ETHERLINE ACCESS SWITCH
Hardware Installation Manual

ETHERLINE ACCESS

M06T-2GEN

M08T-2GEN

M08T02SFP

M08T02GSFP

V1.0, December 2019

For more information please visit:

https://www.lappkabel.com/activenetworkcomponents

ETHERLINE ACCESS M06T-2GEN/M08T-2GEN/M08T02SFP/M08T02GSFP

Hardware Installation Manual

Disclaimer: U.I. Lapp GmbH 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 manual carefully for personal and equipment safety. Please keep the manual for further reference. If the equipment is used in a manner not specified in this manual, the protection provided by the equipment may be impaired. LAPP 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 LAPP 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

The ETHERLINE ACCESS M06T-2GEN/M08T-2GEN/M08T02SFP/M08T02GSFP managed industrial Ethernet switches equipped with optional two 100Base-X or 1000Base-X SFP slots and six/eight 10/100Base-T(X) Ethernet ports, are applicable to factory automation, power distribution, subway PIS, petroleum and petrochemical, intelligent transportation and many other industries.

The ETHERLINE ACCESS M06T-2GEN/M08T-2GEN/M08T02SFP/M08T02GSFP, with wide operating temperature of -40℃ to 75℃, IP40 rated metal housing and reset button for one-touch recovery, supports DT-Ring (recovery time<50ms), DRP/DHP (recovery time<20ms), STP/RSTP/MSTP, VLAN, QoS, security features and network management through Web, Telnet and console port, increasing network reliability and making them ideal for use in any harsh industrial environments.

	Note：
NOTE	This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2 Structure and Interface

2.1 Front Panel

ETHERLINE ACCESS M08T-2GEN   ETHERLINE ACCESS M06T-2GEN
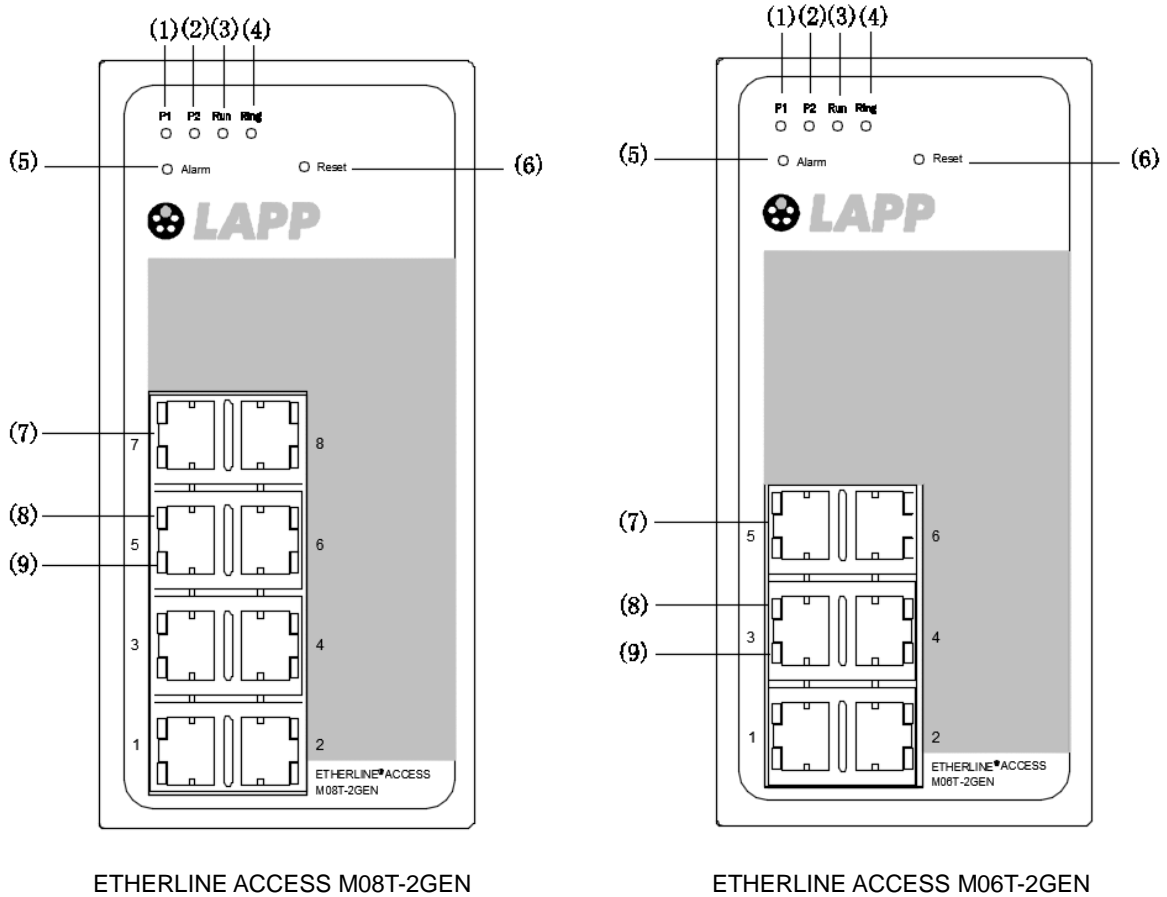
Figure 1 Front Panels of M08T-2GEN and M06T-2GEN

(1) Power 1 LED   (2) Power 2 LED   (3) Running LED

(4) Ring LED   (5) Alarm LED   (6) Reset button

(7) 10/100Base-T(X) Ethernet Port

(8) Speed LED of 10/100Base-T(X) Ethernet port (yellow)

(9) Link/ACT LED of 10/100Base-T(X) Ethernet Port (green)

ETHERLINE ACCESS M08T02GSFP   ETHERLINE ACCESS M08T02SFP

Figure 2 Front Panels of M08T02GSFP and M08T02SFP

(1) Power 1 LED   (2) Power 2 LED   (3) Running LED

(4) Ring LED   (5) Alarm LED   (6) Reset button

(7) 10/100Base-T(X) Ethernet Port

(8) Speed LED of 10/100Base-T(X) Ethernet port (yellow)
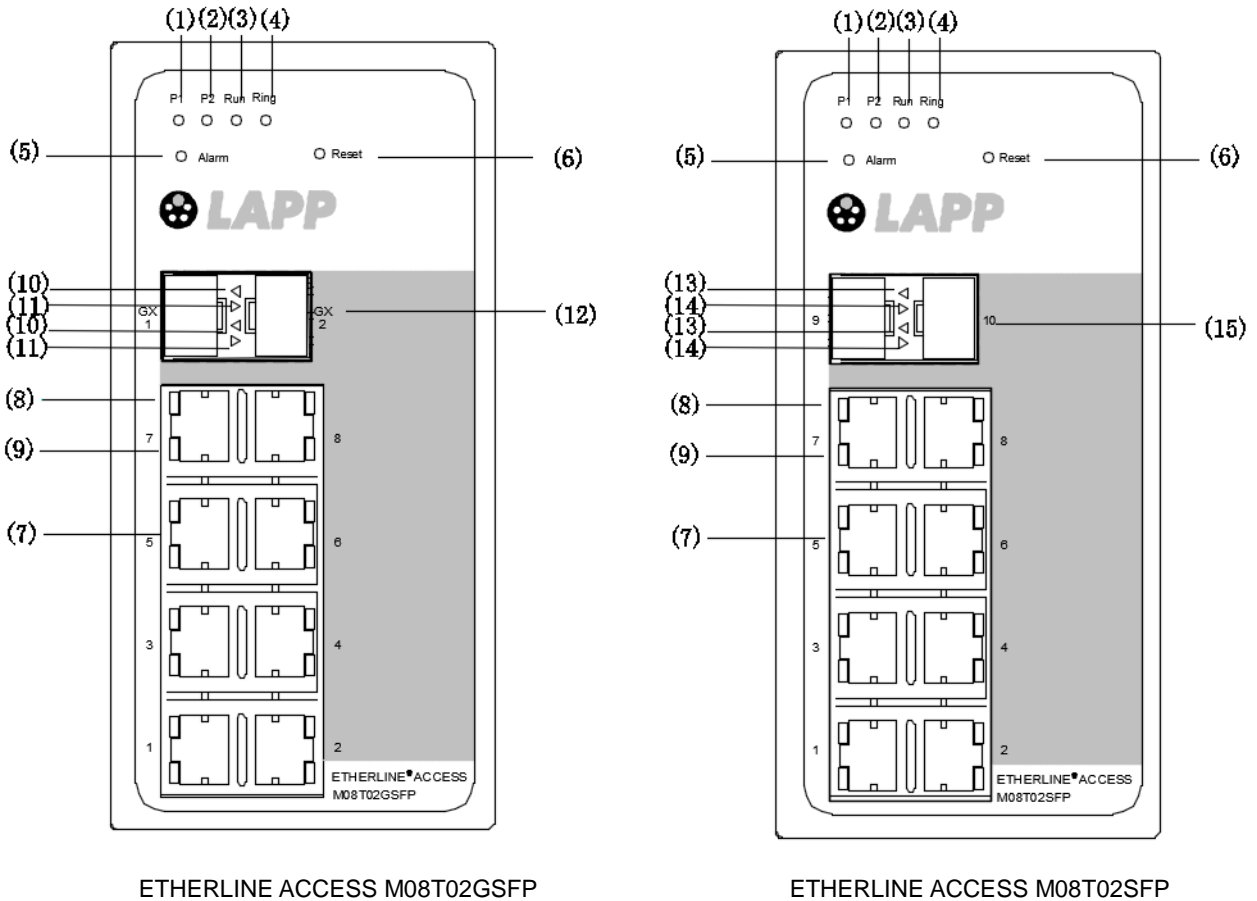
(9) Link/ACT LED of 10/100Base-T(X) Ethernet Port (green)

(10) Link/ACT LED of 1000Base-X SFP slot   (11) Speed LED of 1000Base-X SFP slot

(12) 1000Base-X SFP slot   (13) Link/ACT LED of 100Base-X SFP slot

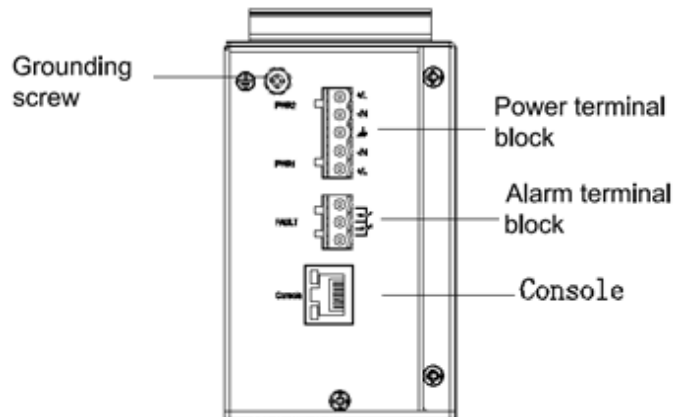(14) Speed LED of 100Base-X SFP slot   (15) 100Base-X SFP Slot

2.2 Top Panel

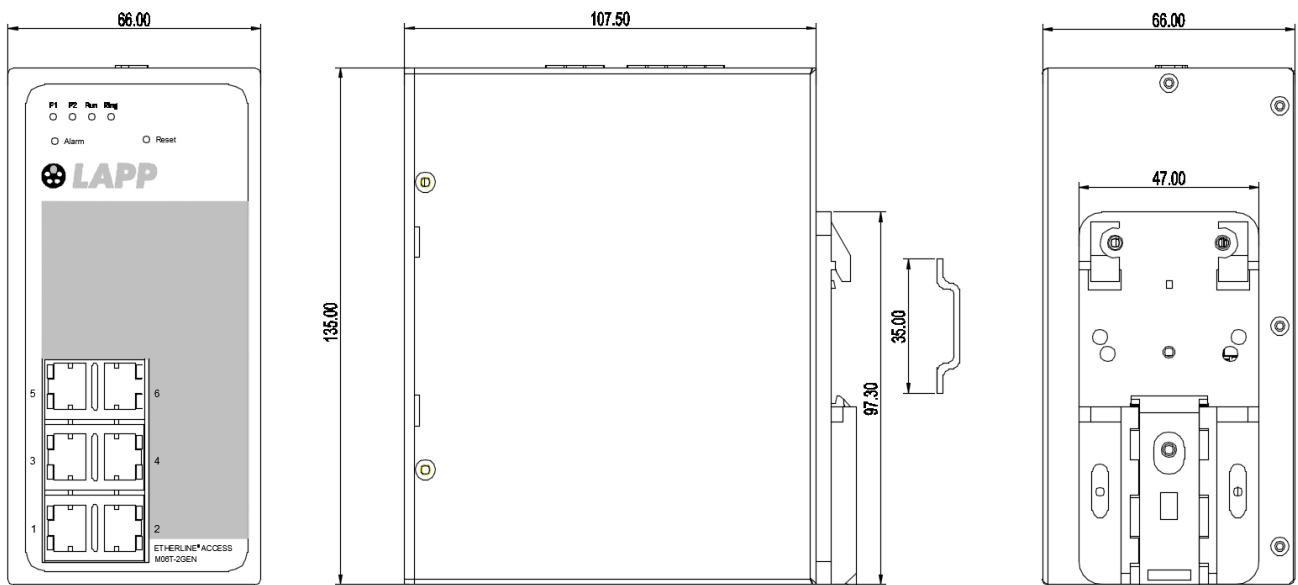Figure 3 Top Panel

3 Mounting

3.1 Dimension Drawing

Figure 4 Dimensions (unit: mm)

⚠ CAUTION	**Caution:**
	As part of the heat dissipation system, the housing of the switch becomes hot while working. Please do not touch or cover the housing while the switch is working.

3.2 Mounting

The device supports DIN-rail mounting.

Mounting Environment:

1) The temperature, humidity and power supply is within the allowable range.

2) No direct sunlight, distant from heat source and areas without strong electromagnetic interference.

3) The switches are open type equipment for indoor use.

4) The switches are intended for use in a Pollution Degree 2 industrial environment

5) The switches are recommended to be mounted in an enclosure that provides a minimum protection rating of IP54.

> **Note：**
>
> Devices should be installed and accessed by service personnel or users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.

3.2.1 DIN-Rail Mounting

Step 1: Select the mounting position for the device and guarantee adequate space for heat dissipation.

Step 2: Insert the connecting seat onto the top of the DIN rail, and push the bottom of the device inward and upward to ensure the DIN rail fits in the connecting seat. Make sure the device is firmly installed on the DIN rail, as shown in the following figure.
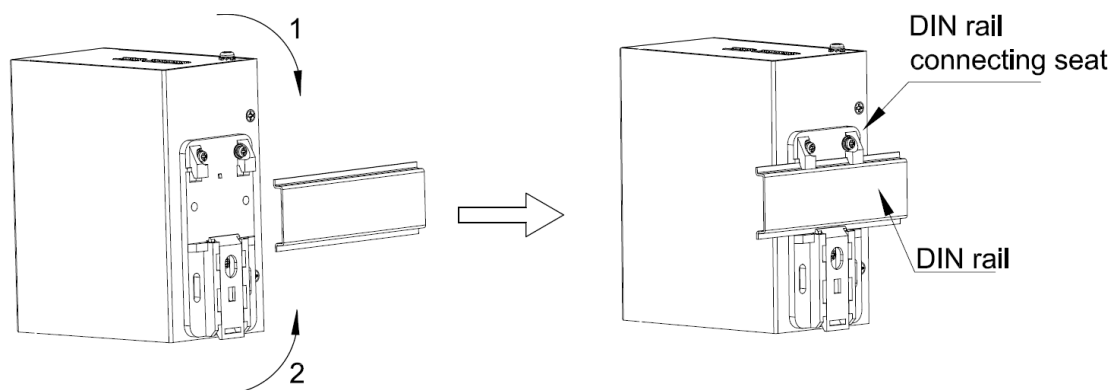

Figure 5 DIN-Rail Mounting

3.2.2 DIN-Rail Dismounting

Step 1: Use a screwdriver to release the spring locking piece at the bottom of the connecting seat by following the arrow 1 on Figure 6.

Step 2: Move the device in arrow 2 until the bottom of the device is detached from the DIN rail. Then pull the device upward in arrow 3 until the device is removed from the DIN rail completely.
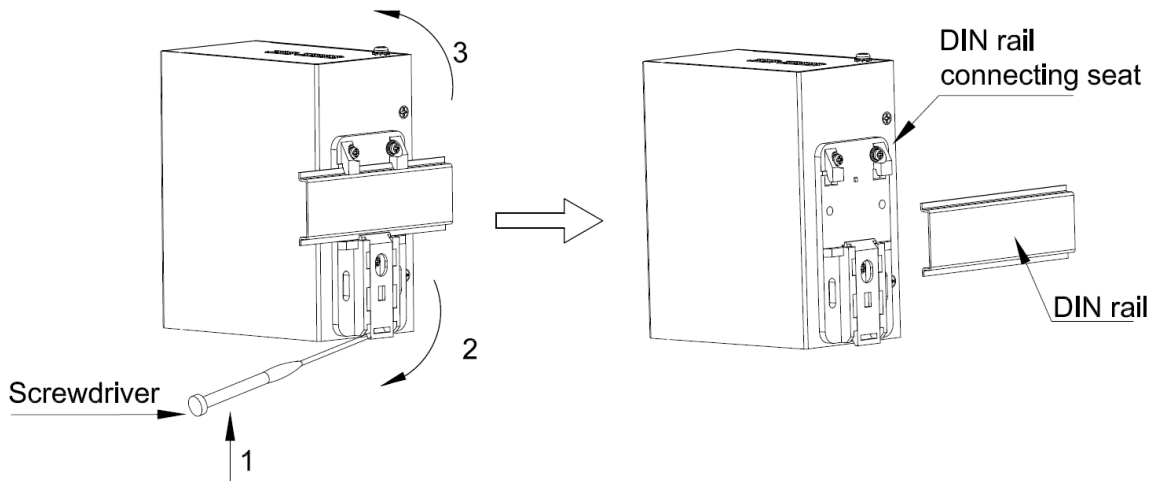

Figure 6 DIN-Rail Dismounting

Caution:

Cut off the power and disconnect all cables before mounting, dismounting or moving the equipment.

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.
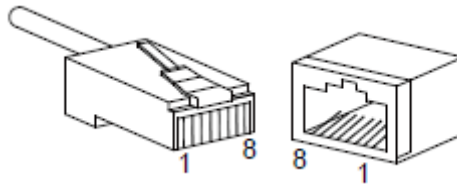
● Pin Definition

Figure 7 RJ45 Port

Table 1 Pin Definitions of 10/100Base-T(X) Ethernet 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：
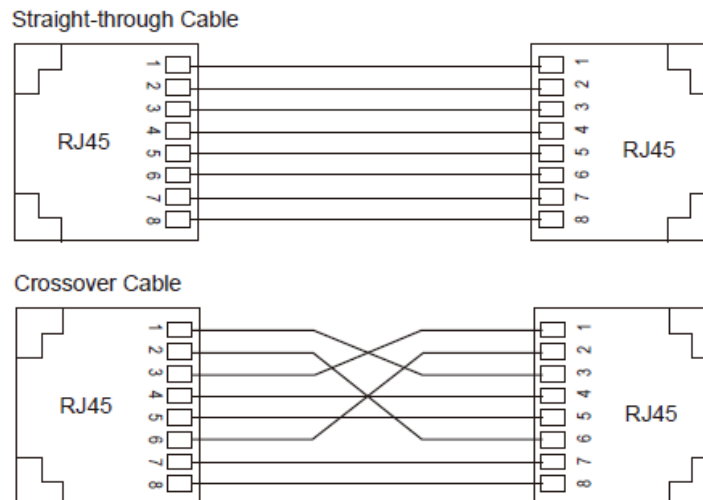
+" and "-" indicate level polarities.

● Wiring Sequence

Figure 8 Connection Using Straight-through/Cross-over Cable

4.2 100/1000Base-X SFP Slot

In the front panel of ETHERLINE ACCESS M08T02SFP and ETHERLINE ACCESS M08T02GSFP, there are two SFP slots, which respectively accept 100Base-X SFP optical transceiver and 1000Base-X SFP optical module, as shown in Figure 9.
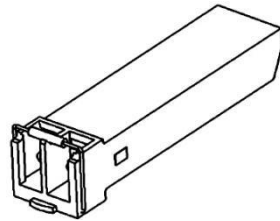

Figure 9 SFP Optical Module

An SFP optical module consists of a TX (transmit) port and an RX (receive) port. To enable communication between Device A and Device B, connect the TX port of Device A to the RX port of Device B, and the RX port of Device A to the TX port of Device B, as shown in the following figure.
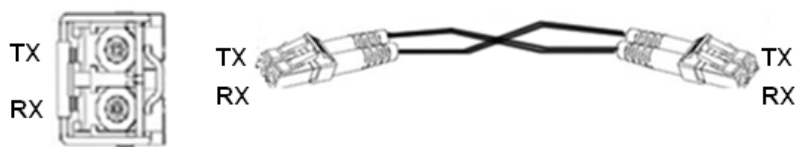

Figure 10 Fiber Connection of an SFP optical module

While wiring, first insert the SFP module into the SFP slot in the switch, and then plug the optical fibers into the SFP module. Viewing the corresponding Link/ACT LED of SFP port, if the LED is off, this may be caused by incorrect connection of the TX and RX ports. Recommended SFP module types, please see Chapter 9 Accessories.
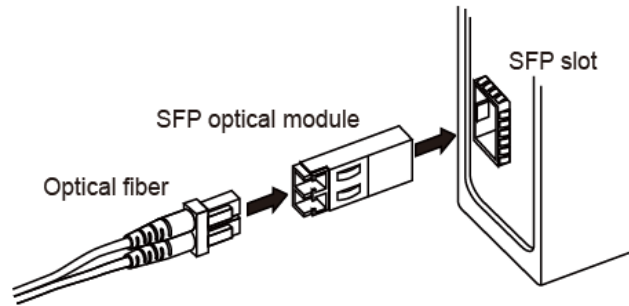
Figure 11 Connecting the SFP Optical Module

Note：

The switch supports DDM (Digital Diagnostic Monitor) function which need to be used together with the SFP optical module that also supports DDM function.

Caution:

● The device uses laser to transmit signals in fibers. 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 device is powered on.

● The applicable distance of 40km SFP module is 12km-40km, 60km SFP module is 20km-60km, 80km SFP module is 27-80km. If the transmission distance is less than the applicable distance, the SFP module might be burned due to overpower.

4.3 Console Port

There is a RJ45 Console port on the top panel of the switch (see Figure 3). Through the Console port, you can configure, maintain, and manage the switch. How to access the switch through Console port, see Chapter 7.1.

Figure 12 Console Port

A DB9-RJ45 Console cable is provided together with the switch as shown in Figure 13. One end of the cable is a DB9 connector to be inserted into the 9-pin serial port of a PC, and the other end is a crimped RJ45 connector to be inserted into the console port of the switch.
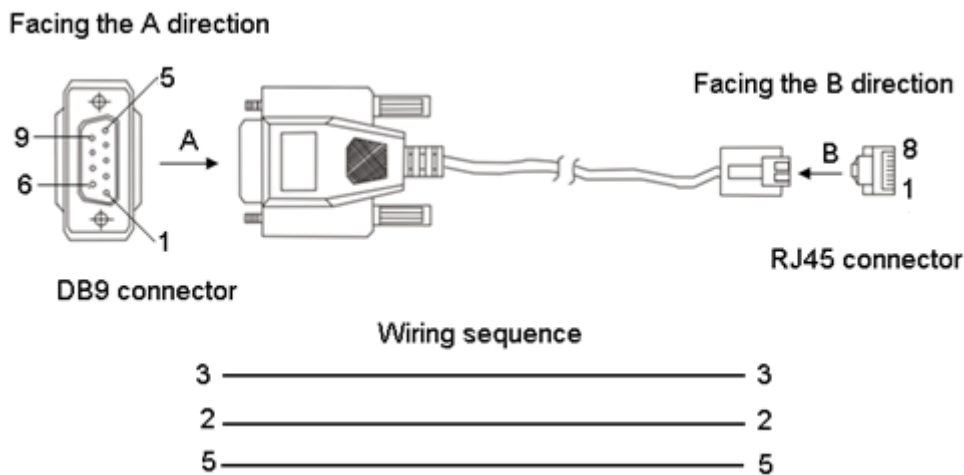

Figure 13 Wiring Sequence of DB9-RJ45 Console Cable

Table 2 Pin Definitions of DB9 Port (9-Pin Serial Port) and RJ45 Port (Console Port)

DB9 Port (9-Pin Serial Port)		RJ45 Port (Console Port)	
Pin	Signal	Pin	Signal
2	RXD (Receive data)	2	TXD (Transmit data)
3	TXD (Transmit data)	3	RXD (Receive data)
5	GND (Grounding)	5	GND (Grounding)

4.4 Grounding

Grounding protects the switch from lightning and interference. Therefore, you must ground the switch properly. You need to ground the switch before it is powered on and disconnect the grounding cable after the switch is powered off.

There is a grounding screw (see Figure 3) on the top panel for chassis grounding. After crimping one end of the grounding cable to a cold pressed terminal, secure the end of the grounding cable to the grounding screw and firmly connect the other end to ground.

	Note：
NOTE	Cross-sectional area of the chassis grounding cable>2.5mm^2; grounding resistance<5Ω; torque range is from 0.76Nm to 0.83Nm.

4.5 Power Terminal Block

There is a power terminal block on the top panel of the device. You need to connect the power wires to the terminal block to provide power for the device. The switch supports redundant power supply with a 5-pin 5.08mm-spacing plug-in terminal block. When one power input is faulty, the switch can continue operating properly, thereby improving network reliability.

- 5-Pin 5.08mm-Spacing Plug-in Terminal Block
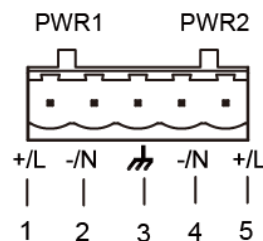
Figure 14 5-Pin 5.08mm-Spacing Plug-in Terminal Block (socket)

Table 3 Pin Definitions of 5-Pin 5.08mm-Spacing Plug-in Terminal Block

Pin Number	Signal	DC Wiring Definition
1	+/L	PWR1: +
2	-/N	PWR1: -
3	⏚	PGND
4	-/N	PWR2: -
5	+/L	PWR2: +

- Wiring and Mounting

Step 1: Ground the device properly according to Chapter 4.4.

Step 2: Remove the power terminal block from the device.

Step 3: Insert the power wires into the power terminal block according to Table 3 and tighten the wires.

Step 4: Plug the terminal block with the connected wires into the terminal block socket on the device.

Step 5: Connect the other end of the power cable to the external power supply system within the allowed power range. If the corresponding power LED on the front panel of the switch turns on, the power supply is connected properly.

Table 4 Wiring and Mounting Specifications

Terminal Type	Required Torque	Wire Range (AWG)
Terminal Block Plug	4.5-5.0 lb-in	12-24

Warning:
- Use copper conductors only. The minimum temperature rating of wires to be connected to the terminal block is 75℃.
- ⏚. Frame or Chassis Terminal, this symbol may also be considered as a warning symbol in that it indicates that a hazardous live voltage must not be connected to the terminal.
- 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.

4.6 Alarm Terminal Block

The device provides an alarm relay (Resistive Load) on the top for alarm output. When the switch works properly, the normally-open contacts (pin 1 & 2) are closed and the normally-closed (pin 2 & 3) contacts are open; when an alarm occurs, the normally-open contacts (pin 1 & 2) are open and the normally-closed contacts (pin 2 & 3) are closed. The alarm is outputted through a 3-pin 5.08mm-spacing plug-in terminal block. The alarm operation is configurable (see the Web Operation Manual for details)
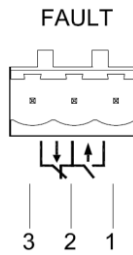
FAULT

Figure 15 Alarm Terminal Block (socket)

● Wiring and Mounting

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

Step 2: Tighten the three wires into the alarm terminal block by following the instructions

above.

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

Table 5 Wiring and Mounting Specifications

Terminal Type	Required Torque	Wire Range (AWG)
Terminal Block Plug	4.5-5.0 lb-in	12-24

Warning:

● Use copper conductors only. The minimum temperature rating of wires to be connected to the

terminal block is 75℃.

5 Reset

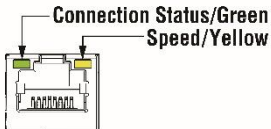The device provides a Reset button on the front panel. The button can be used to restart the

device or restore factory default settings.

To reboot the device, press the button continuously for 0.5 to 3 seconds then release. The

device will reboot.

To restore factory default settings, press the button continuously for more than 3 seconds

then release. The device will reload default settings and then reboot.

6 LEDs

Table 6 Front Panel LEDs

LED	State	Description
P1 LED	On	Power 1 is connected and operates properly
	Off	Power 1 is not connected or operates abnormally
P2 LED	On	Power 2 is connected and operates properly
	Off	Power 2 is not connected or operates abnormally
Run LED	Blinking	The CPU is running properly
	On	The CPU is starting up
	Off	The CPU does not start up
Ring LED	On	Master (DT-Ring mode)/Root (DRP mode)
	Blinking	Slave (DT-Ring mode)/B-Root or Normal (DRP mode)
	Off	No ring
Alarm LED	On	An alarm occurs
	Off	No alarm occurs
10/100Base-T(X)		
Speed LED (yellow)	On	100M working state (100Base-TX)
	Off	10M working state (10Base-T) or no connection
Link/ACT LED (green)	On	Effective port connection
	Blinking	Ongoing network activities
	Off	No effective port connection
100Base-X		
Speed LED (yellow)	On	100M working state (100Base-FX)
	Off	no connection

	On	Effective port connection
Link/ACT LED (green)	Blinking	Ongoing network activities
	Off	No effective port connection
1000Base-X		
Speed LED (yellow)	On	1000M working state (1000Base-X)
	Off	100M working state (100Base-FX) or no connection
	On	Effective port connection
Link/ACT LED (green)	Blinking	Ongoing network activities
	Off	No effective port connection

7 Switch Access

You can access and manage the switch through console port, web and Telnet.

7.1 Access through Console Port

Step 1: Connects the 9-pin serial port of the PC and the Console port of the device through the DB9-RJ45 Network 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 COM port in use, as shown in the following figure.

Figure 17 Selecting a Serial Port

	Note：
	To find out which COM port in use, right-click [My Computer] → [Property] → [Device Manager] → [Port].

Step 5: Set COM port parameters (Bits per second: 115200, 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 following commands can be used to

perform operations.

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Table 7 CLI Commands

View	Command	Description
Privileged mode	SWITCH#show interface vlan 1	Query the IP address of the switch
Privileged mode	SWITCH#show version	Query the version of the switch
Privileged mode	SWITCH#reboot	Restart the switch
Privileged mode	SWITCH#load default	Restore the factory default settings
Privileged mode	SWITCH#config terminal	Enter the configuration mode

7.2 Access through Telnet

Step 1: Connect the network port of a PC to the Ethernet port of the switch with a network cable.

Step 2: On the Windows desktop, click Start and Run. The Run dialog box is displayed. Enter "telnet *IP address*". For example, if the IP address of the device is 192.168.0.2 (default IP address of the device), enter "telnet 192.168.0.2" in the dialog box.
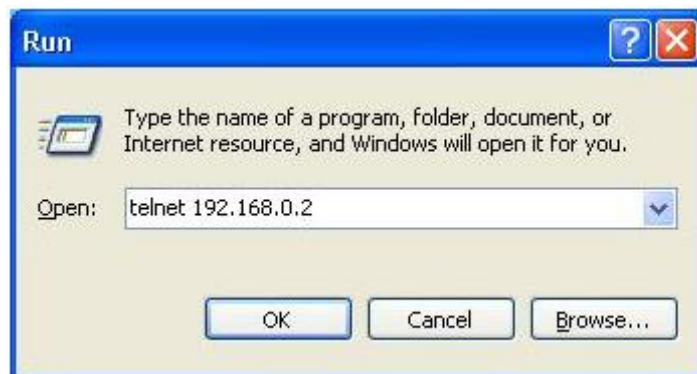

Figure 19 Access through Telnet

Step 3: Click OK to enter Telnet interface. Input default user name "admin" and password "123" to enter configuration mode. Then you can use the commands (as shown in Table 7) to perform operations.

> **Note：**
>
> Make sure that the switch and the PC are in the same subnet before Telnet.

7.3 Access through Web

Step 1: Connect the network port of a PC to the Ethernet port of the switch with a network cable.

Step 2: Enter the IP address of the device in the address box of the browser. The user login interface is displayed. You can log in to the Web UI by default user name "admin" and password "123".

	Note：
NOTE	● IE8.0 or a later version is recommended.
	● Make sure that the switch and the PC are in the same subnet before login through Web.

8 Basic Features and Specifications

Power Supply

Voltage Range	24-48VDC (18-60VDC), SELV
Input Current	ETHERLINE ACCESS M06T-2GEN: 0.62A (MAX)
	ETHERLINE ACCESS M08T-2GEN: 0.62A (MAX)
	ETHERLINE ACCESS M08T02SFP: 0.67A (MAX)
	ETHERLINE ACCESS M08T02GSFP: 0.67A (MAX)
Terminal block	5-pin 5.08 mm-spacing plug-in terminal block

Rated Power Consumption

Rated power consumption	ETHERLINE ACCESS M06T-2GEN: 11W (MAX)
	ETHERLINE ACCESS M08T-2GEN: 11W (MAX)
	ETHERLINE ACCESS M08T02SFP: 12W (MAX)
	ETHERLINE ACCESS M08T02GSFP: 12W (MAX)

Data Port

Model	100Base-X SFP Slot	1000Base-X SFP Slot	10/100Base-T(X) RJ45 Port
ETHERLINE ACCESS M06T-2GEN	/	/	6
ETHERLINE ACCESS M08T-2GEN	/	/	8

ETHERLINE ACCESS M08T02SFP	2	/	8
ETHERLINE ACCESS M08T02GSFP	/	2	8

Physical Characteristics

Housing	Metal, fanless
Protection class	IP40
Installation	DIN-Rail Mounting
Dimensions (W×H×D)	66mm×135mm×107.5mm (excluding the connector, DIN rail)
Weight	1.1kg

Environmental Limits

Operating temperature	-40℃~+75℃
Storage temperature	-40℃~+85℃
Ambient relative humidity	5%~95% (non-condensing)
Altitude	2000m

9 Accessories

Type	Connector	Central Wavelength	Max Transmission Distance
100M SFP multimode optical module	LC	1310nm	2km
100M SFP single mode optical module	LC	1310nm	40km
1000M SFP multimode optical module	LC	850nm	0.55km
1000M SFP single mode optical module	LC	1310nm	10km