

SUPCON Switch






SUP-5216

User Manual

IM19H42-E

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Symbol Definition	
	WARNING: Indicates information that a potentially hazardous situation which, if not avoided, could result in serious injury or death.
	RISK OF ELECTRICAL SHOCK: Indicates information that Potential shock hazard where HAZARDOUS LIVE voltages greater than 30V RMS, 42.4V peak, or 60V DC may be accessible.
	ESD HAZARD: Indicates information that Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices
	ATTENTION: Identifies information that requires special consideration.
	TIP: Identifies advice or hints for the user.

Security& Caution Symbols

The following table lists Security& Caution symbols used on equipments.














No.	Symbol	Description
1		Direct current (DC)
2		Alternating current (AC)
3		Ground (Earth) terminal
4		Protective earth (ground) terminal
5		Reference ground (Earth) terminal
6		Frame or chassis
7		Equipotentiality
8		On (power)
9		Off (power)
10		Caution, risk of electric shock
11		Caution, hot surface
12		Caution, risk of danger
13		Electrostatic sensitive devices (ESD)

Table of Contents

SUP-5216	1
Section 1 Overview	1
1.1 Product Introduction	1
1.2 Functions and Features	1
1.3 Technology Index.....	2
Section 2 Product Appearance.....	3
Section 3 Mounting	6
3.1 Mounting Conditions.....	6
3.2 Mounting Method.....	6
3.3 Wiring	7
3.3.1 Power Line Wiring	7
3.3.2 Ethernet Line wiring.....	8
3.3.3 Optical Fiber Connection	8
3.4 Check and Start Device after Mounting	10
Section 4 Network Cascade.....	11
4.1 Network Lower Cascade	11
4.2 Network Upper Cascade	11
Section 5 Maintenance and Notices.....	12
5.1 Maintenance	12
5.2 Notices	12
5.3 Trouble Shooting	12
5.4 Abnormal Power	12
5.5 Abnormal Signal	13
Section 6 Revision.....	14

SUP-5216

Section 1 Overview

1.1 Product Introduction

SUP-5216, which developed by SUPCON®, is a device integrating the functions of port exchange and network speed auto-negotiation. Compared with traditional concentrator, the full-duplex running mode of the product improves the network bandwidth largely.

SUP-5216 applies miniaturized design to save the cabinet space. Its rail accessories provide convenience for installation. SUP-5216 is applicable for industries such as industry network, telecommunication and financial securities, etc.

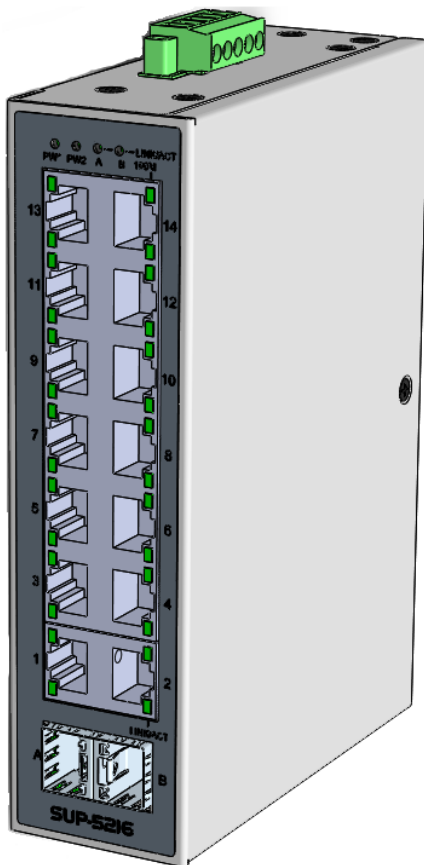


Figure 1-1 Appearance of SUP-5216

1.2 Functions and Features

- Conform to standards of IEEE802.3 10BASE-T and IEEE802.3u 100BASE-TX/FX.
- Store and forward switching mode.

- Auto-negotiation function of MDI-X.
- Broadcasting storms control.
- IEEE 802.3x flow control applies to the full-duplex flow control.
- Backpressure type supports half-duplex flow control.
- 10/100M auto-negotiation RJ-45 interface.
- Optical interface is 100M SFP multi/single mode interface.

1.3 Technology Index

Table 1-1 Technology Index

Items		Description
Dimension (W×D×H)		(44×115×162) mm
Weight		0.7kg
Input Voltage		24V DC, Dual-redundant Power Interface
Power		<8W
Temperature	Working Temperature	(-5~50)°C
	Storage Temperature	(-10~80)°C
Relative Humidity		(5%~90%)RH
Mean time between failures(MTBF)		>15 years@50°C
Packet Transmission Rate		<ul style="list-style-type: none"> ● 10BASE-T: 14880pps ● 100BASE-TX/FX: 148800pps
Protocol		CSMA/CD
Switching Mode		Store and forward
Interface Number		14 RJ-45 Ports (Standard Configuration), 1~2 SFP Ports (Optional)
Catch		1.5Mbit
MAC Address		8K MAC Address
RJ-45 Port Property	Type	CAT5 Twisted Pair Line
	Transmission Distance	(0~100)m
	Transmission Rate	10/100Mbps
Optical interface Property	Type	<ul style="list-style-type: none"> ● Multimode: 62.5/125μm Optical Fiber ● Single Mode: 9/125μm Optical Fiber
	Transmission Distance	<ul style="list-style-type: none"> ● Multimode Optical Fiber: (0~2)km ● Single Mode Optical Fiber: (0~20)km
	Output Power	<ul style="list-style-type: none"> ● Multimode Optical Fiber: (-16~-6)dBm ● Single Mode Optical Fiber: (-10~-1)dBm
	Input Power	<ul style="list-style-type: none"> ● Multimode Optical Fiber: -34dBm ● Single Mode Optical Fiber: -34dBm
	Center Wavelength	1310nm
	Transmission Rate	100Mbps
	Transmit Signal	TX
	Receive Signal	RX

Section 2 Product Appearance

SUP-5216 is an integrated cabinet, the front panel is shown in Figure 2-1, the back panel is shown in Figure 2-2, and the top is shown in Figure 2-3.

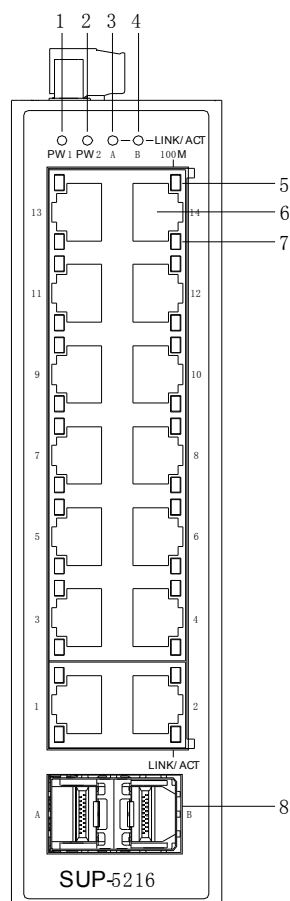


Figure 2-1 Front panel of SUP-5216

Names and instructions of front panel parts are shown in Table 2-1.

Table 2-1 Names and instructions of front panel parts

Serial No.	Name	Instruction
1	Power 1 Indicator Light	Always On: Power 1 input normally. Off: Power 1 does not be powered on, or has power input fault.
2	Power 2 Indicator Light	Always On: Power 2 input normally. Off: Power 2 does not be powered on, or has power input fault.
3	RJ-45 Port Rate Indicator Light	Green Light Always On: Interface runs on 100M. Green Light Off: Interface runs on 10M.
4	10M/100M RJ-45 Port	Totally 14 RJ-45 ports. When the RJ-45 port rate is 10M, apply more than 3 types of twisted pair lines. When the RJ-45 port rate is 100M, apply more than 5 types of twisted pair lines.

Serial No.	Name	Instruction
5	RJ-45 Port LINK/ACT Indicator Light	Green Light Always On: Link is connected. Green Light Act: Data receiving or transmitting. Green Light Off: Link is disconnected.
6	SFP Fiber Module	Totally 2 SFP fiber module slots and can connect 2 optical interface modules.
7	Optical Interface Power Indicator Light	Always On: Optical interface module is powered on. Off: Optical interface module does not be powered on, or has power input fault.
8	Optical Interface LINK/ACT Indicator Light	On: Link is connected. Act: Data receiving or transmitting. Off: Link is disconnected.
9	Optical Interface RX	Receiving signal for optical interface.
10	Optical Interface TX	Transmitting signal for optical interface.

The back panel of SUP-5216 is shown in Figure 2-2. Fix the rail accessories on the back panel by M4 screw. User can fix the device on the rail of industry cabinet by rail accessories in mounting.

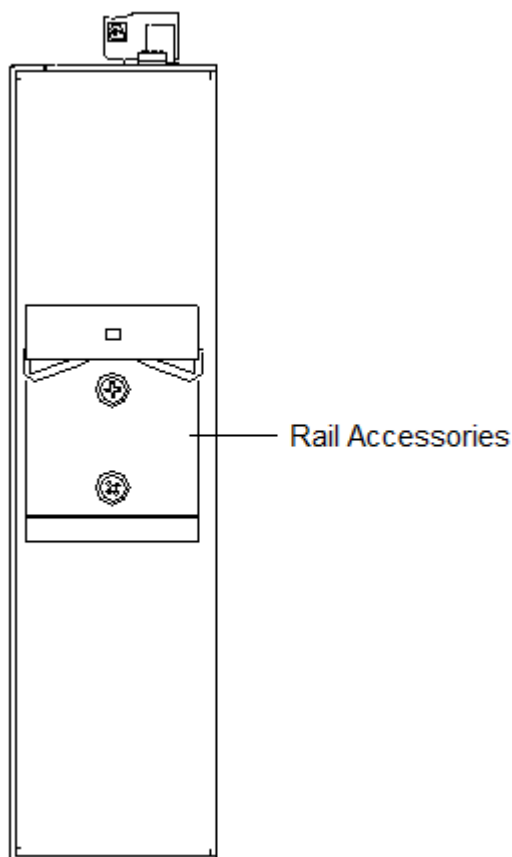


Figure 2-2 Back panel of SUP-5216

The top of SUP-5216 consists of power terminal and grounded bolt, as shown in Figure 2-3.

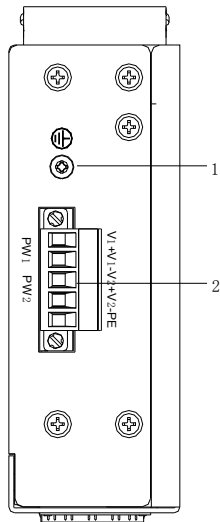


Figure 2-3 Top of SUP-5216

Names of top parts are shown in Table 2-2.

Table 2-2 Names of top parts

Serial No.	Name
1	Grounded Bolt
2	24V DC Dual-power Terminal

Section 3 Mounting

SUP-5216 applies an integrated cabinet. Its dimension is 44mm×115mm×162mm (W×D×H), and it can be mounted in standard industry cabinet.

3.1 Mounting Conditions

In order to keep the good working status for device, following conditions should be satisfied in mounting.

- Keep the temperature in the range of $-5^{\circ}\text{C}\sim 50^{\circ}\text{C}$. Equip with air conditioning if the environment temperature is not in the range. Prevent the air course from being on the device directly.
- Keep the relative humidity in the range of 5%RH~90%RH. There must no water percolation, leak or condensation occur in the machine room.
- Device should not be mounted in environment with dust and harmful gas, or flammable, explosive, and vulnerable to magnetic interference (large radar station, launcher and transformer substation) and unsteady voltage environment, generally, it also should avoid place with severe shake and noise.
- Machine room should equip with lighting protection devices such as lighting rod and lighting strip.
- Leave space on air vent when mounting device for good device heat elimination.

3.2 Mounting Method

User can mount SUP-5216 to industry cabinet via rail, as shown below.

1. Align the rail accessories on back panel of device at the rail slot of cabinet.
2. Incline the device a little and inset it to the rail slot.
3. Push the device to the rail slot parallel. A sound will come up when the device is mounted properly.

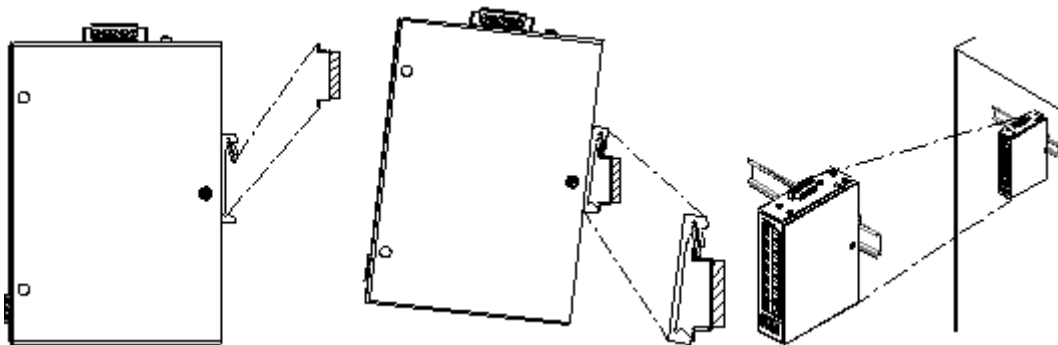


Figure 3-1 Rail mounting

3.3 Wiring

To ensure the normal and safe running of device, user should connect power line and all signal wires before running device.

3.3.1 Power Line Wiring

SUP-5216 applies 24V DC power supply, the corresponding relation between system power and terminal is shown in Table 3-1.

Table 3-1 Corresponding relation between system power and terminal

System Power		Terminal
Channel 1 Power Supply	+	V1+
	-	V1-
Channel 2 Power Supply	+	V2+
	-	V2-

Wiring of power line is shown as below:

1. Grounding the protection ground.
2. Connect the DC power lines to V1+ and V1- (or to V2+ and V2-) separately by screwdriver.
3. Connect the other end of DC power line to DC power.

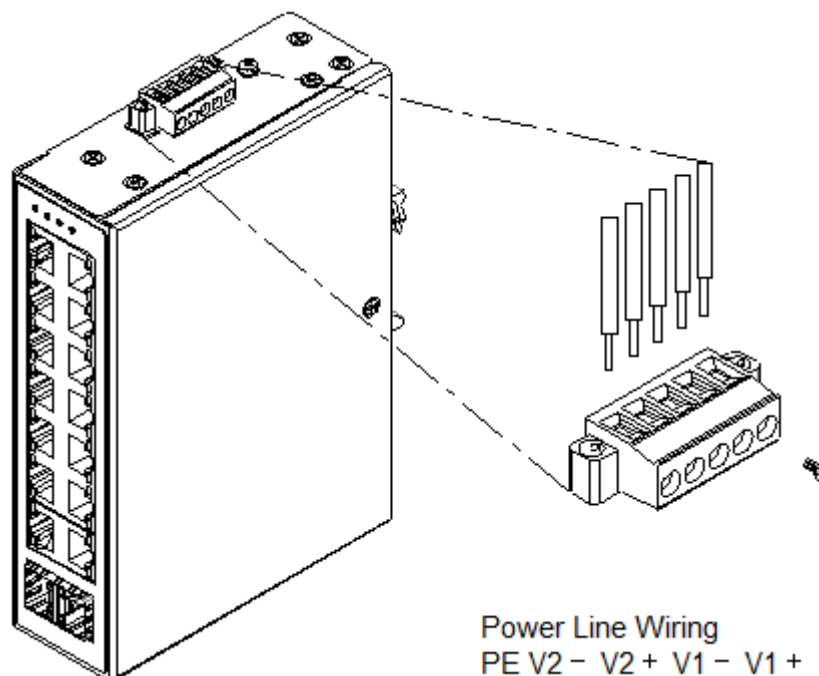


Figure 3-2 Power line wiring

**Attentions:**

- The ground wire (PE) of power line must be grounded.
- The negative end of 24V DC power must be grounded with the working ground.

3.3.2 Ethernet Line wiring

RJ-45 port of SUP-5216 has the feature of MDI/MDX-I and can recognize the wiring type of Ethernet line automatically. The maximum length connecting SUP-5216 and other devices is 100m.

Wiring of Ethernet line is shown as below:

1. Label the two ends of Ethernet line before wiring for identification.
2. Connect Ethernet line to RJ-45 port, a sound will come up when the connection is completed.

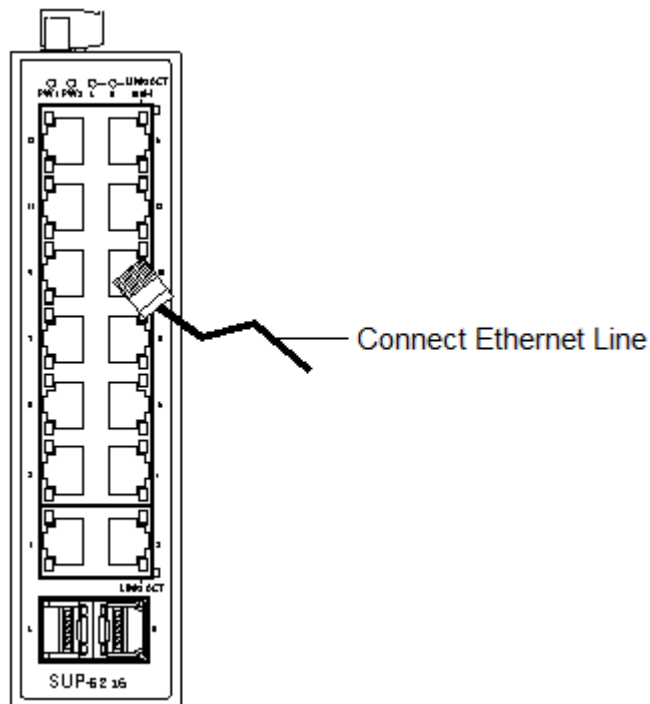


Figure 3-3 Connect Ethernet line

3.3.3 Optical Fiber Connection

SUP-5216 can connect 1~2 SFP optical interface modules. Please select the optical interface module of the end by the optical interface module type of the other end, including the setting of multi-mode type or single mode type. Different optical interface module types on the two ends may lead to communication fault.



Figure 3-4 Optical interface module

Dimensions of multimode optical interface module and single mode optical interface module are the same. User can select one and insert to the slot.

Table 3-2 Type of optical interface module

Optical Fiber Type	Model	Transmission Distance	Center Wavelength	Output Power	Input Power
Multimode Optical Fiber	SFP-02M	(0~2)km	1310nm	(-16~-6)dBm	-34dBm
Single Mode Optical Fiber	SFP-20S	(0~20)km	1310nm	(-10~-1)dBm	-34dBm

Connect the device of corresponding end via optical fiber after selecting the optical interface module. Notices of connection are shown below.

- Keep the dust cover of optical interface module before connecting the optical fiber, to prevent the optical interface from dust when maintenance.
- Don't bend the optical fiber too much, its curvature radius should be more than 40mm.
- Single mode interface module can only be connected by single mode optical fiber, and multi-mode interface module can only be connected by multi-mode optical fiber. Otherwise, communication fault between the two ends may occur.

Optical fiber connection is shown below.

1. Remove the dust cover of optical interface module.
2. Label the two ends of optical fiber before connecting for identification.
3. Insert the optical fiber to optical interface module.

Connect the optical interface Rx to the optical interface Tx of corresponding device via optical fiber. Connect the optical interface Tx to the optical interface Rx of corresponding device via optical fiber.

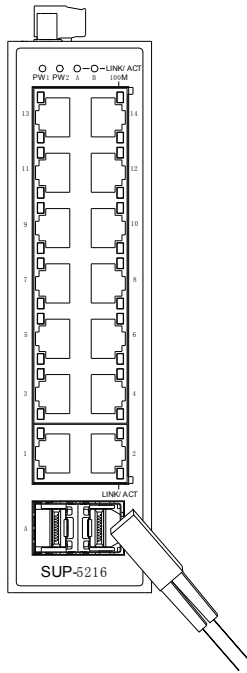


Figure 3-5 Connect optical fiber

3.4 Check and Start Device after Mounting

Check the wiring of device power line and signal wire after device mounting, to secure the normal running of device.

Table 3-3 Check after mounting

Serial No.	Check Item	Check Method	Fault Process
1	Whether the power line wiring is correct or not.	Check the power indicator light status: <ul style="list-style-type: none"> ● On means correct. ● Off means power fault. 	Possible reasons for power fault: <ul style="list-style-type: none"> ● Power line connection is loose, please tighten it. ● Positive and negative terminals of device power and supply power connect reversed, please check the connection.
2	Whether the Ethernet line wiring is correct or not.	Check the LINK/ACT indicator light status of corresponding RJ-45 port: <ul style="list-style-type: none"> ● On means link connected. ● Off means link disconnected. 	Possible reasons for disconnected link: <ul style="list-style-type: none"> ● Ethernet wire connection is loose, please reinsert it. ● Ethernet wire is damaged, please change it.
3	Whether the optical fiber connection is correct or not.	Check the LINK/ACT indicator light status of corresponding optical interface: <ul style="list-style-type: none"> ● On or act means link connected or data transmission. ● Off means link disconnected. 	Possible reasons for disconnected link: <ul style="list-style-type: none"> ● Optical fiber connection is loose, please reinsert it. ● Rx and Tx of optical interface connect reserved, please change and reinsert it. ● Optical interface module is damaged or optical fiber is broken, please change the optical interface module or optical fiber.

Section 4 Network Cascade

4.1 Network Lower Cascade

The optical interface and RJ-45 port of SUP-5216 can connect with lower level terminal or HUB, as shown in Figure 4-1.

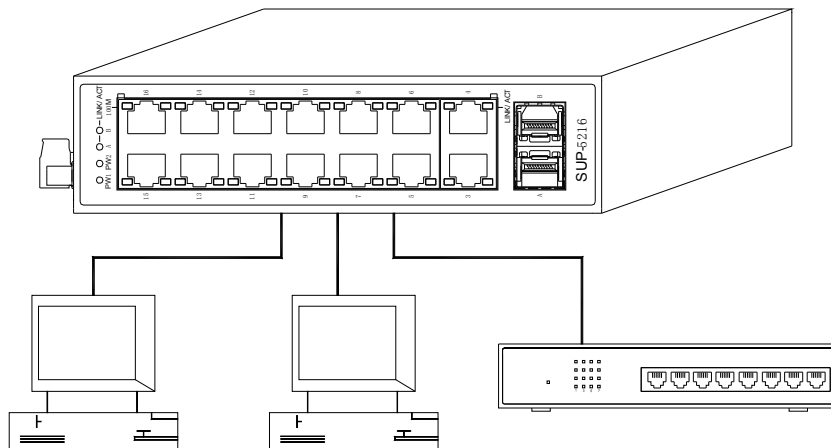


Figure 4-1 Lower cascade application

4.2 Network Upper Cascade

Generally, take the optical interface of SUP-5216 as the upper cascade interface, but user can choose other RJ-45 ports as upper cascade interface in application. As the full-duplex technology is applied, the cascade level will not be limited.

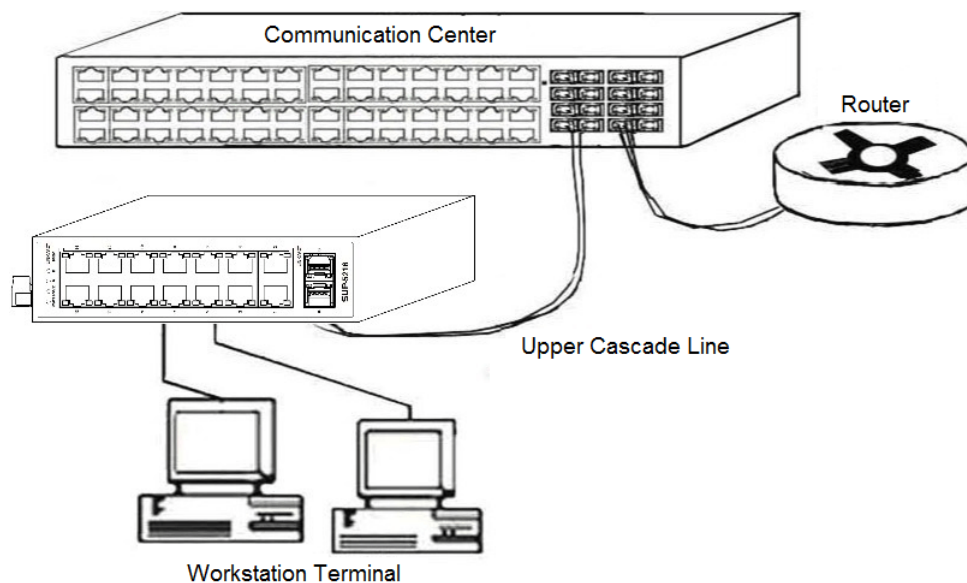


Figure 4-2 Upper cascade application

Section 5 Maintenance and Notices

5.1 Maintenance

Routine maintenance can secure the normal running of device, check items for routine maintenance is shown in Table 5-1.

Table 5-1 Check items for routine maintenance

Serial No.	Check Item	Standard and Instruction
1	Environment Temperature Status	Always in $-5^{\circ}\text{C}\sim 50^{\circ}\text{C}$
2	Humidity Status Machine Room	Always in 5%RH~90%RH
3	Power Connection	Power Light Always On
4	Signal Wire Connection	Indicator Light of Signal Wire is On.

5.2 Notices

- Don't open the cabinet when powered on. Be careful for electric shock.
- Cut off the power immediately when abnormal condition like smoking appears.
- Prevent the device from water or drug.
- Don't put sheet metal or inflammable material into device.
- Don't bend, twist or bundle up the power line casually. Be careful for fire and electric shock caused by power line damage.

5.3 Trouble Shooting

User can monitor the running status via indicators of SUP-5216, and perform troubleshooting rapidly. Major faults of SUP-5216 may be caused by incorrect wiring and wire damage.

5.4 Abnormal Power

Power fault and power light off may be caused by abnormal power supply or power line damage. Troubleshooting is shown in Figure 5-1.

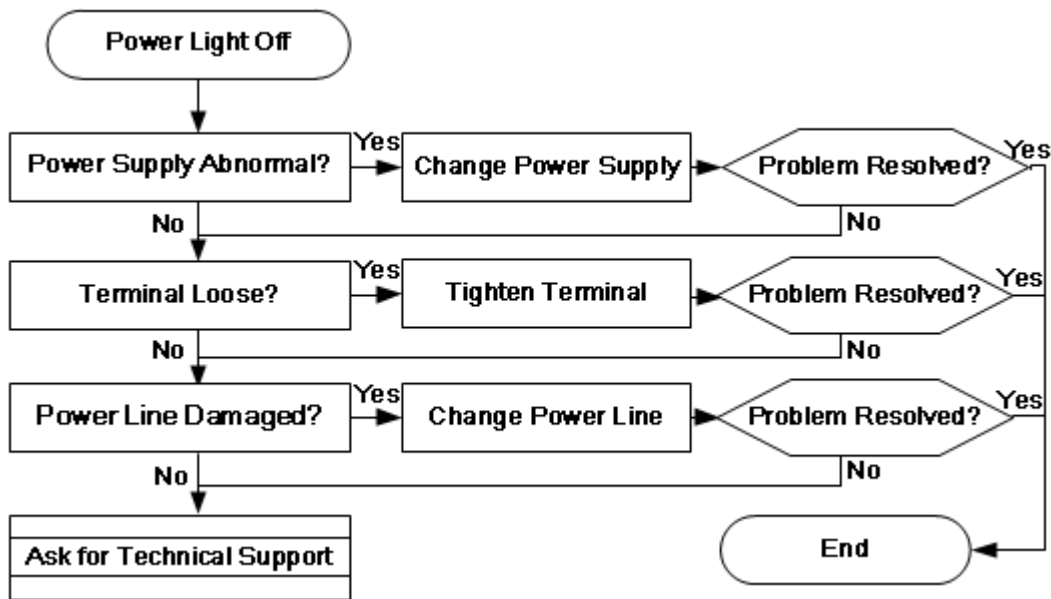


Figure 5-1 Troubleshooting flow for power fault

5.5 Abnormal Signal

Signal fault and LINK/ACT light of interface abnormal may be caused by loose signal wire connection or signal wire damage. Troubleshooting is shown in Figure 5-2.

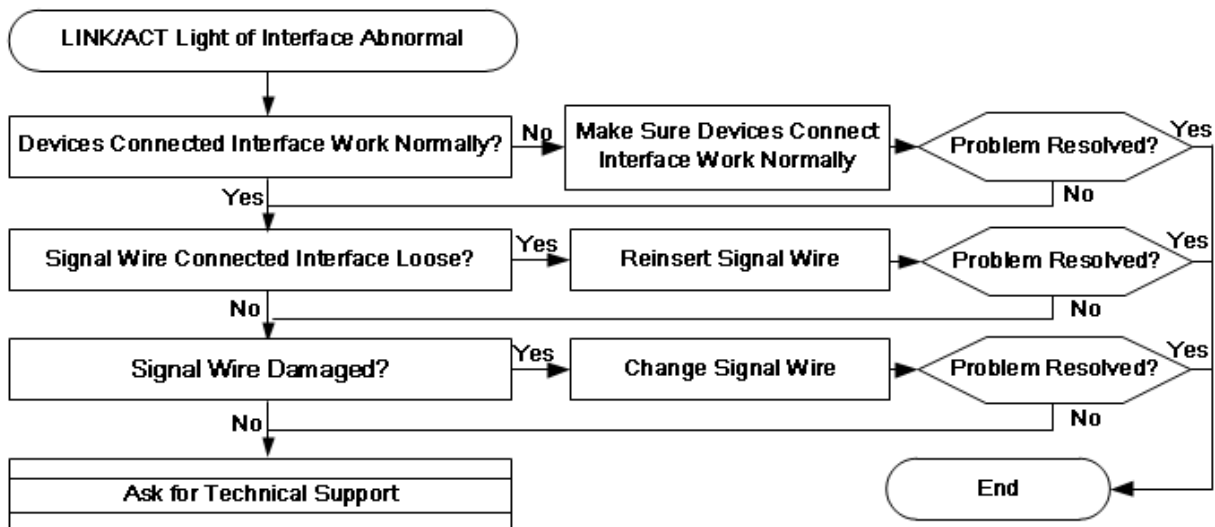


Figure 5-2 Troubleshooting flow for signal fault

Section 6 Revision

Table 6-1 Retrofit list of the version

Document Version	Applicable Product Version	Remarks
V1.0(20180830)	SUP-5216 V1.0 and later versions	The first version.
V1.1(20210206)	SUP-5216 V1.0 and later versions	Add MTBF