# 716M12 Industrial Ethernet Switch

N-Tron<sup>®</sup> Networking Series



# **Fully Managed Industrial Ethernet Switch**

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<sup>™</sup> Technology with ~30ms healing
- N-Link redundant N-Ring coupling
- 802.1d, 802.1w, 802.1D RSTP
- N-View<sup>™</sup> OPC Monitoring
- Plug-and-Play IGMP support
- 802.1Q tag VLAN and Port VLAN
- 802.1p QoS, Port QoS, DSCP
- EtherNet/IP<sup>™</sup> 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 confiuration device for saving and restoring confiuration. (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<sup>™</sup> 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.

## 716M12 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



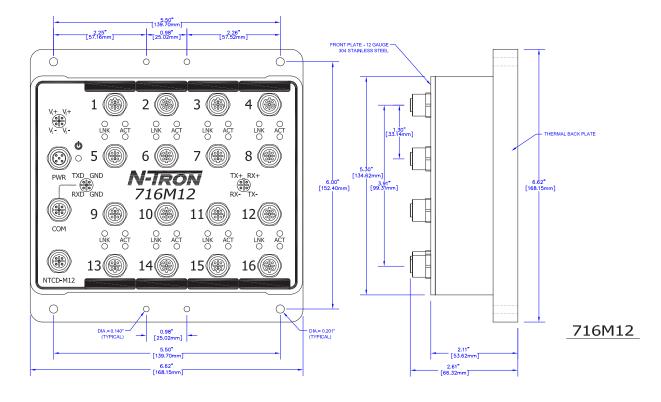
### EtherNet/IP<sup>®</sup>

### **>>>** 716M12 Specifications

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-XStraight M12 to straight M12, shielded
CAT5E-M12-RJ45-XStraight M12 to RJ-45, shielded
CAT5E-M12-XStraight M12 to bare end, shielded
CAT5E-RM12-M12-X
CAT5E-RM12-RM12-X
CAT5E-RM12-RJ45-X
CAT5E-RM12-X
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-M12Serial cable, DB-9 to M12, 5 ft, shielded
SERIAL-DB9-RM12 Serial cable, DB-9 to 90° M12, 5 ft, shielded





www.redlion.net

Connect. Monitor. Control.

Americas sales@redlion.net

Asia-Pacific asia@redlion.net

Europe Middle East Africa europe@redlion.net

+1 (717) 767-6511

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.

ADLD0278 080116 © 2016 Red Lion Controls, Inc. All rights reserved. Red Lion, the Red Lion logo, N-Tron and Sixnet are registered trademarks of Red Lion Controls, Inc. All other company and product names are trademarks of their respective owners.