SICOM6800 Series Industrial Ethernet Switches Hardware Installation Manual

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No.:

KYLAND

SICOM6800 Series

Industrial Ethernet Switches 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.

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.

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

Contents

1 Product Overview

SICOM6800 is a auto-controllable Layer3 rack mountable backbone network switch developed for occasions with high industrial control security requirements,using auto-controllable switching chips、physical layer chips 、CPUs and operating systems.

The series switches support 19 inch 1U rack mounting by front/rear panel. It provides four 1000Base-X, SFP slots (Gigabit SFP Slot), and twenty-four 10/100/1000Base-T(X) Ethernet ports. For details, see the following table.

Table 1 SICOM6800 Models

Models	**SICOM6800-Ports-PS**
Code definition	Code option
Ports	16GX,4GX16SFP,4GX24GE
	Note: 16GX:sixteen 1000Base-X，SFP slots 4GX16SFP:four 1000Base-X，SFP slots；sixteen 100Base-X, SFP modules; 4GX24GE: four 1000Base-X，SFP slots； twenty-four 10/100/1000Base-T(X) ports;
PS: power input	L2-L2（24-48VDC） HV-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.

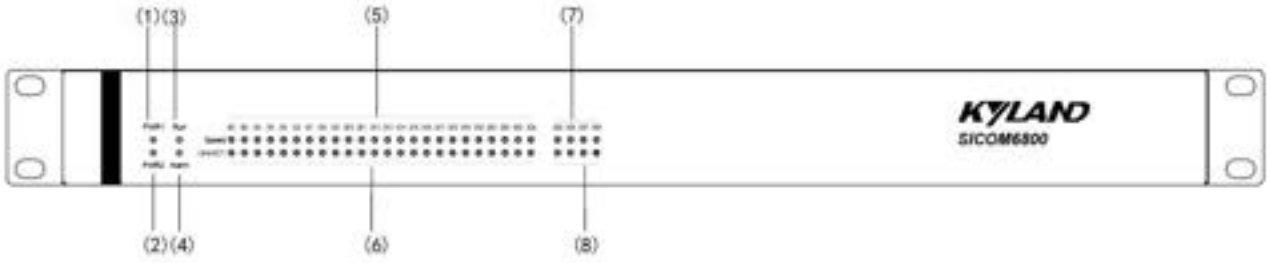
2 Structure and Interface

Caution:

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

2.1 Front Panel

- **4GX24GE**



- **4GX16SFP**

- **16GX**

Figure 1 Front Panel

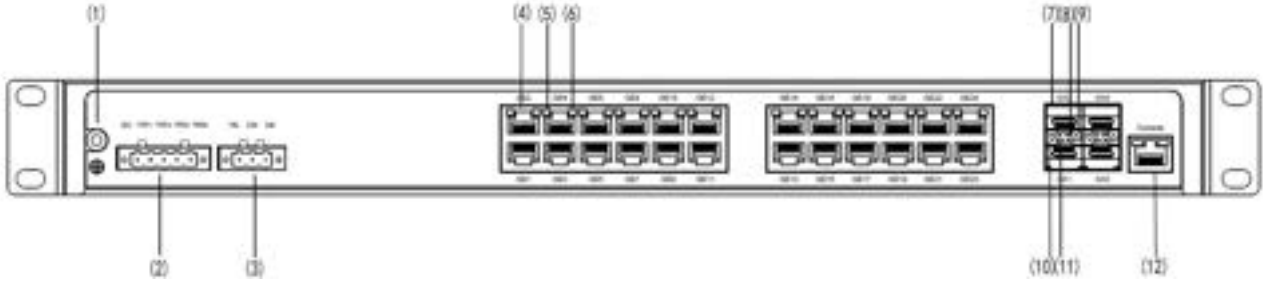
Table 2 Description of Front Panel

No.	Identifier	Description
(1)	PWR1	Power 1 LED

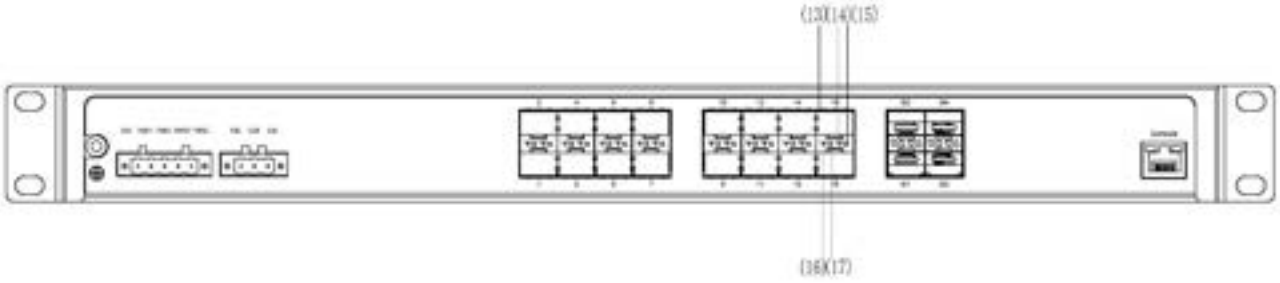
(2)	PWR2	Power 2 LED
(3)	Run	Running LED
(4)	Alarm	Alarm LED
(5)	Speed	10/100/1000Base-T(X) Ethernet Port speed LED
(6)	Link/ACT	10/100/1000Base-T(X) Ethernet Port connection status LED
(7)	Speed	1000Base-X SFP Port speed LED
(8)	Link/ACT	1000Base-X SFP Port connection status LED
(9)	Speed	100Base-X SFP slot speed LED
(10)	Link/ACT	100Base-X SFP slot connection status LED

2.2 Rear Panel

- **4GX24GE**



- **4GX16SFP**



- **16GX**

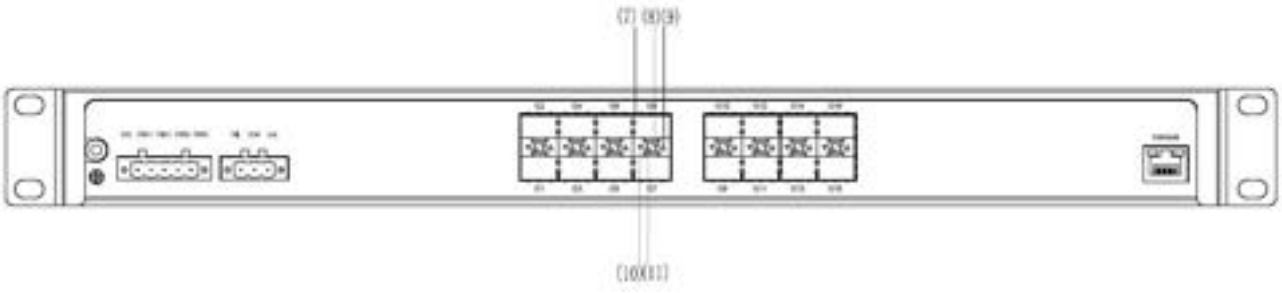


Figure 2 Rear Panel

Table 3 Description of Rear Panel

No.	Description
(1)	Grounding screw
(2)	Power terminal block
(3)	Alarm terminal block
(4)	10/100/1000Base-T(X) Ethernet port
(5)	10/100/1000Base-T (X) Ethernet port speed LED (yellow)
(6)	10/100/1000Base-T (X) Ethernet port connection status LED (green)
(7)	100/1000M SFP
(8)	1000Base-X, SFP slot connection status LED (green, indicating the status of the upper slot)
(9)	1000Base-X, SFP slot speed LED (yellow, indicating the speed of the upper slot)
(10)	1000Base-X, SFP slot connection status LED (green, indicating the status of the lower slot)
(11)	1000Base-X, SFP slot speed LED (yellow, indicating the speed of the lower slot)
(12)	Console port
(13)	100Base-X SFP slot
(14)	100Base-X SFP slot connection status LED (green, indicating the status of the lower slot)
(15)	100Base-X SFP slot speed LED (yellow, indicating the speed of the upper slot)
(16)	100Base-X SFP slot connection status LED (green, indicating the status of the upper slot)
(17)	100Base-X SFP slot speed LED (yellow, indicating the speed of the upper slot)

3 Mounting

3.1 Dimension Drawing

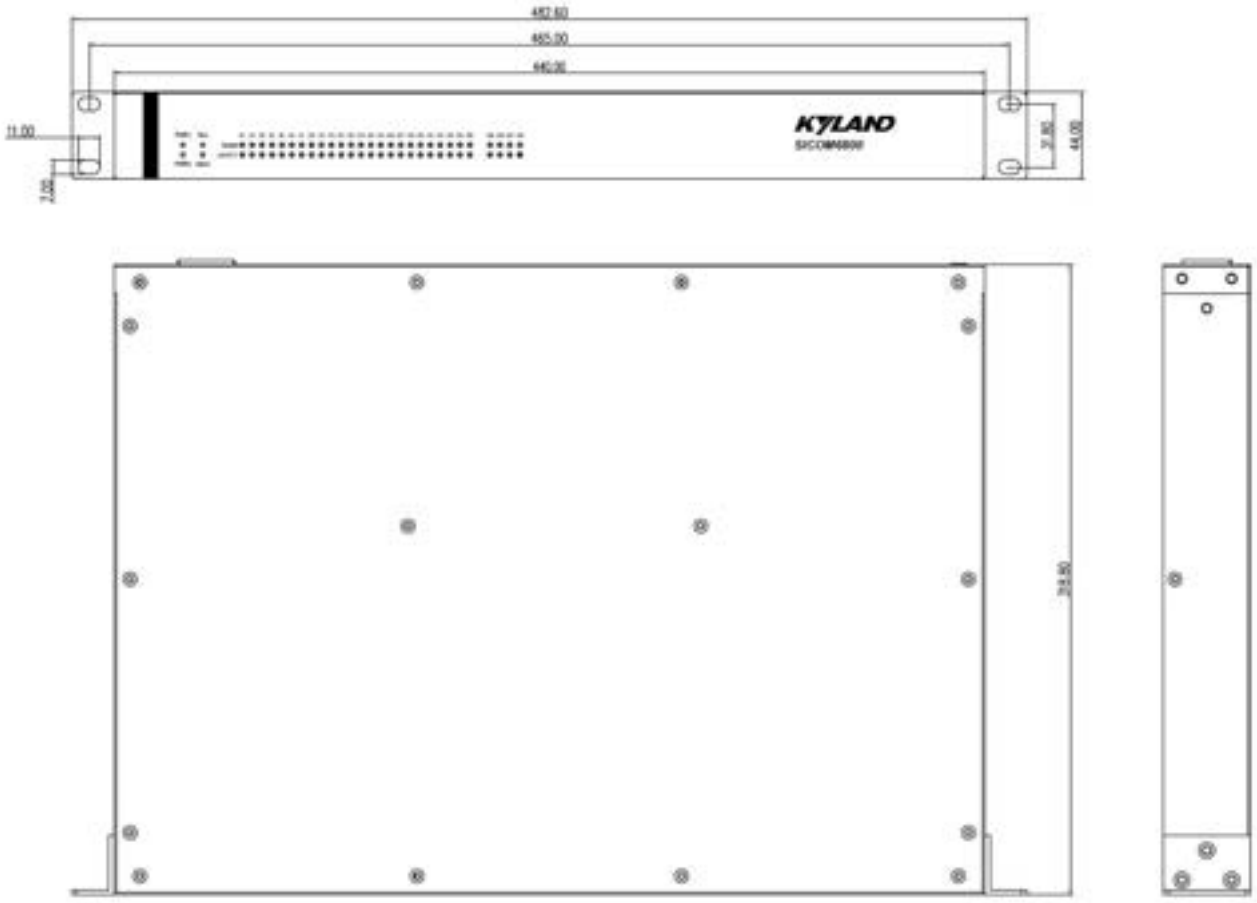


Figure 3 Dimensions (unit: mm)

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 series switches support rack mounting by front/rear panel. The following uses mounting by front panel as an example to describe mounting steps. The steps for mounting by rear panel are similar to those for mounting by front panel. Before installation, make sure that the

following requirements are met.

1) Environment: temperature (-40℃ to 75℃), 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: <5Ω
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.

- Installing Mounting Brackets

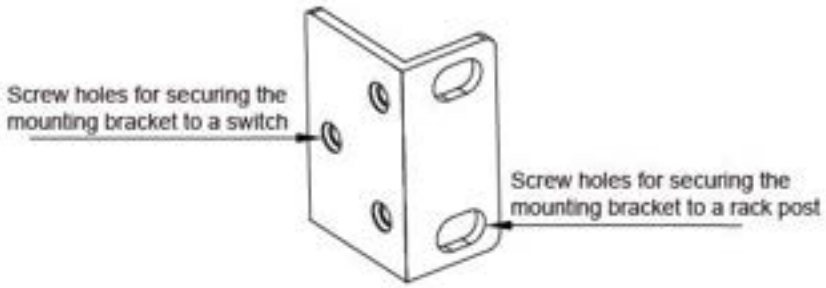


Figure 1 Mounting Bracket

You can select the screw holes for front or rear panel mounting to install the mounting brackets. If you select front panel mounting, If there are screws inserted in the screw holes, remove the screws and keep them for future use.

As shown in the following figure, use three screws to secure two mounting brackets to the switch respectively.

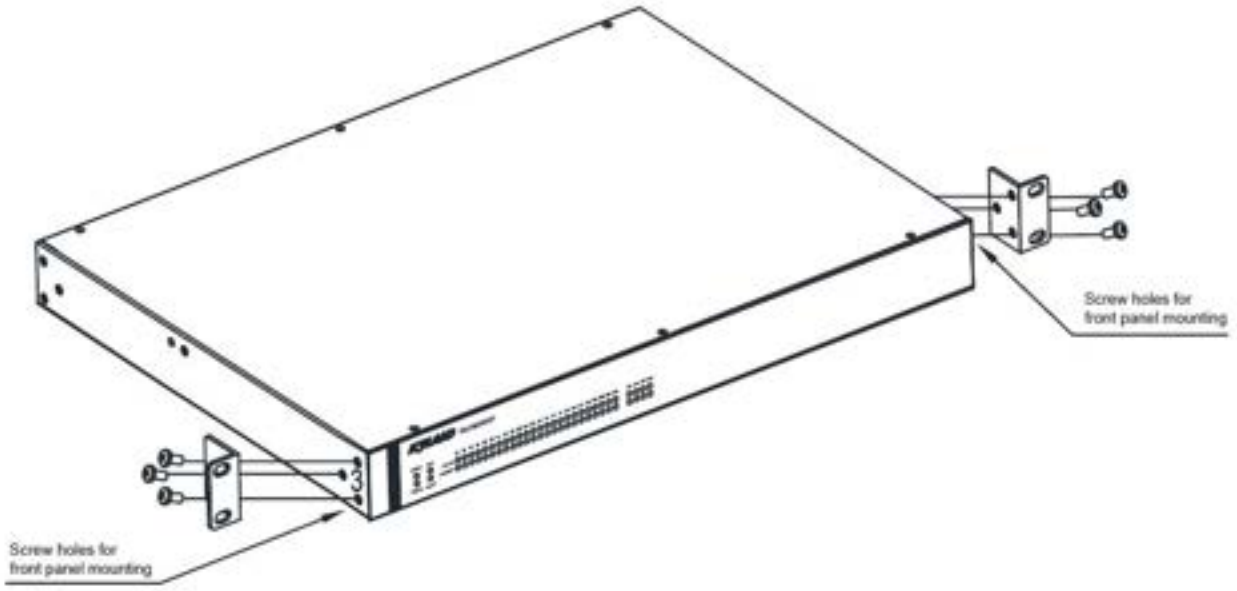


Figure 2 Installing Mounting Brackets

- Mounting

Step 1: Select the mounting position for the device and guarantee adequate space and heat dissipation for it (dimensions: 440mm×44mm×318.8mm).

Step 2: Move the switch in direction 1 until the screw holes for securing the mounting brackets to rack posts are in alignment with the corresponding holes in the rack posts. Then use four screws and supporting captive nuts to secure the mounting brackets to the rack posts.

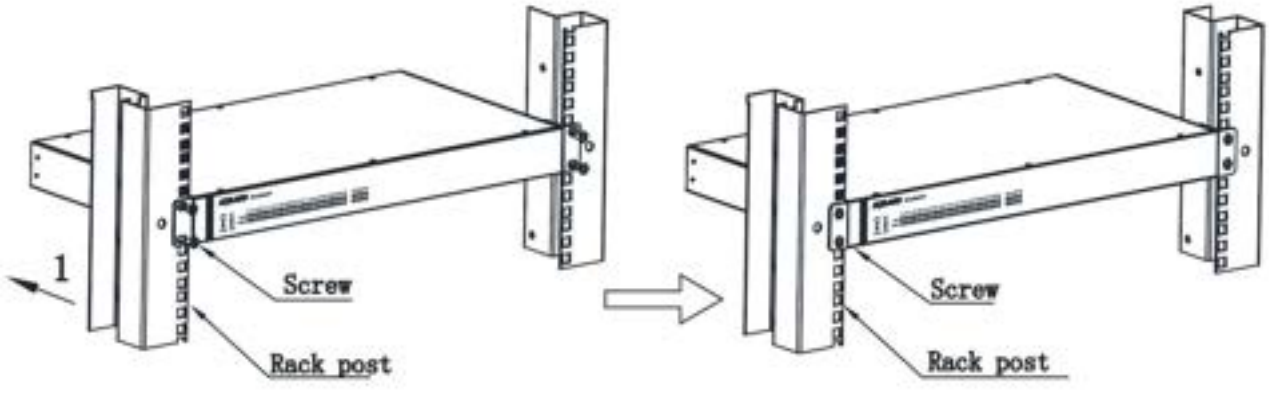


Figure 3 Mounting by Front Panel

- Dismounting

Step 1: Remove the four screws and supporting captive nuts securing the mounting brackets to the rack posts.

Step 2: Remove the switch from the rack posts. Then unscrew the mounting brackets to complete dismounting.

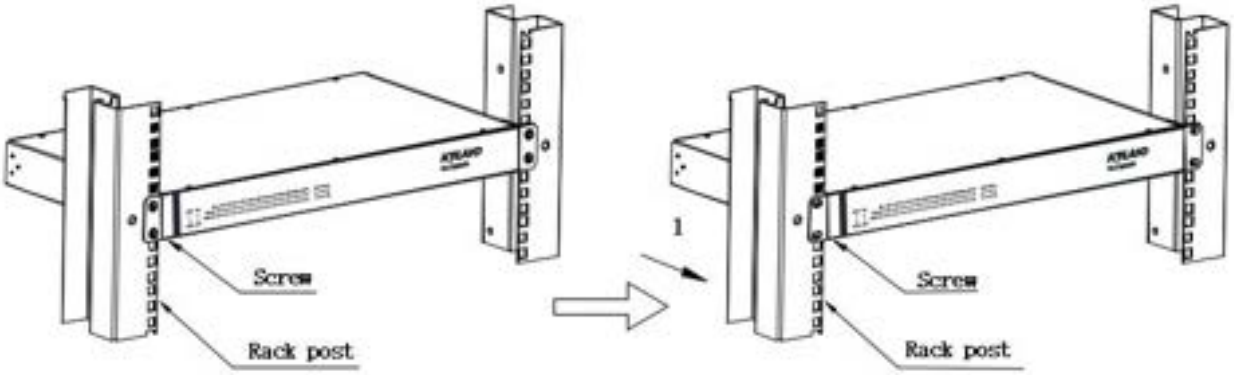


Figure 4 Dismounting by Front Panel

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

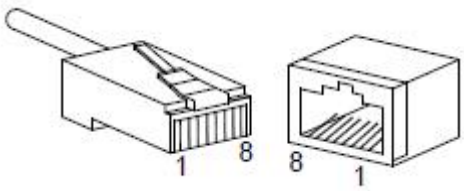


Figure 4 RJ45 Port

Table 5 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

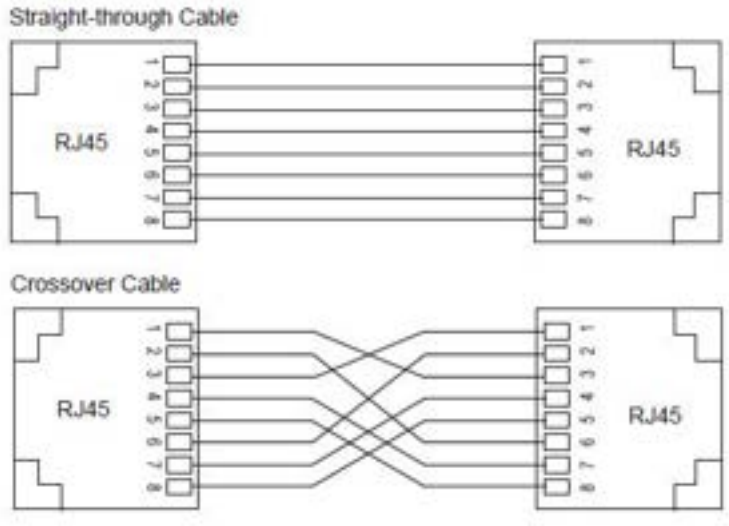


Figure 5 Connection Using Straight-through/Cross-over Cable

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-X SFP Slot

100Base-X SFP slot: You can enable data transmission only after inserting an SFP optical module into the slot and connecting cable properly. The following table lists the SFP optical modules (optional) supported by the switch.

Table 4 SFP Optical Modules for 100Base-X SFP slot

Model	Interface	MM /SM	Connect or	Center Wavelength (CWL)	Transmission Distance
IFSFP-M-LX-LC-1310-2	100Base-FX port	MM	LC	1310nm	2km
IFSFP-S-LH-LC-1310-40	100Base-FX port	SM	LC	1310nm	40km

For how to connect the SFP optical module, please see Gigabit SFP Optical Module.

4.3 1000Base-X, SFP slot

1000Base-X, SFP slot (gigabit SFP slot) requires an SFP optical module to enable data

transmission. The following table lists the gigabit SFP optical modules (optional) supported by the series switches.

Table 6 Gigabit SFP Optical 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

4.3.1 Gigabit SFP Optical Module

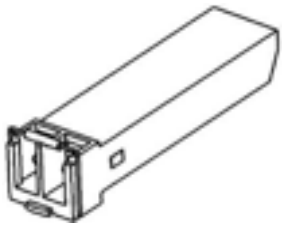


Figure 6 Gigabit SFP Optical Module

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 7 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.

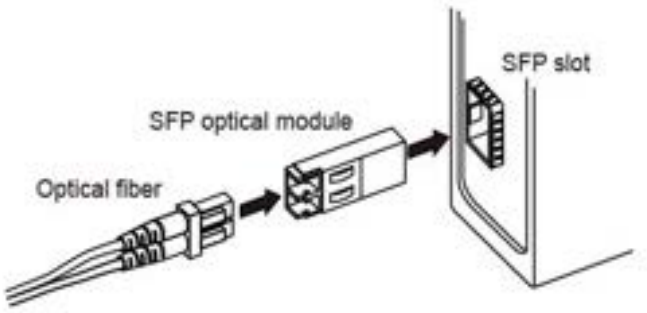


Figure 8 Connecting the SFP Optical Module

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, swop 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.

4.4 Console Port

There is a Console port on the rear 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.

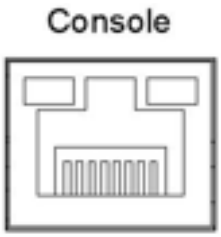


Figure 9 Console Port

- 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.

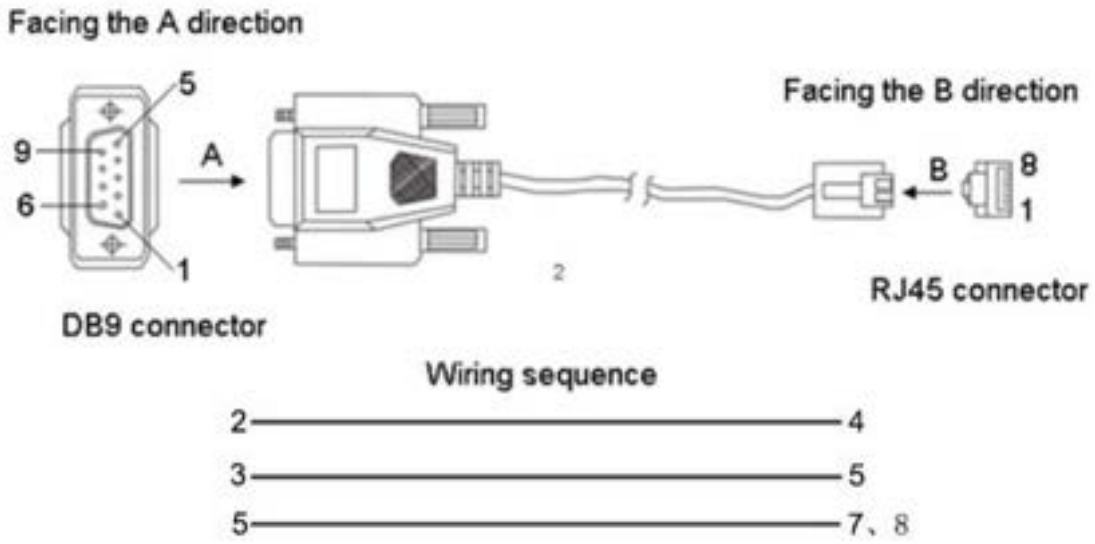


Figure 10 Wiring Sequence of DB9-RJ45 Console Cable

Table 7 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.

4.5 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 rear panel of the device. 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 firmly connect the other end to ground.

Note:

Cross-sectional area of the chassis grounding cable>2.5mm^2; Grounding resistance<5Ω

4.6 Power Terminal Block

There is a power terminal block on the rear panel of the switch. You need to connect the power cable to the terminal block to provide power for the switch.

The device supports single (PWR1) and redundant (PWR1 and PWR2) power supply with a 5-pin 5.08mm-spacing plug-in terminal block. When the redundant power supply is used and one power supply is faulty, the switch can continue operating properly, thereby improving network reliability.

Note:

0.75mm^2<Cross-sectional area of the power cable<2.5mm^2; Grounding resistance: <5Ω

- 5-pin 5.08mm-spacing plug-in terminal block

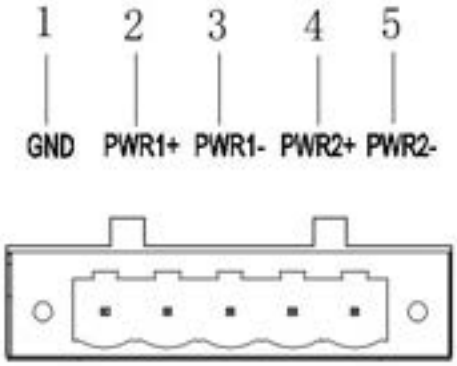


Figure 11 5-Pin 5.08mm-Spacing Plug-in Terminal Block

Table 8 Pin Definitions of 5-Pin 5.08mm-Spacing Plug-in Terminal Block

No.	Signal	DC Definition	AC Definition
1	GND	PGND	PGND
2	PWR1+	DC1:+	AC1:L
3	PWR1-	DC1:-	AC1:N
4	PWR2+	DC2:-	AC2:N
5	PWR2-	DC2:+	AC2:L

Caution:

For single power supply, only pins 1, 2, and 3 (PWR1) of the terminal block can be connected. Do not use pins 4 and 5.

- Wiring and mounting

Step 1: Ground the switch properly according to section 4.5.

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

Step 3: Insert the power cable into the power terminal block according to Table 8 to fix the power cable.

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

Step 5: Connect one end of the power cable to an external power supply system (with the allowed power range). If the power LED on the front panel of the switch turns on, the power supply is connected properly.

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.

Warning:

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

4.7 Alarm Terminal Block

Table 8 Fault alarm terminal definition table

No.	Signal	Note
1	FAIL	Switch fault contact, forming a pair of normally closed contacts with terminal 2.The contact closes during switch startup. When the device fails (such as power down) or the main process is abnormal, the contact is closed. When the device is working normally, the contact is open.
2	COM	Common terminal of two relay output contacts.
3	ALM	Switch alarm contact, forming a pair of normally open contacts with terminal 2. when the device is not alarmed, the contact is open. When the device alarms, the contact is closed.

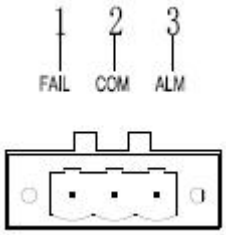


Figure 21 Alarm Terminal Block

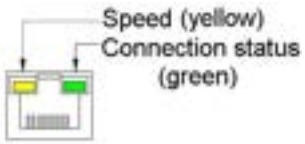
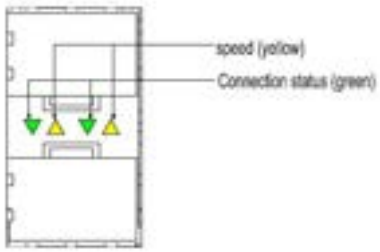
5 LEDs

Table 9 Front Panel LEDs

LED	State	Description
Power 1 LED-PWR1	On	The power 1 is connected and operates properly.
	Off	The power 1 is not connected or operates abnormally.
Power 2 LED-PWR2	On	The power 2 is connected and operates properly.
	Off	The power 2 is not connected or operates abnormally.
Running LED-Run	On	The device is starting up
	Blinking	The CPU operates properly.
	Off	The device does not start up
Alarm LED-Alarm	On	An alarm occurs.
	Off	No alarm occurs.
1000Base-X SFP Port connection status LED	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection
1000Base-X SFP Port speed LED	On	1000M working state (1000Base-X)
	Off	no connection
100M SFP slot connection status LED	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection
100M SFP slot speed LED	On	100M working state (100Base-FX)
	Off	no connection
10/100/1000Base-T(X) RJ45 Port connection status LED	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection

10/100/1000Base-T(X) RJ45 Port speed LED	On	1000M working state (1000Base-T)
	Off	10M or 100M working state (10/100Base-T(X)) or no connection

Table 10 Rear Panel LEDs

LED	State	Description
		
10/100/1000Base-T(X) Ethernet port speed LED (yellow)	On	1000M working state (1000Base-T)
	Off	10M or 100M working state (10/100Base-T(X)) or no connection
10/100/1000Base-T(X) RJ45 Port connection status LED	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection
		
100Base-X SFP slot and 1000Base-X, SFP slot connection status LED（green）	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection
100Base-X SFP slot speed LED (yellow)	On	100M working state (100Base-FX)
	Off	no connection
1000Base-X,SFP slot speed LED （yellow）	On	1000M working state (1000Base-X)
	Off	no connection

6 Switch Access

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

6.1 Access through Console Port

The console port is an RJ45 interface, and you can access the device in two ways.

- DB9-RJ45 console cable

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 12.

Figure 12 Creating a Connection

Step 4: Connect the communication port in use, as shown in Figure 13.

Figure 13 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: 115200, Data bits: 8, Parity: None, Stop bits: 1, and Flow control: None), as shown in Figure 14.

Figure 14 Setting Port Parameters

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

Table 11 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.

- RJ45 console cable

1. The PC and the switch can communicate normally;

2. Input "*IP address*" in the browser address bar (Default IP: 192.168.0.2). After opening the login dialog box, enter the default user name (admin) and default password (123) to successfully log in to the device Web management page.

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: Enter "telnet IP-address" in the Run dialog box, as shown in Figure 15. The default IP address of a Kyland switch is 192.168.0.2.

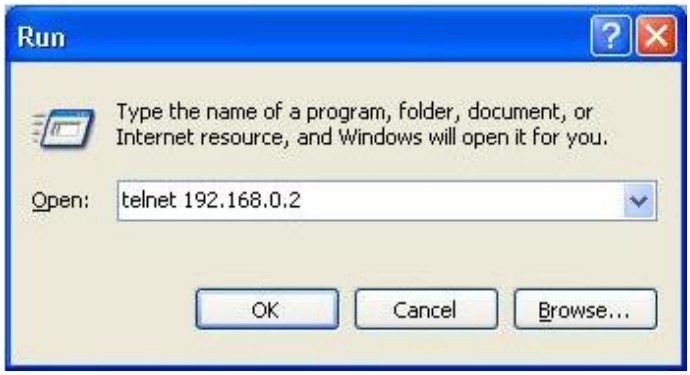


Figure 15 Access through Telnet

Step 3: Click OK. The Telnet CLI is displayed. Then you can enter commands (as shown in Table 11) 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 switch 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 switch and other operation, refer to the Web operation manual.

7 Basic Features and Specifications

Power Requirements		
Power Identifier	Rated Voltage Range	Maximum Voltage Range
L2	24-48VDC	18-72VDC
HV (220AC/DCW)	100-240VAC,50/60Hz;110-220VDC	85-264VAC/77-300VDC
Terminal Block	5-pin 5.08mm spacing terminal block	
Rated Power Consumption		
Rated Power Consumption	SICOM6800-4GX24GE：51W (Max) SICOM6800-4GX16SFP：29W (Max) SICOM6800-16GX：31W (Max)	
Physical Characteristics		
Housing:	Metal, fanless	
Installation	1U rack mounting	
Dimensions(W×H×D)	440mm×44mm×318.8mm (Including the power supply protruding from the casing surface)	
Weight:	< 5.2Kg	
Environmental Limits		
Ambient temperature	-40℃～+75℃	
Storage temperature	-40℃～+85℃	
Ambient relative humidity	5%～95% (non-condensing)	
MTBF		
MTBF	SICOM6800-4GX24GE：592232 h SICOM6800-4GX16SFP：536386 h SICOM6800-16GX：538633 h	
Warranty		

Warranty	Five years

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