SICOM3016B

Industrial Ethernet Switch

Hardware Installation Manual

Kyland Technology Co., LTD.

SICOM3016B Industrial Ethernet Switch
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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.

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 and put the cable in unreachable places;

● Do not tie or wrap the cable to prevent fire.

● 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 cut off the power supply and contact our company:

➢ Water gets into the equipment;

➢ Equipment damage or shell breakage;

➢ Abnormal operation of equipment or its performances have completely changed;

➢ The equipment emits odor, smoke or abnormal noise.

Contents

1. Packing List

SICOM3016B Industrial Ethernet Switch	1
Software Operation Manual	1
Hardware Installation Manual	1
RJ45 to DB9 Console Cable with the length of 2m	1
Slotted Screwdriver (orange, 6*100)	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

SICOM3016B DIN-Rail managed Gigabit industrial Ethernet switches in accordance with IEC61850 standard are used in rail transit, power and many other industries.

SICOM301B industrial Ethernet switch supports DIN-Rail and panel mounting. It provides 4 combo 1000Base SFP slots or 10/100/1000Base-TX ports, and 16 10/100Base-TX ports in the front panel.

3. Structure and Interface
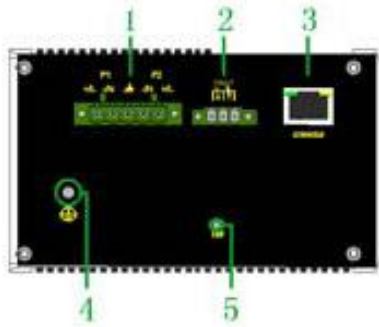
◆ **Front Panel**
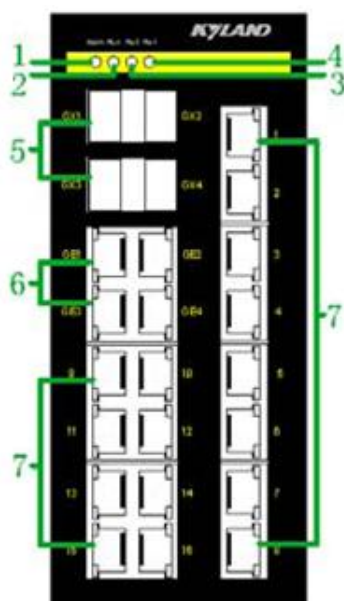
1: ALARM --- Alarm LED

2: RUN --- System running LED

3: PWR1 --- Power 1 LED

4: PWR2 --- Power 2 LED

5: GX1-GX4 --- 1000Base SFP slots

6: GE1-GE4 --- 10/100/1000Base-TX ports

7: 1-16 --- 10/100Base-TX ports

Note: 1000Base SFP slots (GX1-GX4) and 10/100/1000Base-TX ports (GE1-GE4) are combo ports. They can not be used at the same time.

◆ **Top Panel**

1: Terminal block for power input

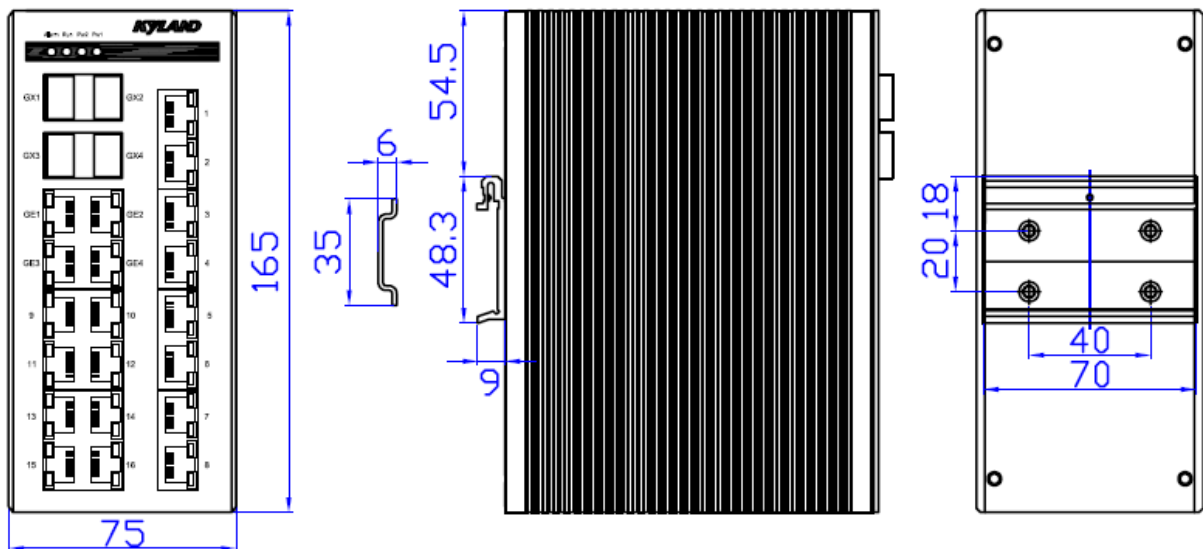2: Terminal block for alarm output

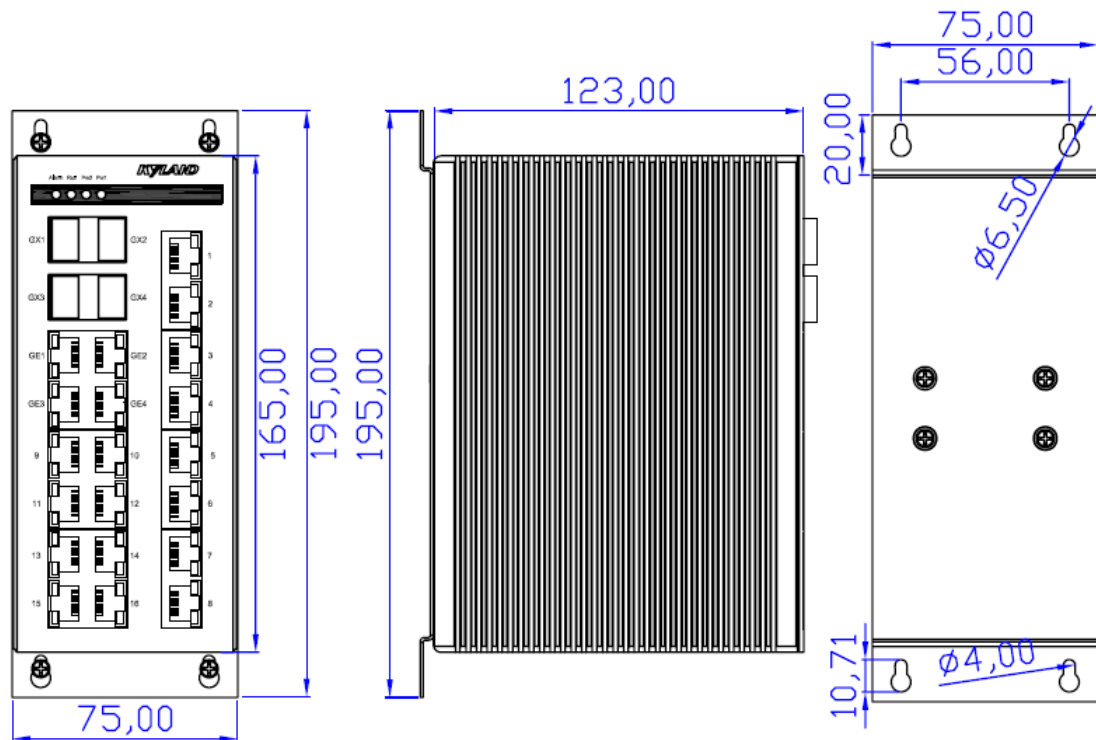3: Console port

4: Screw hole for grounding

5: DEF reset and default configuration button

4. Mounting

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

◆ **Dimension Drawing for Panel Mounting (Unit: mm)**

Note: The switch housing is a part of the heat dissipation system, which becomes hot during operation. Please be careful when handling the device during operation.

◆ **Mounting Steps**

● **SICOM3016B DIN-Rail Mounting**

The specific steps are as follows:

Step 1: Select the mounting position for SICOM3016B and ensure that there is enough space.

Step 2: Insert the top of the DIN-Rail into the spring-supported slot of the DIN-Rail connecting seat in the rear panel of SICOM3016B as seen below; move the device in the direction of arrow 2 to put the whole Din-Rail into the seat; check whether SICOM3016B is firmly mounted on the DIN-Rail, as shown below.
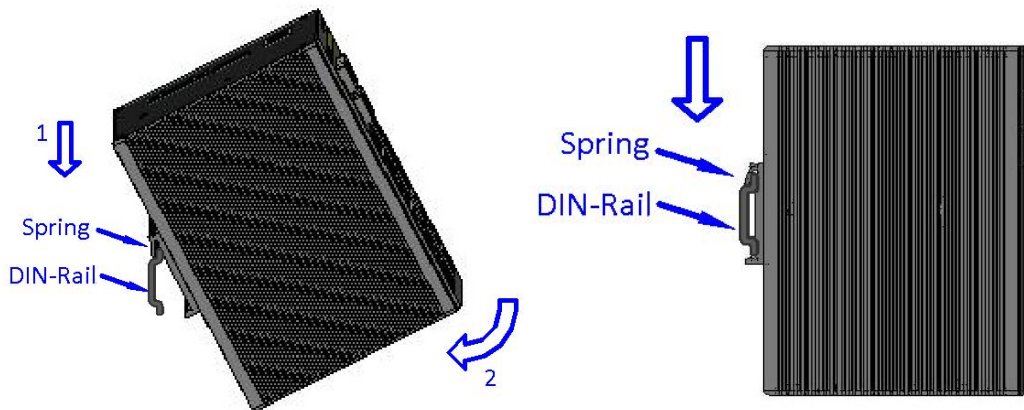
7

● **SICOM3016B Panel Mounting**

The specific steps are as follows:

Step 1: Select the mounting position for SICOM3016B on the wall or in cabinet; ensure that there is enough space for the switch.

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

Step 3: Aim 4 mounting holes on SICOM3016B mounting plate at 4 fixed screws; pass the screws through 4 holes with the diameter of 6.5mm (Φ6.5); then slide down SICOM3016B as seen below; finally screw 4 screws tightly. Now the SICOM3016B should be firmly fixed to the wall or cabinet.
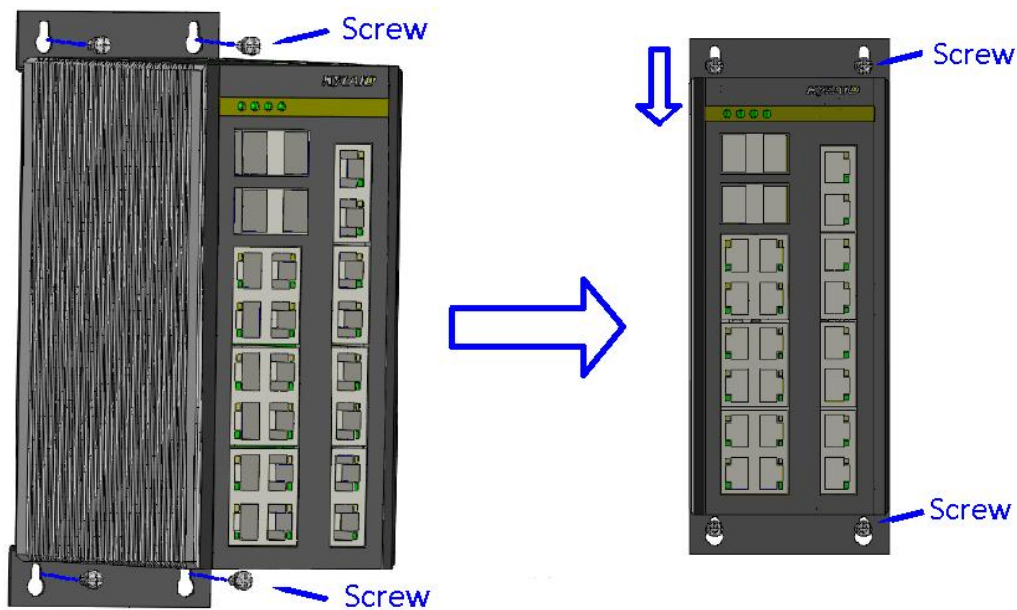
5. Cable Connection

◆ **RJ45 Port**

● **RJ45 port cable types and requirements**

10/100Base-TX Ethernet RJ45 port can be connected to terminal equipment with a straight-through cable, and connected to network device with a cross-over cable.

10/100/1000Base-TX Ethernet RJ45 port can be connected to terminal equipment and network device by a straight-through cable or a cross-over cable. Two ends of the cable must have RJ45 connectors.

RJ45 connector and pin number:

8 7 6 5 4 3 2 1
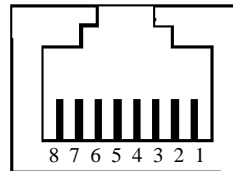
● **Pin distribution of 10/100Base-TX**

Pin	MDI-X signal name	MDI signal name
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.		

● **Pin distribution of 10/100/1000Base-TX**

Pin	MDI/MDI-X signal name
1	Output/Receiving data（TRD0+）
2	Output/Receiving data（TRD0-）
3	Output/Receiving data（TRD1+）
4	Output/Receiving data（TRD2+）
5	Output/Receiving data（TRD2-）
6	Output/Receiving data（TRD1-）
7	Output/Receiving data（TRD3+）
8	Output/Receiving data（TRD3-）
Note: "+""-"means cable polarity.	

- **100M straight-through cable wiring**
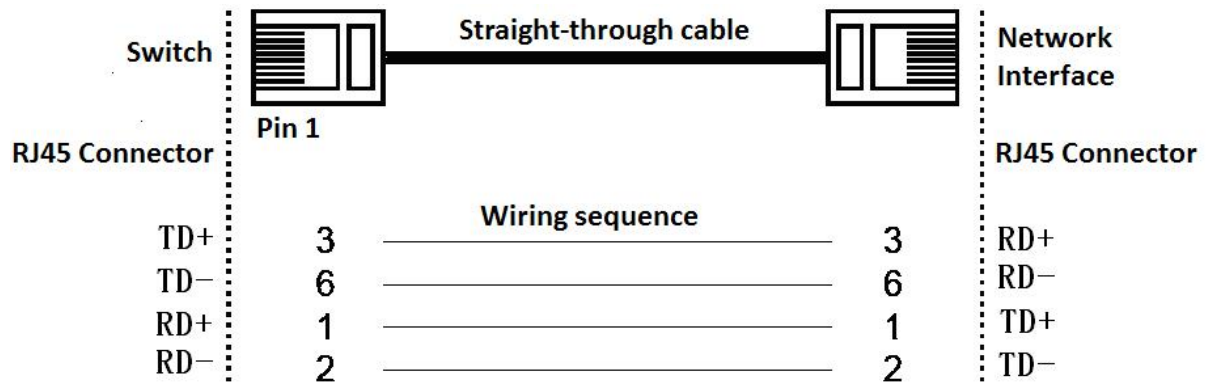
- **100M cross-over cable wiring**
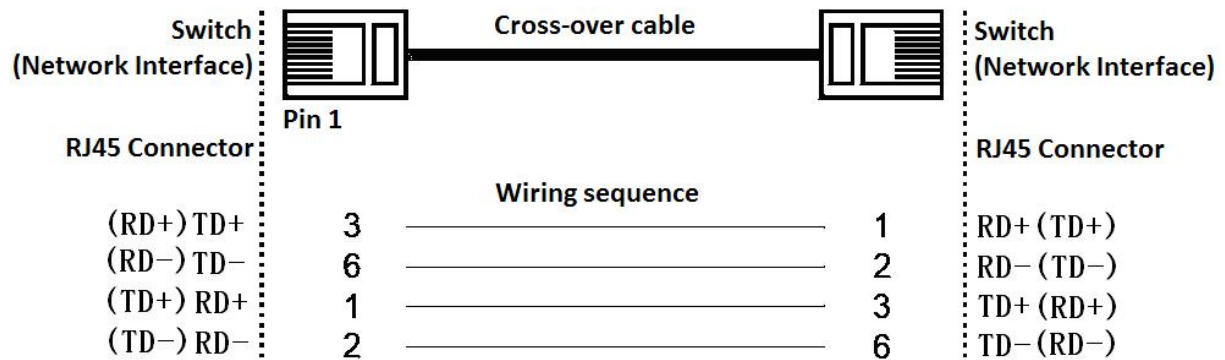
- **1000M straight-through cable wiring**

● **1000M cross-over cable wiring**

Switch (Network Interface)

Cross-over cable

Switch (Network Interface)

Pin 1

RJ45 Connector

RJ45 Connector

Wiring sequence

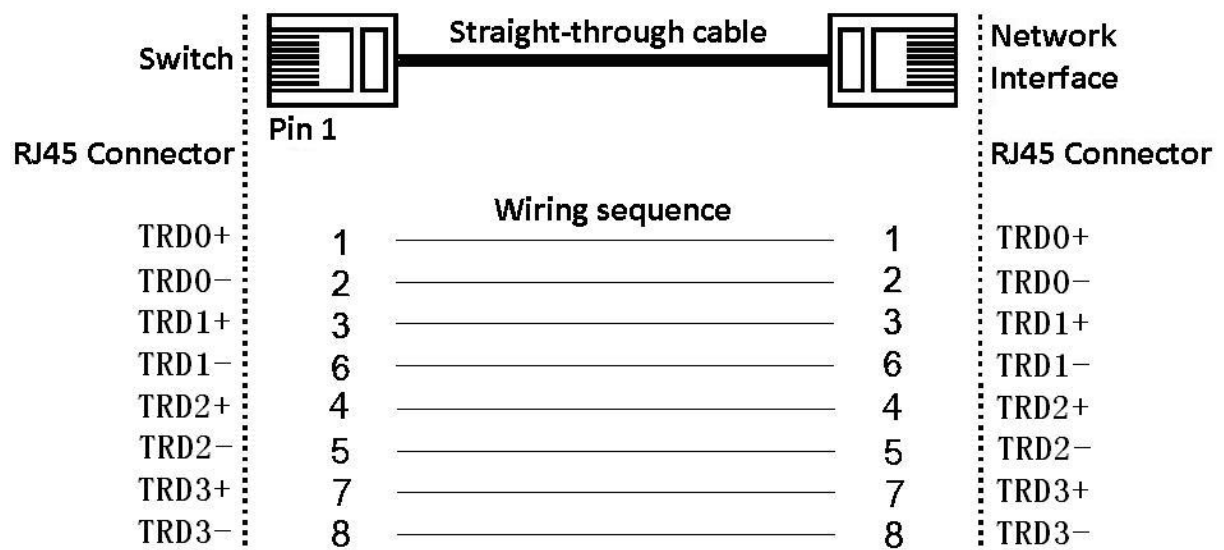| RJ45 (left)	Pin		Pin	RJ45 (right)
TRD0+	1	———	3	TRD1+
TRD0−	2	———	6	TRD1−
TRD1+	3	———	1	TRD0+
TRD1−	6	———	2	TRD0−
TRD2+	4	———	7	TRD3+
TRD2−	5	———	8	TRD3−
TRD3+	7	———	4	TRD2+
TRD3−	8	———	5	TRD2−
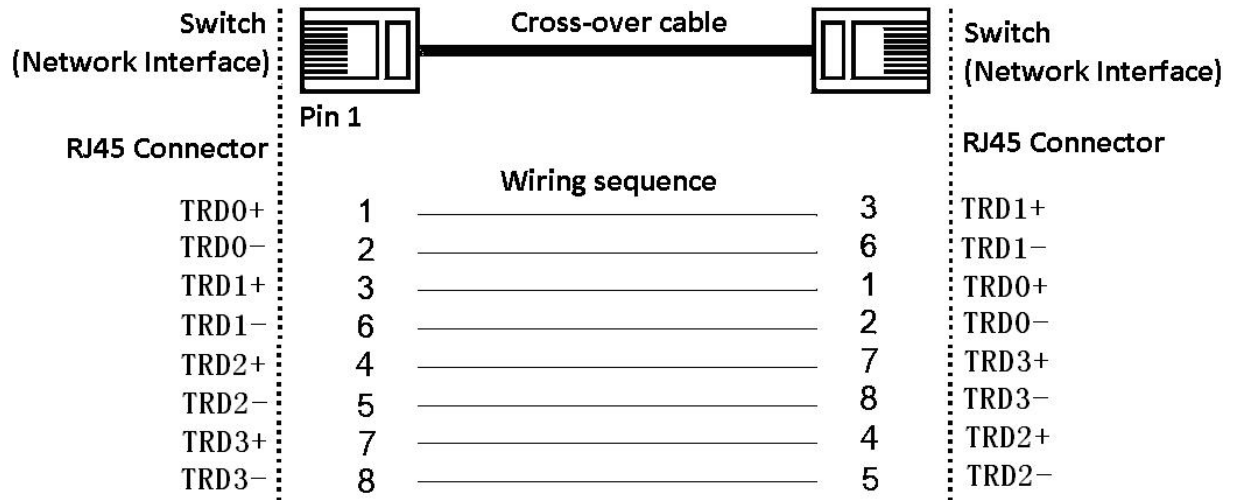
◆ **Fiber Ports (1000Base SFP ports)**

● **1000Base SFP (1.25Gbit/s) Parameter Table**

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

● **Hot-plugging steps of Gigabit SFP module**
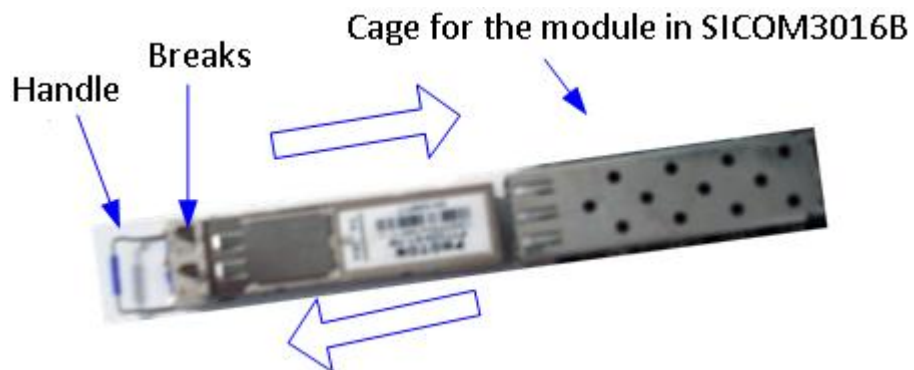
● **Console Port (Network Management Port)**

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 SICOM3016B with the 9-pin serial port in the control computer. The communication standard is 3-wire RS232. Access the hyper terminal software of WINDOWS system to configure, maintain and manage SICOM3016B by CLI commands.

DB9 Plug:
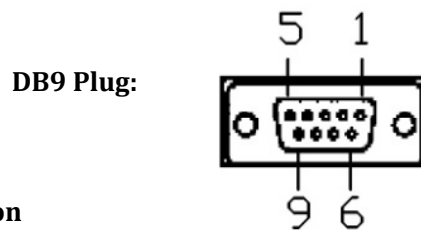
● **DB9 Pin Definition**

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

● **Console port wiring**
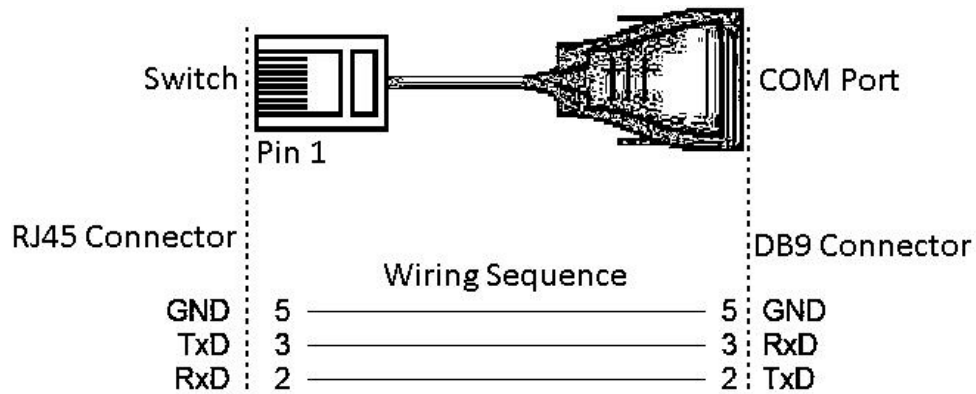
◆ **Power**

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:
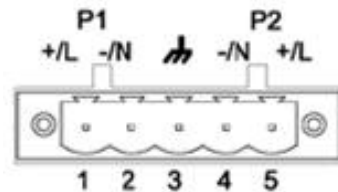
● **Contact definition**

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 SICOM3016B

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

  Step 3: Put the terminal block back to SICOM3016B with the connected cable; tighten the screws to fasten the terminal block

◆ **Grounding**

There is a grounding screwed hole on the top panel of SICOM3016B. 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: <5Ω.

◆ **Alarm Port**

Alarm port is used for alarm output when the power supply fails. When the power is supplied smoothly, the normally open contacts of the alarm relay are on and the normally closed contacts are off; when the power supply is cut off, the normally open contacts are off and the normally closed contacts are on.

Note: The alarm is outputted through a green 3-pin 3.81mm spacing terminal block as shown in below drawing. Pin 1 and pin 2 are normally-closed contacts; pin 2 and pin 3 are normally-open contacts.

3-pin 3.81mm alarm terminal block:
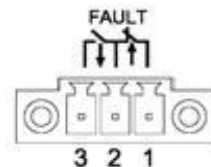
- **Wiring and mounting**

  Step 1: Take the alarm terminal block off SICOM3016B

Step 2: Insert three wires into the terminal block in order and tighten the screws to attach the wires.

Step 3: Put the terminal block back to SICOM3016B with the connected wires; tighten the screws to fasten the terminal block

◆ **DEF reset and default configuration button**

After pressing the button for 20s, the system will perform software and hardware reset operation and will restore all default settings.

If the button is up, the device is in normal working condition.

6. LED Indicators

SICOM3016B LED indicators on front panel

LED	State	Description
System Running LED		
RUN	Blinking 1Hz	Switch operates normally
	OFF	Switch does not operate
Alarm LED		
ALARM	ON	Switch is in alarm state
	OFF	Switch operates normally
Power LEDs		
PWR1	ON	Power 1 is connected and operates normally.
	OFF	Power 1 is not connected or operates abnormally.
PWR2	ON	Power 2 is connected and operates normally.
	OFF	Power 2 is not connected or operates abnormally.
Gigabit port status LEDs (GX1/GE1, GX2/GE2, GX3/GE3, GX4/GE4)		
SPEED	ON	1000M working state (i.e. 1000Base-T)
	OFF	10/100M working state (i.e.10/100Base-F(X)/T(X)) 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
Ethernet RJ45 port status LEDs		
Each RJ45 Ethernet port has two indicators, a yellow one and a green one. The yellow light indicates port rate, and the green light indicates port connection state.		
10M/100M (Yellow)	ON	100M working state (i.e. 100Base-TX)
	OFF	10M working state (i.e. 10Base-T) or no connection
LINK/ACT	ON	Effective network connection in the port

（Green）	Blinking	Network activities in the port
	OFF	No effective network connection in the port

7. Self-inspection

When the device is powered on, PWR LEDs will keep ON. After 2 seconds, all port LEDs in front panel will blink one time. 30 seconds later, the equipment boots fully and RUN LED blink.

8. Switch Management via CLI

Log in Command Line Interface through two ways: CONSOLE interface and Telnet.

◆ CONSOLE Interface

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 SICOM3016B with the serial port in the PC.

Step 2: In the Windows desktop, click "Start" → "Program" → "Accessories" → "Communication" → "Hyper Terminal".

Setting the parameters of the PC serial port as seen below:

Baud Rate	9600
Data Bits	8
Parity Check	None
Stop Bit	1
Flow Control9600	None

Step 3: Open the hyper terminal and power on the device. In the process of device startup, device information will be displayed in the hyper terminal interface. When the device startup is complete, press "Enter", then a prompt will appear (default is "SWITCH>").

Step 4: When the command prompt appears, type "enable" to enter the command line operation mode and the command prompt is "SWITCH#".

SWITCH＞enable

/General user configuration mode

SWITCH#config terminal

/Privileged user configuration mode

SWITCH(config)#

/Global configuration mode

SWITCH(config)#ip address <ip-address> mask <mask>

/IP address configuration

SWITCH(config)#ip gate <ip-address>

/ Gateway address configuration

SWITCH#show interface

/IP address query

SWITCH#reboot

/Device reboot

SWITCH#load default

/Restore default configuration

Step 5: Please check more detail in CLI Command Manual

◆ **TELNET**

Step 1: Use a cross-over cable or a straight-through cable to connect an Ethernet port in the switch with the network port in the PC through Ethernet.

Step 2: In Windows system, type "telnet 192.168.0.2" in the "Operation" window or in the interface of MS-DOS command-line prompt, click "apply".

Step 3: When the switch startup completes, press "Enter". The default prompt is "SWITCH>".

Step 4: For more details, please check the CLI Manual

9. Log in WEB Page

Step 1: Connect the switch to PC with Ethernet. Type the IP address of the switch in IE browser, such as IP is 192.168.0.2, press "Enter", you can see the page as in Figure 1. Enter the default username "admin" and the default password "123", click "Sign in" to enter the WEB's main page.
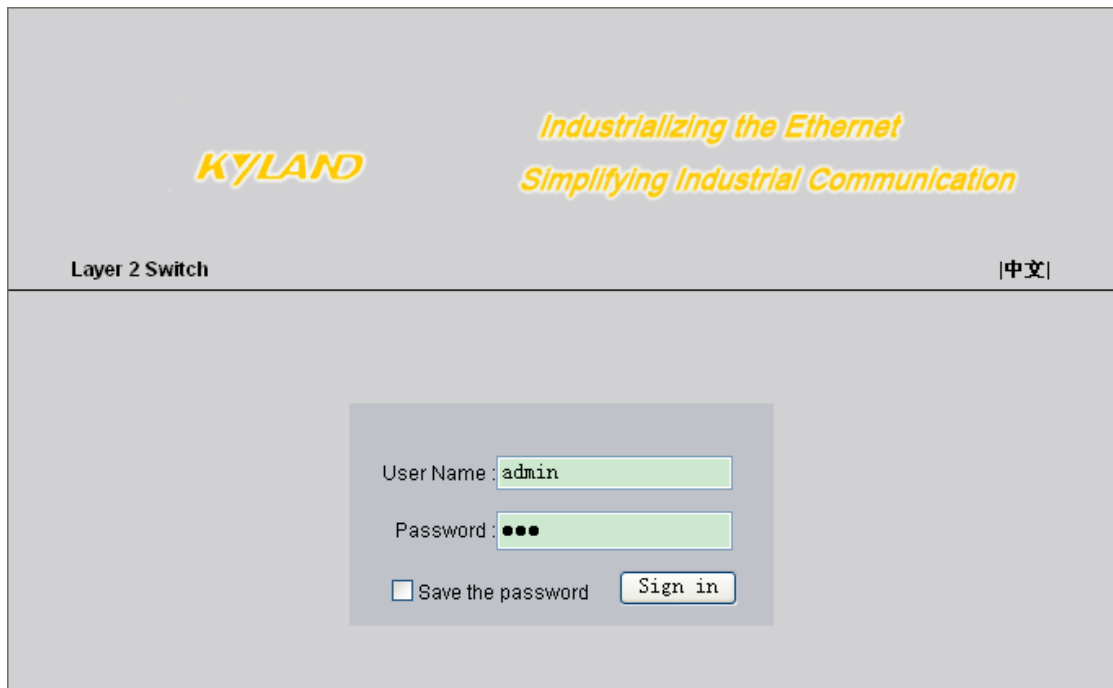
Figure 1: Login page

Note: Password resetting (User name can not be changed). If users forget or do not know the password, you can reset the password by logging into CLI via CONSOLE interface or Telnet. Please type the following command to reset the password:

(config)#web-authentication password <password>

<password> can be 1 to 32 numbers or letters (Both small and capital letters are supported).

For example: If reset the password to 1234, please input:

web-authentication password 1234

Step 2: The main page is shown as in Figure 2. At the left of the page, there is a tree menu for management, including the main menus of Device Status, Basic Configurations, Advanced Configurations, Device Management, Save Configurations, and Load Default.

Click each main menu to open its sub menus.

There are two function keys on the tree menu: Collapse and Expand

Click on "Expand" to display the main menus and all sub-menus.

Click on "Collapse" to display only the main menus and close all sub-menus.
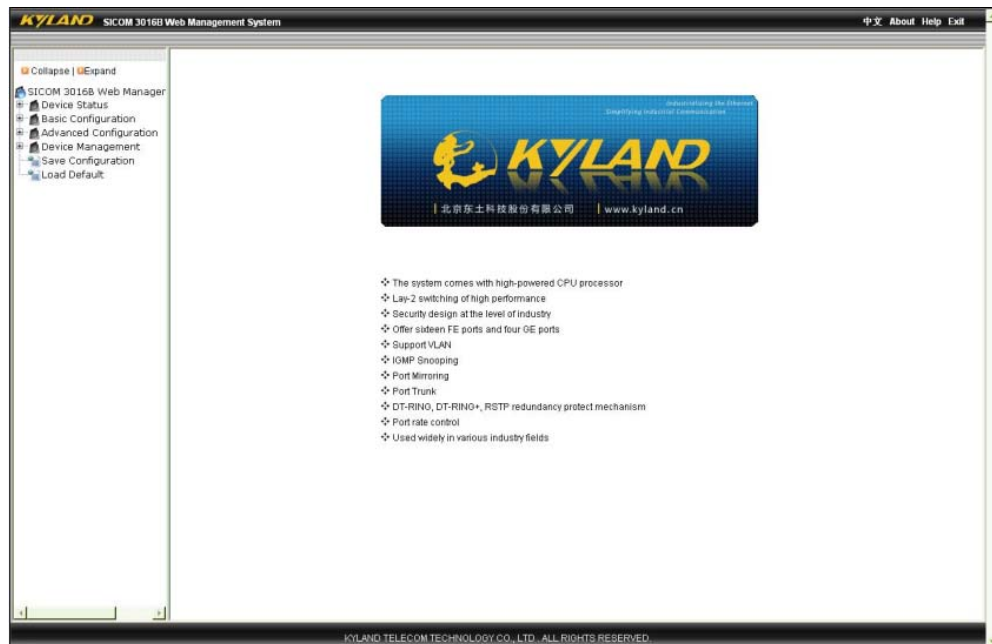

Figure 2: WEB main page

10. Product Models

The specific configuration models of SICOM3016B are shown in below table:

SICOM3016B Configuration Table

Model	Description	Power
SICOM3016B-4GX/GE-16T	4 combo 1000Base SFP slots or 10/100/1000Base-TX ports, and 16 10/100Base-TX RJ45 ports	24VDC, 48VDC, dual redundant power inputs
SICOM3016B-2GX/GE-2GE-16T	2 combo 1000Base SFP slots or 10/100/1000Base-TX ports, 2 10/100/1000Base-TX ports, and 16 10/100Base-TX RJ45 ports	

11. Basic Features and Specifications

◆ **Technology**

IEEE 802.3i, IEEE 802.3u, IEEE802.3ab, IEEE802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE802.1s, store and forward switching mode

◆ **EMC**

IEC61000-4-2(ESD): ±8KV (contact), ±15KV (air)

IEC61000-4-3(RS): 10V/m (80MHz-2GHz)

IEC61000-4-4(EFT): Power Port: ±4KV; Data Port: ±2KV

IEC61000-4-5(Surge) Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV

IEC61000-4-6(CS):3V (10kHz-150kHz); 10V (150kHz-80MHz)

IEC61000-4-16 (common mode conduction): 30V (cont.), 300V (1s)

◆ **Network**

Ring, tangent ring, star, chain

◆ **Cable**

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

Multi Mode Fiber: 850nm, 550m (1000M)

Single Mode Fiber: 1310nm, 10km/40km (1000M)

1550nm, 60km/80km (1000M)

◆ **Power Requirements**

Power input: 24VDC (18-36VDC), 48VDC (36-72VDC)

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

Power consumption: <13.3W

◆ **Physical Characteristics**

Housing: Aluminum, fanless

Installation: DIN-Rail or panel mounting

Dimensions (W×H×D): 75mm×165mm×123mm

Weight: 1.2Kg

◆ **Environment Limits**

Operating Temperature: -40℃ to 85℃ (-40 to 185℉)

Storage Temperature: -40℃ to 85℃ (-40 to 185℉)

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

◆ **Warranty**: 5 years

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

http://www.kyland.cn/