7900 Series Modular Industrial Ethernet Switch

N-Tron® Networking Series

red lion®

▶▶▶ Modular Industrial Switch

The N-Tron® 7900 Industrial Ethernet Modular Switch is designed to deliver optimum performance with maximum network versatility. Its flexible modular format allows customization with a variety of fiber and copper port modules. As the network evolves, port configurations can easily be changed to adapt to new communication requirements. The fully managed series is ideal for manufacturing, utilities, transportation, energy generation, wastewater and other extreme networking environments that demand high reliability, superior noise immunity and support across extended distances.

PRODUCT FEATURES

- 4 slot modular switch
- Requires 2 SFP gigabit CPU module (transceivers sold separately)
- Available modules (transceivers sold separately):
  - 2 port 100BaseFX fiber module
  - 4 port 100BaseFX fiber module
  - 6 port 10/100BaseTX copper module
- -20°C to 70°C operating temperature
- Onboard temperature sensor
- ESD and surge protection diodes on all copper ports
- Auto sensing 10/100BaseTX, duplex and MDIX
- Store-and-forward technology
- Rugged DIN-rail enclosure
- Redundant power inputs (10-30 VDC)
- Configurable bi-color fault status LEDs

FULLY MANAGED FEATURES

- SNMP v1, v2, v3 and web browser management
- EtherNet/IP™ CIP Messaging
- Configuration backup via optional SD card (order NTCD-128)
- Detailed ring map and fault location charting
- N-Ring™ Technology with ~30ms healing
- N-Link Redundant N-Ring Coupling
- N-View™ OPC monitoring
- RSTP - 802.1d, 802.1w, 802.1D
- IGMP auto configuration
- 802.1Q tagged VLAN and port VLAN
- 802.1p QoS, port QoS and DSCP
- LLDP (Link Layer Discovery Protocol)
- DHCP Server, Option 82 relay, Option 61, IP Fallback
- Port mirroring and trunking
- 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

Advanced N-Ring technology provides expanded capacity, detailed fault diagnostics and fast ~30ms healing times in rings composed of N-Tron fully managed switches. The integrity of the N-Ring is continually monitored for error conditions. If a fault is detected, the ring converts to a daisy chain topology and restores communications within ~30ms. For convenience, users can easily access a detailed ring map and fault location chart through the ring manager's browser or the OPC server. Each N-Ring accommodates up to 250 fully-managed N-Tron switches. N-Link easily connects multiple rings, creating additional pathways to critical applications and increasing overall network resiliency.

INDUSTRIAL SPECIFICATIONS

Standard industrial product features include high MTBF, extended shock and vibration specifications, redundant power inputs and a wide operating temperature range.

EASE OF USE

N-Tron's auto sensing capabilities allow all 10/100BaseTX ports to automatically negotiate maximum speed and performance but can also be hard coded using the user interface. A high-speed processor enables simultaneous wire speed capability on all 100BaseTX ports.

industrial
networking

Switch Properties
Number of MAC Addresses: 8,000
Aging Time: Programmable
Latency Typical: 2.6 µs
Backplane Speed: 8.8 Gb/s
Switching Method: Store & Forward

Case Dimensions
Height: 5.2" (13.0 cm)
Width: 9.0" (22.8 cm)
Depth: 5.6" (14.2 cm)
Weight (max): ~5 lbs (2.3 kg)
Din-Rail: 35 mm

Electrical
Redundant Input Voltage: 10-30 VDC
Input Current (max): 1.53A @ 24 VDC (fully populated)
BTU/hr: 125.3 @ 24 VDC (fully populated)
N-Tron Power Supply: NTPS-24-5 (5A @ 24 VDC)

Environmental
Operating Temperature: -20ºC to 70ºC
Operating Humidity: 10% to 95% (Non Condensing)
Operating Altitude: 0 to 10,000 ft.

Shock and Vibration (bulkhead mounted)
Shock: 50g @ 10ms
Vibration/Seismic: 30g, 10-200 Hz, triaxial

Reliability
MTBF: >1 million hours

Network Media
10BaseT: ≥Cat3 cable
100BaseTX: ≥Cat5 cable
100BaseFX, 1000BaseSX Multimode: 50-62.5/125µm
100BaseFXE, 1000BaseLX Singlemode: 7-10/125µm

Connectors
10/100BaseTX: Up to twenty-four (24) RJ-45 copper ports
100BaseFX: Up to sixteen (16) SC or ST fiber ports
1000BaseSX/LX SFP: Two (2) SFP LC duplex gigabit fiber ports

Recommended Wiring Clearance
Front: 4" (10.2 cm)
Side: 1" (2.6 cm)

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

SFP Gigabit Fiber Transceiver Characteristics

Fiber Length	550m for 50/125µm 275m @62.5/125µm*	10km**	40km**	80km**
TX Power Min	-9.5dBm	-9.5dBm	-2dBm	0dBm
RX Sensitivity Max	-17dBm	-20dBm	-22dBm	-24dBm
Wavelength	850nm	1310nm	1310nm	1550nm
Assumed Fiber Loss	3.5 to 3.75 dB/km	.45dB/km	.35dB/km	.25dB/km

* Multimode Fiber Optic Cable
** Singlemode Fiber Optic Cable

Regulatory Certifications

Product Safety
UL 60950-1; UL 508; ANSI/ISA 12.12.01-2007;
CAN/CSA-C22.2 No. 60950; CAN/CSA-C22.2 No. 142;
CAN/CSA-C22.2 No. 213

Emissions
FCC Title 47, Part 15, Radio Frequency Devices, Subpart B;
ANSI C63.4-2003; Industry Canada ICES-003; EN 61000-6-4 (radiated and conducted)

Immunity
EN 61000-6-2; IEC 61000-4-2 (ESD); IEC 61000-4-3 (RFAM);
IEC 61000-4-4 (EFT); IEC 61000-4-5 (SURGE); IEC 61000-4-6 (RFCM);
IEC 61000-4-8 (PFMF); IEC 61000-4-11 (VDI)

Other
EMC Directive 2004/108/EC; ABS (PDA and Type Approval for Shipboard Applications); GOST-R
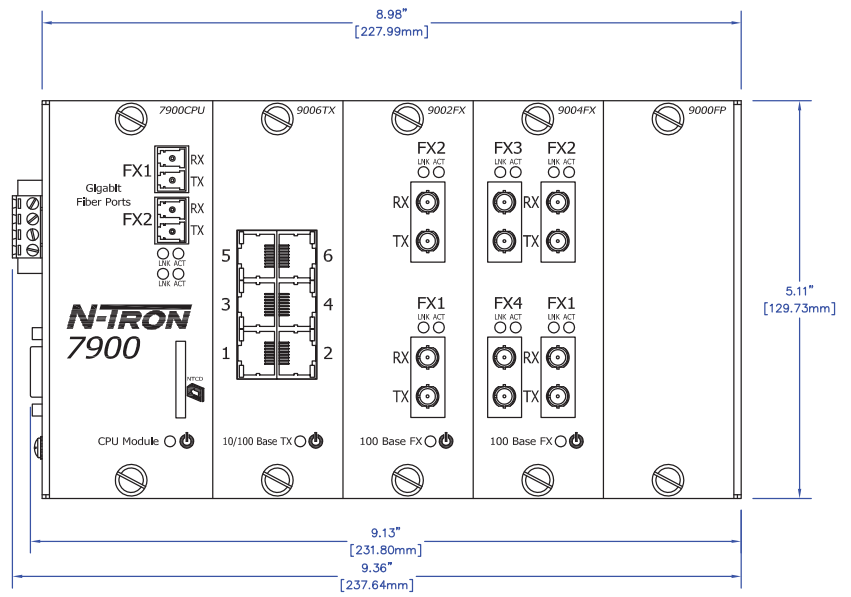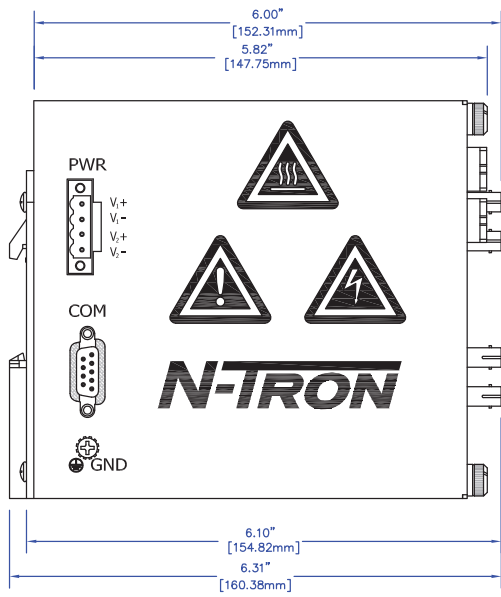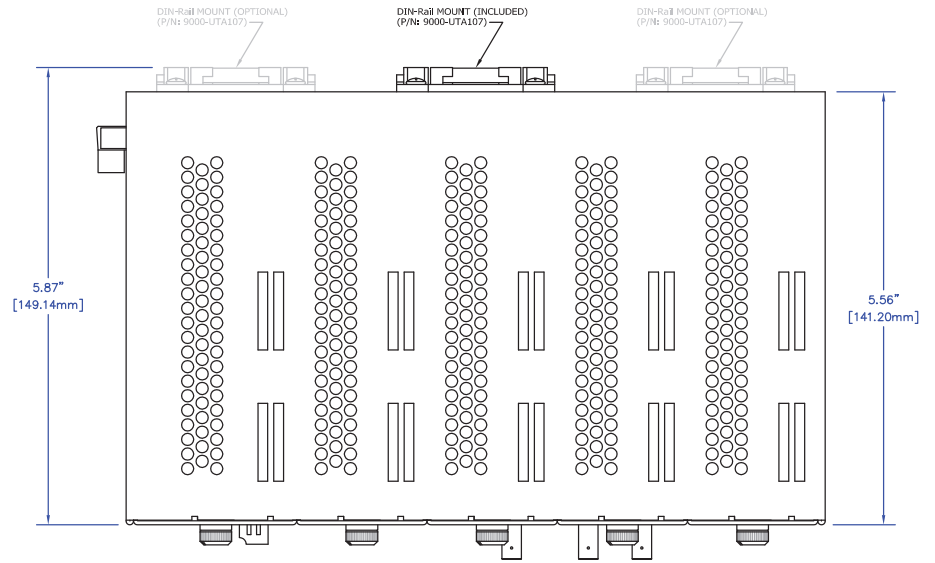
Designed to comply with:
IEEE 1613 for Electric Utility Substations

MECHANICAL DRAWINGS

DIN-Rail MOUNT (OPTIONAL)
(P/N: 9000-UTA107)

DIN-Rail MOUNT (INCLUDED)
(P/N: 9000-UTA107)

DIN-Rail MOUNT (OPTIONAL)
(P/N: 9000-UTA107)

5.87"
[149.14mm]

5.56"
[141.20mm]

6.00"
[152.31mm]

5.82"
[147.75mm]

8.98"
[227.99mm]

PWR

V₁+
V₁−
V₂+
V₂−

COM

N-TRON

GND

6.10"
[154.82mm]

6.31"
[160.38mm]

7900CPU   9006TX   9002FX   9004FX   9000FP

FX1 RX
     TX

Gigabit
Fiber Ports

FX2 RX
     TX

LNK ACT
LNK ACT

N-TRON
7900

NTCD

CPU Module

FX2
LNK ACT

RX

TX

FX1
LNK ACT

RX

TX

10/100 Base TX

FX3   FX2
LNK ACT LNK ACT

RX

TX

FX4   FX1
LNK ACT LNK ACT

RX

TX

100 Base FX

RX

TX

RX

TX

100 Base FX

5   6

3   4

1   2

5.11"
[129.73mm]

9.13"
[231.80mm]

9.36"
[237.64mm]

PART NUMBER	DESCRIPTION
7900CPU	CPU Module with two (2) gigabit SFP ports - transceivers sold separately
9000BP	Five (5) Slot Backplane (requires 7900CPU Module - sold separately)
9006TX	Six (6) 10/100BaseTX Copper Port Slide-in Module
9002FX-XX	Two (2) 100BaseFX Multimode Fiber Port Slide-in Module
9002FXE-XX-YY	Two (2) 100BaseFX Singlemode Fiber Port Slide-in Module
9004FX-XX	Four (4) 100BaseFX Multimode Fiber Port Slide-in Module
9004FXE-XX-YY	Four (4) 100BaseFX Singlemode Fiber Port Slide-in Module
NTSFP-TX	1000BaseT copper SFP pluggable mini-GBIC transceiver (RJ-45 connector)
NTSFP-SX	1000BaseSX multimode fiber SFP pluggable mini-GBIC transceiver (LC style connector)
NTSFP-LX-ZZ	1000BaseLX singlemode fiber SFP pluggable mini-GBIC transceiver (LC style connector)
9000B-FP	Filler Panel (required to fill vacant slots)
NTPS-24-5	N-Tron DIN-Rail Power Supply (5A @ 24 VDC)
NTCD-128	Optional configuration card for backup/restore
9000-PM	Panel Mount Kit
9000-UTA107	Metal DIN-Rail Clip (note: one included, can accommodate two (2) additional clips—3 total—for increased stability)

Where:
E = Singlemode
XX = ST or SC connector
YY = 15, 40, or 80 for singlemode, blank for multimode
ZZ = 10, 40, or 80 for GB singlemode (if SFP transceiver is not specified at the time of purchase, slots will remain blank with covers)

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As the global experts in communication, monitoring and control for industrial automation and networking, Red Lion has been delivering innovative solutions for over forty years. Our automation, Ethernet and cellular M2M technology enables companies worldwide to gain real-time data visibility that drives productivity. Product brands include Red Lion, N-Tron and Sixnet. With headquarters in York, Pennsylvania, the company has offices across the Americas, Asia-Pacific and Europe. Red Lion is part of Spectris plc, the productivity-enhancing instrumentation and controls company. For more information, please visit www.redlion.net.