SICOM3306 Industrial Ethernet Switch

Hardware Installation Manual

KYLAND

Kyland Technology Co., LTD.

SICOM3306 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.

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.

Contents

1 Packing List

SICOM3306 Industrial Ethernet Switch	1
CD	1
Screwdriver	1
18#AWG yellow-green line	1
Certificate of Quality (including Certificate of Compliance)	1

Note: After unpacking, please check the accessories and the appearance of the equipment. If anything is missing or damaged, please contact us.

2 Product Overview

SICOM3306 is a series of green low power consumption industrial Ethernet switch that can be applied extensively in wind power, distribution network automation, subway PIS、AFC, power SACDA, wastewater treatment, highway, metallurgy, hydroelectric power, photovoltaic power, railway CBTC, factory automation, intelligent transportation and many other industries.

SICOM3306 has a Mini USB Console port, and supports Web, Telnet and Console network management; supports VCT (Virtual Cable Test); supports one-key recovery.

SICOM3306 industrial Ethernet switch supports DIN-Rail and panel mounting. It provides 1000Base-X, 10/100/1000Base-T(X) SFP ports, 100Base-FX ports, and 10/100Base-T(X) RJ45 ports in the front panel.

3 Structure and Interface

3.1 Front Panel

- SICOM3306-1GX-2S/M-6T
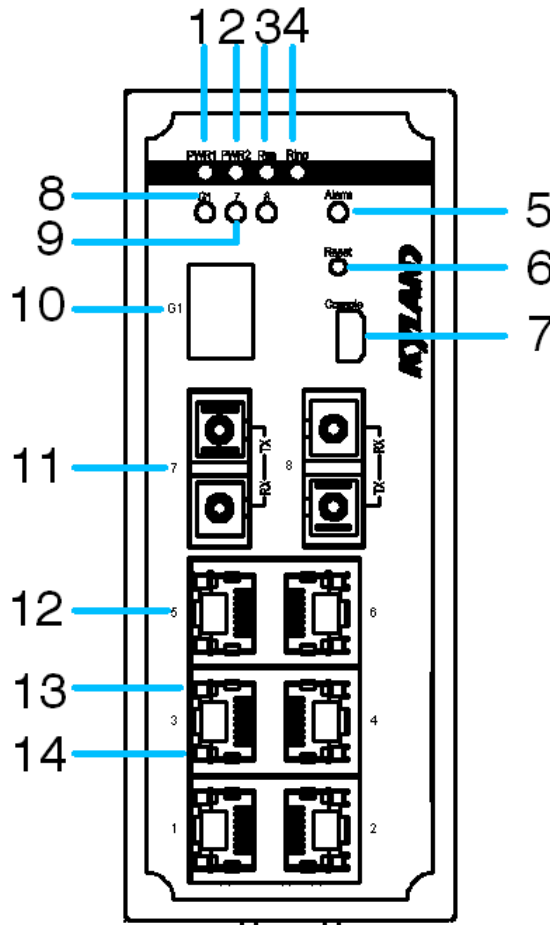

Figure 1 Front Panel 1

Table 1 SICOM3306-1GX-2S/M-6T Front Panel

Number	Diagram Label	Description
1	PWR1	Power 1 LED
2	PWR2	Power 2 LED
3	Run	Running LED
4	Ring	Ring LED

5	Alarm	Alarm LED
6	Reset	Reset button
7	Console	Console interface
8	G1	1000Base-X, 10/100/1000Base-T(X) SFP port LED
9	7, 8	100Base-FX port LED
10	G1	1000Base-X, 10/100/1000Base-T(X) SFP port
11	7, 8	100Base-FX port
12	1~6	10/100Base-T(X) RJ45 port
13	--	RJ45 port Speed LED
14	--	RJ45 port Link/ACT LED

● SICOM3306-3GX-6T
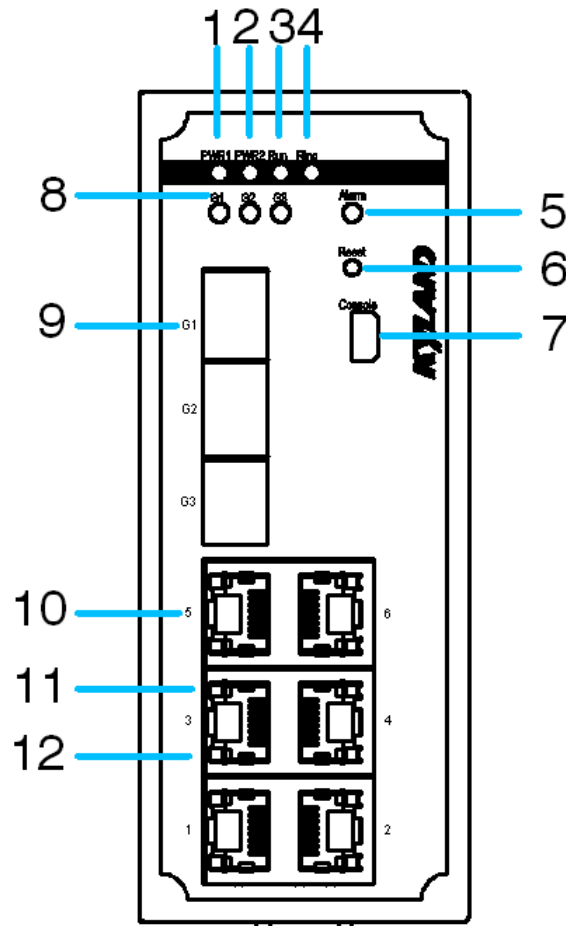
Figure 2 Front Panel 2

Table 2 SICOM3306-3GX-6T Front Panel

Number	Diagram Label	Description
1	PWR1	Power 1 LED
2	PWR2	Power 2 LED
3	Run	Running LED
4	Ring	Ring LED
5	Alarm	Alarm LED
6	Reset	Reset button
7	Console	Console interface
8	G1~G3	1000Base-X, 10/100/1000Base-T(X) SFP port LED
9	G1~G3	1000Base-X, 10/100/1000Base-T(X) SFP port
10	1~6	10/100Base-T(X) RJ45 port
11	--	RJ45 port Speed LED
12	--	RJ45 port Link/ACT LED

● SICOM3306-2GX-6T
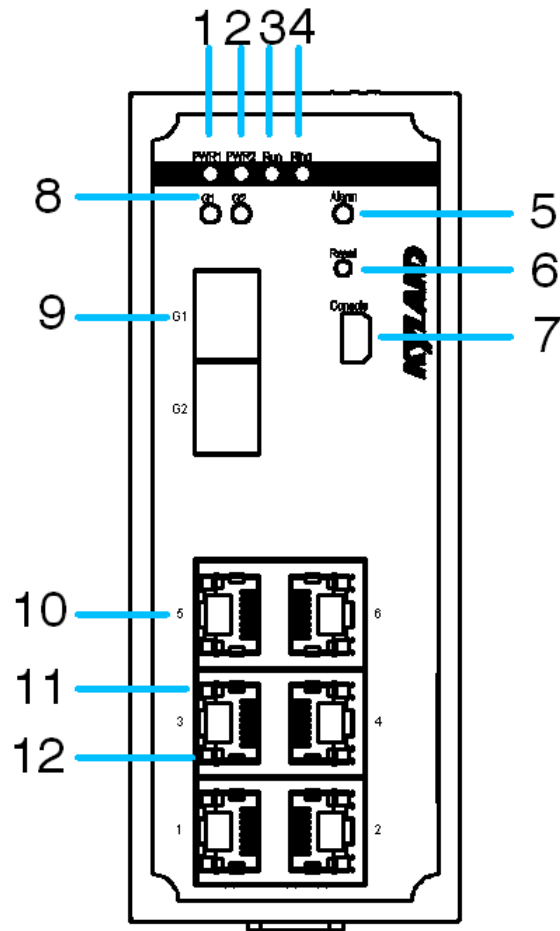
Figure 3 Front Panel 3

Table 3 SICOM3306-2GX-6T Front Panel

Number	Diagram Label	Description
1	PWR1	Power 1 LED
2	PWR2	Power 2 LED
3	Run	Running LED
4	Ring	Ring LED
5	Alarm	Alarm LED
6	Reset	Reset button
7	Console	Console interface
8	G1~G2	1000Base-X, 10/100/1000Base-T(X) SFP port LED
9	G1~G2	1000Base-X, 10/100/1000Base-T(X) SFP port

10	1~6	10/100Base-T(X) RJ45 port
11	--	RJ45 port Speed LED
12	--	RJ45 port Link/ACT LED

● SICOM306-1GX-8T
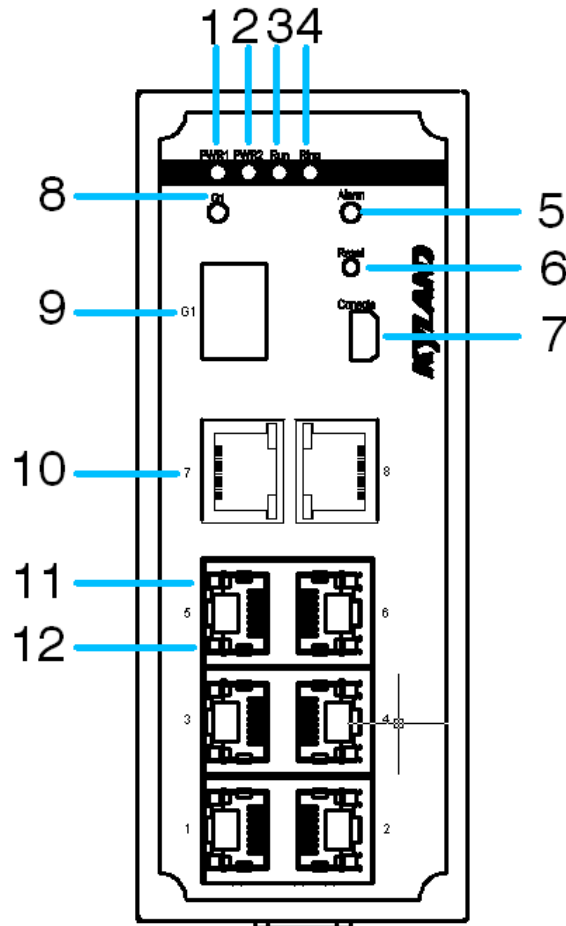
Figure 4 Front Panel 4

Table 4 SICOM3306-1GX-8T Front Panel

Number	Diagram Label	Description
1	PWR1	Power 1 LED
2	PWR2	Power 2 LED
3	Run	Running LED
4	Ring	Ring LED

5	Alarm	Alarm LED
6	Reset	Reset button
7	Console	Console interface
8	G1	1000Base-X, 10/100/1000Base-T(X) SFP port LED
9	G1	1000Base-X, 10/100/1000Base-T(X) SFP port
10	1~8	10/100Base-T(X) RJ45 port
11	--	RJ45 port Speed LED
12	--	RJ45 port Link/ACT LED

3.2 Top Panel
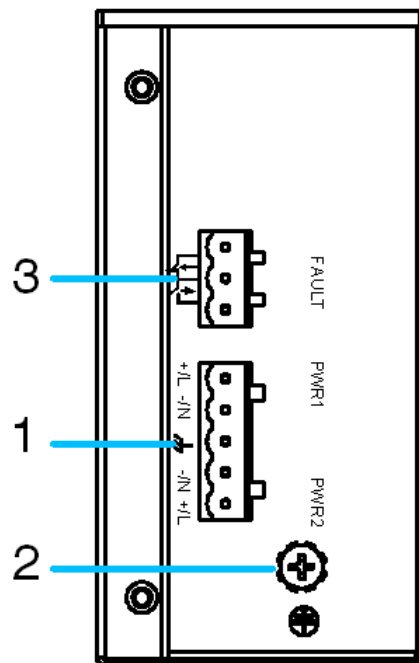
Figure 5 Top Panel

Table 5 SICOM3306 Top Panel

Number	Description
1	Power supply terminal block
2	Grounding Screw
3	Relay contact

4 Mounting

4.1 Dimension Drawing

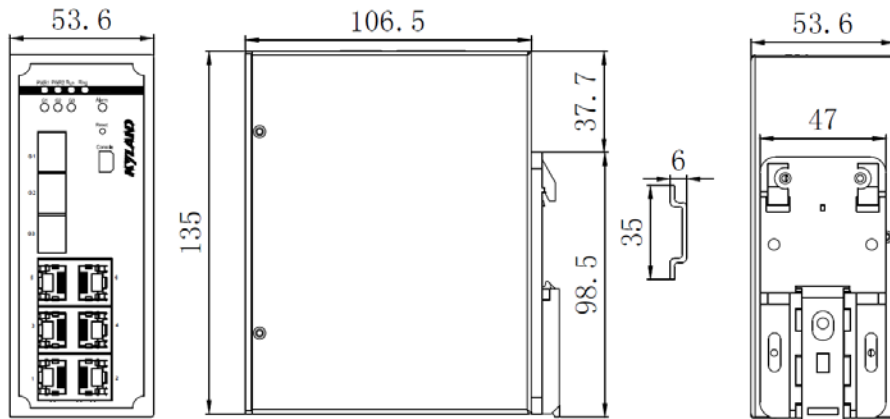● Dimension Drawing for DIN-Rail Mounting (Unit: mm)

Figure 6 DIN-Rail Mounting Dimension

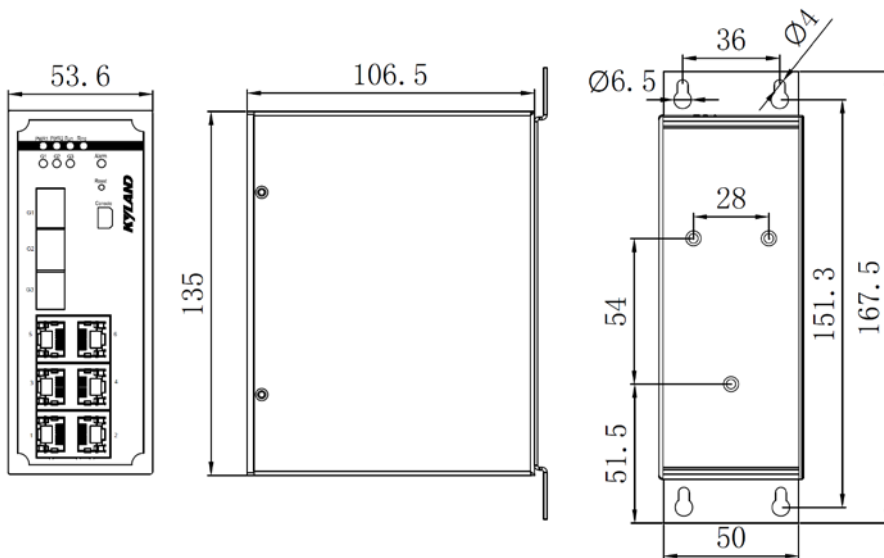● Dimension Drawing for Panel Mounting (Unit: mm)

Figure 7 Panel Mounting Dimension

4.2 **Mounting Steps**

● SICOM3306 DIN-Rail Mounting

The specific steps are as follows:

Step 1: Select the mounting position for SICOM3306 and ensure that there is adequate space.

Step 2: Insert the top of the DIN-Rail into the slot of the DIN-Rail connecting seat in the rear panel of SICOM3306 as shown below; move the switch in the direction of arrow 2 to put the whole Din-Rail into the seat; check whether SICOM3306 is firmly mounted on the DIN-Rail, as shown below.
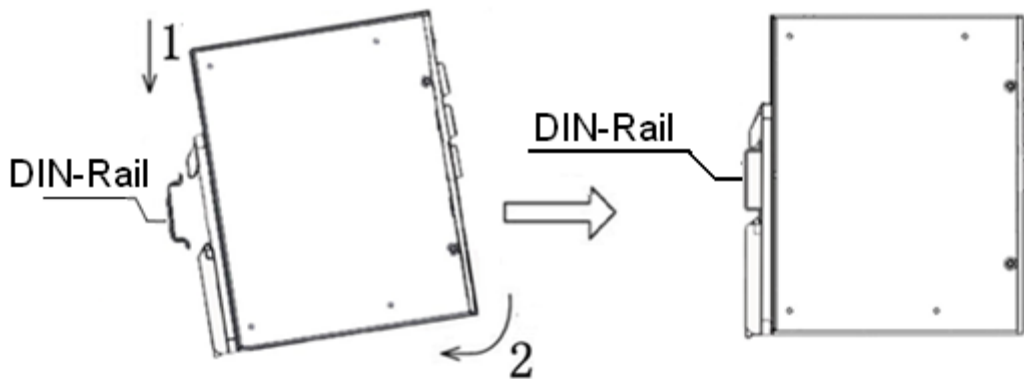

Figure 8 DIN-Rail Mounting

● Remove SICOM3306 from DIN-Rail

The specific steps are as follows:

Step 1: Insert the screwdriver into the hole at the bottom of spring locking plate; press the plate down to loosen the connection of DIN-Rail and switch, as shown in arrow 1.

Step 2: Pull the SICOM3306 up in the direction of arrow 2; meanwhile remove the switch from the DIN-Rail along the direction of arrow 3.
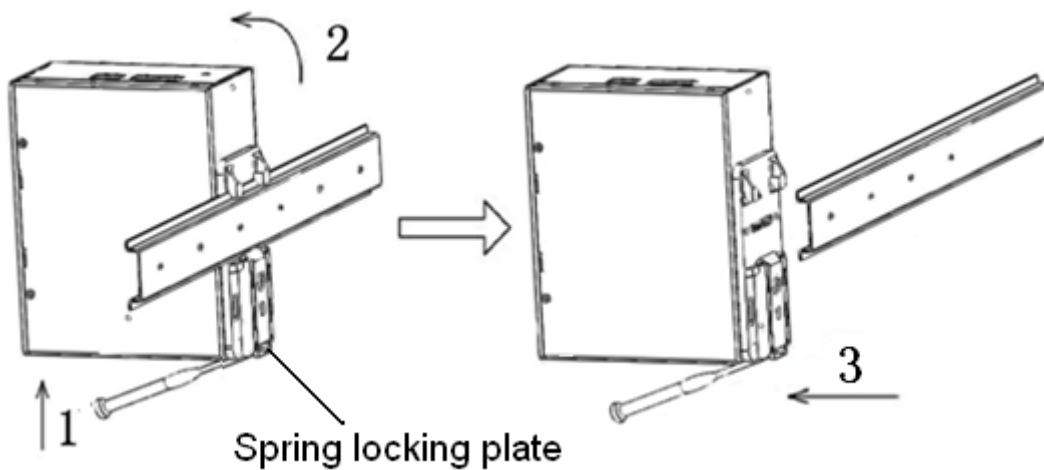
Figure 9 Dismounting

● SICOM3306 Panel Mounting

The specific steps are as follows:

Step 1: Select the mounting position for SICOM3306 on the wall or in cabinet; ensure that there is adequate space for the switch.

Step 2: Drill 4 holes on the selected position according to the panel mounting dimension drawing; use a cross-screwdriver to screw 4 cross-slot screws (M3×10) into holes. Don't tighten the screws completely; leave about 5mm of space between.

Step 3: Aim 4 mounting holes on SICOM3306 mounting plate at 4 fixed screws; pass the screws through 4 holes with the diameter of 6.5mm (Φ6.5); then slide down SICOM3306 as seen below; finally screw 4 screws tightly. Now the SICOM3306 should be firmly fixed to the wall or cabinet.
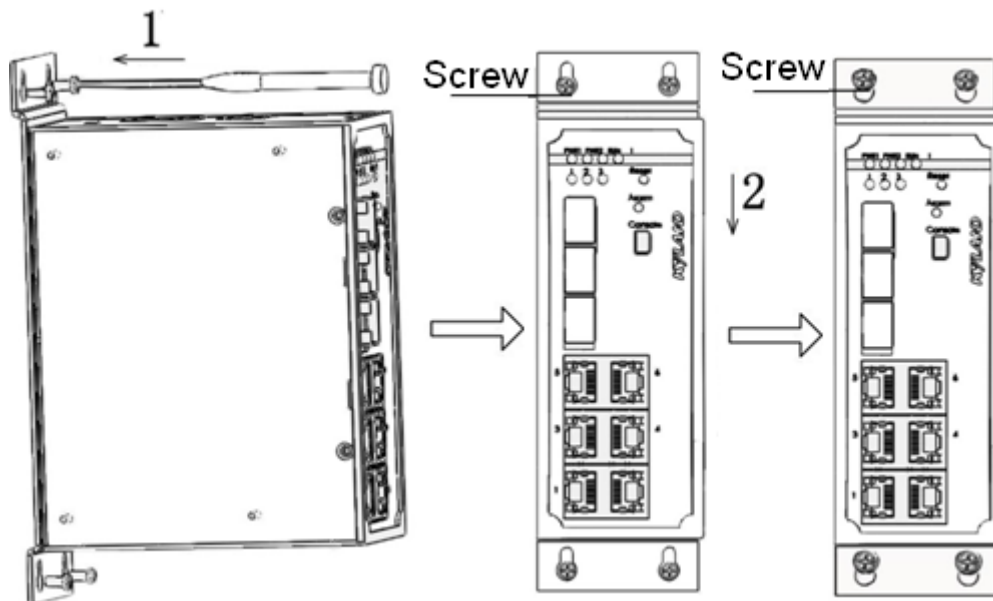
Figure 10 Panel Mounting

● Remove SICOM3306 from wall or cabinet

The specific steps are as follows:

Step 1: Use a screwdriver to loosen 4 screws; move the switch up to let screws into 4 holes with the diameter of 6.5mm (Φ6.5).

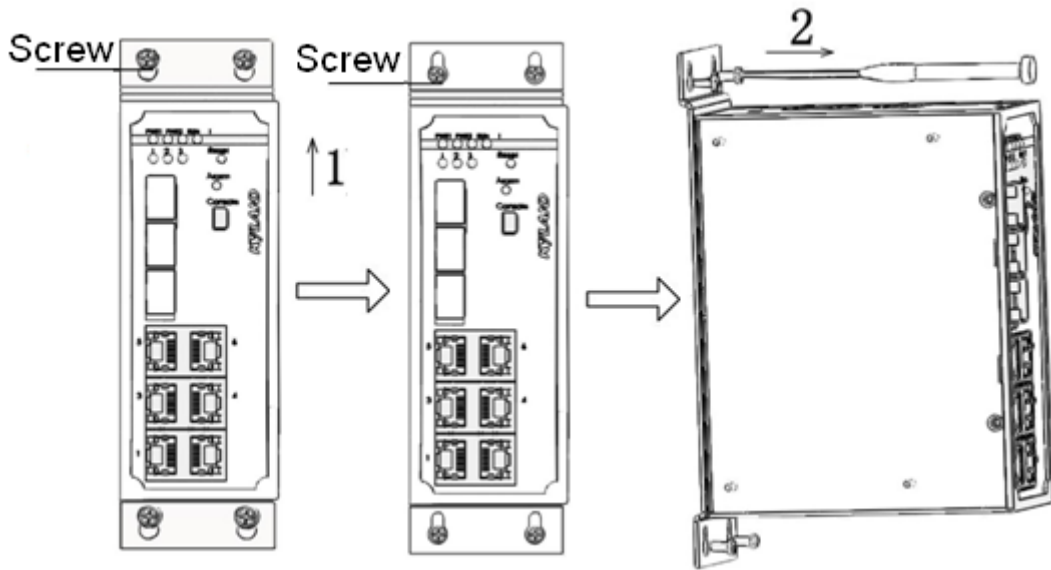Step 2: Unscrew the screws from wall or cabinet; remove the switch from wall or cabinet.

Figure 11 Dismounting

5 Cable Connection

5.1 10/100Base-T(X) Ethernet Port

10/100Base-T(X) Ethernet RJ45 port can be connected to terminal equipment and network devices with straight-through cables or crossover cables. RJ45 connectors must be equipped at both ends of cable.

● Pin definition of 10/100Base-T(X) RJ45 port

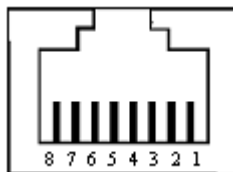Pin number of 10/100Base-T(X) RJ45 port is shown in Figure 12

Figure 12 RJ45 Port

Pin definition of 10/100Base-T(X) RJ45 port is shown in Table 6

Table 6 Pin Definition of 10/100Base-T(X) RJ45 Port

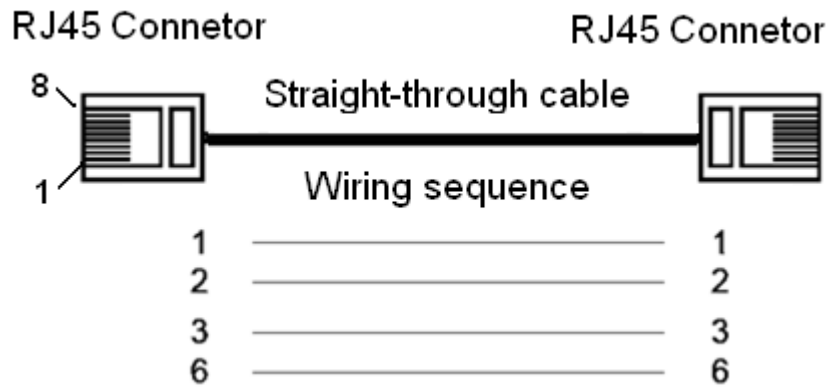| Pin	MDI-X Signal Name	MDI Signal Name
1	Receive Data+ (RD+)	Transmit Data+ (TD+)
2	Receive Data- (RD-)	Transmit Data- (TD-)
3	Transmit Data+ (TD+)	Receive Data+ (RD+)
6	Transmit Data- (TD-)	Receive Data- (RD-)
4, 5, 7, 8	Unused	Unused
Note: "+""-"means level polarity.		

● Wiring Sequence

Figure 13   10/100M Straight-through Cable Wiring
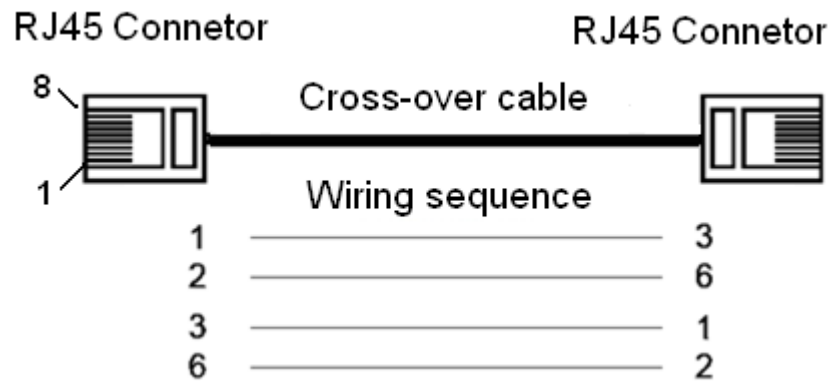

Figure 14   10/100M Cross-over Cable Wiring

Note: The correlation between the pin of RJ45 connector and the color of twisted pair is:
1-orange and white, 2-orange, 3-green and white, 4-blue, 5-blue and white, 6-green,
7-brown and white, 8-white.

5.2 100Base-FX Ethernet Port

100Base-FX Ethernet port is equipped with FC/SC/ST connector, and each port consists of TX (transmit) port and RX (receive) port, as shown in Figure 15.

100Base-FX port wiring is shown in Figure 15 (Take SC port as example; ST/FC wiring method is the same with SC). 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 in order to transmit data between switch A and switch B.
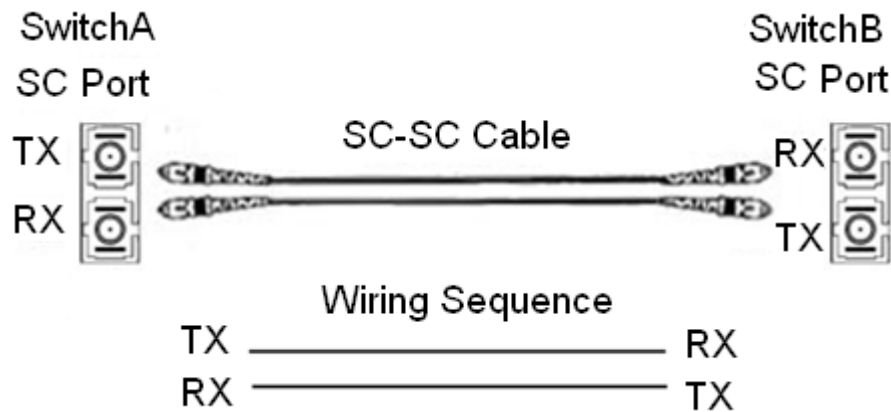
Figure 15 100Base-FX Port Wiring

Note: A laser is used to transmit signals in fiber cables. 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 switch is powered on.

5.3 1000Base-X, 10/100/1000Base-T(X) SFP Port

1000Base-X, 10/100/1000Base-T(X) SFP port namely is 1000Base SFP

slot. Insert SFP module to SFP slot, and then plug twisted pair or optical fiber into SFP module to transmit data. Choose the model of SFP module to meet your requirements, as shown in Table 13.

5.3.1 Gigabit SFP Optical Module

● Figure 16 shows an example of a Gigabit SFP optical module

Figure 16 Gigabit SFP Optical Module

Gigabit SFP optical module is equipped with LC connector, and each port consists of TX (transmit) port and RX (receive) port, as shown in Figure 17.

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 in order to transmit data between switch A and switch B, as shown in Figure 17.
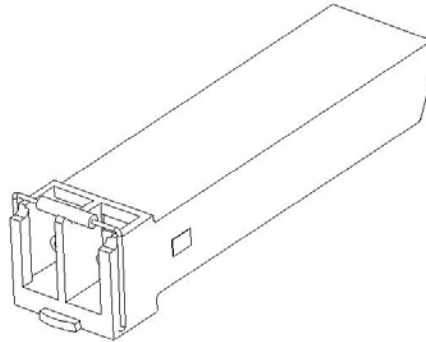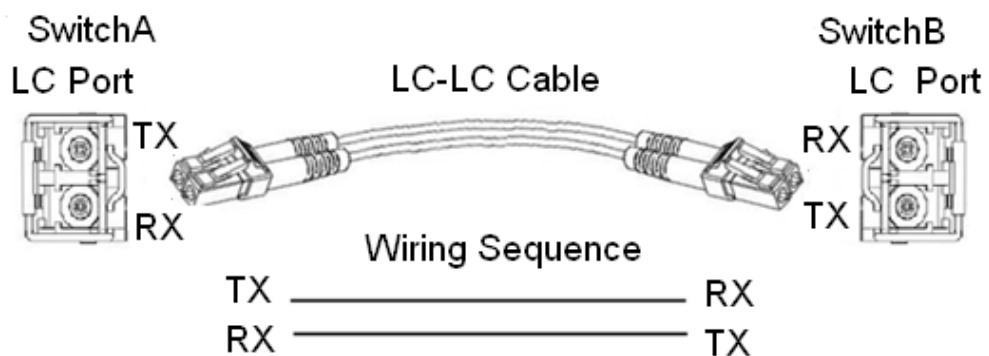
Figure 17 Gigabit SFP Optical Module Wiring

- Confirm Gigabit SFP optical module RX port and TX port

    1. Insert the two connectors in one end of optical fiber into SFP optical module, and then insert the two connectors in the other end of the optical fiber into SFP optical module of another switch to communicate.

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

       Indicator flashing means link connectivity;

       Indicator off means no link connectivity and it may be because of the incorrect link between RX port and TX port in SFP optical modules. Try to swapping connectors in any one end of optical fiber.

- The use of SFP optical module

  While wiring, first insert the SFP optical module into the SFP slot in the switch, and then plug the optical fiber into the SFP optical module. See Figure 18.
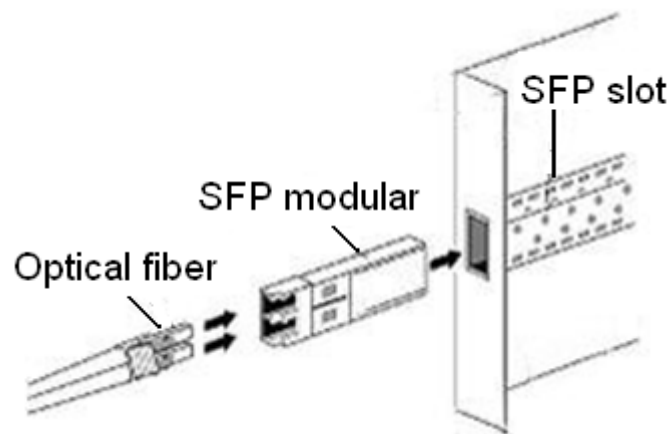

Figure 18 SFP Optical Module

5.3.2 Gigabit SFP Electrical Module

● Figure 19 shows an example of a Gigabit SFP electrical module;
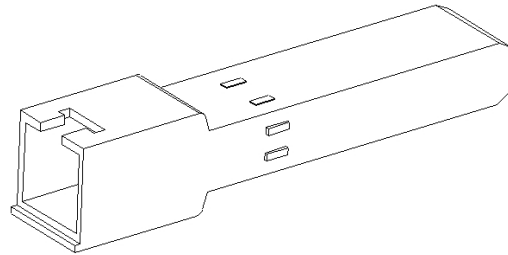
Figure 19 Gigabit SFP Electrical Module

● The use of SFP electrical module

While wiring, first insert the SFP electrical module into the SFP slot in the switch, and then plug the twisted pair into the SFP electrical module. See Figure 20.

Figure 20 SFP Electrical Module

5.4 Console Interface

Install the driver for Mini USB onto your PC. The driver "Mini USB driver.exe" is in the software download folder, which is on the supplied CD. Connect the USB port on the PC to the Console interface on the switch

with cable equipped with Mini USB connector and USB connector at both ends. Run Hyper Terminal software in WINDOWS operating system to connect to console software of the switch, which will allow you to configure, maintain and manage the switch.
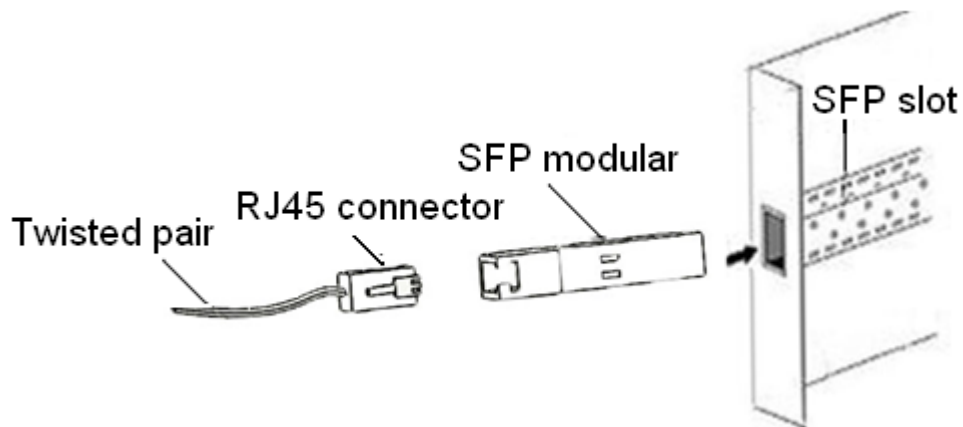
● Mini USB connector

Mini USB connector pin number is shown in Figure 21.
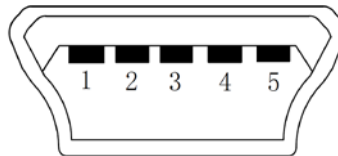

Figure 21 Mini USB Connector

Mini USB connector pin definition is shown in Table 7.

Table 7 Mini USB Pin Definition

Mini USB Pin	Definition
1	VBUS
2	D-
3	D+
4	ID
5	GND

● USB connector

USB connector pin number is shown in Figure 22.
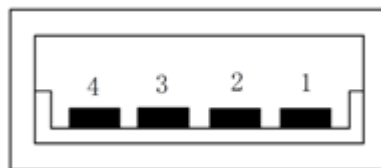
Figure 22 USB Connector

USB pin definition is shown in Table 8.

Table 8 USB Pin Definition

USB Pin	Definition
1	VBUS
2	D-
3	D+
4	GND

5.5 Power

According to the power input requirements, use a 5.08mm-spacing terminal block to connect power cable.

Note: The cross section area of power cable is required to be greater than 0.75mm^2 and less than 2.5mm^2. The grounding resistance requirement: <5Ω.

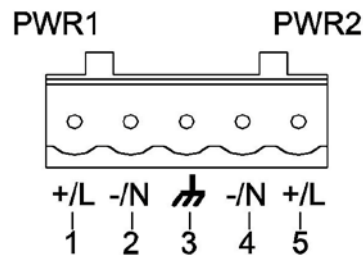● 5 pin 5.08mm power terminal block

Figure 23 5-pin 5.08mm-spacing Plug-in Terminal Block

Table 9 5 Pin 5.08mm Power Terminal Block Contact Definition

Contact Number	DC Wiring Definition	AC Wiring Definition
1	PWR1: +	PWR1: L
2	PWR1: -	PWR1: N
3	Protection Ground	Protection Ground
4	PWR2: -	PWR2: N

5	PWR2: +	PWR2: L

● Wiring and mounting

Step 1: Take the power terminal block off the switch.

Step 2: Insert the power cable into the terminal block and connect the power cable.

Step 3: Put the terminal block back to the switch with the connected cable.

5.6 Grounding

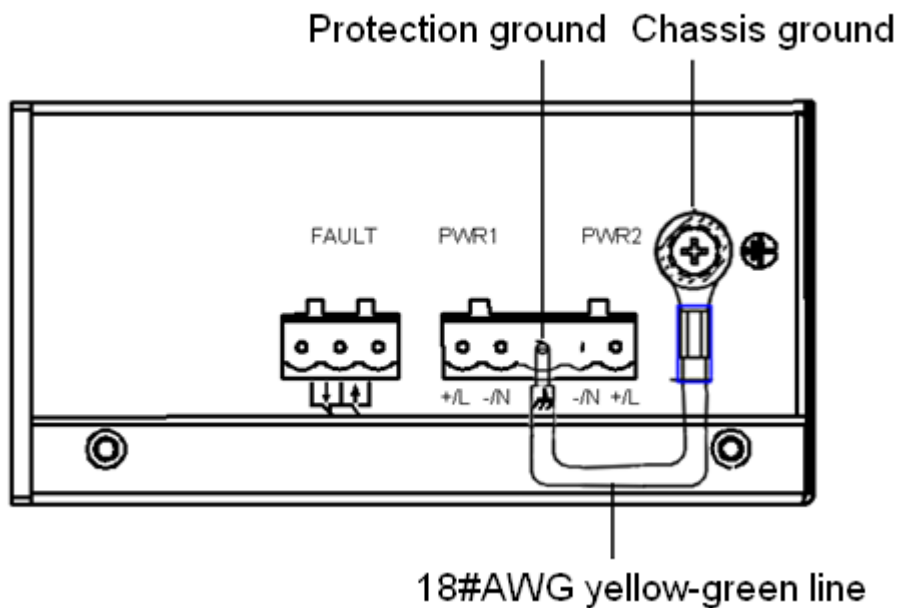● Chassis grounding and power terminal grounding

Figure 24 Chassis Grounding and Power Terminal Grounding

There is a grounding screw on the top panel of the SICOM3306, which is for chassis ground. One end of the chassis grounding cable is connected with the grounding screw and the other end of the cable is reliably grounded. (The cross section area of chassis grounding cable

should be more than 2.5mm^2. The grounding resistance requirement: <5Ω)

The grounding part in the 5.08mm power terminal block is called protection ground.

It is required to connect the chassis grounding part with the protection grounding part with supplied 18#AWG yellow-green line to allow the switch to operate safely and precisely.

The dimension drawing of 18#AWG yellow-green line is shown in Figure 25.
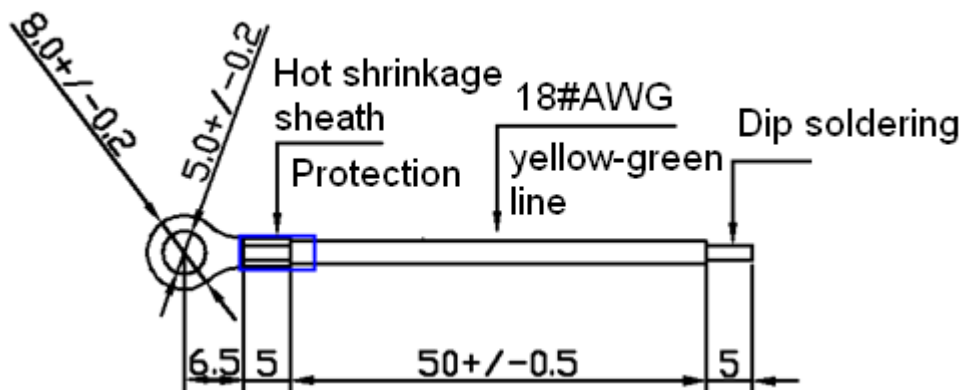

Figure 25 18#AWG Yellow-Green Line (Unit: mm)

Note: If SICOM3306 needs to perform a dielectric voltage withstand test, in order to avoid test failure, please disconnect the 18#AWG yellow-green line to disable surge protection circuit that leads to leakage electricity.
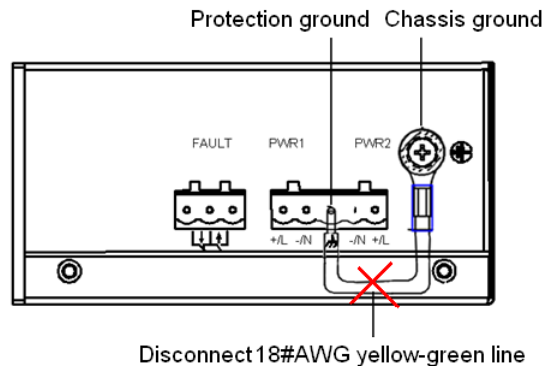
Figure 26   Disconnect 18#AWG Yellow-Green Line (Unit: mm)

5.7 Relay Contact

The relay contact is used for alarm output. When the switch works normally, the normally-open contact of the alarm relay is closed and the normally-closed contact is open; when the 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 3-Pin 5.08mm-Spacing Plug-In Terminal Blocks

The 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 normally, the pin 1 and 2 are closed, pin 2 and pin 3 are open; when the alarm occurs, the pin 1 and 2 are open; pin 2 and 3 are closed.
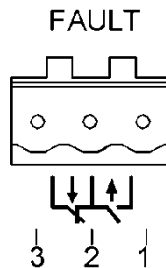
● Wiring and mounting

Step 1: Take the alarm terminal block off the switch.

Step 2: Insert the cable for alarm output into the alarm terminal block according to the requirements and connect the cable.

Step 3: Put the alarm terminal block back to the switch with the connected cable.

6 LED Indicators

Table 10 Front Panel LED

LED	State	Description
Running LED		
Run	ON	CPU is running abnormally or the switch is starting.
	Blinking (1HZ)	CPU is running normally
	OFF	CPU is not started up.
Alarm LED		
Alarm	ON	System alarm
	OFF	No system alarm.
Power LEDs		
PWR1	ON	Power 1 connects and operates normally.
	OFF	Power 1 disconnects or operates abnormally.
PWR2	ON	Power 2 connects and operates normally.

	OFF	Power 2 disconnects or operates abnormally.
Ring LED		
Ring	ON	Master (DT-Ring mode)/Root(DRP mode)
	Blinking	Slave (DT-Ring mode)/B-Root(DRP mode)
	OFF	No ring mode
1000Base-X, 10/100/1000Base-T(X) SFP port LEDs		
Link/ACT	On	Effective network connection in the port
	Blinking	Network activities in the port
	Off	No effective network connection in the port
100Base-FX port LEDs		
Link/ACT	On	Effective network connection in the port
	Blinking	Network activities in the port
	Off	No effective network connection in the port
10/100Base-T(X) RJ45 port LEDs		
Each RJ45 port has two indicators, a yellow LED and a green LED. The yellow LED indicates port rate, while the green LED indicates port connection state.		
Speed (Yellow)	ON	100M working state
	OFF	10M working state or no connection
Link/ACT (Green)	ON	Effective network connection in the port
	Blinking	Network activities in the port
	OFF	No effective network connection in the port

7 Reset Button

Reset button supports reboot and restoring default configuration.

Push the reset button and hold for one second then release to reboot the switch.

Hold the reset button down for five seconds then release to restore default configuration (including IP address) and reboot; the default IP address is 192.168.0.2.

Note: Don't hold the reset button down for more than 5 second to avoid restoring default configuration.

8 Management Access

Access the switch by one of the following three ways.

8.1 Connected through Console Port

1. Install the driver for Mini USB onto your PC. The driver "Mini USB driver.exe" is in the software download folder, which is on the supplied CD.

2. Use the Console cable that is equipped with Mini USB connector at one end and USB connector at the other end to connect the Console interface on the switch with the USB port on PC.

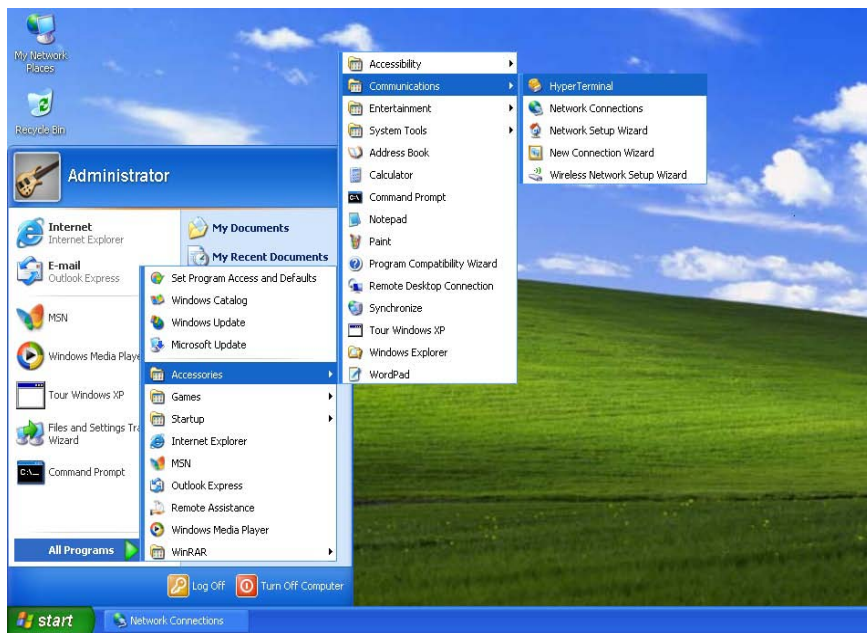3. On Windows desktop, click Start → All programs → Accessories → Communications → Hyper Terminal.

Figure 28 Hyper Terminal

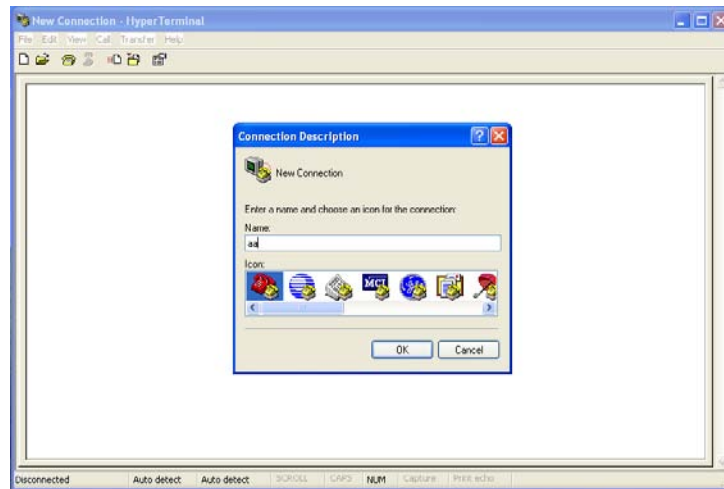4. Build a new connection named "aa"

Figure 29 New Connection

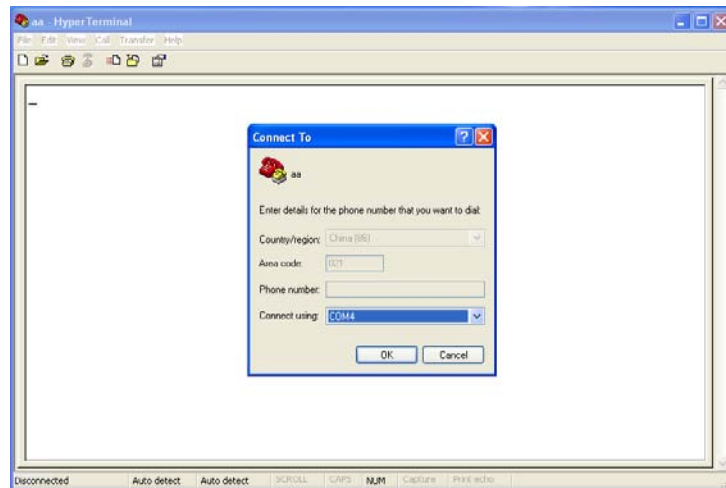5. Select COM port as the connection type.

Figure 30 Choose Port

6. Set the parameters of COM port (Bits per second: 115200, Data bits: 8, Parity: None, Stop bits: 1, Flow control: None)
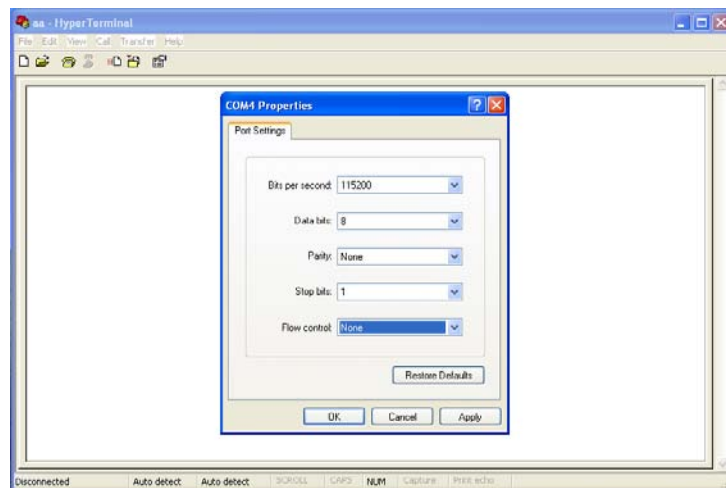

Figure 31 Set COM Parameters

7. Click "OK" to enter the CLI interface, and type in a CLI command from Table 11.

Table 11 CLI Command

View	Command	Description
User View	SWITCH>enable	Enter management view
Management View	SWITCH#show interface	Show the IP address of current switch

Management View	SWITCH#show version	Show version of switch
Management View	SWITCH#reboot	Reboot
Management View	SWITCH#load default	Restore default configuration (except for IP address)
Management View	SWITCH#config terminal	Enter configuration view

8.2 Connected through Ethernet Cable

1. Connect any RJ45 port of the switch with the Ethernet port of a personal computer with a RJ45 cable.

2. Open Run window from the start menu, then input "telnet + 'IP address'". The default IP address is 192.168.0.2.
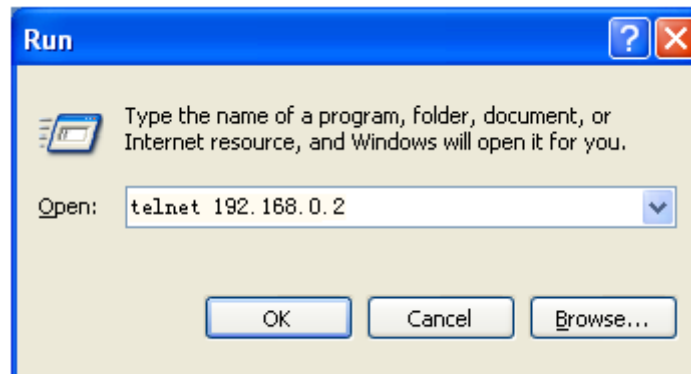

Figure 32 Enter Telnet

3. Click "OK" to enter the Telnet configuration interface. Type in a CLI command from Table 11.

8.3 Web Access

1. Connect the Ethernet port on the PC to any RJ45 port on the switch.

2. Input the IP address of the current switch in web browser, the default IP is

192.168.0.2. The Web interface access screen will appear as shown below in Figure 33, login with default user name "admin" and password "123".
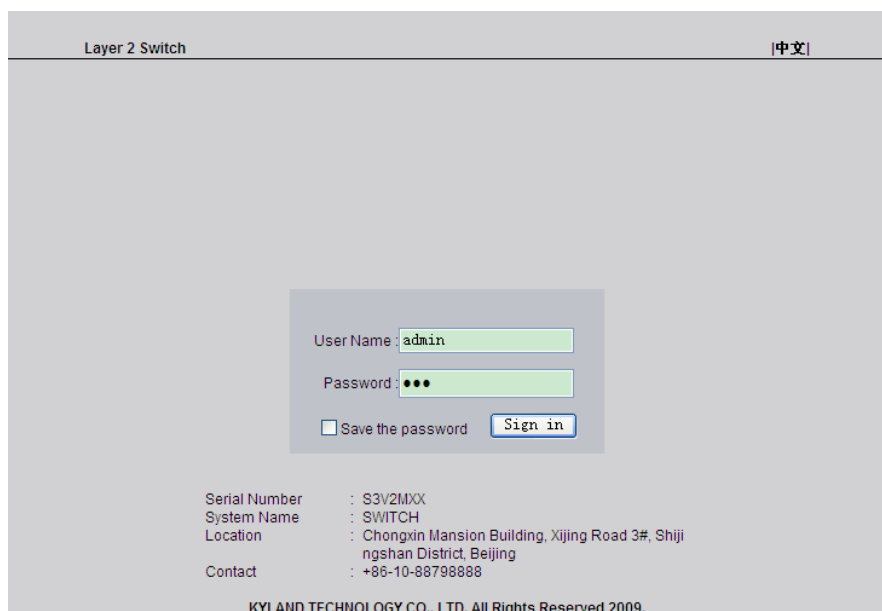

Figure 33 Web Interface Access Screen

Note: We recommend IE version 8.0 or greater.

9 Product Configuration Information

The specific configuration models of SICOM3306 are shown in Table 12

Table 12 SICOM3306 Configuration

Model	Interface Description	Power
SICOM3306-1GX-8T	supports 1 1000Base-X, 10/100/1000Base-T(X) SFP port; 8 10/100Base-T(X) RJ45 ports	12DC, 24AC/DCW dual redundant power inputs
SICOM3306-2GX-6T	supports 2 1000Base-X, 10/100/1000Base-T(X) SFP port; 6 10/100Base-T(X) RJ45 ports	
SICOM3306-3GX-6T	supports 3 1000Base-X, 10/100/1000Base-T(X)	

	SFP port; 6 10/100Base-T(X) RJ45 ports	
SICOM3306-1GX-2S /M-6T	supports 1 1000Base-X, 10/100/1000Base-T(X) SFP port; 2 100Base-FX,SM/MM ports, FC/SC/ST connector; 6 10/100Base-T(X) RJ45 ports	

Table 13 SICOM3306 Optional Accessories

Model	Description
DT-BGAZ-02	Panel mounting kit
DT-FCZ-RJ45-01	RJ45 dustproof shield
DT-XL-Mini USB-USB-2m	USB console cable, Mini USB to USB, 2m
Gigabit SFP Module	
IGSFP-1000BASE-T-RJ45	1000Base-T(X) port, RJ45 connector
IGSFP-10/100/1000BASE-T-RJ45	10/100/1000Base-T(X) port, RJ45 connector
IGSFP-M-SX-LC-850-0.55	1000Base-X port; multi mode, LC connector; wavelength is 850nm, transmission distance is 550m
IGSFP-S-LX-LC-1310-10	1000Base-X port; single mode, LC connector; wavelength is 1310nm, transmission distance is 10Km
IGSFP-S-LH-LC-1310-40	1000Base-X port; single mode, LC connector; wavelength is 1310nm, transmission distance is 40Km
IGSFP-S-ZX-LC-1550-60	1000Base-X port; single mode, LC connector; wavelength is 1550nm, transmission distance is 60Km

IGSFP-S-ZX-LC-1550-80	1000Base-X port; single mode, LC connector; wavelength is 1550nm, transmission distance is 80Km

10 Basic Features and Specifications

- Power Requirements

Power input: 12DC (9～18VDC),

24AC/DCW (18～72VDC,18～50VAC)

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

Power consumption: SICOM3306-2GX-6T: 5.2W (MAX)

SICOM3306-3GX-6T: 6.2W (MAX)

SICOM3306-1GX-8T: 4.2W (MAX)

SICOM3306-1GX-2S/M-6T: 5.2W (MAX)

- Physical Characteristics

Housing: Metal, fanless

Installation: DIN-Rail or panel mounting

Dimensions (W×H×D): 53.6mm×135mm×106.5mm

Weight: 0.76Kg

- Environment Limits

Operating Temperature: -40℃~+85℃

Storage Temperature: -40℃～+85℃

Ambient Relative Humidity: 5%~95% (non-condensing)

- MTBF

410000h

- Warranty

5 years

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

http://www.kyland.cn/