

SC9405 Series

Switches Hardware Installation and Maintenance Guide

V1.0.2306A



Preface

Audience:

This document is intended for network engineers responsible for SC9405 Series switches installation and maintenance. You should have experience in network device installation and maintenance.

Feature Statement:

Please visit the [FS.COM Technical Documents](#) page to download the datasheet and obtain information on the specifications supported by the product.

Safety Statement:

- To avoid harm to people and equipment, please read the safety recommendations in the [Safety Precautions for FS Switches](#) before installing the FS Switch.
- Verify that the requirements described in the [Safety Precautions for FS Switches](#) have been met.

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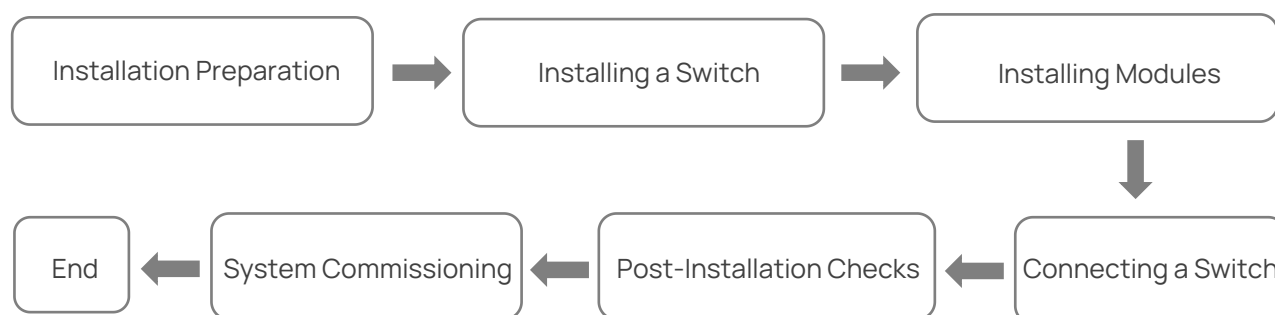
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Hardware Installation and Parts Replacement

The SC9405 series switches are the latest generation of network core switches developed by FS.com. They are built on the Crossbar/FullMesh/Clos architecture, offering advanced features such as support for dual management boards, redundant power backup, and three business module slots for enhanced performance and flexibility.

1.1 Installation Procedure



1.2 Installation Preparation

The SC9405 series switches are a relatively complex device, and the installation location, networking method, power supply and alignment of the device should be carefully planned and arranged before installation.

Confirm the following before installation:

- The installation site provides sufficient space for heat dissipation.
- The installation site meets the temperature and humidity requirements of the switch.
- The power supply and required current are available in the installation site.
- The Ethernet cables have been deployed in the installation site.

1.2.1 Checking the Installation Site

The SC9405 Series Switches must be used indoors. To ensure normal operations and long service life of the device, the installation site must meet the following requirements.

Item	Requirement
Cleanliness	The device must be installed in a clean, dry, and well ventilated standard equipment room with controllable temperature.
Dust proofing	Dustproof measures must be taken in the site. Dust will cause electrostatic discharges on the chassis and affect connections of metal connectors and joints. This shortens service life of the device and may cause failures of the device.
Temperature and humidity	The equipment room must be free from leaking or dripping water, heavy dew, and damp. The temperature and humidity in the installation site must be within specifications. For the operating temperature and relative humidity ranges required by the device, see the device specifications. If the relative humidity exceeds 70%, using dehumidifiers or dehumidifying air conditioners is recommended.
Corrosive gases avoidance	The installation site must be free from acidic, alkaline, or corrosive gases.

1.2.2 Mounting the Cabinet or Rack

When mounting the cabinet, please note the following:

- All expansion bolts for fastening the cabinet base to the ground should be installed and tightened in sequence from bottom to up (large flat washer, spring washer, and nut), and the installation holes on the base and the expansion bolts are aligned.
- The installed cabinet is not movable after installation.
- The installed cabinet is vertical to the ground.
- When multiple cabinets are placed side by side in the equipment room, they should be aligned with each other, leaving an error less than 5mm (0.20 in.).
- The front and rear doors of the cabinet should be installed to allow you open and close them smoothly. The locks should work normally, and all keys should be complete.
- There should be no unnecessary and informal labels inside the cabinet and on service modules.
- Filler panels are installed in empty slots.
- The screws in the cabinet should be fastened tightly and be of the same model.
- The switch is securely installed, and the screws on the panel should be fastened tightly.
- All wiring outlets at the top and bottom of the cabinet should be installed with rodent-resistant nets with openings of no more than 15mm (0.59 in.) in diameter to prevent rodents and other small animals from entering the cabinet.
- An anti-static wrist strap should be provided in the cabinet.

Procedure:

1. Plan the available space before installing the cabinet. Maintain a clearance before the front and back doors for maintenance and operation.
2. Install and fasten the cabinet in the specified site as planned.
3. Install the cable troughs and cables.
4. Install the trays and cable management brackets on the rack according to the number of switches installed into the cabinet.

1.2.3 Checking the Power Conditions

- Before use, please check whether there is obvious damage to the power supply shell and whether the power supply is defective such as abnormal noise.

- The device is only allowed to be plugged into the power module that accompanies the device, otherwise it may lead to unknown risks.
- Power module in 1+1 backup can be hot-swapped one of them, need to ensure that the other power module on the equipment is in the power supply state when replaced, otherwise unplugging the power module will cause the switch to lose power, resulting in business interruption.
- Prohibit the mixed use of power modules with different power and different cooling methods.

1.2.4 Preparing Installation Tools and Accessories

Common Tools	Phillips screwdriver, Ethernet and optical cables, cage nuts, diagonal pliers and cable ties
Special Tools	Anti-static gloves, wire stripper, crimping plier, RJ45 connector crimping plier, and wire cutter
Cleaning Tools	Dust-free paper and fiber end-face microscope
Meters	Multimeter, bit error rate tester (BERT), and optical power meter

- The SC9405 series switches are delivered without a tool kit. You need to prepare a tool kit by yourself.

1.3 Installing a Switch

Precautions:

Before installing the switch in a cabinet, please check whether the racks are properly positioned. If the racks are too close to the front door of the cabinet, you may not be able to close the front door after plugging in the Ethernet and fiber cables. The front panel of the switch should be at least 10mm (0.39 in.) away from the front door of the cabinet. Please confirm the following before installing the switch:

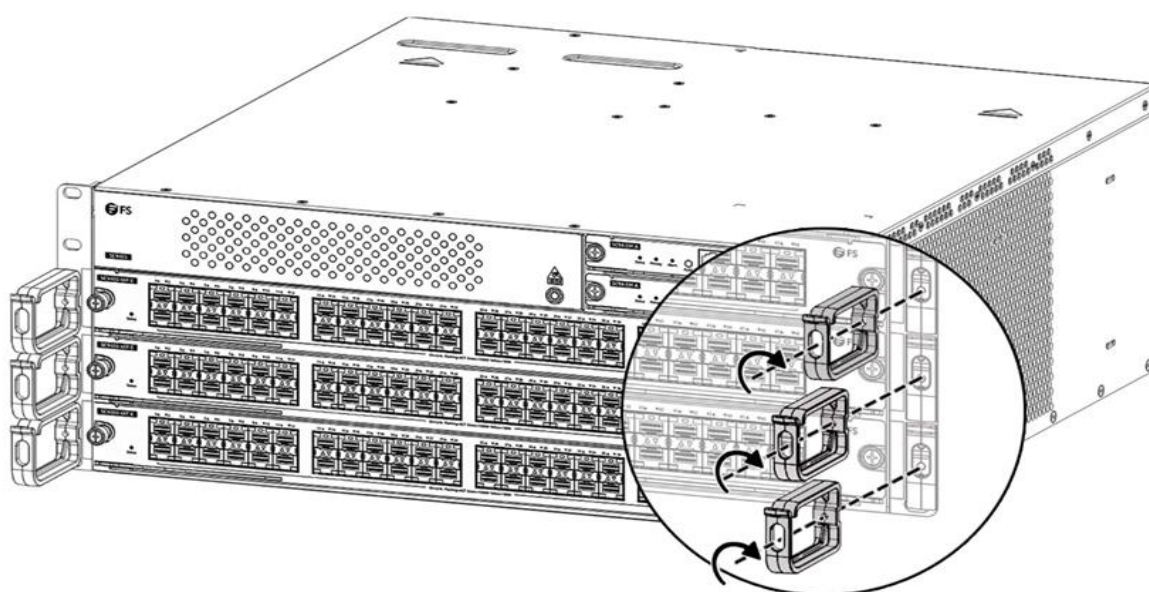
- The cabinet is secured.
- The modules in the cabinet are installed.
- There are no obstructions in and around the cabinet.
- The switch is prepared and transported to a location close to the cabinet.

1.3.1 Mounting the Switch in a Cabinet or Rack

Mounting the Brackets:

1. Take out the two L-shaped brackets and eight M4 x 8 mm screws from the packing materials.
2. Attach a bracket to each side of the switch and secure the brackets with the provided screws.

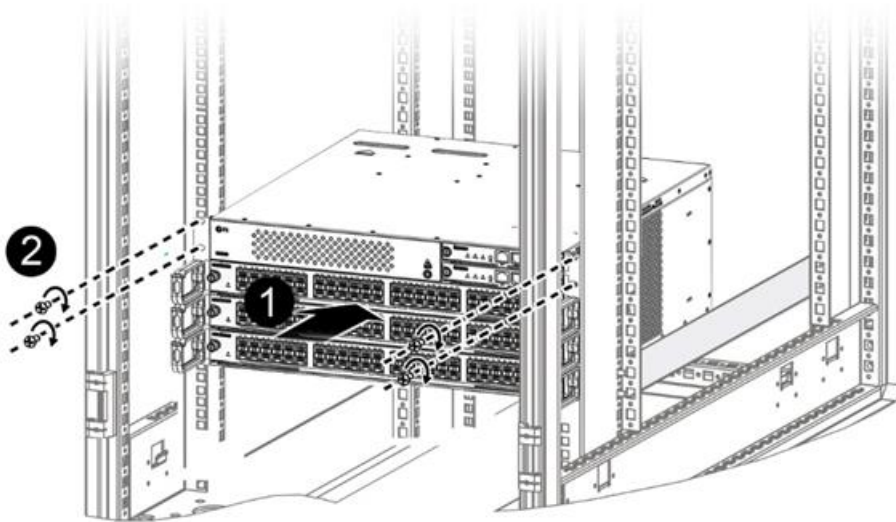
Figure 1: SC9405 Cable Tray Installation Schematic Diagram



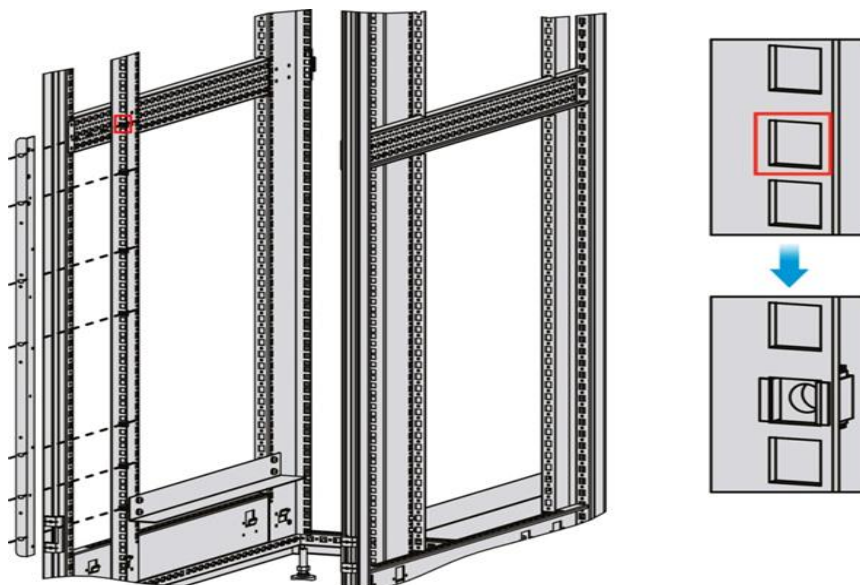
Mounting the Switch in a Rack:

The SC9405 series switches can be installed in a standard 19-inch four-post EIA rack. Mount the switch on the rack with the front panel facing forward. You are advised to use a tray to install the switch and secure the tray on the rack, or use the rack-mount guides to secure the switch.

- Measure the height and mounting hole positions of the chassis mounting ears. Then, measure the corresponding mounting height and mounting hole positions on the load-bearing surface of the slide rail. Mark them one by one with a marker pen, and install the floating nut components at the corresponding positions (as shown in the diagram below).



- Multiple people cooperate to lift the switch from both sides and place it on the cabinet's slide rail or tray, and smoothly push it into the cabinet until the switch's mounting ears are tightly attached to the front square holes of the cabinet.
- Use screws to secure the floating nuts on the mounting ears of the chassis to the square holes on the cabinet.



- Install a mounting bracket by driving four screws into the four among the six screw holes on each side of the panel.
- Distinguish left and right rack-mount guides according to the marked orientation.
- The rack-mount guides are only applicable for a rack with a depth ranging from 800mm (31.50 in.) to 1200mm (47.24 in.).

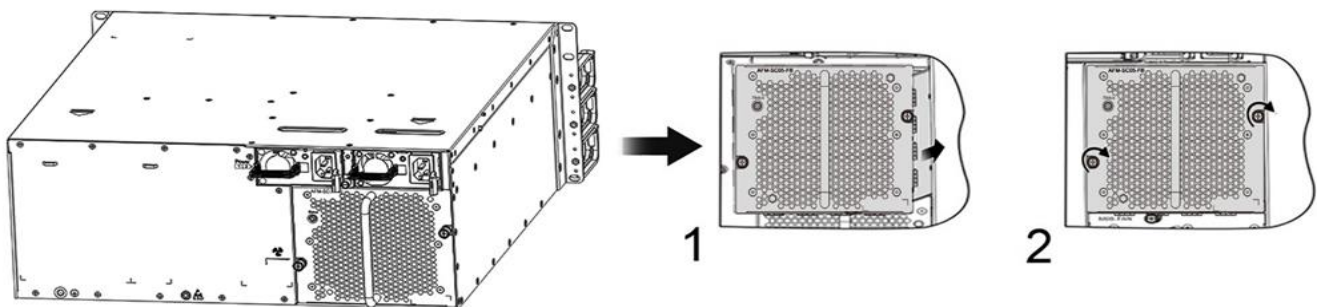
1.4 Installing Modules

- Please wear an antistatic wrist strap before performing the following operations. Ensure that the antistatic wrist strap is in good contact with your skin and confirm that it is properly grounded.

1.4.1 Installing Fan Modules

1. Take a fan module from its packing materials.
2. Insert the fan disk along the fan slot at the back of SC9405, making sure to align it with the direction indicated by the label on the fan disk. Avoid inserting it in the wrong direction.
3. Tighten the captive screws to secure the fan module in the chassis.

Figure 2: Fan Module Installation Diagram

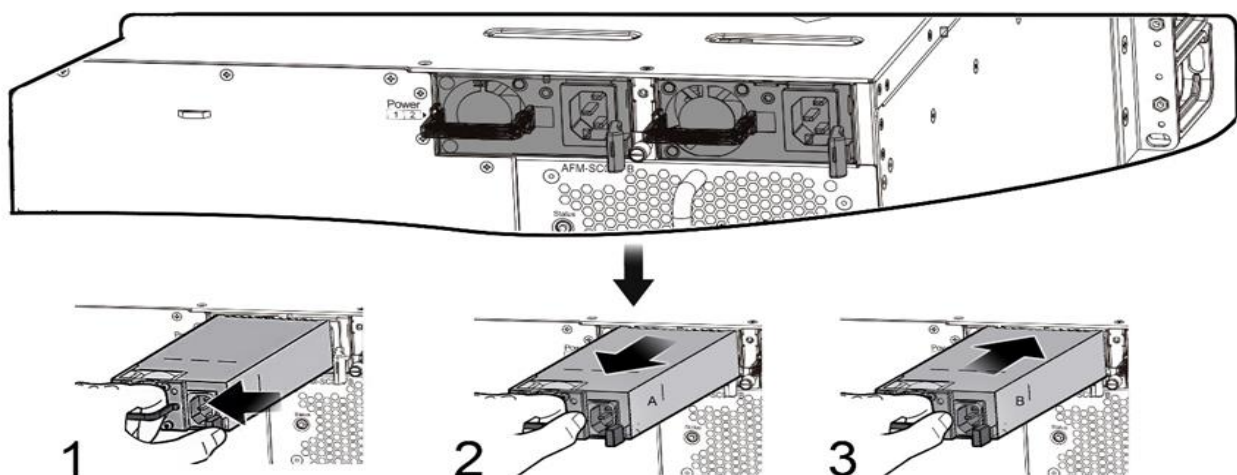


- Slide the fan module into the slot. Verify that the fan module is in the correct orientation.
- If you find it difficult to fully insert the fan module, pull the fan module out, and slide it into the slot again.
- If you can not fully tighten the captive screws, it indicates that the fan module is not fully inserted into the fan slot.
- The power modules and fan modules with different airflow directions cannot be used together.

1.4.2 Installing Power Modules

1. Take out the new power module from the packaging box and confirm that the input mode and specifications of the power module are consistent with the required ones.
2. Remove the power barrier and position the power module with the flat surface bearing the power label information facing upwards. Use one hand to grip the handle of the power module while using the other hand to support the bottom of the power module. Slowly and steadily insert the power module along the guide rail until it is fully inserted into the chassis. You will hear a "click" sound, indicating that the power module is securely connected to the power slot.

Figure 3: Power Module Installation Diagram



- Ensure a smooth insertion of the power module. Please be cautious of the orientation of the power panel and avoid incorrect insertion.
- If you encounter any resistance or difficulty while inserting, please retract the module and verify the alignment between the power module and the guide rail. Then, carefully reinsert it.

1.4.2.1 Features of the Power Module

Features	Introduction
Use "Three-proof Paint"	Equipped with functions such as moisture-proof, salt spray-proof, mildew-proof, insulation, and leakage protection
Possesses Protective Features	Equipped with functions such as input undervoltage protection, output overcurrent protection, output overvoltage protection, output short-circuit protection, etc
Possesses Communication Capabilities	The host can communicate with the power module
Support Redundant Backup	Support for parallel operation of dual power modules, enabling a power backup system for powered equipment with 1+1 redundancy, and the backup power modules have load sharing capabilities
Support Hot-Plugging	In the case of a powered device, a power module in a 1+1 backup power system can be disconnected from the external power system without powering off the device, allowing direct plug-and-play operations on the power module
Support Power Abnormality Alarm Function	Power abnormality alarm is indicated through the output status indicator light when there is a power failure

1.4.2.2 Power Module Indicator Light

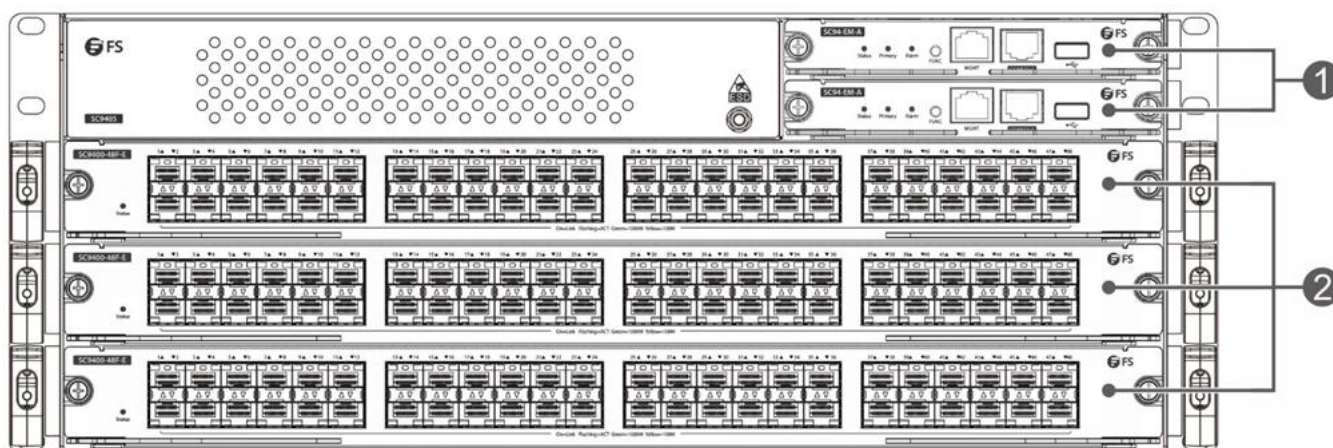
Name	status	meaning
output Status Indicator Light	off	No input power or power failure
	solid green	Power output is normal

1.4.3 Single Board Installation

- When installing modules, please make sure to wear an anti-static wrist strap. The metal part on the anti-static wrist strap should be in full contact with the surface of the skin. For safety reasons, please do not touch any components on the module.
- Please do not hold the edges of the printed circuit board or collide with the components on the printed circuit board.
- When inserting or pulling out management engine modules, business modules and switching modules, please use a pulling tool and avoid rough handling.

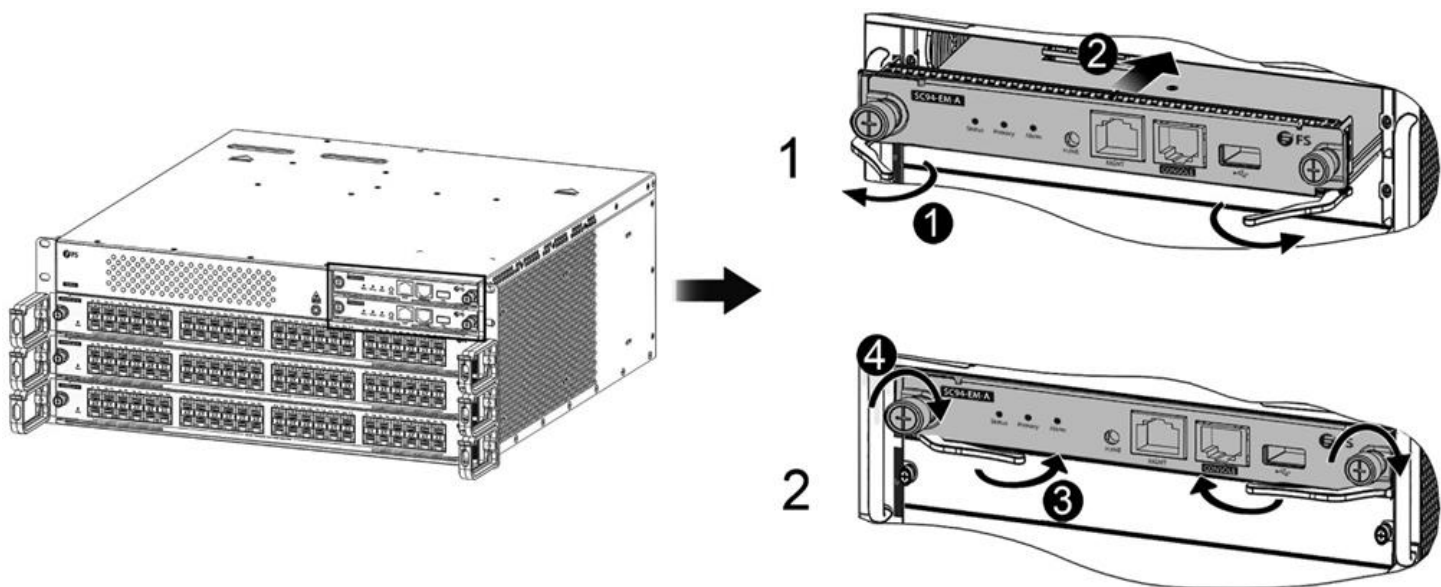
- Select the Slot for the Board

SC9405 corresponding position diagram on the chassis (①management module slot, ②business module slot):



- Simple Steps for Installing Modules on SC9405:

1. Open the module wrench for installation (as indicated by the annotation① in the following diagram).
2. Align the module to be installed with the corresponding slot guide rails on the host, and smoothly push it in horizontally (as indicated by annotation② in the following diagram).
3. Push the wrenches on both sides of the module inward (as indicated by annotation③ in the following diagram).
4. Tighten the screws at both ends of the baffle (as indicated by the annotation④ in the diagram below).



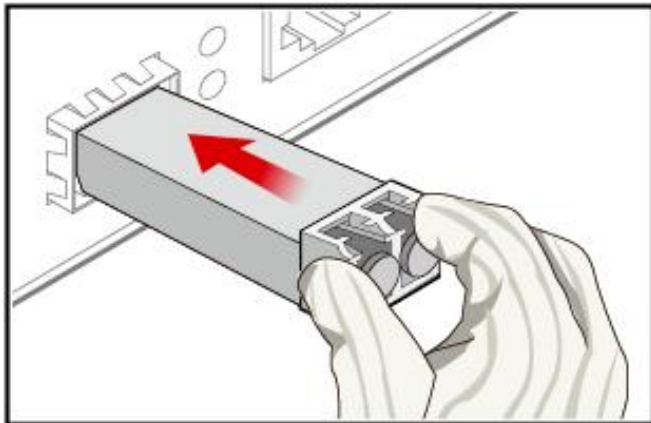
1.4.4 Installing an Optical Module

- Before the installation, take ESD protection measures, for example, wear an ESD wrist strap or ESD gloves.
- Do not touch the edge connector of an optical module during the installation.
- Install an optical module, and then connect optical fibers to the optical module. Do not insert an optical module with optical fibers to an optical port directly.
- Cover idle optical ports with dust plugs. All optical ports on a newly delivered switch are covered with dust plugs.
- When inserting an optical module to a port, hold the optical module horizontally. If the optical module cannot be completely inserted into the optical port, do not force it into the port. Turn the optical module 180 degrees over and try again.

Procedure:

1. Wear an ESD wrist strap or ESD gloves. Ensure that the ESD wrist strap is grounded and in close contact with your wrist.
2. Remove the dust plug from an optical port. Keep the dust plug for future use.
3. Please store the removed dust plug properly for future use.
4. Install the optical module into the optical interface.
5. Install the optical module to the optical port. Gently push the optical module into the optical port until you hear a click.

Figure 4: Optical Module Installation Diagram



Check whether the optical module is securely seated in the optical port.

Keep the handle of the optical module closed, use your thumb and forefinger to hold two sides of the optical module, and gently pull the optical module.

- If the optical module is not pulled out, it has been correctly installed.
- If the optical module is pulled out, it is installed incorrectly. Install the optical module again.

1.5 Connecting a Switch

1.5.1 Connecting the Grounding Cable

There is one ground terminal on the back of the SC9405 Series switches chassis, which should be connected to the grounding lug of the rack first, and then connect the grounding lug to the grounding bar of the equipment room.

Precautions:

- The sectional area of the grounding wire should be determined according to the possible maximum current. Cables of good conductors should be used.
- Do not have bare wires exposed.
- Grounding resistance: Less than 1Ω .
- To guarantee the security of the person and the equipment, the switch must be grounded properly. The grounding resistance between the chassis and the ground should be less than 1Ω .
- The maintenance personnel should check whether the AC socket is reliably connected to the protective ground of the building. If not, the maintenance personnel should use a protective ground conductor from the AC outlet protective ground terminal to the building protective ground.
- The power socket should be installed near the equipment and easily accessible.
- When installing the switch, connect the grounding first and disconnect it last.
- The cross-sectional area of the protection ground wire should be at least 2.5mm^2 (12AWG).

1.5.2 Connecting Power Cables

Precautions:

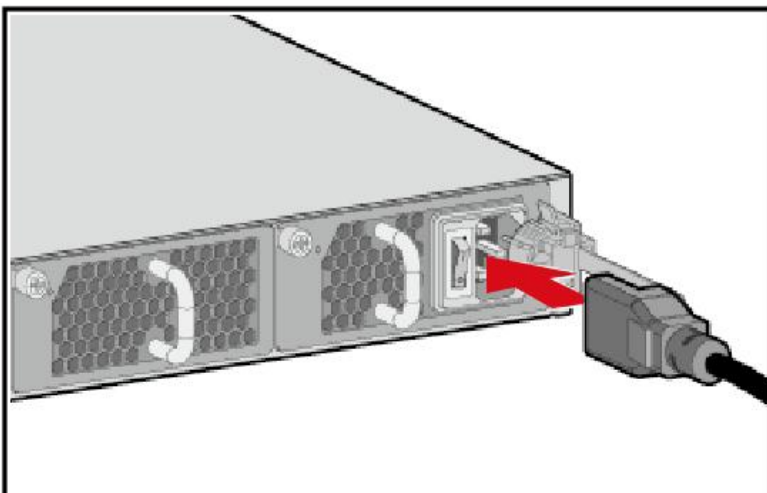
- To avoid electric shock, do not connect the power cable while the power is on.
- Before connecting cables, take ESD protection measures, for example, wear ESD gloves or an ESD wrist strap.
- Power cables must be buried underground or routed indoors and cannot be led into the equipment room aerially.
- Do not power on a switch before you finish installing the switch and connecting cables.

Procedure:

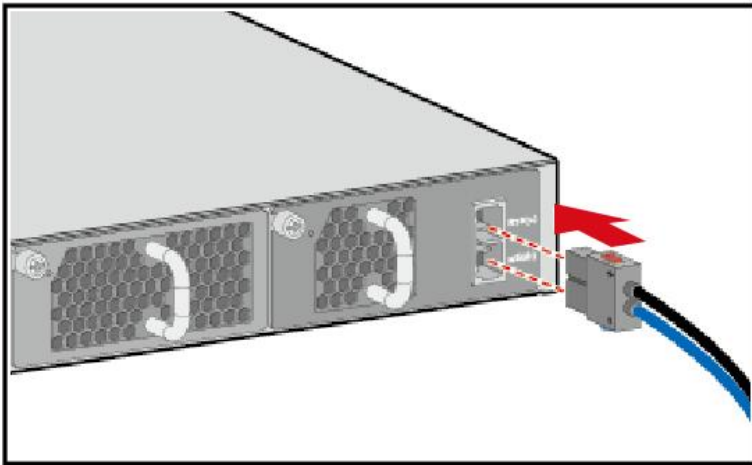
1. Wear an ESD wrist strap or ESD gloves. Ensure that the ESD wrist strap is grounded and in close contact with your wrist.
2. Turn off the power module and the external power supply system for the switch.
3. Connect the power cable to the power module.

- Perform the following steps to connect the AC power cable:

1. Insert the plug of the AC power cable into the power socket in the AC power module.



2. Connect the other end of the AC power cable to the external AC power supply system.
- Perform the following steps to connect the DC power cables:
1. Insert the DC power cable plug to the power socket in the DC power module. Ensure that the positive pole of the plug is connected to the positive socket and the negative pole is connected to the negative socket on the power module.



2. Connect the cord end terminals at the other end of the power cables to the external DC power supply system. Generally, cord end terminals of the power cables are connected to a DC power distribution box. Connect the positive and negative power cables to the positive and negative terminals in the DC power distribution box correctly.

1.5.3 Connecting Ethernet Cables

Connect the RJ45 connector of an Ethernet cable to the management port on the equipment, and the other end to a network management switch or terminal.

1.5.4 Connecting Optical Fibers

Insert the single-mode or multi-mode fiber into the corresponding interface according to the panel identification, and distinguish the transmit and receive ends of a fiber cable.

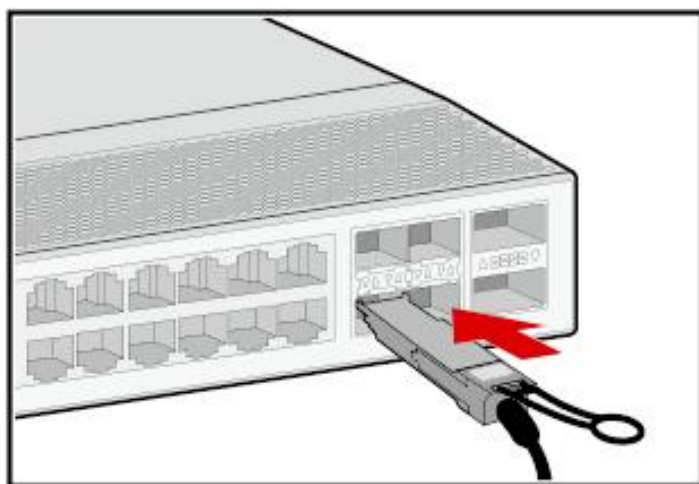
1.5.5 Connecting High-speed Cables

- Before connecting cables, take ESD protection measures, for example, wear ESD gloves or an ESD wrist strap.
- Both ends of an idle high-speed cable must be covered by an ESD cap.
- The bend radius of high-speed cables must be larger than the minimum bend radius. Overbending high-speed cables may damage wires in the cables.

Procedure:

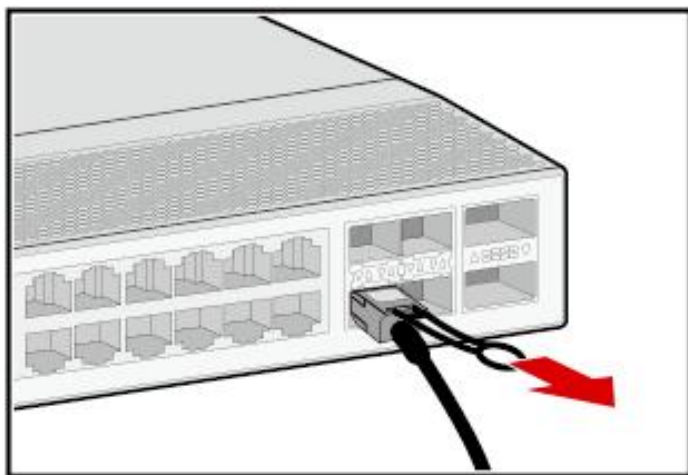
1. Determine the number and type of ports to be connected and plan the cabling routes.
2. Select high-speed cables of appropriate quantity and lengths according to the number of ports and measured cabling distances.
3. Wear an ESD wrist strap or ESD gloves. Ensure that the ESD wrist strap is grounded and in close contact with your wrist.
4. Attach temporary labels to both ends of each high-speed cable and write numbers on the labels to identify the high-speed cables.
5. Connect high-speed cables to ports of the switch.
6. Find the ports matching the numbers on the high-speed cables and plug cable connectors to the ports.
After verifying that all high-speed cables are correctly connected, go to 6.
7. Hold a high-speed cable connector in a correct direction when inserting it into a port. When you hear a click, the high-speed cable is securely connected to the port. See Figure 5.

Figure 5: Connecting a High-speed Cable



To remove a high-speed cable, gently push the cable connector and then pull the handle of the connector. Do not directly pull the cable connector with force. See Figure 6.

Figure6: Removing a High-speed Cable



8. Bundle high-speed cables. Arrange the high-speed cables to make them parallel, and then bundle them with cable ties at an interval of 150mm to 300mm. Use diagonal pliers to cut off redundant cable ties.
9. Replace all the temporary labels with permanent labels on the high-speed cables.

1.5.6 Connecting the Console Port

Connection Steps:

Connect the RJ45 connector of an Ethernet cable to the console port of the switch, and connect the DB9 connector to a network management switch or terminal.

- By default, the baud rate is 9600, data bit 8, parity check none, stop bit 1, and flow control none.

1.6 Post-Installation Checks

1.6.1 Verifying Cabinet

- External power supply matches the distribution panel of the cabinet.
- The front and back doors can be closed after the switch is installed in the cabinet.

- The cabinet and all cables are securely fastened.
- The switch has been installed in the cabinet.
- Maintain a minimum clearance of 200mm (7.87 in.) around the switch for air circulation.

1.6.2 Verifying Cable Connection

- The UTP and STP cables match with the interface type.
- Cables are properly bundled.
- Grounding cables are connected properly and observe the requirement.
- All cables are routed indoors. If not, check whether the power supply and interfaces are protected from lightning strikes.

1.6.3 Verifying Power Supply

The power cord is properly connected and compliant with safety requirements.

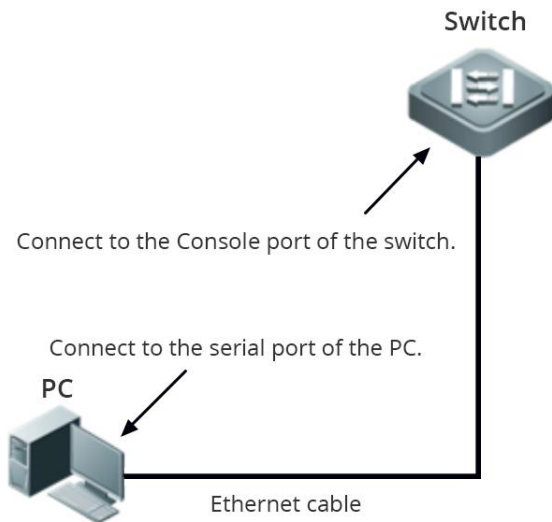
- Cut off the power supply to avoid personal injury and damage to components caused by incorrect connection.

| 1.7 System Commissioning

1.7.1 Setting Up the Configuration Environment

Connect the PC to the console port of the switch through the Ethernet cable, as shown in the figure below.

Figure 7: Configuration Environment

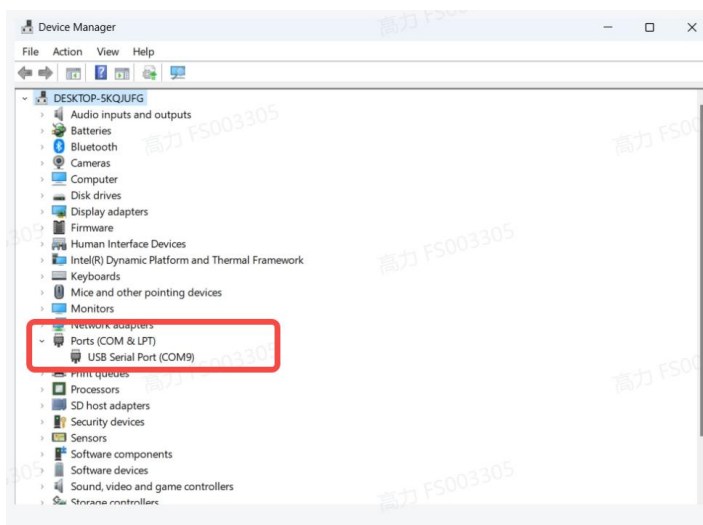


Step 1: Connecting the Ethernet Cable

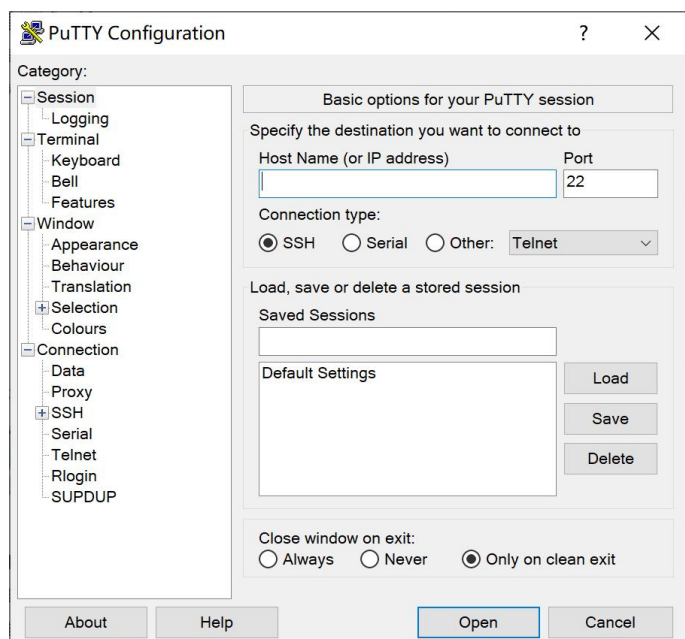
1. Plug the DB-9 connector of the Ethernet cable into the serial port of the PC.
2. Connect RJ45 connector of the Ethernet cable to the console port of the switch.

Step 2: Check the Serial Port Number

Open Device Manager on the computer and check the serial port number.



Step 3: Start Terminal Emulation Software on the Computer (Such as PUTTY)

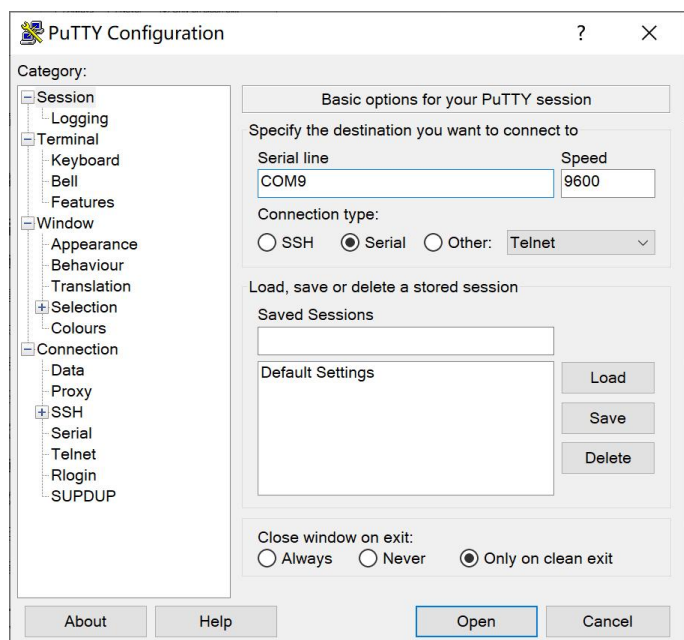


Step 4: Setting Terminal Parameters

Parameter requirements:

Baud rate is 9600, connection type is Serial, fill in COM port number according to the actual situation. The specific diagram is as follows.

Figure 8: Setting Terminal Parameters



1.8 Parts Replacement

1.8.1 Replacing a Board

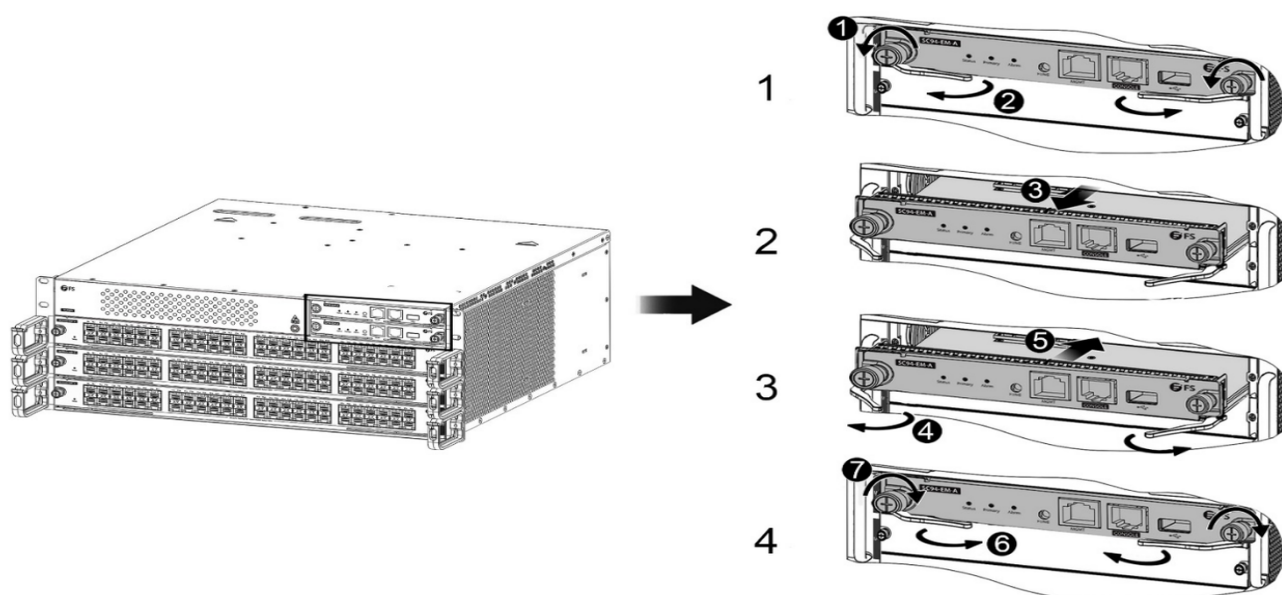
Preparation

1. Wear an antistatic wrist strap and ensure the reliable grounding of the antistatic wrist strap.
2. Remove the board to be installed from the packaging bag.

Procedure

1. Remove all fibers, RJ45 twisted-pair cables, and other cables from the panel to be replaced.
2. Hold both sides of the panel with the self-locking wrench and press the open button. Apply force to flip the board outward, separating it from the back panel of the casing.
3. Slide smoothly along the slot guide rail, hold the bottom board with one hand and grab the board with the other hand before it is 10cm away from the chassis to prevent the module from falling off if it is not held securely.
4. Flip the handles on both sides of the panel of the board to the outside, then hold the bottom board with one hand and grab the board with the other hand, and insert it smoothly along the slot guide rail.
5. Close the handles on both sides of the board inward, ensuring that the board tightly contacts the backplane of the chassis. The self-locking handles will automatically lock, securing the board to the chassis.

Figure9: Replacing a Board Diagram



1.8.2 Replacing a Power Module

Preparation

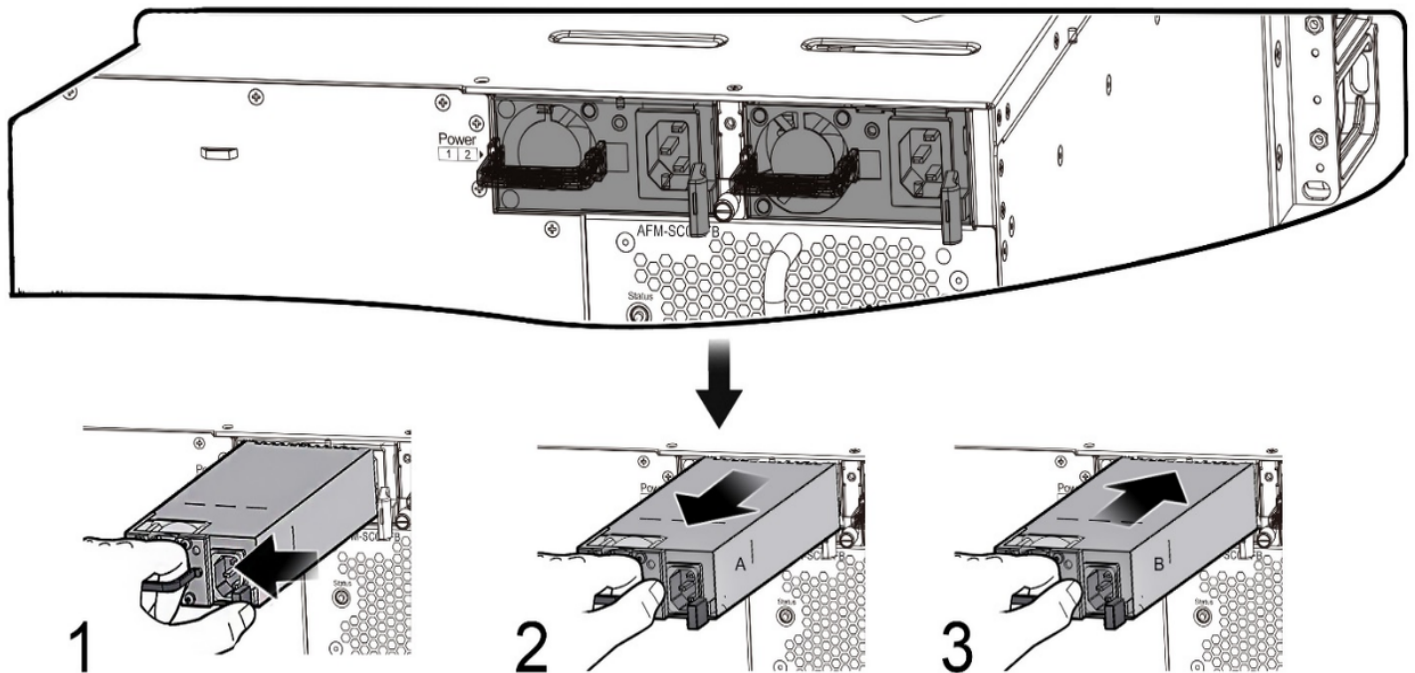
1. Wear an anti-static wristband and ensure that it is reliably grounded.
2. Remove the power module to be installed from the packaging bag.
3. Before replacing the power module, please power off the power supply on the power frame.

- After hot-swapping a module, you must wait for at least 30 seconds before performing the next hot-swap operation.
- Before inserting or removing the power module, please check if the switch is securely fixed, as the switch is relatively high. When inserting or removing the power module, please avoid the switch from tipping over.
- After the power module is powered off, do not touch the golden finger of the power module to avoid incomplete capacitor discharge and electric shock to the human body.

Procedure

1. Remove the power cord by separating the power cord's tail fiber plug from the power module plug.
2. Press the latch on the power module while gripping the handle on the power module to partially pull it out.
3. Hold the power module panel with your right hand and grip the bottom of the power module with your left hand. Slowly pull the power module out from the power frame.
4. Insert the replacement power module into the slot of the power frame until you hear a click sound, ensuring that the power module is properly connected to the power slot.

Figure 10: Removing a Power Module Diagram



1.8.3 Replacing a Fan Modul

- Do not touch any exposed wires, terminals, or parts of the product that are marked with dangerous power symbols to avoid injury to the body.
- The fan frame supports hot swapping. If the fan frame needs to be replaced while the switch is in operation, the replaced fan frame should not be immediately removed from the chassis. Wait for the fan to stop rotating before removing it. At the same time, considering that the fan may still be running, it is strictly prohibited to reach deep into the fan frame to avoid injury.
- After replacing the fan frame while the switch is in operation, it is necessary to promptly install the new fan frame to ensure the proper functioning of the switch and avoid equipment damage.

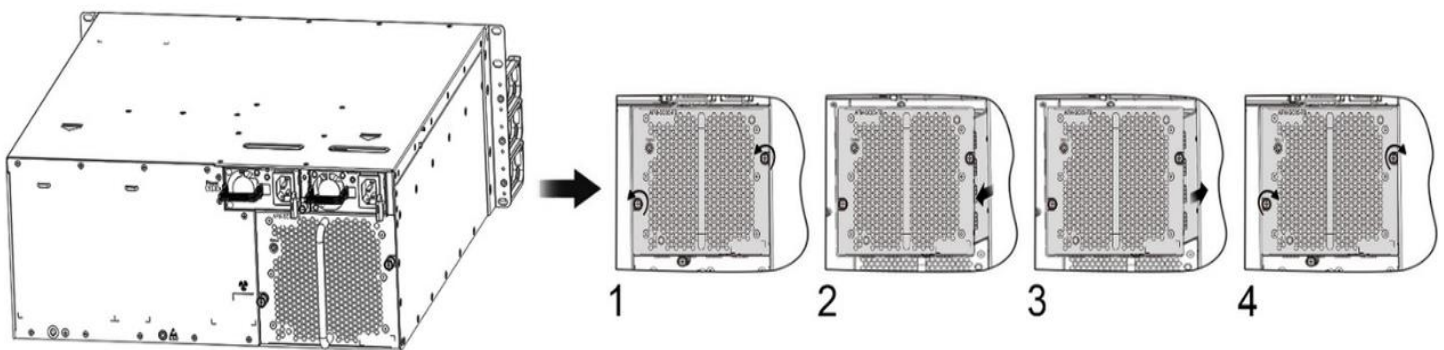
Preparation

1. Wear an anti-static wristband and ensure that it is reliably grounded.
2. Take out the fan module to be installed from the packaging bag.

Procedure

1. Loosen the screw on the fan frame with a Phillips screwdriver.
2. Gently pull out the fan frame along the slot guide rail, and place the removed fan in an anti-static bag.
3. Insert the fan frame to be installed along the guide rail into the fan frame slot, and push the fan frame inward until the rear end of the fan frame is tightly in contact with the back panel of the chassis.
4. Manually align the screw on top of the fan and screw it in, and then use a Phillips screwdriver to tighten the screw, securing the fan frame.

Figure 11: Removing a Power Module



1.8.4 Replacing a Optical Module

When replacing the optical module, pay attention to the following requirements:

- Anti-static preparations must be made before replacement.
- Laser beams will cause eye damage. Do not look into bores of optical modules or optical fibers without eye protection.
- Ensure that the new optical module has the same center wavelength and complies with the same standards as the old one.
- After removing the optical fibers from an optical module, cover the fiber connectors with dust caps.
- When replacing an optical module, ensure that no optical fiber is connected to the optical module. Install or remove optical fibers carefully to avoid damages to fiber connectors. Exercise caution when installing or removing optical fibers to prevent damage to the optical module.

Procedure:

1. Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that the ESD wrist strap is in close contact with your wrist, and insert the other end into the ESD jack of the device or cabinet/rack.
 2. Before replacing an optical module, determine in which cabinet and chassis the optical module is installed, find the optical module in the chassis, and attach a label to the optical module. Record optical fiber locations on the optical module to be replaced and check whether the labels on the optical fibers are correct and clear. If any label is unclear, make and attach a new label to the optical fiber to ensure correct connection.
 3. Rotate the handle of the optical module down, gently push the optical module, and then pull out the optical module by the handle. Remove the optical fibers from the optical module and cover them with dust caps.
- Two types of latches on fiber optic connectors:
 - LC/PC connector, opened by pressing the buckle, as shown in Figure 12.
 - MPO connector, opening automatically when the buckle is pulled, as shown in Figure 13.

Figure 12: LC/PC Connector

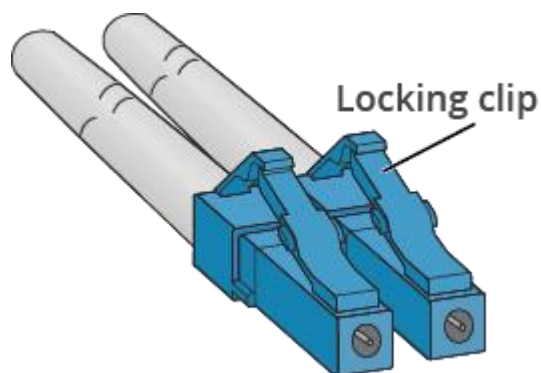
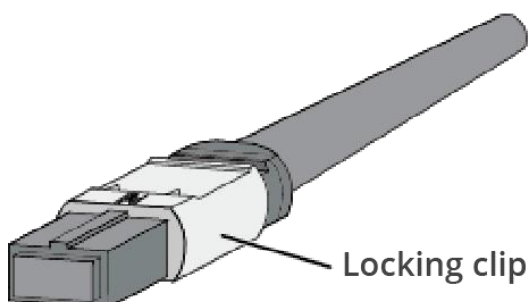


Figure 13: MPO Connector



4. Pull out the optical module, plug the dustproof plug and dispose of it.

There are two types of buckles on the optical module. A pull-rod handle that needs to be turned over to open, as shown in Figure 14. The other is a handle-type handle, which is automatically opened during the process of pulling the handle, as shown in Figure 15.

Figure 14: Pull-rod Handle

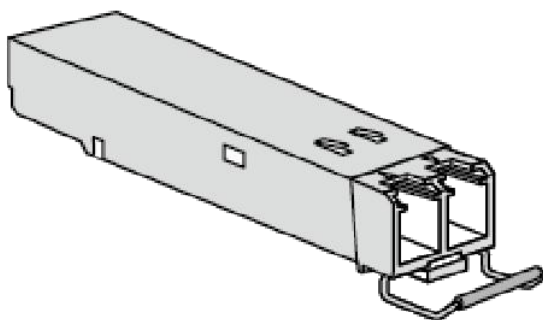
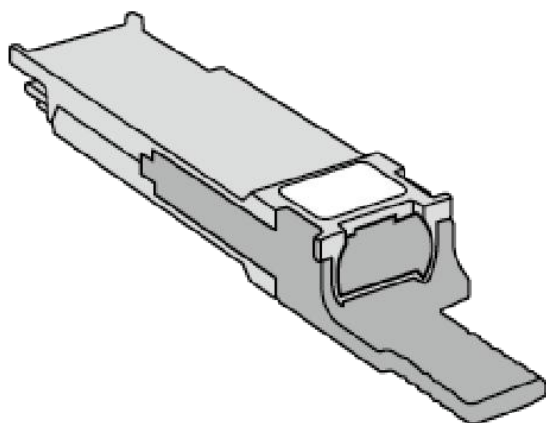


Figure 15: Handle-type Handle



5. Take out the new optical module from the package, and slowly insert it into the interface until you hear a "pop" sound, indicating that it has been installed in place.
6. Find the fiber to be connected, find the interface corresponding to the fiber through the label on the fiber, remove the dust cap and connect the fiber to the interface.

1.8.5 Replacing a Switch

When replacing a faulty switch, pay attention to the following requirements:

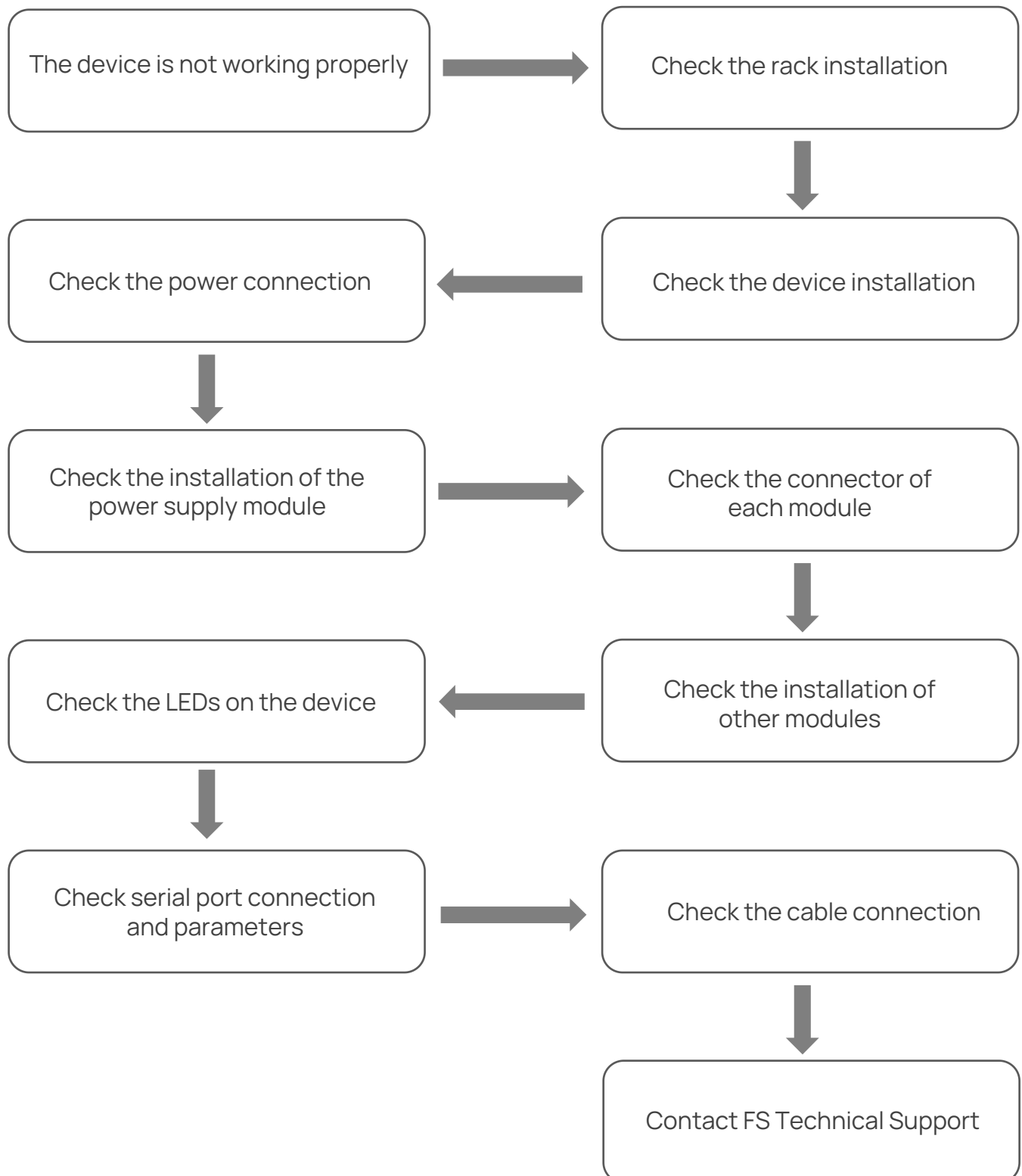
- Anti-static preparations must be made before replacement.
- Laser beams will cause eye damage. Do not look into bores of optical modules or optical fibers without eye protection.

Procedures:

1. Before replacing the faulty switch, be sure to clearly mark the corresponding relationship between the network cable and the port.
2. Check whether the business is ready for power-off, and save relevant business information.
3. Disconnect the power cord and ground wire of the faulty device.
4. Pull out all the network cables and optical fibers of the faulty device.
5. Loosen the fixing screws of the faulty device and remove the faulty device.
6. Install the new equipment, the sequence is the reverse of dismantling the faulty equipment. Fix the screws first, then connect the network cable, optical fiber, and finally connect the power cord and ground wire of the device. Be careful not to touch the power lines, network cables, and optical fibers of other equipment during the replacement process to avoid greater losses.

Troubleshooting After Installation

2.1 Troubleshooting Flowchart



2.2 Guide to Using Switches

Fault 1: The login password is forgotten

Fault Symptom

The login password is forgotten.

Handling Method

Contact FS technical support.

Fault 2: The AC power module does not work

Fault Symptom

All LEDs on the front panel are off. The fan status LED is off, and the fan does not rotate. The power supply status LED is off. The fan does not rotate.

Handling Method

1. Unplug the power cord from the power module.
2. Check whether the power cord is securely connected to the power socket.
3. Check whether the power cord is securely connected to the power module.
4. Check whether the power module is securely seated. If necessary, pull out the power module and check its connector.

Fault 3: The fan tray does not work

Fault Symptom

After the system starts, the fan does not rotate or the Status LED is off.

Handling Method

Check if the connection between the fan module and the chassis is secure and if the connector gets loose. If the connection is secure, replace the fan tray.

Fault 4: The serial port console has no output

Fault Symptom

After the system is started, the serial console does not display any information.

Handling Method

1. Check the serial cable: Make sure the serial port is properly connected to the console port of the switch. Check for loose or damaged connections and reseat the connections.

2. Check whether the connected serial port is consistent with what is configured on the HyperTerminal.
3. Check whether the configuration of the serial port on the HyperTerminal is consistent with that in Configuration Guide (such as SSH, Telnet) log in to the switch to check the working status of the serial port. It may be necessary to view and configure the serial port through the command line interface or web interface of the switch.
4. Replace the serial cable or serial adapter: If none of the above methods solve the problem, try to replace the serial cable or use a different serial adapter. Sometimes glitches can appear on these hardware.
5. Contact Vendor Support: If there is still no output on the serial port, please contact FS technical support.

Fault 5: The serial port console output is garbled

Fault Symptom

The serial port console output is garbled.

Handling Method

1. Check the serial port settings: Make sure the serial port settings used match the console settings of the switch. Check whether the settings of baud rate, data bits, stop bits and parity bits are correct. If the settings do not match, it will cause data transmission errors, resulting in garbled characters.
2. Check the terminal software encoding setting: In the terminal software, check whether the character encoding setting is correct. Make sure that the character encoding used is consistent with the character encoding of the switch, usually ASCII encoding is used.
3. Contact Vendor Support: If there is still no output on the serial port, please contact FS technical support.

Fault 6: The newly inserted expansion module can not be powered on

Fault Symptom

The system runs normally, the indicators on the panel of the newly inserted expansion module are all off, and the ports can not work normally.

Handling Method

First confirm whether the module is inserted in place. If everything is normal, but the newly inserted module still can not be powered on and works, please contact FS technical support.

Fault 7: The link can not be set up between optical ports

Fault Symptom

The system runs normally. After you insert an optical transceiver into an optical port and plug in a fiber cable, the link cannot be set up.

Handling Method

1. Check whether the receive and transmit ends are reversed. The transmit end of an optical port must be connected to the receive end at the other end. You can confirm both ends by exchanging the connection order of two fiber cables.
2. Check whether wavelengths of optical transceivers on both sides are consistent. For example, an optical transceiver with a wavelength of 1310nm cannot be connected to an optical transceiver of 1550nm.
3. Check whether the distance between two sides exceeds the maximum length marked on the optical transceiver.
4. Check whether the speeds of two sides are consistent and whether the fiber cable type meets requirements. For ports supporting different speeds, check their duplex mode settings.

2.3 Guide to Using Optical Modules

2.3.1 Common Faults of an Optical Module

1. An optical module is not completely installed in position.

If the optical module is not completely installed in position and the latch boss is not secured, the device cannot identify the optical module. After the optical module works for a long time, it will be ejected under external stress.

2. The optical receptacle on an optical module is contaminated.

If an optical module is not cleaned or protected properly, contaminants may accumulate on the fiber pin in the optical module. As a result, the coupling efficiency is reduced, optical signals are cut off, or even worse, the surface of the fiber pin is damaged permanently.

3. An optical module is burnt.

If high-power optical signals (caused by an optical time domain reflectometer or self-loop test) are transmitted through an optical module that is used for long-distance transmission but no optical attenuator is used, the optical power will exceed the overload power of the avalanche photodiode (APD). Then the optical module is burnt.

The preceding faults lead to temporary or long-term cut-off of optical signals; or even cause permanent damages to the optical module, affecting communication services.

2.3.2 Measures to Prevent a Loosened Optical Module

1. When installing an optical module, insert it in position. If you hear a click or feel a slight shake, it indicates that the latch boss is secured.

1. If the latch boss is not secured, the gold finger of the optical module is not in good contact with the connector on the board. In this case, the link may be connected but optical signals will be cut off or the optical module will be loosened when the optical module is shaken or hit.
2. Figure 16 shows the release handle on an optical module when it is open and closed. When inserting the optical module, make sure that the release handle is closed. At this time, the latch boss locks the optical module. After the optical module is inserted, try pulling it out to see if it is installed in position. If the optical module cannot be pulled out, it is secured.

Figure 16: State of the Release Handle



Close the release handle



Open the release handle

2.3.3 Measures to Prevent Receptacle Contamination

1. Cleaning tissues must be prepared on site. You need to clean the optical connector before inserting it in the receptacle. This protects the receptacle against contamination on the surface of the optical connector.

Figure 17: Cleaning Optical Fibers with Special Cleaning Tissues



- Place at least three cleaning tissues on the work bench. As shown in Figure 17, wipe the end of an optical connector from left to right or from right to left on a cleaning tissue, and then move the connector end to the unused part of the cleaning tissue to continue.

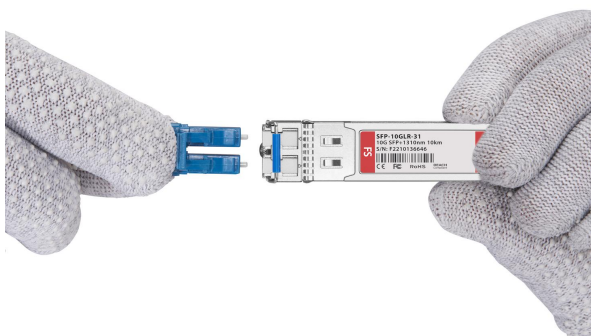
2. Cover an unused optical module with a protective cap to prevent dust, as shown in Figure 18.

Figure 18: Installing a Protective Cap



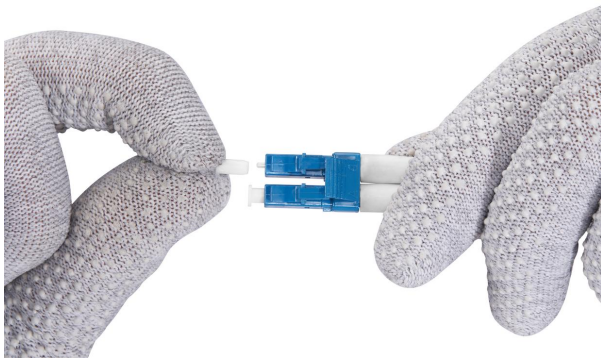
If no protective cap is available, use fibers to protect the optical module, as shown in Figure 19.

Figure 19: Using Fibers to Protect an Optical Module



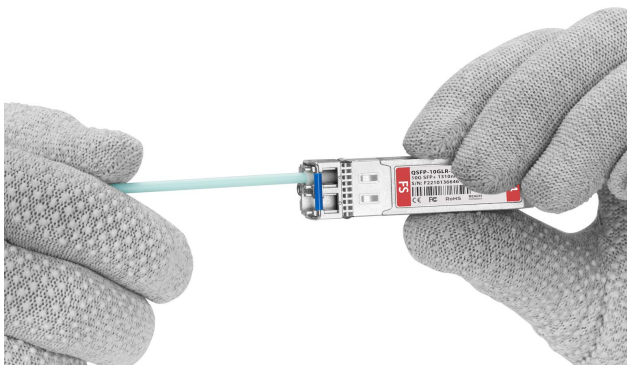
3. Cover unused optical connectors with protective caps, as shown in Figure 20, and then lay out fibers on the fiber rack or coil them in a fiber management tray to prevent fibers from being squeezed.

Figure 20: Installing a Protective Cap on a Fiber



4. If a receptacle or an optical connector has not been used for a long time and is not covered with a protective cap, you need to clean it before using it. Clean a receptacle with a cotton swab, as shown in Figure 21. Clean an optical connector with cleaning tissues.

Figure 21: Cleaning a Receptacle with a Cotton Swab



- When cleaning a receptacle, insert the cotton swab and turn it slowly in the receptacle. Do not use too much strength because the receptacle may be damaged.

5. If optical signals are lost during the operation of a device, use the preceding method to clean the receptacle or the optical connector. In this manner, the possibility of contamination can be excluded.

2.3.4 Measures to Prevent an Optical Module from Being Burnt

1. Before using an optical time-domain reflectometer (OTDR) to test the connectivity or the attenuation of optical signals, disconnect the optical fibers from the optical module. Otherwise, the optical module will be burnt.
2. When performing a self-loop test, use an optical attenuator. Do not loosen the optical connector instead of the optical attenuator.

2.3.5 Precautions

1. The optical connector should be vertically inserted in the receptacle to avoid damages to the receptacle.
2. Fibers must be inserted into multimode optical modules, and single mode fibers must be inserted into single mode optical modules. If a fiber is inserted into an optical module of a different mode, faults may occur. For example, optical signals will be lost.



FS has invested resources in product R&D, quality control, intelligent manufacturing, industry-leading experts, professional technical support, and networking solutions. All is to provide customers with higher-performance, lower-power consumption, and the most cost-effective products, promoting clients' network upgrades.

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