



N-Tron[®] Series 1000

Industrial Gigabit Media Converters & Gigabit Ethernet Switches

Hardware Guide | November 2016

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20 Willow Springs Circle

York, PA 17406

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CONTACT INFORMATION :

AMERICAS

Inside US: +1 (877) 432-9908

Outside US: +1 (717)767-6511

Hours: 8am-6pm Eastern Standard Time
(UTC/GMT -5 hours)

ASIA-PACIFIC

Shanghai, P.R. China: +86 21-6113-3688 x767

Hours: 9am-6pm China Standard Time
(UTC/GMT +8 hours)

EUROPE

Netherlands: +31 (0) 33 4723-225

France: +31 (0) 1 84 88 75 25

Germany: +49 (0) 1 89 5795-9421

UK: +44 (0) 20 3868 0909

Hours: 9am-5pm Central European Time
(UTC/GMT +1 hour)

Website: www.redlion.net

Email: customer.service@redlion.net

Table of Contents

Preface

Disclaimer	iii
Compliance Information	iii
Industry Canada	iii
Environmental Impact Statement	iv
Toxic Emissions	iv
Trademark Acknowledgments	iv
Release Notes and Document Updates	iv
Publication History	iv
Related Documents	iv
Document Comments	iv
Additional Product Information	iv
Warnings and Cautions	v
General Safety Cautions and Warnings	v
Electrical Safety Warnings	v
Environmental Safety Cautions and Warnings	vii
Hazardous Location Warning	vii
Laser Safety Warning	viii

Section 1 Introduction and Specifications

Introduction	1-1
Key Features	1-1
Model 1002MC	1-2
Key Specifications	1-2
Dimensions	1-3
Product Ordering Guide	1-4
Model 1002MC Regulatory Approvals	1-4
Warranty	1-4
Model 1003GX2	1-5
Key Specifications	1-5
Dimensions	1-6
Product Ordering Guide	1-7
Model 1003GX2 Regulatory Approvals	1-7
Warranty	1-7
Model 1005TX	1-8
Key Specifications	1-8
Dimensions	1-9



- Product Ordering Guide 1-9
- Model 1005TX Regulatory Approvals 1-10
- Warranty 1-10
- Model 1008TX 1-11
 - Key Specifications 1-11
 - Dimensions 1-12
 - Product Ordering Guide 1-13
 - Model 1008TX Regulatory Approvals 1-13
 - Warranty 1-13
- Model 1008TX-POE+ 1-14
 - Key Specifications 1-14
 - Dimensions 1-15
 - Product Ordering Guide 1-15
 - Model 1008TX-POE+ Regulatory Approvals 1-16
 - Warranty 1-16

Section 2 Installation

- Introduction 2-17
- Unpacking 2-17
- Inspection 2-17
- Installing/Mounting 2-17
 - DIN-Rail Mounting 2-18
- Connections 2-19
 - Power Connection (Top View) 2-19
 - Ground Connection 2-19
 - N-Tron Series Switch Grounding Techniques for 1000 Series 2-19
 - RJ45 Connector Crimp Specifications 2-21
- Cable Connection 2-21

Section 3 Operation and Maintenance

- Introduction 3-22
- Controls and Indicators 3-22
 - Model 1002MC, 1003GX2, 1005TX Indicators 3-22
 - Model 1008TX Indicators 3-23
 - Model 1008TX-POE+ Indicators 3-24
- Maintenance 3-25
 - Verify/Troubleshoot Cable Interface 3-25
 - Cleaning 3-25



Preface

Disclaimer

Portions of this document are intended solely as an outline of methodologies to be followed during the maintenance and operation of N-Tron® Series 1000 equipment. It is not intended as a step-by-step guide or a complete set of all procedures necessary and sufficient to complete all operations.

While every effort has been made to ensure that this document is complete and accurate at the time of release, the information that it contains is subject to change. Red Lion Controls is not responsible for any additions to or alterations of the original document. Industrial networks vary widely in their configurations, topologies, and traffic conditions. This document is intended as a general guide only. It has not been tested for all possible applications, and it may not be complete or accurate for some situations.

Users of this document are urged to heed warnings and cautions summarized at the front of the document, such as electrical hazard warnings.

Compliance Information

It is recommended that the owner of this equipment determine and ensure conformance with any specific and applicable local regulations.

Part 15 of the Federal Communications Commission (FCC) - A Rules: Interference

Every effort has been made to ensure that this equipment is designed to comply with the limits for a Class A digital device, as described in the FCC Rules.

This product complies with Part 15 of the FCC-A Rules.

Operation is subject to the following conditions:

1. This device may not cause harmful Interference
2. This device must accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Industry Canada

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. Operation is subject to the following two conditions; (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Cet appareillage numérique de la classe A répond à toutes les exigences de l'interférence canadienne causant des règlements d'équipement. L'opération est sujette aux deux conditions suivantes: (1) ce dispositif peut ne pas causer l'interférence nocive, et (2) ce dispositif doit accepter n'importe quelle interférence reçue, y compris l'interférence qui peut causer l'opération peu désirée.



Environmental Impact Statement

Red Lion equipment contains no hazardous materials as defined by the United States Environmental Protection Agency (USEPA). Red Lion recommends that all failed product be returned to Red Lion for failure analysis and proper disposal.

Toxic Emissions

Red Lion equipment releases no toxic emissions.

Trademark Acknowledgments

Ethernet is a registered trademark of Xerox Corporation. All other company and product names are trademarks of their respective owners.

Release Notes and Document Updates

The hard copy and electronic media versions of this document are revised only at major releases and therefore, may not always contain the latest product information. As needed, Documentation Notes and or Product Bulletins will be provided between major releases to describe any new information or document changes.

The latest online version of this document and all product updates can be accessed through the Red Lion web site at <http://www.redlion.net/documentation>.

Publication History

The following information lists the release history of this document.

ISSUE/REVISION	RELEASE DATE	CONTENT DESCRIPTION
Revised 2014-01-23	January 2014	Document Updates
Revised 2015-03-17	March 2015	Added 1008TX Model, Format Changes
Revised 2015-03-24	March 2015	Format Changes to Cover, Page Header and Tables
Revised 2016-08-30	August 2016	Add 1008TX-POE+ model
Revised 2016-11-16	November 2016	Minor document updates, panel mounts

Related Documents

Visit the Technical Resources page on the Red Lion website at the following link to view available documents related to this product.

<http://www.redlion.net/documentation/red-lion-documentation>

Document Comments

Red Lion appreciates all comments that will help us to improve our documentation quality. The user can submit comments through the Red Lion Customer Service. Simply email us at customer.service@redlion.net

Additional Product Information

Additional product information can be obtained by contacting the local sales representative or Red Lion through the contact numbers and/or e-mail addresses listed on the inside of the front cover.







Warnings and Cautions


Warnings apply to situations where personal injury or death may result.

Cautions apply to where reduced function or damage to equipment may result.

General Safety Cautions and Warnings

	<p>CAUTION: If the N-Tron series equipment is used in the manner not specified by Red Lion, the protection provided by the equipment may be impaired.</p> <p>ATTENTION: Si l' N-Tron série équipement est utilisé d'une manière non spécifiée par Red Lion, la protection fournie par l'équipement peut être compromise.</p>
	<p>CAUTION: Do not perform any services on the unit unless qualified to do so. Do not substitute unauthorized parts or make unauthorized modifications to the unit.</p> <p>ATTENTION: Ne pas effectuer de services sur l'appareil s'il n'est pas qualifié pour le faire. Ne pas substituer pièces non autorisées ou de modifications non autorisées de l'appareil.</p>
	<p>CAUTION: Do not operate the equipment in a manner not specified by this manual.</p> <p>ATTENTION: Ne pas faire fonctionner l'équipement d'une manière non spécifiée par ce manuel.</p>
	<p>WARNING: Install only in accordance with Local and National Codes of authorities having jurisdiction.</p> <p>ALERTE: Installer uniquement, conformément aux codes locaux et nationaux des autorités ayant compétence.</p>

Electrical Safety Warnings

	<p>WARNING: Do not work on equipment or cables during periods of lightning activity.</p> <p>ALERTE: Ne pas travailler sur le matériel ou les câbles pendant les périodes d'activité de la foudre.</p>
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WARNING: Properly ground the unit before connecting anything else to the unit. Units not properly grounded may result in a safety risk and could be hazardous and may void the warranty. See the grounding technique section of this Hardware Guide for proper ways to ground the unit.
ALERTE: Correctement à la terre de l'unité avant tout raccordement à l'unité. Unités pas correctement mise à la terre peut entraîner un risque de sécurité et pourraient être dangereux et peut annuler la garantie. Voir la section technique de mise à la terre de ce mode d'emploi des moyens appropriés à la masse de l'appareil.



WARNING: This equipment must be used with a Listed UL Industrial Power Supply.
ALERTE: Cet équipement doit être utilisé avec une alimentation UL Listed industrielle.



WARNING: This equipment (1005TX,1008TX and 1008TX-POE+) must be used with a Listed UL Class 2 Power Supply.
ALERTE: Cet équipement (1005TX,1008TX and 1008TX-POE+) doit être utilisé avec une alimentation UL Listed Classe 2.



WARNING: A Recognized or Listed fuse, rated maximum 3A, minimum 30VDC, must be installed on the line side of the device.
ALERTE: Un fusible reconnu ou classé, classé 3A maximale, 30VDC minimum, doit être installé sur le côté de la ligne de l'appareil.



WARNING: Use 110°C or higher rated copper wire, (0.22Nm) 2 lb/in tightening torque for field installed conductors.
ALERTE: Utilisez 110°C ou nominale supérieure fil de cuivre, (0,22 Nm) 2 lb/pouce couple de serrage pour le champ installé conducteurs.



WARNING: Do not operate the unit with the end plates removed, as this could create a shock or fire hazard.
ALERTE : Ne pas faire fonctionner l'unité avec les plaques d'extrémité retiré, ce qui pourrait créer une décharge électrique ou un incendie.



CAUTION: Observe proper DC Voltage polarity when installing power input cables. Reversing voltage polarity can cause permanent damage to the unit and voids the warranty.
ATTENTION: Respecter la polarité correcte de tension DC lors de l'installation des câbles d'alimentation d'entrée. Inversion de polarité de tension peut causer des dommages permanents à l'appareil et annule la garantie.

Environmental Safety Cautions and Warnings

	<p>CAUTION: This equipment is suitable for use in Class I, Division 2, Groups A, B, C, and D or non-hazardous locations only.</p> <p>ATTENTION: Cet équipement est adapté pour une utilisation dans la classe I, Division 2, Groupes A, B, C et D ou non dangereux endroits seulement.</p>
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	<p>WARNING: Explosion Hazard – Substitution of components may impair suitability for Class I, Division 2.</p> <p>ALERTE - Risque d'explosion - Remplacement d'un composant peut empêcher la conformité de Classe I, Division 2.</p>
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	<p>WARNING: Do not operate the equipment in the presence of flammable gases or fumes. Operating electrical equipment in such an environment constitutes a definite safety hazard.</p> <p>ALERTE : Ne pas utiliser le matériel en présence de gaz ou de vapeurs inflammables. L'utilisation de matériel électrique dans un tel environnement constitue un danger certain.</p>
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	<p>WARNING – Explosion Hazard – Do not connect or disconnect any connections while circuit is live unless area is known to be non-hazardous.</p> <p>ALERTE - Risque d'explosion - Ne pas brancher ou débrancher les connexions lorsque le circuit est sous tension sauf si la zone est connue pour être non dangereux.</p>
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	<p>WARNING: Disconnect the power and allow to cool 5 minutes before touching.</p> <p>ALERTE: Déconnectez le câble d'alimentation et laissez refroidir 5 minutes avant de la toucher.</p>
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Hazardous Location Warning

	<p>WARNING (1005TX ,1008TX and 1008TX-POE+ only): This equipment is open-type device and is meant to be installed in an enclosure suitable for the environment that is only accessible with the use of a tool.</p> <p>ALERTE (1005TX ,1008TX and 1008TX-POE+ uniquement): Cet équipement est ouvert de type périphérique et est destiné à être installé dans un boîtier adapté à l'environnement qui n'est accessible qu'avec l'utilisation d'un outil.</p>
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Laser Safety Warning



CAUTION (1002MC and 1003GX2 only): CLASS 1 LASER PRODUCT. Do not stare into the laser.

ATTENTION (1002MC et 1003GX2 uniquement): PRODUIT LASER CLASSE 1. Ne pas regarder dans le laser.

Section 1 Introduction and Specifications

Introduction

The N-Tron® Series 1000 Unmanaged Industrial Gigabit Ethernet Switches and Media Converters are housed in ruggedized enclosures, and provide Category-5 compliant 10/100/1000Base-T connections for high performance network design. The 1000 series switches support high speed layer 2 switching between ports.

Fiber models utilize IEEE compliant LC duplex connectors for fiber optic communications in a convenient SFP (Small Form Pluggable) modular design. All 10/100/1000Base-T ports utilize RJ45 shielded connectors.

- The 1002MC is a two port unmanaged media converter that converts 10/100/1000Base-T copper to 1000BaseSX/LX SFP port.
- The 1003GX2 is a three port unmanaged Gigabit switch that offers one 10/100/1000Base-T copper port and two 1000BaseT/SX/LX SFP ports.
- The 1005TX is a five port unmanaged Gigabit switch that offers five 10/100/1000Base-T copper ports.
- The 1008TX is an eight port unmanaged Gigabit switch that offers eight 10/100/1000Base-T copper ports.
- The 1008TX-POE+ is an eight port unmanaged Gigabit switch that offers eight 10/100/1000Base-T copper ports, including 4 PoE+ capable ports (up to 30 Watts each).

Red Lion's industrial Power over Ethernet (PoE) solutions are designed to transmit power and data over an Ethernet network. PoE networks eliminate the need for running separate wires for power and are ideal in installations with devices such as IP surveillance cameras, wireless access points, IP phones and other PoE-enabled devices. These industrial PoE devices offer a compact, rugged design for harsh, remote locations.

Key Features

- Compact Space Saving Package
- Unmanaged Operation
- Jumbo Frame Support (1005TX and 1008TX only)
- Extended Environmental Specifications
- Supports Full/Half Duplex Operation
- Up to 16.0 Gb/s Maximum Throughput
- MDIX Auto Sensing Cable
- Auto Sensing Speed and Flow Control
- Full Wire Speed Communication
- Store-and-Forward Switching Technology
- Redundant Power Inputs
- LED Link/Activity Status Indication
- Industry Standard 35mm DIN-Rail Mounted Enclosure
- Plug-and Play installation



Model 1002MC

The 1002MC provides one RJ-45 auto sensing 10/100/1000BaseT port and one 1000BaseSX/LX SFP port. The RJ-45 port is full/half duplex capable, using state-of-the-art Ethernet switching technology. The switch auto-negotiates the speed and flow control capabilities of the copper port, and configures itself automatically. Up to 2 Gb/s maximum throughput. The 1000BaseSX/LX fiber optic port utilizes industry standard SFP transceivers with LC style connectors and is configured for full duplex operation. Both multimode and singlemode fiber models are available.

Key Specifications

Table 1. 1002MC - Key Specifications

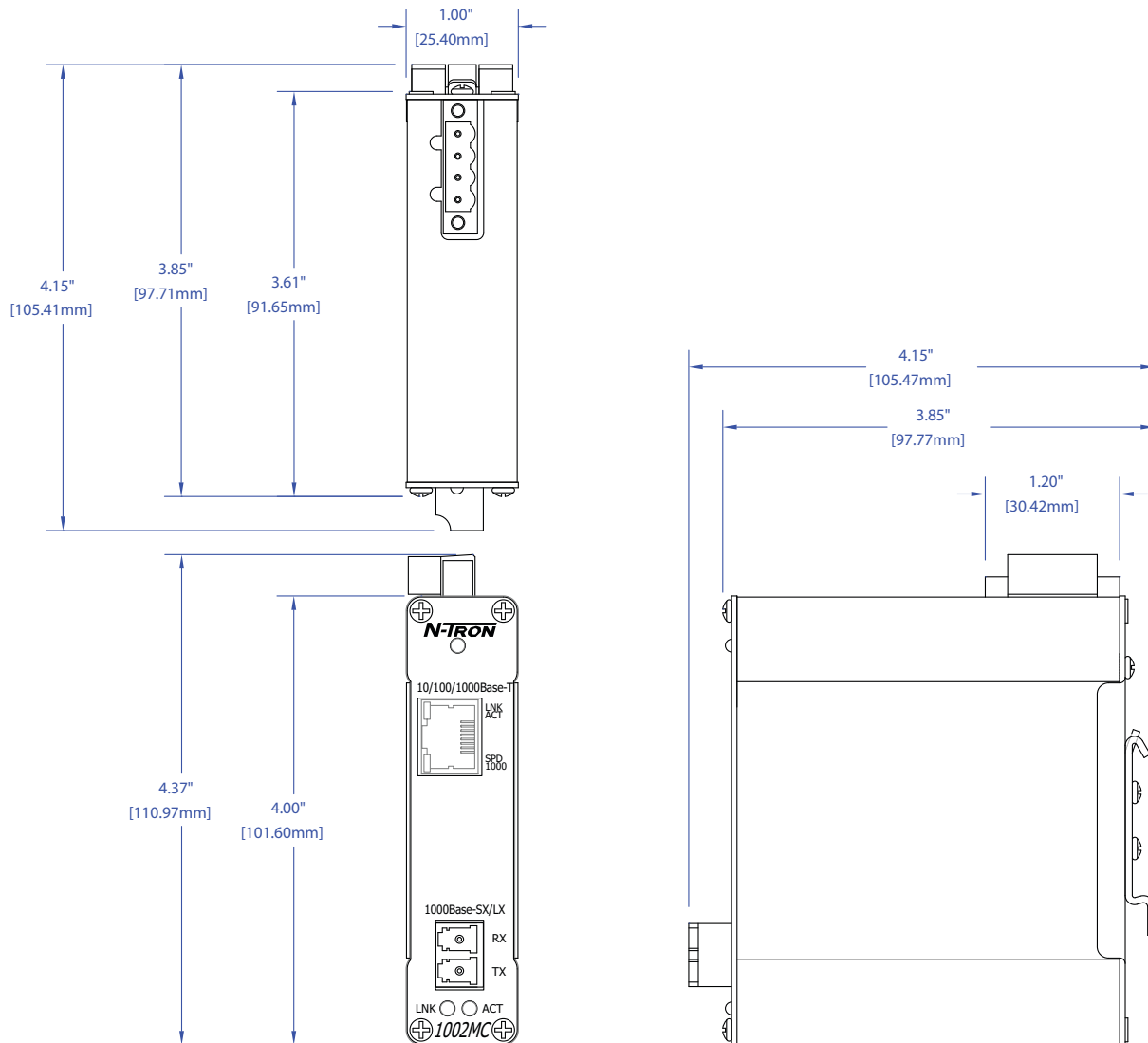
PHYSICAL		ELECTRICAL	
Height	4.0 in. (10.16 cm)	Input Voltage	10-30 VDC (Regulated)
Width	1.0 in. (2.54 cm)	Input Current	200mA max. @ 24VDC (Steady State)
Depth w/ typical SFP installed	3.6 in. (9.165 cm)	Inrush Current	13 Amp/0.8 ms max. @ 24VDC
Weight	0.7 lbs (0.32 kg)	Input Ripple	Less than 100 mV
DIN-Rail	35 mm	Input Wire Size	12-24 AWG
		BTU/hr	16.4
ENVIRONMENTAL		NETWORK MEDIA	
Operating Temperature	-40°C to 85°C	10BaseT	≥ Cat-3
Storage Temperature	-40°C to 85°C	100BaseT	≥ Cat-5
Operating Humidity	10% to 95% (Non Condensing)	1000BaseT	≥ Cat-5e
Operating Altitude	0 to 10,000 ft.	1000BaseSX Multimode	50-62.5/125µm
Ingress Protection	IP30	1000BaseLX Singlemode	7-10/125µm
Shock	200g @ 10 ms (bulkhead mounted)		
Vibration	50 g, 10-200 Hz, triaxial (bulk-head mounted)		
CONNECTOR		RECOMMENDED MINIMUM WIRING CLEARANCE	
10/100/1000BaseTX	One (1) RJ45 TX Copper Port	Top	1 in. (2.5 cm)
1000Base-SX/LX SFP	One (1) SFP LC Duplex Gigabit Fiber Port	Front	4 in. (10.1 cm)

Table 2. Gigabit Fiber Transceiver SFP Characteristics

	NTSFP-SX	NTSFP-LX-10	NTSFP-LX-40	NTSFP-LX-80
Fiber Length*	550m with 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
Laser Type	VCSEL	FP	DFB	DFB

*Fiber length distances represent technical performance. Link budgets should be evaluated based on specific application conditions.

Dimensions



Product Ordering Guide

Part Number	Application
1002MC-SX	1000BaseSX Multimode fiber Media Converter
1002MC-LX-ZZ	1000BaseLX Singlemode fiber Media Converter
1000-PM	Panel Mount kit, used with 1002MC, 1003GX2, 1005TX
NTPS-24-1.3	DIN-Rail Power Supply 24V@1.3 Amp
Where: "ZZ" is:	10 for 10km maximum fiber segment length 40 for 40km maximum fiber segment length 80 for 80km maximum fiber segment length

Model 1002MC Regulatory Approvals

Safety

For use in Class I, Division 2, Groups A, B, C and D Hazardous Locations.

- UL 508, Industrial Control Equipment.
- ANSI/ISA-12.12.01-2007 for use in Class I and II, Division 2 and Class III Divisions 1 and 2 Hazardous (Classified) Locations Groups A, B, C, D. T4A.
- cUL C22.2 No. 14-M05
- cUL C22.2 No. 213-M1987 for use in Class I, Division 2 Hazardous Locations.

EMI

- EN61000-6-4, EN55011 - Class A
- FCC Title 47, Part 15, Subpart B - Class A
- ICES-003 – Class A

EMC

- EN61000-6-2
- EN61000-4-2 (ESD)
- EN61000-4-3 (RS)
- EN61000-4-4 (EFT)
- EN61000-4-5 (Surge)
- EN61000-4-6 (Conducted Disturbances)

Warranty

3 years from the date of purchase.



Model 1003GX2

The 1003GX2 offers one auto sensing 10/100/1000Base-T copper port and two 1000BaseT/SX/LX full duplex copper/fiber ports. The RJ-45 port is full/half duplex capable, using state-of-the-art Ethernet switching technology. The switch auto-negotiates the speed and flow control capabilities of the copper port, and configures itself automatically. Up to 6 Gb/s Maximum Throughput. The 1000BaseSX/LX fiber optic port utilizes industry standard SFP transceivers with LC style connectors and is configured for full duplex operation. The 1003GX2 offers models in a combination of Singlemode and Mix-and-Match Multimode configurations.

- The 1003GX2-B has one 10/100/1000BaseT port and two (2) 1000BaseSX/LX SFP ports that support a combination of Multimode and Singlemode Mini-GBIC SFP transceivers (SFP transceivers sold separately)
- The 1003GX2-SX has one 10/100/1000BaseT port and two (2) 1000BaseSX SFP fiber transceivers.
- The 1003GX2-LX-10 has one 10/100/1000BaseT port and two (2) 1000BaseLX-10 SFP transceivers
- The 1003GX2-LX-40 has one 10/100/1000BaseT port and two (2) 1000BaseLX-40 SFP transceivers
- The 1003GX2-LX-80 has one 10/100/1000BaseT port and two (2) 1000BaseLX-80 SFP transceivers.

Key Specifications

Table 3. 1003GX2 Key Specifications

PHYSICAL		ELECTRICAL	
Height	4.0 in. (10.16 cm)	Input Voltage	10-30 VDC (Regulated)
Width	1.0 in. (2.54 cm)	Input Current	200mA max. @ 24VDC (Steady State)
Depth	3.6 in. (9.165 cm)	Inrush Current	13 Amp/0.8 ms max. @ 24VDC
Weight	0.7 lbs (0.32 kg)	Input Ripple	Less than 100 mV
DIN-Rail	35 mm	Input Wire Size	12-24 AWG
		BTU/hr	16.4
ENVIRONMENTAL		NETWORK MEDIA	
Operating Temperature	-40°C to 85°C	10BaseT	≥ Cat-3
Storage Temperature	-40°C to 85°C	100BaseT	≥ Cat-5
Operating Humidity	10% to 95% (Non Condensing)	1000BaseT	≥ Cat-5e
Operating Altitude	0 to 10,000 ft.	1000BaseSX Multimode	50-62.5/125µm
Ingress Protection	IP30	1000BaseLX Singlemode	7-10/125µm
Shock	200g @ 10 ms (bulkhead mounted)		
Vibration	50 g, 10-200 Hz, triaxial (bulkhead mounted)		
CONNECTORS		RECOMMENDED MINIMUM WIRING CLEARANCE	
10/100/1000BaseTX	One (1) RJ45 TX Copper Port	Top	1 in. (2.5 cm)
1000Base-SX/LX SFP	Up to two (2) SFP LC Duplex Gigabit Fiber Ports	Front	4 in. (10.1 cm)

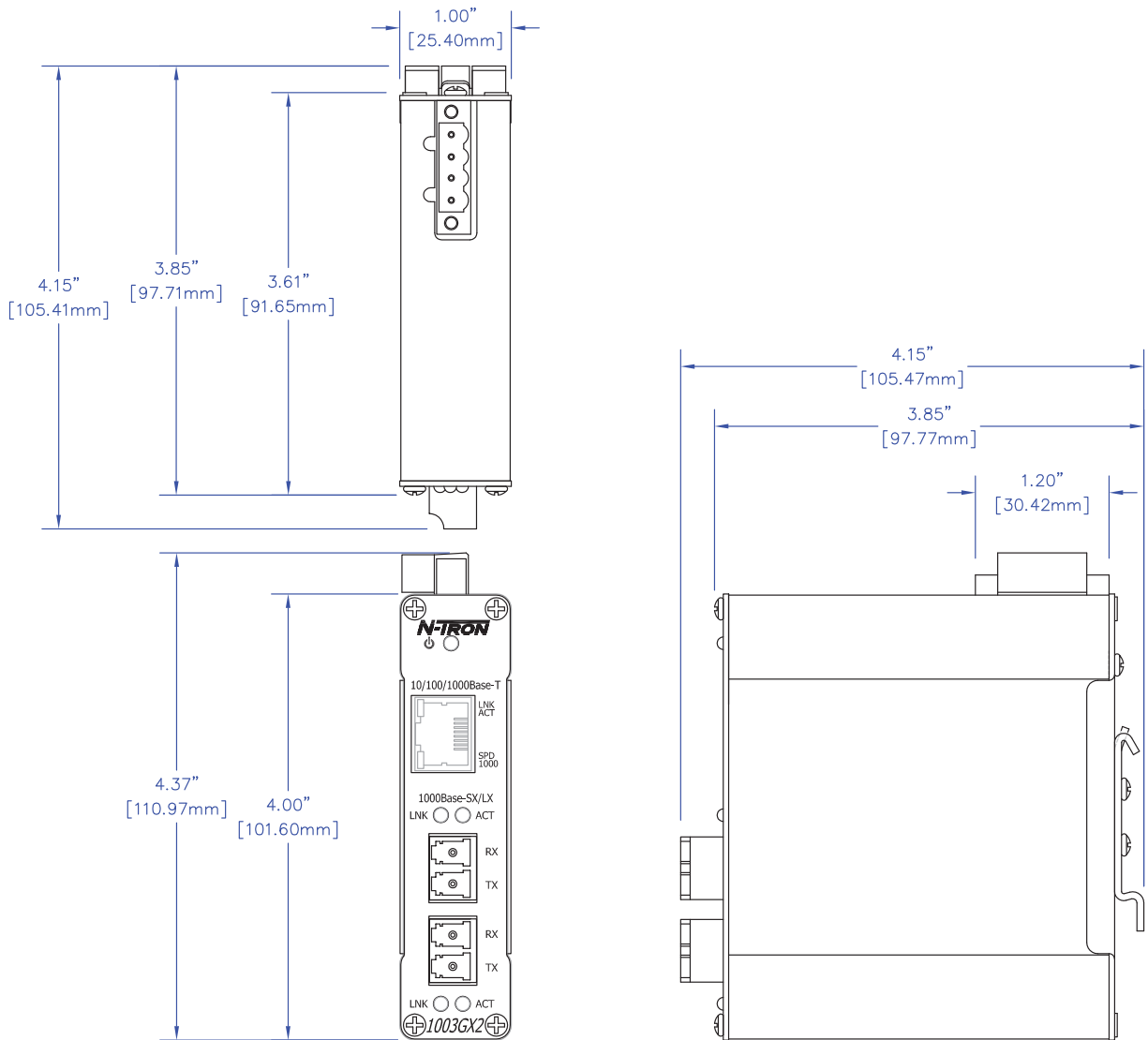


Table 4. Gigabit Fiber Transceiver (SFP) Characteristics

	NTSFP-SX	NTSFP-LX-10	NTSFP-LX-40	NTSFP-LX-80
Fiber Length	550m with 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
Laser Type	VCSEL	FP	DFB	DFB

*Fiber length distances represent technical performance. Link budgets should be evaluated based on specific application conditions.

Dimensions



Product Ordering Guide

Part Number	Application
1003GX2-B	One 10/100/1000BaseT port; Two (2)1000BaseSX/LX SFP ports supporting a combination of Multimode and Singlemode SFP Mini-GBIC fiber transceivers. Note: Unit must be populated with two SFP transceivers upon shipment
1003GX2-SX	One 10/100/1000BaseT port; Two (2) 1000BaseSX SFP fiber transceivers
1003GX2-LX-10	One 10/100/1000BaseT port; Two (2) 1000BaseLX-10 SFP fiber transceivers
1003GX2-LX-40	One 10/100/1000BaseT port; Two (2) 1000BaseLX-40 SFP fiber transceivers
1003GX2-LX-80	One 10/100/1000BaseT port; Two (2) 1000BaseLX-80 SFP fiber transceivers
1000-PM	Panel Mount Kit, used with 1002MC, 1003GX2, 1005TX,1008TX
NTPS-24-1.3	DIN-Rail Power Supply 24V@1.3Amp
NTSFP-SX	One 1000BaseSX Multimode SFP Gigabit Transceiver (two required per unit)
NTSFP-LX-ZZ*	One 1000BaseSX Singlemode SFP Gigabit Transceiver (two required per unit) Note: Unit must be populated with two SFP transceivers upon shipment

* ZZ = 10, 40, or 80 for GB Singlemode SFP Transceiver

Model 1003GX2 Regulatory Approvals**Safety**

For use in Class I, Division 2, Groups A, B, C and D Hazardous Locations.

- UL 508, Industrial Control Equipment.
- ANSI/ISA-12.12.01-2007 for use in Class I and II, Division 2 and Class III Divisions 1 and 2 Hazardous (Classified) Locations Groups A, B, C, D. T4A.
- cUL C22.2 No. 14-M05
- cUL C22.2 No. 213-M1987 for use in Class I, Division 2 Hazardous Locations.

EMI

- EN61000-6-4, EN55011 - Class A
- FCC Title 47, Part 15, Subpart B - Class A
- ICES-003 – Class A

EMC

- EN61000-6-2
- EN61000-4-2 (ESD)
- EN61000-4-3 (RS)
- EN61000-4-4 (EFT)
- EN61000-4-5 (Surge)
- EN61000-4-6 (Conducted Disturbances)

Warranty

3 years from the date of purchase.



Model 1005TX

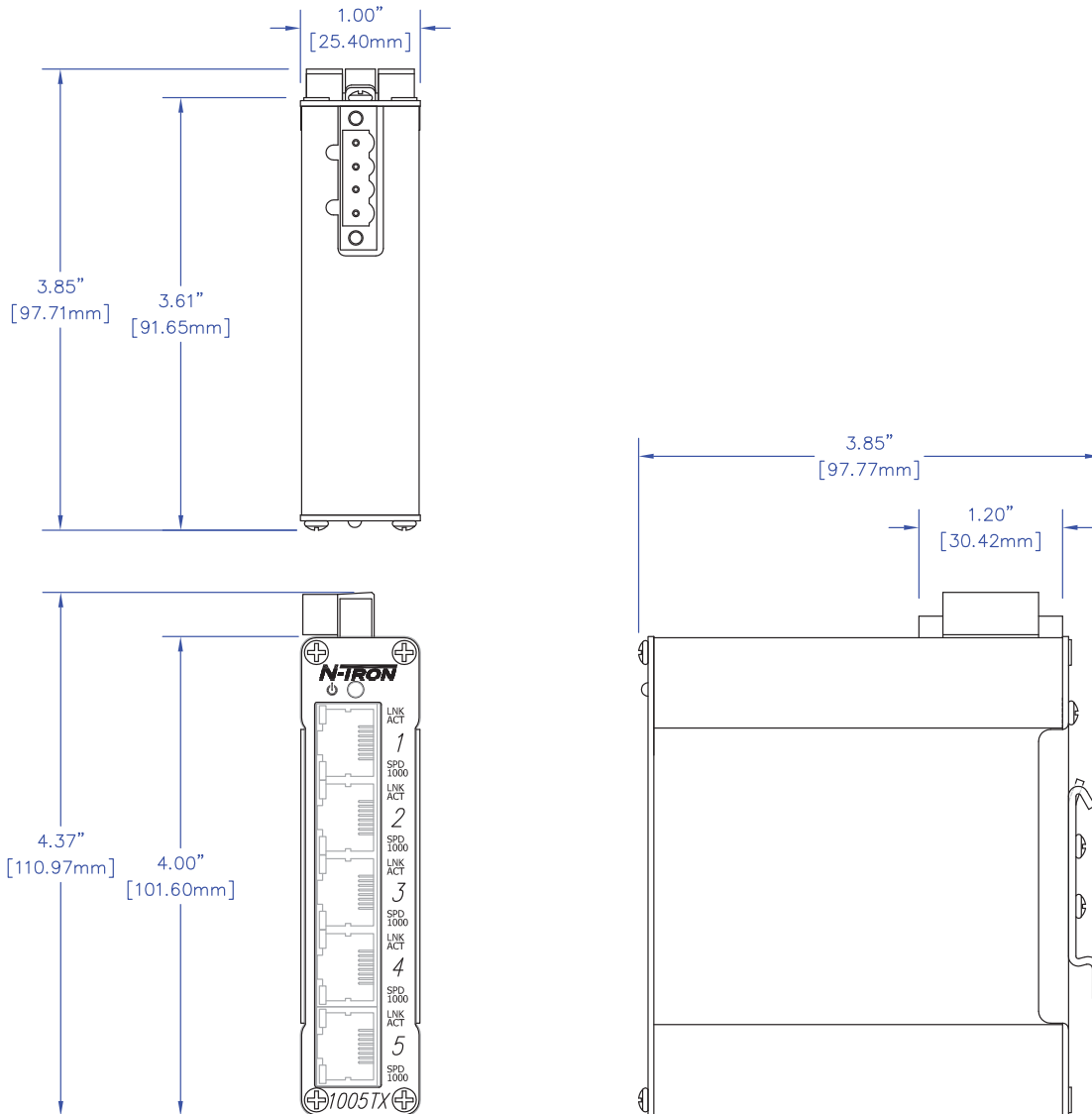
The 1005TX is a five port unmanaged Gigabit switch that offers five 10/100/1000Base-T RJ-45 ports. The RJ-45 port is full/half duplex capable, using state-of-the-art Ethernet switching technology. The switch auto-negotiates the speed and flow control capabilities of the copper port, and configures itself automatically. Up to 10 Gb/s maximum throughput. It is designed for use in mission critical data acquisition, control, and Ethernet I/O applications where Gigabit capability is required. The 1005TX Gigabit network switch is designed to solve the most demanding industrial communication requirements while providing high throughput and minimum downtime.

Key Specifications

Table 5. 1005TX Key Specifications

PHYSICAL		ELECTRICAL	
Height	4.0 in. (10.16 cm)	Input Voltage	10-30 VDC (Regulated)
Width	1.0 in. (2.54 cm)	Input Current	230mA max. @ 24VDC (Steady State)
Depth	3.6 in. (9.165 cm)	Inrush Current	13 Amp/0.6 ms max. @ 24VDC
Weight	0.7 lbs (0.32 kg)	Input Ripple	Less than 100 mV
DIN-Rail	35 mm	Input Wire Size	12-24 AWG
		BTU/hr	18.8
ENVIRONMENTAL		NETWORK MEDIA	
Operating Temperature	-40°C to 85°C	10BaseT	≥ Cat-3
Storage Temperature	-40°C to 85°C	100BaseT	≥ Cat-5
Operating Humidity	10% to 95% (Non Condensing)	1000BaseT	≥ Cat-5e
Operating Altitude	0 to 10,000 ft.		
Ingress Protection	IP30		
Shock	200g @ 10 ms (bulkhead mounted)		
Vibration	50 g, 10-200 Hz, triaxial (bulkhead mounted)		
CONNECTORS		RECOMMENDED MINIMUM WIRING CLEARANCE	
10/100/1000BaseTX	Five (5) RJ45 TX Copper Ports	Top	1 in. (2.5 cm)
		Front	2 in. (5.0 cm)

Dimensions



Product Ordering Guide

Part Number	Application
1005TX	Five port 10/100/1000BaseT Ethernet switch
1000-PM	Panel Mount kit
NTPS-24-1.3	DIN-Rail Power Supply 24V@1.3 Amp



Model 1005TX Regulatory Approvals

Safety

For use in Class I, Division 2, Groups A, B, C and D Hazardous Locations.

- UL 508, Industrial Control Equipment
- ANSI/ISA-12.12.01-2015 for use in Class I and II, Division 2 and Class III Divisions 1 and 2 Hazardous (Classified) Locations Groups A, B, C, D. T4
- cUL C22.2 No. 14-13 Industrial Control Equipment
- cUL C22.2 No. 213-15 for use in Class I and II, Division 2 and Class III Divisions 1 and 2 Hazardous (Classified) Locations.

EMI

- EN61000-6-4, EN55011 - Class A
- FCC Title 47, Part 15, Subpart B - Class A
- ICES-003 – Class A

EMC

- EN61000-6-2
- EN61000-4-2 (ESD)
- EN61000-4-3 (RS)
- EN61000-4-4 (EFT)
- EN61000-4-5 (Surge)
- EN61000-4-6 (Conducted Disturbances)

Warranty

3 years from the date of purchase.



Model 1008TX

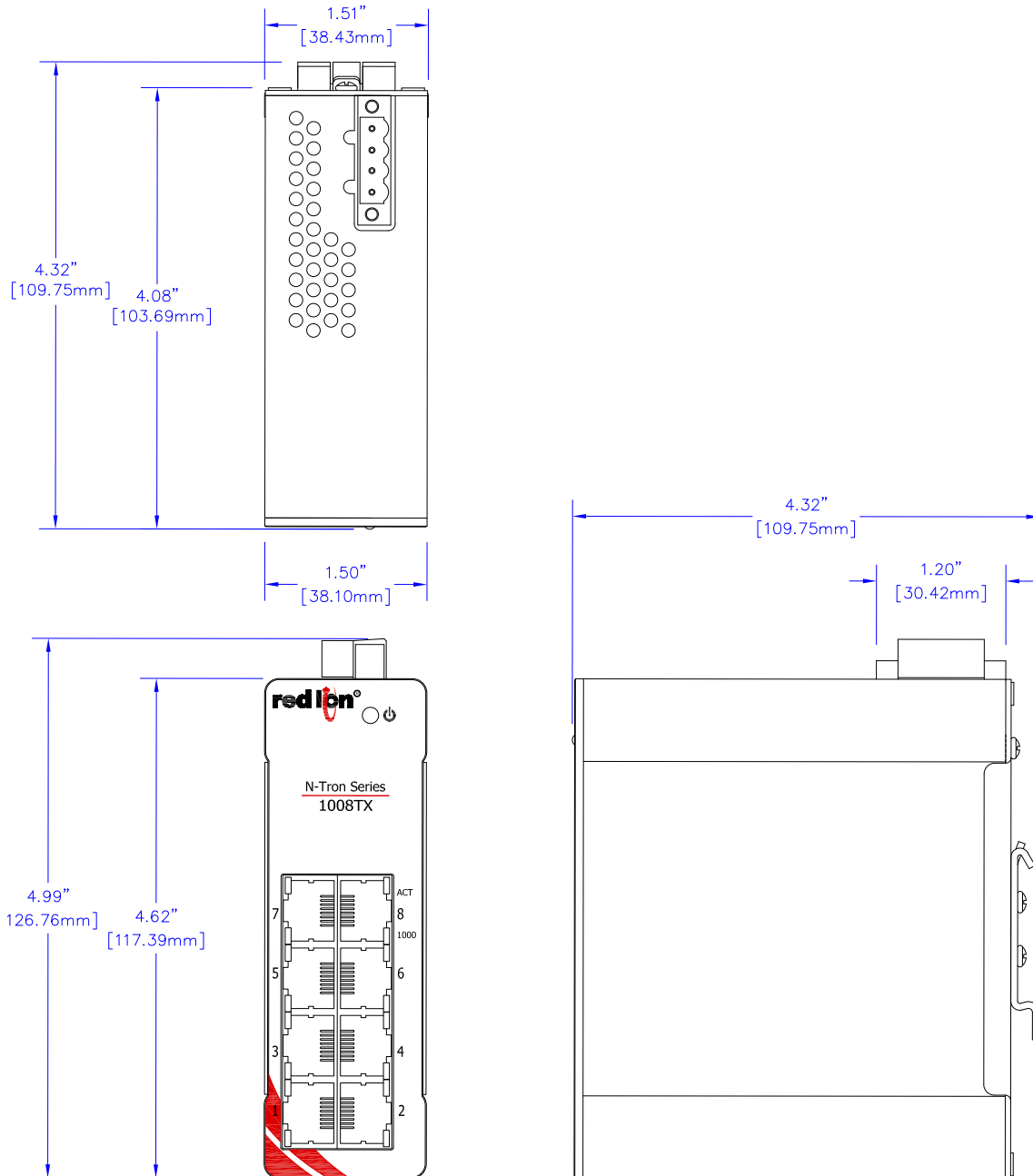
The 1008TX is an unmanaged Gigabit switch that offers eight Gigabit 10/100/1000Base-T RJ-45 ports. The RJ-45 port is full/half duplex capable, using state-of-the-art Ethernet switching technology. The switch auto-negotiates the speed and flow control capabilities of the copper port, and configures itself automatically. Up to 16 Gb/s maximum throughput. It has redundant power inputs.

Key Specifications

Table 6. 1008TX Key Specifications

PHYSICAL		ELECTRICAL	
Height	4.6 in. (11.76 cm)	Input Voltage	10-49 VDC (Regulated)
Width	1.5 in. (3.94 cm)	Input Current	250mA max. @ 24VDC (Steady State)
Depth	4.0 in. (10.37 cm)	Inrush Current	20 Amp/0.06 ms max. @ 24VDC
Weight	0.7 lbs (0.32 kg)	Input Ripple	Less than 100 mV
DIN-Rail	35 mm	Input Wire Size	12-24 AWG
		BTU/hr	20.5
ENVIRONMENTAL		NETWORK MEDIA	
Operating Temperature	-40°C to 85°C	10BaseT	≥ Cat-3
Storage Temperature	-40°C to 85°C	100BaseT	≥ Cat-5
Operating Humidity	10% to 95% (Non Condensing)	1000BaseT	≥ Cat-5e
Operating Altitude	0 to 10,000 ft.		
Ingress Protection	IP20		
Shock	200g @ 10 ms (bulkhead mounted)		
Vibration	50 g, 10-200 Hz, triaxial (bulk-head mounted)		
CONNECTORS		RECOMMENDED MINIMUM WIRING CLEARANCE	
10/100/1000BaseTX	Eight (8) RJ45 TX Copper Ports	Top	1 in. (2.5 cm)
		Front	2 in. (5.0 cm)

Dimensions



Product Ordering Guide

Part Number	Application
1008TX	Eight port 10/100/1000BaseT Ethernet switch
1K26-PMK	Panel Mount kit, 1000 series
NTPS-24-1.3	DIN-Rail Power Supply 24V@1.3 Amp

Model 1008TX Regulatory Approvals**Safety**

For use in Class I, Division 2, Groups A, B, C and D Hazardous Locations.

- UL 508, Industrial Control Equipment.
- ANSI/ISA-12.12.01-2015 for use in Class I and II, Division 2 and Class III Divisions 1 and 2 Hazardous (Classified) Locations Groups A, B, C, D. T4.
- cUL C22.2 No. 14-13 Industrial Control equipment
- cUL C22.2 No. 213-15 for use in Class I, Division 2 and Class III Divisions 1 and 2 Hazardous (Classified) Locations.

EMI

- FCC Title 47, Part 15, Subpart B - Class A
- Industry Canada ICES-003 – Class A
- EN 55011 - Class A
- EN 61000-6-4
- EN 61000-3-2/3

EMC

- EN 61000-6-2
- EN 61000-4-2/3/4/5/6/8/11

Warranty

3 years from the date of purchase.



Model 1008TX-POE+

Red Lion's N-Tron® series 1008TX-POE+ unmanaged gigabit PoE+ Ethernet switch features plug-and-play operation for up to eight 10/100/1000Base-T(X) devices with Power Over Ethernet Plus (PoE+) support on four ports. The 1008TX-POE+ will output up to 30 Watts of power along with data on each of its four IEEE 802.3af/at compliant PoE+ ports to PoE/PoE+ compliant powered devices (PDs), eliminating the need to run separate power lines. Built-in power boost technology dynamically boosts power from either of the 22-49 VDC power inputs to meet PoE+ requirements.

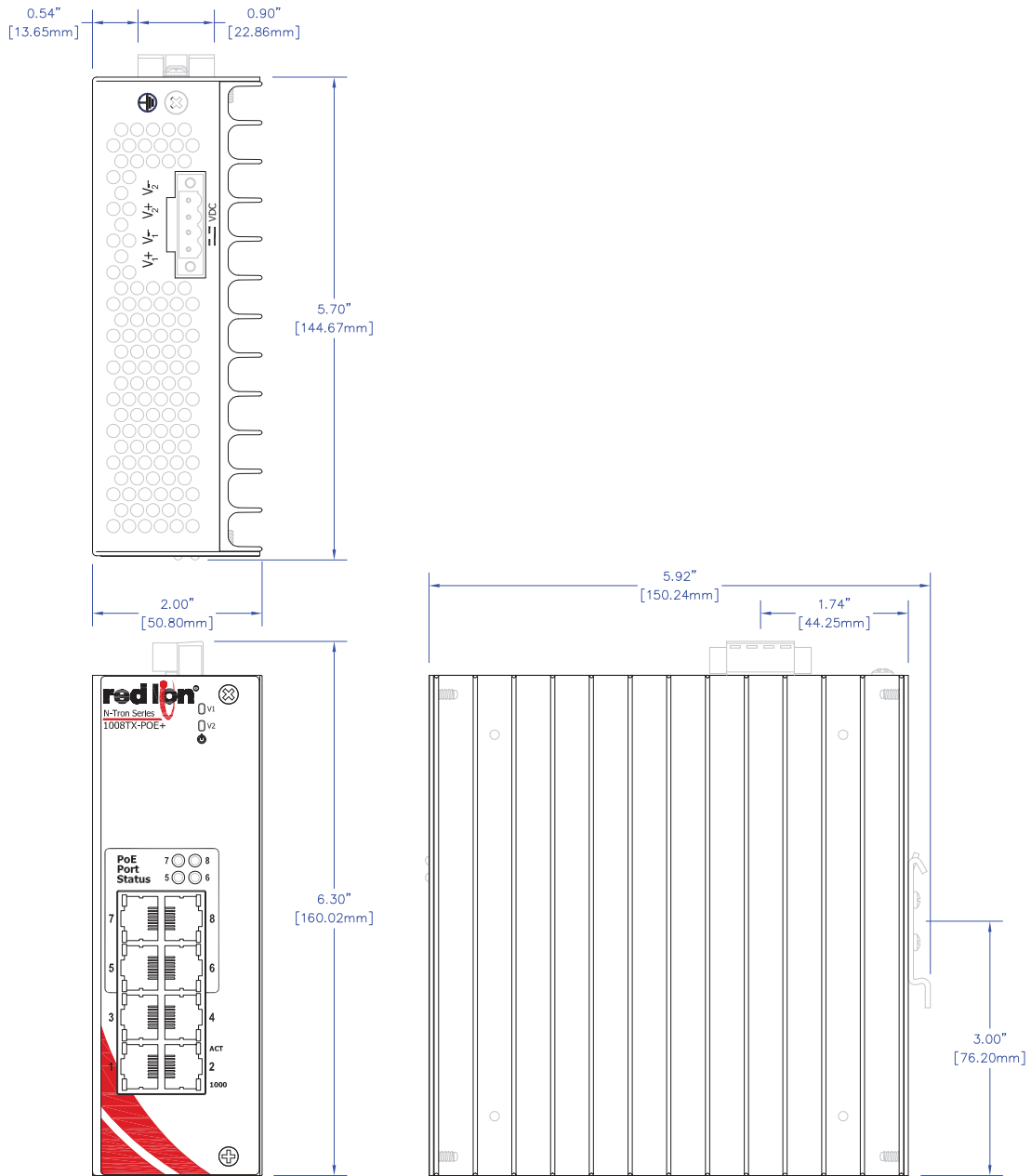
Key Specifications

Table 7. 1008TX-POE+ Key Specifications

PHYSICAL		ELECTRICAL	
Height	5.9 in. (14.99 cm)	Input Voltage	22-49 VDC (Regulated)
Width	2.0 in. (5.11 cm)	Input Current	5.6A max. @ 24VDC (Under Full Load)
Depth	5.9 in. (15.04 cm)	Inrush Current	70.5 Amp/60us @ 24VDC
Weight	1.5 lbs (0.69 kg)	Input Ripple	Less than 100 mV
DIN-Rail	35 mm	Input Wire Size	12-16 AWG
		BTU/hr	60
ENVIRONMENTAL		NETWORK MEDIA	
Operating Temperature	-40°C to 80°C	10BaseT	≥ Cat-3
Storage Temperature	-40°C to 85°C	100BaseT	≥ Cat-5
Operating Humidity	10% to 95% (Non Condensing)	1000BaseT	≥ Cat-5e
Operating Altitude	0 to 10,000 ft.	802.3af (802.3at Type 1) PoE	≥ Cat-3
Ingress Protection	IP20	802.3at Type 2 PoE+	≥ Cat-5
Shock	200g @ 10 ms (bulkhead mounted)		
Vibration	50 g, 10-200 Hz, triaxial (bulkhead mounted)		
CONNECTORS		RECOMMENDED MINIMUM WIRING CLEARANCE	
10/100/1000Base-T	four (4) RJ45 Ports	Top	1 in. (2.5 cm)
10/100/1000Base-T/PoE+	four (4) RJ45 TX/PoE+ Ports	Front	2 in. (5.0 cm)
POWER OVER ETHERNET			
PoE Standard IEEE 802.3af/at Gigabit Mid-Span PSE			
PoE Output Power 57VDC/30W (25.5W at PD) per port			
Power Pin assignment Pins 1/2 (+) Pins 3/6 (-)			
PSE Type Type 2			



Dimensions



Product Ordering Guide

Part Number	Application
1008TX-POE+	Eight port Industrial Unmanaged Gigabit PoE+ Switch (4 10/100/1000Base-T ports, 4 10/100/1000Base-T with PoE+ ports)
1K26-PMK	Panel Mount kit, 1000 Series
NTPS-24-10	DIN-Rail Power Supply, 24V@10 Amp

Model 1008TX-POE+ Regulatory Approvals

Safety

- ANSI/ISA 12.12.01-2015 Class I and II, Div. 2 and Class III, Div. 1 and 2, Groups A, B, C and D Hazardous Locations, T4
- UL508 Industrial Control Equipment
- CAN/CSA-C22.2 No. 213-15, Hazardous Locations
- CAN/CSA-C22.2 No. 14-13, Industrial Control Equipment

EMI

- FCC Title 47, Part 15, Radio Frequency Devices, Subpart B, ANSI C63.4-2009;
- Industry Canada ICES-003, EN 55032, EN 61000-3-2, EN61000-3-3

EMC

- EN 55024, EN 61000-6-2, EN 61000-4-2 (ESD); EN 61000-4-3 (RFAM); EN 61000-4-4 (EFT); EN 61000-4-5 (SURGE); EN 61000-4-6 (RFCM); EN 61000-4-8 (PFMF); EN 61000-4-11 (VDI)

Warranty

3 years from the date of purchase.



Section 2 Installation

Introduction

This sections contains the information and procedures necessary to unpack, inspect, install and connect the N-Tron® Series 1000 equipment.

Unpacking

Remove all the equipment from the packaging, and store the packaging in a safe place.

Inspection

Please ensure the shipping package contains the following items in undamaged condition:

1. N-Tron® Series 1000 Media Converter or Ethernet Switch.
2. Product CD.

If the package contents are damaged:

1. Contact your carrier.
2. File any damage claims with the carrier.

Installing/Mounting

Read the following warning before beginning the installation:

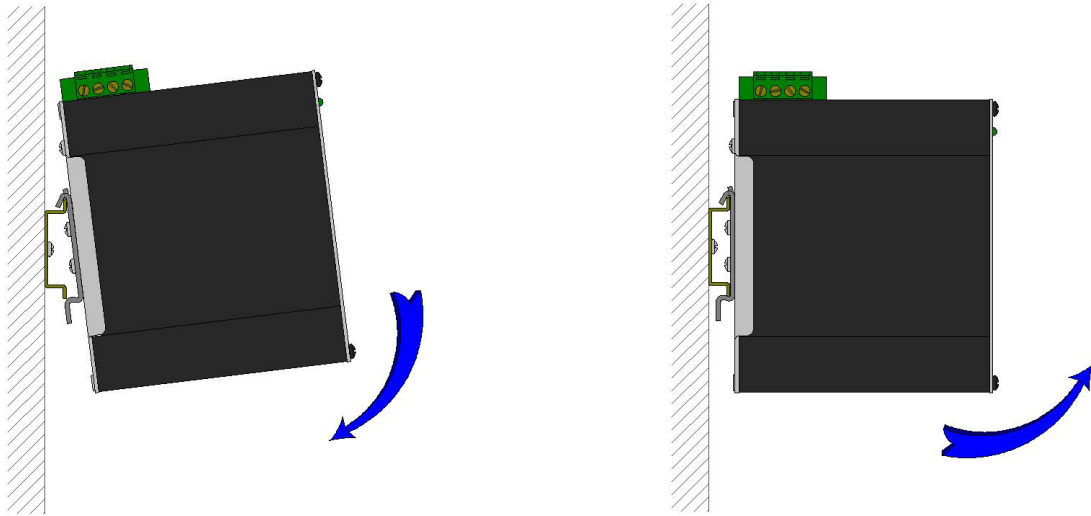
Lire l'avertissement suivant avant de commencer l'installation:



WARNING: Never install or work on electrical equipment or cabling during periods of lightning activity. Never connect or disconnect power when hazardous gases are present.
ALERTE: Ne jamais installer ou de travailler sur un équipement électrique ou de câblage pendant les périodes d'activité de la foudre. Ne jamais brancher ou débrancher l'alimentation en gaz dangereux sont présents

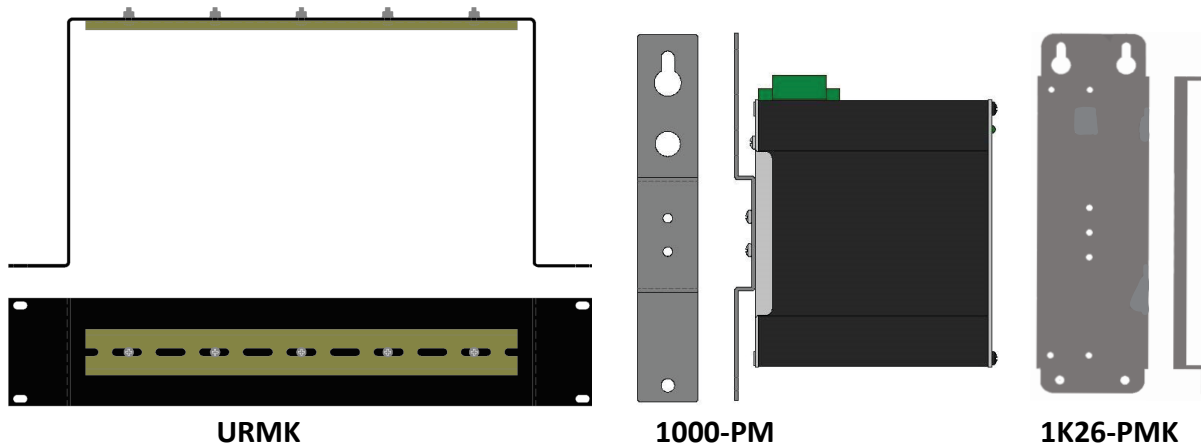
DIN-Rail Mounting

- a. Install the unit in a standard DIN-Rail. Recess the unit to allow at least 2" of horizontal clearance for CAT5e cable bend radius or 5" of horizontal clearance for Fiber Optic cable bend radius.



- b. To install the unit to 35mm industrial DIN-Rail, place the top edge of the included mounting bracket on the back of the unit against the DIN-Rail at a 15° angle as shown. Rotate the bottom of the unit to the back (away from you) until it snaps into place.

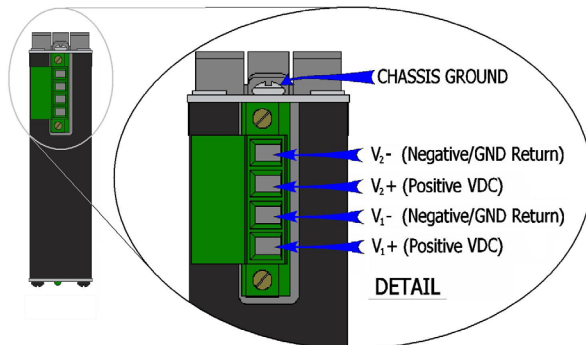
- c. To remove the unit from the 35mm industrial DIN-Rail, pull forward on the unit until it disengages from the bottom of the DIN-Rail. Rotate the bottom of the unit towards you and up at an approximate 15° upward angle to completely remove the unit.



Most Red Lion N-Tron™ products are designed to be mounted on industry standard 35mm DIN-Rail. However, DIN-Rail mounting may not be suitable for all applications. Our Universal Rack Mount Kit (P/N: URMK) can be used to mount the 1000 Series enclosures to standard 19" racks, and our Panel Mount Assembly (P/N: 1000-PM) can be used to mount the 1000 Series enclosures to a panel or any other flat surface. The 1008TX and 1008TX-POE+ will require the 1K26-PMK panel mount.

Connections

Power Connection (Top View)



1. Unscrew & Remove the DC Voltage Input Plug from the top header.
2. Install the DC Power Cables into the Plug (observing polarity on unit).
3. Plug the Voltage Input Plug back into the top header.
4. Tightening torque for the terminal block power plug is **0.5 Nm/0.368 Pound Foot**.
5. Verify the Power LED stays ON (GREEN).

Note: Either V_1 or V_2 can be connected to power for minimal operation. For redundant power operation, V_1 and V_2 plugs must be connected to separate DC Voltage sources. Use wire sizes of 12-24 gauge for non-PoE models and 12-16 gauge for PoE models. Limit the power cord length to less than 10 meters in order to ensure optimum performance.

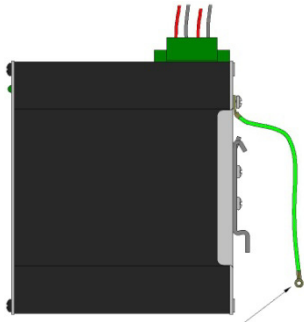
Recommend using 24V DC Power Supplies, similar to:

- 100-240VAC: N-Tron NTPS-24-1.3, DC 24V/1.3A
- 100-240VAC: N-Tron NTPS-48-5, DC 48/5A Ground Connection
- 100-240VAC: N-Tron NTPS-24-10, DC 24V/10A

Ground Connection

N-Tron Series Switch Grounding Techniques for 1000 Series

The grounding of any control system is an integral part of the design. Optimum noise immunity and emissions are obtained when the chassis is connected to earth ground via a 12-14 gauge drain wire. The N-Tron series models provide a ground lug that is used to provide a safe grounding path of the device.



Drain wire with lug connecting switch chassis to known grounding posts.

Users may run a drain wire & lug from the screw provided on the back face of the enclosure. In the event the provided grounding screw has been lost, care should be taken to limit the penetration of the outer skin by less than 1/4 in. Failure to do so may cause irreversible damage to the internal components of the switch.

Note: Ensure the power supply is grounded properly before applying power to the grounded switch. This can be verified by using a voltmeter to determine that there is no voltage difference between the power supply's negative output terminal and the chassis grounding point of the switch.

Note: The V-legs of the power input connector are connected to the chassis internally on the 1002MC, 1003GX2 and 1005TX. Before applying power to the grounded switch, you must use a volt meter to verify there is no voltage difference between the power supply's negative output terminal and the switch chassis grounding point.

Note: The 1008TX and 1008TX-POE+ power input (V-) pins are isolated from chassis ground. Do not attempt to ground the switch to earth ground via the power input pins (V-).

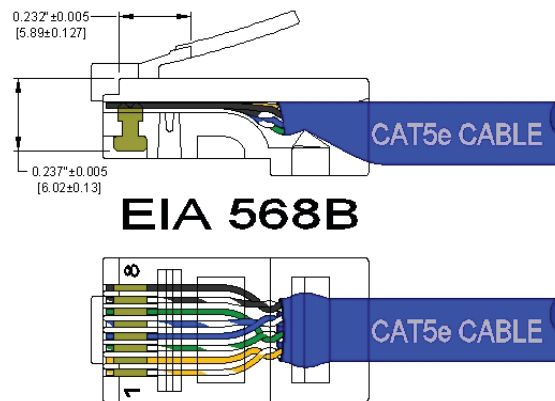
If the use of shielded cables is required, it is generally recommended to only connect the shield at one end to prevent ground loops and interfere with low level signals (i.e. thermocouples, RTD, etc.). Cat5e cables manufactured to EIA-568A or 568B specifications are required for use with N-Tron series switches.



In the event all Cat5e patch cable distances are small (i.e. All Ethernet devices are located the same local cabinet and/or referenced to the same earth ground), it is permissible to use fully shielded cables terminated to chassis ground at both ends in systems void of low level analog signals.

RJ45 Connector Crimp Specifications

Please reference the illustration below for your Cat5 cable specifications:



Cable Connection

Cable connections are dependent on the network configuration and N-Tron® Series 1000 model in use.

1. For 10Base-T ports, plug a Category 3 (or greater) twisted pair cable into the RJ45 connector.
2. For 100/1000Base-T ports, plug a Category 5e (or greater) twisted pair cable into the RJ45 connector. Connect the other end to the far end station. The total length should not exceed 100 meters.
3. Verify that the LNK/ACT LEDs are ON once the connection has been completed.
4. To connect any other port to another Switch or Repeater, use a standard Cat5e straight through or crossover cable.



CAUTION: Creating a port to port connection on the same switch (i.e. loop) is an illegal operation and will create a broadcast storm which will crash the network!

ATTENTION: Création d'un port de connexion du port sur le même commutateur (c.-à-boucle) est une opération illégale et va créer une tempête de diffusion qui va planter le réseau!

Section 3 Operation and Maintenance

Introduction

The N-Tron® Series 1000 Gigabit Media Converter & Industrial Gigabit Ethernet Switch devices provide operating status information through the LED indicators located on the front panel.

Controls and Indicators


Model 1002MC, 1003GX2, 1005TX Indicators



Table 8. Model 1002MC, 1003GX2, 1005TX Indicators (from top to bottom)

INDICATOR	DESCRIPTION
	Green LED lights when power is connected
LNK/ACT	LED indicating link/activity
SPD1000	LED indicating 1000 Link data speed

Table 9. Model 1002MC, 1003GX2, 1005TX Indicator States

INDICATOR	STATE	DESCRIPTION
	ON	Power is applied
	OFF	Power is off
LNK/ACT	BLINKING	Link established, activity on cable
	OFF	No link activity on cable
SPD1000	ON	Link is operating at 1000Mbps
	OFF	Link is operating at 10/100Mbps

Model 1008TX Indicators

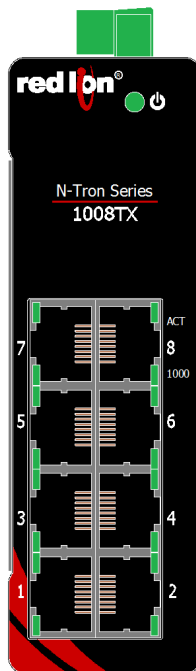


Table 10. Model 1008TX Indicators (from top to bottom)


INDICATOR	DESCRIPTION
	Green LED lights when power is connected
ACT	LED indicating activity
1000	LED indicating 1000 Link data speed

Table 11 describes the indicator states and the operating modes:

Table 11. Model 1008TX Indicator States

INDICATOR	STATE	DESCRIPTION
🔌	ON	Power is applied
	OFF	Power is off
ACT	ON/BLINKING	Link established, activity on cable
	OFF	No link activity on cable
1000	ON	Link is operating at 1000Mbps
	OFF	Link is operating at 10/100Mbps

Model 1008TX-POE+ Indicators

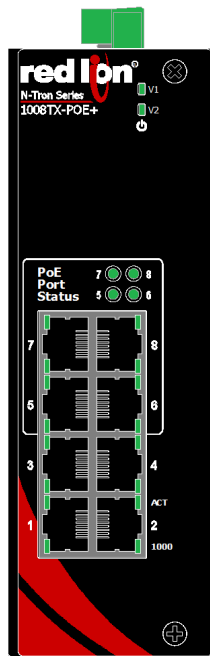


Table 12. Model 1008TX-POE+ Indicators (from top to bottom)

INDICATOR	DESCRIPTION
V1	V1 Power LED
V2	V2 Power LED
🔌	Power Supply
PoE Port Status	PoE activity
ACT	LED indicating activity
1000	LED indicating 1000 Link data speed

Table 13 describes the indicator states and the operating modes:



Table 13. Model 1008TX-POE+ Indicator States

INDICATOR	COLOR/STATE	DESCRIPTION
⏻	GREEN	Valid Power (22-49VDC) is applied on corresponding voltage input.
	RED	Invalid Power (<20VDC) is applied to corresponding voltage input.
	OFF	No power is applied to the device.
ACT	ON/BLINKING	Link established, activity on cable.
	OFF	No link activity on cable.
1000	ON	Link established, activity on cable.
	OFF	No link activity on cable.
PoE Port Status	GREEN	PoE power is being applied to the corresponding port.
	OFF	No PoE power is being applied to the corresponding port.

Maintenance

Maintenance is limited to verifying the cable interface and unit cleaning.

Verify/Troubleshoot Cable Interface

1. Make sure the ⏻ (Power LED) is ON.
2. Make sure you are supplying sufficient current for the chosen switch version.

Note: The inrush current will exceed the steady state current by ~ 2X.

3. Verify that Link LEDs are ON for both ports.
4. Verify cabling used between stations.
5. Verify that cabling is Category 3 or greater for 10Mbps Operation.

Cleaning

Clean hardware only with a damp cloth.

LIMITED WARRANTY

(a) Red Lion Controls Inc., Sixnet Inc., N-Tron Corporation, or Blue Tree Wireless Data, Inc. (the “Company”) warrants that all Products shall be free from defects in material and workmanship under normal use for the period of time provided in “Statement of Warranty Periods” (available at www.redlion.net) current at the time of shipment of the Products (the “Warranty Period”). **EXCEPT FOR THE ABOVE-STATED WARRANTY, COMPANY MAKES NO WARRANTY WHATSOEVER WITH RESPECT TO THE PRODUCTS, INCLUDING ANY (A) WARRANTY OF MERCHANTABILITY; (B) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; OR (C) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE.** Customer shall be responsible for determining that a Product is suitable for Customer’s use and that such use complies with any applicable local, state or federal law.

(b) The Company shall not be liable for a breach of the warranty set forth in paragraph (a) if (i) the defect is a result of Customer’s failure to store, install, commission or maintain the Product according to specifications; (ii) Customer alters or repairs such Product without the prior written consent of Company.

(c) Subject to paragraph (b), with respect to any such Product during the Warranty Period, Company shall, in its sole discretion, either (i) repair or replace the Product; or (ii) credit or refund the price of Product provided that, if Company so requests, Customer shall, at Company’s expense, return such Product to Company.

(d) THE REMEDIES SET FORTH IN PARAGRAPH (c) SHALL BE THE CUSTOMER’S SOLE AND EXCLUSIVE REMEDY AND COMPANY’S ENTIRE LIABILITY FOR ANY BREACH OF THE LIMITED WARRANTY SET FORTH IN PARAGRAPH (a).

