

# TN-5916 Series

## EN 50155 16-port NAT router



- > Designed for rolling stock backbone networks
- > Dual bypass relay
- > Isolated power input range from 24 to 110 VDC
- > Complies with all EN 50155 mandatory test items\*
- > -40 to 75°C operating temperature range
- > Turbo Ring and RSTP/STP for network redundancy

\*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)



### Introduction

The ToughNet TN-5916, designed for rolling stock backbone networks, is a high performance M12 router with four bypass relay backbone ports. It supports NAT and routing functionality to facilitate the deployment of applications across networks. The TN-5916 router uses M12 and other circular connectors to ensure tight, robust connections that guarantee reliability against environmental disturbances, such

as vibration and shock. The TN-5916 router provides a wide power input range of 24 to 110 VDC. The TN-5916 operates in an extended operating temperature range of -40 to 75°C and is compliant with EN 50155/50121-4 requirements, making the router suitable for a variety of industrial applications.

### Features and Benefits

- Routing functionality to divide a large network into hierarchical subnets and allow data and information to communicate across networks
- NAT makes IP management easier, since end devices in different carriages can use the same IP addresses
- Leading EN 50155-compliant Ethernet router for rolling stock applications
- Turbo Ring and RSTP/STP for network redundancy
- IGMP V1/V2 snooping for filtering multicast traffic
- IEEE 802.1Q VLAN to ease network planning
- QoS (IEEE 802.1p/1Q and TOS/DiffServ) to improve reliability
- IEEE 802.3ad for Static Port Trunking
- SNMPv3, HTTPS, and SSH to enhance network security
- SNMP v1/v2c/v3 for different levels of network management
- Port mirroring for online debugging
- Automatic warning by exception through email and 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, and CLI Windows utility
- Panel mounting or DIN-rail mounting installation capability

### Specifications

#### Technology

##### Standards:

- 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 802.1Q for VLAN Tagging
- IEEE 802.1p for Class of Service
- IEEE 802.3ad for Static Port Trunking

#### Software Features

**Management:** SNMP v1/v2c/v3, Account Management, Telnet, Console - CLI, DHCP Server, LLDP, Port Mirror, Syslog, TFTP, SMTP Client, RARP, HTTP, HTTPS, SNMP inform, Flow Control, Back pressure flow control

**Filter:** 802.1Q VLAN, IGMPv1/v2, Static Multicast

**Redundancy Protocols:** STP/RSTP, Turbo Ring v2, Static Port Trunk

**Security:** Management Interface Control (TCP/UDP port blocking), Trusted Access Control

**Time Management:** SNTP, NTP Server/Client

**Routing Redundancy:** VRRP

**NAT:** N-1 NAT, 1-1 NAT, Port Forwarding

#### Router Properties

**Priority Queues:** 4

**Max. Number of VLANs:** 16

**VLAN ID Range:** VID 1 to 4094

**IGMP Groups:** 256

#### Interface

**Fast Ethernet:** Front cabling, M12 D-coded 4-pin female connector, 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection, with 4 bypass relays on backbone ports

**Console Port:** M12 A-coded 5-pin male connector

**Alarm Contact:** 2 relay outputs in one M12 A-coded 5-pin male connector with current carrying capacity of 1 A @ 30 VDC

#### Power Requirements

**Input Voltage:** 24/36/48/72/96/110 VDC

**Operating Voltage:** 16.8 to 137.5 VDC

**Input Current:** 0.85 A @ 24 VDC; 0.17 A @110 VDC

**Overload Current Protection:** Present

**Connection:** M23 connector

**Reverse Polarity Protection:** Present

**Physical Characteristics**

**Housing:** Aluminium alloy

**IP Rating:** IP54 protection (optional protective caps available for unused ports)

**Dimensions:** 250 x 175.8 x 116.3 mm (9.84 x 6.92 x 4.58 in)

**Weight:** 4030 g (8.88 lb)

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

**Environmental Limits**

**Operating Temperature:**

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)

**Altitude:** 2000 m

**Standards and Certifications**

**Safety:** UL/cUL 508, EN 60950-1 (LVD)

**EMC:** EN 55032, EN 55024

**EMI:** CISPR 32, FCC Part 15B Class A

**EMS:**

IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV

IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m

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

**Rail Traffic:** EN 50155\*, EN 50121-4, EN 45545-2

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**Shock:** EN 50155, EN/IEC 61373

**Freefall:** IEC 60068-2-32

**Vibration:** EN 50155, EN/IEC 61373

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

**MTBF (mean time between failures)**

Time: 556,025 hrs

**Standard:** Telcordia SR332

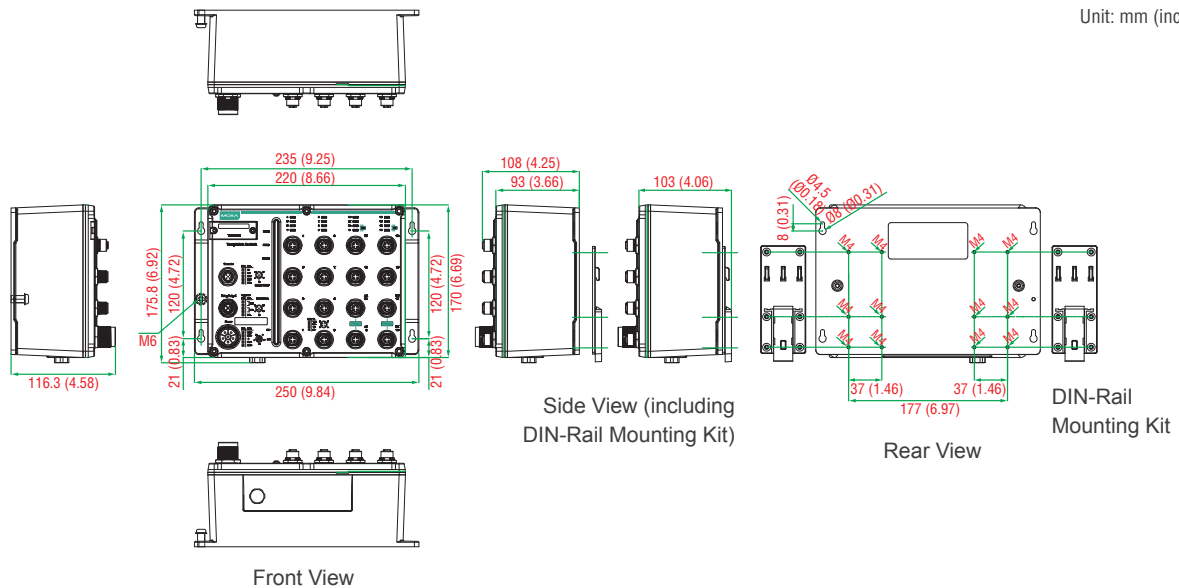
**Warranty**

**Warranty Period:** 5 years

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

**Dimensions**

Unit: mm (inch)



**Ordering Information**

Available Models	Port Interface				Power Supply	Conformal Coating
	Front Cabling					
Wide Temperature (-40 to 75°C)	10/100BaseT(X), M12 connector	10/100BaseT(X), M12 connector with bypass relay	10/100/1000BaseT(X), M12 connector	10/100/1000BaseT(X), M12 connector with bypass relay	WV: 24 to 110 VDC (16.8 to 137.5 VDC)	
TN-5916-WV-T	16	4	-	-	1 (Dual Input)	-
TN-5916-WV-CT-T	16	4	-	-	1 (Dual Input)	✓

**Optional Accessories** (can be purchased separately)

**Power Cords, M12/M23 Connectors, Protective Caps:** See the EN 50155 Switch

Accessories datasheet for details

**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 routers, 0 to 60°C operating temperature

**Package Checklist**

- TN-5916 router
- 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 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



### **CBL-M12XMM8PRJ45-Y-200-IP67**

2-meter M12-to-RJ45 Cat-5 UTP Ethernet cable with IP67-rated 8-pin male X-coded crimp type M12 connector



### **CBL-M12XMM8P-Y-300-IP67**

3-meter M12-to-M12 Cat-5 UTP Ethernet cable with IP67-rated 8-pin male X-coded crimp type M12 connector



### **CBL-M12XMM8P-Y-100-IP67**

1-meter M12-to-M12 Cat-5 UTP Ethernet cable with IP67-rated 8-pin male X-coded crimp type M12 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



### **M12X-8PMM-IP67-HTG**

Field-installable M12 X-coded crimp type, slim design connector, 8-pin male, IP67-rated



## : M12 IP67 Protective Caps

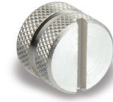
### **A-CAP-M12F-M**

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

