The N-TRON® 716M12 Industrial Ethernet Switch offers outstanding performance and ease of use. With 16 10/100BaseTX M12 D-coded ports, the fully managed switch is ideally suited for connecting Ethernet enabled devices in railway, industrial and security applications. It is designed to meet or exceed the operating parameters of the connected equipment. These include extended temperature ratings, extended shock and vibrations specs, redundant power inputs, and high MTBF (greater than 2 million hours). The switch features a rugged IP67-rated enclosure for resistance to dust and wash immersion.

PRODUCT FEATURES

- IP67-rated hardened metal enclosure
- Bulkhead mountable (optional DIN-rail mounting)
- Dustproof
- Protection against low/high pressure water jets
- Temporary immersion in water
- Sixteen 10/100BaseTX M12 D-Coded ports
- -40° C to 85°C operating temperature
- ESD and surge protection diodes on all ports
- Auto Sensing 10/100BaseTX, Duplex, and MDIX
- Store-and-Forward Technology
- Redundant power inputs (10-49 VDC)

FULLY MANAGED FEATURES

- Full SNMP v1, v2, v3 and web browser management
- Detailed ring map and fault location charting
- N-Ring™ Technology with ~30ms healing
- N-Link™ redundant N-Ring coupling
- 802.1d, 802.1w, 802.1D RSTP
- N-View™ OPC Monitoring
- Plug-and-Play IGMP support
- 802.1Q tag VLAN and Port VLAN
- 802.1p QoS, Port QoS, DSCP
- EtherNet/IP™ CIP Messaging
- LLDP (Link Layer Discovery Protocol)
- Trunking
- Port mirroring
- DHCP Server, Option 82 relay, Option 61, IP Fallback
- Port Security—MAC address based
- Optional N-Tron auto configuration device for saving and restoring configuration. (P/N 700-NTCD-M12)

716M12

N-Tron Ethernet Series
Fully Managed Industrial Switch

REMOTE MONITORING

N-Tron provides multiple tools to monitor 716M12 switch activities. A convenient web-based interface is available to view and configure switch options, as well as to monitor network traffic, alarms, and trend information. For tightly controlled environments, N-View OPC server software easily combines with HMI control and monitoring applications to form a complete surveillance solution for N-View-enabled switches. For local monitoring, each switch features configurable LEDs 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. If preferred, ports can be hardcoded using the user interface. A high-speed processor enables simultaneous wire speed capability on all 100BaseTX ports.

SPECIFICATIONS

Switch Properties
Number of MAC Addresses: 8,000
Aging Time: Programmable
Latency Typical: 2.9 µs
Switching Method: Store & Forward

Case Dimensions
Height: 6.7" (16.9 cm)
Width: 6.7" (16.9 cm)
Depth: 2.2" (5.6 cm)
Weight: 4.6 lbs (2.3 kg)
Din-Rail: 35 mm (with optional clips)

Electrical
Redundant Input Voltage: 10-49 VDC
Input Current (max): 350mA max @ 24 VDC
BTU/hr: 28.7 @ 24 VDC
N-Tron Power Supply: NTPS-24-1.3 (1.3A @ 24 VDC)

Environmental
Operating Temperature: -40°C to 85°C
Operating Humidity: 5% to 100% (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: >2 million hours

Network Media
10BaseT: ≥Cat3 cable
100BaseTX: ≥Cat5 cable

Connectors
10/100BaseTX: Sixteen (16) M12 D-coded 4-pin female ports
RS-232 Com: One (1) M12 A-coded 5-pin female port
NTCD-M12: One (1) M12 A-coded 5-pin female port
Power: One (1) M12 A-coded 4-pin male port

Recommended Wiring Clearance
Front: 4" (10.2 cm)

Regulatory Certifications

Product Safety
For use in Class I, Division 2, Groups A, B, C and D hazardous locations
UL508
ANSI/ISA 12.12.01-2007
CAN/CSA-C22.2 No. 142-M1987
CAN/CSA-C22.2 No. 14-95
CAN/CSA-C22.2 No. 213-M1987

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)

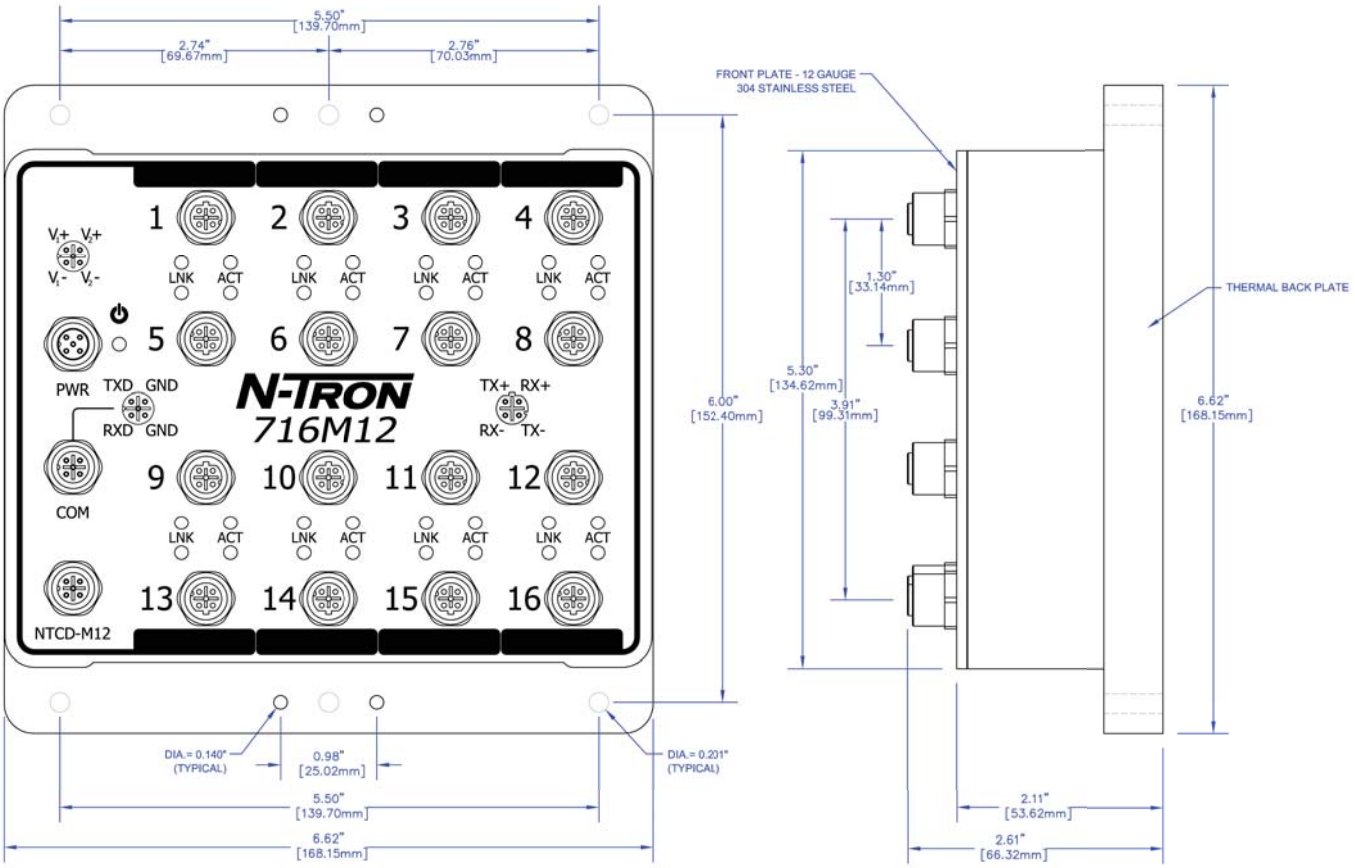
Immunity
EN 61000-6-2; IEC 61000-4-2 (ESD); IEC 61000-4-3 (RFAM);
IEC 61000-4-4 (EFT); IEC 61000-4-5 (SURGE); IEC 61000-4-6 (RFCM);
IEC 61000-4-8 (PFMF); IEC 61000-4-11 (VDI)

Other
EMC Directive 2004/108/EC; ABS (PDA and Type Approval for Shipboard Applications); EN 50155 Railway Applications; GOST-R

Designed to comply with:
IEEE 1613 for Electric Utility Substations

Further information regarding regulatory conformity can be found on the N-Tron website at www.n-tron.com/regulatory

MECHANICAL DRAWINGS



PART NUMBER	DESCRIPTION
716M12	IP67-rated 16-port 10/100BaseTX fully managed Industrial Ethernet Switch with M12 D-coded female 4-pin connectors, bulkhead mountable, 10-49 VDC
700-NTCD-M12	Configuration device for saving and restoring configuration on parameters
NTPS-24-1.3	DIN-Rail Power Supply 24V @ 1.3 amp recommended for 716M12
M12DRC-ISO	DIN-Rail kit, two isolated plastic clips

Cat5E STP Cables with M12 connectors

CAT5E-M12-M12-X	Straight M12 to straight M12, shielded
CAT5E-M12-RJ45-X	Straight M12 to RJ-45, shielded
CAT5E-M12-X	Straight M12 to bare end, shielded
CAT5E-RM12-M12-X	90° M12 to straight M12, shielded
CAT5E-RM12-RM12-X	90° M12 to 90° M12, shielded
CAT5E-RM12-RJ45-X	90° M12 to RJ-45, shielded
CAT5E-RM12-X	90° M12 to bare end, shielded
PWR-M12-A-X	Power Cable, M12 A-Coded straight female to bare end, shielded
PWR-RM12-A-X	Power Cable, M12 A-Coded 90° female to bare end, shielded
SERIAL-DB9-M12	Serial cable, DB-9 to M12, 5 ft, shielded
SERIAL-DB9-RM12	Serial cable, DB-9 to 90° M12, 5 ft, shielded

N-Tron's award-winning products deliver exceptional performance for mission-critical data acquisition and control applications. Offering a complete line of high-quality ruggedized Ethernet and wireless solutions for industrial automation, N-Tron products are designed and manufactured in the United States with a global sales and service network that supports customers worldwide.

For more information,
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QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
ISO 9001:2008