7014FX2 Ethernet Switch
N-Tron Networking Series

red lion®

▶▶▶ **Gigabit Capable Ethernet Switch**

The N-TRON® 7014FX2 Gigabit Capable Industrial Ethernet Switch offers 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
- Ten 10/100BaseTX RJ-45 Ports
- Two 100BaseFX Ports, ST or SC Style
- Two Optional SFP (Mini-GBIC) Gigabit Transceivers
- 1000BaseSX/LX Fiber with LC style connectors or 1000BaseT Copper with RJ-45 connectors
- Fiber Optic Ring Manager with~30ms Healing
- Full SNMP and Web Browser Management with Detailed Ring Map and Fault Location Charting
- N-View™ OPC Monitoring with Fault Status for Ring Managers
- Plug-and-play IGMP Support
- Extended Environmental Specifications
- Auto Sensing 10/100BaseTX, Duplex, and MDIX
- Store-and-forward Technology
- Rugged DIN-Rail Enclosure
- Redundant Power Inputs (10-30 VDC)

Fully Managed Features:
- IGMP Snooping
- VLAN
- QoS
- Trunking
- Mirroring
- 802.1D-2004 Rapid Spanning Tree Protocol
- DHCP
- N-Ring™ Technology

Management Features
The 7014FX2 offers several management functions that can be easily configured using a Web Browser, Telnet or a COM port.

IGMP Snooping - Internet Group Management Protocol is a feature that allows the 7014FX2 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 proioritization 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.

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.In addition, SNMP, COM port, and Telnet interfaces are available for switch link and status monitoring.

Shown with Optional Gigabit SFP Transceivers installed

Rapid Spanning Tree - This function 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 7014FX2 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, COM port, and Telnet interfaces are available for switch link and status monitoring.

N-Ring Technology
N-TRON's 7014FX2 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 7014FX2 Ring Manager periodically checks the health of the Ring via packets. If the Ring Manager stops receiving these health check packets, it times out and converts the Ring to a fiber optic backbone 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. Up to 250 fully managed or 50 unmanaged monitored N-TRON switches can participate in N-Ring topologies.

Industrial Packaging and Specifications
The 7014FX2 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 specifications of the equipment it is connecting. These include extended temperature ratings, extended shock and vibration specs, redundant power inputs, and high MTBF (greater than 1M 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 using the user interface. A high speed processor allows wire speed capability on all 100BaseTX and 100Base FX ports simultaneously. The two optional Gigabit ports support full 2000 Mb/s communications via 1000BaseSX/LX/T. For added flexibility, these pluggable SFP (Mini-GBIC) Gigabit transceivers can be installed in our factory at the time of purchase, or upgraded later in the field.

industrial
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7014FX2 Specifications

Switch Properties
Number of MAC Addresses: 4,096
Aging Time: Programmable
Latency Typical: 2.9 μs
Switching Method: Store-and-Forward

Case Dimensions
Height: 2.5" (6.4cm)
Width: 7.4" (18.8cm)
Depth: 4.2" (10.7cm)
Weight (max): 2.1 lbs (1kg)
DIN-Rail Mount: 35mm

Electrical
Redundant Input Voltage: 10-30 VDC
Input Current (max): 1.0A@24V
Inrush @ 24V: 12.6 Amp for 0.05ms
N-TRON Power Supply: NTPS-24-1.3 (1.3 Amp@24V)

Environmental
Operating Temperature: -20ºC to 70ºC
Storage Temperature: -40ºC to 85ºC
Operating Humidity: 10% 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: >1 Million Hours

Network Media
10BaseT: >Cat3 Cable
100BaseTX: >Cat5 Cable
1000BaseT: >Cat5e Cable
100BaseFX, 1000BaseSX
Multimode: 50-62.5/125μm
100BaseFXE, 1000BaseLX
Singlemode: 7-10/125μm

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

* SX Fiber Optic Cable
** LX Fiber Optic Cable

Connectors
10/100BaseTX: Ten (10) RJ-45 Copper Ports
100BaseFX: Two (2) SC or ST Fiber Duplex Ports
1000BaseT: Up to Two (2) RJ-45 Gigabit Copper Ports
1000BaseSX: Up to Two (2) LC Duplex Gigabit Fiber Ports (optional)

Recommended Wiring Clearance
Front: 4" (10.16cm)
Side: 1" (2.54cm)

Regulatory Approvals
FCC Title 47, Part 15, Subpart B - Class A
CE: EN61000-6-2,4, EN55011, EN61000-4-2,3,4,5,6
UL Listed ANSI/ISA-12.12.01-2000 (US and Canada)
CLASS I, DIV 2, Groups A,B,C,D,T4
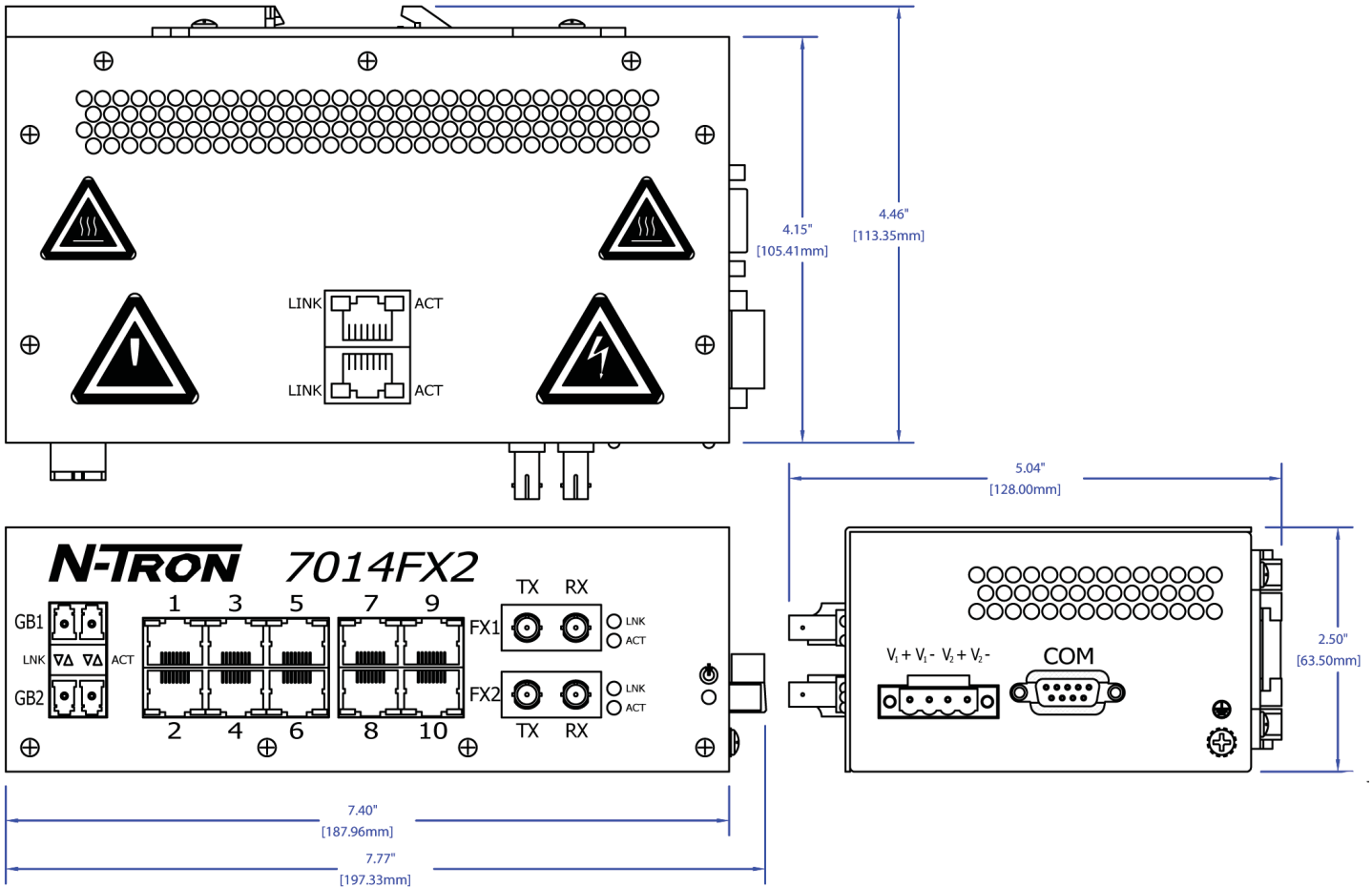*GOST-R Certified, RoHS Compliant*

Designed to comply with:
IEEE 1613 for Electric Utility Substations,
and NEMA TS1/TS2 for Traffic Control

7014FX2 Industrial Ethernet Switch Ordering Information

7014FX2-XX	Ten 10/100BaseTX Ports, Two Multimode 100BaseFX Fiber Optic Ports
7014FXE2-XX-YY	Ten 10/100BaseTX Ports, Two Singlemode 100BaseFX Fiber Optic Ports
NTSFP-TX	Optional SFP (Mini-GBIC) Transceiver with One 1000BaseT GB Copper Port
NTSFP-SX	Optional SFP (Mini-GBIC) Transceiver with One 1000BaseSX Multimode GB Fiber Optic Port
NTSFP-LX-ZZ	Optional SFP (Mini-GBIC) Transceiver with One 1000BaseLX Singlemode GB Fiber Optic Port
700-PM	Universal Panel Mount kit

Where: XX = ST or SC, YY = 15, 40, or 80 for Singlemode, Blank for Multimode
E = Singlemode, and Blank Otherwise
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