MICROSENS

4-port 10/100TX + 2-port 100FX Industrial Switch

4-port 10/100TX + 1-port 100FX Industrial Switch

User Manual

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.

Contents

CHAPTER 1

Overview

Sections include:

- Introduction
- Features
- Specifications
- Packing List
- Safety Precaution

Chapter 1 Overview

1.1 Introduction

The 4 10/100TX + 2 or 1 100FX Industrial Switch is a cost-effective solution and meets the high reliability requirements demanded by industrial applications.

1.1.1 High-Speed Transmissions

The 4 10/100TX + 2 or 1 100FX Industrial Switch provides you with Fiber port for your fiber optic cable to make a long-distance connection. The 4 10/100TX + 2 or 1 100FX 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.

1.1.2 Dual Power Input

To reduce the risk of power failure, the 4 10/100TX + 2 or 1 100FX Industrial Switch provides +12 ~ 48 V_{DC} dual power inputs. If there is power failure, 4 10/100TX + 2 or 1 100FX Industrial Switch will automatically switch to the secondary power input.

1.1.3 Flexible Mounting

4 10/100TX + 2 or 1 100FX 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.

1.1.4 Advanced Protection

The power line of 4 10/100TX + 2 or 1 100FX Industrial Switch supports up to 3000 V_{DC} EFT protection, which secure equipment against unregulated voltage and make systems safer and more reliable. Meanwhile, 4000 V_{DC} ESD protections for Ethernet ports make 4 10/100TX + 2 or 1 100FX Industrial Switch more suitable for harsh environments.

1.1.5 Wide Operating Temperature

The operating temperature of the 4 10/100TX + 2 or 1 100FX Industrial Switch is between -40 ~ 75 ℃ (wide operating temperature model) or -10 ~ 60 ℃ (standard model). With such a wide range, you can use the 4 10/100TX + 2 or 1 100FX Industrial Switch in some of the harshest industrial environments that exist.

1.1.6 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.

1.2 Features

- Provides 4 x 10/100TX + 2 x 100FX or 4 x 10/100TX + 1 x 100FX Mbps Ethernet ports with
- Provides 2K (wide operating temp. model) or 1K (standard model) MAC address table
- TX ports support full/half duplex flow control
- Supports MDI/MDI-X auto-crossover
- Supports surge (EFT) protection 3000 V_{DC} for power line
- Supports 4000 V_{DC} Ethernet ESD protection
- Provides broadcast storm protection
- Embedded with a switch controller, supports auto-negotiation
- Supports store & forward transmission
- Supports redundant +12 ~ 48 V_{DC} power input
- Provides flexible mounting: DIN-rail, Wall Mounting
- Supports operating temperatures from -40 ~ 75 ℃ (wide operating temperature model) or -10 ~ 60 ℃ (standard model)

1.3 Specification

Communications

Compatibility	IEEE 802.3, 802.3u, 802.3x
LAN	10/100Base-TX, 100FX
Transmission Distance	Multi-Mode Fiber 2KM (50/125 μm ~ 62.5/125 μm) Single-Mode Fiber 30KM (9/125 μm) UTP/STP up to 100 meters
Transmission Speed	Up to 100 Mbps

Interface

Connectors	4 x RJ-45 2 x SC type 100M fiber (2 x 100FX model) 1 x SC type 100M fiber (1 x 100FX model) 6-pin removable screw terminal (power)
LED Indicators	Unit: P1, P2, Fault TX port: Link/Active, Duplex/Collision

Power

Power Consumption	6.41 W (2 x 100FX model) 4.44 W (1 x 100FX model)
Power Input	2 x Unregulated +12 ~ 48 V_{DC}
Fault Output	1 Relay Output

Mechanism

Dimensions (WxHxD)	30 x 95 x 140
Enclosure	IP30, Metal shell with solid mounting kits
Mounting	DIN35 rail, Wall

Protection

ESD (Ethernet)	4000 V_{DC}
Surge (EFT for power)	3000 V_{DC}
Power Reverse	Yes

Environment

Operating Temperature	-40~75 ℃ (wide operating temperature model) -10~60 ℃ (standard temperature model)

Operating Humidity	5%~95% (non-condensing)
Storage Temperature	-40~85 ℃

Certifications

EMC	EU: EN55011, EN61000-6-4 EN55022, Class A, EN61000-3-2/3 EN55024 IEC61000-4-2/3/4/5/6/8/11/12 EN61000-6-2
Free Fall	IEC60068-2-32
Shock	IEC60068-2-27
Vibration	IEC60068-2-6

1.4 Packing List

- 4 x 10/100TX + 2 x 100FX or 4 x 10/100TX + 1 x 100FX Industrial Switch
- 1 x User manual
- 2 x Wall Mounting Bracket and Screws

1.5 Safety Precaution

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

CHAPTER 2

Installation

Sections include:

- LED Indicators
- Dimensions
- Mounting
- Network Connection
- Power Connection

Chapter 2 Installation

In this chapter, you will be given an overview of the 4 10/100TX + 2 or 1 100FX Industrial Switch hardware installation procedures.

2.1 LED Indicators

There are few LEDs display the power status and network status located on the front panel of 4 10/100TX + 2 or 1 100FX Industrial Switch, each of them has its own specific meaning as below table.

Table 2.1: 4 10/100TX + 2 or 1 100FX Industrial Switch LED Definition

LED	**Color**	**Description**	
P1	Green	On	Power input 1 is active
		Off	Power input 1 is inactive
P2	Green	On	Power input 2 is active
		Off	Power input 2 is inactive
P-Fail	Red	On	Power input 1 or 2 is inactive
		Off	Power input 1 and 2 are both active, or no power input
Link/Active (1~6 for 2 x 100FX) (1~5 for 1 x 100FX)	Green	On	Connected to network
		Flashing	Networking is active
		Off	Not connected to network
Duplex/Collision (1~4)	Orange	On	Ethernet port full duplex
		Flashing	Collision of packets occurs
		Off	Ethernet port half duplex or not connect to network

2.2 Dimensions (units: mm)

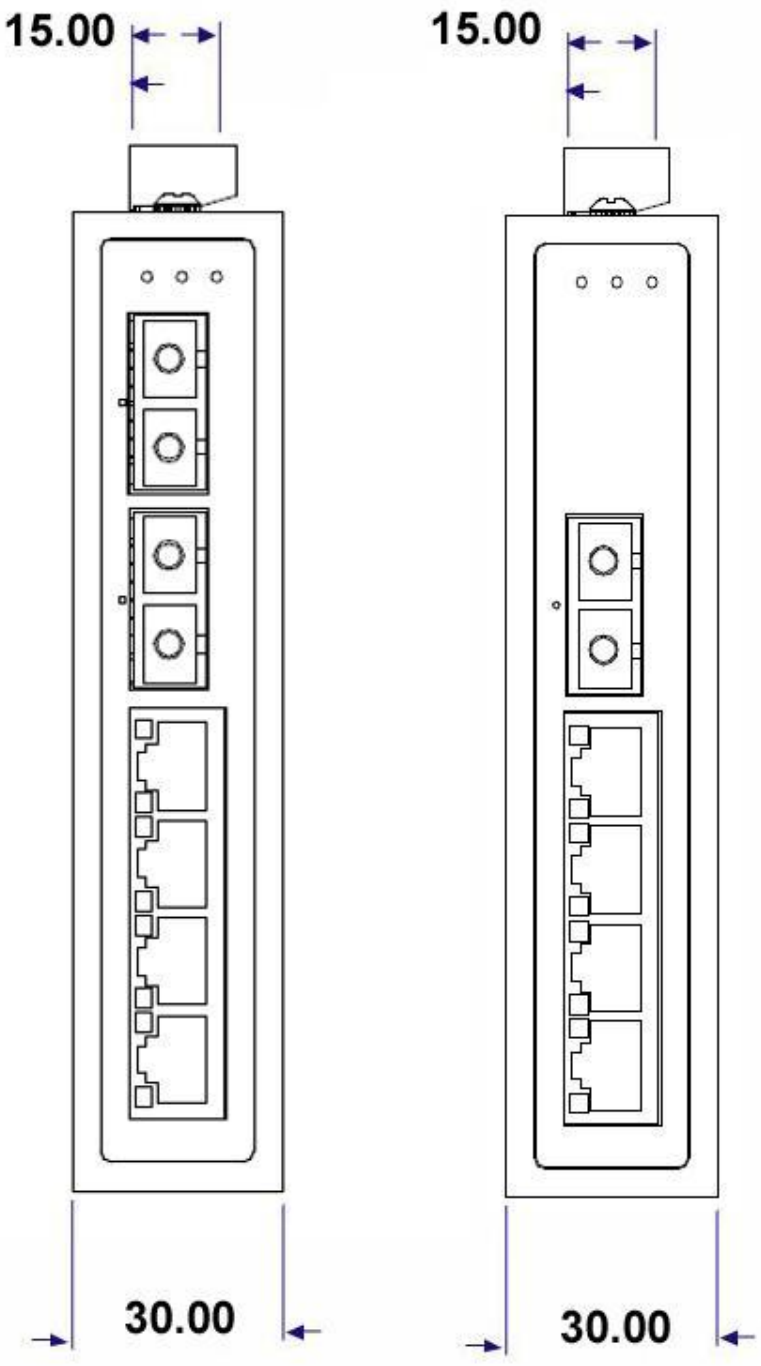

Figure 2.1: Front View of 4 10/100TX + 2 or 1 100FX Industrial Switch

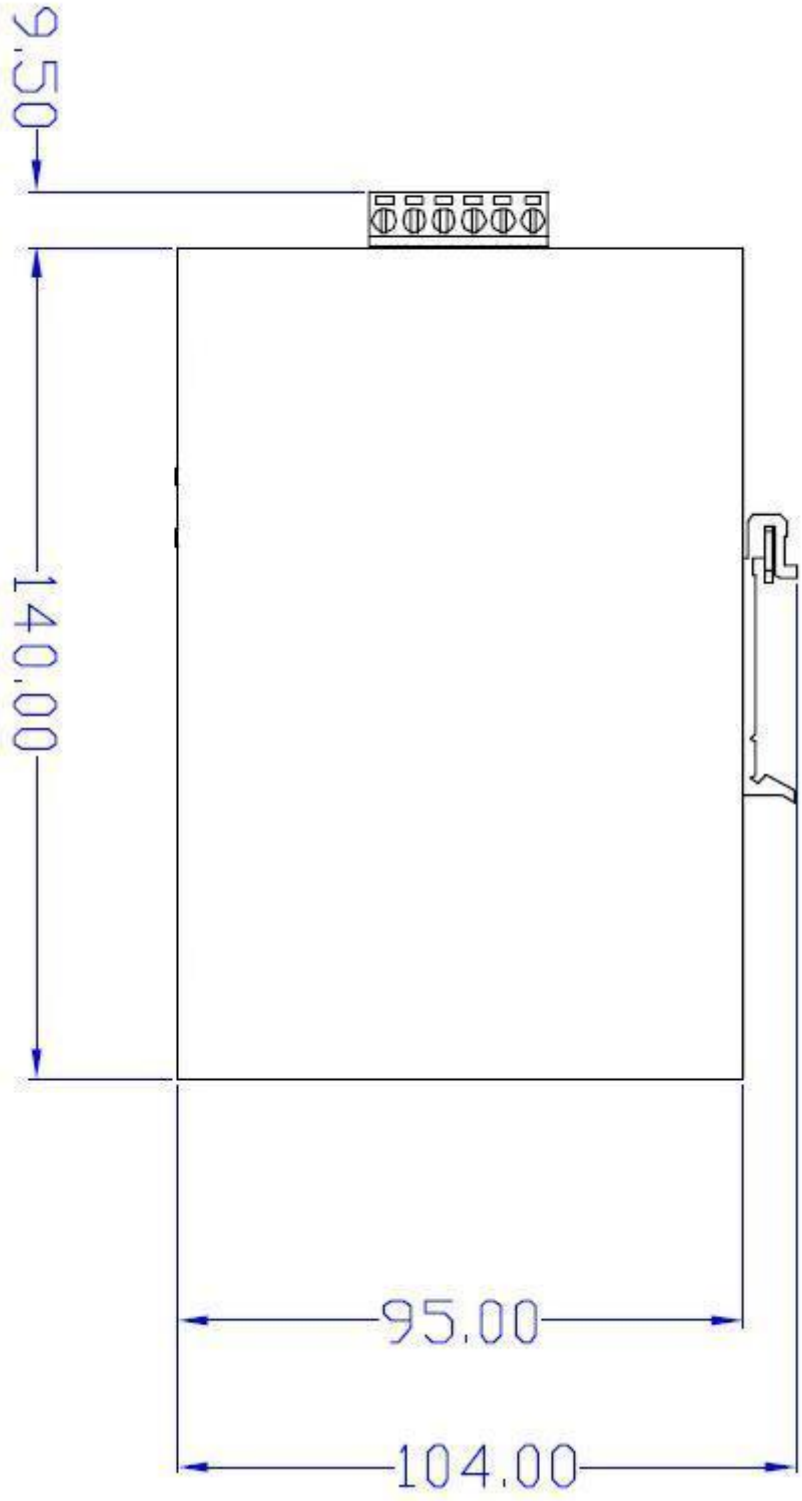

Figure 2.2: Side View of 4 10/100TX + 2 or 1 100FX Industrial Switch

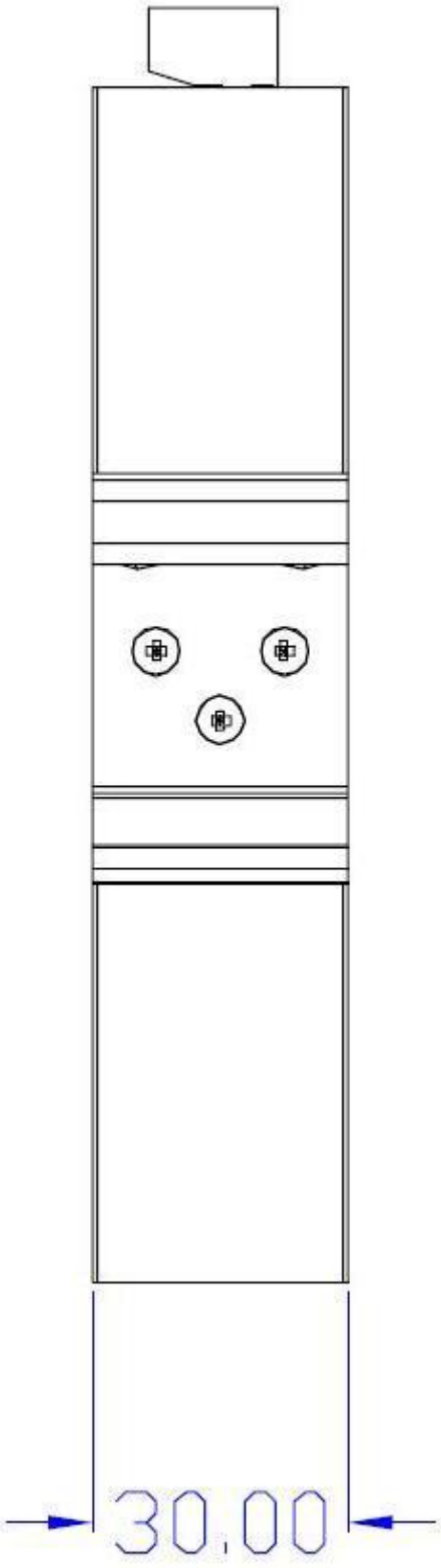

Figure 2.3: Rear View of 4 10/100TX + 2 or 1 100FX Industrial Switch

Please refer to page 17 for pin assignment of power connector.

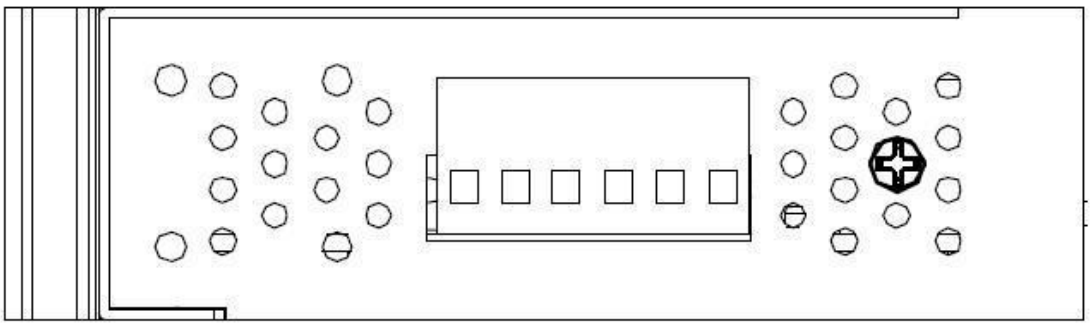

Figure 2.4: Top View of 4 10/100TX + 2 or 1 100FX Industrial Switch

2.3 Mounting

The 4 10/100TX + 2 or 1 100FX Industrial Switch supports two mounting methods: DIN-rail & Wall.

2.3.1 Wall mounting

4 10/100TX + 2 or 1 100FX Industrial Switch can be wall-mounted by using the included mounting kit. Then, hang on the 4 10/100TX + 2 or 1 100FX Industrial Switch to the nails on the wall.

First, use the screws included in the package to combine the 4 10/100TX + 2 or 1 100FX Industrial Switch and metal mounting kit. And then you can install the device firmly via the components, please see Figure 2.5 as below.

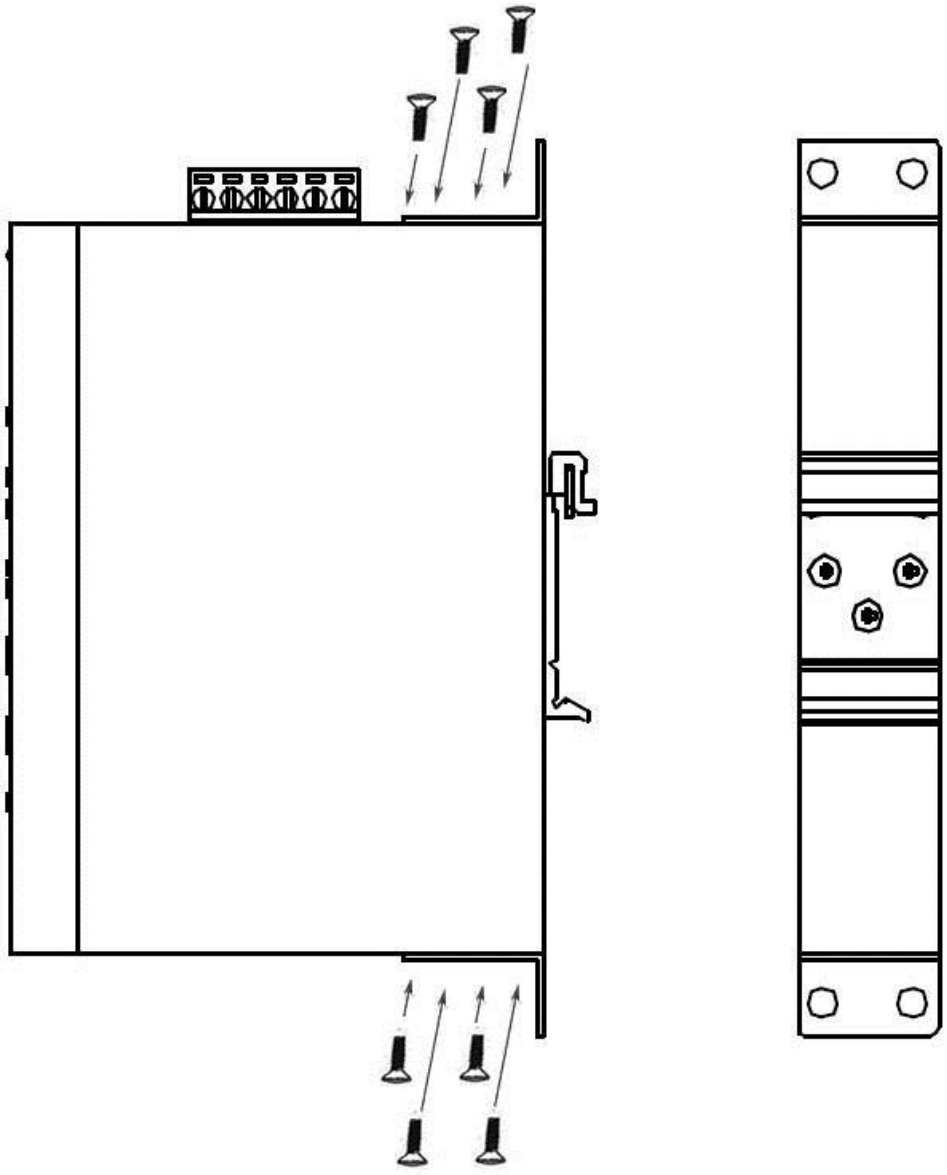

Figure 2.5: Combine the Metal Mounting Kit

2.3.2 DIN-rail Mounting

You can also mount 4 10/100TX + 2 or 1 100FX Industrial Switch on a standard DIN-rail by below steps.

The DIN-rail kit is screwed on the industrial switch when out of factory. If the DIN-rail kit is not screwed on the industrial switch, please screw the DIN-rail kit on the switch first.

First, hang the 4 10/100TX + 2 or 1 100FX Industrial Switch to the DIN-rail with angle of inclination. See figure 2.6.

Figure 2.6: Installation to DIN-rail Step 1

Then, let the device down straight to slide over the rail smoothly. See Figure 2.7

Figure 2.7: Installation to DIN-rail Step 2

2.4 Network Connection

The 4 10/100TX + 2 or 1 100FX Industrial Switch has the SC type fiber port using in multi mode (2Km) or single mode (30Km). When you connect the fiber port to another one, please follow the below figure to connect it. Wrong connection will not allow the port to work normally.

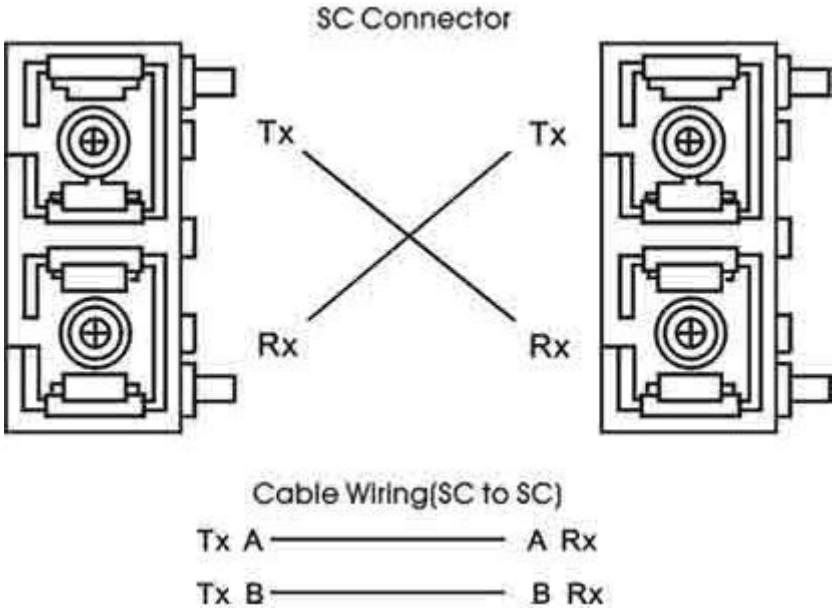

Figure 2.8: Pin Assignment of the Power Connector

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

The 4 10/100TX + 2 and 1 100FX Industrial Switch both have 4 x RJ-45 ports that support connection to 10 Mbps Ethernet, or 100 Mbps Fast Ethernet, and half or full duplex operation. 4 10/100TX + 2 or 1 100FX Industrial Switch can be connected to other hubs or switches through a twisted-pair straight through the cable or a crossover cable up to 100m long. The connection can be made from any TX port of the 4 10/100TX + 2 or 1 100FX Industrial Switch (MDI-X) to another hub or switch either MDI-X or uplink MDI port.

The 4 10/100TX + 2 or 1 100FX Industrial Switch supports auto-crossover to make networking more easy and flexible. You can connect any RJ-45 (MDI-X) station port on the switch to any device such as a switch, bridge or router.

2.5 Power Connection

The 4 10/100TX + 2 or 1 100FX Industrial Switch supports dual +12 ~ 48 V_{DC} power inputs and power-fail relay output.

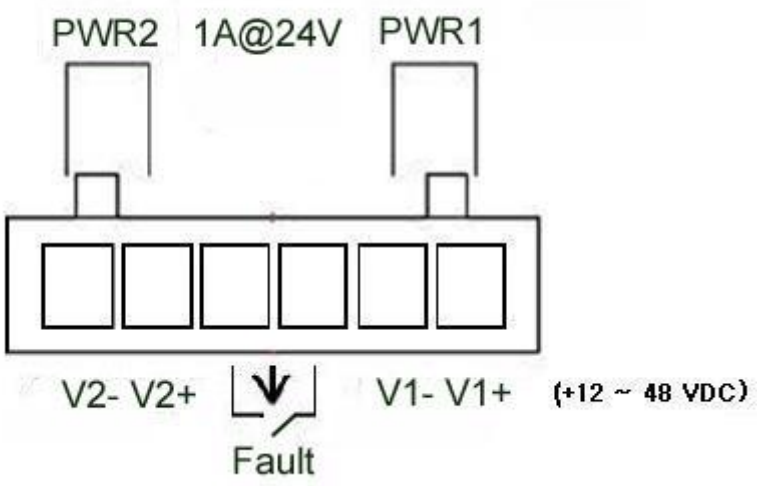

Figure 2.9: Pin Assignment of the Power Connector

You can connect an alarm indicator, buzzer or other signaling equipment through the relay output. The relay opens if power input 1 or 2 fails (“Open” means if you connect relay output with an LED, the light would be off).

CHAPTER 3

Troubleshooting

Chapter 3 Troubleshooting

1. Power Input

Verify that is using the right power cord/adapter (+12~48 V_{DC}), please don't use the power adaptor with DC output voltage higher than 48V, or it will burn this converter down.

2. Cable

Select the proper UTP cable to construct user network. Please check that is using the right cable. Use Unshielded Twisted-Pair (UTP) or Shielded Twisted-Pair (STP) cable for RJ-45 connections: 100 Category 3, 4 or 5 cable for 10 Mbps connections or 100 Category 5 cable for 100 Mbps connections. Also, be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).
Otherwise, use the 50/125 ~ 62.5µm fiber cable to connect the fiber port in multi-mode or 9/125µm fiber cable in single-mode.

3. Diagnosing LED Indicators

The switch can be easily monitored through panel indicators, which describes common problems user may encounter and where user can find possible solutions, to assist in identifying.
If the power indicator does not light up when the power cord is plugged in, user may have a problem with power cord. Then check for loose power connections, power losses or surges at power outlet. If user still cannot resolve the problem, contact the local dealer for assistance.
If the Industrial switch LED indicators are normal and the connected cables are correct but the packets still cannot transmit, please check your system's Ethernet devices configuration or status.

APPENDIX A

Pin Assignment & Wiring

Appendix A Pin Assignment & Wiring

It is suggested to adopt ELA/TIA as the wiring of the RJ-45.

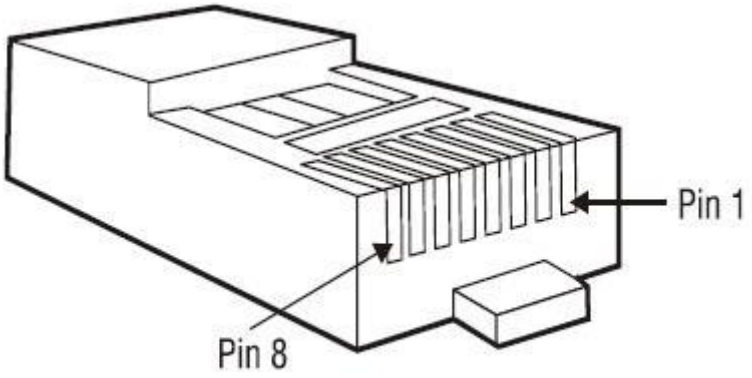

Figure A.1: RJ-45 Pin Assignment

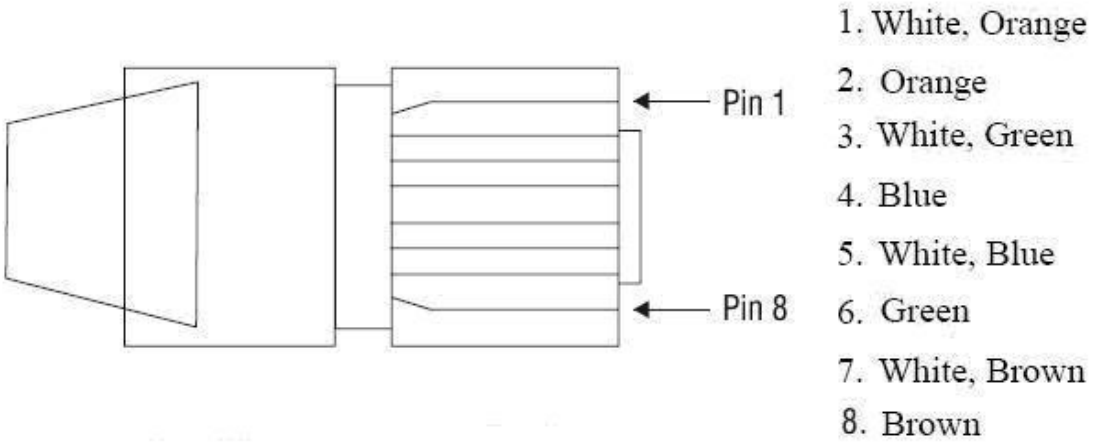

Figure A.2: EIA/TIA-568B

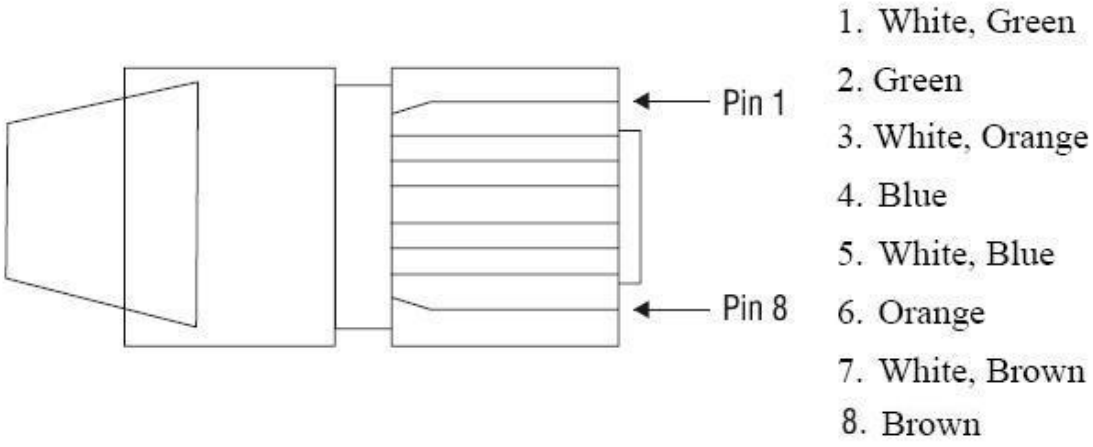

Figure A.2: EIA/TIA-568A