

# **SICOM6000A Industrial Ethernet Switch**

## **Hardware Installation Manual**

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***KYLAND***

## **SICOM6000A 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 manual 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 a 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. High 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 jewelry (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 an electrical storm.
- 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.

The following information applies when operating this device in hazardous locations:

Suitable for use in Class I, Division 2, Groups A, B, C and D Hazardous Locations, or nonhazardous locations only.

Cet appareillage est utilisable dans les emplacements de Classe I, Division 2, Groupes A, B, C et D, ou dans les emplacements non dangereux seulement.

**WARNING: EXPLOSION HAZARD**

- Do not disconnect equipment while the circuit is live or unless the area is known to be free of ignitable concentrations.
- Substitution of any component may impair suitability for Class I, Division 2.

**AVERTISSEMENT: RISQUE D'EXPLOSION**

- Avant de deconnecter l'equipement, couper le courant ou s'assurer que l'emplacement est designe non dangereux.
- La substitution de composants peut rendre ce materiel inacceptable pour les emplacements de Classe I, Division 2.

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# 1 Product Overview

SICOM6000A includes a series of green low-consumption industrial Ethernet switches applicable to wind power, distribution network automation, subway PIS, power SCADA, petroleum and petrochemical, actory automation, intelligent transportation, rail transit, and many other industries.

The series switches provide Console port, and supports one-touch recovery, and network management through Web, Telnet, and console port.

SICOM6000A supports DIN rail mounting and panel mounting. It provides four 10/100/1000Base-T(X) Ethernet ports, and eight 10/100Base-T(X) Ethernet ports. For details, see the following table.

Table 1 Models

Models	SICOM6000A-Ports -PS1-PS2
Code definition	Code option
Ports: GX, S/M, T	4GE8T
	<p><b>Note:</b></p> <p>4GE8T: <i>Four 10/100/1000Base-T(X) RJ45 ports, eight 10/100/Base-T(X) RJ45 ports</i></p>
PS1-PS2: power input	H2-H2 (110VDC, redundant power input)



**Note:**

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

## 2 Structure and Interface



**Caution:**

It is recommended to purchase the port dustproof shield (optional) to keep ports clean and ensure device performance.

### 2.1 Front Panel

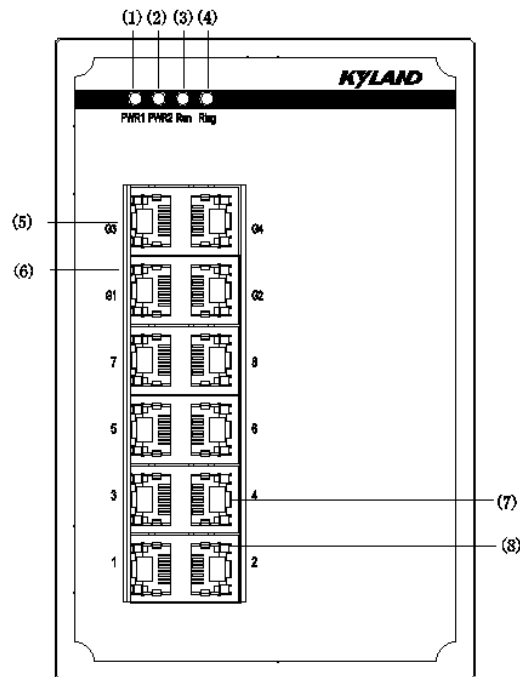


Figure 1 Front Panel

- (1) Power 1 LED      (2) Power 2 LED      (3) Running LED
- (4) Ring LED      (5) 10/100/1000 Base-T(X) Ethernet Port
- (6) 10/100/1000Base-T(X) Ethernet Port connection status LED (green)
- (7) 10/100Base-T(X) Ethernet Port
- (8) 10/100/1000Base-T(X) Ethernet Port connection status LED (green)

## 2.2 Top Panel

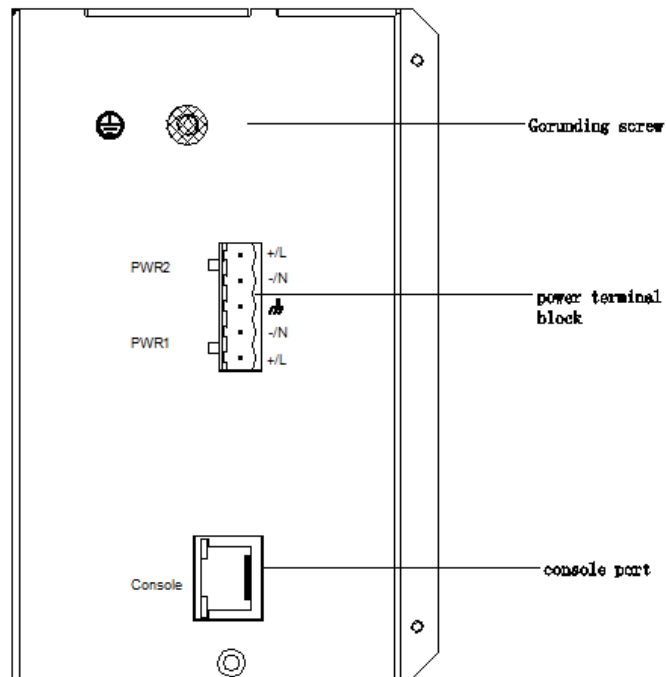


Figure 2 Top Panel



### 3 Mounting

#### 3.1 Dimension Drawing

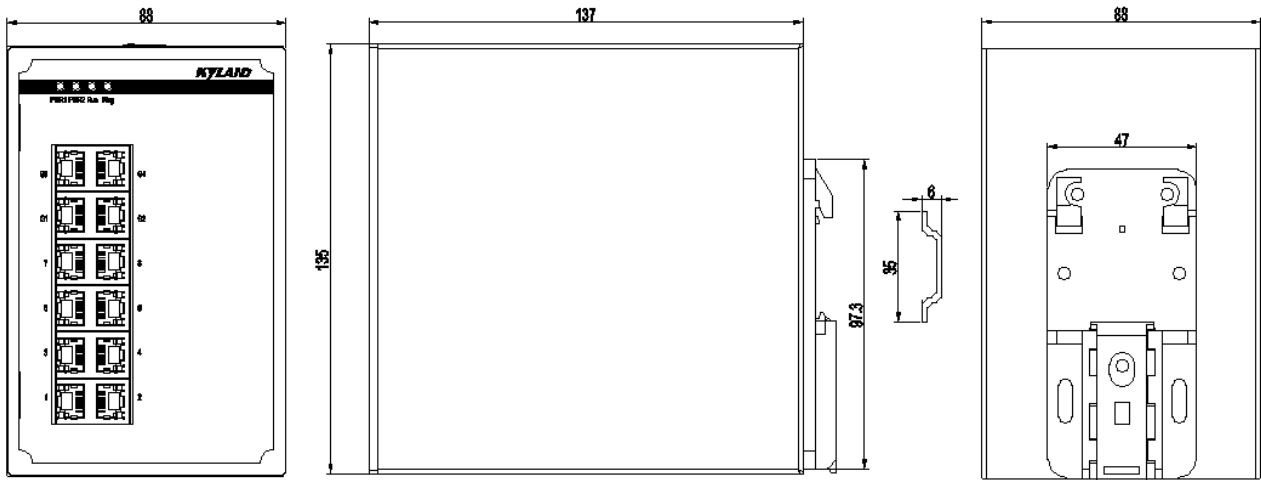


Figure 3 Dimensions for DIN-Rail Mounting (unit: mm)

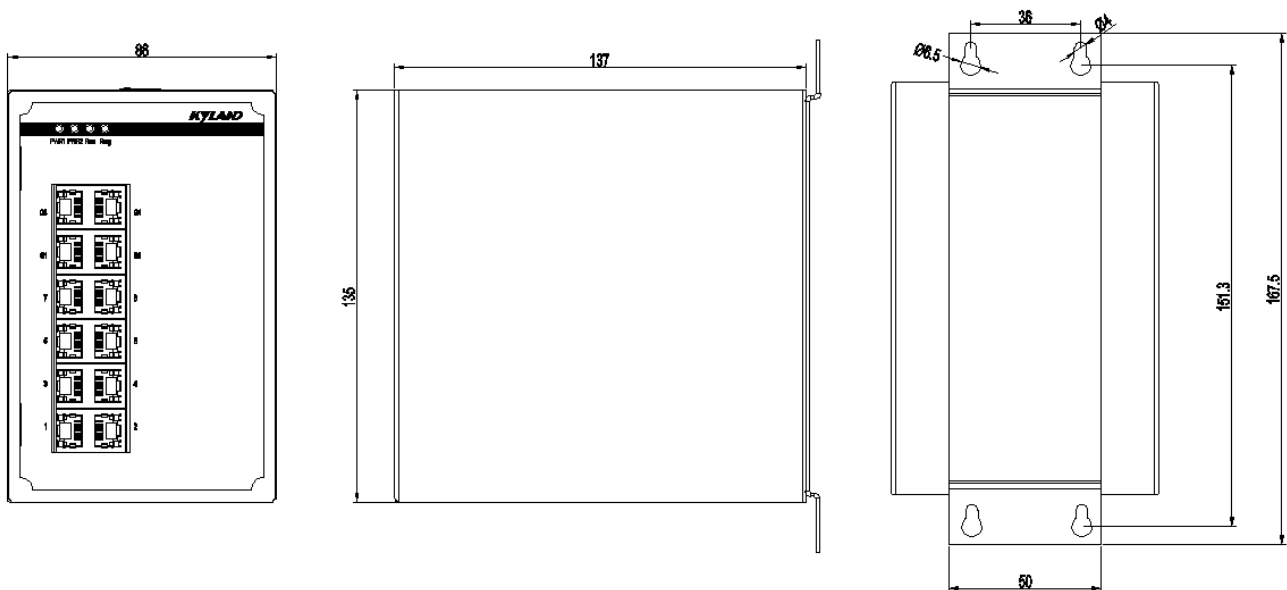


Figure 4 Dimensions for DIN-Rail Mounting (unit: mm)



**Caution:**

- 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.

- 
- The figures in this manual are only for reference.
- 

## **3.2 Mounting Modes and Steps**

The device supports both DIN-rail mounting and panel mounting. Before installation, make sure that the following requirements are met.

- 1) Environment: temperature (-40°C to 75°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:  $<5\Omega$
- 4) No direct sunlight, distant from heat source and areas with strong electromagnetic interference.
- 5) Devices are to be installed in an authority certified enclosure and accessible only by the use of a tool.
- 6) Devices should be installed and accessed by service personnel or users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.

### **3.2.1 DIN-Rail Mounting**

- DIN-Rail 1 Mounting

Step 1: Select the mounting position for the device and guarantee adequate space and heat dissipation.

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.

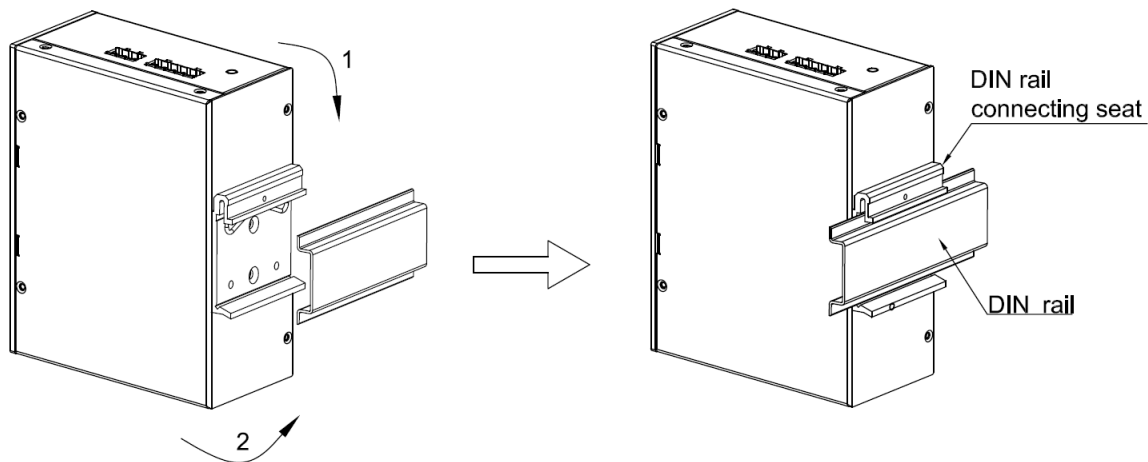


Figure 5 DIN-Rail 1 Mounting

● **DIN-Rail 1 Dismounting**

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.

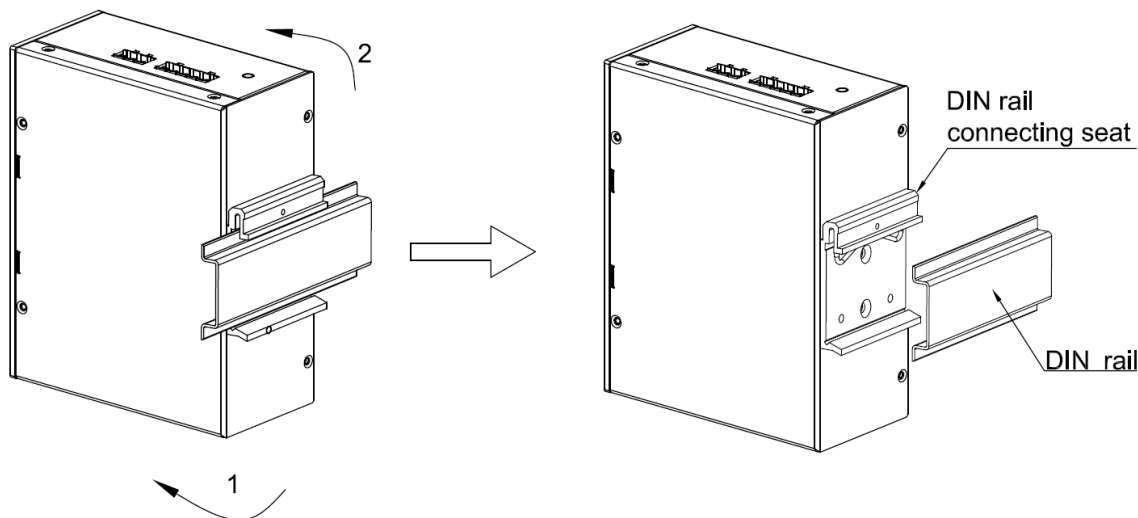


Figure 6 DIN-Rail 1 Dismounting

● **DIN-Rail 2 Mounting**

Step 1: Select the mounting position for the device and guarantee adequate space and heat dissipation.

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.

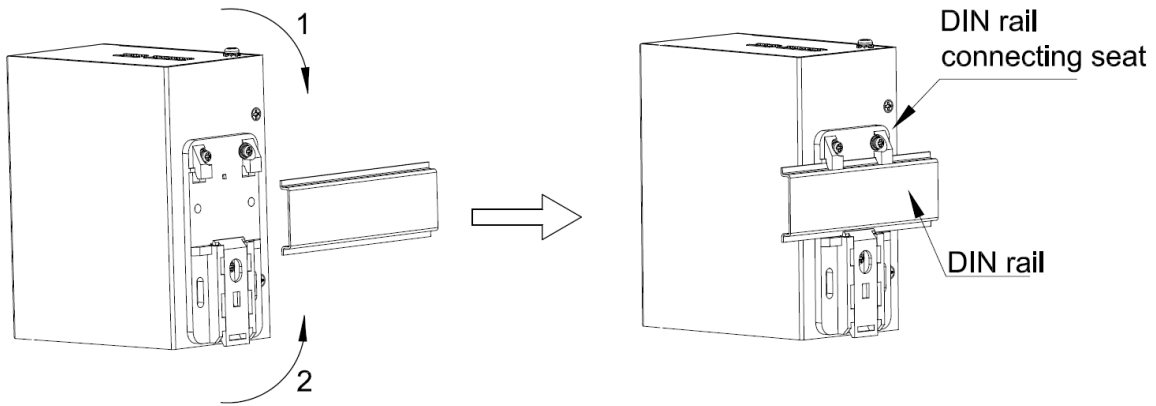


Figure 7 DIN-Rail 2 Mounting

● **DIN-Rail 2 Dismounting**

Step 1: Insert the head of a screwdriver into the opening of the spring locking piece at the bottom from the left. Lift the handle of the screwdriver to open the spring locking piece of the connecting seat, as shown on the left of the following figure.

Step 2: Move the device in direction 2 until the bottom of the device is detached from the DIN rail. Then move the device in direction 3 and uplift the device until the top of the connecting seat is detached from the DIN rail. In this way, the device is removed from the DIN rail completely.

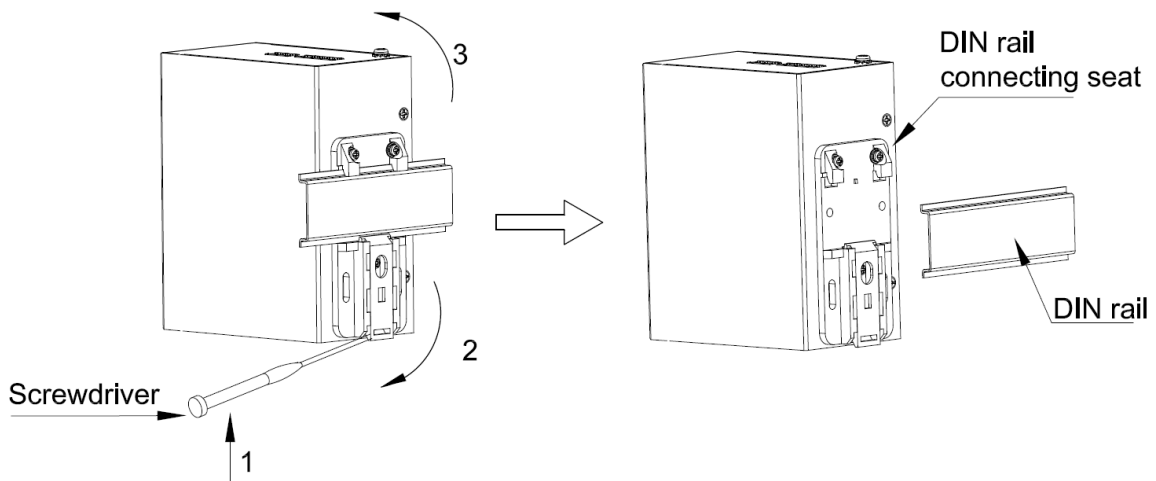


Figure 8 DIN-Rail 2 Dismounting

**3.2.2 Panel Mounting**



**Note:**

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

- Mounting

Step 1: Use screws to fix 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.

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 to complete mounting.

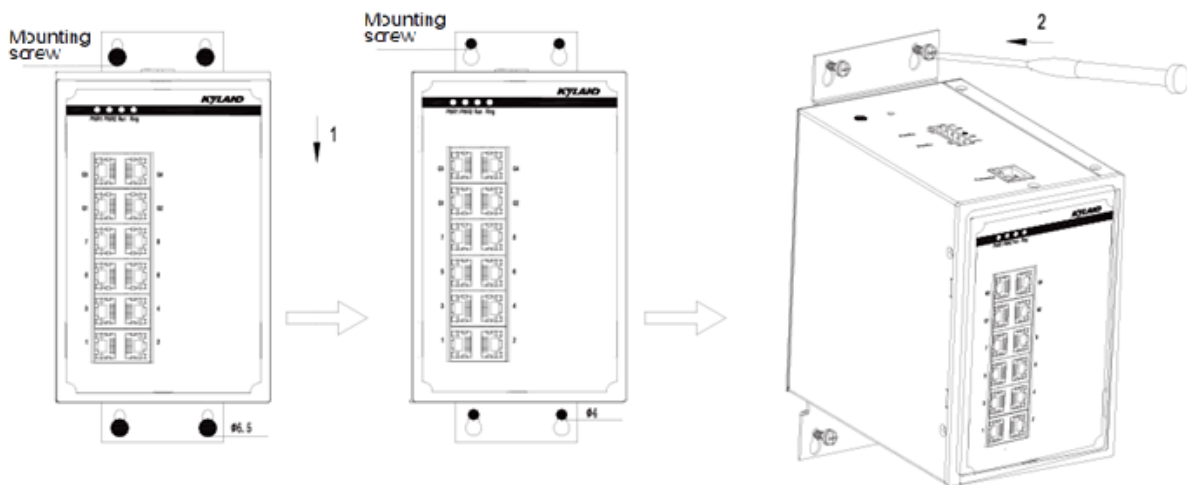


Figure 9 Panel Mounting

- Dismounting

Step 1: Loosen the four screws with a screwdriver. Move 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.

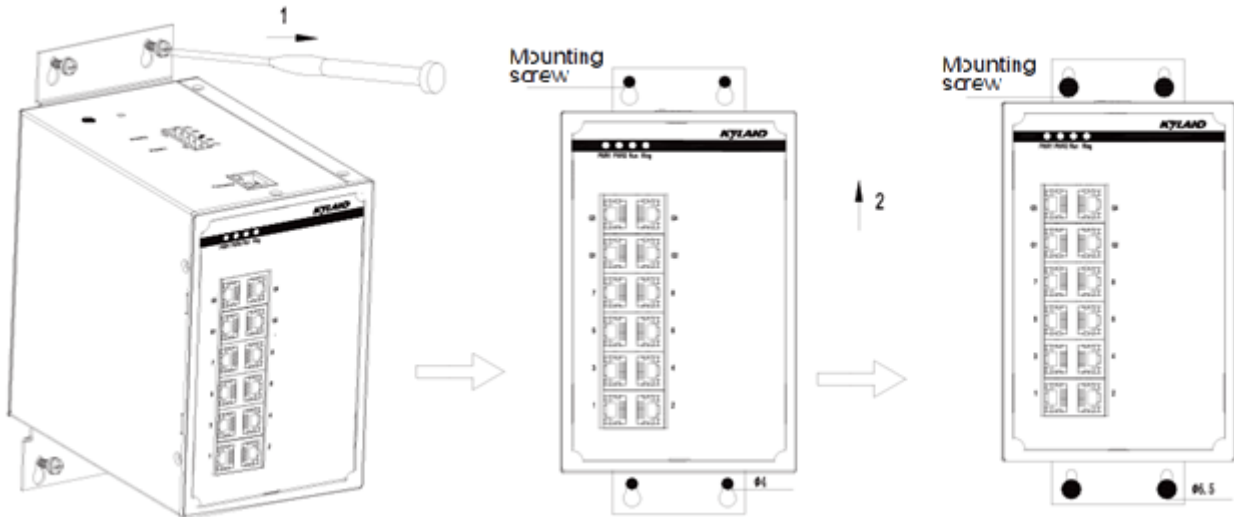


Figure 10 Panel Dismounting



**Caution:**

Cut off the power and disconnect all cables before mounting, dismounting or moving the equipment.

## 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 Definition

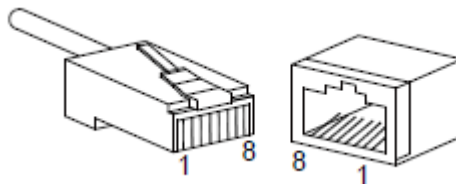



Figure 11 RJ45 Port

Table 2 Pin Definitions of 10/100Base-T(X) Ethernet 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
 <b>Note:</b> "+" and "-" indicate level polarities.		

- Wiring Sequence

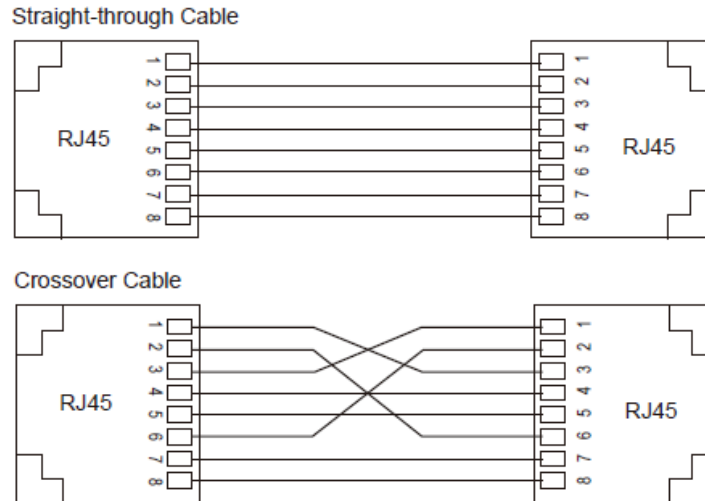


Figure 12 Connection Using Straight-through/Cross-over Cable



**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 10/100/1000Base-T(X) Ethernet Port

10/100/1000Base-T(X) Ethernet port is equipped with RJ45 connector. The port is self-adaptive. It can automatically configure itself to work in 10M, 100M, or 1000M 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 Definition

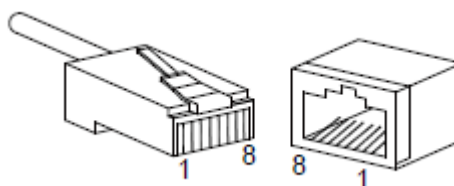


Figure 13 RJ45 Port

Table 1 Pin Definitions of 10/100/1000Base-T(X) RJ45 Port

Pin	MDI-X	MDI
-----	-------	-----



1	Transmit/Receive Data (TRD1+)	Transmit/Receive Data (TRD0+)
2	Transmit/Receive Data (TRD1-)	Transmit/Receive Data (TRD0-)
3	Transmit/Receive Data (TRD0+)	Transmit/Receive Data (TRD1+)
4	Transmit/Receive Data (TRD3+)	Transmit/Receive Data (TRD2+)
5	Transmit/Receive Data (TRD3-)	Transmit/Receive Data (TRD2-)
6	Transmit/Receive Data (TRD0-)	Transmit/Receive Data (TRD1-)
7	Transmit/Receive Data (TRD2+)	Transmit/Receive Data (TRD3+)
8	Transmit/Receive Data (TRD2-)	Transmit/Receive Data (TRD3-)



**Note:**

"+" and "-" indicate level polarities.

● Wiring Sequence

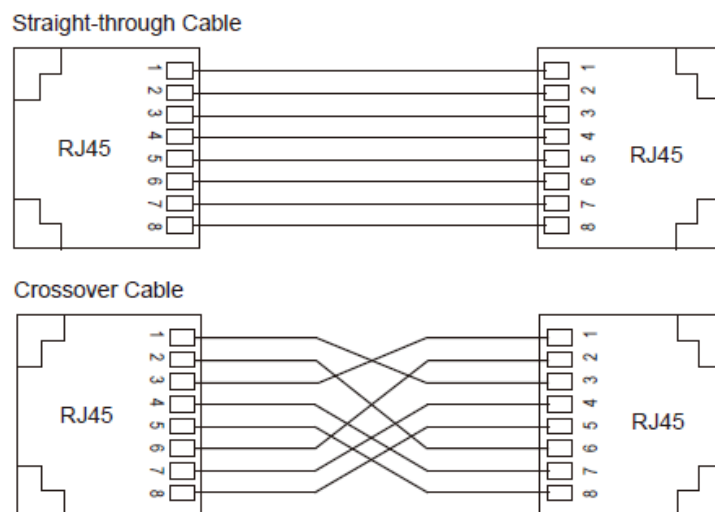


Figure 14 Connection Using Straight-through/Cross-over Cable



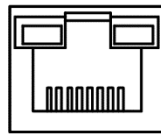
**Note:**

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.

**4.3 Console Port**

There is a Console port on the front panel of the switch, as shown in [错误!未找到引用源。](#). Connect the 9-pin serial port of a PC to the console port of the switch with a DB9-RJ45

console cable. You can configure, maintain, and manage the switch by running Hyper Terminal in the Windows OS of a computer.



Console

Figure 15 Console Port

- DB9-RJ45 Console Cable

One end of a DB9-RJ45 console cable is the DB9 connector to be inserted into the 9-pin serial port of a PC, and the other end is crimped RJ45 connector to be inserted into the console port of the switch.

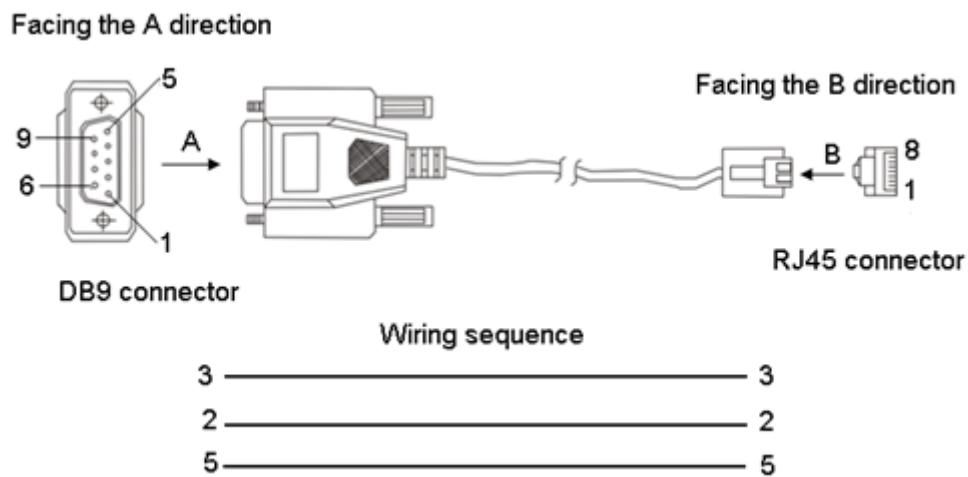


Figure 16 Wiring Sequence of DB9-RJ45 Console Cable

Table 2 Pin Definitions of DB9 Port (9-Pin Serial Port) and RJ45 Port (Console Port)

DB9 Port (9-Pin Serial Port)		RJ45 Port (Console Port)	
Pin	Signal	Pin	Signal
2	RXD (Receive data)	2	TXD (Transmit data)
3	TXD (Transmit data)	3	RXD (Receive data)
5	GND (Grounding)	5	GND (Grounding)

## 4.4 Grounding

Grounding protects the switch from lightning and interference. Therefore, you must ground the switch properly. You need to ground the switch before it is powered on and disconnect

the grounding cable after the switch is powered off.

The switch provides a grounding screw(see Figure 2) on the top panel 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.



**Note:**

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

### 4.5 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 to the device. The device supports redundant power input with a 5-pin 5.08mm-spacing plug-in terminal block. When one power input is faulty, the device can continue operating properly, thereby improving network reliability.



**Note:**

- 0.75mm<sup>2</sup> < Cross-sectional area of the power wire < 2.5mm<sup>2</sup>; grounding resistance < 5Ω.
- Use copper conductors only, temperature rating 75°C only.

- 5-Pin 5.08mm-Spacing Plug-in Terminal Block

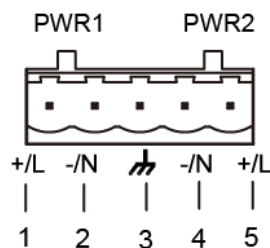


Figure 17 5-Pin 5.08mm-Spacing Plug-in Terminal Block (socket)

Table 3 Pin Definitions of 5-Pin 5.08mm-Spacing Plug-in Terminal Block

No.	Signal	DC Definition	AC Definition
1	+/L	PWR1: +	PWR1: L
2	-/N	PWR1: -	PWR1: N
3		PGND	PGND
4	-/N	PWR2: -	PWR2: N

5	+/L	PWR2: +	PWR2: L
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● **Wiring and Mounting**

Step 1: Ground the device properly according to section 4.4.

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

Step 3: Insert the power wires into the power terminal block according to Table 3 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 LEDs on the front panel. If the LEDs are on, the power is connected properly.

Wiring and Mounting should meet following specifications.

Table 4 Wiring and Mounting Specifications

Terminal Type	Required Torque	Wire Range (AWG)
Terminal Block Plug	4.5-5.0 lb-in	12-24



**Caution:**

- 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.
- To comply with UL restrictions, this equipment must be powered from a source compliant with Class 2.

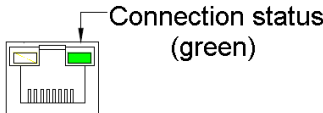


**Warning:**

- 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 5 Front Panel LEDs

LED	State	Description
Power 1 LED	On	Power 1 is connected and operates properly.
	Off	Power 1 is not connected or operates abnormally.
Power 2 LED	On	Power 2 is connected and operates properly.
	Off	Power 2 is not connected or operates abnormally.
Running LED	Blinking	The CPU operates properly.
	On	The CPU is starting up.
	Off	The CPU does not start up.
Ring LED	On	Master (DT-Ring mode)/Root (DRP mode)
	Blinking	Slave (DT-Ring mode)/B-Root or Normal (DRP mode)
	Off	No ring
		
Ethernet port connection status LED (green)	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection

## 6 Switch Access

You can access the switch in any of the following ways:

### 6.1 Access through Console Port

Step 1: Connect the console port of the switch to the 9-pin serial port of a PC with the delivered DB9-RJ45 console cable.

Step 2: Open the Hyper Terminal in the Windows OS. On the desktop, click Start → All Programs → Accessories → Communications → Hyper Terminal.

Step 3: Create a connection "Switch", as shown in Figure 18.



Figure 18 Creating a Connection

Step 4: Connect the communication port in use, as shown in Figure 19.



Figure 19 Selecting the Communication Port in Use



**Note:**

To confirm the communication port in use, right-click [My Computer] and click [Property]→[Hardware]→[Device Manager]→[Port] to view the communication port.

Step 5: Set port parameters (Bits per second: 9600, Data bits: 8, Parity: None, Stop bits: 1, and Flow control: None), as shown in Figure 20.

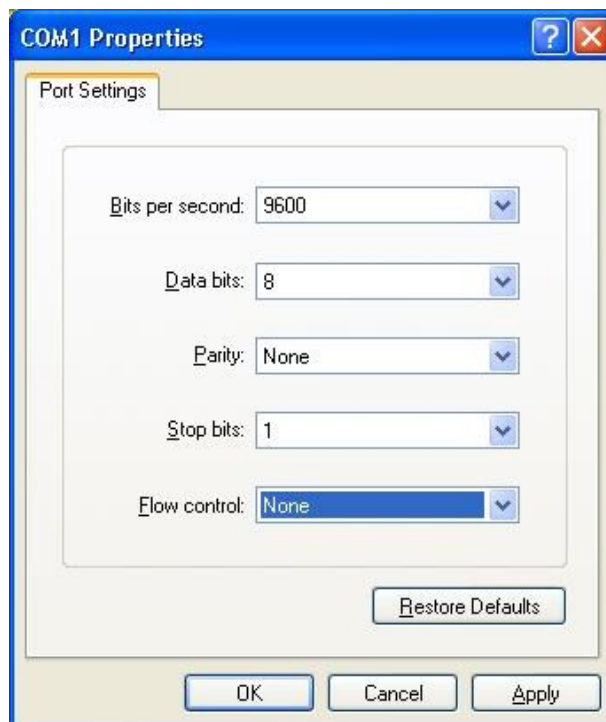


Figure 20 Setting Port Parameters

Step 6: Click OK to enter the switch CLI. Then you can run the following commands to perform

operations.

Table 3 CLI Commands

View	Command	Description
User view	SWITCH>enable	Enter the management view.
Management view	SWITCH#show interface	Query the IP address of the switch.
Management view	SWITCH#show version	Query the version of the switch.
Management view	SWITCH#reboot	Restart the switch.
Management view	SWITCH#load default	Restore the factory default settings
Management view	SWITCH#config terminal	Enter the configuration view.

## 6.2 Access through Telnet

Step 1: Connect the network port of a PC to the Ethernet port of the switch with a network cable.

Step 2: On the Windows desktop, click Start and Run. The Run dialog box is displayed. Enter "telnet *IP address*". For example, if the IP address of the device is 192.168.0.2 (default IP address of the device), enter "telnet 192.168.0.2" in the dialog box.

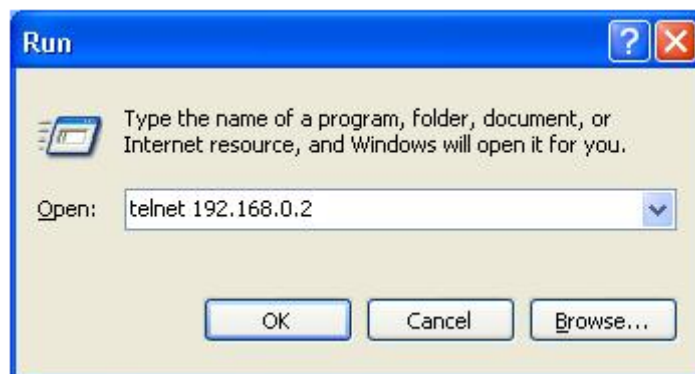


Figure 21 Access through Telnet

Step 3: Click OK. The Telnet CLI is displayed. Then you can run the commands in [错误!未找到引用源。](#) to perform operations.

## 6.3 Access through Web

Step 1: Connect the network port of a PC to the Ethernet port of the switch with a network



cable.

Step 2: Enter the IP address of the device in the address box of the browser. The user login interface is displayed. You can log in to the Web UI by default user name "admin" and password "123".

---

**Note:**

- IE8.0 or a later version is recommended.
  - For details about how to access the device and other operations, refer to the Web operation manual in the delivered CD.
-

## 7 Basic Features and Specifications

<b>Power Requirements</b>		
Power Identifier	Rated Voltage Range	Maximum Voltage Range
H2	110VDC	77-154VDC
Terminal block	5-pin 5.08mm-spacing plug-in terminal block	
<b>Rated Power Consumption</b>		
Rated power consumption	14.8W (MAX)	
<b>Physical Characteristics</b>		
Housing	Metal, fanless	
Installation	DIN-rail mounting or panel mounting	
Dimensions (W×H×D)	88mm×135mm×137mm (excluding the connector, DIN rail, and component for panel mounting)	
Weight	1.23Kg	
<b>Environmental Limits</b>		
Operating temperature	-40°C~+70°C	
Storage temperature	-40°C~+85°C	
Ambient relative humidity	5%~95% (non-condensing)	
<b>MTBF</b>		
MTBF	1009660h	
<b>Warranty</b>		
Warranty	5 years	

## ***KYLAND***

FAX: +86-10-88796678

Website: <http://www.kyland.com>

Email: [support@kyland.com](mailto:support@kyland.com)

For more information about KYLAND  
products, please visit our website:

<http://www.kyland.com>