

**104TX/105TX**  
**Industrial Ethernet Switches**  
**Installation**  
**Guide**

*Industrial Ethernet Switch Installation Guide*

104TX

105TX



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### **Warning**

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.

Do not operate the unit with the endplates removed, as this could create a shock or fire hazard.

Do not operate the equipment in the presence of flammable gasses or fumes. Operating electrical equipment in such an environment constitutes a definite safety hazard.

## Safety Warnings

### ELECTRICAL SAFETY



**WARNING:** Disconnect the power cable before removing the endplates.

**WARNING:** Do not operate the unit with the endplates removed.

**WARNING:** Do not work on equipment or cables during periods of lightning activity.

**WARNING:** Do not perform any services on the unit unless qualified to do so.

**WARNING:** Observe proper DC Voltage polarity when installing power input cables. Reversing voltage polarity can cause permanent damage to the unit and void the warranty.



## Hazardous Location Installation Requirements

1. **WARNING:** Do not remove or replace while circuit is live unless the area is known to be free of ignitable concentrations of flammable gases or vapors.
2. **WARNING:** Explosion hazard. Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations.
3. **WARNING:** Install only in accordance with Local & National Codes of Authorities Having Jurisdiction.
4. Class I, Div 2 Installations require that power connections must be current limited at the power source with an in-line fuse rated at 0.5A.
5. Class I, Div 2 installations require that all devices connected to this product must be UL listed for the area in which it is installed.
6. Use 60/75°C rated Copper wire, (022Nm) 2 inch-lbs Tightening torque for field installed connectors.
7. Limited Operating Voltage: 12-30V for Class I, Div 2 installations.
8. This apparatus is suitable for use in Class I, Div 2, Groups A, B, C, and D, or unclassified or nonhazardous locations.

## **104TX and 105TX Industrial Ethernet Switches**

The 104TX and 105TX Unmanaged Industrial Ethernet Switches support high speed layer 2 switching between ports. These switches are housed in ruggedized aluminum enclosures, while the front and back plates are made of brushed stainless steel. The switches provide Category-5 compliant 10/100-BaseT connections for high performance network design, and hub/repeater upgrades.

The 104TX and 105TX switches are affordable and share a small footprint. Each switch is capable of auto negotiating 10/100 Mb and half/full duplex communications.

### **Key Features**

- Full IEEE 802.3
- Extended Environmental Specifications
- Support for Full/Half Duplex Operation
- LED Link/Activity Status Indication
- Autonegotiation, Autosensing Speed, Duplex, and Flow Control
- Up to 1.0 Gb/s Maximum Throughput
- Industry Standard 35mm DIN rail Mounted Enclosure



## **PACKAGE CONTENTS**

Please make sure the Ethernet Switch package contains the following items:

1. 104TX or 105TX Unit
2. Instruction Sheet

## **UNPACKING**

Remove all the equipment from the packaging, and store the packaging in a safe place. File any damage claims with the carrier.

## **INSTALLATION**

Read the following warning before beginning the installation:

### **WARNING**



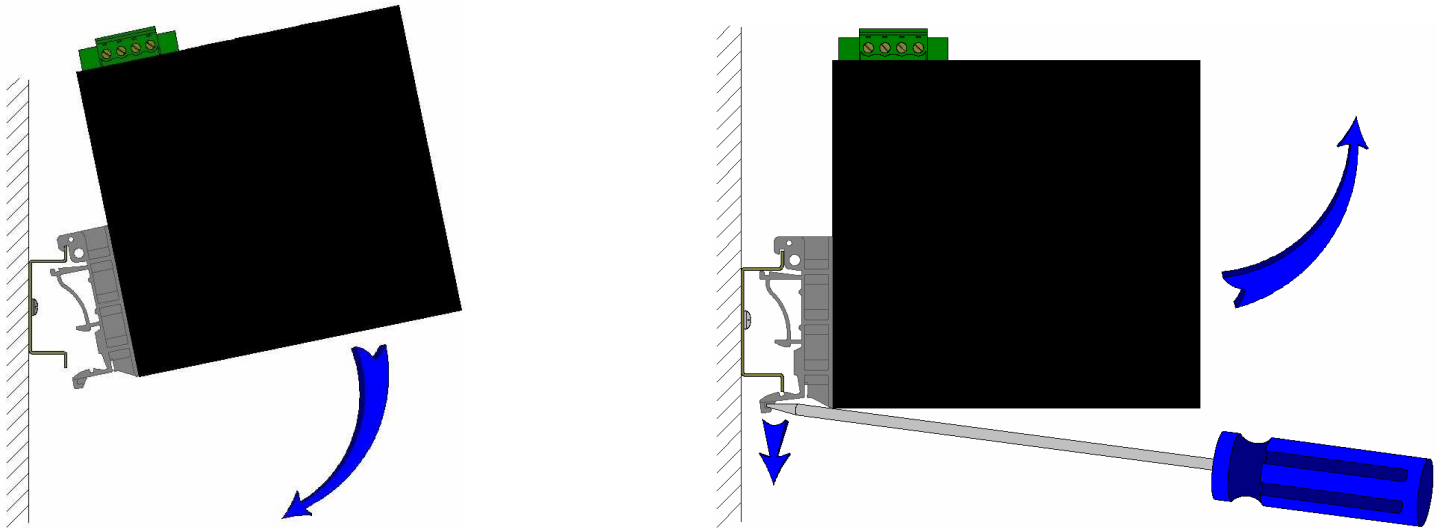
Never install or work on electrical equipment or cabling during periods of lightning activity.

Disconnect the power cable before removing the endplates.

Do not operate the unit with the endplates removed

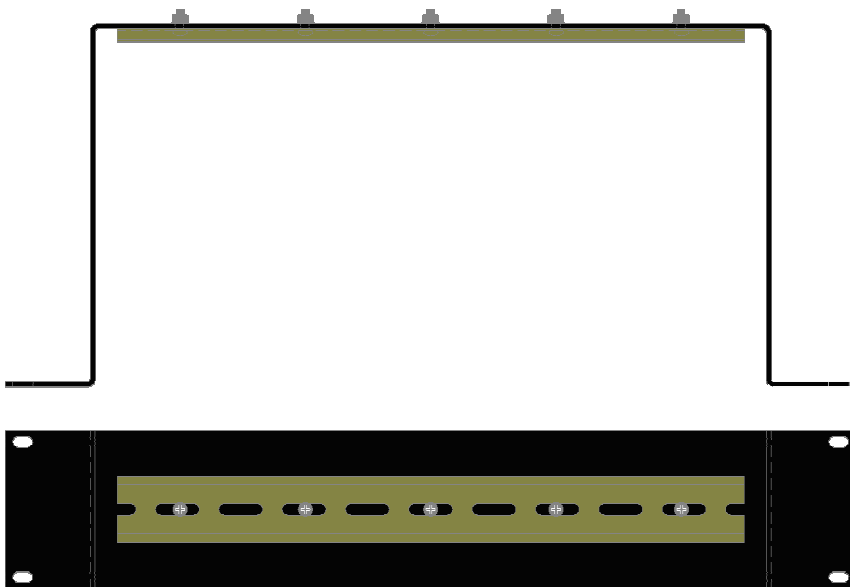
## DIN Rail Mounting

Install the unit in a standard DIN rail. Recess the unit to allow at least 2" of horizontal clearance for CAT5e cable bend radius.



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.

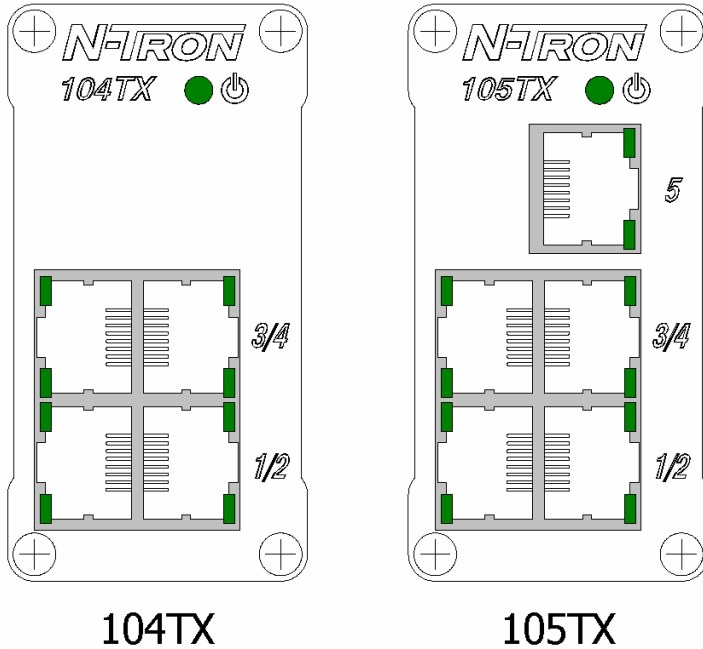
To remove the unit from the 35mm industrial DIN rail, place a flat head screwdriver into the release clip found at the bottom of the unit, and apply downward force on the clip until it disengages from the bottom of the unit from the DIN rail. Rotate the bottom of the unit towards you and up at an approximate 15° upward angle to completely remove the unit.



Most 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 Rack Mount Assembly (P/N: 900-RM) may be used to mount the 104TX and 105TX enclosures to standard 19" racks as an option.



## FRONT PANEL



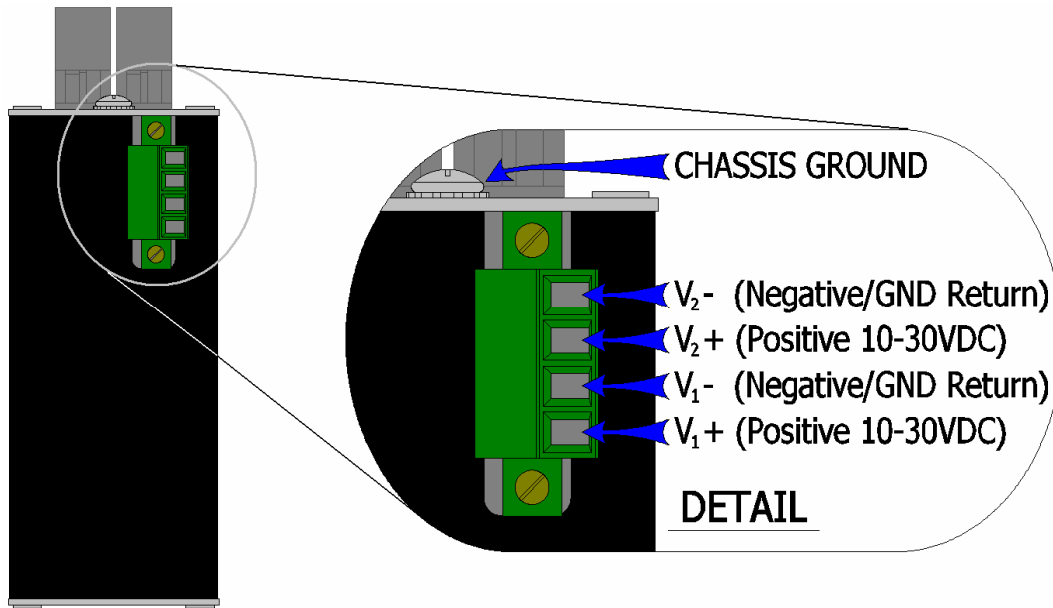
- SPD**                      Speed LED
- LNK/ACT**              Link/Activity LED
- RJ45 Ports**            All ports are Auto sensing 10/100BaseT Connections
- ⏻**                            Green LED lights when Power is connected

**NOTE:** Each RJ45 data port has two LED's for each connector.  
 The upper port LED indicates LINK and ACTIVITY status.  
 The lower port LED indicates the SPEED status.

**LED's:** The table below describes the operating modes:

LED	Color	Description
⏻	ON	Power is Applied.
	OFF	Power is OFF.
LNK/ACT	ON	Link established, no Activity on cable.
	BLINKING	Link established, Activity on cable
	OFF	No link activity on cable.
SPD	ON	LINK is 100Mbps.
	OFF	Link is 10Mbps.

## APPLYING POWER (Top View)



Unscrew & Remove the DC Voltage Input Plug from the top header.  
Install the DC Power Cables into the Plug (observing polarity on unit).  
Plug the Voltage Input Plug back into the top header.  
Tightening torque for the terminal block power plug is **0.22 Nm/0.162 Pound Foot**.  
All LED's will flash ON Momentarily.  
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 16-28 gauge. The power cord should be limited to less than 10 meters in order to ensure optimum performance.

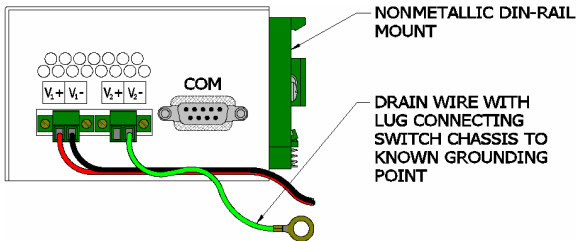
Recommended 24V DC Power Supplies, similar to:

100VAC/240VAC:

N-Tron NTPS-24-1.3, DC 24V/1.3A.

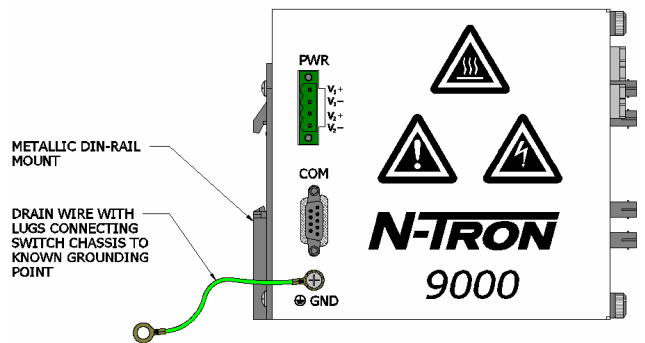
## GROUNDING TECHNIQUES

The grounding philosophy of any control system is an integral part of the design. N-Tron switches are designed to be grounded, but the user has been given the flexibility to float the switch when required. The best noise immunity and emissions (i.e. CE) are obtained when the N-Tron switch chassis is connected to earth ground via a drain wire. Some N-Tron switches have metal din-rail brackets that can ground the switch if the din-rail is grounded. In some cases, N-Tron switches with metal brackets can be supplied with optional plastic brackets if isolation is required.



Both V- legs of the power input connector are connected to chassis internally on the PCB. Connecting a drain wire to earth ground from one of the V- terminal plugs as shown here will ground the switch and the chassis. The power leads from the power source should be limited to 3 meters or less in length.

As an alternate, users can run a drain wire & lug from any of the Din-Rail screws or empty PEM nuts on the enclosure. When using an unused PEM nut to connect a ground lug via a machine screw, 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.



The use of shielded cables between devices is not required for most N-Tron devices (please consult the user manuals for specific details). 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 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.

## **CONNECTING THE UNIT**

For 10Base-T ports, plug a Category 3 (or greater) twisted pair cable into the RJ45 connector. For 100Base-T ports, plug a Category 5 (or greater) twisted pair cable into the RJ45 connector. Connect the other end to the far end station. Verify that the LNK LED's are ON once the connection has been completed. To connect any other port to another Switch or Repeater, use a standard Cat5 straight through or crossover cable.

## **TROUBLESHOOTING**

1. Make sure the  (Power LED) is ON.
2. Verify that Link LED's are ON or BLINKING for connected ports.
3. Verify cabling used between stations.
4. Verify that cabling is Category 5 (or greater) for 100Mbit Operation.

## **SUPPORT**

Contact N-TRON Corp. at:  
TEL: 251-342-2164  
FAX: 251-342-6353  
[www.n-tron.com](http://www.n-tron.com)  
[support@n-tron.com](mailto:support@n-tron.com)

## **FCC STATEMENT**

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.

## KEY SPECIFICATIONS

### Physical

<i>Height:</i>	2.9" (max.)
<i>Width:</i>	1.50" (max.)
<i>Depth:</i>	4.25" (max.)
<i>Weight:</i>	0.60 lbs.

### Electrical

<i>Input Voltage:</i>	10-30 VDC (Regulated)
<i>Input Current:</i>	215 mA max. @ 24VDC (Steady State)
<i>Inrush Current:</i>	7.8 Amp/0.7ms max. @ 24VDC
<i>Input Ripple:</i>	Less than 100 mV
<i>Input Wire Size:</i>	16-28 AWG

### Environmental

<i>Operating Temperature:</i>	-40°C to 80°C
<i>Storage Temperature:</i>	-40°C to 85°C
<i>Operating Humidity:</i>	10% to 90% (Non Condensing)
<i>Operating Altitude:</i>	0 to 10,000 ft.

### Network Media

<i>10BaseT:</i>	> Cat-3 Cable
<i>100BaseT:</i>	> Cat-5 Cable

### Connectors

10/100BaseT: RJ45 UTP Ports

### Recommended Minimum Wiring Clearance:

<i>Top:</i>	2" (5.08 cm)
<i>Front:</i>	2" (5.08 cm)
<i>Side:</i>	1" (2.54 cm)

### Regulatory Approvals:

**Safety:** UL Listed in accordance with ANSI/ISA-12.12.01-2000 (US and Canada)

This apparatus is suitable for use in Class I, Div 2, Groups A, B, C, and D, T5

**EMI:** EN61000-6-4, EN55011 - Class A  
FCC Title 47, Part 15, Subpart B - Class A

**EMS:** 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:** 1 year from the date of purchase.

## **N-TRON Limited Warranty**

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**ADVANCE REPLACEMENT OPTION:** Upon registration, this product qualifies for advance replacement. A replacement product will be shipped within three (3) days after verification by N-TRON that the product is considered defective. The shipment of advance replacement products is subject to local legal requirements and may not be available in all locations. When an advance replacement is provided and customer fails to return the original product to N-TRON within fifteen (15) days after shipment of the replacement, N-TRON will charge customer for the replacement product, at list price.

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GOVERNING LAW: This Limited Warranty shall be governed by the laws of the State of Alabama, U.S.A.