

# **KIEN1005 Industrial Ethernet Switch**

## **Hardware Installation Manual**

***KYLAND***

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## **KIEN1005 Industrial Ethernet Switch**

### **Hardware Installation Manual**

**Disclaimer:** Kyland Technology Co., Ltd. tries to keep the content of this manual as accurate and as updated as possible. This document is not guaranteed to be error-free, and we reserve the right to amend it without notice to users.

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## Notice for Safety Operation

The product performs reliably as long as it is used according to the guidance. Artificial damage or destruction of the device should be avoided. Before using the device, read this notice carefully for personal and equipment safety. Please keep the manual for further reference. Kyland is not liable to any personal or equipment damage caused by violation of this notice.

- Do not place the device near water sources or damp areas. Keep the ambient relative humidity within the range from 5% to 95% (non-condensing).
- Do not place the device in an environment with high magnetic field, strong shock, or high temperature. Keep the working and storage temperatures within the allowed range.
- Install and place the device securely and firmly.
- Please keep the device clean; if necessary, wipe it with soft cotton cloth.
- Do not place any irrelevant materials on the device or cables. Ensure adequate heat dissipation and tidy cable layout without knots.
- Wear antistatic gloves or take other protective measures when operating the device.
- Avoid any exposed metal wires because they may be oxidized or electrified.
- Install the device in accordance with related national and local regulations.
- Before power-on, make sure the power supply is within the allowed range of the device. Overhigh voltage may damage the device.
- Power connectors and other connectors should be firmly interconnected.
- Do not plug in or out the power supply with wet hands. When the device is powered on, do not touch the device or any parts with wet hands.
- Before operating a device connected to a power cable, remove all jewelries (such as rings, bracelets, watches, and necklaces) or any other metal objects, because they may cause electric shock or burns.
- Do not operate the device or connect or disconnect cables during lightning.
- Use compatible connectors and cables. If you are not sure, contact our sales or technical support personnel for confirmation.
- Do not disassemble the device by yourself. When an anomaly occurs, contact our sales or technical support personnel.
- If any part is lost, contact our sales or technical support personnel to purchase the substitute. Do not purchase parts from other channels.

- Dispose of the device in accordance with relevant national provisions, preventing environmental pollution.

In the following cases, please immediately shut down your power supply and contact your Kyland representative:

- Water gets into the equipment.
- Equipment damage or shell damage.
- Equipment operation or performance has abnormally changed.
- The equipment emits odor, smoke or abnormal noise.

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# 1 Product Overview

KIEN1005 includes a series of unmanaged 5-port industrial Ethernet switches developed by Kyland particularly for industrial applications. The series switches are applicable to harsh and hazardous industrial environments with reliable operation due to its high-performance switching engine, solid closed housing, low power consumption, fanless design, overcurrent, overvoltage, and EMC protection for power input, and sound EMC protection of RJ45 ports.

The series switches support both DIN rail and panel mounting. They provide up to four 10/100Base-T(X) Ethernet ports and one 100Base-FX Ethernet port, as listed in the following table.

Table 1 KIEN1005 Models

Model	Port		Power Supply
	100Base-FX Ethernet Port	10/100Base-T(X) Ethernet Port	
KIEN1005-1S/M-4T	1	4	12DCW, 220AC
KIEN1005-5T	--	5	(single power supply)



**Note:**

For the product information listed in this table, we reserve the right to amend it without notice to users.  
 To obtain the latest information, you can contact our sales or technical support personnel.

## 2 Structure and Interface



**Caution:**

To keep ports clean and ensure switch performance, you are advised to purchase the port dustproof shield (optional).

### 2.1 Front Panel

- Front Panel of KIEN1005-1S/M-4T

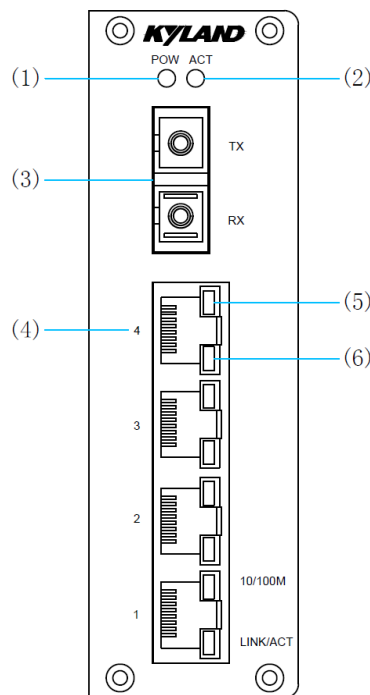


Figure 1 Front Panel of KIEN1005-1S/M-4T

Table 2 Description of the Front Panel of KIEN1005-1S/M-4T

No.	Identifier	Description
(1)	POW	Power LED
(2)	ACT	100Base-FX Ethernet port connection status LED
(3)	TX/RX	100Base-FX Ethernet port
(4)	1-4	10/100Base-T(X) Ethernet port
(5)	10/100M	10/100Base-T(X) Ethernet port speed LED (yellow)
(6)	LINK/ACT	10/100Base-T(X) Ethernet port connection status LED (green)

● Front Panel of KIEN1005-5T

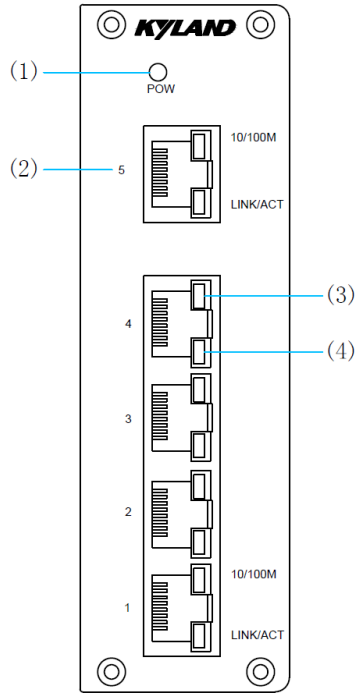


Figure 2 Front Panel of KIEN1005-5T

Table 3 Description of the Front Panel of KIEN1005-5T

No.	Identifier	Description
(1)	POW	Power LED
(2)	1-5	10/100Base-T(X) Ethernet port
(3)	10/100M	10/100Base-T(X) Ethernet port speed LED (yellow)
(4)	LINK/ACT	10/100Base-T(X) Ethernet port connection status LED (green)



## 2.2 Top Panel

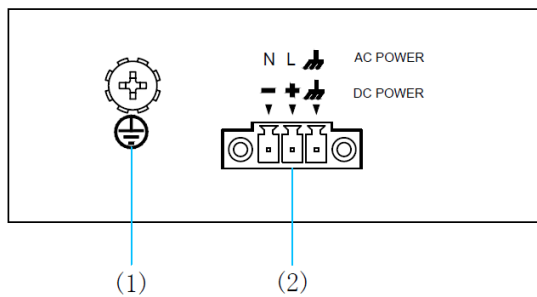





Figure 3 Top Panel of KIEN1005

Table 4 Description of the Top Panel of KIEN1005

No.	Identifier	Description
(1)		Grounding screw
(2)	N L  AC POWER - +  DC POWER v v v	Power terminal block

### 3 Mounting

#### 3.1 Dimension Drawing

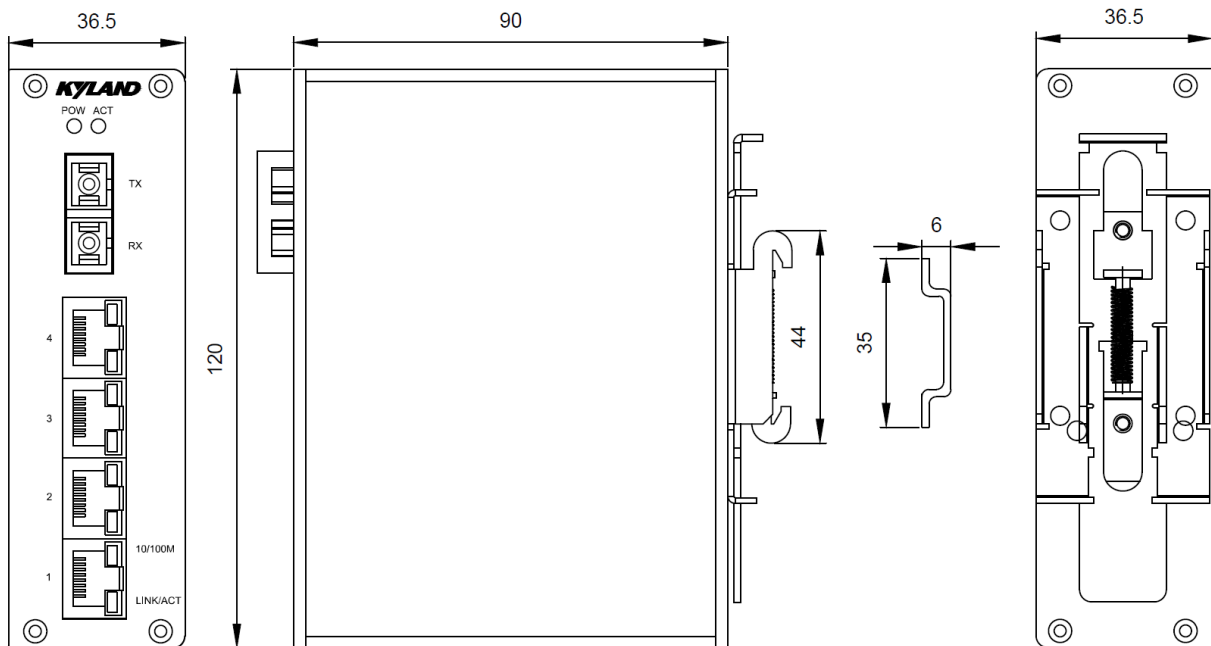


Figure 4 Dimensions for DIN-Rail Mounting 1 (unit: mm)

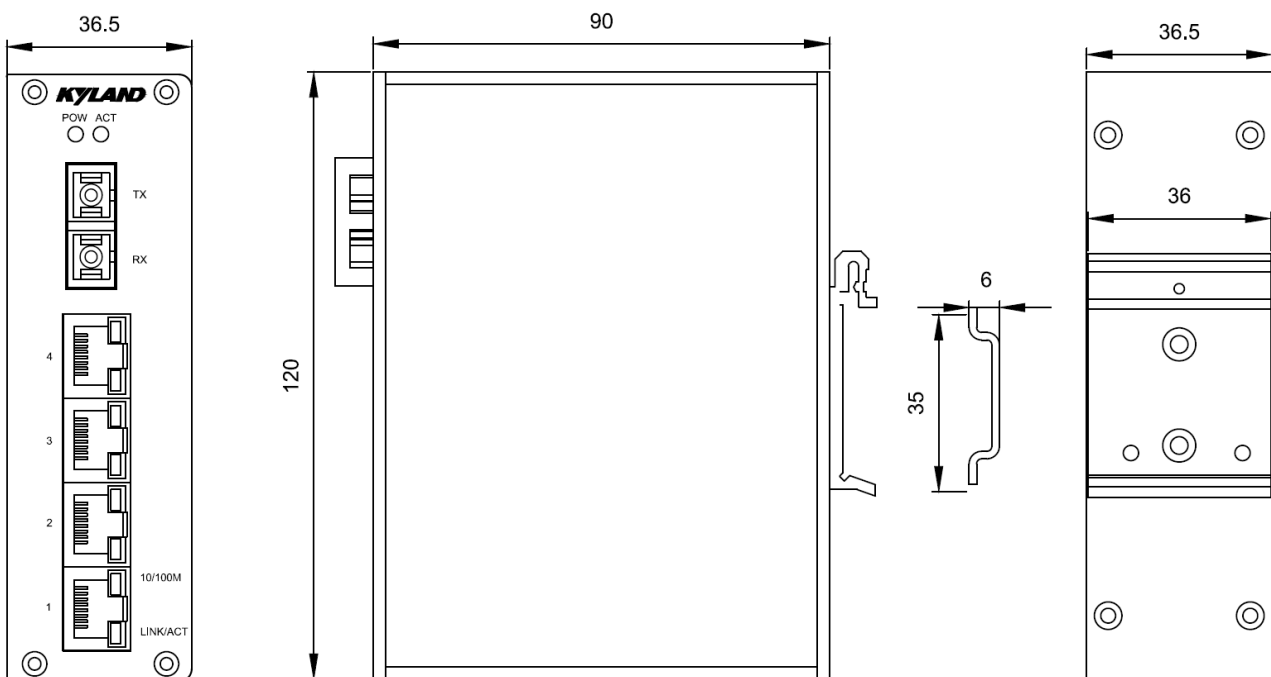


Figure 5 Dimensions for DIN-Rail Mounting 2 (unit: mm)

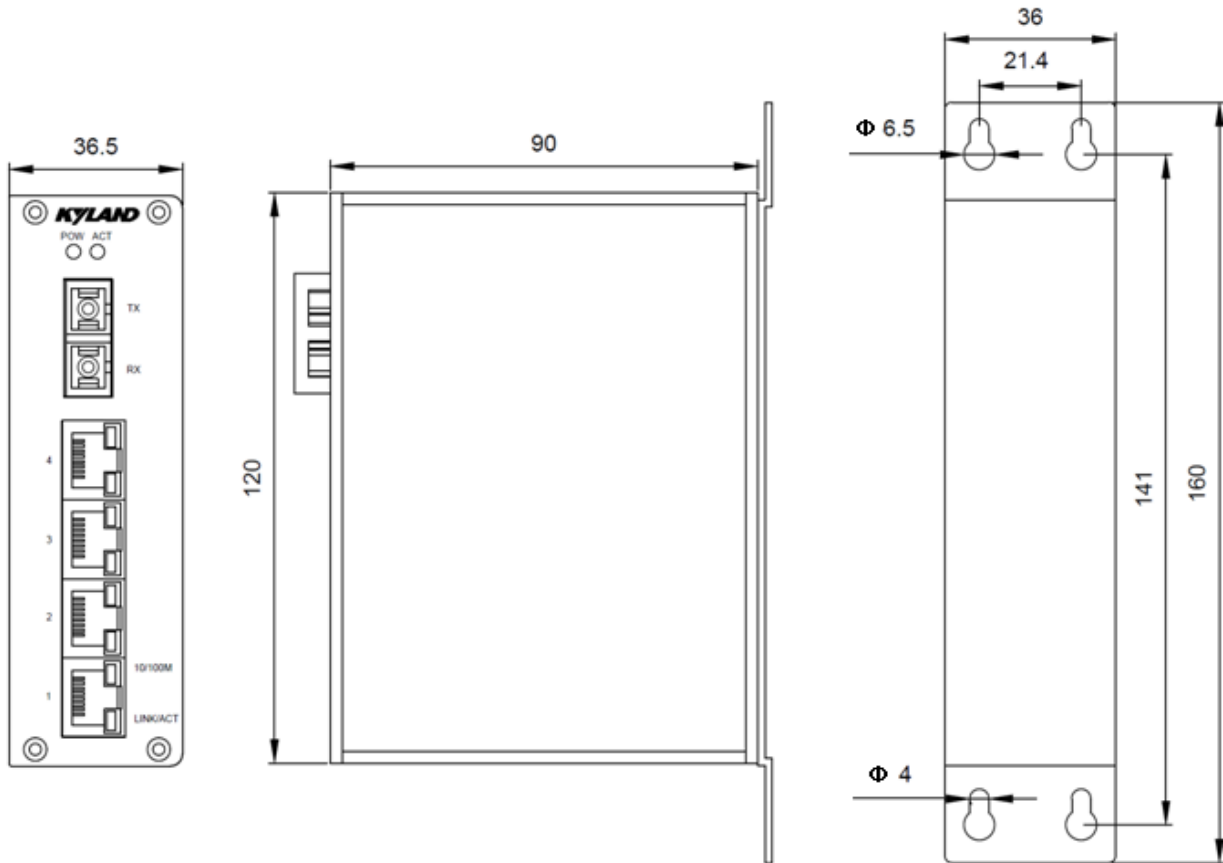


Figure 6 Dimensions for Panel Mounting (unit: mm)



**Caution:**

- The manual provides two dimensions for DIN-rail mounting. You can follow the dimension and related mounting steps according to the type of DIN rail in use.
- The figures in this manual are only for reference.
- As part of the heat dissipation system, the switch housing becomes hot during operation. Please use caution when coming in contact and avoid covering the switch housing when the switch is running.

### 3.2 Mounting Modes and Steps

The series switches support DIN rail and panel mounting. Before installation, make sure that the following requirements are met.

- 1) Environment: temperature (-40°C to 85°C), ambient relative humidity (5% to 95%, non-condensing)
- 2) Power requirement: The power input is within the voltage range of the switch.
- 3) Grounding resistance: <math><5\Omega</math>
- 4) No direct sunlight, distant from heat source and areas with strong electromagnetic interference.

### 3.2.1 DIN-Rail Mounting

- DIN-Rail Mounting 1

Step 1: Select the mounting position for the device and guarantee adequate space and heat dissipation for it (dimensions: 36.5mm×120mm×90mm).

Step 2: Insert the lower edge of the DIN rail into the bend of the lower hooks of the DIN rail connecting seat. Pull the device upward and move the device in direction 2 to insert the upper edge of the DIN rail into the bend of the upper hooks of the connecting seat. In this way, the device is mounted on the DIN rail, as shown in the following figure.

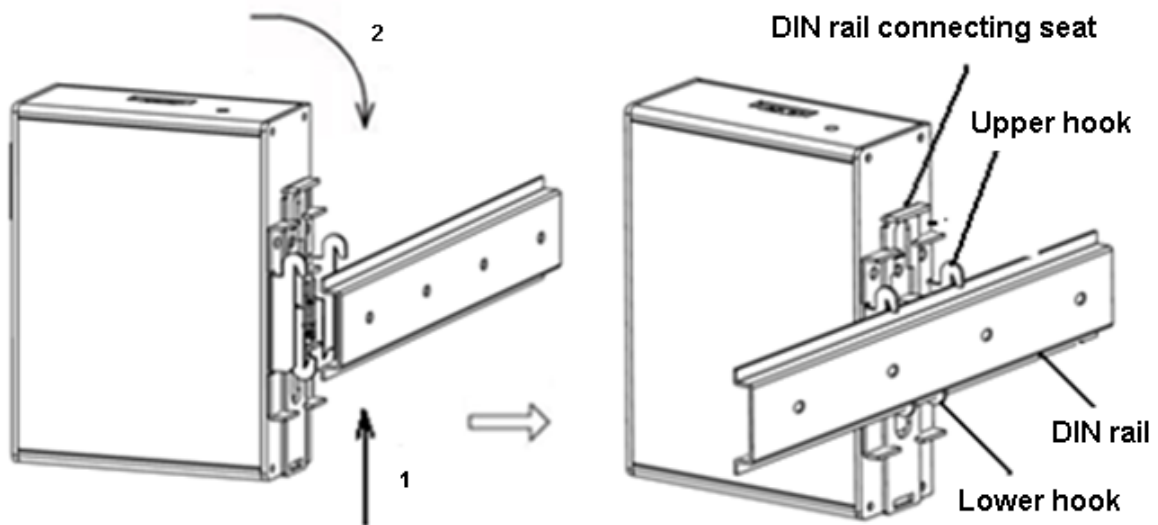


Figure 7 DIN-Rail Mounting 1

● **DIN Rail Dismounting 1**

Step 1: As shown in the following figure, pull the device upward and move it in direction 2 until the upper edge of the DIN rail is detached from the upper hooks of the connecting seat.

Step 2: Push the device downward until the DIN rail is removed from the connecting seat completely.

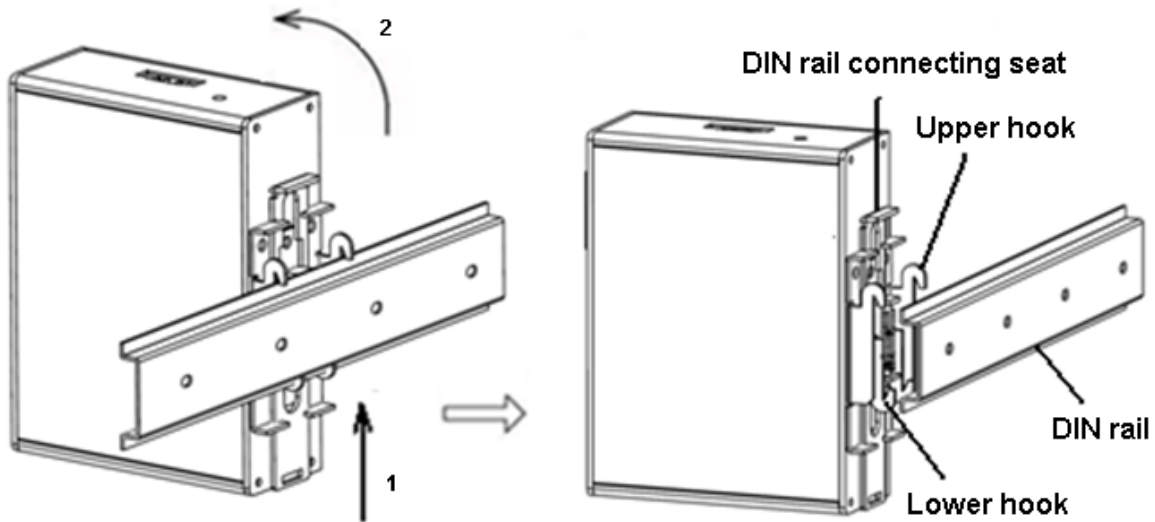


Figure 8 DIN-Rail Dismounting 1

● **DIN-Rail Mounting 2**

Step 1: Select the mounting position for the device and guarantee adequate space and heat dissipation for it (dimensions: 36.5mm×120mm×90mm).

Step 2: Insert the connecting seat onto the top of the DIN rail, and push the bottom of the device inward and upward to ensure the DIN rail fits in the connecting seat. Make sure the device is firmly installed on the DIN rail, as shown in the following figure.

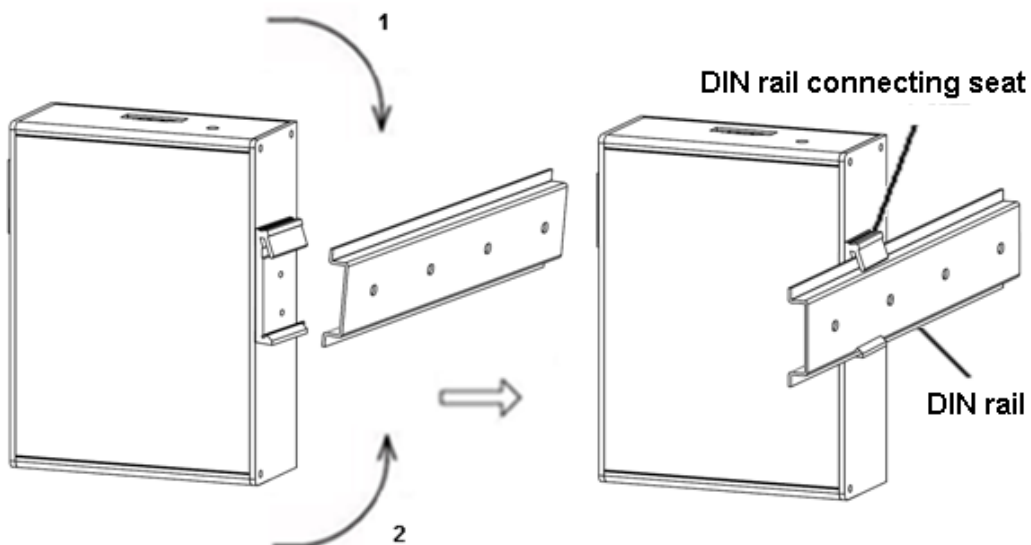


Figure 9 DIN-Rail Mounting 2

● DIN Rail Dismounting 2

Step 1: As shown in the following figure, press the device downward and move the device in direction 1 until the bottom of the device is detached from the DIN rail.

Step 2: Pull the device upward and move the device in direction 2 until the device is removed from the DIN rail completely.

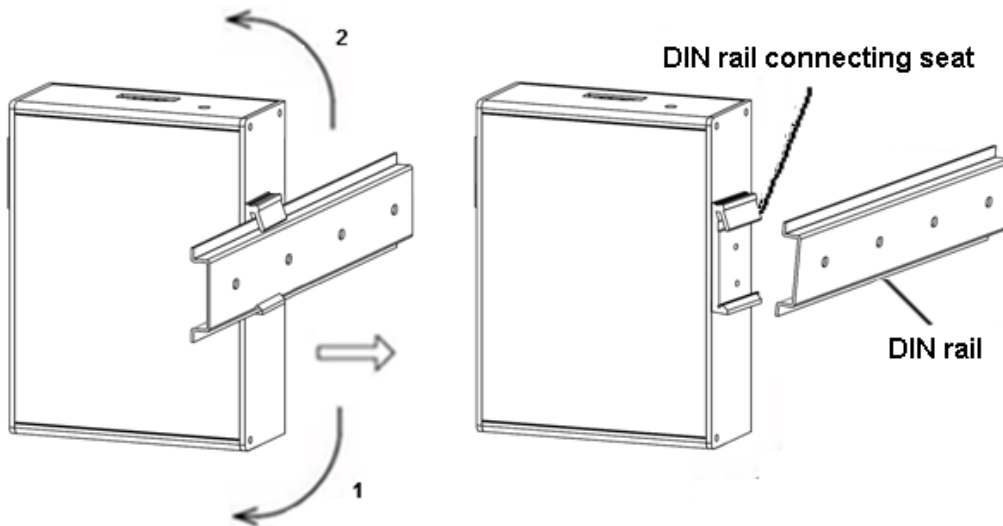


Figure 10 DIN Rail Dismounting 2

**3.2.2 Panel Mounting**



**Caution:**

To adopt panel mounting, you need to purchase the plate (optional) for panel mounting.

● Panel Mounting

Step 1: Use screws to secure the plate for panel mounting to the rear panel of the device.

Step 2: Select the mounting position (on a wall or inner wall of a cabinet) for the device and guarantee adequate space and heat dissipation for it (dimensions: 36.5mm×120mm×90mm).

Step 3: Punch four holes in the selected position according to the dimensions for panel mounting. Insert four screws into the four holes respectively, and turn the screws with a screwdriver until about a 5mm distance is left between each screw head and the wall.

Step 4: Align the four mounting holes on the plate for panel mounting with the four screws. Make the screws pass through the  $\Phi 6.5$  positions in the following figure. Move the device in direction 1 until the four screws are in the  $\Phi 4$  positions. Then tighten the screws.

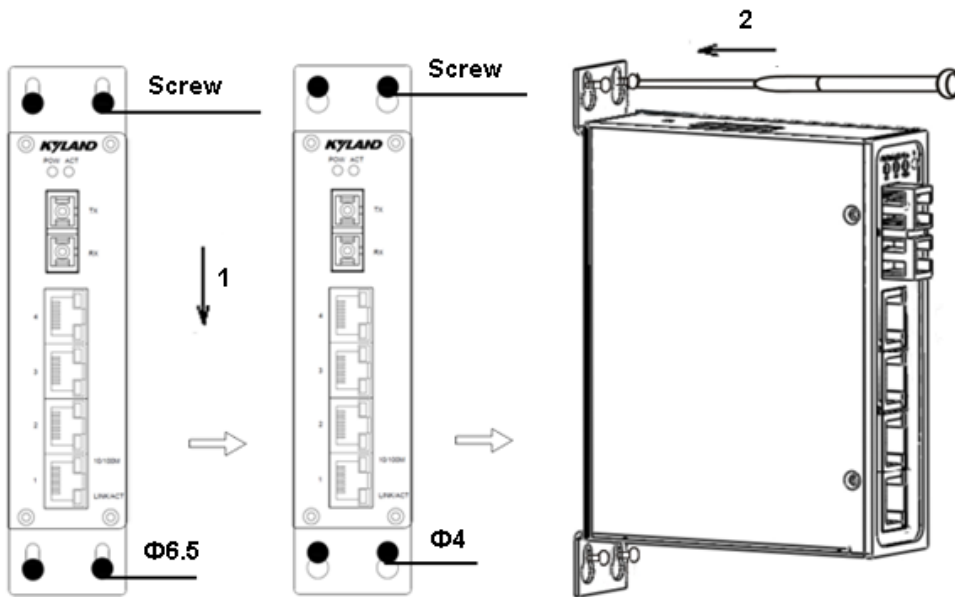


Figure 11 Panel Mounting

● Panel Dismounting

Step 1: Loosen the four screws with a screwdriver. Pull the device upward until the four screws are in the  $\Phi 6.5$  positions in the following figure. Then remove the plate for panel mounting from the four screws to detach the device from the wall or inner wall of the cabinet.

Step 2: Loosen the screws completely with a screwdriver. Remove them from the wall or inner wall of the cabinet. Then remove the plate for panel mounting from the rear panel to complete dismounting the device.

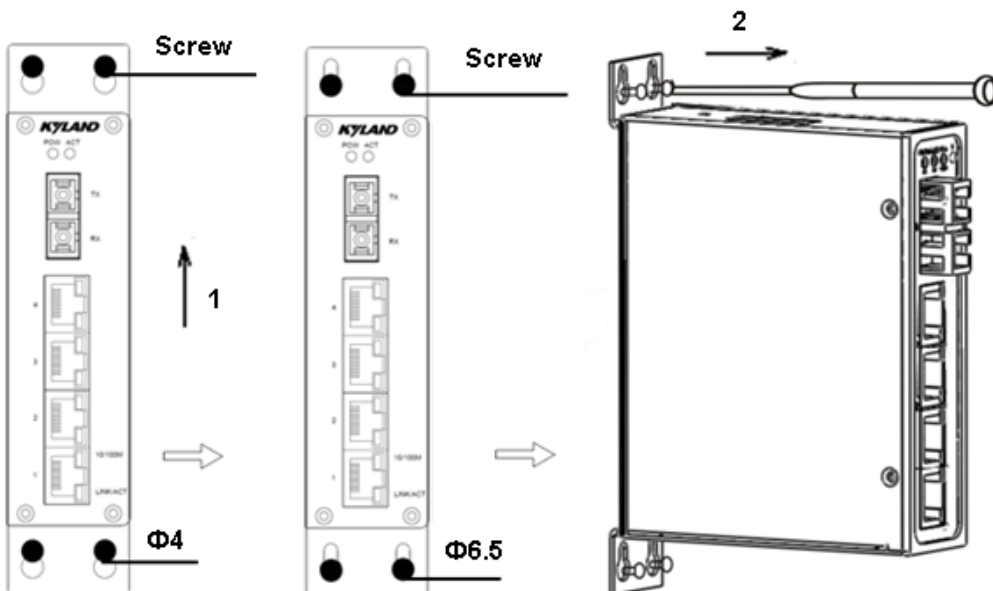


Figure 12 Panel Dismounting

## 4 Connection

### 4.1 10/100Base-T(X) Ethernet Port

10/100Base-T(X) Ethernet port is equipped with RJ45 connector. The port is self-adaptive. It can automatically configure itself to work in 10M or 100M state, full or half duplex mode. The port can also adapt to MDI or MDI-X connection automatically. You can connect the port to a terminal or network device with a straight-through or cross-over cable.

- Pin Definitions

The following figure shows the pin numbers of the RJ45 port.

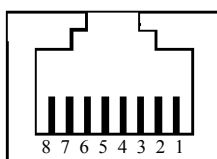


Figure 13 RJ45 Port

The following table lists the pin definitions of the 10/100Base-T(X) RJ45 port.

Table 5 Pin Definitions of 10/100Base-T(X) RJ45 Port

Pin	MDI-X Signal	MDI Signal
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-)
4, 5, 7, 8	Unused	Unused



**Note:**

"+" and "-" indicate level polarities.



● Wiring Sequence

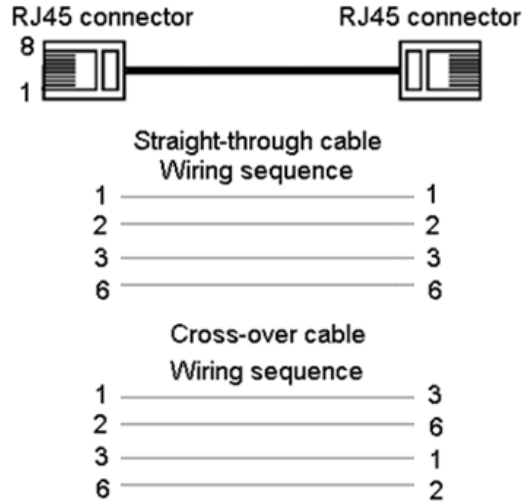


Figure 14 Connection Using Straight-through/Cross-over Cable



**Note:**

The color of the cable for RJ45 connector meets the 568B standard: 1-orange and white, 2-orange, 3-green and white, 4-blue, 5-blue and white, 6-green, 7-brown and white, and 8-brown.

**4.2 100Base-FX Ethernet Port**

100Base-FX Ethernet port is equipped with FC/ST/SC connector, and each port consists of TX (transmit) port and RX (receive) port. To enable data transmission between Device A and Device B, connect the TX (transmit) port of Device A to the RX (receive) port of Device B, and the RX (receive) port of Device A to the TX (transmit) port of Device B. The following figure shows the wiring sequence of the 100Base-FX Ethernet port. (The following uses an SC port as an example. The wiring sequence of an ST/FC port is the same with that of the SC port.)

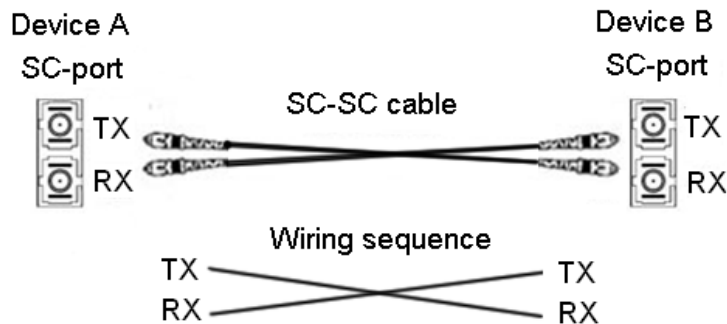


Figure 15 Connection of 100Base-FX Ethernet Port



**Caution:**

The device uses laser to transmit signals in fibers. The laser meets the requirements of level 1 laser products. Routine operation is not harmful to your eyes, but do not look directly at the fiber port when the device is powered on.

### 4.3 Grounding

Grounding protects the device from lightning and interference. Therefore, you must ground the device properly. You need to ground the device before it is powered on and disconnect the grounding cable after the device is powered off.

There is a grounding screw on the top panel of the switch. The screw is for chassis grounding. After crimping one end of the grounding cable to a cold pressed terminal, secure the end to the grounding screw and connect the other end to the earth firmly.

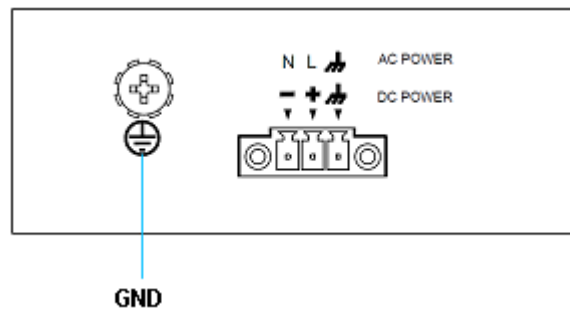


Figure 16 Grounding



**Note:**

Cross-sectional area of the chassis grounding cable > 2.5mm<sup>2</sup>; grounding resistance < 5Ω.

### 4.4 Power Terminal Block

There is a power terminal block on the top panel of the device. You need to connect the power wires to the terminal block to provide power for the device. The device supports single power supply with 3-pin 3.81mm-spacing plug-in terminal block.



**Note:**

0.75mm<sup>2</sup> < Cross-sectional area of the power wire < 2.5mm<sup>2</sup>; grounding resistance < 5Ω.

- 3-Pin 3.81mm-Spacing Plug-in Terminal Block

The following figure lists the pin definitions of the 3-pin 3.81mm-spacing plug-in terminal block.

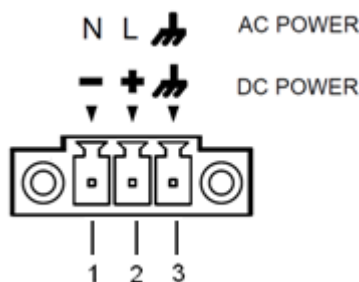


Figure 17 3-Pin 3.81mm-Spacing Plug-in Terminal Block (socket)

The following figure lists the pin definitions of the 3-pin 3.81mm-spacing plug-in terminal block.

Table 6 Pin Definitions of 3-Pin 3.81mm-Spacing Plug-in Terminal Block

No.	DC Definition	AC Definition
1	-	N
2	+	L
3	PGND	PGND

● **Wiring and Mounting**

Step 1: Ground the device properly according to section 4.3.

Step 2: Remove the power terminal block from the device.

Step 3: Insert the power wires into the power terminal block according to Table 6 and secure the wires.

Step 4: Insert the terminal block with the connected wires into the terminal block socket on the device.

Step 5: Connect the other end of the power wires to the external power supply system according to the power supply requirements of the device. View the status of the power LED. If the LED is on, the power is connected properly.

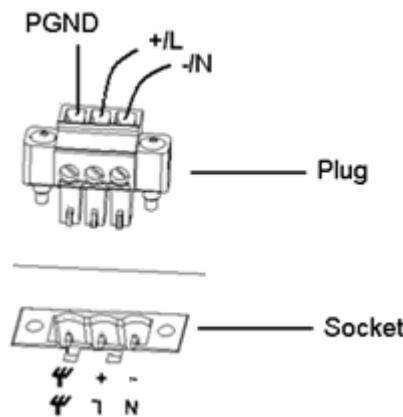


Figure 18 Connection of 3-Pin 3.81mm-Spacing Plug-in Terminal Block



**Caution:**

The switch supports 12DCW and 220AC power input. Before connecting the device to power supply, make sure that the power input meets the power requirement. If connected to an incorrect power input, the device may be damaged.

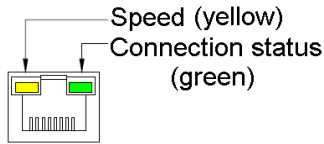


**Warning:**

- Do not touch any exposed conducting wire, terminal, or component with a voltage warning sign, because it may cause damage to humans.
- Do not remove any part or plug in or out any connector when the device is powered on.

## 5 LEDs

Table 7 Front Panel LEDs

LED	State	Description
Power LED	On	The device is connected to power supply and operates properly.
	Off	The device is not connected to power supply or operates abnormally.
100Base-FX Ethernet port connection status LED	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection
		
10/100Base-T(X) Ethernet port speed LED (yellow)	On	100M working state (100Base-TX)
	Off	10M working state (10Base-T) or no connection
10/100Base-T(X) Ethernet port connection status LED (green)	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection

## 6 Basic Features and Specifications

### Power Requirements

Power Identifier	Rated Voltage Range	Maximum Voltage Range
12DCW	12-24VDC	9-36VDC
220AC	100-240VAC, 50/60Hz	85-264VAC
Terminal block	3-pin 3.81mm-spacing plug-in terminal block	

### Rated Power Consumption

Rated power consumption	3.6W (MAX)
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### Physical Characteristics

Housing	Metal, fanless
Installation	DIN rail or panel mounting
Dimensions (W×H×D)	36.5mm×120mm×90mm (excluding the connector, DIN rail, and component for panel mounting)
Weight	0.3Kg

### Environmental Limits

Operating temperature	-40°C to +85°C
Storage temperature	-40°C to +85°C
Ambient relative humidity	5% to 95% (non-condensing)

### MTBF

MTBF	454,730 hours
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### Warranty

Warranty	5 years
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For more information about KYLAND products, please visit our website: <http://www.kyland.cn/>