SICOM3172 Industrial Ethernet Switch

Hardware Installation Manual

Kyland Technology Co., Ltd.

Publication Date: Mar. 2013

Version: V1.00

FAX: +86-10-88796678

Website: http://www.kyland.com

E-mail: support@kyland.com

SICOM3172 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

The product performs reliably as long as it is used according to the guidance. Artificial damage or destruction of the device should be avoided. Before using the device, read this notice carefully for personal and equipment safety. Please keep the manual for further reference. Kyland is not liable to any personal or equipment damage caused by violation of this notice.

- Do not place the device near water sources or damp areas. Keep the ambient relative humidity within the range from 5% to 95% (non-condensing).
- Do not place the device in an environment with high magnetic field, strong shock, or high temperature. Keep the working and storage temperatures within the allowed range.
- Install and place the device securely and firmly.
- Please keep the device clean; if necessary, wipe it with a soft cotton cloth.
- Do not place any irrelevant materials on the device or cables. Ensure adequate heat dissipation and tidy cable layout without knots.
- Wear antistatic gloves or take other protective measures when operating the device.
- Avoid any exposed metal wires because they may be oxidized or electrified.
- Install the device in accordance with related national and local regulations.
- Before power-on, make sure the power supply is within the allowed range of the device. High voltage may damage the device.
- Power connectors and other connectors should be firmly interconnected.
- Do not plug in or out the power supply with wet hands. When the device is powered on, do not touch the device or any parts with wet hands.
- Before operating a device connected to a power cable, remove all jewelry (such as rings, bracelets, watches, and necklaces) or any other metal objects, because they may cause electric shock or burns.
- Do not operate the device or connect or disconnect cables during an electrical storm.
- Use compatible connectors and cables. If you are not sure, contact our sales or technical support personnel for confirmation.
- Do not disassemble the device by yourself. When an anomaly occurs, contact our sales or technical support personnel.
- If any part is lost, contact our sales or technical support personnel to purchase the substitute. Do not purchase parts from other channels.

- Dispose of the device in accordance with relevant national provisions, preventing environmental pollution.

In the following cases, please immediately shut down your power supply and contact your Kyland representative:

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

Contents

1 Product Overview

SICOM3172 includes a series of access and aggregation devices tailored specifically for the integrated cabinet of the intelligent transportation industry. Equipped with dual systems, the series devices can serve as switches and programmable protocol converters. The device supports long-distance data transmission over telephone lines via the EoVDSL port, simplifying network topology. SICOM3172 supports mutual conversion between RS232/485 and Ethernet data with the programmable protocol converter system.

SICOM3172 provides powerful network management functions. The device can be managed through CLI, Telnet, Web, SNMP-based network management software.

SICOM3172 supports guide rail installation. It provides up to two EoVDSL ports, two RS232/485 serial ports, and four 10/100Base-T(X) Ethernet ports. For details, see the following table.

Table 1 SICOM3172 Models

Model	**Port**			**Power Supply**
	EoVDSL port (RJ11 connector)	RS232/485 serial port	10/100Base-T(X) Ethernet port	
SICOM3172-1EoVDSL-RJ11-4T	1	--	4	24DC (single power supply)
SICOM3172-1EoVDSL-RJ11-4T-2D	1	2	4	
SICOM3172-2EoVDSL-RJ11-4T	2	--	4	
SICOM3172-2EoVDSL-RJ11-4T-2D	2	2	4	

2 Structure and Interface

Caution:

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

2.1 Front Panel

- Front Panel of SICOM3172-1EoVDSL-RJ11-4T

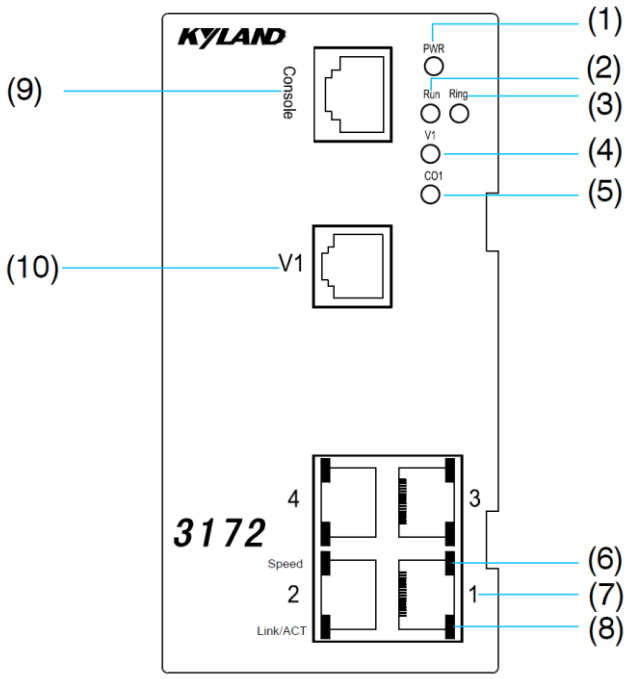


Figure 1 Front Panel of SICOM3172-1EoVDSL-RJ11-4T

Table 2 Description of the Front Panel of SICOM3172-1EoVDSL-RJ11-4T

No.	Identifier	Description
(1)	PWR	Power LED
(2)	Run	Running LED
(3)	Ring	Ring LED
(4)	V1	EoVDSL port connection status LED
(5)	CO1	EoVDSL port role LED
(6)	Speed	10/100Base-T(X) Ethernet port speed LED (yellow)
(7)	1-4	10/100Base-T(X) Ethernet ports
(8)	Link/ACT	10/100Base-T(X) Ethernet port connection status LED (green)

(9)	Console	Console port
(10)	V1	EoVDSL port

- Front Panel of SICOM3172-1EoVDSL-RJ11-4T-2D

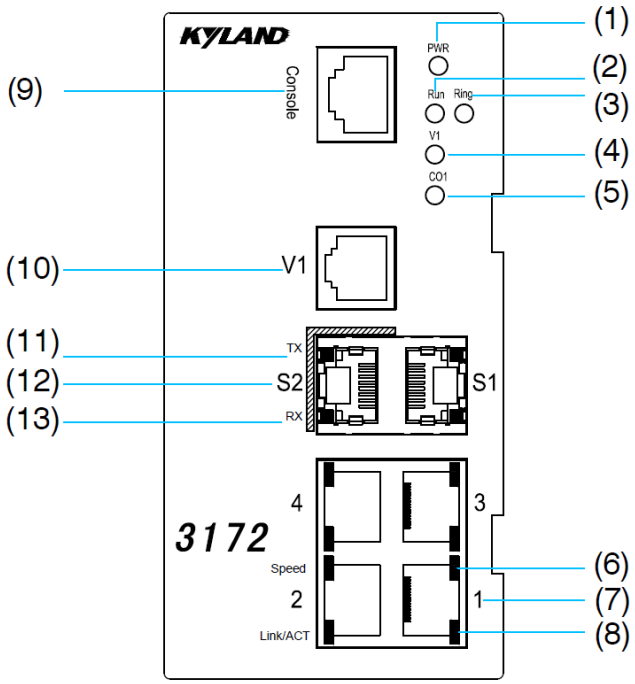


Figure 2 Front Panel of SICOM3172-1EoVDSL-RJ11-4T-2D

Table 3 Description of the Front Panel of SICOM3172-1EoVDSL-RJ11-4T-2D

No.	Identifier	Description
(1)	PWR	Power LED
(2)	Run	Running LED
(3)	Ring	Ring LED
(4)	V1	EoVDSL port connection status LED
(5)	CO1	EoVDSL port role LED
(6)	Speed	10/100Base-T(X) Ethernet port speed LED (yellow)
(7)	1-4	10/100Base-T(X) Ethernet ports
(8)	Link/ACT	10/100Base-T(X) Ethernet port connection status LED (green)
(9)	Console	Console port
(10)	V1	EoVDSL port
(11)	TX	RS232/485 serial port TX LED
(12)	S1, S2	RS232/485 serial ports
(13)	RX	RS232/485 serial port RX LED

- Front Panel of SICOM3172-2EoVDSL-RJ11-4T

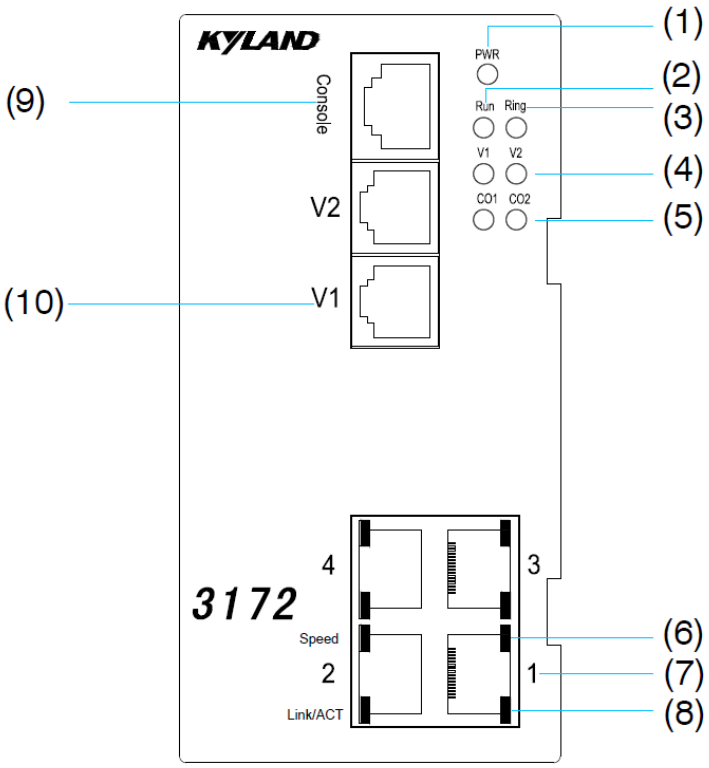


Figure 3 Front Panel of SICOM3172-2EoVDSL-RJ11-4T

Table 4 Description of the Front Panel of SICOM3172-2EoVDSL-RJ11-4T

No.	Identifier	Description
(1)	PWR	Power LED
(2)	Run	Running LED
(3)	Ring	Ring LED
(4)	V1, V2	EoVDSL port connection status LED
(5)	CO1, CO2	EoVDSL port role LED
(6)	Speed	10/100Base-T(X) Ethernet port speed LED (yellow)
(7)	1-4	10/100Base-T(X) Ethernet ports
(8)	Link/ACT	10/100Base-T(X) Ethernet port connection status LED (green)
(9)	Console	Console port
(10)	V1, V2	EoVDSL port

- Front Panel of SICOM3172-2EoVDSL-RJ11-4T

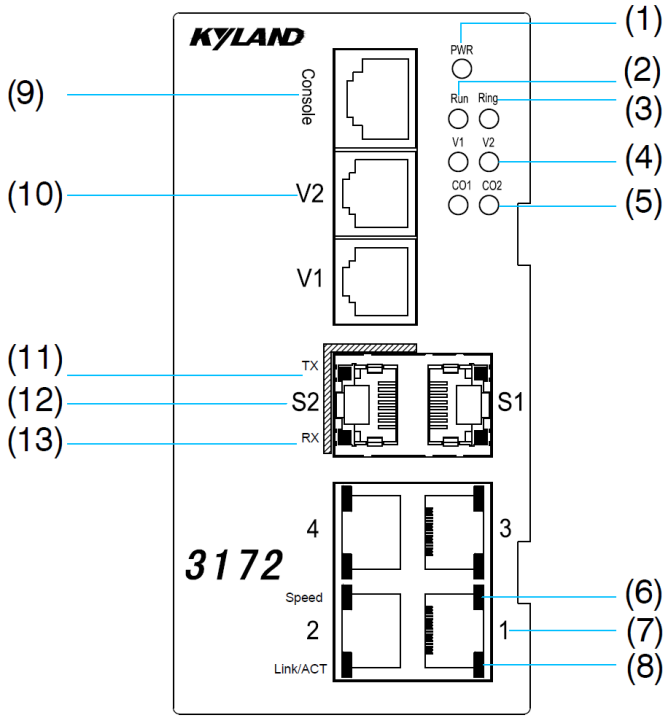


Figure 4 Front Panel of SICOM3172-2EoVDSL-RJ11-4T-2D

Table 5 Description of the Front Panel of SICOM3172-2EoVDSL-RJ11-4T-2D

No.	Identifier	Description
(1)	PWR	Power LED
(2)	Run	Running LED
(3)	Ring	Ring LED
(4)	V1, V2	EoVDSL port connection status LED
(5)	CO1, CO2	EoVDSL port role LED
(6)	Speed	10/100Base-T(X) Ethernet port speed LED (yellow)
(7)	1-4	10/100Base-T(X) Ethernet ports
(8)	Link/ACT	10/100Base-T(X) Ethernet port connection status LED (green)
(9)	Console	Console port
(10)	V1, V2	EoVDSL port
(11)	TX	RS232/485 serial port TX LED
(12)	S1, S2	RS232/485 serial ports
(13)	RX	RS232/485 serial port RX LED

2.2 Side Panel

- Side Panel

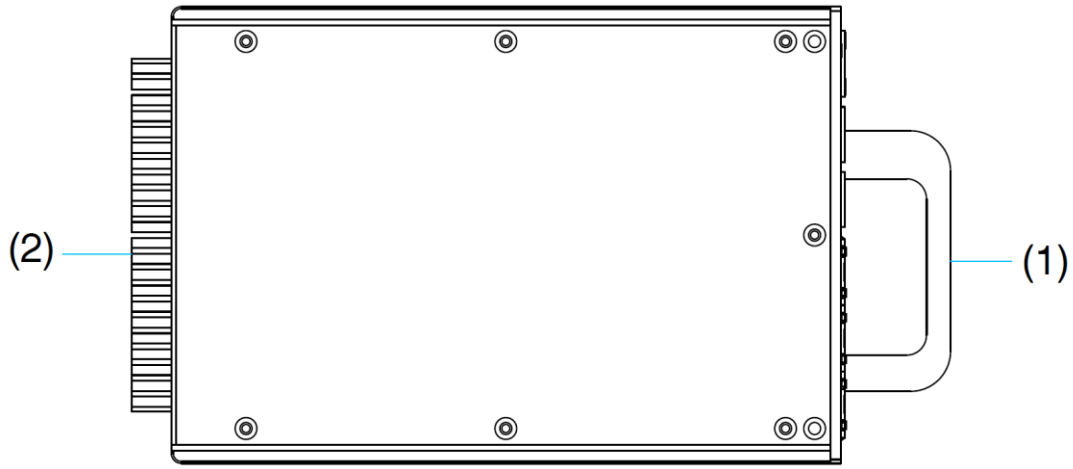


Figure 5 Side Panel

Table 6 Description of the Side Panel

No.	**Description**
(1)	Handle
(2)	Connecting finger

3 Mounting

3.1 Dimension Drawing

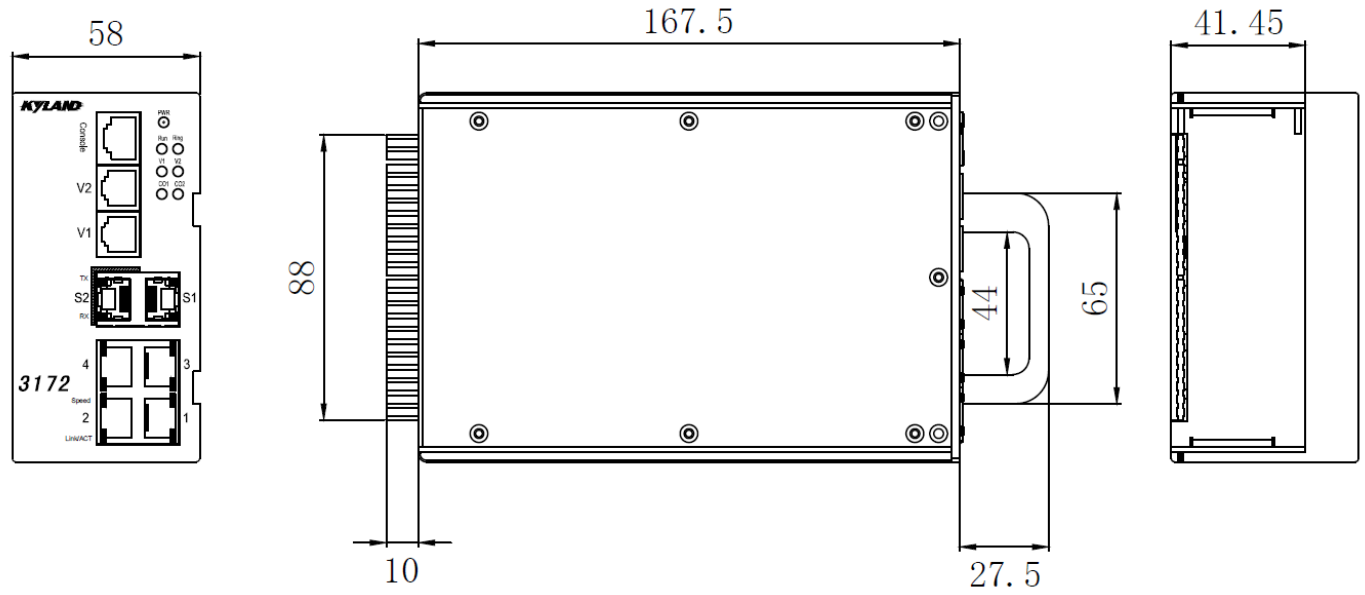


Figure 6 Dimensions (Unit: mm)

Caution:

- As part of the heat dissipation system, the switch housing becomes hot during operation. Please use caution when coming in contact and avoid covering the switch housing when the switch is running.
- The figures in this manual are only for reference.

3.2 Mounting Modes and Steps

The series switches support guide rail installation. Before installation, make sure that the following requirements are met.

1) Environment: temperature (-40℃ to 85℃), ambient relative humidity (5% to 95%, non-condensing)
2) Power requirement: The power input is within the voltage range of the switch.
3) Grounding resistance: <5Ω
4) No direct sunlight, distant from heat source and areas with strong electromagnetic interference.

3.2.1 Mounting Steps

Step 1: Before installation, make sure that the following requirements are met.

- Adequate space for SICOM3172 (dimensions: 41.45mm×114mm×167.5mm; width of the front panel: 58mm; depth of the handle: 27.5mm)
- Applicable power input on the backplane

Step 2: Insert SICOM3172 into the cabinet by ensuring that the cabinet channels securely fasten into the flanges on the top and bottom guide rails of the device. Hold the handle of SICOM3172 and push it along the channels until the connecting finger is securely connected to the power supply socket of the backplane, as shown in the following figure.

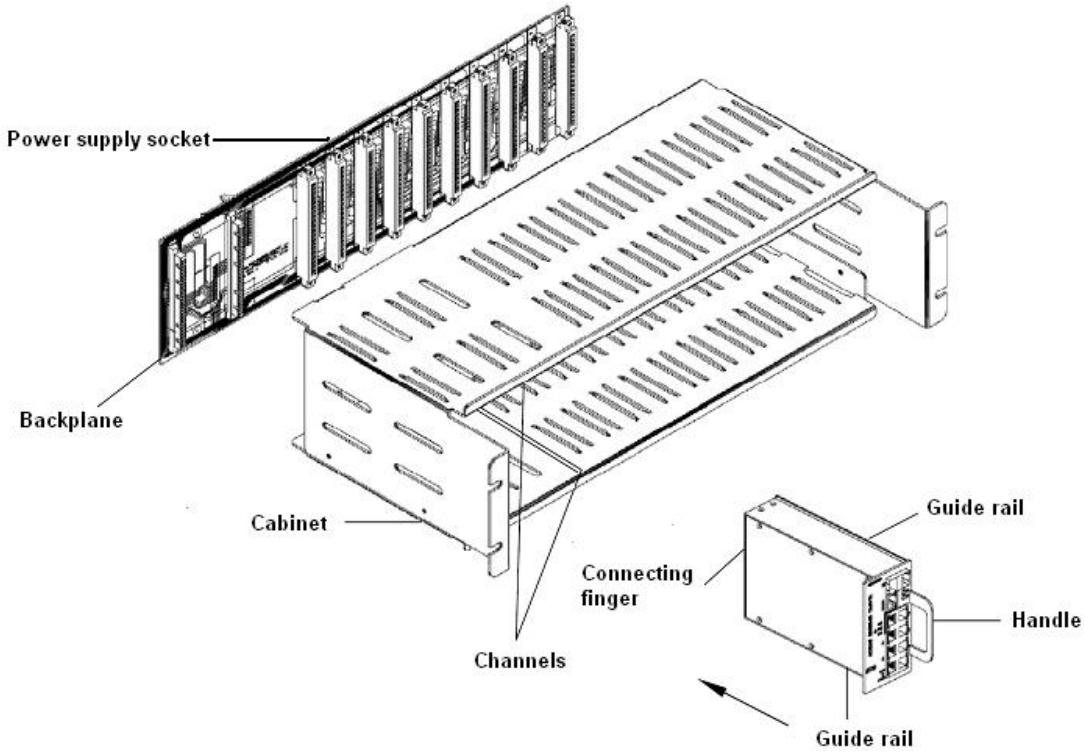


Figure 7 Mounting

4 Connection

4.1 10/100Base-T(X) Ethernet Port

10/100Base-T(X) Ethernet 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.

- Pin Definition

The following figure shows the pin numbers of the 10/100Base-T(X) RJ45 port.

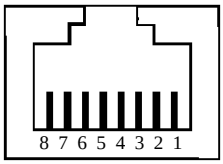


Figure 8 RJ45 Port

The following table lists the pin definitions of the 10/100Base-T(X) RJ45 port.

Table 7 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

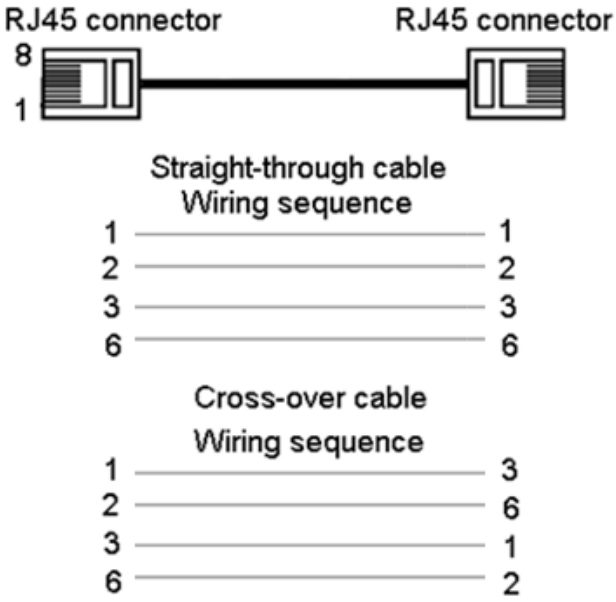


Figure 9 Connection Using Straight-through/Cross-over Cable

Note:

The color of the cable for RJ45 connector meets the 568B standard: 1-orange and white, 2-orange, 3-green and white, 4-blue, 5-blue and white, 6-green, 7-brown and white, and 8-brown.

4.2 RS232/485 Serial Port

RS232/485 serial port is equipped with RJ45 connector, numbered S1 and S2. The following figure shows the pin numbers of the port.

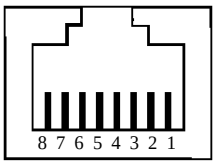


Figure 10 RJ45 Port

The following table lists the pin definitions of the port.

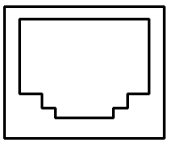
Table 8 Pin Definitions of RS232/485 Serial Port

Pin	RS232	RS485
1	Unused	Unused
2	Unused	Transmit/Receive Data (TXD-/RXD-)
3	Unused	Unused
4	Unused	Unused
5	Transmit Data (TXD)	Unused
6	Receive Data (RXD)	Transmit/Receive Data (TXD+/RXD+)

7	Signal Ground (SG)	Signal Ground (SG)
8	Unused	Unused

4.3 Console Port

The device provides a console port on the front panel. Connect the 9-pin serial port of a PC to the console port of the switch with an RJ45-DB9 console cable. Then you can configure, maintain, and manage the switch by running Hyper Terminal in Windows OS of a computer.



Console

Figure 11 Console Port

- RJ45-DB9 Console Cable

One end of an RJ45-DB9 console cable is crimped RJ45 connector to be inserted into the console port of the switch, and the other end is the DB9 connector to be inserted into the 9-pin serial port of a PC.

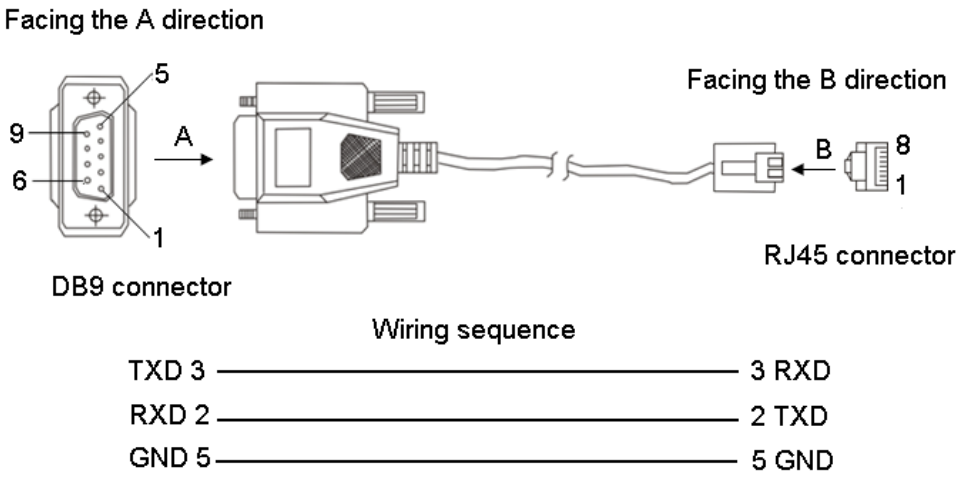


Figure 12 Wiring Sequence of DB9-RJ45 Console Cable

Table 9 Pin Definitions of DB9-RJ45 Console Cable

DB9 Pin	RJ45 Pin	Signal	Description
2	3	RXD	Receive data
3	2	TXD	Transmit data
5	5	GND	Grounding

4.4 EoVDSL Port

The device provides EoVDSL ports (V1 and V2) on the front panel. The ports are equipped with RJ11 connectors and transmit VDSL signals, achieving long-distance data transmission over telephone lines, as shown in the following figure.

Figure 13 EoVDSL Port

Table 10 Pin Definitions of the EoVDSL Port

Pin	Definition
1	Unused
2	Ring
3	TIP
4	Unused

- Wiring Sequence

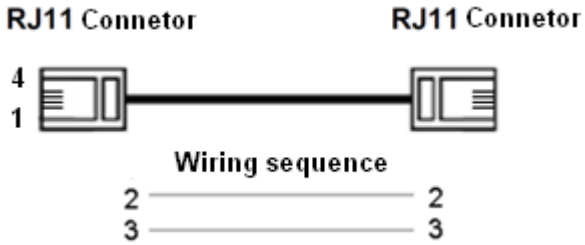


Figure 14 Wiring Sequence of RJ11 Connectors

4.5 Connecting Finger

The connecting finger is to be connected to the socket of the backplane for power supply.

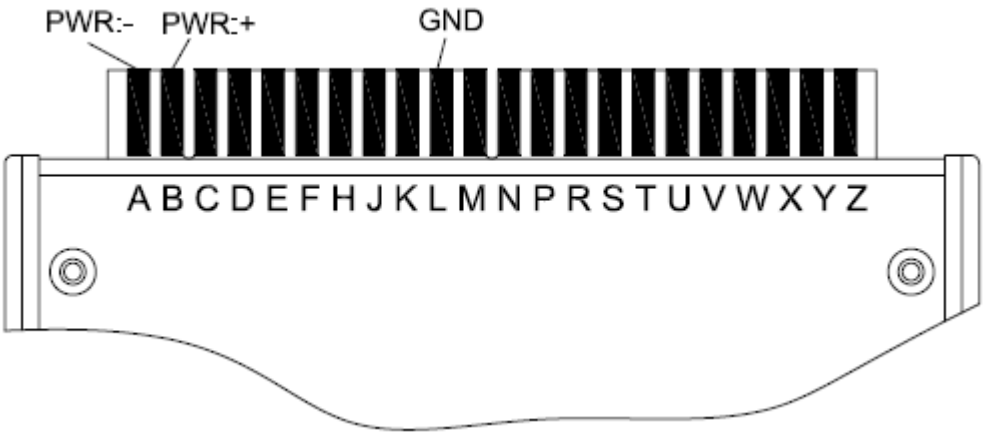


Figure 15 Pins of the Connecting Finger

Table 11 Pin Definitions of the Connecting Finger

Pin	Description
A	PWR: -
B	PWR: +
L	GND

Caution:

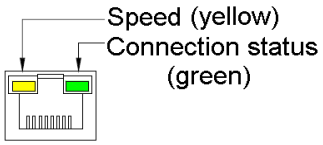
The switch supports 24DC power input. Before inserting the device into the cabinet, make sure that the power input meets the power requirement. If connected to an incorrect power input, the device may be damaged.

Warning:

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

5 LEDs

Table 12 Front Panel LEDs

LED	State	Description
Power LED	On	The power is connected and operates properly.
	Off	The power is not connected or operates abnormally.
Running LED	Blinking	The CPU operates properly.
	On	The CPU operates abnormally or is starting up.
	Off	The CPU does not start up.
Ring LED	On	Master
	Blinking	Slave
	Off	No ring
EoVDSL port connection status LED	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection
EoVDSL port role LED	On	CO
	Off	CPE
		
10/100Base-T(X) Ethernet port speed LED (yellow)	On	100M working state (100Base-TX)
	Off	10M working state (10Base-T) or no connection
10/100Base-T(X) Ethernet port connection status LED (green)	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection

6 Switch Access

You can access the switch through the console port, Telnet, or Web.

If the device works as a programmable protocol converter, you can access it through Telnet or Web.

Table 13 Default Parameters

	Switch	**Programmable Protocol Converter**
Default IP address	192.168.0.2	192.168.0.3
Default user name	admin	root
Default password	123	123

Table 14 Switch Commands

View	**Command**	**Description**
User view	SWITCH>enable	Enter the management view.
Management view	SWITCH#show interface	Query the current IP address of the switch.
Management view	SWITCH#show version	Query the version of the switch.
Management view	SWITCH#reboot	Restart the switch.
Management view	SWITCH#load default	Restore the factory default settings (excluding the IP address).
Management view	SWITCH#configure terminal	Enter the configuration view.

Table 15 Programmable Protocol Converter Commands

Command	**Description**
[root@system /root]# channelc -c [*channel-id*] –-show	Query the settings of a serial port. [*channel-id*] indicates the ID of the serial port. The value ranges from 1 to 4.
[root@system /root]# ifconfig	Query the IP and MAC addresses of the device.
[root@system /root]# cat /etc/version	Query the version of the device.
[root@system /root]# reboot	Restart the device.
[root@system /root]#loadfactory.sh	Restore the factory default settings (including the IP address).

6.1 Access through Console Port

Caution:

The device cannot be accessed through the console port when serving as a programmable protocol converter.

Step 1: Connect the console port of the switch to the 9-pin serial port of a PC with the delivered RJ45-DB9 console cable.

Step 2: Open Hyper Terminal in Windows OS. On the computer's desktop, click Start → All Programs → Accessories → Communications → Hyper Terminal.

Step 3: Create a connection "Switch", as shown in the following figure.

Figure 16 Creating a Connection

Step 4: Connect the communication port in use, as shown in the following figure.

Figure 17 Selecting a Serial Port

Note:

To confirm the communication port in use, right-click [My Computer] and select [Property]. Click [Hardware] → [Device Manager] → [Port] to view the communication port.

Step 5: Set port parameters (Bits per second: 9600, Data bits: 8, Parity: None, Stop bits: 1, and Flow control: None), as shown in the following figure.

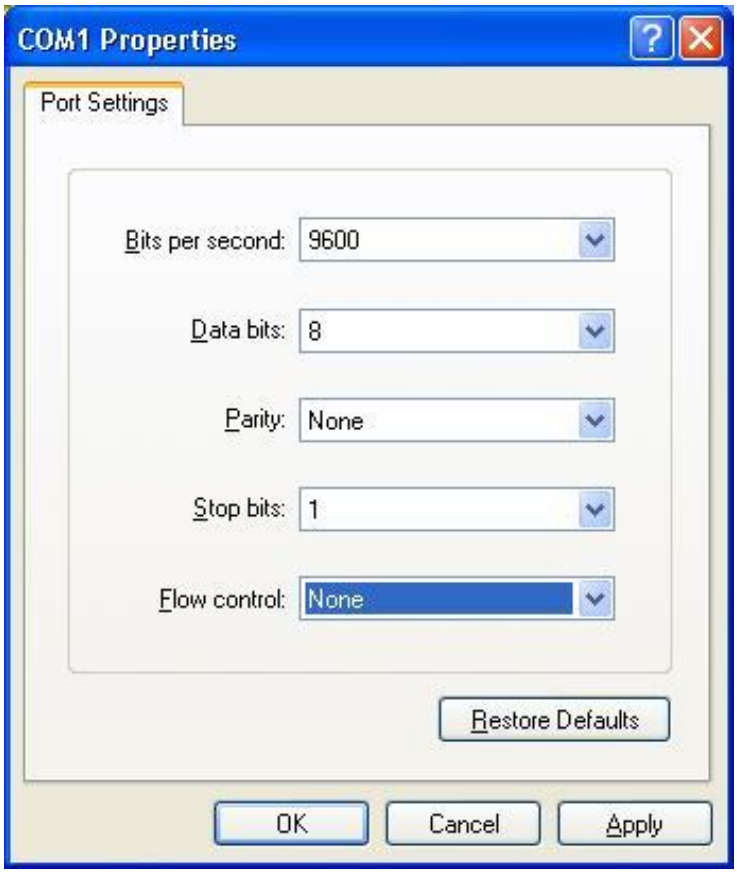


Figure 18 Setting Port Parameters

Step 6: Click OK to enter the switch CLI. Then the commands in Table 14 can be used to perform operations.

6.2 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. For example, if the IP address of the switch is 192.168.0.2 (default IP address of a Kyland switch), enter "telnet 192.168.0.2" in the dialog box.

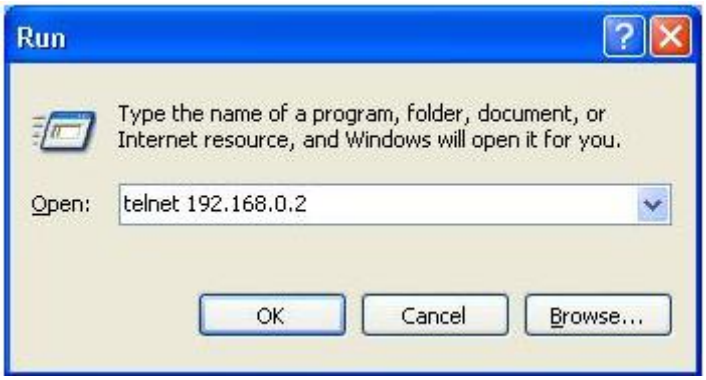


Figure 19 Access through Telnet

Step 3: Click OK. The Telnet CLI is displayed. Then you can enter commands (as listed in Table 14 or Table 15) to perform operations.

Note:

Enter the required IP address, user name, and password according to the system in use, as listed in Table 13.

6.3 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 user login interface is displayed. You can log in to the Web UI by using default user name and password.

Note:

- Enter the required IP address, user name, and password according to the system in use, as listed in Table 13.

- IE8.0 or a later version is recommended.
- For details about how to access the switch and other operations, refer to the Web operation manual in the delivered CD.

7 Basic Features and Specifications

Power Requirements		
Power Identifier	Rated Voltage Range	Maximum Voltage Range
24DC	24VDC	18-36VDC
Rated Power Consumption		
Rated power consumption	10W	
Physical Characteristics		
Housing	Aluminum, fanless	
Installation	Guide rail installation	
Dimensions (W×H×D)	41.45mm×114mm×167.5mm (width of the front panel: 58mm; depth of the handle: 27.5mm)	
Weight	0.8Kg	
Environmental Limits		
Operating temperature	-40℃~+85℃	
Storage temperature	-40℃~+85℃	
Ambient relative humidity	5%~95% (non-condensing)	
Warranty		
Warranty	5 years	

For more information about KYLAND products, please visit our website: http://www.kyland.com/