

# 509FX-A Industrial Ethernet Switch

N-Tron Networking Series



## ▶▶▶ Unmanaged Industrial Ethernet Switch

### PRODUCT FEATURES

- Full IEEE 802.3 and 1613 Compliance
- NEMA TS1/TS2 Compliance
- American Bureau of Shipping (ABS) Type Approval
- Eight (8) 10/100 BaseTX RJ-45 Ports
- One (1) 100BaseFX Port, ST (shown) or SC
- -40°C to 85°C Operating Temperature
- Auto Sensing 10/100BaseTX, Duplex, and MDIX
- Store-and-Forward Technology
- Up to 1.8 Gb/s Maximum Throughput
- Rugged Industrial DIN-Rail Enclosure
- Redundant Power Inputs (10-30 VDC)
- Bi-Color LEDs For Link, Speed, Activity & Duplex Status

### Advanced Management Functions (With -A option only):

- IGMP Snooping
- VLAN
- QoS
- Trunking and Mirroring
- N-View™ (Remote Monitoring Using OPC Technology)

### PRODUCT OVERVIEW

The N-TRON® 509FX Series Industrial Ethernet Switch offers outstanding performance and ease of use. It is ideally suited for connecting Ethernet enabled industrial and/or security equipment and can be optionally configured with advanced Ethernet communication management functions.

### Industrial Packaging and Specifications

The 509FX, designed to operate in industrial environments, is housed in a rugged DIN-rail-mounted steel enclosure. Optional panel and rack mount kits are also available. The switch comes standard with extended temperature rating, extended shock and vibration specs, redundant power inputs, and a high MTBF (greater than 2M hours).

### Ease of Use

The 509FX requires no setup unless the advanced port functions are utilized. The eight 10/100BaseTX ports are auto sensing and auto configuring. Each copper port automatically negotiates for maximum speed and performance by default. The fiber optic port supports full 200Mb/s communications via 100BaseFX. Bi-color LEDs are provided to display the link status, link speed and activity of each port as well as power on/off status.

### Performance

The 509FX supports up to 4,000 MAC addresses and uses advanced IEEE 802.3 Fast Ethernet 10/100BaseTX switching technology to eliminate network collisions and increase network determinism. A high-speed processor and backplane allow full-wire speed capability on all ports simultaneously.



### ADVANCED MANAGEMENT FEATURES

The 509FX-A offers several management functions that can be easily configured using the COM Port (DB 9 connector located on the right side of the switch).

**IGMP Snooping:** Internet Group Management Protocol allows the N-Tron switch to intelligently forward and filter multicast traffic.

**VLAN:** Virtual Local Area Network allows switch segmentation in order to create two or more separate local area network domains.

**QoS:** Quality of Service streamlines network operation by managing packet priority. The primary goal of QoS is to improve the latency of prioritized Ethernet packets required for ring management, real-time and other interactive applications.

**Trunking:** Trunking (aggregation) enables multiple physical ports to be linked together and function as one uplink to another identically configured trunking-capable switch. This feature increases the bandwidth between switches and creates redundancy for applications requiring high levels of fault tolerant operation.

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

**N-View OPC Switch Monitoring:** (With -A or -N Option Only) N-View OPC server software can be used with popular HMI software packages to transmit operational information from N-View-capable switches. This technology enables network traffic monitoring, as well as alarm and trending details. In all, the N-View OPC Server collects 41 different traffic variables per port and five system level variables per switch, providing a complete overview of network load, service quality, and packet traffic. Empowered with N-View OPC Server data, users can resolve network problems faster and make more informed decisions about overall system performance.

# 509FX-A Specifications

## Specifications

### Switch Properties

Number of MAC Addresses: 4,000  
 Aging Time: 300s, Programmable (-A option)  
 Latency Typical: 2.1  $\mu$ s  
 Switching Method: Store & Forward

### Case Dimensions

Height: 2.3" (5.8 cm)  
 Width: 5.5" (13.9 cm)  
 Depth: 3.5" (8.9 cm)  
 Weight: 1.6 lbs (0.8 kg)  
 Din-Rail: 35 mm

### Electrical

Redundant Input Voltage: 10-30 VDC  
 Input Current: 260 mA @ 24 VDC  
 BTU/hr: 21.3 @ 24 VDC  
 Inrush: 8.5 amp/0.7ms @24 VDC

### Environmental

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

### Fiber Transceiver Characteristics

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

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

### Shock and Vibration (bulkhead mounted)

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

### Reliability

MTBF: >2 Million Hours

### Serial Configuration Port

Com Parameters: 9600,n,8,1

### Network Media

10BaseT:  $\geq$ Cat3 Cable  
 100BaseTX:  $\geq$ Cat5 Cable  
 100BaseFX:  
 Multimode: 50-62.5/125 $\mu$ m  
 Singlemode: 7-10/125 $\mu$ m

### Connectors

10/100BaseTX: Eight (8) RJ-45 Copper Ports  
 100BaseFX: One (1) SC or ST Duplex Port

### Recommended Wiring Clearance

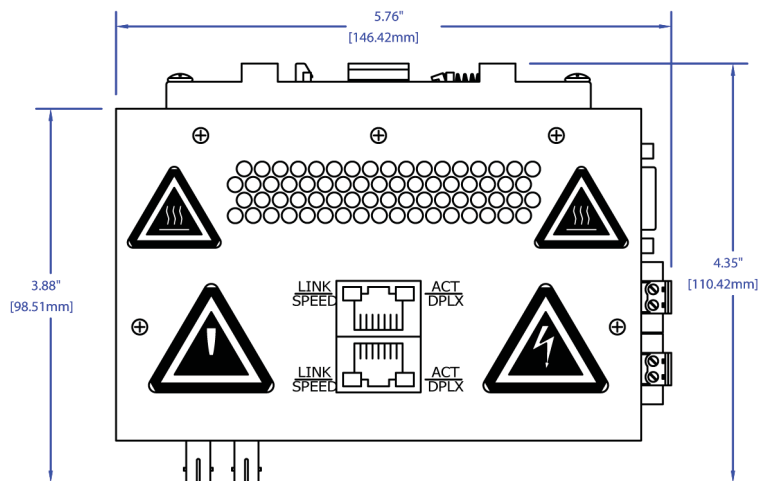
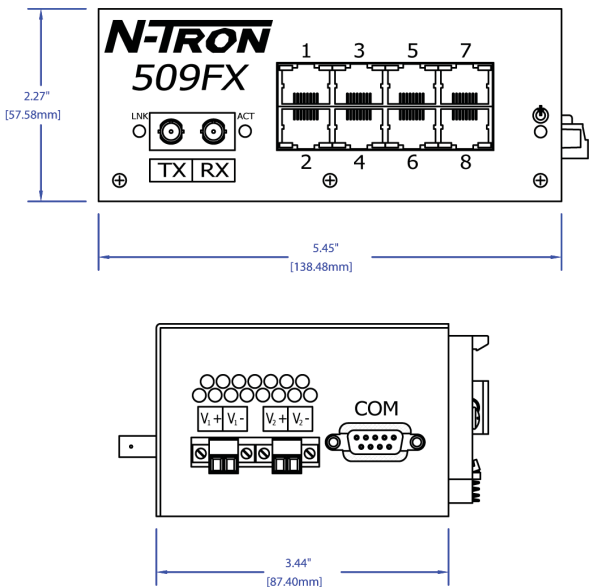
Front: 4" (10.2 cm)  
 Side: 1" (2.6 cm)

### Regulatory Approvals

FCC/CE (CFR 47, Part 15, Subpart B, Class A); ICES-003  
 EMC Dir 89/336/EEC, EN 50204, EN 55011  
 EN61000-4-2, 3, 4, 5, 6, 8, 11, EN61000-6-2, 4  
 ANSI C63.4  
 UL /cUL: Class I, Div 2, Groups A, B, C, D and T4  
 UL 508 and UL 1604  
 CAN/CSA-C22.2 No.213, ATEX II 3 G Ex nA  
 IEEE 1613 for Electric Utility Substations  
 ABS Type Approval for Shipboard Applications  
 GOST-R Certified, RoHS Compliant

Designed to comply with:

NEMA TS1/TS2 for Traffic Control



## ORDERING INFORMATION

PART NUMBER	DESCRIPTION
509FX-A-XX .....	9-port (8 10/100BaseTX, 1 100BaseFX Fiber Uplink, Multimode) Industrial Ethernet Switch, DIN-Rail with Advanced Management Features (includes N-View)
509FXE-A-XX-YY .....	9-port (8 10/100BaseTX, 1 100BaseFX Fiber Uplink, Singlemode) Industrial Ethernet Switch, DIN-Rail with Advanced Management Features (includes N-View)
509FX-N-XX .....	9-port (8 10/100BaseTX, 1 100BaseFX Fiber Uplink, Multimode) Industrial Ethernet Switch, DIN-Rail with N-View OPC switch monitoring
509FXE-N-XX-YY .....	9-port (8 10/100BaseTX, 1 100BaseFX Fiber Uplink, Singlemode) Industrial Ethernet Switch, DIN-Rail with N-View OPC switch monitoring
509FX-XX .....	9-port (8 10/100BaseTX, 1 100BaseFX Fiber Uplink, Multimode) Industrial Ethernet Switch, DIN-Rail
509FXE-XX-YY .....	9-port (8 10/100BaseTX, 1 100BaseFX Fiber Uplink, Singlemode) Industrial Ethernet Switch, DIN-Rail
NTPS-24-1.3 .....	N-Tron Power Supply (1.3 amp @ 24 VDC)
900-PM .....	Panel Mount Kit - converts switch from DIN-rail to panel mount.
URMK .....	Universal Rack Mount Kit
500-UTA89 .....	Metal DIN-Rail Clip

Where:

- A = Advanced Management Features (includes N-View)
- N = N-View OPC Switch Monitoring
- 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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