6 10/100/1000TX + 2G Fiber Industrial Ethernet Switch

User Manual

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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.

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Introduction

The 6 10/100/1000TX + 2G fiber industrial switch is a cost-effective solution and meets the high reliability requirements demanded by industrial applications. By using fiber port can extend the connection distance that increases the network elasticity and performance. And also support wide operation temperature and green power features.

Feature

Standard	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX IEEE 802.3ab 1000Base-T IEEE 802.3z Gigabit fiber IEEE 802.3x Flow Control and Back Pressure
LED Indicators	Per unit: Power 1 (Green), Power 2 (Green), P-Fail(Red), Link/Activity for Fiber (Green) Per port: Link/Activity (Green), Speed (Green)
Connector	10/100/1000T: RJ-45 x 6 1000 Fiber: Fiber sockets(SC) x 2
Switch architecture	Store and forward switch architecture
Back-plane	16Gbps

MAC address	8K MAC address table with Auto learning function
Power Supply	DC 12~48V, Redundant power and removable terminal block $24V_{AC}$ (18~30V)
Power Consumption	9.3 Watt (Max)
Ventilation	Fanless
Operating Temperature	-40℃~75℃ -40℃~60℃ (non-air-flow environment)
Operating Humidity	5% to 95%
Storage environment	-40℃~85℃
Storage Humidity	5% to 95%
MTBF	505863 hrs
Dimensions	59.6mm (W) x 105mm (D) x 152mm (H)
EMC	■ FCC Class A ■ EN61000-6-4 ■ EN61000-6-2 ■ EN61000-4-2 (ESD) ■ EN61000-4-3 (Radiated RFI) ■ EN61000-4-4 (Burst) ■ EN61000-4-5 (Surge) ■ EN61000-4-6 (Induced RFI)

	■ EN61000-4-8 (Magnetic Field) ■ EN61000-4-11 (Voltage Dip) ■ EN61000-4-12 (Oscillatory waves) ■ EN61000-3-2 (Harmonics Current) ■ EN61000-3-3 (Voltage Fluctuation & Flickers)
Safety	■ UL508 ■ Class 1 Division 2
Stability Testing	■ IEC60068-2-32 (Free fall) ■ IEC60068-2-27 (Shock) ■ IEC60068-2-6 (Vibration)

Package Contents

Please refer to the package content list below to verify them against the checklist.

- 6 10/100/1000TX + 2 Gigabit fiber industrial switch
- User manual
- Block connector
- 2 wall mount plates and 6 screws
- One DIN-Rail (attached on the switch)

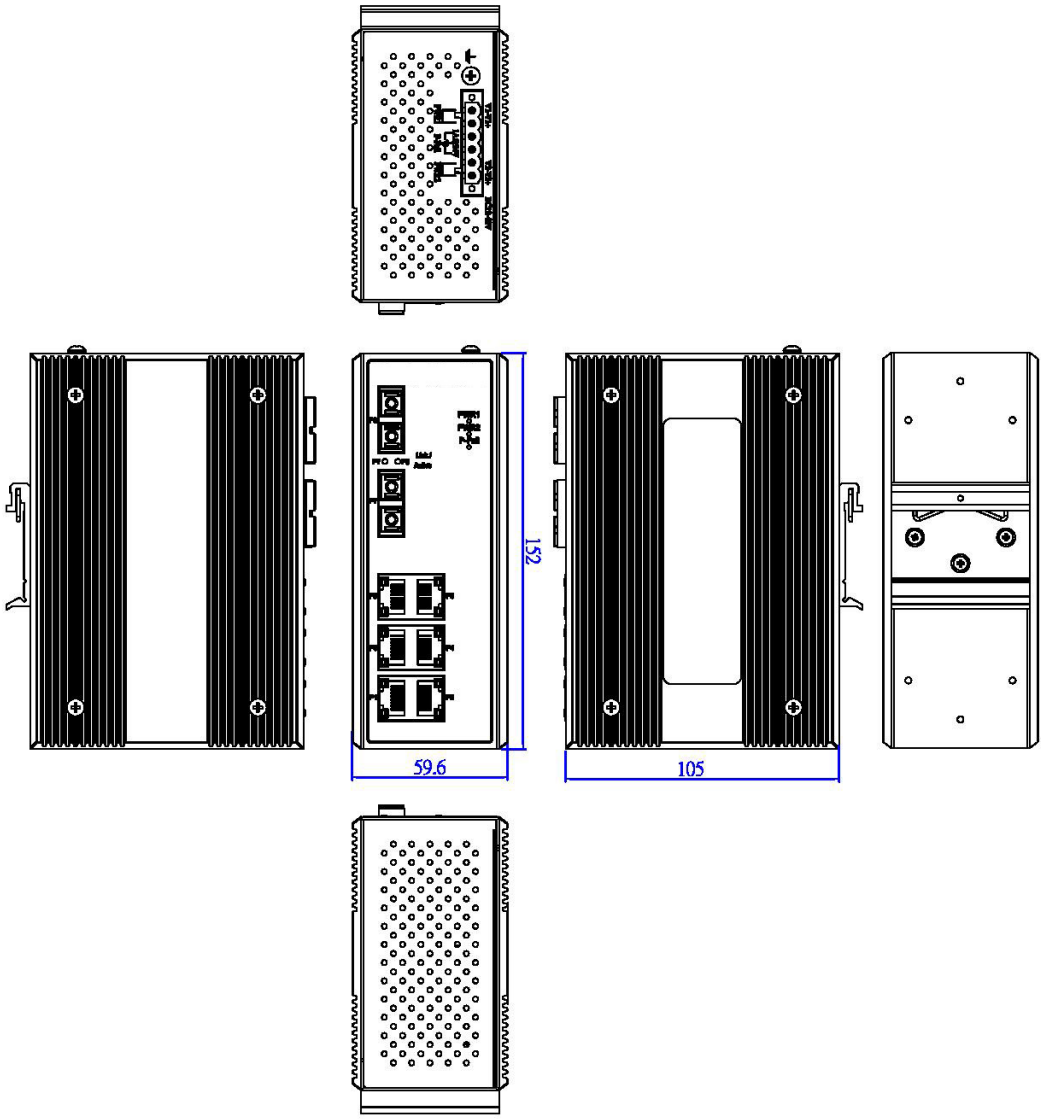
Compare the contents of the industrial switch with the standard checklist above. If any item is damaged or missing, please contact the local dealer for service.

Hardware Description

In this paragraph, it will describe the Industrial switch's hardware spec, port, cabling information, and wiring installation.

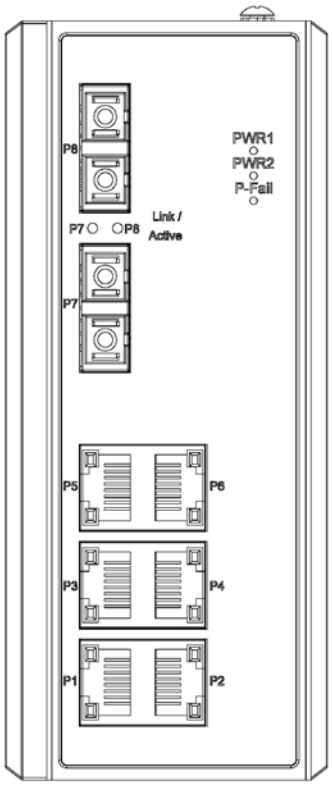
Physical Dimension

6 10/100/1000TX + 2G fiber industrial switch dimension (W x D x H) is 59.6mm x 105mm x 152mm



Front Panel

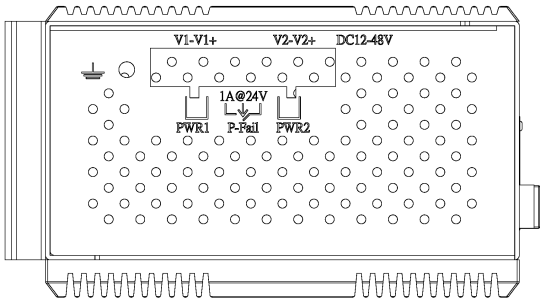
The Front Panel of the 6 10/100/1000TX +2G fiber industrial switch is shown as below:



Front Panel of the industrial switch

Top View

The top panel of the 6 10/100/1000TX + 2G fiber industrial switch has one terminal block connector of two DC power inputs.



Top Panel of the industrial switch

LED Indicators

There are diagnostic LED indicators located on the front panel of the industrial switch. They provide real-time information of system and optional status. The following table provides description of the LED status and their meanings for the switch.

LED	Status	Description
Per Unit		
PWR1(Green)	On	Power input 1 is active
	Off	Power input 1 is inactive
	BLK	--
PWR2(Green)	On	Power input 2 is active
	Off	Power input 2 is inactive
	BLK	--
P-FAIL(Red)	On	Power1/Power2 is inactive
	Off	Power1 and Power2 are both active, or no power input
	BLK	--
Link/Active for Fiber(Green)	On	Link up
	Off	Link down
	BLK	Transmitting
Per Port		
Link/Active(Green)	On	Link up
	Off	Link down
	BLK	Transmitting
Speed(Green)	On	1000Mbps

	Off	100Mbps
	BLK	--

Green Ethernet

The 6 10/100/1000TX + 2G fiber industrial switch has a special function. The switch will automatically detect Ethernet ports status and Cable Length and adjust power efficiency.

Below table shows 6 10/100/1000TX + 2G fiber industrial switch power consumption.

Link Up: Cable Length 20m	
Green power (off/on)	Consumption (Watts)
OFF	6.9
ON	5.85
Gap	0.34
Saving %	5.49%

Hardware Installation

In this paragraph, we will describe how to install the 6 10/100/1000TX + 2G fiber industrial switch and the installation points to be attended to it.

Installation Steps

1. Unpack the Industrial switch
2. Check if the DIN-Rail is screwed on the Industrial switch or not. If the DIN-Rail is not screwed on the Industrial switch, please refer to **DIN-Rail Mounting** section for DIN-Rail installation. If user wants to wall mount the Industrial switch, then please refer to **Wall Mount Plate Mounting** section for wall mount plate installation.
3. To hang the Industrial switch on the DIN-Rail track or wall, please refer to the **Mounting Installation** section.
4. Power on the Industrial switch. Please refer to the **Wiring the Power Inputs** section for knowing the information about how to wire the power. The power LED on the Industrial switch will light up. Please refer to the **LED Indicators** section for indication of LED lights.
5. Prepare the twisted-pair, straight through Category 5e cable for Ethernet connection.
6. Insert one side of RJ-45 cable (category 5e) into the Industrial switch Ethernet port (RJ-45 port) and another side of RJ-45 cable (category 5e) to the network device's Ethernet port (RJ-45 port), e.g. Switch, PC or Server. The UTP port (RJ-45) LED on the industrial switch will light up when the cable is connected with the network device. Please refer to the **LED Indicators** section for LED light indication.
7. When all connections are set and LED lights all show in normal, the installation is complete.

Cabling

- Using four twisted-pair, Category 5e cabling for RJ-45 port connection. The cable between the converter and the link partner (switch, hub, workstation, etc.) must be

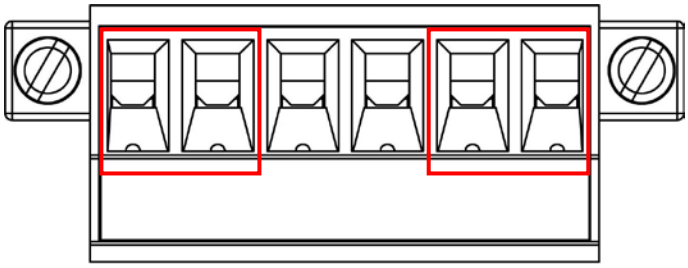
less than 100 meters (328 ft.) long.

- 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 **10 Kilometers**.
- Fiber segment using **multi-mode** connector type must use 50/125 or 62.5/125 μm multi-mode fiber cable. User can connect two devices up to **550m** distances.

Wiring the Power Inputs

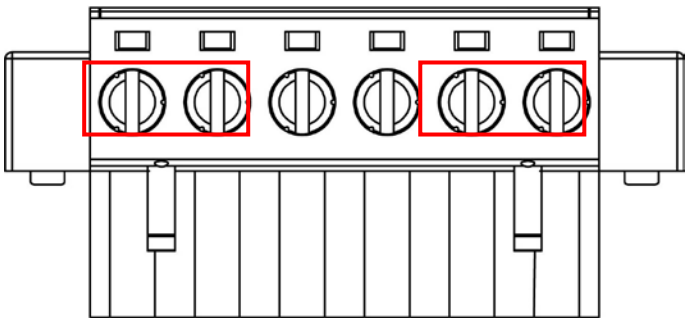
Please follow the steps below to wire the power cord which from the other compliant external DC power supplier.

1. Insert the positive and negative wires into the **PWR1 (V1+, V1-)** and **PWR2 (V2+, V2-)** contacts on the terminal block connector as shown in below



Terminal Block Front View for Power1 & Power2 Contact

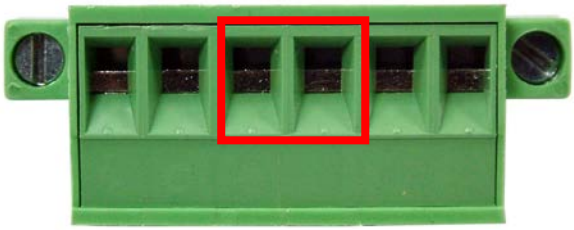
2. Tighten the wire-clamp screws which as shown in below for preventing the wires from loosing.



Terminal Block Top View

Wiring the P-Fail Alarm Contact

The P-Fail alarm contact is in the middle of terminal block connector as the picture shows below. Inserting the wires, will detect the P-Fail status including power failure or *port link failure (managed industrial switch only)* and from a ***Normally Close*** circuit. Please refer to the diagrams below for the P-Fail alarm contact, and the application example for the P-Fail alarm operation.

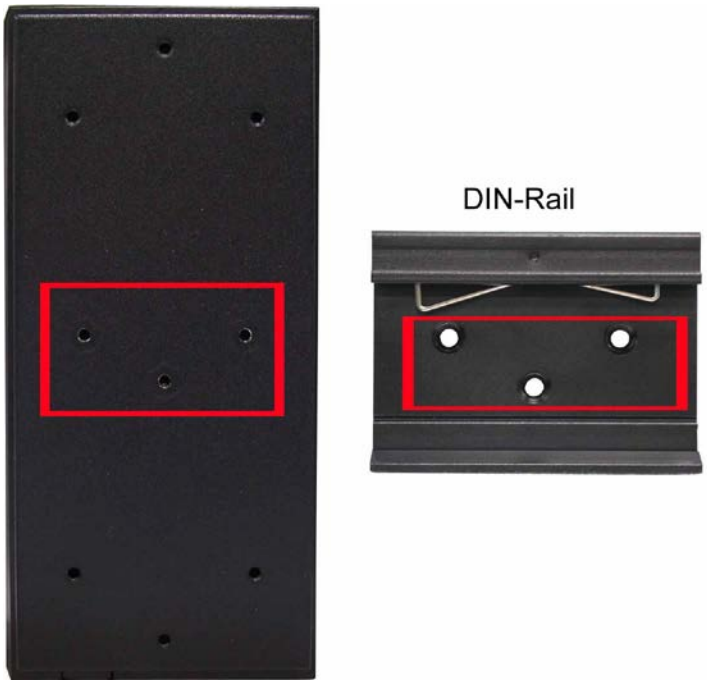


Insert the wires into the P-Fail alarm contact.

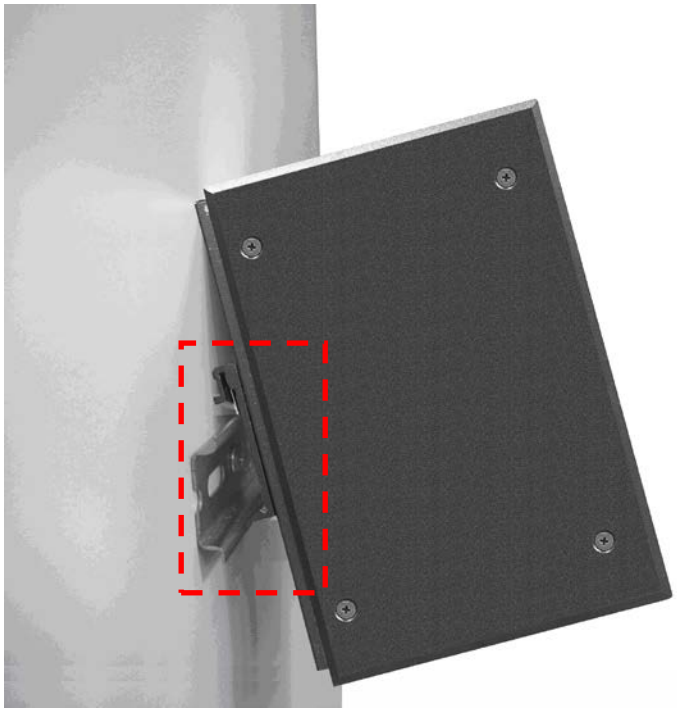
Note *The wire gauge for the terminal block should be in the range between 12~ 24 AWG.*

DIN-Rail Mounting

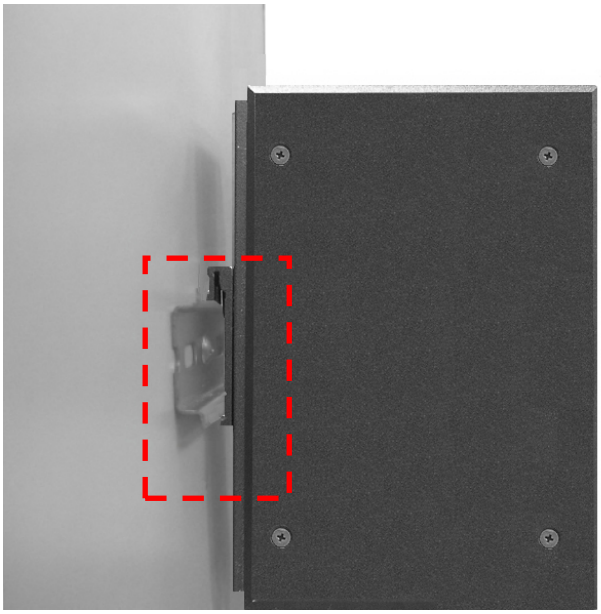
The DIN-Rail is screwed on the industrial switch when out of factory. If the DIN-Rail is not screwed on the industrial switch, please see the following pictures to screw the DIN-Rail on the switch. Follow the steps below to hang the industrial switch.



1. First, insert the top of DIN-Rail into the track.



2. Then, lightly push the DIN-Rail into the track.

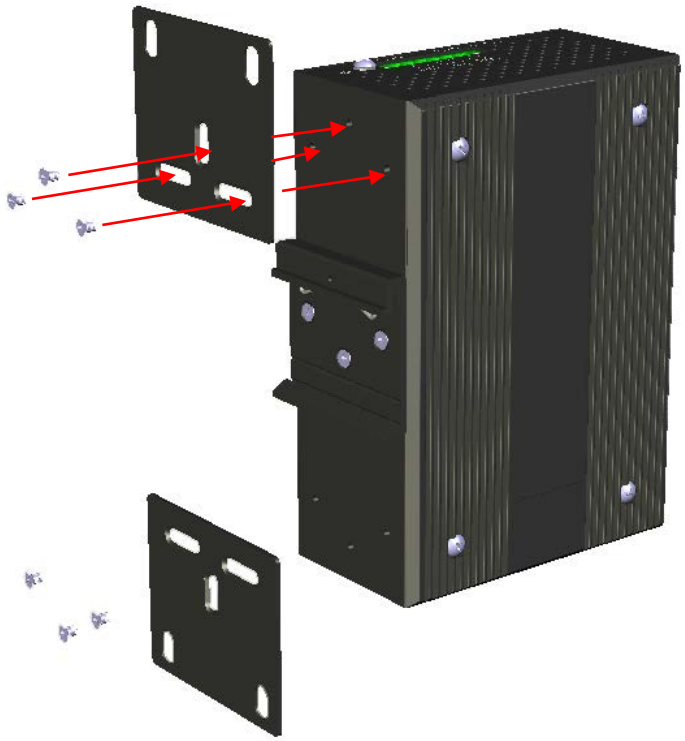


3. Check if the DIN-Rail is tightened on the track or not.
4. To remove the industrial switch from the track, reverse steps above.

Wall Mount Plate Mounting

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

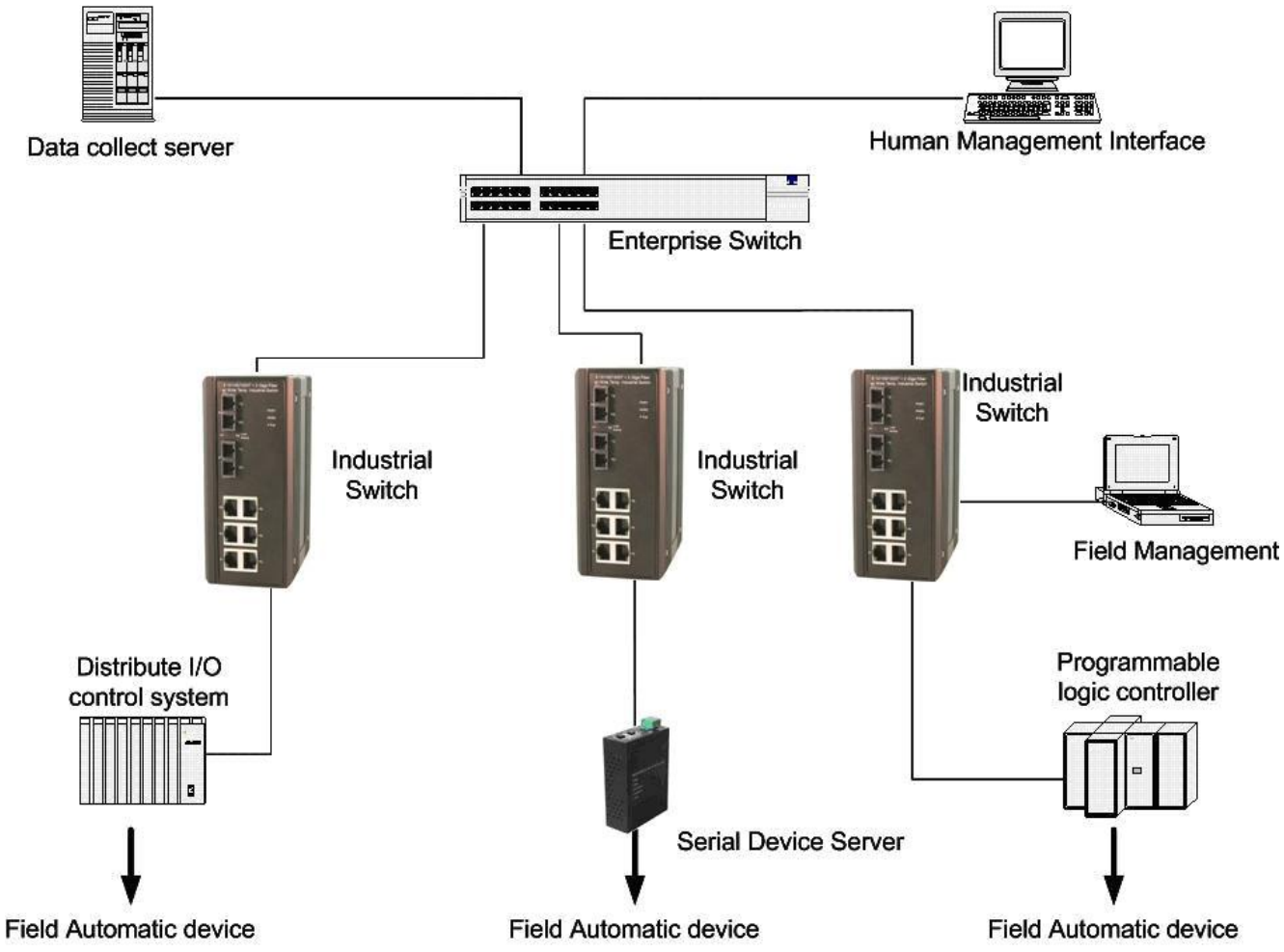
1. Remove the DIN-Rail from the industrial switch; loose the screws to remove the DIN-Rail.
2. Place the wall mount plate on the rear panel of the industrial switch.
3. Use the screws to screw the wall mount plate on the industrial switch.
4. Use the hook holes at the corners of the wall mount plate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



Use screws to screw the wall mount plate on the rear side

Network Application

This chapter provides some sample applications to help user to have more actual idea of industrial switch function application. A sample application of the industrial switch is shown as below.



Troubles shooting

- Verify that is using the right power cord/adapter (DC 12-48V), please don't use the power adapter with DC output higher than 48V, or it will burn this converter down.
- Select the proper UTP cable to construct user network. Please check that is using the right cable. Use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable for RJ-45 connections: 100Ω Category 3, 4 or 5 cable for 10Mbps connections or 100Ω Category 5/5e cable for 100Mbps connections or 100Ω Category 5e/6 for 1000Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).
- **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 problems.
- If the power indicator does not light on 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 user 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 user system's Ethernet devices' configuration or status.