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# 709FX Industrial Ethernet Switch

N-Tron Networking Series



## Managed Industrial Ethernet Switch

The N-TRON® 709FX compact, fully managed industrial Ethernet switch is housed in a rugged industrial metal enclosure and offers a powerful combination of eight 10/100BaseTX copper ports and one 100Base fiber port. It is ideally suited for use in industrial applications such as factory floor control networks, utilities, wind turbines, wastewater treatment facilities, rail car, intelligent traffic control and transportation applications, and any other application where high reliability, superior noise immunity, extreme ruggedness, and extended distance are required.

### PRODUCT FEATURES

- Eight 10/100BaseTX RJ-45 Ports
- One 100BaseFX Port, ST or SC Style
- -40°C to 70°C Operating Temperature
- Onboard Temperature Sensor
- 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 (10-49 VDC)
- Configurable Bi-Color Fault Status LED

### FULLY MANAGED FEATURES

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



### Remote Monitoring Options

Web browser and N-View OPC (OLE for process control) server software provides configuration and monitoring capability. N-View software easily combines with HMI software to monitor network traffic, alarms, and trends. SNMP is also available for switch link and status monitoring. Status LEDs are configurable to indicate power failure and N-Ring status.

### N-Ring Technology

N-Ring technology provides expanded ring capacity, detailed fault diagnostics, and fast 30ms healing time. The ring manager validates the integrity of the ring using health check packets and quickly converts the ring to a linear topology within ~30ms when an error is detected. The health status of a ring comprised of all N-TRON fully managed switches may be monitored. A detailed ring map and fault location chart may be accessed by the ring manager's web browser or the OPC server. N-Link allows the linking of two N-Rings. Up to 250 fully managed N-TRON switches are supported in an N-Ring topology.

### Industrial Specifications

High MTBF, extended shock and vibration specifications, wide operating temperature range and redundant power inputs are standard features.

### 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 10/100BaseTX ports simultaneously.

## Specifications

### Switch Properties

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

### Case Dimensions

Height: 4.3" (10.8 cm)  
 Width: 2.4" (6.1 cm)  
 Depth: 4.6" (11.5 cm)  
 Weight (max): 1.4 lbs (0.6 kg)  
 DIN-Rail Mount: 35mm

### Electrical

Redundant Input Voltage: 10-49 VDC (Regulated)  
 Input Current (max): 365mA@24 VDC  
 BTU/hr: 29.89@24 VDC  
 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: Eight (8) RJ-45 Copper Ports  
 100BaseFX: One (1) 100BaseFX Port, ST or SC Style

### Recommended Wiring Clearance

Front: 4" (10.2 cm)  
 Side: 1" (2.6 cm)

## Fiber Transceiver Characteristics

Fiber Length	2km*	15km**	40km**	80km**
<i>TX Power Min</i>	-19dBm	-15dBm	-5dBm	-5dBm
<i>RX Sensitivity Max</i>	-31dBm	-31dBm	-34dBm	-34dBm
<i>Wavelength</i>	1310nm	1310nm	1310nm	1550nm

\* Multimode Fiber Optic Cable  
 \*\* Singlemode Fiber Optic Cable

### Regulatory Approvals

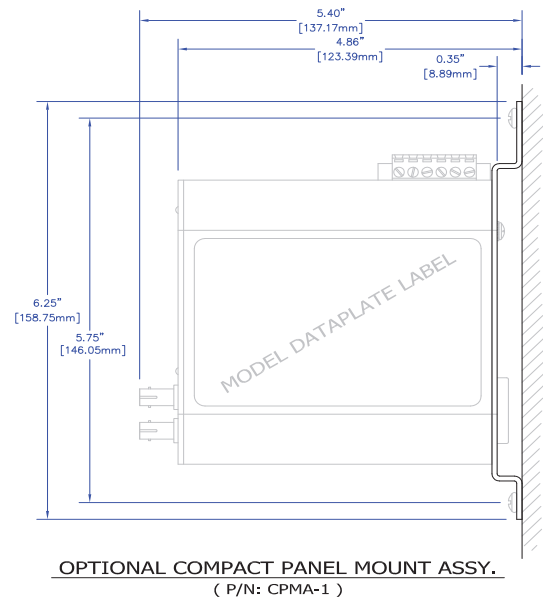
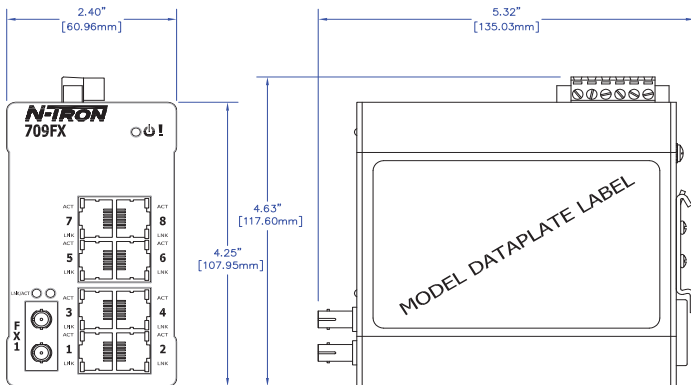
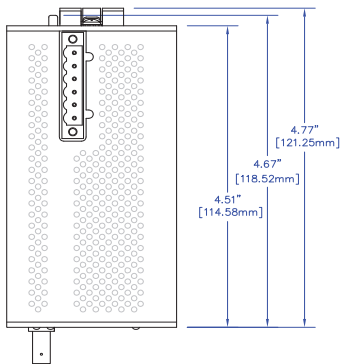
FCC: Title 47, Part 15, Subpart B, Class A; ICES-003: Class A;  
 ANSI C63.4  
 CE: EN 61000-6-2, 4; IEC 61000-4-2, 3, 4, 5, 6, 8, 11  
 GOST-R Certified, RoHS Compliant  
 UL/cUL: UL 508 and ANSI/ISA-12.12.01-2007  
 Class I, Div 2, Groups A, B, C, and D; T4  
 Designed to comply with:  
 IEEE 1613 for Electric Utility Substations  
 NEMA TS1/ TS2 for Traffic control  
 IEC-61850

## EtherNet/IP™

## ORDERING INFORMATION

PART NUMBER	DESCRIPTION
709FX-XX-YY	9-Port (8 10/100BaseTX, 1 100BaseFX Fiber Uplink) Fully Managed Industrial Ethernet Switch, DIN-Rail
709FXE-XX-YY	9-Port (8 10/100BaseTX, 1 100BaseFX Fiber Uplink) Fully Managed Industrial Ethernet Switch, singlemode, DIN-Rail
NTCD128	Optional configuration card for backup / restore
NTPS-24-1.3	N-TRON Power Supply - (1.3 Amp @ 24 VDC)
CPMA-1	Compact panel mount (factory installed option only)
URMK	Universal Rack Mount Kit

Where: N = N-View Firmware Option  
 E = Singlemode  
 XX = ST for ST style fiber connector, SC for SC style fiber connector  
 YY = Segment length:  
 15 for 15km max. fiber segment length  
 40 for 40km max. fiber segment length  
 80 for 80km max. fiber segment length



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