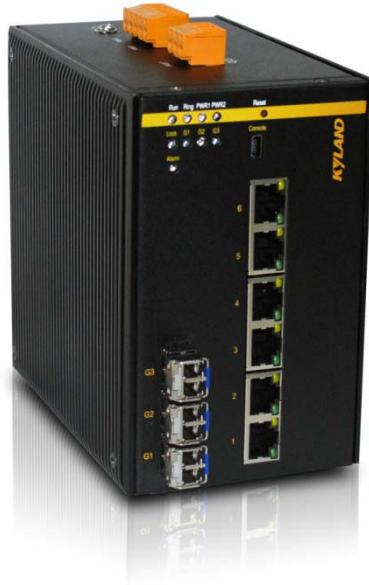


SICOM3306PT Industrial Ethernet Switch

Hardware Installation Manual



KYLAND

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**SICOM3306PT 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

This product performs reliably as long as it is used according to the guidance. Artificial damage or destruction of the equipment should be avoided.

- Read this manual carefully and keep it for future reference;
- Do not place the equipment near water sources or damp areas;
- Do not place anything on power cable or put the cable in unreachable places;
- Do not tie or wrap the cable, which may cause a fire risk;
- Power connectors and other equipment connectors should be firmly interconnected and checked frequently;
- Do not repair the equipment by yourself, unless it is clearly specified in the manual;
- Please keep the equipment clean; if necessary, wipe the equipment with soft cotton cloth.

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

SICOM3306PT includes a series switches designed by Kyland for the power industry. The series switches support IEEE1588 Precision Clock Protocol (PTP) with accuracy of $\pm 100\text{ns}$. The switches also provide Gigabit ports for data transmission with reduced delay. All these features ensure the accuracy, reliability, and effectiveness of data transmission.

SICOM3306PT provides a Mini USB console port and supports network management through Web, Telnet, and console port.

Due to its compact size, SICOM3306PT can be installed in a limited space. It supports both DIN rail and panel mounting. It also provides diversified ports, including 1000Base-X SFP port, and 10/100Base-T(X) port. With the synchronization finish LED, you can conveniently view the working state of IEEE1588. In addition, the reset button on the switch allows you to restore factory default settings easily.

2 Structure and Interface

2.1 Front Panel

- SICOM3306PT-3GX-6T

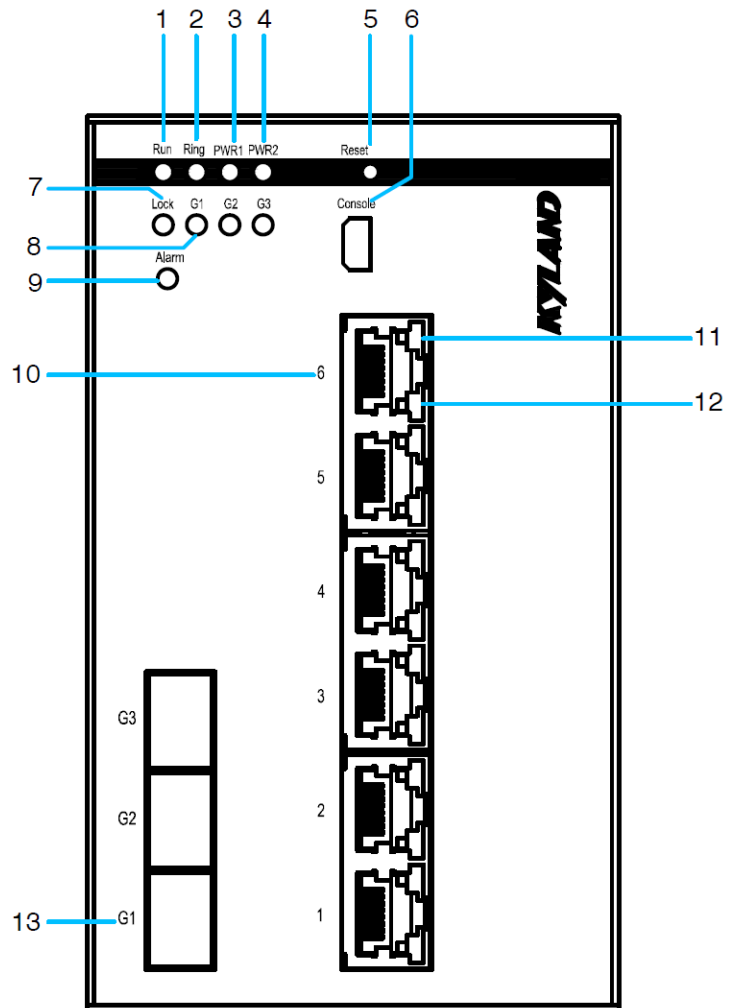


Figure 1 Front Panel 1

Table 1 Front Panel of SICOM3306PT-3GX-6T

No.	Identifier	Description
1	Run	Running LED
2	Ring	Ring LED
3	PWR1	Power 1 LED
4	PWR2	Power 2 LED
5	Reset	Reset button
6	Console	Console port
7	Lock	Synchronization Finish LED
8	G1-G3	1000Base-X SFP port LED
9	Alarm	Alarm LED
10	1-6	10/100Base-T(X) Ethernet port
11	--	RJ45 port Speed LED
12	--	RJ45 port Link/ACT LED
13	G1-G3	1000Base-X SFP port

● SICOM3306PT-2GX-6T

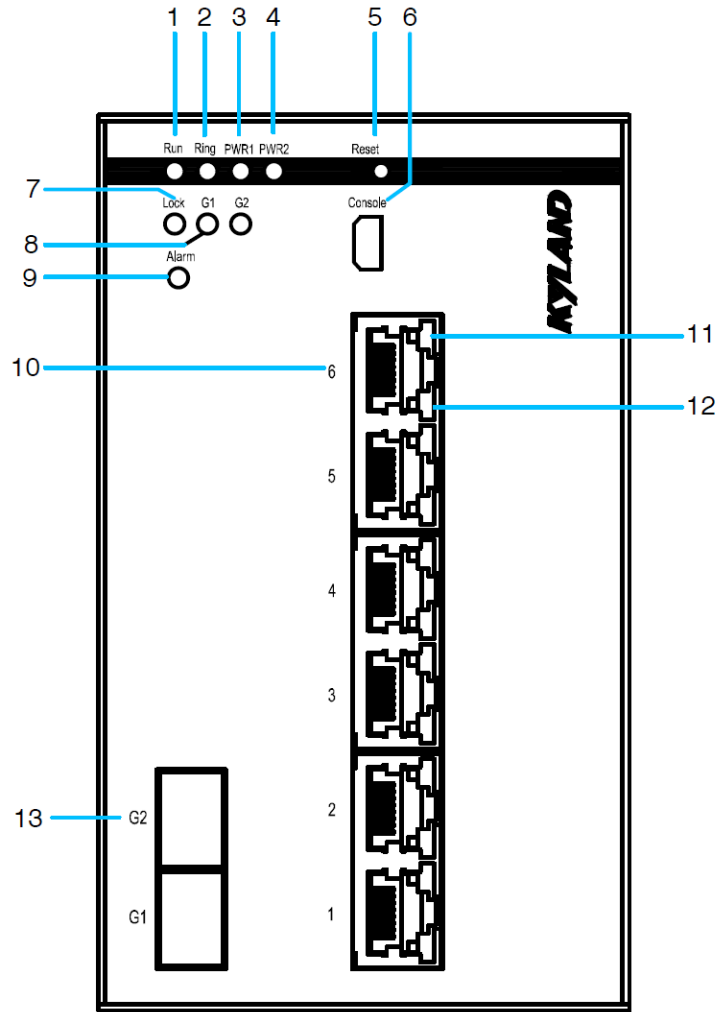


Figure 2 Front Panel 2

Table 2 Front Panel of SICOM3306PT-2GX-6T

No.	Identifier	Description
1	Run	Running LED
2	Ring	Ring LED
3	PWR1	Power 1 LED
4	PWR2	Power 2 LED
5	Reset	Reset button
6	Console	Console port
7	Lock	Synchronization Finish LED
8	G1-G2	1000Base-X SFP port LED
9	Alarm	Alarm LED
10	1-6	10/100Base-T(X) Ethernet port
11	--	RJ45 port Speed LED
12	--	RJ45 port Link/ACT LED
13	G1-G2	1000Base-X SFP port

● SICOM3306PT-2S/M-6T

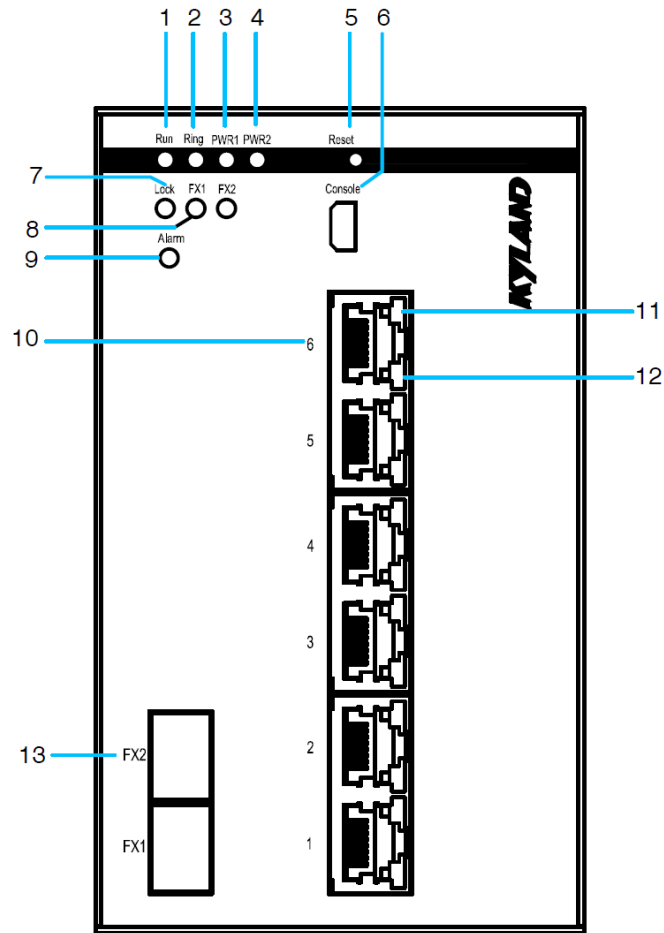


Figure 3 Front Panel 3

Table 3 Front Panel of SICOM3306PT-2S/M-6T

No.	Identifier	Description
1	Run	Running LED
2	Ring	Ring LED
3	PWR1	Power 1 LED
4	PWR2	Power 2 LED
5	Reset	Reset button
6	Console	Console port
7	Lock	Synchronization Finish LED
8	FX1-FX2	100Base-FX SFP port LED
9	Alarm	Alarm LED
10	1-6	10/100Base-T(X) Ethernet port
11	--	RJ45 port Speed LED
12	--	RJ45 port Link/ACT LED
13	FX1-FX2	100Base-FX SFP port

● SICOM3306PT-6T

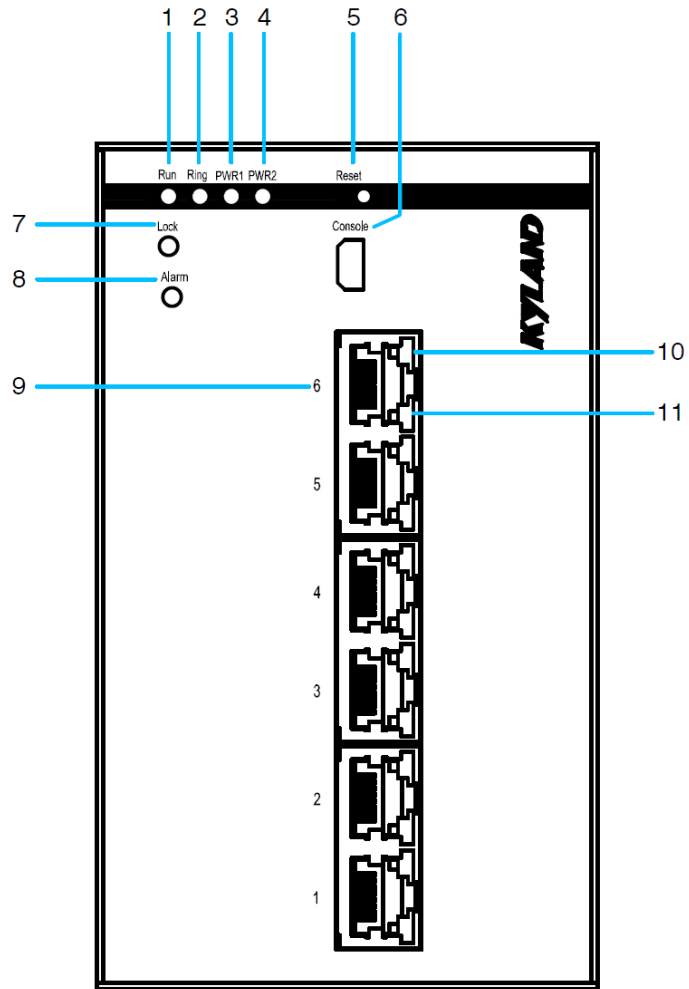


Figure 4 Front Panel 3

Table 4 Front Panel of SICOM3306PT-6T

No.	Identifier	Description
1	Run	Running LED
2	Ring	Ring LED
3	PWR1	Power 1 LED
4	PWR2	Power 2 LED
5	Reset	Reset button
6	Console	Console port
7	Lock	Synchronization Finish LED
8	Alarm	Alarm LED
9	1-6	10/100Base-T(X) Ethernet port
10	--	RJ45 port Speed LED
11	--	RJ45 port Link/ACT LED

2.2 Top Panel

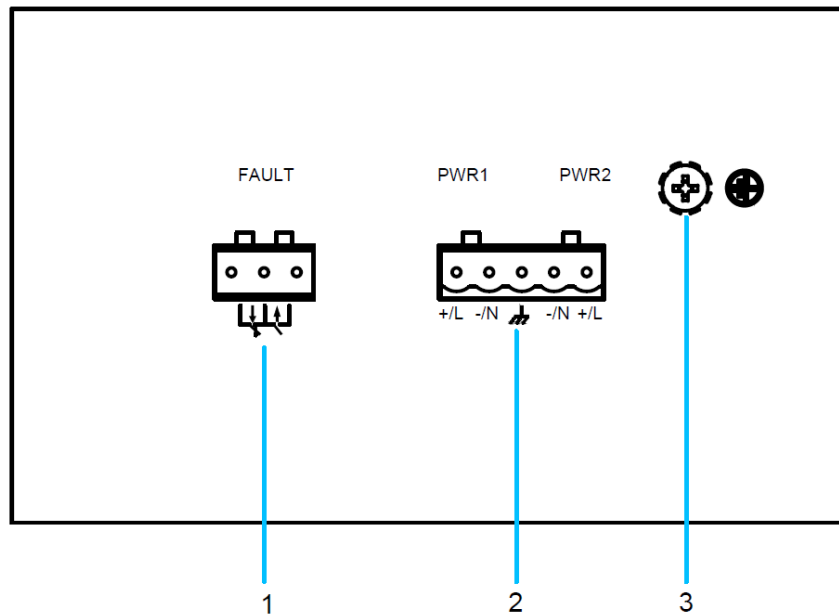





Figure 5 Top Panel

Table 5 Top Panel of SICOM3306PT

No.	Identifier	Description
1		Alarm terminal block
2	+/L -/N  -/N +/L	Power terminal block
3		Grounding screw

3 Mounting

3.1 Dimension Drawing

- Dimensions for Panel Mounting (unit: mm)

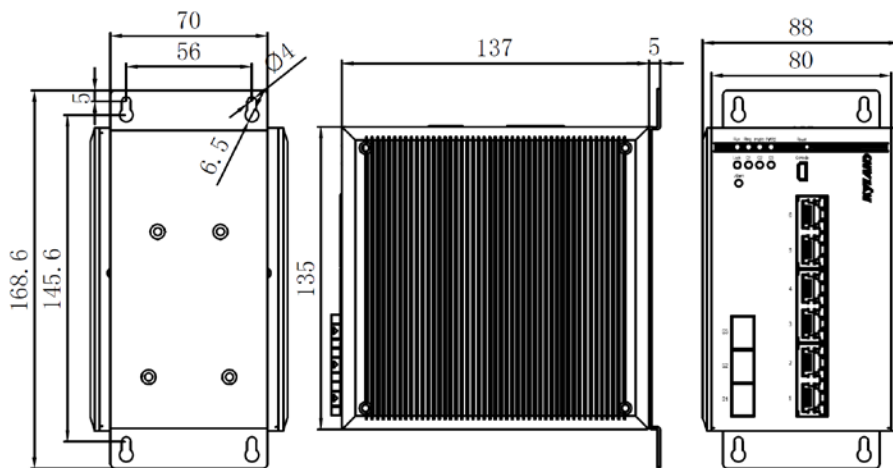


Figure 6 Dimensions for Panel Mounting

- Dimensions for DIN Rail Mounting (unit: mm)

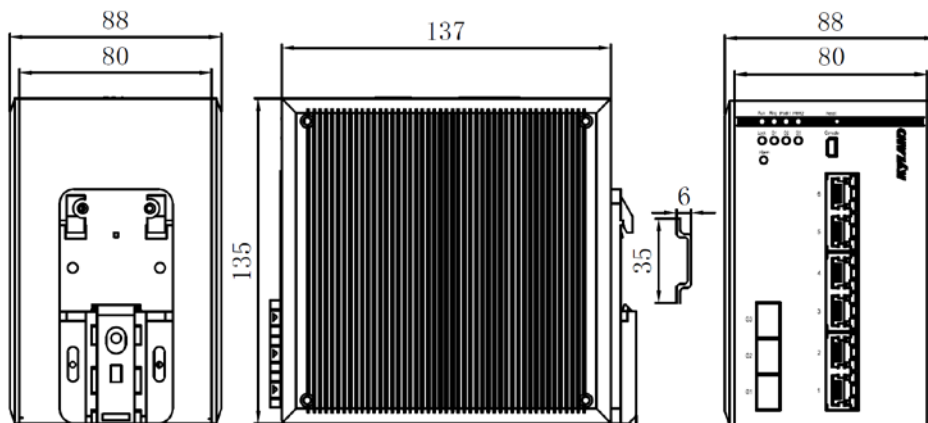


Figure 7 Dimensions for Vertical DIN Rail Mounting

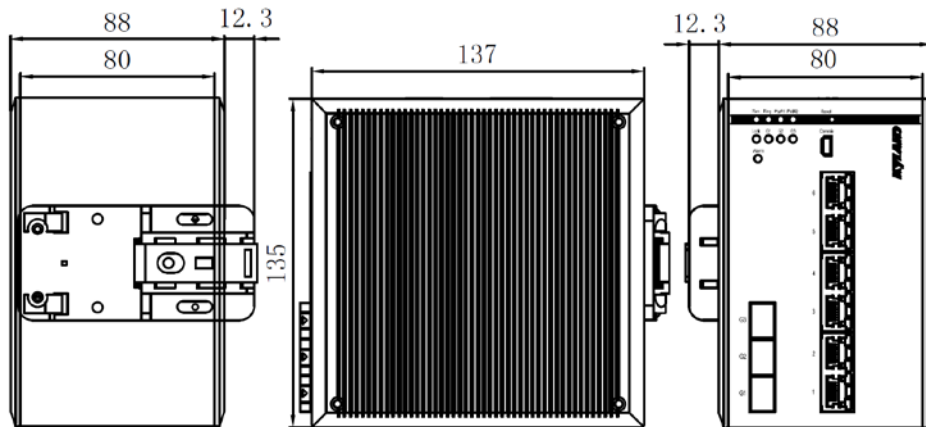


Figure 8 Dimensions for Horizontal DIN Rail Mounting

3.2 Mounting Modes and Steps

3.2.1 DIN Rail Mounting

- DIN Rail Mounting

The device supports both vertical and horizontal DIN rail mounting. By default, the DIN-rail connecting seat is installed vertically on the rear panel of the device. If horizontal mounting is required, you can remove the connecting seat from the device and then install the connecting seat horizontally on the rear panel of the device, as shown in Figure 9.

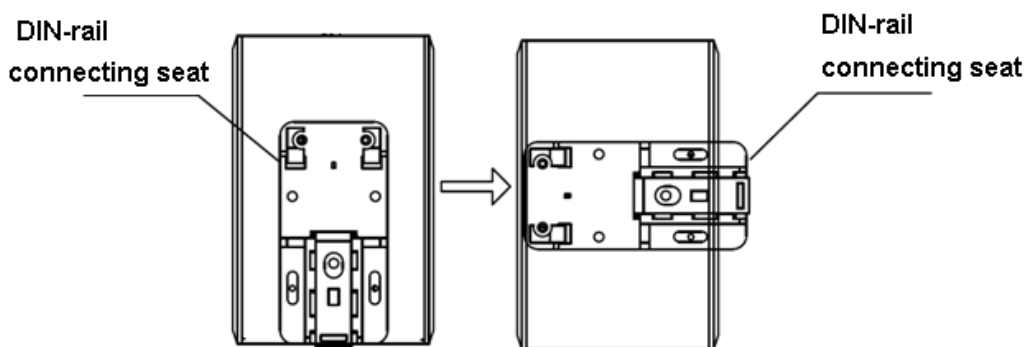


Figure 9 Installing the DIN-rail Connecting Seat

Detailed mounting steps are as follows: (The following uses vertical DIN rail mounting as an example. The mounting steps for horizontal mounting are similar.)

Step 1: Select the mounting position for SICOM3306PT and guarantee adequate space for it.

Step 2: Insert the connecting seat of SICOM3306PT into 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, as shown on the left of the following figure. Make sure that SICOM3306PT is firmly installed on the DIN rail, as shown on the right of the following figure.

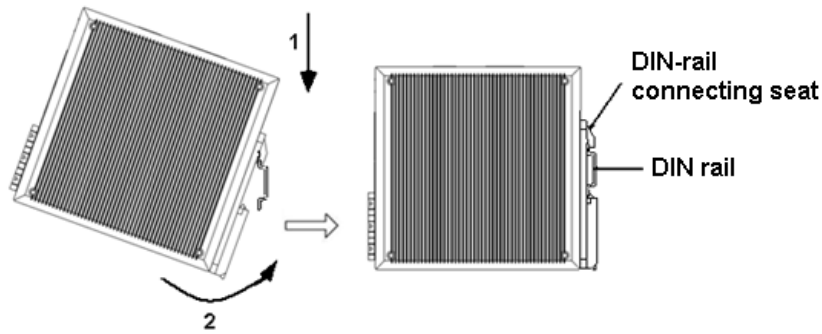


Figure 10 DIN Rail Mounting

- **DIN Rail Dismounting**

Detailed steps are as follows:

Step 1: Open the spring locking piece of the connecting seat with a screw driver, as shown on the left of the following figure.

Step 2: Move SICOM3306PT in the direction of arrow 2 and the bottom of SICOM3306PT outward in the direction of arrow 3. In this way, you can remove SICOM3306PT from DIN rail.

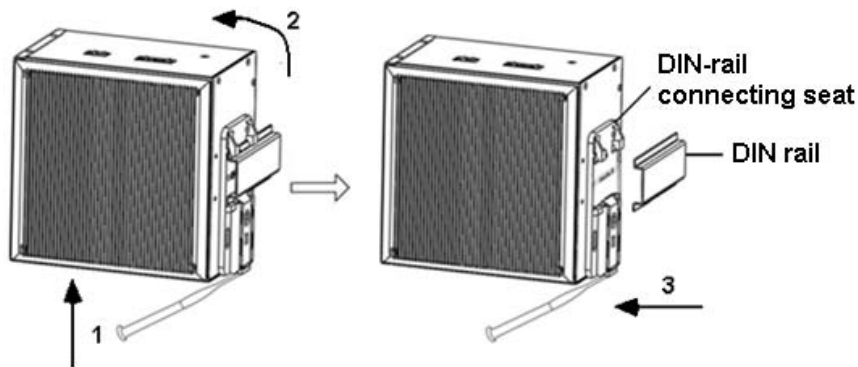


Figure 11 DIN Rail Dismounting

3.2.2 Panel Mounting

- **Panel Mounting**

Detailed steps are as follows:

Step 1: Select the mounting position on a wall or an inner wall of a cabinet for SICOM3306PT and guarantee adequate space for it.

Step 2: Punch four holes in the selected position according to the panel mounting dimensions of SICOM3306PT. Insert four M3x10 screws into the four holes respectively, and turn the screws with a Philips screwdriver until about a 5mm distance is left between each screw head and the wall.

Step 3: 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 SICOM3306PT in direction 2 until the four screws are in the $\Phi 4$ positions. Then tighten the screws. In this way, SICOM3306PT is firmly mounted to the wall or inner wall of a cabinet.

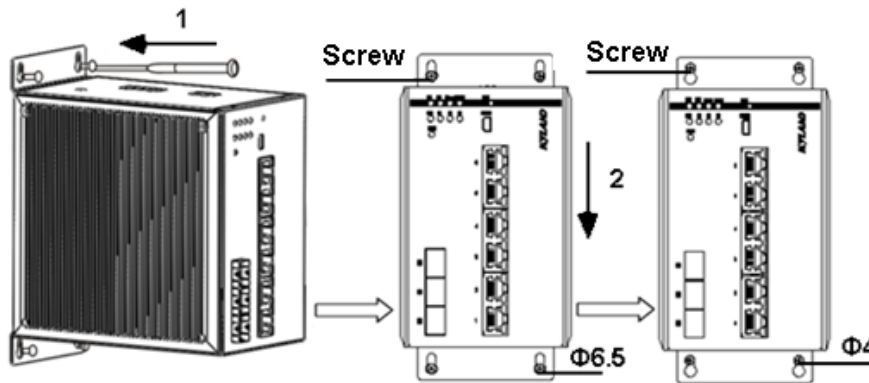


Figure 12 Panel Mounting

● Panel Dismounting

Detailed steps are as follows:

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. In so doing, you have completed dismounting the device.

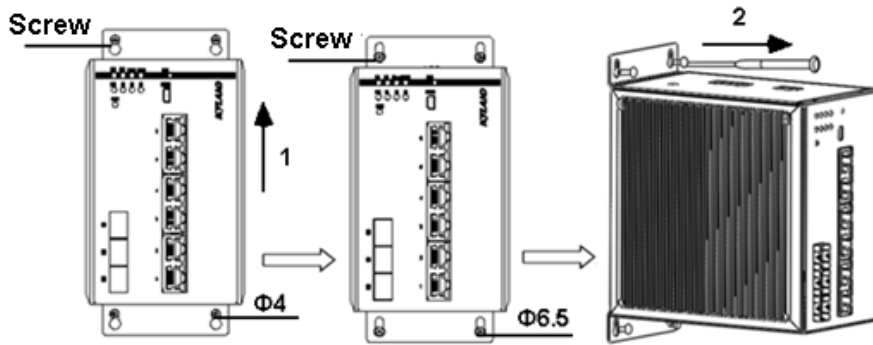


Figure 13 Panel Dismounting

4 Cable Connection

4.1 10/100Base-T(X) Port

10/100Base-T(X) 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.

Figure 14 shows the pin numbers of the 10/100Base-T(X) RJ45 port.

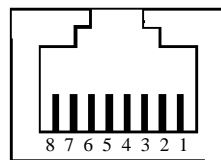


Figure 14 RJ45 Port

Table 6 lists the pin definitions of the 10/100Base-T(X) RJ45 port.

Table 6 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

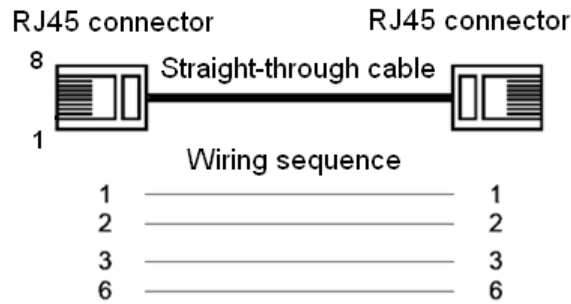


Figure 15 Connection Using Straight-through Cable

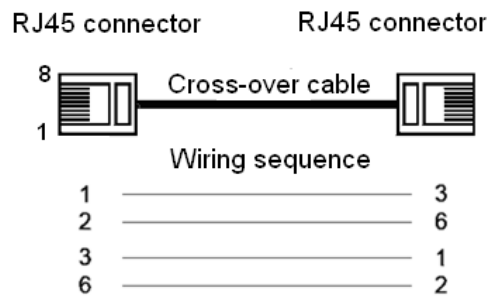


Figure 16 Connection Using Cross-over Cable

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 SFP Port

100Base-FX SFP port is 100M SFP slot. You can enable data transmission only after inserting an SFP module into the slot and connecting cable properly. You can purchase SFP modules as needed, as shown in Table 13.

4.2.1 100M SFP Optical Module

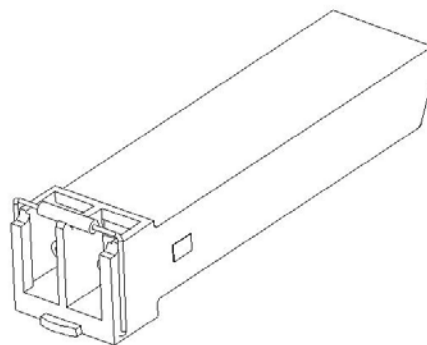


Figure 17 100M SFP Optical Module

100M SFP optical module is equipped with standard LC connector, and each port consists of a TX (transmit) port and an RX (receive) port, as shown in Figure 18.

To enable data transmission between Switch A and Switch B, connect the TX (transmit) port of Switch A to the RX (receive) port of Switch B, and the RX (receive) port of Switch A to the TX (transmit) port of Switch B, as shown in Figure 18.

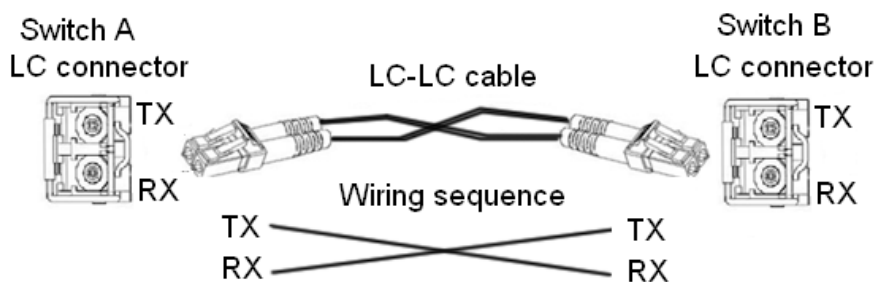


Figure 18 Cable Connection of 100M SFP Optical Module

● How to connect the 100M SFP Optical Module

Insert the SFP module into the SFP slot in the switch, and then plug the optical fiber into the TX port and RX port of the SFP module, as shown in Figure 19.

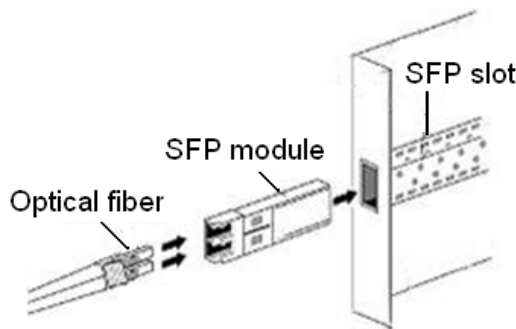


Figure 19 Connecting the 100M SFP Optical Module

How to determine the RX port and TX port of 100M SFP optical module

1. Insert the two connectors in one end of optical fiber into 100M SFP optical module, and those in the other end of the optical fiber into the SFP module of another switch.

2. Check the corresponding port Link/ACT LED in the front panel:

If the LED blinks, the link is connected.

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 in the one end of the optical fiber.

4.3 1000Base-X SFP Port

1000Base-X SFP port is 1000Base SFP slot. You can enable data transmission only after inserting an SFP optical module into the slot and connecting cable properly. You can purchase SFP modules as needed, as shown in Table 13.

4.3.1 Gigabit SFP Optical Module

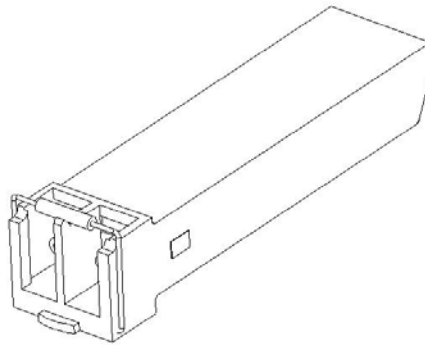


Figure 20 Gigabit SFP Optical Module

Gigabit SFP module is equipped with standard LC connector, and each port consists of a TX (transmit) port and an RX (receive) port, as shown in Figure 21.

To enable data transmission between Switch A and Switch B, connect the TX (transmit) port of Switch A to the RX (receive) port of Switch B, and the RX (receive) port of Switch A to the TX (transmit) port of Switch B, as shown in Figure 21.

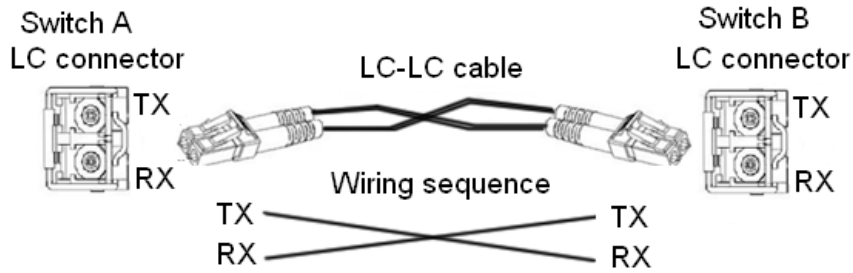


Figure 21 Cable Connection of Gigabit SFP Module

● How to connect the Gigabit SFP Optical Module

Insert the SFP module into the SFP slot in the switch, and then plug the optical fiber into the TX port and RX port of the SFP module, as shown in Figure 22.

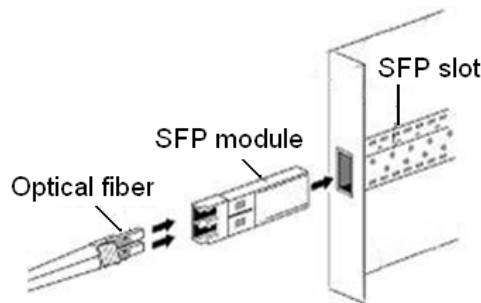


Figure 22 Connecting the Gigabit SFP Optical Module

How to determine the RX port and TX port of Gigabit SFP optical module

1. Insert the two connectors in one end of optical fiber into gigabit SFP module, and those in the other end of the optical fiber into the SFP module of another switch.

2. Check the corresponding port Link/ACT LED in the front panel:

If the LED blinks, the link is connected.

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 in the one end of the optical fiber.

4.4 Console Port

The console port is located on the front panel. To use the console port, you need to install Mini USB driver.exe on the computer. You can find the program

in the [software download] folder in the supplied CD. Then use a cable with one Mini USB connector and one USB connector to connect the console port of the switch to the USB port of the computer. You can configure, maintain, and manage the switch by running the Hyper Terminal in the Windows OS of the computer.

- Mini USB Connector

Figure 23 shows the pin numbers of the Mini USB connector.



Figure 23 Mini USB Connector

Table 7 lists the pin definitions of the Mini USB connector.

Table 7 Pin Definitions of Mini USB Connector

Pin	Definition
1	VBUS
2	D-
3	D+
4	ID
5	Grounding

- USB Connector

Figure 24 shows the pin numbers of the USB connector.

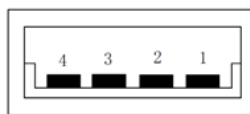


Figure 24 USB Connector

Table 8 lists the pin definitions of the USB connector.

Table 8 Pin Definitions of USB Connector

Pin	Definition
1	VBUS
2	D-

3	D+
4	Grounding

4.5 Grounding

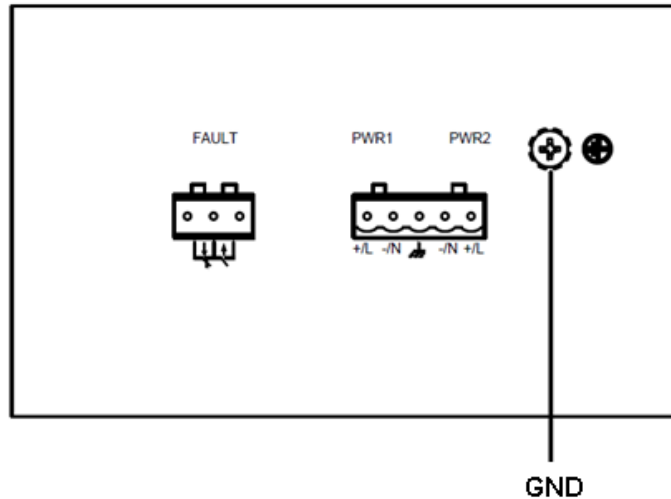


Figure 25 GND & PGND

Grounding protects the switch from lightning and interference. Therefore, you must ground the switch properly.

There is a grounding screw on the top panel of SICOM3306PT. The screw is for chassis grounding. Connect one end of the grounding cable to the grounding screw and the other end to the earth firmly (cross-sectional area of the grounding cable $>2.5\text{mm}^2$; grounding resistance $<5\Omega$).

4.6 Power Terminal Block

SICOM3306PT adopts 5-pin 5.08mm-spacing plug-in terminal block on the top panel. You need to connect the power cable to the terminal block to provide power for the device.

The device supports 24DCW and 220AC/DCW power input. When 24DCW power input is used, SICOM3306PT supports dual power inputs for redundancy. When one power input is faulty, the switch can continue operating properly, thereby improving reliability. When 220AC/DCW power input is used, SICOM3306PT supports single power input. For how to connect the power terminal block, see Figure 26 and Table 9.

Note: $0.75\text{mm}^2 < \text{Cross-sectional area of the power cable} < 2.5\text{mm}^2$;
 Grounding resistance: $< 5\Omega$

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

Figure 26 shows the pin numbers of the 5-pin 5.08mm-spacing plug-in terminal block.

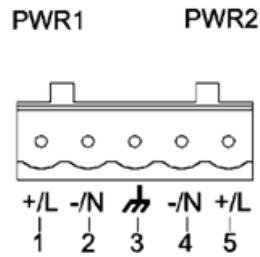


Figure 26 5-Pin 5.08mm-Spacing Plug-in Terminal Block (socket)

Table 9 lists the pin definitions of the 5-pin 5.08mm-spacing plug-in terminal block.

Table 9 Pin Definitions of 5-Pin 5.08mm-Spacing Plug-in Terminal Block

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

Note: When 220AC/DCW power input is used, you can only connect PWR1 (Pin No.1, 2, 3).

- 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

9 to fix the power cable.

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

Step 5: Check the status of the power LED on the front panel. If the LED is on, the power is connected properly.

Caution: The device supports 24DCW and 220AC/DCW 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.

4.7 Alarm Contact

The relay contact on the top panel is used for alarm output. When the switch works properly, the normally-open contact of the alarm relay is closed and the normally-closed contact is open. When an alarm occurs, the normally-open contact is open and the normally-closed contact is closed. The alarm is outputted through a 3-pin 5.08mm spacing terminal block, as shown in Figure 27.

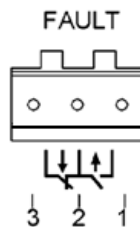


Figure 27 Alarm Terminal Block (socket)

Electrical parameters of the relay:

Max Switch Voltage: 250VAC/220VDC

Max Switch Current: 2A

Max Switch Power: 60W

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.

Wiring and mounting

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

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

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

5 LEDs

Table 10 lists the descriptions of the front panel LEDs.

Table 10 Front Panel LEDs

LED	State	Description
Power LEDs		
PWR1	On	Power 1 is connected and operates properly.
	Off	Power 1 is not connected or operates abnormally.
PWR2 (only for 24DCW)	On	Power 2 is connected and operates properly.
	Off	Power 2 is not connected or operates abnormally.
Running LED		
Run	On	The CPU operates abnormally or the device is starting up.
	Blinking (1Hz)	The CPU operates properly.
	Off	The CPU does not start up.
Alarm LED		
Alarm	Blinking (5Hz)	An alarm occurs.
	Blinking (2Hz)	Press and hold the reset button for 1-5 seconds.
	Off	No alarm occurs.
Synchronization Finish LED		
Lock	On	The switch has completed PTP synchronization.
	Blinking (1Hz)	The switch is performing PTP synchronization.
	Off	The switch has not performed PTP synchronization.
Ring LED		
Ring	On	Master station (DT-Ring)/Root (DRP)
	Blinking (1Hz)	Slave station (DT-Ring)/B-Root or Normal (DRP)
	Off	No ring
1000Base-X SFP Port LEDs		
G1-G3	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection
10/100Base-T(X) Ethernet Port LEDs		
Each RJ45 port has two LEDs. The yellow one indicates port rate while the green one indicates port connection state.		

Speed (yellow)	On	100M working state
	Off	10M working state or no connection
Link/ACT (green)	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection

6 Reset Button

The reset 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 1-5 seconds. You can restore factory default settings (including the IP address) by pressing and holding the button for more than 5 seconds. The default IP address is 192.168.0.2.

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

When the reset button is being pressed and held for 1-5 seconds, the Alarm LED will blink at 2Hz. When the reset button is being pressed and held for more than 5 seconds, the device will begin to restore factory default settings.

7 Switch Access

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

7.1 Access through Console Port

Step 1: Install Mini USB driver.exe. You can find the program in [Software download] folder in the CD.

Step 2: Connect the USB port of the PC to the console port of the switch with the Mini USB console cable.

Step 3: Open the Hyper Terminal in the Windows OS. On the desktop, click Start → All Programs → Accessories → Communications → Hyper Terminal.

Step 4: Create a new connection "Switch", as shown in Figure 28.

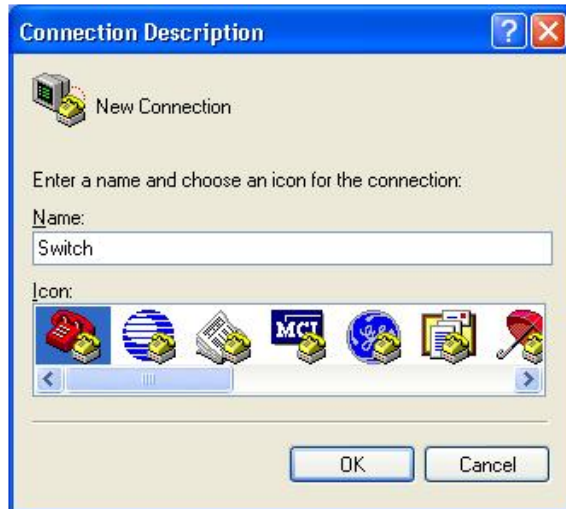


Figure 28 Creating a Connection

Step 5: Select the COM port in use, as shown in Figure 29.



Figure 29 Selecting a Serial Port

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

Step 6: Set port parameters (Bits per second: 115200, Data bits: 8, Parity: None, Stop bits: 1, and Flow control: None), as shown in Figure 30.



Figure 30 Setting Port Parameters

Step 7: 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 vlan 1	Query the default IP address of the switch.
Management view	SWITCH#show version	Query the version of the switch.
Management view	SWITCH#reload	Restart the switch.
Management view	SWITCH#set default SWITCH#write	Restore the factory default settings (including the IP address).
Management view	SWITCH#config terminal	Enter the configuration view.

7.2 Access through Telnet

Step 1: Connect the network port of the PC to the RJ45 port of the switch with an RJ45-RJ45 cable.

Step 2: Enter "telnet *IP-address*" in the Run dialog box, as shown in Figure 31.

The default IP address of a Kyland switch is 192.168.0.2.

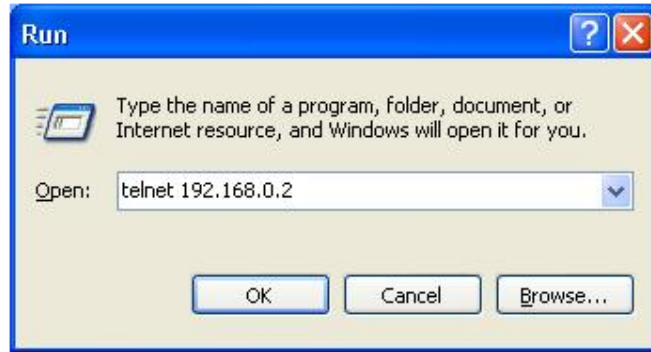


Figure 31 Access Through Telnet

Step 3: Click OK. The Telnet CLI is displayed. Then you can enter commands (as shown in Table 11) to perform operations.

7.3 Access through Web

Step 1: Connect the network port of the PC to the RJ45 port of the switch with an RJ45-RJ45 cable.

Step 2: Enter the IP address of the switch in the address box of the browser. The default IP address of a Kyland switch is 192.168.0.2. The user login interface is displayed, as shown in Figure 32 (SICOM3306PT-3GX-6T is used as an example). You can log in to the Web UI of the switch by user name "admin" and password "123".



Figure 32 Login Dialog Box

Note: IE8.0 or a later version is recommended.

8 Product Configuration Information

Table 12 lists the models supported by PTC1000.

Table 12 SICOM3306PT Configuration

Model	Interface	Power
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SICOM3306PT-3GX-6T	Three 1000Base-X SFP ports, six 10/100Base-T(X) RJ45 ports	24DCW (redundant), 220AC/DCW (single)
SICOM3306PT-2GX-6T	Two 1000Base-X SFP ports, six 10/100Base-T(X) RJ45 ports	
SICOM3306PT-2S/M-6T	Two 100Base-FX SFP ports, six 10/100Base-T(X) RJ45 ports	
SICOM3306PT-6T	Six 10/100Base-T(X) RJ45 ports	

Table 13 lists the optional accessories of SICOM3306PT.

Table 13 SICOM3306PT Optional Accessories

Model	Description
DT-BGAZ-02	Panel mounting plate
DT-FCZ-RJ45-01	RJ45 dustproof shield
DT-XL-Mini USB-USB-2m	USB console cable, Mini USB to USB, 2m
Industrial Gigabit SFP Module	
IGSFP-M-SX-LC-850-0.55	1000Base-X port; multi mode, LC connector; 850nm center wavelength (CWL), 550m transmission distance
IGSFP-S-LX-LC-1310-10	1000Base-X port; single mode, LC connector; 1310nm center wavelength (CWL), 10km transmission distance
IGSFP-S-LH-LC-1310-40	1000Base-X port; single mode, LC connector; 1310nm center wavelength (CWL), 40km transmission distance
IGSFP-S-ZX-LC-1550-80	1000Base-X port; single mode, LC connector; 1550nm center wavelength (CWL), 80km transmission distance
Industrial 100M SFP Module	
IFSFP-M-LX-LC-1310-2	100Base-FX port; multi mode, LC connector; 1310nm center wavelength (CWL), 2km transmission distance
IFSFP-S-LH-LC-1310-40	100Base-FX port; single mode, LC connector; 1310nm center wavelength (CWL), 40km transmission distance

9 Basic Features and Specifications

Power Requirements

Rated voltage range	24DCW: 24-48VDC 220AC/DCW: 100-240VAC, 50/60Hz; 110-220VDC
Maximum voltage range	24DCW: 18-72VDC 220AC/DCW: 85-264VAC/77-300VDC
Power terminal	5-pin 5.08mm-spacing plug-in terminal block

Rated Power Consumption

Rated Power Consumption	16W
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Physical Characteristics

Housing	Metal, aluminum, fanless
Installation	DIN rail and panel mounting
Dimensions (W×H×D)	88mm×135mm×137mm (excluding the DIN rail and component for panel mounting)
Weight	0.72Kg

Environmental Limits

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

Warranty

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