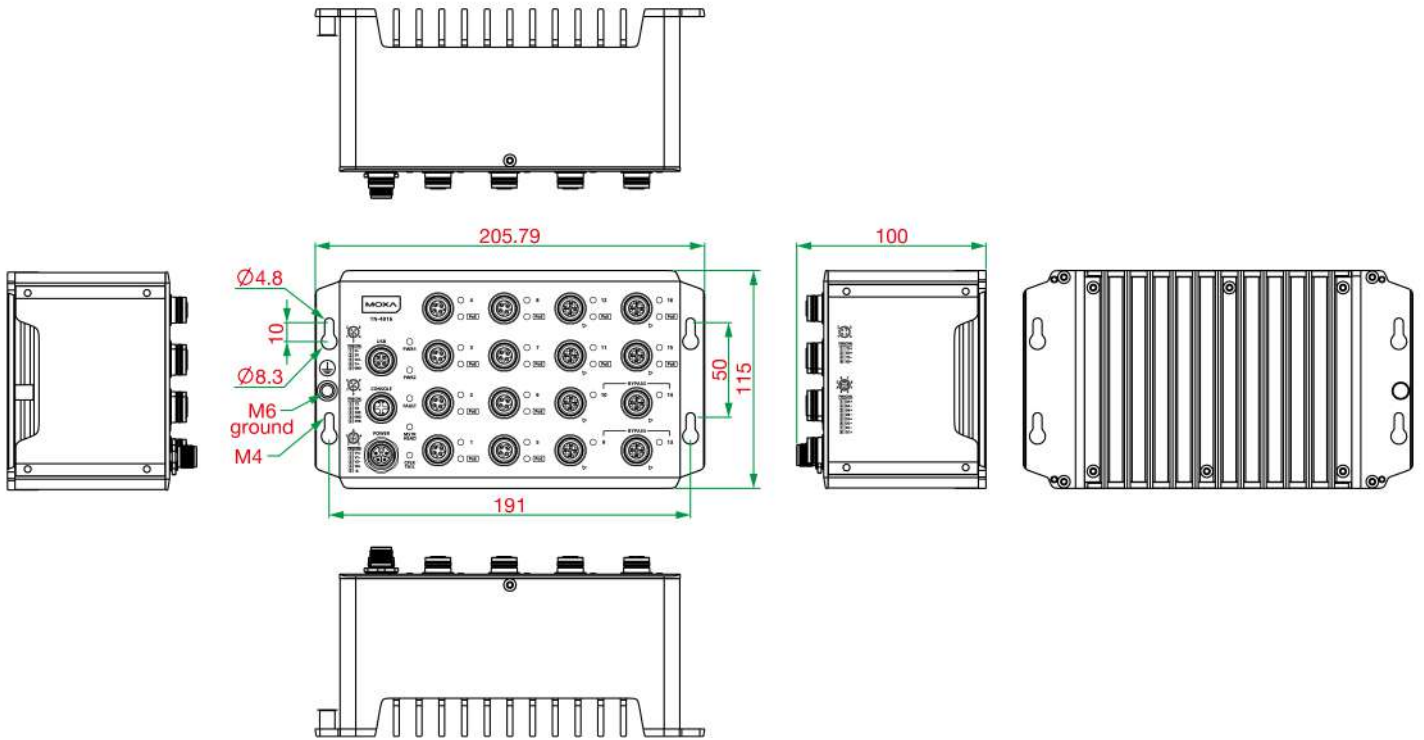
### TN-4908 PoE Models

Unit: mm



## TN-4916 PoE Models

Unit: mm



## Ordering Information

Model Name	Firewall	ETBN	10/100BaseT(X) PoE Ports, M12 D-coded 4-pin Female Connector	10/100/ 1000BaseT(X) Ports, M12 X- coded Female Connector	100/ 1000BaseT(X) Ports, M12 X- coded 8-pin Female Connector With Bypass Relay	10/100/ 1000BaseT(X) PoE Ports, M12 X-coded 8-pin Female Connector	Conformal Coating
TN-4908-8GTX-WV-T	✓	-	-	8	-	-	-
TN-4908-8GTX-WV-CT-T	✓	-	-	8	-	-	✓
TN-4908-ETBN-4GTX-4GTXBP-WV-T	-	✓	-	4	4	-	-
TN-4908-ETBN-4GTX-4GTXBP-WV-CT-T	-	✓	-	4	4	-	✓
TN-4908-ETBN-F-4GTX-4GTXBP-WV-T	✓	✓	-	4	4	-	-
TN-4908-ETBN-F-4GTX-4GTXBP-WV-CT-T	✓	✓	-	4	4	-	✓
TN-4908-4GPoE-4GTX-WV-T	✓	-	-	4	-	4	-
TN-4908-4GPoE-4GTX-WV-CT-T	✓	-	-	4	-	4	✓
TN-4908-ETBN-4GPoE-4GTXBP-WV-T	-	✓	-	-	4	4	-
TN-4908-ETBN-4GPoE-4GTXBP-WV-CT-T	-	✓	-	-	4	4	✓
TN-4908-ETBN-F-4GPoE-4GTXBP-WV-T	✓	✓	-	-	4	4	-
TN-4908-ETBN-F-4GPoE-4GTXBP-WV-CT-T	✓	✓	-	-	4	4	✓

Model Name	Firewall	ETBN	10/100BaseT(X) PoE Ports, M12 D-coded 4-pin Female Connector	10/100/1000BaseT(X) Ports, M12 X-coded Female Connector	100/1000BaseT(X) Ports, M12 X-coded 8-pin Female Connector With Bypass Relay	10/100/1000BaseT(X) PoE Ports, M12 X-coded 8-pin Female Connector	Conformal Coating
TN-4916-8PoE-4GPoE-4GTX-WV-T	-	-	8	4	-	4	-
TN-4916-8PoE-4GPoE-4GTX-WV-CT-T	-	-	8	4	-	4	✓
TN-4916-ETBN-8PoE-4GPoE-4GTXBP-WV-T	-	✓	8	-	4	4	-
TN-4916-ETBN-8PoE-4GPoE-4GTXBP-WV-CT-T	-	✓	8	-	4	4	✓
TN-4916-ETBN-F-8PoE-4GPoE-4GTXBP-WV-T	✓	✓	8	-	4	4	-
TN-4916-ETBN-F-8PoE-4GPoE-4GTXBP-WV-CT-T	✓	✓	8	-	4	4	✓

## Accessories (sold separately)

### M12 Connector Caps

A-CAP-M12M-M	Metal cap for M12 male connector
A-CAP-M12F-M-PP	Metal cap for M12 female push-pull connector

### Connectors

M12X-8PMM-IP67-HTG	X-coded screw-in Gigabit Ethernet connector, 8-pin male M12 connector, IP67
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### Cables

CBL-M12XMM8P-Y-300-IP67	M12-to-M12 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 3 m
CBL-M12XMM8PRJ45-Y-200-IP67	M12-to-RJ45 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 2 m
CBL-M12XMM8P-Y-100-IP67	M12-to-M12 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 1 m
CBL-M12BMM5PF9-BK-150-IP68	B-coded male M12-to-5-pin DB9 console cable, IP68-rated, 1.5 m
CBL-M12KFF5POPEN-O-150-IP67	K-coded female M12-to-5-pin open wire M12 power cable, IP67-rated, 1.5 m

### Storage Kits

ABC-02-P-USB-M12-CT-T	USB-based configuration backup and restoration tool with M12 connector for Moxa's ToughNet series of managed Ethernet switches and wireless APs/bridges/clients, -40 to 75°C operating temperature, conformal coating
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