

SICOM3024P

Industrial Ethernet Switch

Hardware Installation Manual



KYLAND
Kyland Technology Co., LTD.

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Customer Service Hotline: (+8610) 88796676

FAX: (+8610) 88796678

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

E-mail: support@kyland.biz

No.: 1.12.02.0066-0

**SICOM3024P Industrial Ethernet Switch
Hardware Installation Manual**

Disclaimer: Kyland Technology Co., Ltd. tries to keep the content in this manual as accurate and as up-to-date as possible. This document is not guaranteed to be error-free, and we reserve the right to amend it without notice.

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Notice for Safety Operation

This product performs reliably as long as it is used according to the guidelines. 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 that 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 remove power and contact your Kyland representative:

- Water gets into the equipment;
- Equipment damage or shell breakage;
- Equipment operation or performance has abnormally changed;
- The equipment emits odor, smoke or abnormal noise.

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1. Packing List

SICOM3024P Industrial Ethernet Switch	1
Software Operation Manual (CD)	1
RJ45-to-DB9 Console cable (2m)	1
Hardware Installation Manual	1
Certificate of Quality (including Warranty Card)	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

SICOM3024P managed Gigabit industrial Ethernet switches can be applied extensively in power, rail transit, coal mining and many other industries. They comply with IEC61850-3 and IEEE1613 standards and adopt internal modular design for flexible expansion.

The SICOM3024P is a 19-inch 1U structure and allows rack mounting by its front or rear panel. It is equipped with max 4 Gigabit ports and 24 fast Ethernet fiber/RJ45 optional ports.

3. Structure and Interface

3.1 Front Panel

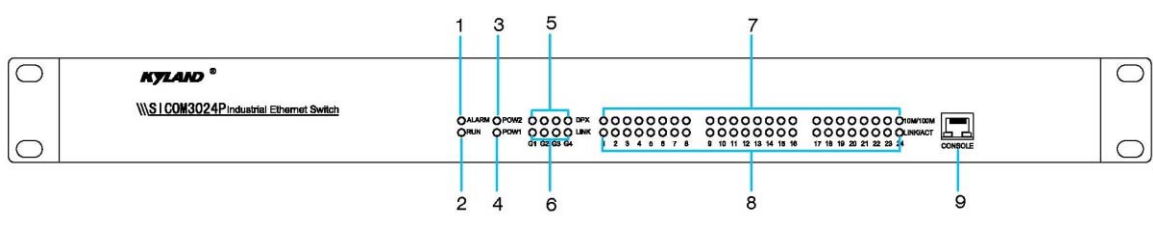


Figure 1: SICOM3024P Front Panel

- 1: ALARM --- Alarm LED
- 2: RUN --- Running LED
- 3: POW2 --- Power 2 LED

- 4: PWR1 --- Power 1 LED
- 5: DPX (G1-G4) --- 4 LEDs showing Gigabit ports' duplex status
- 6: LINK (G1-G4) --- 4 LINK/ACT LEDs for Gigabit ports
- 7: (1-24) --- 24 speed LEDs for 100M ports
- 8: (1-24) --- 24 LINK/ACT LEDs for 100M ports
- 9: CONSOLE --- CONSOLE port

3.2 Rear Panel

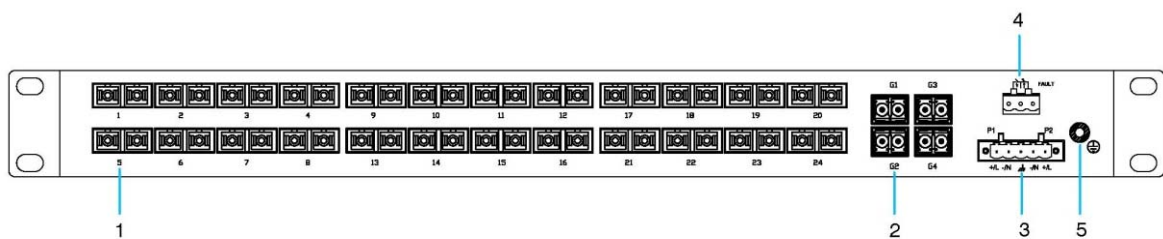


Figure 2: SICOM3024P Rear Panel

- 1: (1-24) --- 24 100Base-FX ports
- 2: (G1-G4) --- 4 Gigabit SFP ports
- 3: Terminal block for power input
- 4: Terminal block for alarm output
- 5: Screw hole for grounding

4. Mounting

4.1 Dimension Drawing (Unit: mm)

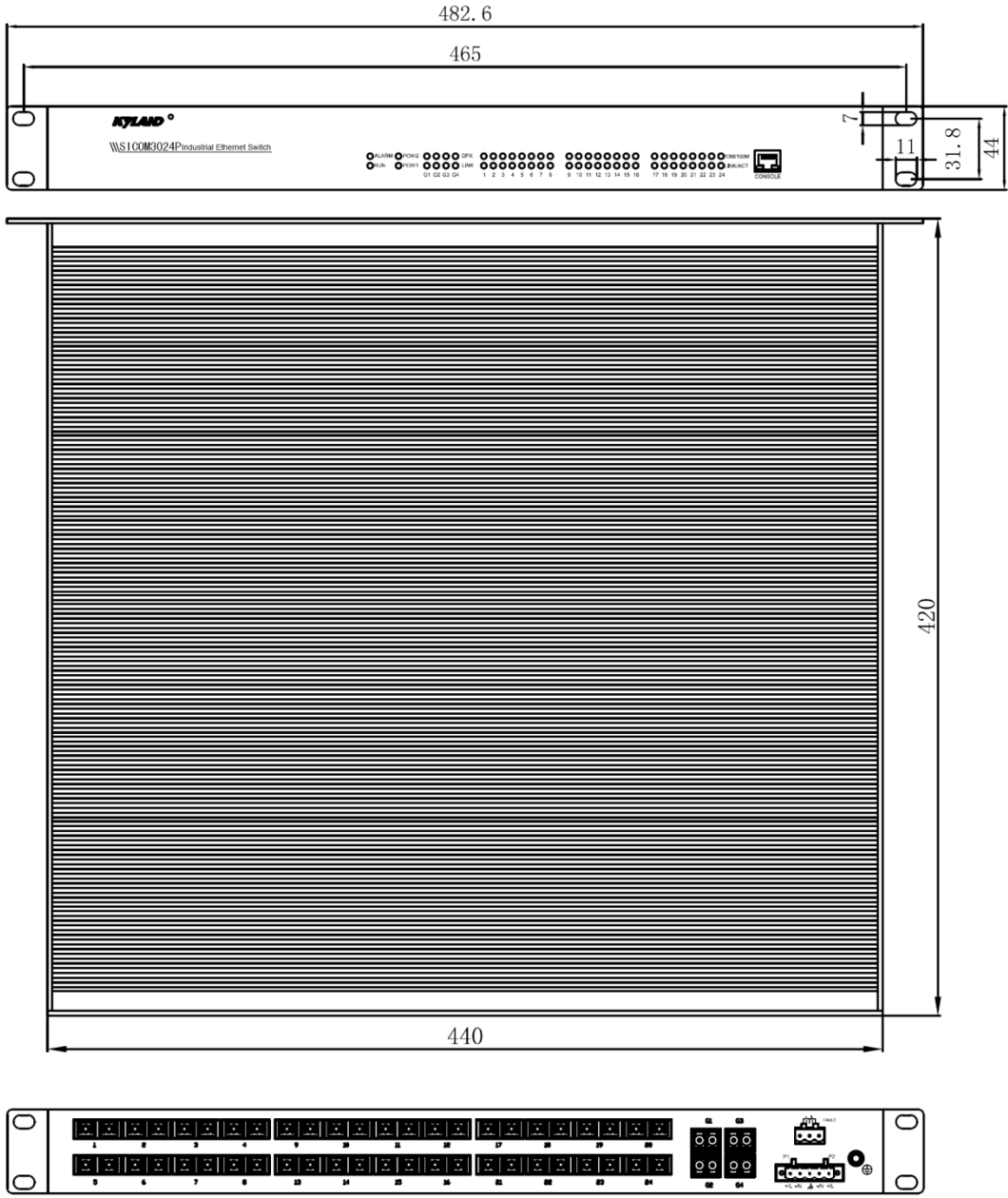


Figure 3: Dimension Drawing

4.2 Mounting Steps

SICOM3024P supports rack mounting by its front/rear panel.

- The steps of mounting by the front panel

Step 1: Select the mounting position for SICOM3024P on the rack and ensure that there is

adequate space for it.

Step 2: As Figure 4 shows, move the device in the direction of arrow 1 and align the holes in the SICOM3024P mounting brackets with the corresponding holes in rack rails; use 4 screws (M5×14) to fix the device on the rack.

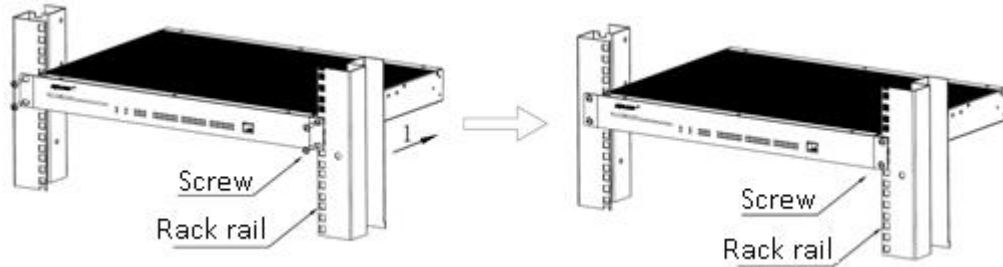


Figure 4: Mounting by front panel

- Dismounting steps

Step 1: Unscrew 4 screws fastening the device and the rack as shown in Figure 5.

Step 2: Remove the device from the rack rails along the direction of arrow 1.

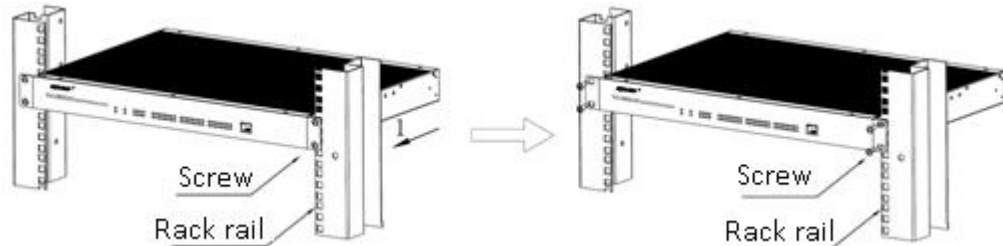


Figure 5: Dismounting

- The steps of mounting by the rear panel

Step 1: Remove the mounting brackets from the front panel and reposition them in the rear.

Step 2: Select the mounting position for SICOM3024P on the rack and ensure that there is adequate space for it.

Step 3: As Figure 6 shows, move the device in the direction of arrow 1 and align the holes in the mounting brackets with the corresponding holes in rack rails; use 4 screws (M5×14) to fix the device on the rack.

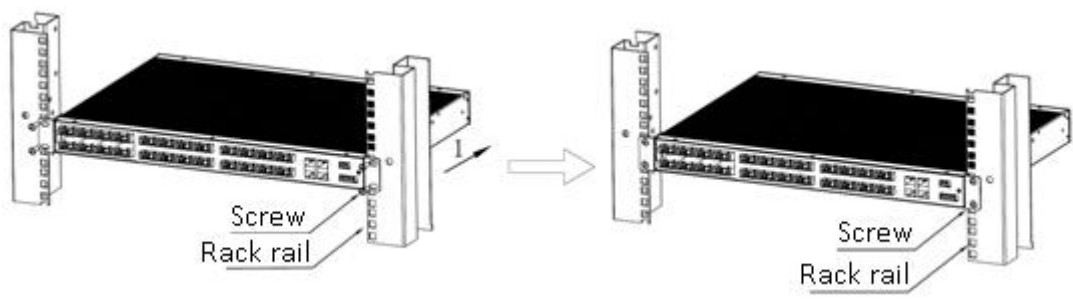


Figure 6: Mounting by rear panel

- Dismounting steps

Step 1: Unscrew 4 screws fastening the device and the rack as shown in Figure 7.

Step 2: Remove the device from the rack rails along the direction of arrow 1.

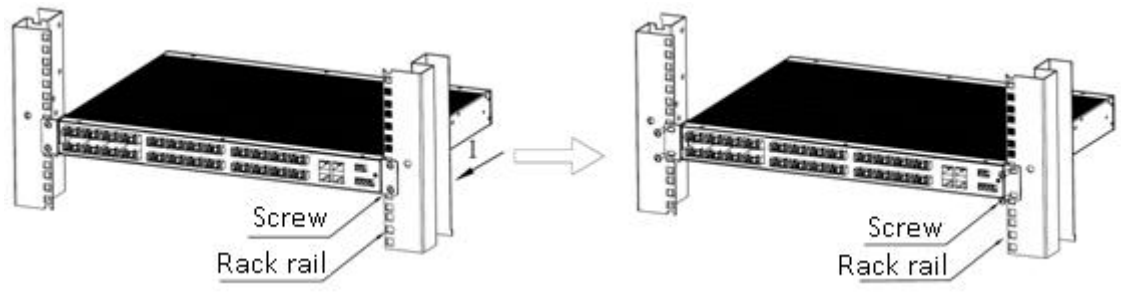


Figure 7: Dismounting

5. Cable Connection

5.1 10/100Base-TX port connection

- 10/100Base-TX RJ45 port cable types and requirements

10/100Base-TX Ethernet RJ45 ports can be connected to terminal equipments and network devices with straight-through or crossover cables. RJ45 connectors must be attached at both ends of the cable. RJ45 connector pinout information is shown below.

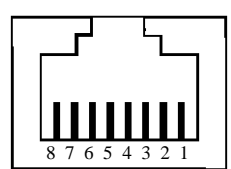


Figure 8: RJ45 connector

Table 1: 10/100Base-TX RJ45 connector pinout

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

1	Receiving data+ (RD+)	Output data+ (TD+)
2	Receiving data- (RD-)	Output data- (TD-)
3	Output data+ (TD+)	Receiving data+ (RD+)
6	Output data- (TD-)	Receiving data- (RD-)
4, 5, 7, 8	Unused	Unused
Note: "+" "-" means cable polarity.		

- 100M RJ45 to RJ45 straight-through cable wiring

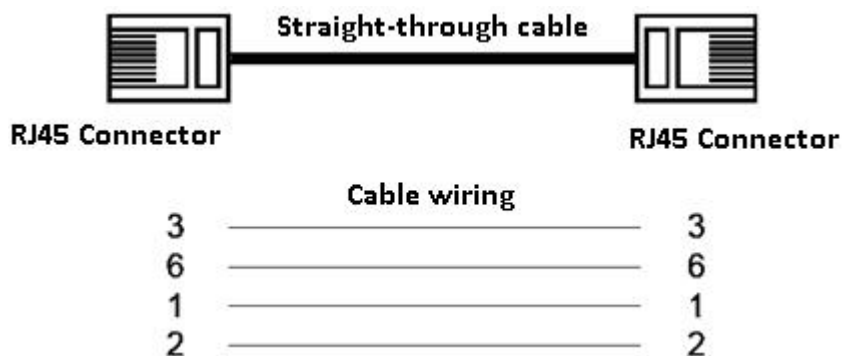


Figure 9: 100M straight-through cable wiring

- 100M RJ45 to RJ45 crossover cable wiring

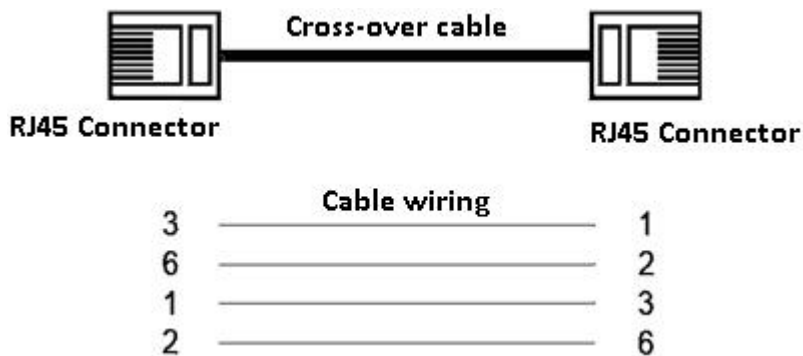


Figure 10: 100M crossover cable wiring

5.2 100Base-FX port connection

- 100Base-FX fiber port parameters

Table 2: 100Base-FX fiber port parameter table

Property	FX (FC/SC/ST)				
Type	Multi mode	Single mode	Single mode	Single mode	Single mode

		(M)	(S)	(S)	(S)	(S)
Center wavelength (nm)		1310	1310	1310	1550	1550
Transmission distance (Km)		2	5	40	60	80
Application range (Km)		0-2	0-5	0-40	6-60	4-60
Transmitting optical power	Mini. (dBm)	-19	-12	-8	-8	-8
	Max. (dBm)	-11	-4	0	-2	0
Receiving sensitivity (dBm)		-31	-34	-34	-34	-34
Overload optical power (dBm)		-3	-3	-3	-3	-3

- 100Base-FX fiber port cable wiring

(Take SC connector as example; ST/FC wiring method is the same with SC)

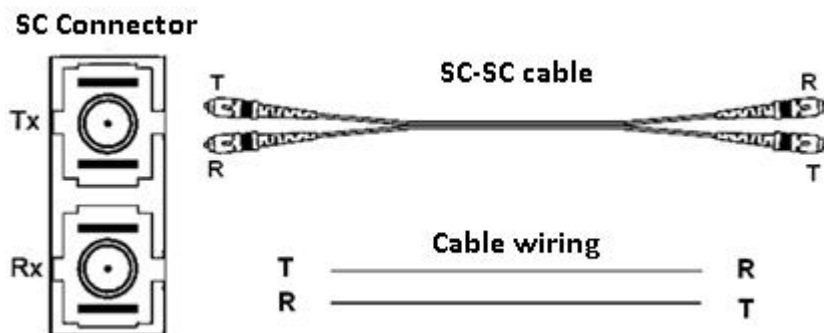


Figure 11: 100Base-FX port cable wiring

Note: Laser is used to transmit signals in fiber cables. Laser meets the requirements of level 1 laser products. Routine operation is not harmful to your eyes, but do not look directly into fiber port when the switch is powered on.

5.3 10/100/1000Base-TX port connection

10/100/1000Base-TX Ethernet RJ45 ports can be connected to terminal equipment and network devices with straight-through or crossover cables. RJ45 connectors must be attached at both ends of the cable. Gigabit RJ45 connector pinout information is shown below.

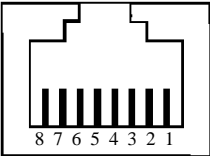


Figure 12: RJ45 connector

Table 3: 10/100/1000Base-TX RJ45 connector pinout

Pin	MDI	MDI-X
1	Output/Receiving data (TRD0+)	Output/Receiving data (TRD1+)
2	Output/Receiving data (TRD0-)	Output/Receiving data (TRD1-)
3	Output/Receiving data (TRD1+)	Output/Receiving data (TRD0+)
4	Output/Receiving data (TRD2+)	Output/Receiving data (TRD3+)
5	Output/Receiving data (TRD2-)	Output/Receiving data (TRD3-)
6	Output/Receiving data (TRD1-)	Output/Receiving data (TRD0-)
7	Output/Receiving data (TRD3+)	Output/Receiving data (TRD2+)
8	Output/Receiving data (TRD3-)	Output/Receiving data (TRD2-)

Note: "+" "-" means level polarity.

- 1000M RJ45 to RJ45 straight-through cable wiring

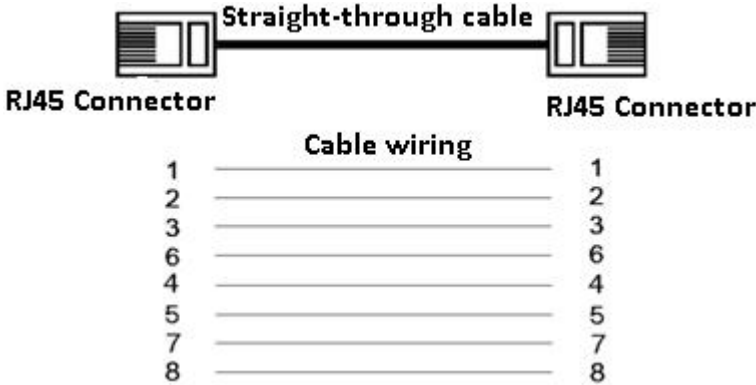


Figure 13: 1000M straight-through cable wiring

- 1000M RJ45 to RJ45 crossover cable wiring

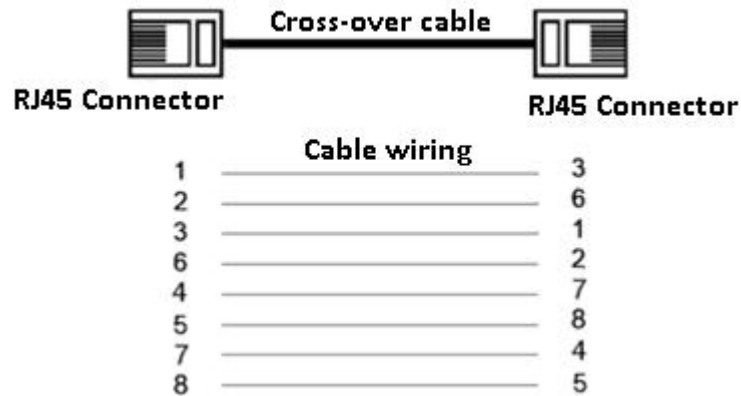


Figure 14: 1000M crossover cable wiring

5.4 1000Base SFP port connection

- 1000Base SFP (1.25Gbit/s) Parameters

Table 4: 1000Base SFP (1.25Gbit/s) parameter table

Property		SX	LX	LH	ZX	ZX
Type		Multi mode (M)	Single mode (S)	Single mode (S)	Single mode (S)	Single mode (S)
Center wavelength (nm)		850	1310	1310	1550	1550
Transmission distance (Km)		0.55	10	40	60	80
Application range (Km)		0-0.55	0-10	12-40	24-60	27-80
Transmitting optical power	Mini. (dBm)	-11	-10	-4	-3	-2
	Max. (dBm)	-2	-3	3	4	5
Receiving sensitivity (dBm)		-18	-21	-23	-22	-25
Overload optical power (dBm)		0	-3	-3	-3	-3

- Gigabit SFP fiber module



Figure 15: 1000Base SFP fiber module

- Wiring method

Plug the SFP module into the SFP slot in the device, and then insert the TX and RX of optical fiber into SFP module, as shown in Figure 16

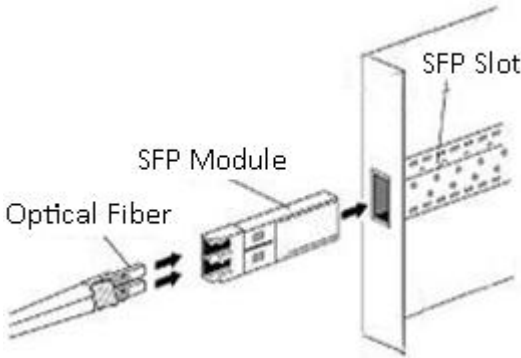


Figure 16: 1000Base SFP port connection

5.5 CONSOLE Port

The communication standard of CONSOLE port is 3-wire RS232. Use a Console cable with a shielded RJ45 plug at one end and a DB9 plug at the other end to connect the CONSOLE port of SICOM3024P with the 9-pin serial port in the control computer. Microsoft HyperTerminal or any terminal emulation software can be used to configure, maintain and manage SICOM3024P with CLI commands. DB9 connector pinout information is shown below.

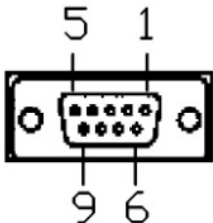


Figure 17: DB9 Connector

Table 5: DB9 connector pinout

Pin	Definition
2	TXD
3	RXD
5	GND
1, 4, 6, 7, 8, 9	Unused

- CONSOLE port cable wiring

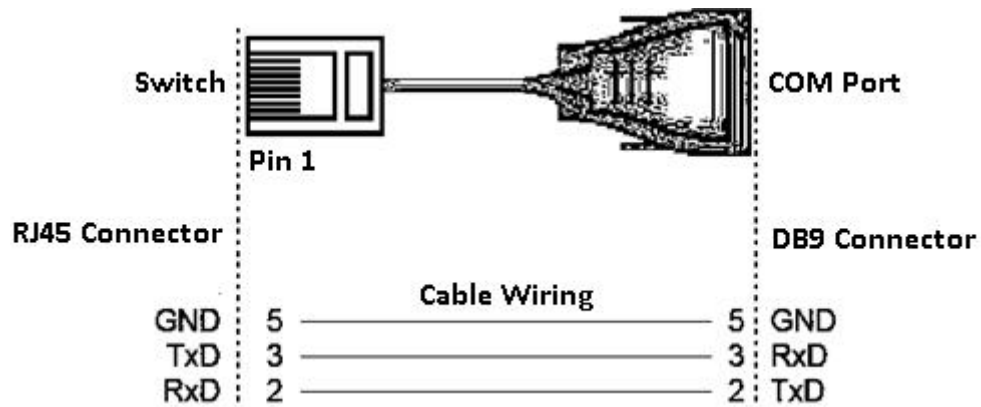


Figure 18: CONSOLE port cable wiring

5.6 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: $<5\Omega$.

- 5 pin 5.08mm power terminal block pinout

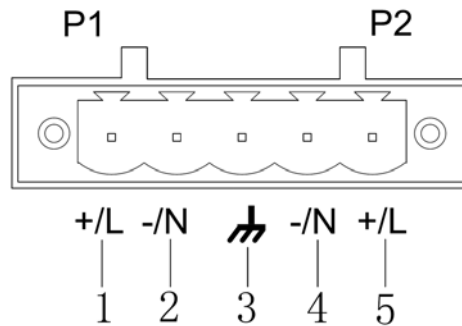


Figure 19: 5 pin 5.08mm power terminal block

- 5 pin 5.08mm power terminal block contact definition

Table 6: 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 SICOM3024P

Step 2: Insert the power cable into the terminal block according to the power cable requirements and fix the power cable

Step 3: Put the terminal block back to SICOM3024P with the connected cable; tighten the screws to fasten the terminal block

5.7 Grounding

There is a grounding screwed hole on the rear panel of SICOM3024P. After crimping one end of the grounding cable with the cold-pressing terminal, attach it to the grounding hole with grounding screws. The other end of the cable is reliably grounded.

Note: The cross section area of grounding cable should be more than 2.5mm^2 . The grounding resistance requirement: $<5\Omega$.

5.8 Alarm Port

The Alarm port is used for alarm output when failure occurs. When the device works normally, the normally-open contacts of the alarm relay are closed and the normally-closed contacts are open; when failure occurs (or power loss), the normally-open contacts are open and the normally-closed contacts are closed. The alarm is outputted through a green 3-pin 5.08mm spacing terminal block as shown in Figure 20.

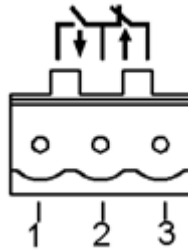


Figure 20: 3-pin 5.08mm spacing alarm terminal block

The electrical parameters of the relay:

Max Switch Voltage: 250VAC/220VDC;

Max Switch Current: 2A

Note: Pin 1 and pin 2 are normally-open contacts; pin 2 and pin 3 are normally-closed contacts. When the device is operating normally, the pin 1 and 2 are closed, pin 2 and pin 3 are open; when failure occurs (or power loss), the pin 1 and 2 are open; pin 2 and 3 are closed.

6. LED Indicators

SICOM3024P LED indicators on front panel are described in Table 7:

Table 7: LEDs in front panel

LED	State	Description
-----	-------	-------------

System Running LED		
RUN	ON	CPU operates abnormally or device is in the power on and startup process
	Blinking (1Hz)	CPU operates normally
	OFF	CPU does not start up
Alarm LED		
ALARM	Blinking (5Hz)	System alarm
	OFF	No alarm
Power LEDs		
POW1	ON	Power 1 is connected and operates normally.
	OFF	Power 1 is not connected or operates abnormally.
POW2	ON	Power 2 is connected and operates normally.
	OFF	Power 2 is not connected or operates abnormally.
Gigabit port LEDs		
DPX	ON	Full duplex connection
	OFF	Half duplex connection
LINK	ON	Effective network connection in the port
	Blinking	Network activities in the port
	OFF	No effective network connection in the port
Fast Ethernet port LEDs		
10M/100M	ON	100M working state
	OFF	10M working state or no connection
LINK/ACT	ON	Effective network connection in the port
	Blinking	Network activities in the port
	OFF	No effective network connection in the port

Table 8 shows the LEDs in the SICOM3024P rear panel.

Table 8: LEDs in rear panel

RJ45 port status 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.			
Gigabit RJ45 ports	Speed (Yellow)	ON	1000M working state
		OFF	10/100M 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
	Fast	Speed	ON

Ethernet RJ45 ports	(Yellow)	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

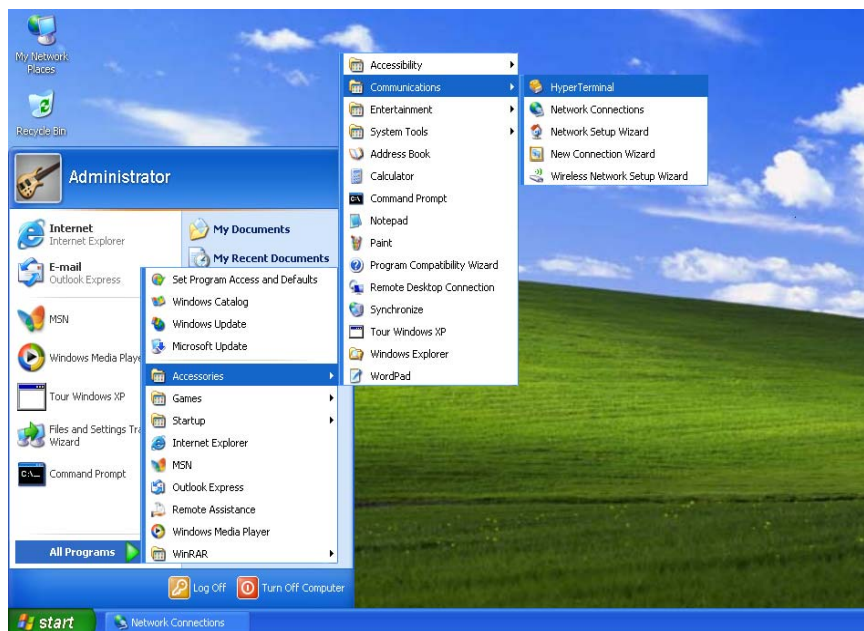
7. Access switch

There are three ways to access the switch: CONSOLE port, Telnet and WEB page.

7.1 CONSOLE port connection

Step 1: Use the Console cable that is equipped with a RJ45 plug at one end and a DB9 plug at the other end to connect the CONSOLE interface of SICOM3024P with the serial port of PC.

Step 2: In the Windows desktop, click “Start” → “All Programs” → “Accessories” → “Communication” → “HyperTerminal”.



Step 3: Establish a new connection “SICOM3024P ” as shown in Figure 21



Figure 21: New connection

Step 4: Use COM port to connect as shown in Figure 22. It is able to learn the currently used COM port in "Device Manager".

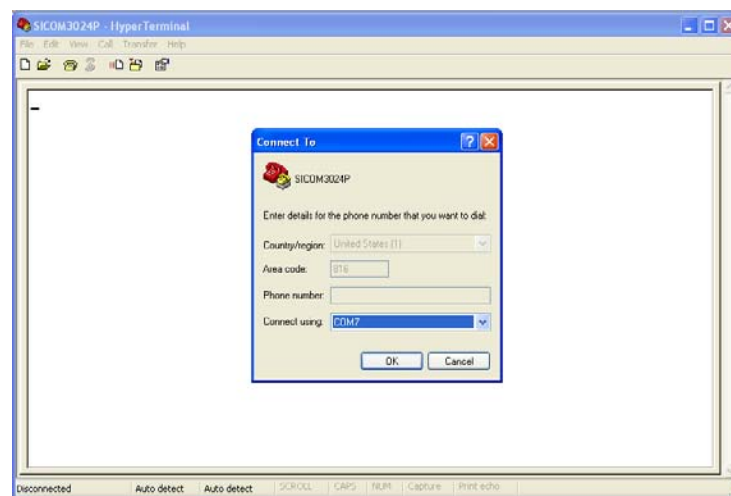


Figure 22: Connect correct COM port

Step 5: Port settings (Bits per second: 9600; Data bits: 8; Parity: None; Stop bits: 1; Flow control: None) as shown in Figure 23.

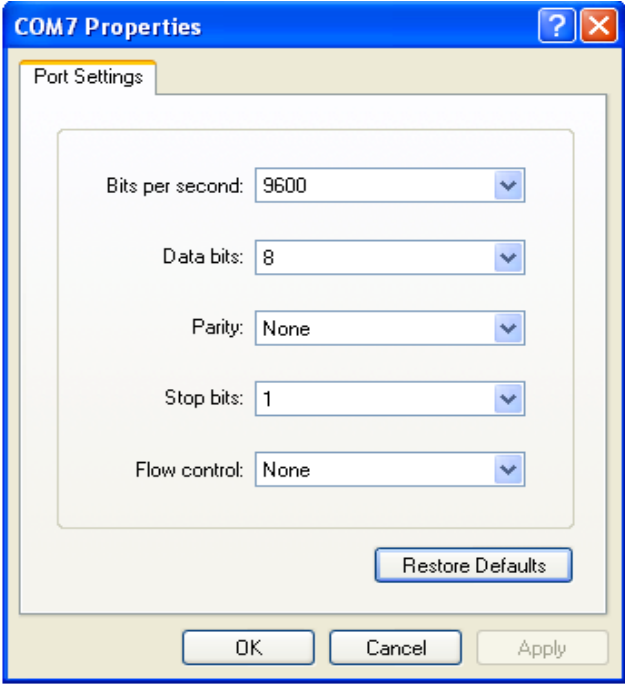


Figure 23: Port setting

Step 6: Click OK to enter the switch command line interface as shown in Figure 24. Users can input commands to carry out corresponding operation, as shown in Table 9.

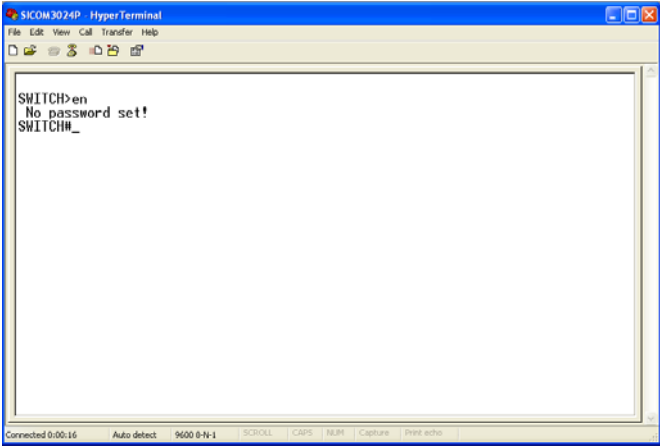


Figure 24: Command line interface

Table 9: Commands and operation

View Type	Command	Explanation
User view	SWITCH>enable	Enter management view

Management view	SWITCH# show interface	Switch IP address query
Management View	SWITCH# show version	Switch software version query
Management view	SWITCH# reboot	Reboot switch
Management view	SWITCH# load default	Restore default configuration
Management view	SWITCH# config terminal	Enter configuration view

7.2 TELNET

Step 1: Use a RJ45-to-RJ45 cable to connect a RJ45 port in the switch with the network port in the PC.

Step 2: Open the “Run” dialog box, type: “telnet *IP-address*” as shown in Figure 25.

The default IP address of Kyland switch is 192.168.0.2

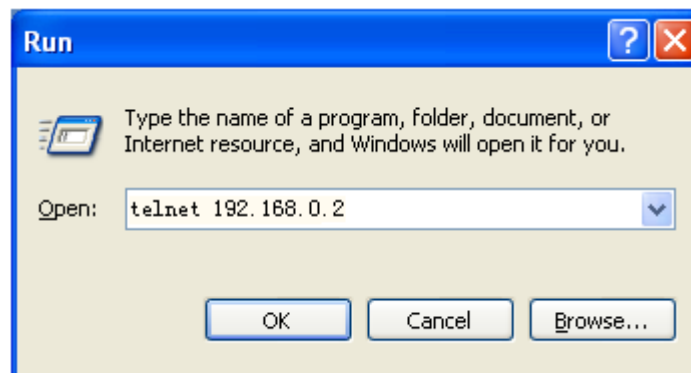


Figure 25: Telnet access

Step 3: Click “OK” to enter the Telnet command line interface. User can type commands described in Table 9 to perform corresponding operation.

7.3 Login WEB Page

Step 1: Use a RJ45-to-RJ45 cable to connect a RJ45 port in the switch with the network port in the PC.

Step 2: Type the IP address of switch in the browser address bar.

The default IP address of Kyland switch is 192.168.0.2. A login dialog box appears as shown in Figure 26. Enter the default username “admin” and the default password “123”, click “OK” to enter switch WEB page.



Figure 26: Login dialog box

8 Product Models

The specific configuration models of SICOM3024P are shown in below table:

Table 10: SICOM3024P Configuration Table

Model	Description	Power
SICOM3024P-4GX(E)-24S/M	4 1000Base SFP slots or 10/100/1000Base-TX RJ45 ports, and 24 100Base-FX SM/MM ports	24VDC, 48VDC, 110VDC, 220VAC/DC, dual redundant power supplies
SICOM3024P-4GX(E)-20S/M-4T	4 1000Base SFP slots or 10/100/1000Base-TX RJ45 ports, 20 100Base-FX SM/MM ports, and 4 10/100Base-TX RJ45 ports	
SICOM3024P-4GX(E)-16S/M-8T	4 1000Base SFP slots or 10/100/1000Base-TX RJ45 ports, 16 100Base-FX SM/MM ports, and 8 10/100Base-TX RJ45 ports	
SICOM3024P-4GX(E)-12S/M-12T	4 1000Base SFP slots or 10/100/1000Base-TX RJ45 ports, 12 100Base-FX	

	SM/MM ports, and 12 10/100Base-TX RJ45 ports	
SICOM3024P-4GX(E)-8S/M-16T	4 1000Base SFP slots or 10/100/1000Base-TX RJ45 ports, 8 100Base-FX SM/MM ports, and 16 10/100Base-TX RJ45 ports	
SICOM3024P-4GX(E)-4S/M-20T	4 1000Base SFP slots or 10/100/1000Base-TX RJ45 ports, 4 100Base-FX SM/MM ports, and 20 10/100Base-TX RJ45 ports	
SICOM3024P-4GX(E)-24T	4 1000Base SFP slots or 10/100/1000Base-TX RJ45 ports, and 24 10/100Base-TX RJ45 ports	

Note: Models without Gigabit ports are also available.

9 Basic Features and Specifications

- **Protocol**

DT-Ring, DT-VLAN, DT-Ring+, MSTP, IGMP snooping, GMRP, VLAN, PVLAN, SNTP, RTC, DT-Psec, SSH, SSL, ACL, Telnet, HTTP, SNMPv1/v2/v3, RMON, LLDP, DHCP server, FTP, Syslog, ARP, QoS

- **Cable**

Twisted Pair: 100m (Standard CAT5, CAT5e network cable)

Multi Mode Fiber: 1310nm, 5km (100M)

850nm, 550m (1000M)

Single Mode Fiber: 1310nm, 40km/60km (100M), 1550nm, 60km/80km (100M)

1310nm, 10km/40km (1000M), 1550nm, 60km/80km (1000M)

- **Power Requirements**

Power input: 24VDC (18-36VDC), 48VDC (36-72VDC), 110VDC (82-185VDC), 220VAC/DC
(85-264VAC/120-370VDC)

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

Power consumption: <35W

- **Physical Characteristics**

Housing: Aluminum, fanless

Installation: 19-inch 1U rack mounting

Dimensions (W×H×D): 428.6mm×44mm×420mm

Weight: 5Kg

- **Environment Limits**

Operating Temperature: -40°C to 85°C (-40 to 185°F)

Storage Temperature: -40°C to 85°C (-40 to 185°F)

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

- **MTBF:** 346,889 hrs.

- **Warranty:** 5 years

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

<http://www.kyland.cn/>