N-TRON
THE INDUSTRIAL NETWORK COMPANY

716TX

The N-TRON® 716TX Industrial Ethernet switch combines outstanding performance and ease of use. It is ideally suited for connecting Ethernet enabled industrial and/or security equipment and is a fully managed switch.

PRODUCT FEATURES

- Sixteen 10/100BaseTX RJ-45 Ports
- -40°C to 70°C Operating temperature
- ESD and Surge Protection Diodes on all Ports
- Auto Sensing 10/100BaseTX, Duplex, and MDIX
- Store-and-forward Technology
- Rugged DIN-Rail Enclosure
- Redundant Power Inputs (10-30VDC)
- Configurable Alarm Contact & Bi-Color Fault Status LED

Fully Managed Features:

- SNMP v1, v2, v3 and Web Browser Management
- Detailed Ring Map and Fault Location Charting
- N-Ring™ Technology with ~30ms Healing
- N-View™ OPC Monitoring
- N-Link™ Redundant N-Ring Coupling
- Plug-and-play IGMP Support
- 802.1Q tag VLAN and Port VLAN
- 802.1p QoS and Port QoS
- EtherNet/IP™ CIP Messaging
- LLDP (Link Layer Discovery Protocol)
- Port Trunking
- Port Mirroring
- 802.1d, 802.1w, 802.1D RSTP
- DHCP Server, Option 82 relay, Option 61, IP Fallback
- Port Security—MAC Address Based

Management Features

The 716TX offers several management functions that can be easily configured using a web browser.

IGMP Snooping - Internet Group Management Protocol is a feature that allows the 716TX switch to forward and filter multicast traffic intelligently.

VLAN - Virtual Local Area Network allows you to segment the switch in order to create two or more separate local area network domains.

QoS - Quality of Service provides prioritization of network traffic in order to provide better network service. The primary goal of QoS is to improve the latency of prioritized Ethernet packets required for ring management, real-time, and other interactive applications.

Port Trunking - Trunking (link aggregation) enables multiple physical ports to be linked together and function as one uplink to another N-TRON trunking capable switch configured in the same manner, thereby increasing the bandwidth between switches. This configuration can provide increased bandwidth and redundancy to applications requiring high levels of fault tolerant operation.

Port Mirroring - This function allows the traffic on one port to be duplicated and sent to a designated mirror port. Port mirroring can be used to monitor Ethernet traffic on the designated source port using the assigned mirror port.

DHCP-DHCP Server / Client automates the assignment of IP addresses. DHCP Option 82 assures that if a device on a specific port is replaced, the replacement receives the same IP address as the original device.

Rapid Spanning Tree Protocol
RSTP allows the switch to be configured in a ring or mesh topology, and provides support for redundant path communications with high speed (rapid) healing.

Remote Monitoring Options
For ease of configuration and monitoring, the 716TX offers web browser management and N-View OLE for process control (OPC) server software. The N-TRON N-View software can be combined with popular HMI software packages to add network traffic monitoring, trending, and alarming to any application using N-TRON switches. In addition, SNMP is available for switch link and status monitoring. The alarm contact and status LED can be configured to respond to power failure on power input 1 or input 2, N-Ring broken, partial break high, partial break low, or if multiple ring managers are detected.

N-Ring Technology
N-TRON's 716TX ring manager using N-TRON's N-Ring technology offers expanded ring size capacity, detailed fault diagnostics, and a standard healing time of ~30ms. The 716TX ring manager periodically checks the health of the ring via packets. If the ring manager stops receiving these health check packets, it converts the ring to a linear topology within ~30ms. When all switches in the ring are N-TRON fully managed switches, a detailed ring map and fault location chart will also be provided on the ring manager's web browser and OPC server to identfy the health status of the ring. N-Link ™ allows the linking of two N-Ring. Up to 250 fully managed N-TRON switches can participate in N-Ring topologies.

Industrial Packaging and Specifications
The 716TX is designed to operate in industrial environments. It is housed in a rugged steel DIN-Rail enclosure. It has extended industrial specifications and features to meet or exceed the operating parameters of connected equipment. These include extended temperature ratings, extended shock and vibration specs, redundant power inputs, and high MTBF (greater than 2M hours).

Ease of Use
The 10/100BaseTX ports are auto sensing and auto configuring. Each copper port is automatically negotiated for maximum speed and performance by default, but can also be hard coded through the user interface. A high speed processor allows wire speed capability on all 100BaseTX ports simultaneously.

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QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
ISO 9001:2008

716TX Specifications

Switch Properties

Number of MAC Addresses:	8000
Aging Time:	Programmable
Latency Typical:	2.6 µs
Switching Method:	Store-and-Forward

Case Dimensions

Height:	2.3"	(5.8 cm)
Width:	8.3"	(21.0 cm)
Depth:	4.8"	(12.1 cm)
Weight (max):	3.3 lbs	(1.5 kg)
DIN-Rail Mount:	35mm	

Electrical

Redundant Input Voltage:	10-30 VDC (Regulated)
Input Current (max):	620mA max. @ 24VDC
BTU/hr:	50.8@24VDC
N-TRON Power Supply:	NTPS-24-1.3 (1.3A@24V)

Environmental

Operating Temperature:	-40°C to 70°C
Storage Temperature:	-40°C to 85°C
Operating Humidity:	5% to 95% (Non Condensing)
Operating Altitude:	0 to 10,000 ft.

Shock and Vibration (bulkhead mounted)

Shock:	200g @ 10ms
Vibration/Seismic:	50g, 5-200Hz, Triaxial

Reliability

MTBF:	>2 Million Hours

Network Media

10BaseT:	>Cat3 Cable
100BaseTX:	>Cat5 Cable

Connectors

10/100BaseTX: Sixteen (16) RJ-45 Copper Ports

Recommended Wiring Clearance

Front:	4"	(10.16 cm)
Side:	1"	(2.54 cm)

Regulatory Approvals

FCC Title 47, Part 15, Subpart B - Class A; ICES-003 - Class A

UL Listed (US and Canada) 1604; ANSI/ISA-12.12.01-2007 Class I, Div 2, Groups A, B, C, D, and T4A

CE: EN61000-6-2:2001: EN61000-4-2, 3, 4, 5, 6
EN55011:1998+A1:1999+A2:2002-Class A
EN50155 for Railway applications
GOST-R Certified, RoHS Compliant

Designed to comply with:

IEEE 1613 for Electric Utility Substations
NEMA TS1/ TS2 for Traffic control

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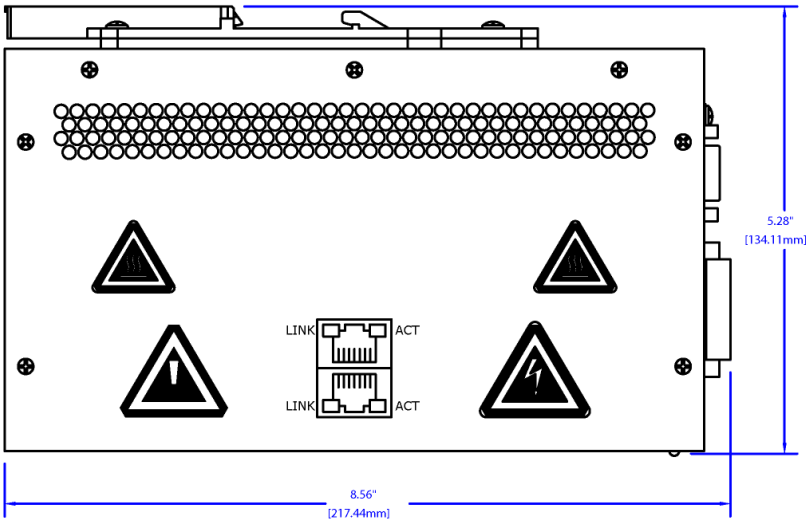
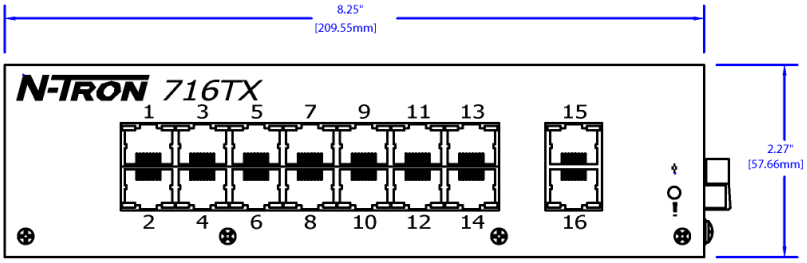
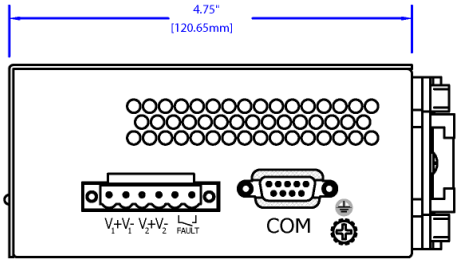
716TX Industrial Ethernet Switch Ordering Information

716TX	Sixteen 10/100BaseTX Ports
700-PM	Panel Mount kit
URMK	Universal Rack Mount Kit
NTPS-24-1.3	*N-TRON* Power Supply - (1.3 Amp @ 24VDC)



716TX





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