

# **SICOM6800-D Industrial Ethernet Switch**

## **Hardware Installation Manual**

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***KYLAND***

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### **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.

NOTE: 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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This product must not be used in residential areas.

This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

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# 1 Product Overview

SICOM6800-D is a Layer3 network management Ethernet switch designed for high industrial control safety requirements. It adopts autonomous controllable exchange chip and autonomous controllable CPU. It provides four 1000Base-X, SFP slots (Gigabit SFP Slot), and eight 10/100/1000Base-T(X) Ethernet ports. For details, see the following table.

Table 1 Models

<b>Models</b>	<b>SICOM6800-D-4GX8GE-L2-L2</b> <b>SICOM6800-D-4GX8GE-HV</b>
<b>Code definition</b>	Code option
<b>Ports</b>	4GX8GE
	<i><b>Note:</b> 4GX8GE: four 1000Base-X, SFP slots; eight 10/100/1000Base-T(X) ports;</i>
<b>PS: power input</b>	L2-L2 (24-48VDC)
	HV (220AC/DCW)



**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

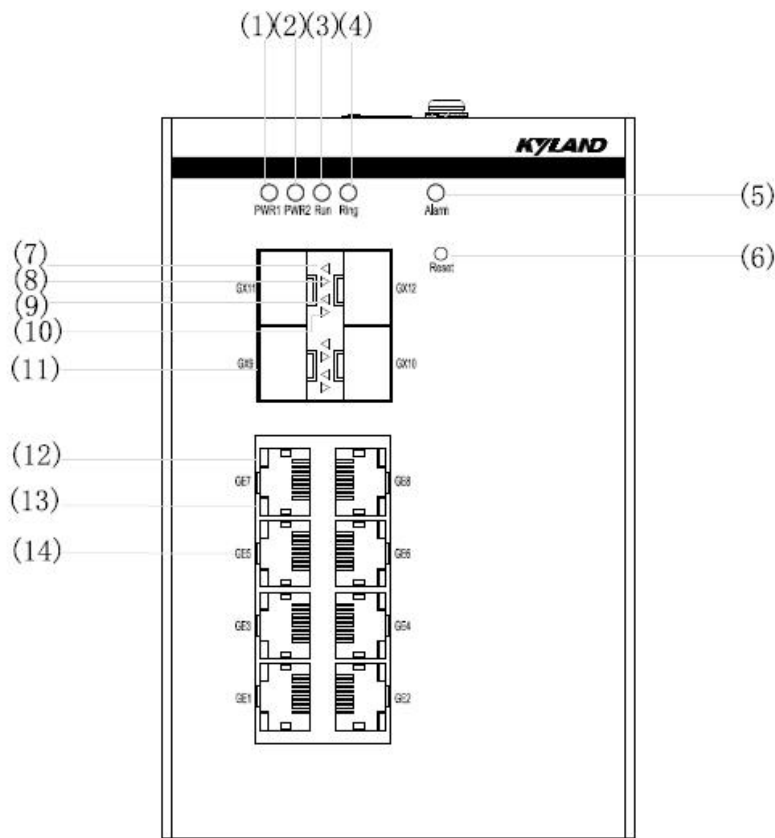


Figure 1 Front Panel

- (1) Power 1 LED      (2) Power 2 LED      (3) Running LED
- (4) Ring LED      (5) Alarm LED      (6) Reset button
- (7) 1000Base-X SFP Port connection status LED (green)
- (8) 1000Base-X SFP Port speed LED (yellow)
- (9) 1000Base-X SFP Port connection status LED (green)
- (10) 1000Base-X SFP Port speed LED (yellow)



- (11) 1000Base-X SFP Slot
- (12) 10/100/1000Base-T(X) Ethernet Port speed LED (yellow)
- (13) 10/100/1000Base-T(X) Ethernet Port connection status LED (green)
- (14) 10/100/1000Base-T(X) Ethernet Port

## 2.2 Top Panel

- **Low voltage (L2) products Top Panel**

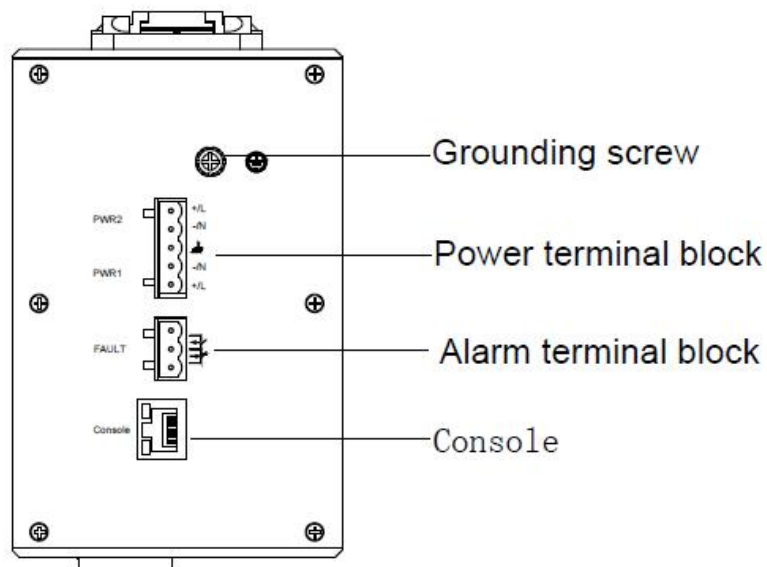


Figure 2 Low voltage products Top Panel

- **High voltage (HV) products Top Panel**

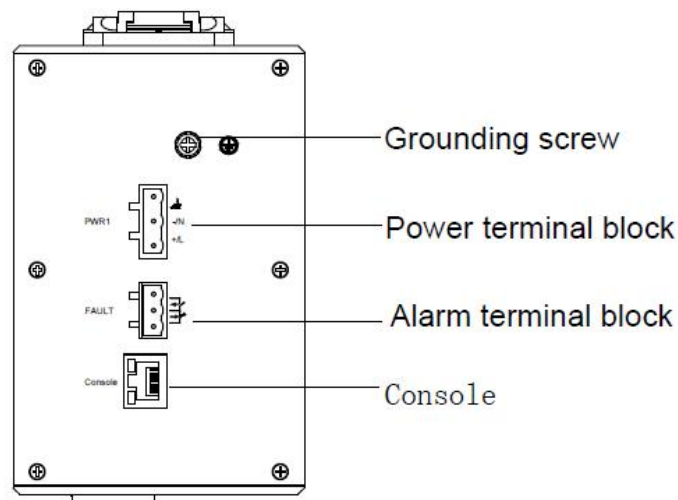


Figure 3 High voltage products Top Panel

### 3 Mounting

#### 3.1 Dimension Drawing

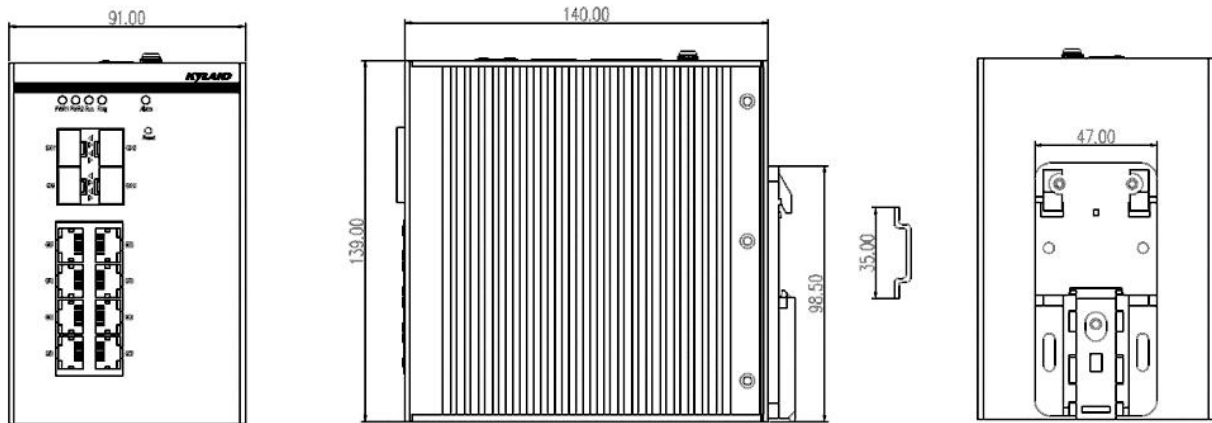


Figure 4 Dimensions for DIN-Rail Mounting (unit: mm)



**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 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.
- 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 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.

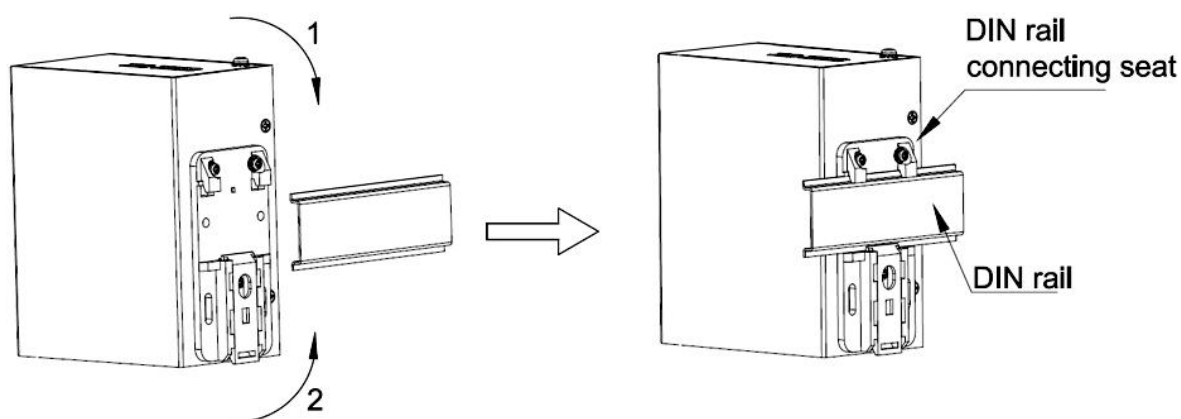


Figure 5 DIN-Rail Mounting

- DIN-Rail 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: 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.

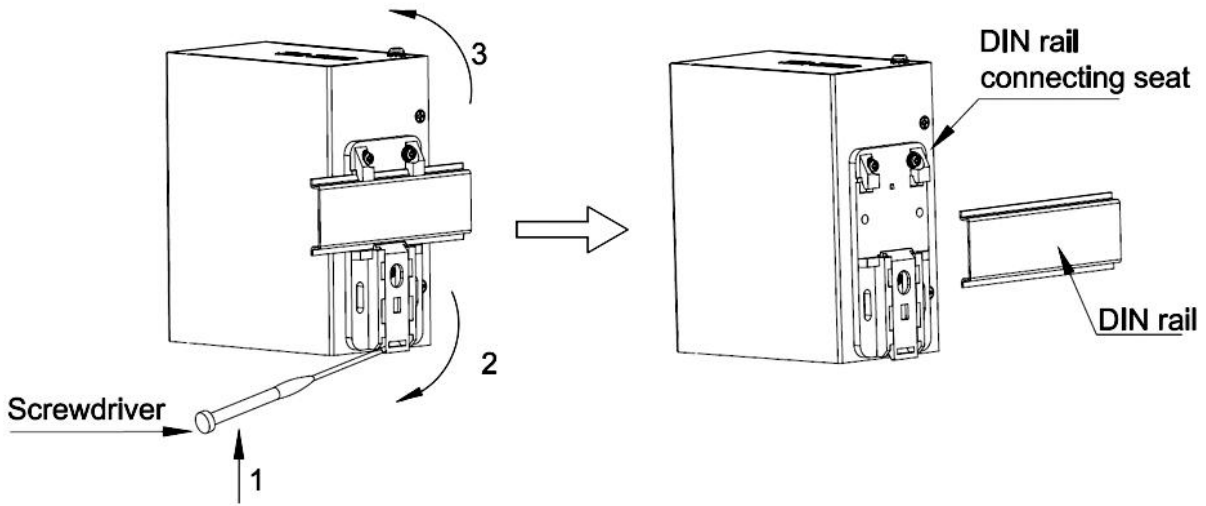


Figure 6 DIN-Rail Dismounting

## 4 Connection

### 4.1 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

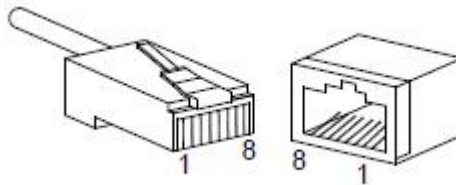



Figure 7 RJ45 Port

Table 2 Pin Definitions of 10/100/1000Base-T(X) RJ45 Port

Pin	MDI-X	MDI
1	Receive Data+ (RD0+)	Transmit Data+ (TD0+)
2	Receive Data- (RD0-)	Transmit Data- (TD0-)
3	Transmit Data+ (TD1+)	Receive Data+ (RD1+)
4	Receive Data+ (RD2+)	Transmit Data+ (TD2+)
5	Receive Data- (RD2-)	Transmit Data- (TD2-)
6	Transmit Data- (TD1-)	Receive Data- (RD1-)
7	Transmit Data+ (TD3+)	Receive Data+ (RD3+)
8	Transmit Data- (TD3-)	Receive Data- (RD3-)



**Note:**  
" +" and " -" indicate level polarities.

- Wiring Sequence

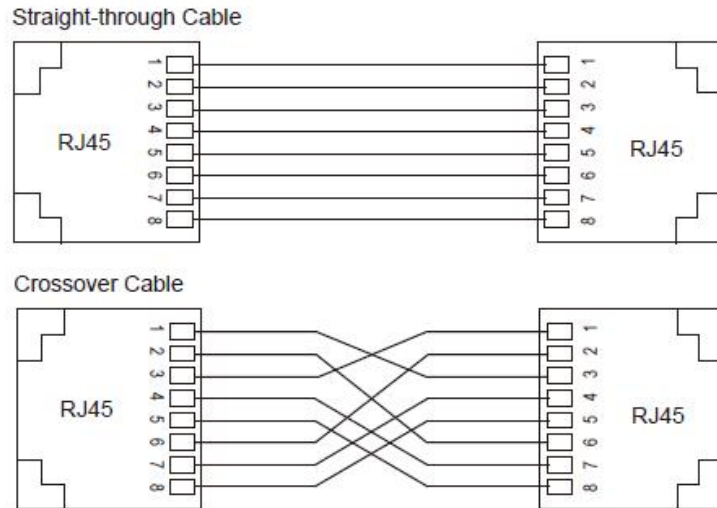


Figure 8 Connection Using Straight-through/Cross-over Cable



**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 1000Base-X, SFP slot

1000Base-X, SFP slot (gigabit SFP slot) requires an SFP optical/electrical module to enable data transmission. The following table lists the gigabit SFP optical/electrical modules (optional) supported by the series switches.

Table 3 Gigabit SFP Optical/Electrical Modules

Model	Port	MM/SM	Connector	Central Wavelength	Transmission Distance
IGSFP-M-SX-LC-850-0.55	1000Base-X port	MM	LC	850nm	0.55km
IGSFP-S-LX-LC-1310-10	1000Base-X port	SM	LC	1310nm	10km
IGSFP-S-LH-LC-1310-40	1000Base-X port	SM	LC	1310nm	40km
IGSFP-S-ZX-LC-1550-80	1000Base-X port	SM	LC	1550nm	80km
IGSFP-10/100/1000BASE-T-RJ45	10/100/1000Base-T(X) port	--	RJ45	--	--

### 4.2.1 Gigabit SFP Optical Module

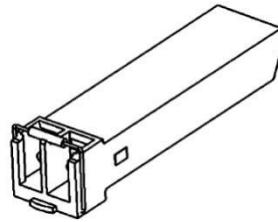


Figure 9 Gigabit SFP Optical Module

An SFP optical module is equipped with LC connector, and each port consists of a TX (transmit) port and an RX (receive) port. To enable communication between Device A and Device B, connect the TX port of Device A to the RX port of Device B, and the RX port of Device A to the TX port of Device B, as shown in the following figure.

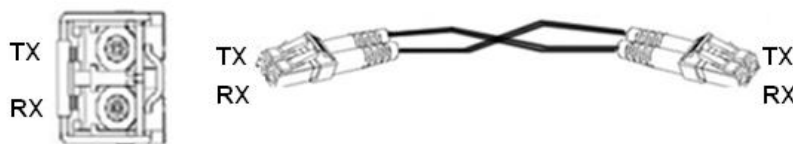


Figure 10 Fiber Connection of an SFP Optical Module

- How to Connect the SFP Optical Module

Insert the SFP optical module into the SFP slot in the switch, and then insert the fibers into the TX port and RX port of the SFP module.

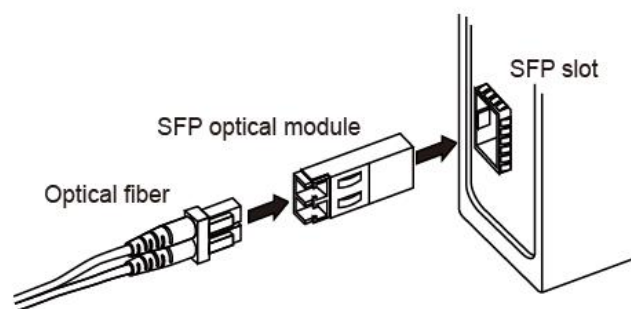


Figure 11 Connecting the SFP Optical Module

Identify the RX port and TX port of an SFP optical module:

1. Insert the two connectors in one end of two fibers into the SFP module, and those in the other end into the peer module.
2. View the corresponding connection status LED:

If the LED is on, the connection is correct. If the LED is off, the link is not connected. This may be caused by incorrect connection of the TX and RX ports. In this case, swap the two connectors at one end of the fibers.



**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.
- If the defined transmission distance of an SFP module is longer than 60km, do not use a short fiber (<20km) for connection. If such a short fiber is used, the module will be burned.

**4.2.2 Gigabit SFP Electrical Module**

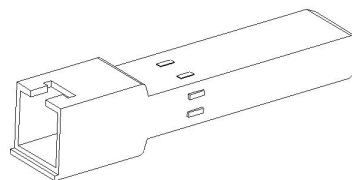


Figure 12 Gigabit SFP Electrical Module

- How to Connect the SFP Electrical Module

Insert the SFP electrical module into the SFP slot in the switch, and then insert the RJ45 connector of the twisted pair into the SFP module.

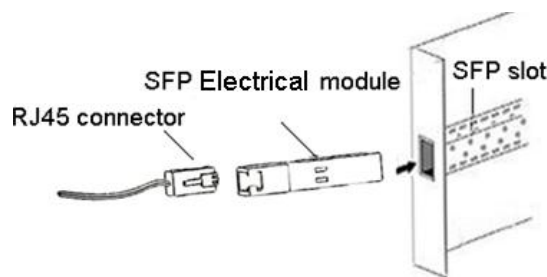


Figure 13 Connecting the SFP Electrical Module

**4.3 Console Port**

There is a Console port on the Top panel of the switch. This console port is an RJ45 interface. You can configure, maintain, and manage the device in two ways.

**Way1:**



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.

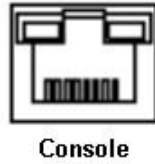


Figure 14 Console Port

● 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.

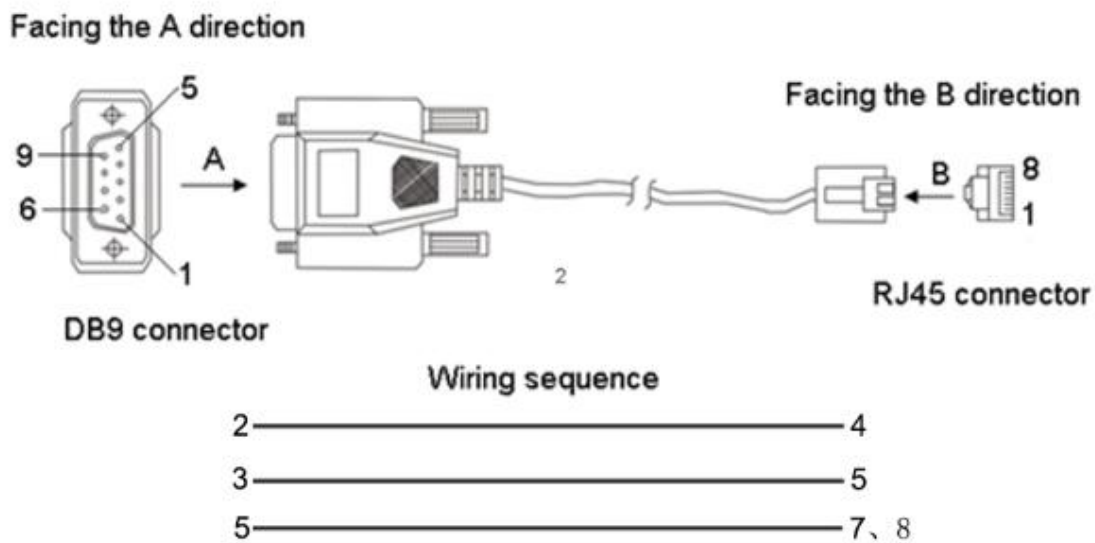


Figure 15 Wiring Sequence of DB9-RJ45 Console Cable

Table 4 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)	4	TXD (Transmit data)
3	TXD (Transmit data)	5	RXD (Receive data)
5	GND (Grounding)	7、8	GND (Grounding)

**Way2:**

Use a standard RJ45 network cable to connect the network port of the PC and the console port of the device, and configure and manage the device through the web.

## 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 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  $>2.5\text{mm}^2$ ; grounding resistance  $<5\Omega$ .

## 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. High voltage (HV) products supports single input with a 3-pin 7.62mm spacing plug-in terminal block. When one power input is faulty, the device can continue operating properly, thereby improving network reliability.

**Note:**

- $0.75\text{mm}^2 < \text{Cross-sectional area of the power wire} < 2.5\text{mm}^2$ ; grounding resistance  $< 5\Omega$ .
- Use copper conductors only, temperature rating  $75^\circ\text{C}$  only.

- 3-Pin 7.62mm-Spacing Plug-in Terminal Block

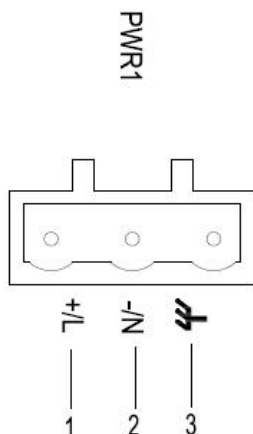


Figure 16 3-Pin 7.62mm-Spacing Plug-in Terminal Block (socket)

Table 5 Pin Definitions of 3-Pin 7.62mm-Spacing Plug-in Terminal Block

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

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

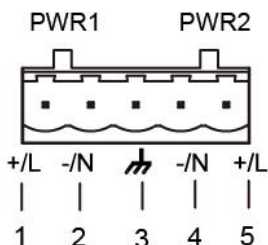


Figure 17 5-Pin 5.08mm-Spacing Plug-in Terminal Block (socket)

Table 6 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

● 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 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 7 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.

## 4.6 Alarm Terminal Block

The device provides an alarm terminal block on the top panel for alarm output. When the switch works properly, the normally-open contacts of the alarm relay are closed and the normally-closed contacts are open; when an alarm occurs, the normally-open contacts are

open and the normally-closed contacts are closed. The alarm is outputted through a 3-pin 5.08mm-spacing plug-in terminal block.

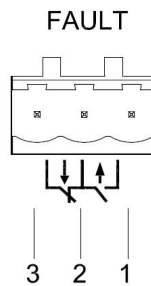


Figure 18 Alarm Terminal Block (socket)

Electrical parameters of the relay:

Max Switch Voltage: 250VAC/220VDC;

Max Switch Current: 2A

Max Switching Power: 60W

Dielectric Strength: 2KV



**Note:**

- Pin 1 and pin 2 are normally-open contacts; pin 2 and pin 3 are normally-closed contacts.  
When the switch works properly, pin 1 and pin 2 are closed, pin 2 and pin 3 are open; when an alarm occurs, pin 1 and pin 2 are open; pin 2 and pin 3 are closed.
- Use copper conductors only, temperature rating 75°C only.

- **Wiring and Mounting**

Step 1: Remove the alarm terminal block from the switch.

Step 2: Secure the three wires for alarm into the alarm terminal block in the required sequence.

Step 3: Insert the alarm terminal block into its socket.

Wiring and Mounting should meet following specifications.

Table 8 Wiring and Mounting Specifications

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

## 5 Reset

The device provides a Reset button on the front panel. The button can be used to restart the device or restore factory default settings.

You can restart the device by pressing and holding the button for 0.5 to 3 second.

You can restore factory default settings by pressing and holding the button for 3 seconds or more.

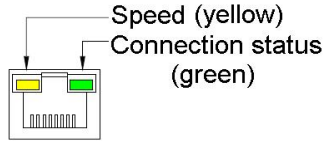
**Caution:**

To restart the device only, do not press and hold the button for 3 seconds or more, because the operation will restore factory default settings.

---

## 6 LEDs

Table 9 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
Alarm LED	On	An alarm occurs.
	Off	No alarm occurs.
1000Base-X SFP Port speed LED (yellow)	On	1000M working state (1000Base-X)
	Off	no connection
1000Base-X SFP Port connection status LED (green)	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection
		
10/100/1000Base-T(X) Ethernet port speed LED (yellow)	On	1000M working state (1000Base-TX)
	Off	10/100M working state or no connection
10/100/1000Base-T(X) Ethernet port connection status LED	On	Effective port connection
	Blinking	Ongoing network activities

---

(green)	Off	No effective port connection
---------	-----	------------------------------



## 7 Switch Access

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

### 7.1 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 Hyper Terminal in Windows OS. On the computer desktop, click [Start] → [All Programs] → [Accessories] → [Communications] → [Hyper Terminal].

Step 3: Create a connection "Switch", as shown in the following figure.



Figure 19 Creating a Connection

Step 4: Connect the communication port in use, as shown in the following figure.



Figure 20 Selecting a Serial Port



**Note:**

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

Step 5: Set port parameters (Bits per second: 115200, Data bits: 8, Parity: None, Stop bits: 1, and Flow control: None), as shown in the following figure.



Figure 21 Setting Port Parameters

Step 6: Click OK to enter the switch CLI. Then the following commands can be used to perform operations.

Table 10 CLI Commands

View	Command	Description
Privileged mode	SWITCH#show interface vlan 1	Query the IP address of the switch.
Privileged mode	SWITCH#show version	Query the version of the switch.
Privileged mode	SWITCH#reboot	Restart the switch.
Privileged mode	SWITCH#load default	Restore the factory default settings .
Privileged mode	SWITCH#config terminal	Enter the configuration mode.

## 7.2 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.

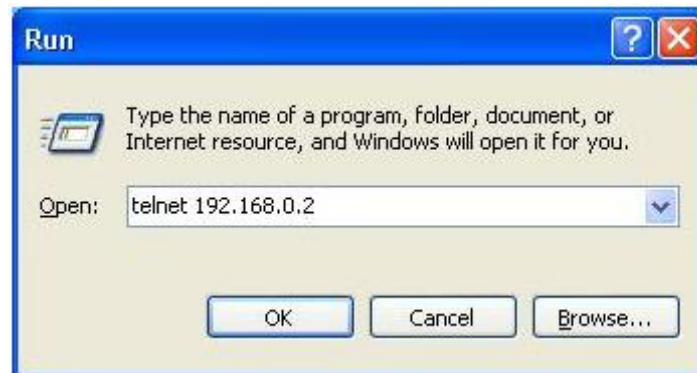


Figure 22 Access through Telnet

Step 3: Click OK. The Telnet CLI is displayed. Then you can run the commands in Figure 22 to perform operations.

### 7.3 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.

## 8 Basic Features and Specifications

### Power Requirements

Power Identifier	Rated Voltage Range	Maximum Voltage Range
L2	24-48VDC	18-72VDC
HV	100-240VAC, 50/60Hz; 110-220VDC	85-264VAC/77-300VDC
Terminal block	L2: 5-pin 5.08mm-spacing plug-in terminal block HV: 3-pin 7.62 mm-spacing plug-in terminal block	

### Rated Power Consumption

Rated power consumption	20W (MAX)
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### Physical Characteristics

Housing	Metal, fanless
Protection class	IP40
Installation	DIN-rail mounting
Dimensions (W×H×D)	91mm×139mm×140mm (excluding the connector, DIN rail, and component for panel mounting)
Weight	1.9Kg

### Environmental Limits

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

### Warranty

Warranty	5 years
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## ***KYLAND***

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