SISTP10xx-141-LR(T)

Industrial PoE Switch

Install Guide

33531 Rev. A

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SISTP10xx-141-LR(T) Industrial PoE Switch Install Guide, 33531 Rev. A

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Revision History

Rev	Date	Description
A	8/18/16	Initial release.

Cautions and Warnings

Definitions

Cautions indicate that there is the possibility of poor equipment performance or potential damage to the equipment.

Warnings indicate that there is the possibility of injury to a person.

Cautions and Warnings appear here and may appear throughout this manual where appropriate. Failure to read and understand the information identified by this symbol could result in poor equipment performance, damage to the equipment, or injury to persons.

Caution and warning symbols

Make sure that you read and understand all content identified by these two symbols:

Cautions and warnings appear here and throughout this manual where appropriate. Failure to read and understand the information identified by the “caution” and “warning” symbols could result in poor equipment performance, damage to equipment, or injury to persons.

Cautions

Cautions indicate the possibility of damage to equipment.

CAUTION

Make sure that the Industrial PoE Switch is mounted with proper space around it for ventilation (heat dissipation). Failure to observe this caution could result in damage to the Industrial PoE Switch.

CAUTION

Please exercise caution when using power tools. Do not install this unit in damp or wet locations, or in close proximity to very hot surfaces. Failure to observe this caution could result in damage to the Industrial PoE Switch and cables.

CAUTION

Only qualified persons should install the Industrial PoE Switch. Failure to observe this caution could result in poor performance or damage to the Industrial PoE Switch.

CAUTION

Install the Industrial PoE Switch in an environment where the temperature range will not exceed the stated environmental specifications for the particular model being installed. Failure to observe this caution could result in permanent damage to the Industrial PoE Switch.

CAUTION

DO NOT install the Industrial PoE Switch in areas where strong electromagnetic fields (EMF) exist. Failure to observe this caution could result in poor Industrial PoE Switch performance and data corruption.

CAUTION

The Industrial PoE Switch must be mounted to a well-grounded surface. Failure to observe this caution could result in EMI problems.

CAUTION

When connecting DC power wires to the terminal-block plug, pay close attention to the polarity markings shown near the terminal block of the Industrial PoE Switch. Failure to observe this caution could result in damage to the equipment.

CAUTION

This is a Class A product. In a residential environment, this product could cause radio interference in which case the user may be required to take adequate corrective measures.

CAUTION

Circuit devices are sensitive to static electricity, which can damage their delicate electronics. Dry weather conditions or walking across a carpeted floor may cause you to acquire a static electrical charge. To protect your device, always touch the metal chassis of your computer to ground the static electrical charge before you pick up the circuit device.

Warnings

Warnings indicate the possibility of injury to persons.

WARNING

Be sure to disconnect power before installing and wiring the Industrial PoE Switch. Failure to observe this warning could result in an electrical shock.

WARNING

Fiber optics: Visible and invisible laser radiation when open: DO NOT stare into the beam, or directly view the beam with optical instruments. Failure to observe this warning could result in an eye injury or blindness.

WARNING

Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

Table of Contents

Trademark, copyright, and product classification information

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Copyright restrictions

FCC warning

This equipment has been tested and found to comply with the limits for class A devices, pursuant to part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses, and radiates radio frequency energy; therefore, if it is not installed and used in accordance with the instructions in this document, could cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference; the user will be required to correct the interference at the user's own expense.

CE Mark

CE Marking (European Conformity): This is a Class A product. In a domestic environment, this product could cause radio interference; as a result, the user may be required to take adequate preventative measures.

About this product and manual

Industrial PoE Switch

The SISTP10xx-141-LR(T) unmanaged Industrial PoE Switch provides (4) 10/100Base-TX (RJ-45) copper ports with Power over Ethernet injection and a 100Base-FX fiber connection with a fixed optical transceiver. These switches are hardened devices designed to reliably operate in harsh environments such as those found on factory floors, outdoor enclosures or other hazardous environments.

Term/usage

In this manual, the term "Industrial PoE Switch" (first letter upper case) refers to the SISTP10xx-141-LR(T) 10/100Base-TX to 100Base-FX Industrial PoE Switch.

About this manual

This manual provides instructions on how to install, configure, and operate the SISTP10xx-141-LR(T) 10/100Base-TX to 100Base-FX Industrial PoE Switch.

Manual structure

This manual has a beginning table of contents; also, at the beginning of each section there is a table of contents. .

1. Introduction

General description

Overview

The SISTP10xx-141 unmanaged Industrial PoE Switch can help eliminate EMI or RFI issues and help to overcome distance limitations with copper-based cabling by providing a fiber interface to transport data from copper-based industrial networking and communication devices over fiber optic cabling. In addition, these PoE switches are industrial hardened Power Sourcing Equipment (PSE) and are fully compatible with Powered Devices (PD) that comply with the IEEE802.3afTM Power over Ethernet standard.

Each Industrial PoE Switch can connect to either 10Base-T or 100Base-TX copper ports and provides a 100Base-FX fiber optic connection. In addition, the four RJ-45 ports also provide power to Data Terminal Equipment (DTE) Power Devices (PD) over unshielded twisted pair cabling. Multiple fiber optic connector options are offered as well as two distinct operating temperature ranges:

- Standard: -10°C to +50°C (14°F to +122°F)
- Extended: -40°C to +65°C (-40°F to +149°F)

Features

The SISTP10xx-141 Industrial PoE Switch has the following features:

- Auto-Negotiation
- AutoCross™
- IEEE802.3af Power over Ethernet compliant
- 4-port integrated POE injector with full 15.4 Watts per port on data pairs
- Under-current detection and over current protection [re-settable fuse]
- Dual, redundant auto-sensing 48VDC inputs with reverse polarity protection
- Dry Contact Relay alarm output for failure of primary or redundant power input
- IEEE 802.3x flow control support
    - Flow control on full-duplex
    - Back pressure on half-duplex
- 1K MAC address table
- Full wire-speed with 1Gbps backplane switching fabric
- DIN-Rail mounting bracket (installed)
- Wall mount brackets included
- IP30 protection metal enclosure
- Lifetime Warranty

Models

Standard models

The part numbers shown in Tables 1 and 2 perform as described in this manual.

Table 1: Industrial PoE Switch Part Numbers

Standard Operating Temperature (-10°C to +50°C)

Part #	Ports 1-4: 10/100Base-TX	Port 5: 100Base-FX
SISTP1011-141-LR	RJ-45 100 m (328ft)	ST, 1300 nm multimode 2 km (1.2miles)
SISTP1013-141-LR	RJ-45 100 m (328ft)	SC, 1300 nm multimode 2 km (1.2 miles)
SISTP1014-141-LR	RJ-45 100 m (328ft)	SC, 1310 nm single mode 20 km (12.4 miles)

Table 2: Industrial PoE Switch Part Numbers

Extended Operating Temperature (-40°C to +65°C)

Part #	Ports 1-4: 10/100Base-TX	Port 5: 100Base-FX
SISTP1011-141-LRT	RJ-45 100 m (328ft)	ST, 1300 nm multimode 2 km (1.2miles)
SISTP1013-141-LRT	RJ-45 100 m (328ft)	SC, 1300 nm multimode 2 km (1.2 miles)
SISTP1014-141-LRT	RJ-45 100 m (328ft)	SC, 1310 nm single mode 30 km (18.6 miles)

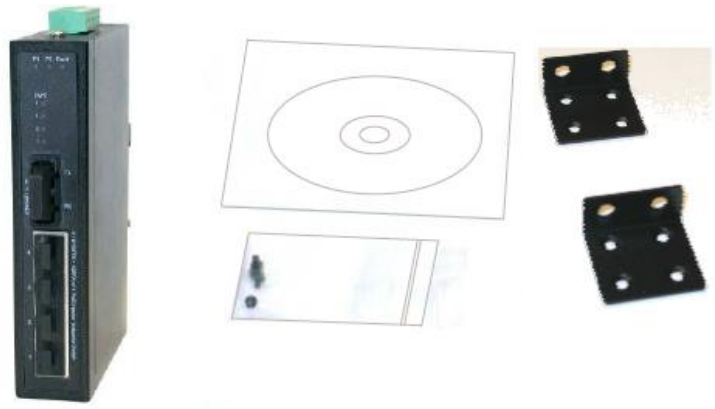
Note: The distances for ports 1 and 2 listed in Tables 1 and 2 are typical maximum distances; the physical characteristics of the network will affect the actual distances.

Table 3: Optional Accessories (sold separately)

Part #	Description
25080 	Industrial DIN Rail Power Supply 120W - Universal AC input voltage range (switch selectable) 88 ~ 132VAC/176 ~ 264VAC - 48VDC, 2.5A output - Operating temperature range: -10°C to +60°C - Short circuit/Over load/Over voltage/Over temperature protection - Cooling by free air convection – no fan - UL 508(industrial control equipment)approved - LED indicator for power on - 100% full load burn-in test - Dimensions: 65mm W x 125mm H x 100mm D - Lifetime warranty

Package contents

Quantity	Description
1	10/100Base-TX to 100Base-FX Industrial PoE Switch
1	DIN-Rail mounting bracket (installed)
2	Wall mount brackets
8	Screws (for attaching wall-mount bracket)
1	Installation manual CD



Compare the package contents of your industrial PoE Switch with the standard checklist above. If any item is damaged or missing, please contact Transition Networks Technical Support.

Physical description

Physical dimensions

Width: 1.2” [30mm]
Height: 5.5” [140mm]
Depth: 3.7” [95mm]

Front panel

The front panel of the Industrial PoE Switch is shown in Figure 1 with the descriptions provided below.

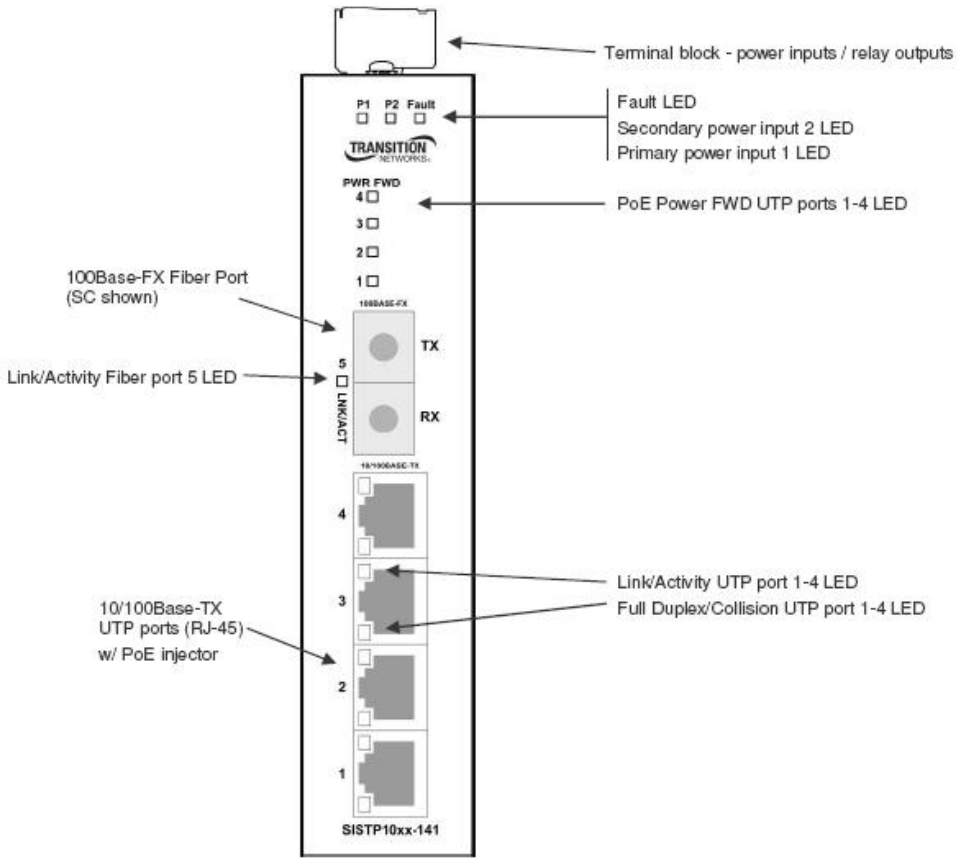


Figure 1: SISTP10xx-141-LR(T) Industrial PoE Switch (Front View)

Bottom panel

The top view of the Industrial PoE Switch is shown in Figure 2 with corresponding descriptions listed below:

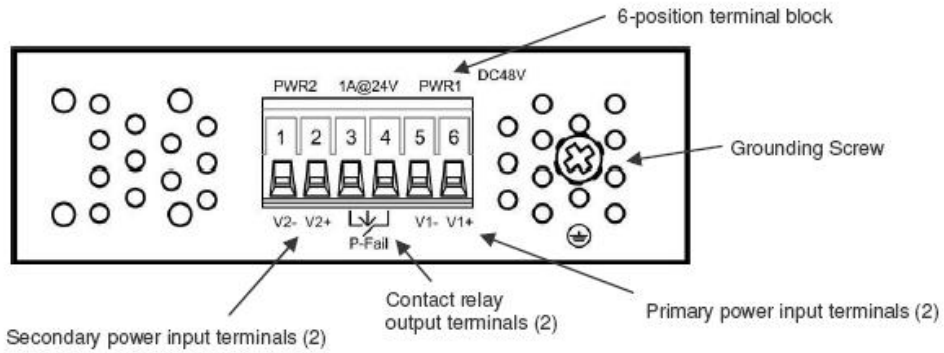


Figure 2: SISTP10xx-141-LR(T) Industrial PoE Switch (Top View)

Back panel

The back view of the Industrial PoE Switch is shown in Figure 3 with corresponding descriptions listed below:

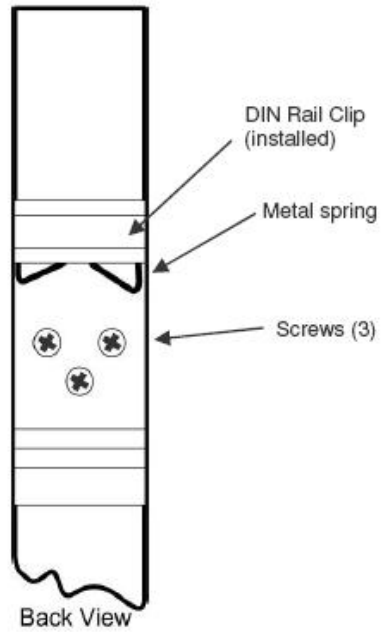


Figure 3: SISTP10xx-141-LR(T) Industrial PoE Switch (Back View)

2. Installation

Hardware and Cable Installation

Caution: Wear a grounding device to avoid damage from electrostatic discharge.

DIN rail mounting

DIN rail clip: The Industrial PoE Switch includes an aluminum DIN Rail Clip attached to the rear panel. Verify the clip is attached and oriented as pictured in Figure 4 below.

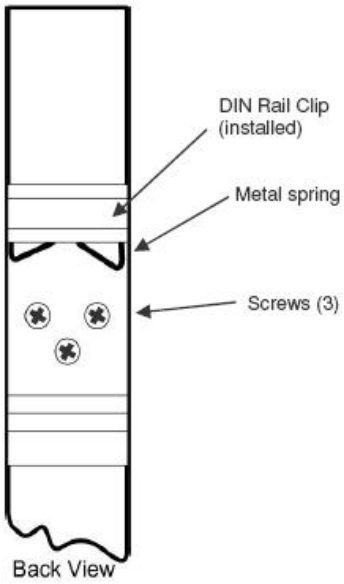


Figure 4: Mounted DIN Rail Clip

DIN rail mounting considerations

Consider the following before mounting the DIN rail to a surface and attaching the Industrial PoE Switch:

- The surface must support at least 450g (1.0 lbs) for the Industrial PoE Switch.
- Do not place heavy objects on the Industrial PoE Switch.

CAUTION

Mount the Industrial PoE Switch with proper spacing around it for ventilation (heat dissipation). Failure to observe this caution could result in damage to the Switch.

CAUTION

Please exercise caution when using power tools. Do not install this unit in damp or wet locations, or in close proximity to very hot surfaces. Failure to observe this caution could result in damage to the Industrial PoE Switch and cables.

DIN rail mounting procedure

To mount the Industrial PoE Switch to the DIN rail, see Figure 5 and do the following:

1. Align and then position DIN-Rail-clip spring to the top of the DIN rail as shown in Figure 5, step (a).
2. Press DOWN on the Industrial PoE Switch and then IN to snap it into place on the DIN Rail. See Figure 5, step (b) below.

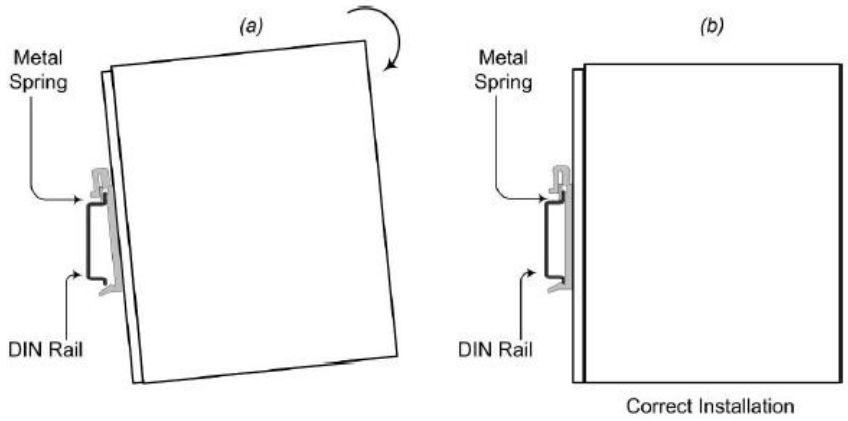


Figure 5: Industrial PoE Switch Mounting to DIN Rail

To remove the Industrial PoE Switch from the DIN rail, reverse the steps above.

Wall mounting

Wall mount bracket

The Industrial PoE Switch includes wall mount brackets and screws in the contents of the shipping package. The wall mount brackets can be attached to the top and bottom panels of the Industrial PoE Switch to enable mounting to a vertical surface such as the wall of an enclosure. Locate the brackets (2) and screws (8) and follow the steps below to install the brackets on the Industrial PoE Switch.

Wall mount bracket install procedure

To install the wall mount brackets to the Industrial PoE Switch, see Figure 6 and do the following:

1. Remove existing screws (3) and DIN-Rail bracket from rear of Industrial PoE Switch.
2. Locate wall mount brackets (2) and screws (8) from Industrial PoE Switch packaging.
3. Place brackets in correct orientation as shown and insert and tighten screws to secure bracket to the top and bottom of Industrial PoE Switch.
4. Mount assembled device to a wall per locally accepted practices for anchoring and securing. (Wall mount screws not included.)

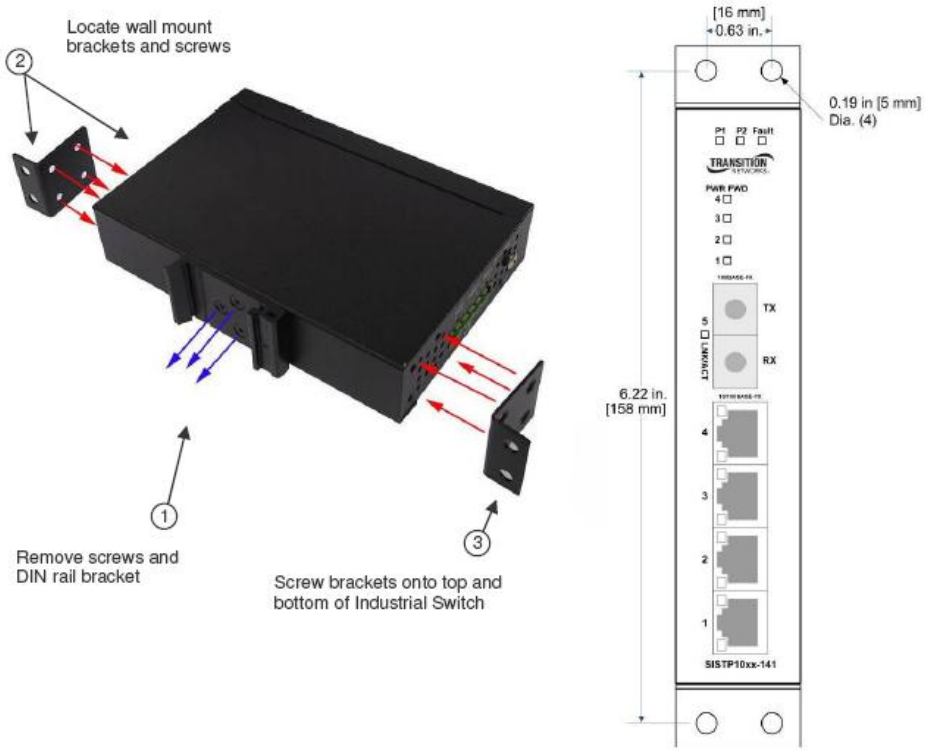


Figure 6: Installing wall mount brackets to Industrial PoE Switch

Grounding the Industrial PoE Switch

CAUTION

Be sure to disconnect the Industrial PoE Switch from the DC power source before installing and wiring the device.

Wiring considerations

The following wiring considerations are recommended:

- Signal lines must not be directly connected to outdoor wiring.
- Use separate paths or conduits to route wiring for power and device data cables. To avoid interference, wires with different signal characteristics route separately. If power wiring and device data cables must cross make sure that the wires are perpendicular at the intersection point.
- Use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is wiring that shares similar electrical characteristics can be bundled together.
- Keep input and output wiring separated.

CAUTION

The Industrial PoE Switch is intended to be grounded to a well-grounded mounting surface such as a metal plate. Install the grounding wire prior to connecting any other device to the Industrial PoE Switch.

Industrial PoE Switch grounding

Grounding the Industrial PoE Switch helps limit the effects of noise due to electromagnetic interference (EMI) via proper grounding. Always run the ground connection from the ground screw to a grounding surface before connecting the Industrial PoE Switch to a DC power source. See Figure 7 below.

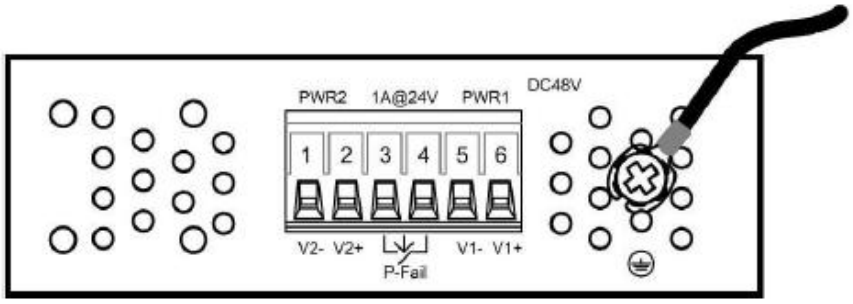


Figure 7: Industrial PoE Switch Ground Screw (Top Panel)

Connecting power to the Industrial PoE Switch

Redundant power inputs

The Industrial PoE Switch has dual (redundant) power inputs capable of auto-sensing the input voltage, while providing over current protection and reverse polarity protection.

The dual power inputs can be connected simultaneously to live DC power sources. See Figure 8. If one power source fails, the other live source acts as a backup, and automatically supplies the Industrial PoE Switch with power.

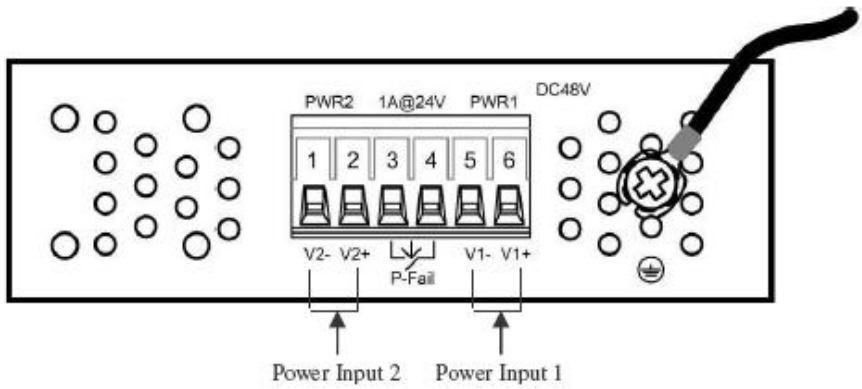


Figure 8: Redundant Power Connections

IMPORTANT

- Power is supplied through an external 48 VDC power source. Check the Technical Specification section for details about the DC power input voltage.
- The Industrial PoE Switch does not include a power switch; therefore, plugging a wired and active terminal-block plug into its terminal block will immediately power ON the unit.

CAUTION

Before connecting the Industrial PoE Switch to a DC power source, ensure the power source is stable.

CAUTION

This device is intended to be supplied by a listed power source marked LPS or Limited Power Source, provided with a connector for field wiring terminal.

CAUTION

This device is designed for operation with a safety extra-low voltage (SELV) in compliance with IEC950 / EN60950 / VDE0805 and in compliance with the low voltage directive 73/23/EEC and 93/68/EEC.

Note: The terminal block can accept 12-24 AWG wire for power and alarm relay inputs.

Terminal-block wiring

To wire the 6-position terminal block for redundant power, do the following:

Note: The 6-position terminal-block plug is constructed (keyed) to mate with the Industrial PoE Switch terminal block. When wiring the plug for power, use the polarity markings next to the terminal block and on top of the plug to ensure proper connection.

1. Turn the external power source OFF.
2. Strip the power wires as required.
3. Insert one stripped power wire into the terminal block plug. Observe polarity. See Figure 9.
4. Secure the wire using a flathead screwdriver by tightening the contact screw. See Figure 9.
5. Repeat Steps 3 and 4 until all wires are installed and secured.

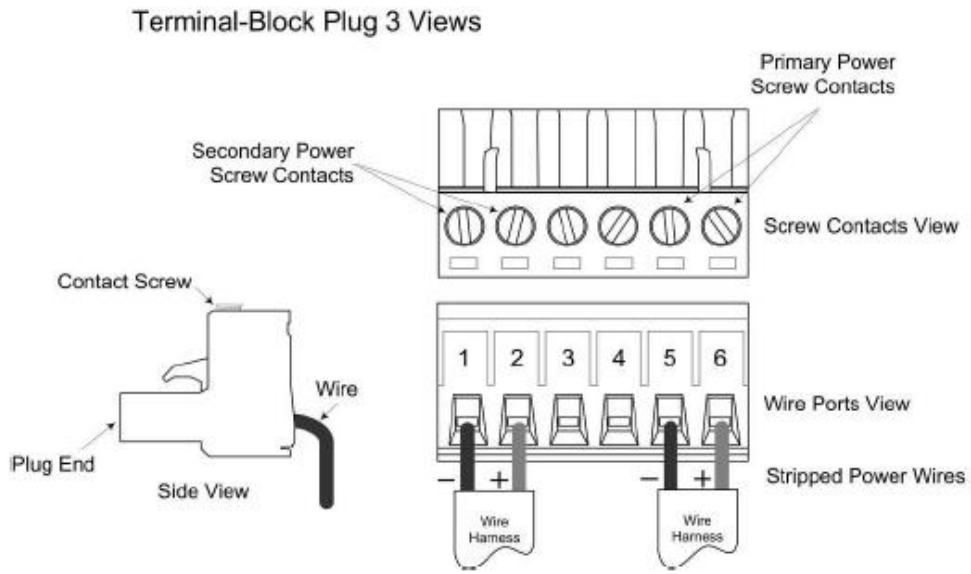


Figure 9: 6-Position Terminal-Block (Primary/Redundant Power Wiring)

6. Insert the terminal block plug into the Industrial PoE Switch's terminal block, as shown in Figure 10 below.

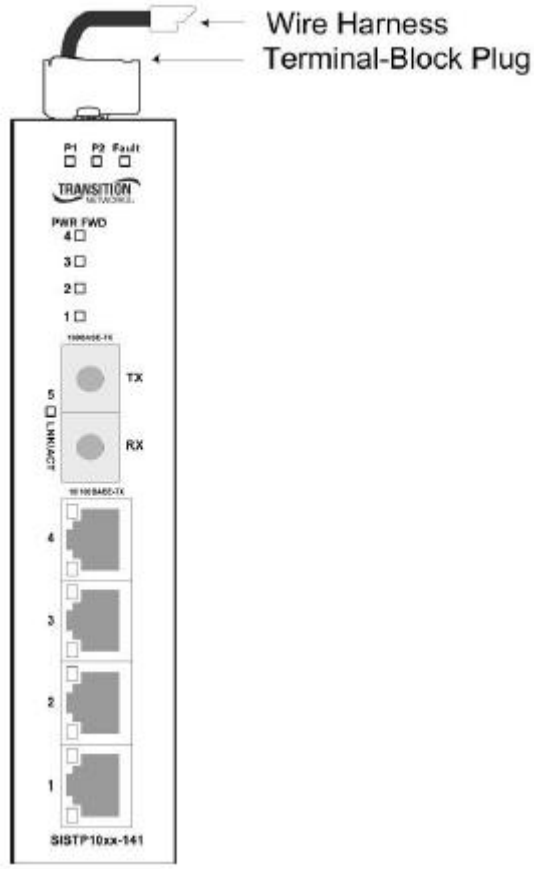


Figure 10: Wired Terminal Block Plug Inserted Into Industrial PoE Switch

7. Make sure that the DC power source is stable and clean.
8. Turn ON the power source and the PWR LED should turn ON along with PWR 1 LED and/or PWR 2 LED, depending on whether one or both power supplies are connected and turned ON.

Note: An external AC/DC power supply is not included with the Industrial PoE Switch. Transition Networks offers an accessory power supply that can be purchased separately, if required. Please see optional accessories in the general information section of this manual for ordering information.

CAUTION

The operating temperature of the Industrial PoE Switch, when used in conjunction with an AC/DC power supply will be limited to the lesser operating temperature range of either device.

For example: SISTP10xx-141-LRT (-40ºC to +65ºC operating temp) used with 25080 (-10ºC to +60ºC operating temp)

Operating temp for combination is -10ºC to +60ºC

Connecting an alarm fixture

Alarm relay

The Industrial PoE Switch has dry relay contacts for connecting an external alarm fixture. Located on the green terminal block on the top panel, the relay has “normally open” contacts that can be wired to form a circuit for triggering an external alarm when a fault occurs (light or audible alarm). See Figure 11 below.

Note: Normally open contacts are contacts that form an open circuit when there is a loss of power to the device or when a fault occurs. Once power is applied to the Industrial PoE Switch, the contacts will be closed and current will flow through the contacts.

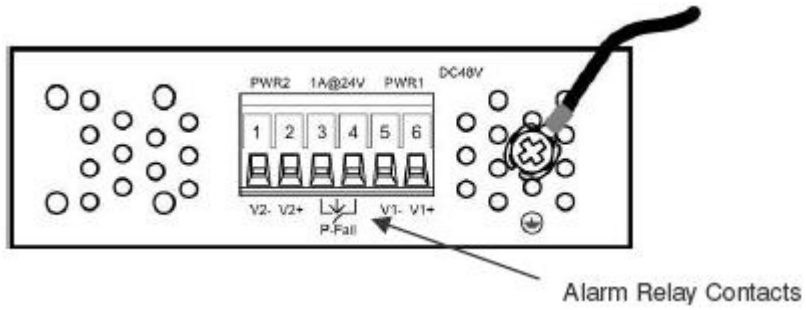


Figure 11: Alarm Relay Contacts

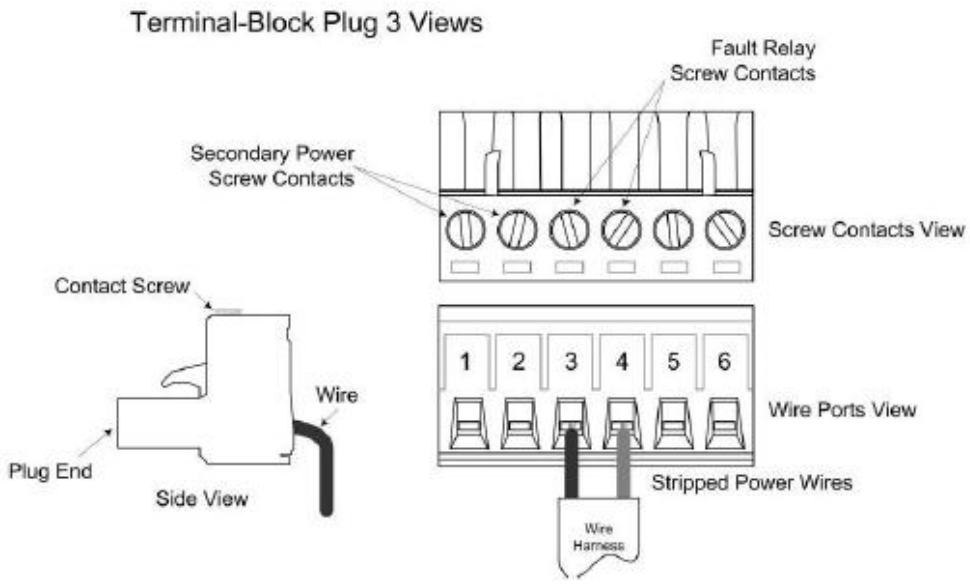


Figure 12: Alarm Relay Wiring

Fault indications

Wire the relay contacts to any warning light or audible alarm in the control room as shown in Figure 13. When a fault occurs, the relay contacts open, stopping the flow of current through the contact circuit. This will disable the external alarm or turn OFF a light, indicating a fault.

An alarm will occur under the following conditions:

- Power failure to either of the Industrial PoE Switch power inputs:
  - Power wires are disconnected, power source malfunction
  - Input power is something other than 48VDC

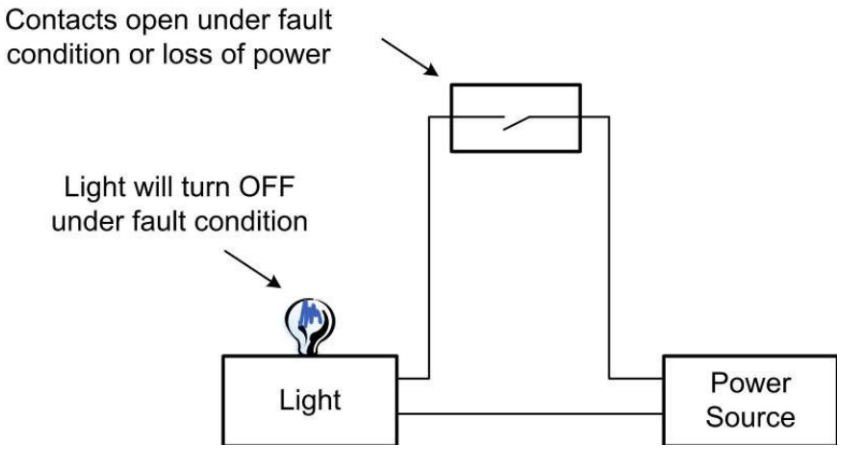


Figure 13: Alarm Relay Contacts

Connecting fiber cables

Fiber cable installation

When connecting fiber cables to the 100BASE-FX port on the Industrial PoE Switch, make sure the correct type is used: ST or SC.

To install the fiber cables, do the following:

1. Remove and keep the fiber-port protective dust cover(s).

Note: When not connected to a fiber cable, keep the protective cover(s) on the optical ports to protect the optics and keep dust and debris from entering the optical interface.

2. Check that the fiber connectors on the fiber-optic cabling are clean. If necessary, clean the fiber connectors using locally accepted cleaning procedures.

Note: Dirty fiber connectors on fiber optic cables will impair light transmission quality through the cable and lead to degraded performance on the port.

3. Connect the fiber cable as shown in Figure 14 below.

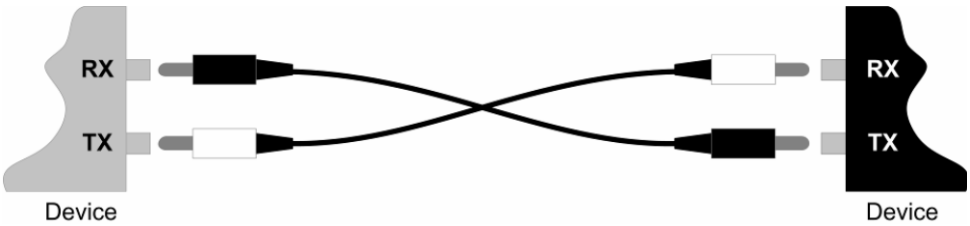


Figure 14: Fiber Cable Connections

4. Check the corresponding fiber port LED on the Industrial PoE Switch to verify the connection—LNK/ACT LED should be lit.

Warning

- Visible and invisible laser radiation when open: DO NOT stare into the beam, or directly view the beam with optical instruments. Failure to observe this warning could result in an eye injury.
- Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

Connecting copper cables

Copper cable installation

To connect the copper cable to the Industrial PoE Switch and other equipment, do the following:

1. Locate or build 10Base-T or 100Base-TX compliant copper cables with male, RJ-45 connectors installed at both ends.
2. Connect the RJ-45 connector at one end of the cable to the RJ-45 port on the Industrial PoE Switch. See Figure 15 below.
3. Connect the RJ-45 connector at the other end of the cable to the RJ-45 port on the other device (switch, workstation, PLC, etc.).
4. Check the copper port LED on the Industrial PoE Switch to verify the connection—LNK/ACT LED should be lit.

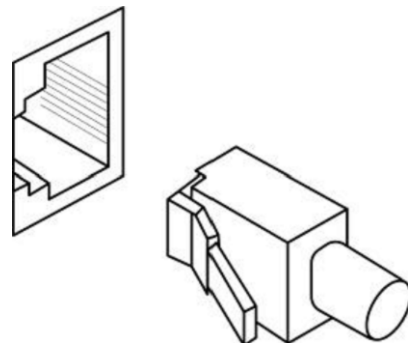


Figure 15: Copper Cable Installation

Copper cable configuration

Either a straight-through or cross-over cable may be used. See Figure 16 below.

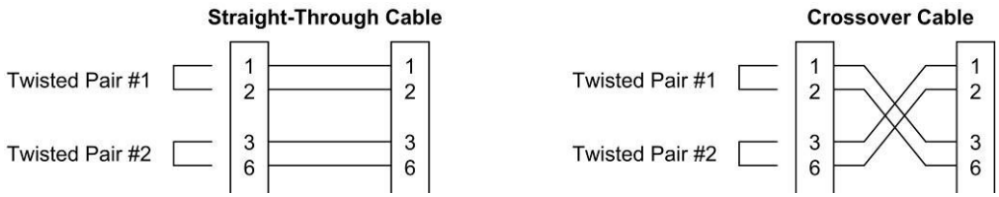
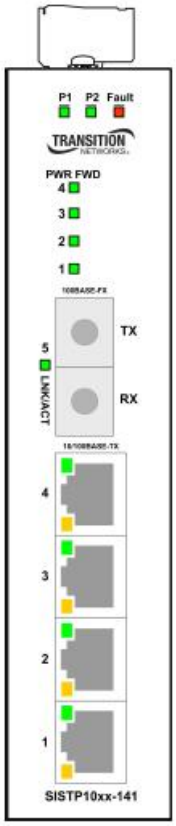


Figure 16: Straight-Through and Crossover Cables

Note: The AutoCross™ feature determines the characteristics of the cable connection and automatically configures the unit to link up, regardless of the cable configuration, allowing either straight-through (MDI) or crossover (MDI-X) cables to be used. (Requires no operator intervention.). See Advanced Features section for more information.

LEDs

The Industrial PoE Switch has LED indicators located on its front panel. The LEDs present at-a-glance network status, and provide real-time connectivity information. Figure 17 below shows the LEDs and a chart that explains the function of each.



LED	Description
P1	Green = input power present on PWR1 input
P2	Green = input power present on PWR2 input
FAULT	Red = Loss of either power input
LNK/ACT (Fiber port)	Green = fiber link Green (blinking) = fiber port is receiving link pulses or data from a 100Base-FX compliant port
PWR FWD 1-4	Green = PoE power being supplied to powered device (PD) Off = No PoE power being output on port
LNK/ACT (UTP port) *[upper LED]*	Green = UTP link Green (blinking) = UTP port is receiving link pulses or data from a 10/100Base-TX compliant port
Full Duplex / Collision (UTP port) *[lower LED]*	Yellow = Full duplex link Yellow (blinking) = collisions occurring Off = half duplex or no link

Figure 17: LEDs and Description Chart

3. Advanced Features

Introduction

This section explains the advanced features on the Industrial PoE Switch.

AutoCross™

AutoCross™ automatically detects and configures the twisted pair port on the converter to the correct MDI or MDI-X configuration allowing either straight-through (MDI) or crossover (MDI-X) cables to be used – see Figure 18. No user intervention is required.

* Eliminates an entire category of troubleshooting.
* No need to identify cable type; straight-through or crossover.
* No user intervention required to determine correct button / switch settings.

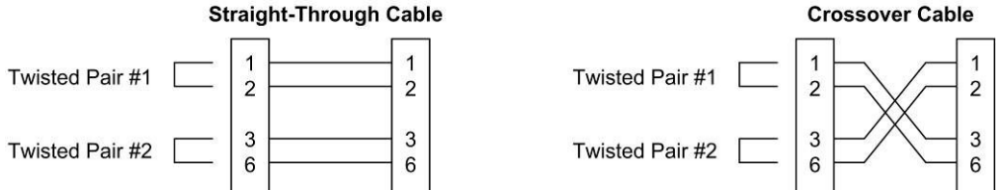


Figure 18: Straight-Through and Crossover Cables

Auto-Negotiation (IEEE 802.3u)

Auto-Negotiation allows devices to perform automatic configuration to achieve the best possible mode of operation over a link. The Industrial PoE Switch will broadcast its speed (10Mbps, 100Mbps) and duplex (half, full) capabilities to other devices and negotiate the best mode of operation between the two devices.

* No user intervention required to determine best mode of operation.
* Optimal link established automatically.
* Quick and easy installation.

Note: If the Industrial PoE Switch is connected to a non-negotiating device over the copper link, it will default to 10Mb/s speed, half duplex mode.

Pause (IEEE 802.3xy)

PAUSE signaling is an IEEE feature that is used to temporarily suspend data transmission between two devices in the event that one of the devices becomes overwhelmed. In the event that a device needs some time to clear network congestion, it will send out a PAUSE signal to the other end device, which will then wait a pre-determined amount of time before retransmitting the data. Transition's converters will pass PAUSE signaling unhindered; ensuring that the message is delivered to the end device.

* PAUSE enabled devices allowed to work properly.
* Prevents loss of valuable data transmission.
* Reduces bottlenecks and allows for efficient use of network devices.

Note: PAUSE signaling is not standardized over fiber media. Transition's Industrial PoE Switches will communicate this signaling over fiber between the switches to pass this signaling on to the other end device.

4. Cable Specifications

Introduction

This section provides copper and fiber cable specifications.

Copper (RJ-45) cable specifications

Copper cabling

Shielded twisted-pair (STP) or unshielded twisted-pair (UTP) cabling may be used and can be configured as either Straight-through or Crossover – see Figure 19 below.

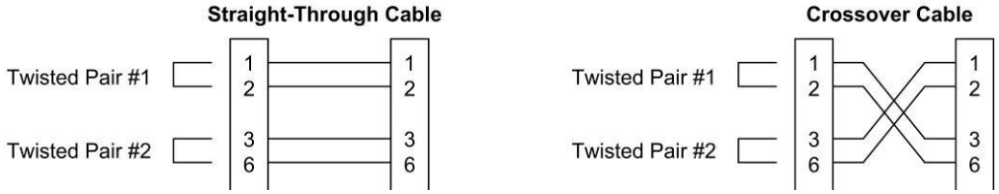


Figure 19: Straight-Through and Crossover Cables

Note: The AutoCross™ feature determines the characteristics of the cable connection and automatically configures the unit to link up, regardless of the cable configuration, allowing either straight-through (MDI) or crossover (MDI-X) cables to be used. (Requires no operator intervention.). See the “Advanced Features: section for more information.

Copper cable specifications

Wire category:	Category 5 (*minimum*)
Attenuation:	22.0 dB /100m @ 100 MHz
Gauge:	24 to 22 AWG
Maximum cable distance:	100 meters (*328 ft*)

RJ-45 pinouts

Figure 20 shows the RJ-45 connector pin assignment chart for 10Base-T or 100Base-TX.

Pin #	MDI Signal Name	MDI-X Signal Name
1	Receive Data + (RD+)	Transmit Data + (TD+)
2	Receive Data - (RD-)	Transmit Data - (TD-)
3	Transmit Data + (TD+)	Receive Data + (RD+)
6	Transmit Data - (TD-)	Receive Data - (RD-)

Figure 20: RJ-45 Connector Pin Assignment Chart

Note: The Industrial PoE Switch is configured as a MDI-X device.

Fiber cable and optic specifications

Fiber cable characteristics

Cable physical characteristics must meet or exceed IEEE 802.3™ specifications.

Parameter	Specification
Bit Error Rate:	<10-9
Single mode fiber:	9 µm
Multimode fiber:	62.5/125 µm
Multimode fiber:	100/140, 85/140, 50/125 µm

Fiber optic specifications

The following shows the fiber optic specification:

Fiber Cable	Specifications
SISTP1011-141-LR(T)	1300 nm multimode
Fiber-optic transmitter power:	min: -20.0 dBm max: -14.0 dBm
Fiber-optic receiver sensitivity:	min: -31.0 dBm max: 0.0 dBm
Link budget:	11.0dB
SISTP1013-141-LR(T)	1300 nm multimode
Fiber-optic transmitter power:	min: -20.0 dBm max: -14.0 dBm
Fiber-optic receiver sensitivity:	min: -31.0 dBm max: 0.0 dBm
Link budget:	11.0dB
SISTP1014-141-LR(T)	1310 nm single mode
Fiber-optic transmitter power:	min: -15.0 dBm max: -8.0 dBm
Fiber-optic receiver sensitivity:	min: -32.0 dBm max: -5.0 dBm
Link budget:	17.0 dB

Note: The fiber optic transmitters on this device meet Class I Laser safety requirements per IEC-825/CDRH standards and comply with 21CFR1040.10 and 21CFR1040.11.

5. Troubleshooting

Introduction

This section provides basic troubleshooting information for the Industrial PoE Switch via a problem and corrective action table. The problems are stated in the problem column and the action(s) to take for the problem is stated in the corrective action column. If the corrective measures listed do not correct the problem, contact our 24-Hour Technical Support department at 1-800-260-1312, International: 00-1-952-941-7600.

Troubleshooting problem and corrective action table

Problem: Industrial PoE Switch does not power up.
Potential Cause:
1. Is the wired terminal-block plug fully inserted into the Industrial PoE Switch?
2. Is the power LED lit?

Potential Solution:
1. Wire and insert the terminal-block plug into the Industrial PoE Switch's terminal block – see pages 12-14.
2. Check that DC power is at the recommended levels.
3. Contact Tech Support. See Service on page 28.

Problem: No link or activity on the UTP port.
Potential Cause:
1. Is the power LED lit?
2. Is the UTP cable properly installed at both ends?

Potential Solution:
1. Check that the power is turned ON.
2. Verify that the cable at both ends is properly inserted into the UTP port.

Problem: No link or activity on the Fiber port.
Potential Cause:
1. Is the power LED lit?
2. Is the Fiber cable properly installed at both ends?

Potential Solution:
1. Check that the power is turned ON.
2. Verify that the cable at both ends is properly inserted into the fiber port.

Problem: Alarm contacts not working.
Potential Cause:
1. Is the wired terminal-block plug fully inserted into the Industrial PoE Switch?
2. Is the alarm circuit wired for normally-open contacts?

Potential Solution:
1. Wire alarm contacts and circuit and insert the terminal-block plug into the Industrial PoE Switch's terminal block – see page 15.
2. Check that alarm circuit is wired correctly – see page 16.
3. Contact Tech Support. See Service on page 28.

6. Troubleshooting

Introduction

This section explains how to contact Transition Networks via Phone, fax, email, and direct mail. It also explains:

- What the warranty covers.
- Who to contact to return product.
- How and where to return the product.
- Industry standards compliance.

Service

US and Canada: 1-800-260-1312
International: 00-1-952-941-7600

Main Office
tel: +1.952.941.7600 | toll free: 1.800.526.9267 | fax: 952.941.2322
sales@transition.com | techsupport@transition.com | customerservice@transition.com

Address
Transition Networks
10900 Red Circle Drive
Minnetonka, MN 55343, U.S.A.
Web: https://www.transition.com

Warranty

This warranty is your only remedy. No other warranties, such as fitness for a particular purpose, are expressed or implied. Transition Networks is not liable for any special, indirect, incidental or consequential damages or losses, including loss of data, arising from any cause or theory. Authorized resellers are not authorized to extend any different warranty on transition networks' behalf.

Limited Lifetime Warranty **Effective for products shipped May 1, 1999 and after.** Every Transition Networks' labeled product purchased after May 1, 1999 will be free from defects in material and workmanship for its lifetime. This warranty covers the original user only and is not transferable.

What the Warranty Does Not Cover This warranty does not cover damage from accident, acts of God, neglect, contamination, misuse or abnormal conditions of operation or handling, including over-voltage failures caused by use outside the product's specified rating, or normal wear and tear of mechanical components. If the user is unsure of the proper means of installing or using the equipment, contact Transition Networks' free technical support services.

Establishing Original Ownership To establish original ownership and provide date of purchase, please complete and return the registration card accompanying the product or register the product on-line on our product registration page.

Transition Networks will at its option:

- Repair the defective product to functional specifications at no charge
- Replace the product with an equivalent functional product
- Refund the purchase price of a defective product

Who to Contact for Returns
To return a defective product for warranty coverage, contact Transition Networks' technical support department for a return authorization number. Transition's technical support department can be reached through any of the following means:
Service Hours
Mon thru Fri 7 AM - 6 PM CST:
Contact Tech Support via telephone at 800-260-1312 or 952-941-7600
Fax 952-941-2322
Email: techsupport@transition.com

Live web chat: Transition Now
Any Other Time: Voice Mail 800-260-1312 x 579 or 952-941-7600 x 579

How and Where to Send Returns Send the defective product postage and insurance prepaid to the following address:

Transition Networks, Inc.
10900 Red Circle Drive
Minnetonka, MN 55343 USA
Attn: RETURNS DEPT: CRA/RMA # _____

Failure to properly protect the product during shipping may void this warranty. The return authorization number must be written on the outside of the carton to ensure its acceptance. We cannot accept delivery of any equipment that is sent to us without a CRA or RMA number.

CRAs are valid for 60 days from the date of issuance. An invoice will be generated for payment on any unit(s) not returned within 60 days.
Upon completion of a demo/ evaluation test period, units must be returned or purchased within 30 days. An invoice will be generated for payment on any unit(s) not returned within 30 days after the demo/ evaluation period has expired.

The customer must pay for the non-compliant product(s) return transportation costs to Transition Networks for evaluation of said product(s) for repair or replacement. Transition Networks will pay for the shipping of the repaired or replaced in-warranty product(s) back to the customer (any and all customs charges, tariffs, or/and taxes are the customer's responsibility).

Before making any non-warranty repair, Transition Networks requires a $200.00 charge plus actual shipping costs to and from the customer. If the repair is greater than $200.00, an estimate is issued to the customer for authorization of repair. If no authorization is obtained, or the product is deemed 'not repairable', Transition Networks will retain the $200.00 service charge and return the product to the customer not repaired. Non-warranted products that are repaired by Transition Networks for a fee will carry a 180-day limited warranty. All warranty claims are subject to the restrictions and conventions set forth by this document.
Transition Networks reserves the right to charge for all testing and shipping incurred, if after testing, a return is classified as "No Problem Found."

THIS WARRANTY IS YOUR ONLY REMEDY. NO OTHER WARRANTIES, SUCH AS FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSED OR IMPLIED. TRANSITION NETWORKS IS NOT LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE OR THEORY. AUTHORIZED RESELLERS ARE NOT AUTHORIZED TO EXTEND ANY DIFFERENT WARRANTY ON TRANSITION NETWORKS'S BEHALF.
Customer Pays Non-Compliant Return Costs
The customer must pay the non-compliant product(s) return transportation cost to Transition

Networks for evaluation of said product(s) for repair or replacement. Transition Networks will pay for shipping the repaired or replaced in-warranty product(s) back to the customer (any and all customs charges, tariffs, or/and taxes are the customer's responsibility).

Non-Warranty Repair Costs
Before making any non-warranty repair, Transition Networks requires a $200 charge, plus actual shipping costs to and from the customer. If the repair is greater than $200, an estimate is issued to the customer for authorization before making the repair. If no authorization is obtained, or the product is deemed not repairable, Transition Networks will retain the $200 service charge and return the product to the customer not repaired.

Repaired Non-Warranty Products
Non-warranted products repaired by Transition Networks for a fee will carry a 180-day limited warranty. All warranty claims are subject to the restrictions and conventions set forth by this document.

Transition Networks reserves the right to charge for all testing and shipping incurred, if after testing, a return is classified as "No Problem Found."

Compliance information

Compliances: CISPR22/EN5022 Class A + EN55024; EN60950 Class A; FCC Class A; CE Mark.

UL Listed; C-UL Listed (Canada): The following part numbers are UL Listed: SISTP1011-141-LR, SISTP1011-141-LRT, SISTP1013-141-LR, SISTP1013-141-LRT, SISTP1014-141-LR, SISTP1014-141-LRT.

FCC Regulations: 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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations: This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.
Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Regulations

CUATION:
This is a Class A product. In a domestic environment, this product could cause radio interference in which case the user may be required to take adequate corrective measures.

Achtung !
Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fäll ist der Benutzer für Gegenmaßnahmen verantwortlich.

Attention !
Ceci est un produit de Classe A. Dans un environnent domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prende les measures spécifiques appropriées.

In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.

CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentlickes Telekommunikationsnetz in den EGMitgliedstaaten verstösst gegen die jeweligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

Appendix A: Technical Specifications

SISTP10xx-141-LR(T) specifications, notices, and warnings

Specifications

Parameter	Description
Standards	IEEE 802.3™, IEEE 802.3ab, IEEE 802.3u, IEEE 802.3x, IEEE 802.3af
Regulatory Compliance for Emissions	CISPR/EN55022 Class A; FCC Class A; CE Mark;
Safety Compliance	UL 60950; cUL; CE/EN60950-1
EMI Compliance	EN61000-4-2; EN61000-4-3; EN61000-4-4; EN61000-4-5; EN61000-4-6; EN61000-4-8; EN61000-4-11; EN61000-4-12; EN61000-6-2; EN61000-6-4
Environmental Compliance	IEC60068-2-32 (Free fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
Ports	(1) fiber port single mode/multi-mode (4) RJ-45 port
Fiber Optic Specifications	1300 nm multimode min: -20.0 dBm max: -14.0 dBm min: -31.0 dBm max: 0.0 dBm 11.0dB 1310 nm single mode min: -15.0 dBm max: -8.0 dBm min: -32.0 dBm max: -5.0 dBm 17.0 dB
Max Distance	Fiber (fixed): up to 20km (12.4 miles) Copper: up to 100 meters (328 ft.)
Max Data Rate	Fiber: 100 Mb/s Copper: 10Mb/s or 100Mb/s
Signals	TxD, RxD, CTS, RTS, DTR, DSR, RI, DCD, GND
MAC address table	1k MAC addresses
Power Consumption	4.6 watts (w/o PoE); 66 watts (w/PoE)
Ingress Protection	IP30
MTBF (MIL-HDBK-217F)	443,154 hours
Input Power	48 VDC, 0.1A-1.4A; dual, redundant auto-sensing inputs with reverse polarity and overload current protection
Dimensions	Width: 1.2" [30 mm] Depth: 3.7" [95 mm] Height: 5.5" [140 mm]
Weight	0.45 kg (1.0 lbs)
Shipping weight	0.59 kg (1.3 lbs)

Standard Operating Temperature (-LR models only)	-10ºC to +50ºC (32 ºF to 140ºF)
Extended Operating Temperature (-LRT models only)	-40ºC to +65ºC (-40 ºF to 167ºF)
Storage Temperature	-40ºC to +85ºC (-40 ºF to 185ºF)
Operating Humidity	5% to 95% (non-condensing)
Warranty	Lifetime

Notices

- The information in this user's guide is subject to change. For the most up-to-date information on the SISTP10xx-141-LR(T) Industrial PoE Switch, refer to the user's guide on-line at https://www.transition.com/.
- Product is certified by the manufacturer to comply with DHHS Rule 21/CFR, Subchapter J applicable at the date of manufacture.
- IMPORTANT Copper based media ports: e.g., Twisted Pair (TP) Ethernet, USB, RS-232, RS422, RS485, DS1, DS3, Video Coax, etc., are intended to be connected to intra-building (*inside plant*) link segments that are not subject to lightening transients or power faults.
  Copper based media ports: e.g., Twisted Pair (TP) Ethernet, USB, RS-232, RS-422, RS-485, DS1, DS3, Video Coax, etc., are NOT to be connected to inter-building (*outside plant*) link segments that are subject to lightening transients or power faults. Failure to observe this caution could result in damage to equipment.

Warnings

WARNING: Visible and invisible laser radiation when open. Do not stare into the beam or view the beam directly with optical instruments. Failure to observe this warning could result in an eye injury or blindness.

WARNING: Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

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SISTP10xx-141-LR(T) Industrial PoE Switch Install Guide, 33531 Rev. A