

# User Guide

## SISTF101x-241-LRT

### SISTF101x-241-LRT Industrial Switch



- Class 1 Div 2 Certified
- Auto-Negotiation for 10/100BASE-TX
- AutoCross™ automatically detects and configures the twisted pair port on the converter to the correct MDI or MDI-X configuration.
- DIN Rail Mounting and Wall Mount Brackets Included
- Extended (-40°C to 75°C) operating temperature
- Dual Auto-Sensing Redundant DC Power Inputs
- Barrel connector interface cable included for connecting external AC/DC power supply
- Allows devices to perform automatic configuration to achieve the best possible mode of operations over a link.

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## Overview

### Introduction

The SISTF101x-241-LRT Industrial Switch is a cost-effective solution and meets the high reliability requirements demanded by industrial applications. Depending on the model, these switches can provide multimode or single mode fiber connections with SC or ST connectors for extended distance communications up to 20 kilometers.

## High-Speed Transmissions

The SISTF101x-241-LRT Industrial Switch provides you with Fiber port for your fiber optic cable to make a long-distance connection. The SISTF101x-241-LRT Industrial Switch includes a switch controller that can automatically sense transmission speeds (10/100 Mbps).

The RJ-45 interface can also be auto-detected, so MDI or MDI-X is automatically selected and a crossover cable is not required. All Ethernet ports have memory buffers that support the store-and-forward mechanism. This assures that data is properly transmitted.

## Dual Power Input

To reduce the risk of power failure, the SISTF101x-241-LRT Industrial Switch provides +12 ~+48 VDC dual power inputs. If there is power failure, the SISTF101x-241-LRT Industrial Switch will automatically switch to the secondary power input.

## Flexible Mounting

SISTF101x-241-LRT Industrial Switch is extremely compact and can be mounted on a DIN-rail or a panel, so it is suitable for any space-constrained environment.

## Advanced Protection

The power line of SISTF101x-241-LRT Industrial Switch supports up to 3,000 VDC EFT protection, which secures equipment against unregulated voltage and makes systems safer and more reliable. Meanwhile, 6,000 VDC ESD protections for Ethernet ports make SISTF101x-241-LRT Industrial Switch more suitable for harsh environments.

## Wide Operating Temperature

The operating temperature of the SISTF101x-241-LRT Industrial Switch supports the wide operating temperature in the range between -40 ~ 75°C. With such a wide range, you can use the SISTF101x-241-LRT Industrial Switch in some of the harshest industrial environments that exist.

## Easy Troubleshooting

LED indicators make troubleshooting quick and easy. Each 10/100 Base-TX port has 2 LEDs that display the link status, transmission speed and collision status. Also the three power indicators P1, P2 and Fault help you diagnose immediately.

## Features

- Provides 4 x 10/100TX Mbps Ethernet ports
- Provides 1 SC/ST fiber optic port
- TX ports support full/half duplex flow control
- Supports MDI/MDI-X auto-crossover
- Supports surge (EFT) protection 3,000 VDC for power line
- Supports 6,000 VDC Ethernet ESD protection
- Provides broadcast storm protection
- Embedded switch controller supports auto-negotiation
- Supports store & forward transmission
- Supports redundant +12 ~ +48 VDC power input
- Provides flexible mounting: DIN-rail, Wall Mounting
- Supports operating temperatures from -40 ~ 75°C

## Technical Specifications

The technical specifications of the Industrial Switch are listed as follows.

### Communications

Compatibility	IEEE 802.3, 802.3u, 802.3x
LAN	10/100Base-TX, 100FX
Transmission Distance	Multi-Mode Fiber 2KM (50/125 m ~ 62.5/125 m) Single-Mode Fiber 30KM (9/125 m) UTP/STP up to 100 meters
Transmission Speed	Up to 100 Mbps
Broadcast Storm Rate Limit	200pps (@ 100Mbps), 20pps (@ 10Mbps)
MAC Addresses	1K
Data Memory Buffer	512 Kb
Backplane	1.0 Gbps

### Interface

Connectors	Four RJ-45 One SC or ST type 100M fiber 6-pin removable screw terminal (power & Relay)
LED Indicators	Unit: P1, P2, Fault
Ethernet port:	Link/Active, Full Duplex/Collision

### Power

Power Consumption	Four 10/100TX + 1 100FX model: 4.44 Watts max.
Power Input	Two Unregulated +12 ~ 48 VDC or 18 to 30 VAC
Fault Output	One Relay Output

### Mechanical

Dimensions (WxDxH)	30 mm x 95 mm x 140 mm (1.18" x 3.74" x 5.51")
Enclosure	IP30, Metal shell with solid mounting kits
Mounting	DIN Rail, Wall Mount

### Protection

ESD (Ethernet)	6,000 VDC
Surge (EFT for power)	3,000 VDC
Power Reverse	Yes

### Environment

Extend Operating Temperature	-40 ~ 75oC (-40°F~167°F)
Operating Humidity	5% ~ 95% (non-condensing)
Shipping Weight	2 lbs. [0.90 kg]

## Certifications

Safety	UL508, cUL, CE EN60950-1 Class1 / Division 2
EMC	FCC Class A CE EN61000-4-2 (ESD) CE EN61000-4-3 (RS) CE EN61000-4-4 (EFT) CE EN61000-4-5 (Surge) CE EN61000-4-6 (CS) CE EN61000-4-8 (Magnetic Field) CE EN61000-4-11 (Voltage DIP) CE EN61000-6-2 CE EN61000-6-4
Free Fall	IEC60068-2-32
Shock	IEC60068-2-27
Vibration	IEC60068-2-6

## Packing List

- One 4-port 10/100TX + 1-port 100FX Industrial Switch
- One User manual
- Two Wall Mounting Bracket and Screws

Compare the contents of the industrial switch with the standard checklist above. If any item is damaged or missing, please contact your local dealer for service. Please save the packaging for possible future use.

**Optional Accessories** (sold separately): External AC/DC Power Supply:

25135: Input: 85-264 VAC, 120-370VDC. Output: 24VDC, .42A, 10 Watts.

25083: Input: 85-264 VAC, 120-370VDC; Output: 10.8 ~ 13.2 VDC, 2A, 24 Watts.

## Safety Precaution

**Attention:** If DC voltage is supplied by an external circuit, please use a protection device on the power supply input.

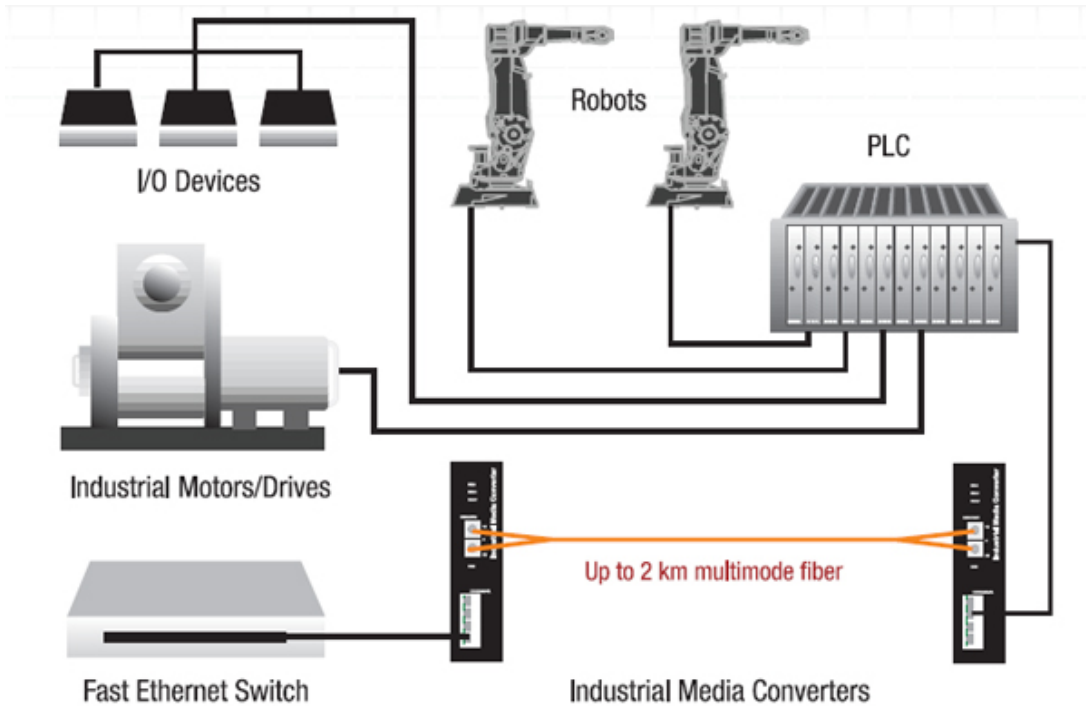
## Hardware Description

This section introduces the Industrial switch hardware specs, ports, cabling, and wiring installation.

### Application Example

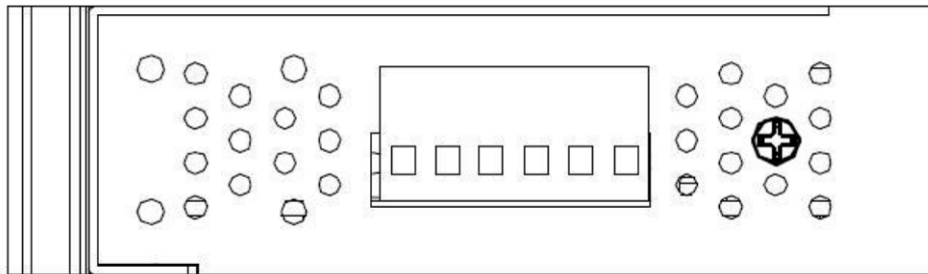
Transition Networks' Industrial Switches are hardened devices designed to reliably operate in harsh environments such as those found on factory floors, outdoor enclosures or other hazardous environments.

Eliminate EMI and RFI issues or overcome distance limitations with copper based cabling by using the Industrial Media Converter to convert your copper based equipment over to fiber optics. The media converter can connect to either 10Base-T or 100Base-TX ports and provides a 100Base-FX fiber optic connection for links up to 20 km.



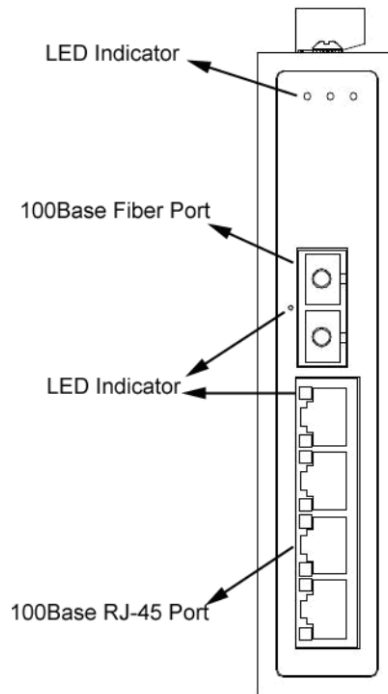
### Top View

The top panel of the SISTF101x-241-LRT Industrial Switch is equipped with one terminal block connector for the two power inputs and Fault Relay output.



### Front Panel

The Front Panel of the 4-port10/100TX + 1 port 100FX Industrial Switch is shown below.



**Front Panel of the SISTF101x-241-LRT Industrial Switch**

### LED Indicators

The front panel LEDs display the power status and network status as described in the table below.

LED	Color - Condition	Meaning
P1	Green - On	Power input 1 is active.
P1	Green - Off	Power input 1 is inactive.
P2	Green - On	Power input 2 is active.
P2	Green - Off	Power input 2 is inactive.
Fault	Red - On	Power input 1 or 2 is inactive.
Fault	Red - Off	Power input 1 and 2 are both active, or no power input.
Link/Active 1~5 for 1 x 100FX	Green - On	Connected to network.
Link/Active 1~5 for 1 x 100FX	Green - Flashing	Networking is active.
Link/Active 1~5 for 1 x 100FX	Green - Off	Not connected to network.
Full Duplex / Collision (1~4)	Orange - On	Ethernet port full duplex
Full Duplex / Collision (1~4)	Orange - Flashing	Collision of packets occurs.
Full Duplex / Collision (1~4)	Orange - Off	Ethernet port half duplex or not connected to network.

## Ports

### RJ-45 ports (Auto MDI/MDIX)

The RJ-45 ports are auto-sensing for 10Base-T or 100Base-TX devices connections. Auto MDI/MDIX means that you can connect to another switch or workstation without changing straight through or crossover cabling. See figures as below for straight through and crossover cable schematic.

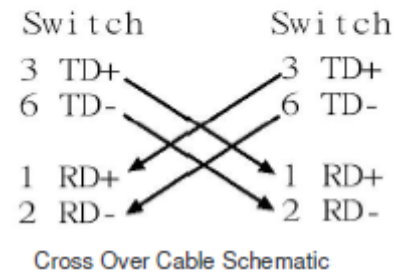
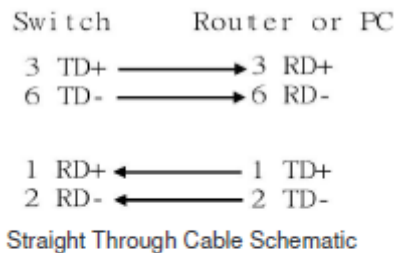
### RJ-45 Pin Assignments

Pin Number	Assignment
1	Tx+
2	Tx-
3	Rx+
6	Rx-

**Note:** the “+” and “-” signs represent the polarity of the wires that make up each wire pair.

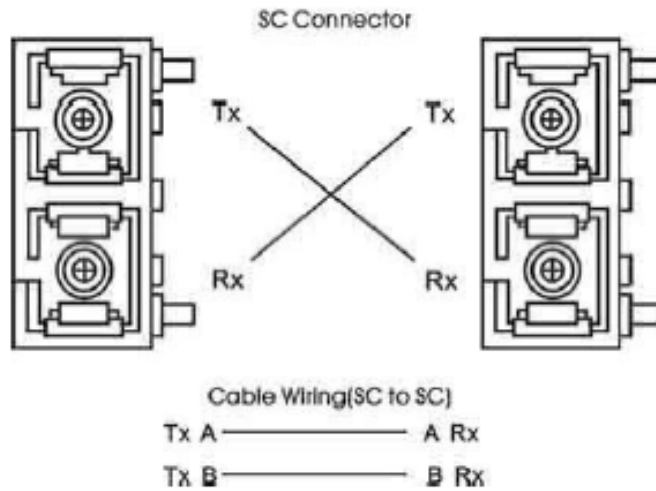
All ports on this industrial switch support automatic MDI/MDI-X operation, you can use straight-through cables (See Figure below) for all network connections to PCs or servers, or to other switches or hubs. In straight-through cable, pins 1, 2, 3, and 6, at one end of the cable, are connected straight through to pins 1, 2, 3 and 6 at the other end of the cable. The table below shows the 10BASE-T/ 100BASE-TX MDI and MDI-X port pin outs.

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



## Fiber Port

The fiber connector can be worked in multi mode (2Km) or single mode (30Km). When you connect the fiber port to another one, please follow the figure below to connect accordingly. Wrong connection will cause the port cannot work normally.



**ATTENTION** This is a Class 1 Laser/LED product. Don't stare into the Laser/LED Beam.

## Cabling

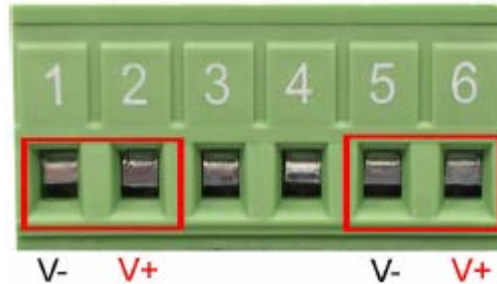
- Use four twisted-pair, Category 5 cabling for RJ-45 port connection. The cable between the switch and the link partner (switch, hub, workstation, etc.) must be less than 100 meters (328 ft.) long.
- Fiber segment using single-mode connector type must use 9/125µm single-mode fiber cable. User can connect two devices in the distance up to 30 Kilometers.
- Fiber segment using multi-mode connector type must use 50 or 62.5/125 µm multi-mode fiber cable. User can connect two devices up to 2Km distances.



## Wiring the Power Inputs

Please follow the steps below to insert the power wires.

1. Insert the positive and negative wires into the V+ and V- contacts on the terminal block connector.



2. Tighten the wire-clamp screws to prevent the wires from coming loose.



## Wiring the Fault Alarm Contact

The fault alarm contact is in the middle of terminal block connector as the picture shows below. Inserting the wires, it will detect the fault status which the power is failure or port link failure (for managed model) and form an open circuit.



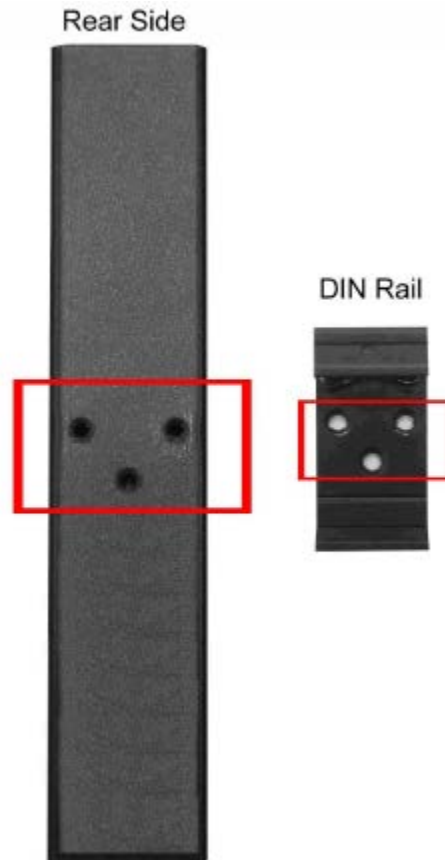
1. Insert the wires into the fault alarm contact (No. 3 & 4) as shown above.

**Note:** The wire gauge for the terminal block should be in the range of 12~ 24 AWG.

## Mounting Installation

### *DIN-Rail Mounting*

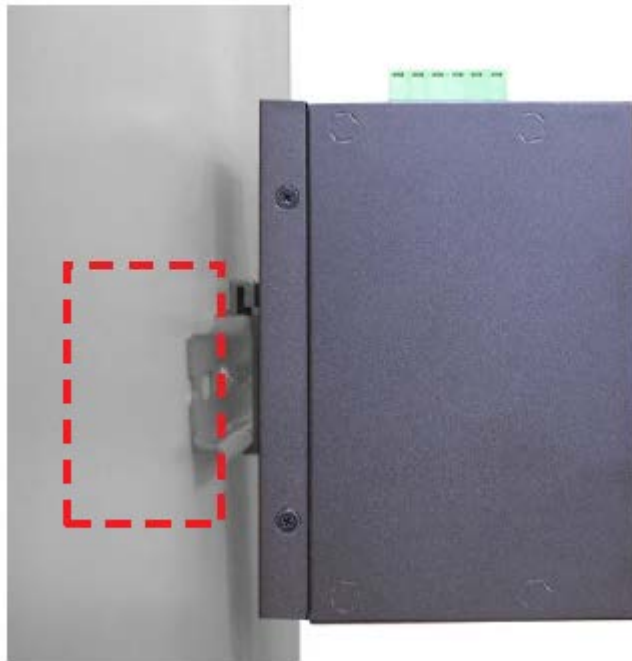
The DIN-Rail is screwed on the industrial switch at the factory. If the DIN-Rail is not screwed on the industrial switch, please see the following figure to screw the DIN-Rail on the switch. Follow the steps below to hang the industrial switch.



1. Use the screws to screw on the DIN-Rail on the industrial switch
2. To remove the DIN-Rail, reverse the step 1.
3. Insert the top of DIN-Rail into the track.



4. Then, lightly push the button of DIN-Rail into the track.

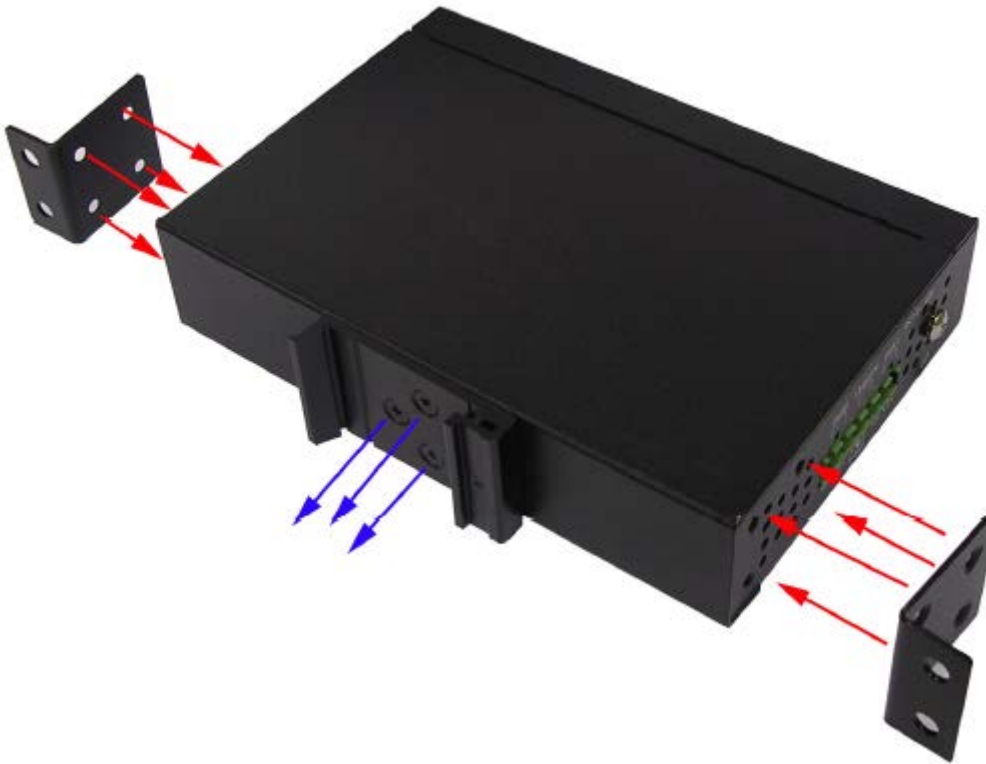


5. Check the DIN-Rail is tightly on the track.
6. To remove the industrial switch from the track, reverse the steps above.

## Wall Mount Plate Mounting

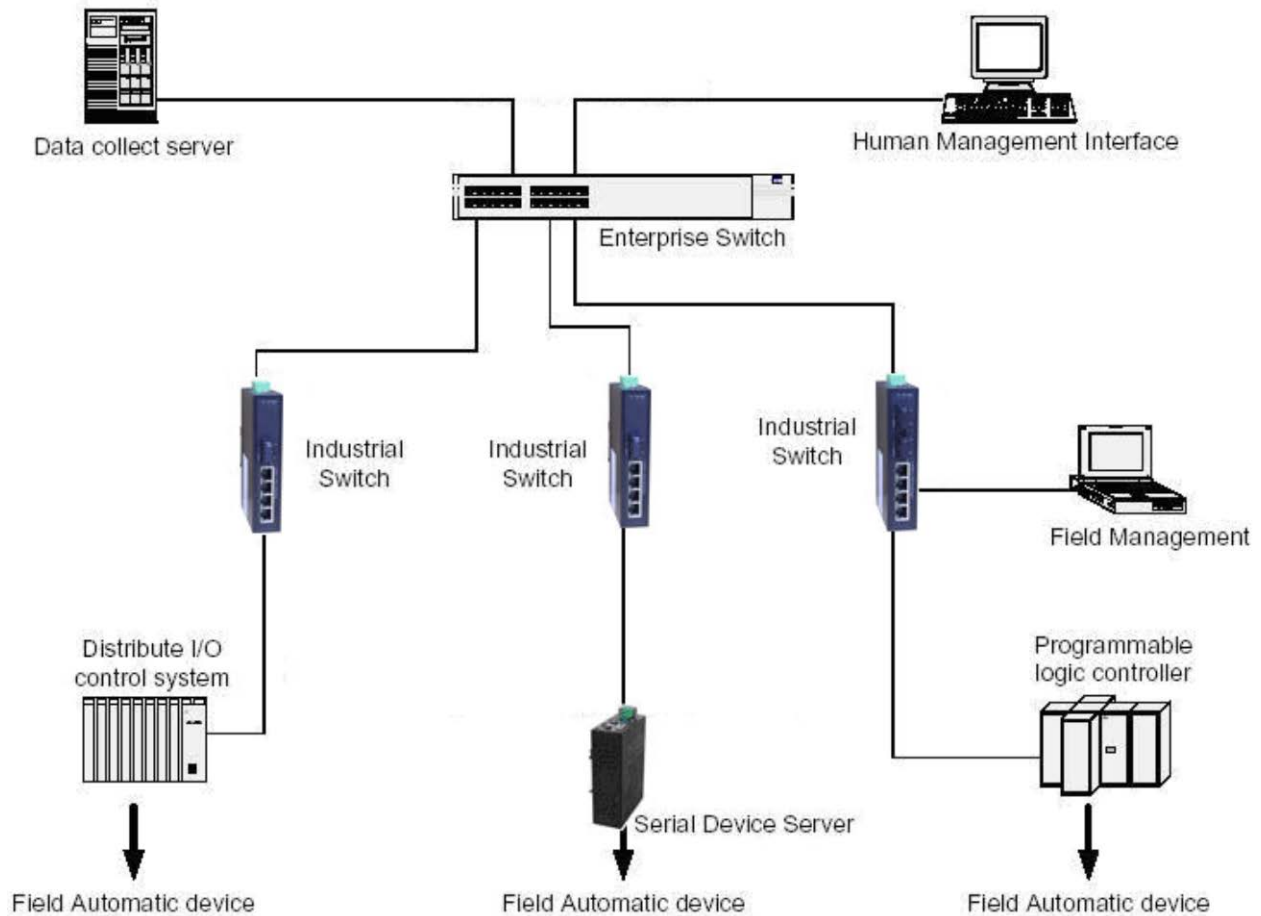
Follow the steps below to mount the industrial switch with wall mount plate.

1. Remove the DIN-Rail from the industrial switch; loosen the screws to remove the DIN-Rail.
2. Place the wall mount plate on the top and bottom side of the industrial switch.
3. Use the screws to screw the wall mount plate on the industrial switch.
4. Use the hook holes at the corners of the wall mount plate to hang the industrial switch on the wall.
5. To remove the wall mount plate, reverse the steps above.



## Hardware Installation

Below is an illustration of some typical applications for the SISTF101x-241-LRT Industrial Switch.



### Installation Steps

1. Unpack the Industrial switch packing.
2. Check the DIN-Rail is screwed on the Industrial switch. If the DIN-Rail is not screwed on the Industrial switch. Refer to **DIN-Rail Mounting** section for DIN-Rail installation. To wall mount the Industrial switch, refer to **Wall Mount Plate Mounting** section.
3. To hang the Industrial switch on the DIN-Rail track or wall, refer to the **Mounting Installation** section.
4. Power on the Industrial switch. For how to wire the power, refer to the **Wiring the Power Inputs** section. The power LED on the Industrial switch will light up. Refer to the **LED Indicators** section for LED descriptions.
5. Prepare the twisted-pair, straight through Category 5 cable for Ethernet connection.
6. Insert one side of Category 5 cables into the Industrial switch Ethernet port (RJ-45 port) and another side of category 5 cables to the network devices' Ethernet port (RJ-45 port), ex: switch, PC or Server. The UTP port (RJ-45) LED on the Industrial switch will light when the cable connected with the network device. Refer to the **LED Indicators** section for LED descriptions.
7. When all connections are all set and LED lights all show in normal, the installation is complete.

## Troubleshooting

- Verify that you are using the right power cord/adaptor. Please don't use the power adapter output higher than the power input of this switch or it may damage the switch.
- Select the proper UTP/STP cable to construct your network. Please check that you are using the right cable. Use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable for RJ-45 connections: 100 Category 3, 4, or 5 cable for 10Mbps connections or 100 Category 5 cable for 100Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).
- Diagnosing LED Indicators: To assist in identifying problems, the switch can be easily monitored through panel indicators, which describe common problems the user may encounter and where the user can find possible solutions.
- If the power indicator does not light on when the power cord is plugged in, you may have a problem with power cord. Then check for loose power connections, power losses or surges at power outlet. IF you still cannot resolve the problem, contact your local dealer for assistance.
- If the LED indicators are normal with the correctly connected cables and the packets still cannot transmit, please check your system's Ethernet devices' configuration or status.

## Contact Us

### Technical support

Technical support is available 24-hours a day

US and Canada: 1-800-260-1312

International: 00-1-952-941-7600

### Transition now

Chat live via the Web with Transition Networks Technical Support.

Log onto [www.transition.com](http://www.transition.com) and click the **Transition Now** link.

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### E-Mail

Ask a question anytime by sending an e-mail to our technical support staff.

[techsupport@transition.com](mailto:techsupport@transition.com)

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## Compliance Information

### FCC Warning

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. It may cause harmful interference to radio communications if the equipment is not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### CE Mark Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

### 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

**Warning** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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

**Attention !** Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures 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 öffentliches Telekommunikationsnetz ist den

EGMitgliedstaaten verstösst gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

## Record of Revisions

Rev	Date	Notes
1	10/14/15	Initial release.
A	4/26/15	Updated input power spec and case dimensions.

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