3 Hardware Installation and Component Replacement (Fixed Switches)

3.1 Switch Overview

Huawei S series fixed switches ensure high-quality transmission of services and provide reliable access and aggregation on campus networks. They have an integrated hardware structure and consist of a chassis, power modules, fan modules, and a Switch Control Unit (SCU). Some models support pluggable power modules, fan modules, and cards.

NOTE

- All figures are for illustration purposes only and may not accurately depict the actual device or module.
- Some switch models have nameplates attached on their bottom sides.
- The S5735-S4T2X-IA150G1, S5735-S8P2X-IA200G1, S5735-S8P2X-IA200H1, S5720I-6X-PWH-SI-AC and S5720I-10X-PWH-SI-AC are outdoor fixed switches, which can be pole- or wall-mounted. For details about how to install the switches, see the **S5720I-6X-PWH-SI-AC and S5720I-10X-PWH-SI-AC Quick Start Guide**, S5735-S8P2X-IA200H1 Quick Start Guide and **S5735-S4T2X-IA150G1 and S5735-S8P2X-IA200G1 Quick Start Guide**.

CAUTION

All switches except the S1730S-L8T-A and S1730S-L8T-MA are Class A products. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

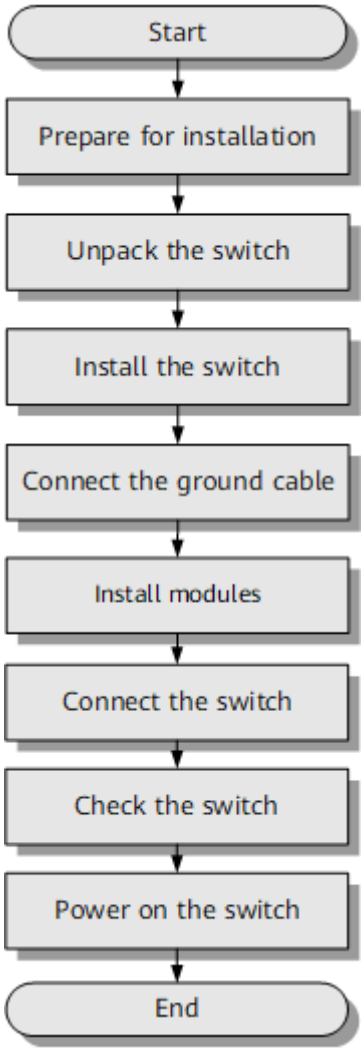
The S series fixed switch models differ in appearance and basic dimensions (excluding the parts protruding from the body).

Chassis basic dimensions determine where and how a switch can be installed. For details, see **3.5.1 Installation Scenario Overview**. For the dimensions of specific switch models, see the *Hardware Description*.

3.2 Installation Overview

Figure 3-1 shows the sequence of tasks involved in installing a switch.

Figure 3-1 Installation flowchart



3.3 Preparing for Installation

3.3.1 Safety Precautions

Before you start the installation procedure, read all safety precautions described in this document and observe any warning labels affixed to the switch. Doing so ensures your safety and protects the switch from damage.

Safety precautions provided in this document may not cover every eventuality, so remain mindful of safety at all times.

Only trained and qualified personnel should be allowed to install, operate or maintain the equipment.

General Safety Guidelines

CAUTION

Always take precautions against ESD whenever you handle a switch. For example, wear ESD gloves or an ESD wrist strap. To avoid electric shock or burn, remove conductive objects like jewelry and watch.

WARNING

Connect the ground cable first after installing the switch into a cabinet or rack. Do not remove the ground cable unless all the other cables and modules have been removed from the chassis.

Environmental Safety

DANGER

Do not install the switch in an environment with flammable or explosive gases or smoke.

NOTICE

Install the switch in a dry environment away from sources of water, as water or damp may damage circuits of meters.

NOTICE

The installation site must be well ventilated to prevent the switches from overheating.

Electrical Safety

DANGER

Contact with high-voltage power can be fatal. Never touch uninsulated electrical wires or terminals that have not been disconnected from their power source.

DANGER

Never install or remove the switch or power cables while the power is on.

DANGER

To ensure personal and equipment safety, ground the switch before powering it on.

Laser Safety

CAUTION

Never look directly into an optical module or the ends of optical fibers. Optical modules and connected fibers emit laser radiation that can cause eye damage.

CAUTION

Cover fiber connectors with dust caps when they are not connected.

Mechanical Safety

CAUTION

Use safe lifting practices when moving the switch. Never attempt to lift objects that are too heavy for one person to handle. Instead, seek help or use appropriate tools.

CAUTION

Before installing the switch into or removing it from a cabinet, ensure there are no objects that could fall from the cabinet and cause injury.

NOTICE

Do not drill unapproved holes into a cabinet, as doing so may impair its electromagnetic shielding and damage the cables inside. In addition, drilling holes produces metal shavings that may enter the cabinet and cause short circuits on printed circuit boards (PCBs).

3.3.2 Checking the Installation Site

The S series fixed switches (except for the S5720I-SI and outdoor fixed switches) must be installed in indoor equipment rooms with controllable temperature. The S5720I-SI series switches can also be installed in outdoor cabinets. **Table 3-1** describes the requirements for the installation site.

Table 3-1 Requirements for the installation site

Item	Requirement
Cleanliness	The installation site must be clean, dry, well ventilated, and free from leaking or dripping water and dew. There are holes on the surface of some switches. Take protective measures to prevent insects, water, animal excrement, or other foreign matter from entering the switch through the holes.
Dust	The installation site must not have an excessive amount of dust. A buildup of dust may cause electrostatic discharge on the chassis and impair electrical connections, which will reduce the service life and may cause failure of the switch.
Temperature and humidity	The switch must be installed in a temperature-controlled environment where the temperature and humidity are within specifications. For the operating temperature and relative humidity ranges required for your switch, see the *Hardware Description*. In environments where the relative humidity exceeds 70%, use dehumidifiers or dehumidifying air conditioners. For the models with forced heat dissipation, the fan speed increases with the increase of the operating temperature. In a constant-temperature equipment room, the noise caused by the increase of the ambient temperature can be effectively avoided.
Corrosive gases	The installation site must be free from acidic, alkaline, or corrosive gases.
Airflow clearance	Leave at least 50 mm (2.0 in.) clearance around the switch for heat dissipation. Do not install a switch with its air intake vent facing or close to the air exhaust vent of other devices.

Item	Requirement
Service port surge protection	• If power and network cables of a switch need to be routed outdoors, bury them underground or put them in steel pipes to protect the switch from lightning strikes. • If the Ethernet cables connected to a device need to be routed outside, surge protectors must be configured for the corresponding ports. • If the network ports on the S5720I-SI series switches are connected to devices on a street pole, no surge protector needs to be installed. If the network ports are connected to devices on a tower, a network port surge protector must be installed. • To protect network ports from lightning, use 8-line surge protectors or Huawei certified 4-line surge protectors. Connect the IN ports to terminals and the OUT ports to network ports of the switch. • If fiber reinforcing ribs are used, ensure that they are properly grounded to protect the switches from lightning.

Item	Requirement
Power supply surge protection	When installing the S5720I-SI series switches in outdoor cabinets, ensure that the following requirements are met: • AC switch: – If the 220 V mains supply is used, install a 20 kA surge protector between the power port of the switch and the mains. – If power is supplied by an isolated inverter near the outdoor cabinet, no surge protector needs to be installed between the power port of the switch and the inverter. • DC switch: An isolated power supply must be used and placed in the same outdoor cabinet as the switch. Surge protection is required for the power input of the outdoor cabinet. The surge protector, power supply, and switch must be equipotential. The outdoor cabinet must be properly grounded and the grounding impedance must be less than or equal to 10 ohms. If a DC switch is connected to the PAC-260WA-E or PAC240S56-CN power module that is powered by the 220 V mains, install a 20 kA surge protector between the power input port of the PAC-260WA-E or PAC240S56-CN and the mains. The 20 kA surge protector and S5720I-SI switch can be decoupled using 5-10 m power cables or decoupling inductors. For details, see "WLA220W01-20kA Surge Protector" in the *S5700 Series Switches Hardware Description*. In all installation scenarios, switches, cabinets, independent power modules, and surge protectors must be separately grounded.

3.3.3 Checking the Cabinet or Rack

Table 3-2 describes the requirements for the cabinet or rack where a switch will be installed in indoor equipment rooms.

Table 3-2 Requirements for the cabinet or rack

Item	Requirement
Width	The S series fixed switches have standard dimensions and can be installed in a standard 19-inch cabinet or rack (such as an N66E or N68E cabinet).

Item	Requirement
Depth	If you use a non-standard cabinet or rack, ensure that there is a sufficient space. When equipped with 1150 W PoE power modules, the switch cannot be installed in a 600 mm (23.6 in.) deep cabinet. Only switches whose depth is less than or equal to 220 mm and whose power outlets are on the front panel can be installed in a 300 mm deep cabinet.
Distance between front and rear mounting rails	To install an S1730S-S48P4S-A, S5710-EI, S5710-HI, S5720 (420-mm deep models), S5730, S5731 (420-mm deep models), S5732 (420-mm deep models), S5735 (420-mm deep models), S5736 (420-mm deep models), S6720 (420-mm deep models), S6735 (420-mm deep models), or S6730 (420-mm deep models) switch into a cabinet, install front and rear mounting brackets on the switch. Ensure that the distance between front and rear mounting rails is within the specified range. For details, see **3.5.2.2 Using Front and Rear Mounting Brackets** and **3.5.2.3 Using Front Mounting Brackets or Cable Management Frames and Rear Mounting Brackets**. If the distance between front and rear mounting rails does not meet the requirement, use a pair of guide rails or a tray (purchased separately).
Grounding	The cabinet or rack must have reliable ground points for grounding the chassis.

Figure 3-2 shows the points from which to take measurements for the cabinet width (a), the cabinet depth (b), and the distance between front and rear mounting rails (c).

Figure 3-2 Measuring a cabinet

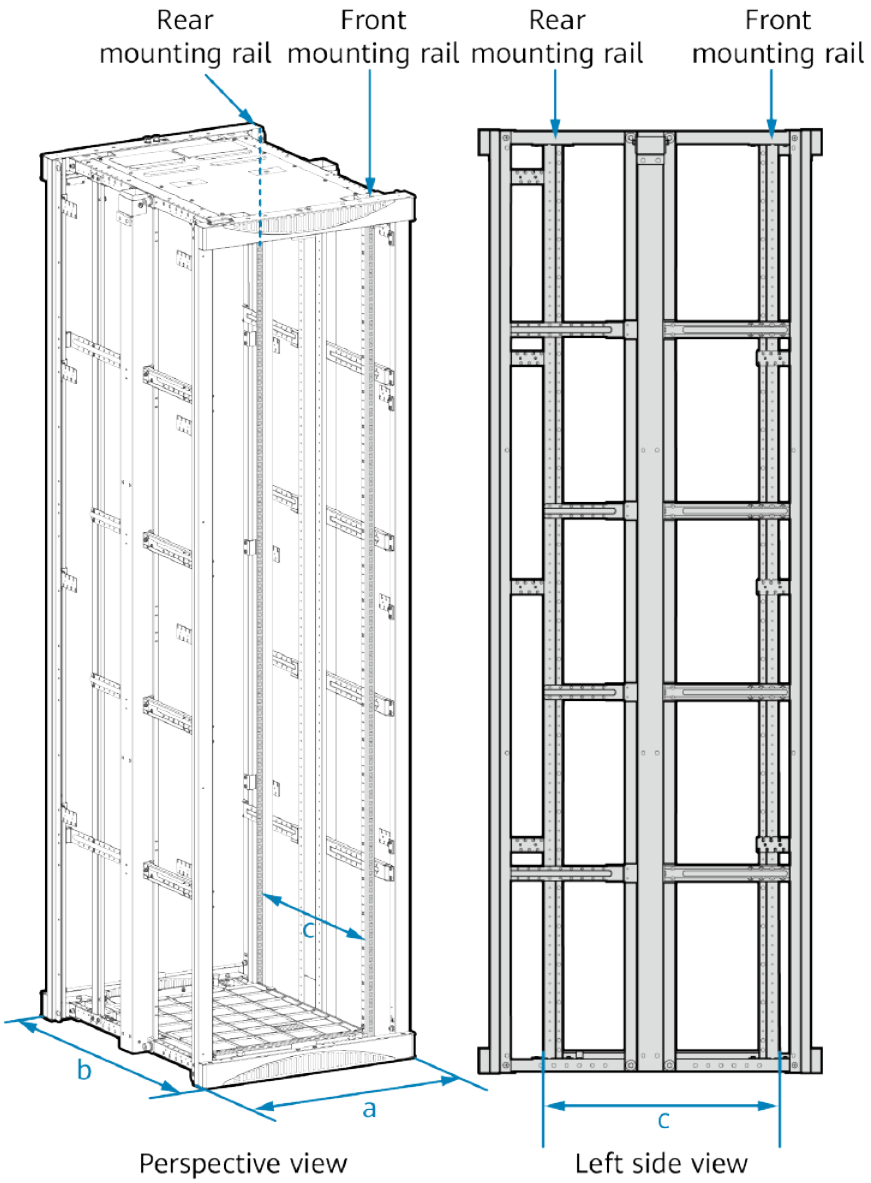


Table 3-3 describes the requirements for an outdoor cabinet where an S5720I-SI series switch will be installed.

Table 3-3 Requirements for an outdoor cabinet

Item	Requirements
Width of the mounting rails of an outdoor cabinet	The mounting rails supported by the standard mounting brackets delivered with the S5720I-12X-SI-AC and S5720I-12X-PWH-SI-DC must have a width of 272.5 mm to 278.5 mm. The mounting rails supported by the standard mounting brackets delivered with the S5720I-28X-SI-AC and S5720I-28X-PWH-SI-AC must have a width of 462 mm to 468 mm and support switch installation in a 19-inch standard cabinet. Installation of the 5720I-12X-SI-AC and S5720I-12X-PWH-SI-DC in a 19-inch cabinet requires front mounting brackets (part number: 21240477), which can be purchased separately.
Installation space	Ensure that the outdoor cabinet has sufficient installation space and its depth is not less than that of the switch. In addition, pay attention to the following: • If G.657.A2 short-jacket optical fibers are used, the distance between the front panel of the switch and the front door of the cabinet must be at least 55 mm. • If G.652 long-jacket optical fibers are used, the distance between the front panel of the switch and the front door of the cabinet must be at least 85 mm. • Leave at least 50 mm (2.0 in.) clearance around the switch for heat dissipation. Do not install a switch with its air intake vent facing or close to the air exhaust vent of other devices.
Grounding	The cabinet must have reliable ground points for grounding the chassis.

3.3.4 Checking the Power Supply System

The power supply system must be ready before the installation. **Table 3-4** describes the requirements for the power supply system of the S series fixed switches.

Table 3-4 Power supply requirements

Item	Requirement
Input voltage	The input voltage must be within switch specifications. For details, see the *Hardware Description*. Ensure that the power supply voltage of the device is stable to prevent device failures caused by power grid fluctuation.
Power outlets and power cables	• To use AC power outlets, switches must have built-in AC power supply units or pluggable AC power modules, and use AC power cables or AC power adapters complying with local standards. • To use an AC power distribution unit (PDU), switches must have built-in AC power supply units or pluggable AC power modules, and use C13 straight female to C14 straight male power cables. • To use a DC power distribution box, switches must have built-in DC power supply units or pluggable DC power modules, and use DC power cables. • The power cables and plugs delivered with a switch are for use with this switch only. Do not use them on other devices.
Circuit breaker of each channel	The rated current of a circuit breaker must be greater than the maximum input current of power modules.

3.3.5 Preparing Installation Tools and Accessories

Table 3-5 and Table 3-6 show the tools and accessories required for installing a switch.

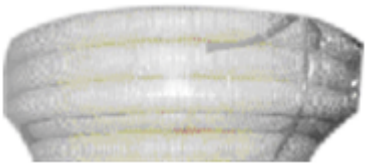
Table 3-5 Installation tools

Tool	Description	Picture
ESD wrist strap	Used to prevent electrostatic discharge. Wear the strap on your wrist and insert the cord into the ESD jack on the cabinet.	

Tool	Description	Picture
ESD gloves	Used to prevent electrostatic discharge.	
Protective gloves	Used to protect hands against lacerations and abrasions.	
Utility knife	Used to cut open cartons.	
Measuring tape	Used to measure distance.	
Marker	Used to mark the installation position of components.	
Flat-head screwdriver	Used to turn slotted-head screws and bolts.	
Phillips screwdriver	Used to turn cross-head screws and bolts.	

Tool	Description	Picture
Diagonal pliers	Used to cut insulation tubes and cables.	
Network cable tester	Used to test the connectivity of network cables.	
Multimeter	Used to test the electrical characteristics, such as voltage, current, and resistance, of the switch, cabinet, and cables.	
Hammer drill	Used to drill holes with appropriately sized drill bits (selected based on depth of holes and type of expansion bolts).	
Adjustable wrench	Used to turn hex or square bolts and nuts.	

Table 3-6 Installation accessories

Accessory	Description	Picture
Cable tie	Used to bundle cables.	
Fiber binding tape	Used to bundle optical fibers.	
Insulation tape	Used to insulate power wires or other conductors.	
Corrugated pipe	Used to protect optical fibers.	

3.4 Unpacking a Switch

Context

A switch and its cables, cards, and power modules usually ship in cartons. This section describes how to unpack a 442.0 mm x 220.0 mm x 43.6 mm (17.4 in. x 8.7 in. x 1.72 in.) switch model. The methods for unpacking switch models of other dimensions or other components are similar.

NOTE

- Before opening the package, check whether the seal label or package is damaged. If there are signs of damage, stop unpacking and contact the supplier.
- Moving an unpacked switch over a long distance may damage the switch. Do not unpack the switch until you are ready to begin installation.
- Save the carton and packing material in case of future transportation.

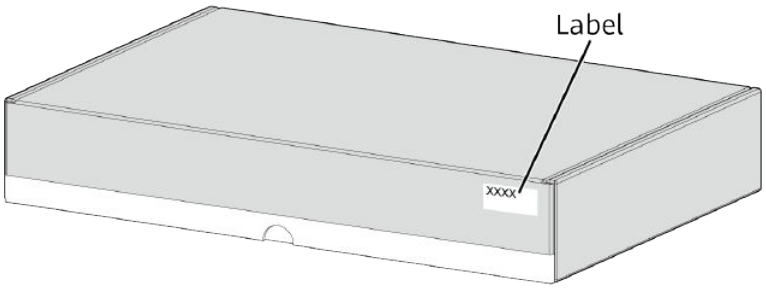
Tools

- Protective gloves
- Utility knife

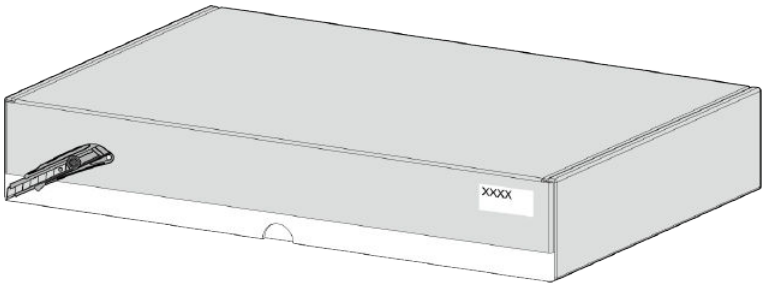
Procedure

Step 1 Wear protective gloves to protect your hands.

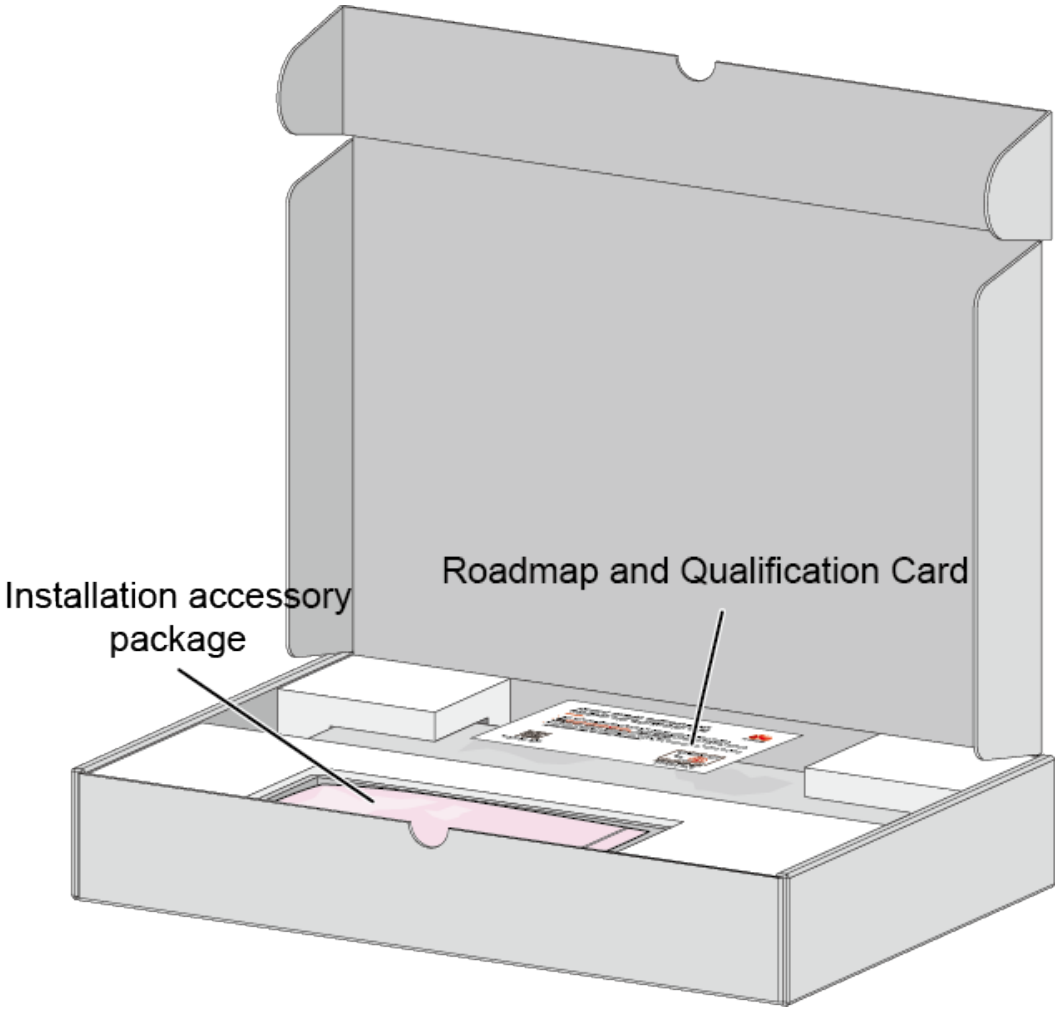
Step 2 Check the label on the carton to confirm whether the switch model is correct.



Step 3 Use a utility knife to cut the adhesive tape around the cover of the carton.



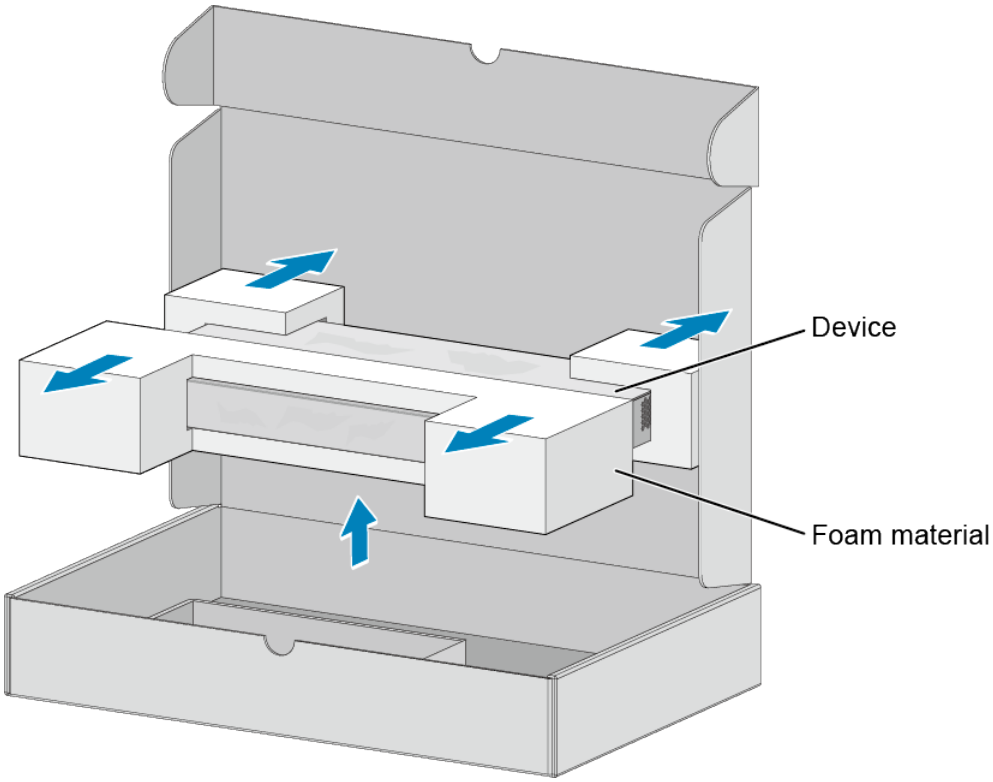
Step 4 Open the carton and take out the installation accessory package and the *Documentation Roadmap and Qualification Card*.



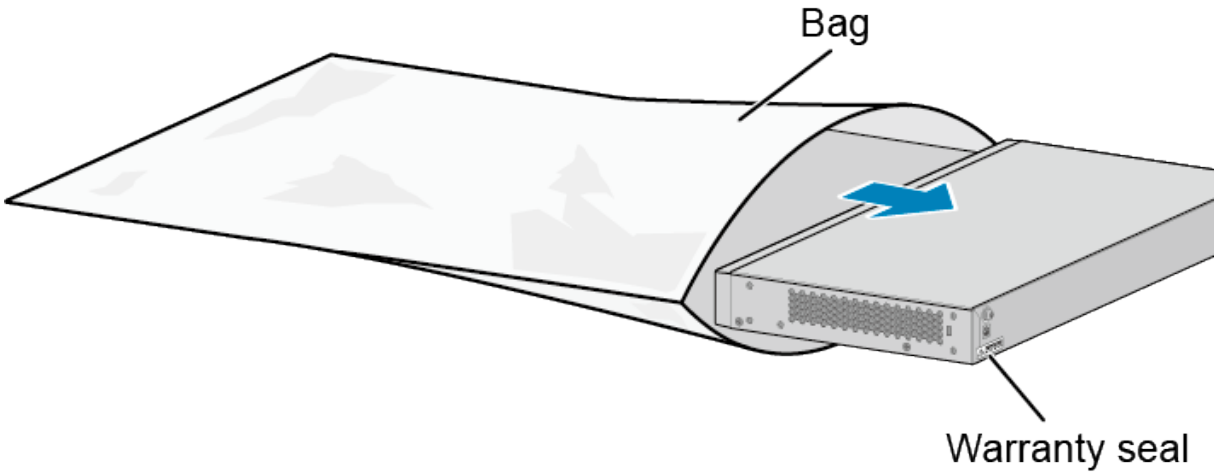
NOTE

The *Documentation Roadmap and Qualification Card* or *Quick Start Guide* manual may be included in the installation accessory package or packaged independently.

Step 5 Take the switch out of the carton and remove the foam packing materials.



Step 6 Take the switch out of the bag and check switch surfaces and the warranty seal on the switch. If the switch is found eroded or damp or if the warranty seal is damaged, stop unpacking and contact the supplier.



NOTE

Huawei is unable to provide warranty services if the warranty seal is damaged or removed.

Step 7 Check whether the nameplate on the chassis is consistent with the label on the carton. The nameplate is attached to either the top or bottom of the chassis.

----End

Follow-up Procedure

Save the installation accessory package for later use. The installation accessory package contains the following items: mounting brackets, screws, rubber pads, Phoenix connectors, and dust plugs.

NOTE

The type and quantity of items in an installation accessory package vary depending on the product model.

3.5 Installing a Switch

3.5.1 Installation Scenario Overview

The S series fixed switches of different sizes support different installation scenarios.

Table 3-7 Installation scenarios for S200&S300&S500 switches

Dimensions (H x W x D)	Scenario: Cabinet/Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting
43.6 mm x 250.0 mm x 180.0 mm (1.72 in. x 9.8 in. x 7.1 in.)	Supported	Supported	Supported
43.6 mm x 300.0 mm x 220.0 mm (1.72 in. x 11.8 in. x 8.7 in.)	Supported	Supported	Supported
43.6 mm x 442.0 mm x 220.0 mm (1.72 in. x 17.4 in. x 8.7 in.)	Supported	Supported	Supported

Table 3-8 Installation scenarios for S1700 switches

Switch Dimensions (H x W x D)	Scenario: Cabinet/ Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting	Scenario: Network Box Mounting
29 mm x 230.0 mm x 49.5 mm (1.14 in. x 9.06 in. x 1.95 in.)	Not supported	Not supported	Not supported	Supported
28 mm x 160.0 mm x 120.0 mm (1.10 in. x 6.30 in. x 4.73 in.)	Not supported	Supported	Supported	Not supported
32.8 mm x 160.0 mm x 134.0 mm (1.29 in. x 6.30 in. x 5.28 in.)	Not supported	Supported	Supported	Not supported
43.6 mm x 250.0 mm x 180.0 mm (1.72 in. x 9.85 in. x 7.10 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported
43.6 mm x 300.0 mm x 220.0 mm (1.72 in. x 11.82 in. x 8.67 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported
43.6 mm x 320.0 mm x 208.0 mm (1.72 in. x 12.61 in. x 8.20 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported
43.6 mm x 320.0 mm x 220.0 mm (1.72 in. x 12.61 in. x 8.67 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported
43.6 mm x 442.0 mm x 220.0 mm (1.72 in. x 17.41 in. x 8.67 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported
43.6 mm x 442.0 mm x 224.8 mm (1.72 in. x 17.41 in. x 8.86 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported

Switch Dimensions (H x W x D)	Scenario: Cabinet/ Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting	Scenario: Network Box Mountin g
43.6 mm x 442.0 mm x 225.0 mm (1.72 in. x 17.41 in. x 8.87 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported
43.6 mm x 442.0 mm x 314.8 mm (1.72 in. x 17.41 in. x 12.40 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported
43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.41 in. x 16.55 in.)	Supported Use front and rear mounting brackets.	Supported	Not supported	Not supported

Table 3-9 Installation scenarios for S2700 switches

Switch Dimensions (H x W x D)	Scenario: Cabinet/Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting
43.6 mm x 250.0 mm x 180.0 mm (1.72 in. x 9.8 in. x 7.1 in.)	Supported Use front mounting brackets.	Supported	Supported
43.6 mm x 320.0 mm x 220.0 mm (1.72 in. x 12.6 in. x 8.7 in.)	Supported Use front mounting brackets.	Supported	Supported
43.6 mm x 300.0 mm x 220.0 mm (1.72 in. x 11.8 in. x 8.7 in.)	Supported Use front mounting brackets.	Supported	Supported

Switch Dimensions (H x W x D)	Scenario: Cabinet/Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting
43.6 mm x 442.0 mm x 220.0 mm (1.72 in. x 17.4 in. x 8.7 in.) The installation methods of 224.8 mm deep devices are the same. This document uses 220.0 mm as an example.	Supported Use front mounting brackets.	Supported	Supported
43.6 mm x 442.0 mm x 310.0 mm (1.72 in. x 17.4 in. x 12.2 in.) The installation methods of 314.8 mm deep devices are the same. This document uses 310.0 mm as an example.	Supported Use front mounting brackets.	Supported	Supported
43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.4 in. x 16.5 in.)	Supported Use front mounting brackets.	Supported	Not supported

Table 3-10 Installation scenarios for S3700 switches

Dimensions (H x W x D)	Scenario: Cabinet/Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting
43.6 mm x 442.0 mm x 220.0 mm (1.72 in. x 17.4 in. x 8.7 in.)	Supported Use front mounting brackets.	Supported	Supported
44.4 mm x 442.0 mm x 220.0 mm (1.75 in. x 17.4 in. x 8.7 in.)	Supported Use front mounting brackets.	Supported	Not supported

Dimensions (H x W x D)	Scenario: Cabinet/Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting
43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.4 in. x 16.5 in.)	Supported Use front mounting brackets.	Supported	Not supported

Table 3-11 Installation scenarios for S5700 switches

Dimensions (H x W x D)	Scenario: Cabinet/ Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting	Scenario: Top Wall Mounting	Scenario: DIN Rail Mounting
150.0 mm x 46.0 mm x 133.0 mm (5.9 in. x 1.81 in. x 5.24 in.)	Supported Use horizontal rack-mounting kit.	Not supported	Not supported	Not supported	Supported
150.0 mm x 86.0 mm x 133.0 mm (5.9 in. x 3.39 in. x 5.24 in.)	Supported Use horizontal rack-mounting kit.	Not supported	Not supported	Not supported	Supported
43.6 mm x 250.0 mm x 180.0 mm (1.72 in. x 9.8 in. x 7.1 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported	Not supported
43.6 mm x 320.0 mm x 220.0 mm (1.72 in. x 12.6 in. x 8.7 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported	Not supported
43.6 mm x 320.0 mm x 210.0 mm (1.72 in. x 12.6 in. x 8.27 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported	Not supported

Dimensions (H x W x D)	Scenario: Cabinet/ Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting	Scenario: Top Wall Mounting	Scenario: DIN Rail Mounting
43.6 mm x 320.0 mm x 263.0 mm (1.72 in. x 12.6 in. x 10.35 in.)	Supported Use front mounting brackets.	Supported	Supported	Supported	Not supported
43.6 mm x 300.0 mm x 220.0 mm (1.72 in. x 11.8 in. x 8.7 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported	Not supported
43.6 mm x 442.0 mm x 220.0 mm (1.72 in. x 17.4 in. x 8.7 in.) The installation methods for devices with a depth ranging from 220.0 mm to 227.0 mm are the same. This document uses 220.0 mm as an example.	Supported Use front mounting brackets.	Supported	Supported	Not supported	Not supported

Dimensions (H x W x D)	Scenario: Cabinet/ Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting	Scenario: Top Wall Mounting	Scenario: DIN Rail Mounting
44.4 mm x 442.0 mm x 220.0 mm (1.75 in. x 17.4 in. x 8.7 in.) The installation methods for devices with a depth ranging from 220.0 mm to 224.9 mm are the same. This document uses 220.0 mm as an example.	Supported Use front mounting brackets.	Supported	Not supported	Not supported	Not supported
43.6 mm x 442.0 mm x 260.0 mm (1.72 in. x 17.40 in. x 10.24 in.)	Supported Use front mounting brackets.	Supported	Supported	Not supported	Not supported

Dimensions (H x W x D)	Scenario: Cabinet/ Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting	Scenario: Top Wall Mounting	Scenario: DIN Rail Mounting
43.6 mm x 442.0 mm x 310.0 mm (1.72 in. x 17.4 in. x 12.2 in.) The installation methods for devices with a depth ranging from 310.0 mm to 314.9 mm are the same. This document uses 310.0 mm as an example.	Supported Use front mounting brackets.	Supported	Supported	Not supported	Not supported
43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.4 in. x 16.5 in.)	Supported • S5700-SI and S5700-EI: use front mounting brackets • Other models: use front and rear mounting brackets	Supported	Not supported	Not supported	Not supported

Dimensions (H x W x D)	Scenario: Cabinet/ Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting	Scenario: Top Wall Mounting	Scenario: DIN Rail Mounting
44.4 mm x 442.0 mm x 420.0 mm (1.75 in. x 17.4 in. x 16.5 in.) The installation methods of the devices whose depth ranges from 420.0 mm to 510.5 mm are the same. This document uses 420.0 mm as an example.	Supported Use front and rear mounting brackets.	Supported	Not supported	Not supported	Not supported
86.1 mm x 442.0 mm x 470.0 mm (3.4 in. x 17.4 in. x 18.5 in.)	Supported Use front mounting brackets or cable management frames and rear mounting brackets.	Not supported	Not supported	Not supported	Not supported

Table 3-12 Installation scenarios for S6700 switches

Dimensions (H x W x D)	Scenario: Cabinet/Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting
43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.4 in. x 16.5 in.)	Supported • S6700-EI: use front mounting brackets • Other models: use front and rear mounting brackets **NOTE** Using guide rails (purchased separately) to support the S6700-EI is recommended due to its weight.	• S6700-EI and S6720-HI: Not supported • Other models: Supported	Not supported
44.4 mm x 442.0 mm x 420.0 mm (1.75 in. x 17.4 in. x 16.5 in.) The installation methods of the devices whose depth ranges from 420.0 mm to 425.0 mm are the same. This document uses 420.0 mm as an example.	Supported	Supported	Not supported
44.4 mm x 442.0 mm x 220.0 mm (1.75 in. x 17.4 in. x 8.7 in.) The installation methods for devices with a depth ranging from 220.0 mm to 225.0 mm are the same. This document uses 220.0 mm as an example.	Supported	Supported	Not supported

Dimensions (H x W x D)	Scenario: Cabinet/Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting
43.6 mm x 442.0 mm x 220.0 mm (1.72 in. x 17.4 in. x 8.7 in.)	Supported	Supported	Supported

NOTE

For the S5735-L, S5735S-L, and S5735S-L-M series switches with natural heat dissipation, heat is dissipated from the bottom shell, leading to a high temperature of the shell even at ambient temperature. To prevent injuries, do not touch the bottom shell. Additionally, you must install these switches in a well-ventilated area with restricted access (not accessible to unskilled personnel), instead of on a desk or in an airtight cabinet. It is recommended that the switches be installed in a well-ventilated network box or cabinet.

3.5.2 Scenario : Cabinet/Rack Mounting

3.5.2.1 Using Front Mounting Brackets

Context

This installation method applies to the following switches:

- S1700 (excluding the S1700-8-AC and S1700-8G-AC), S1720, and S1730S (excluding the S1730S-L4P1T-BUA, S1730S-L8P2T-BUA, S1730S-L8LP2T-BUA, S1730S-L8T-A, S1730S-L8T-MA, and S1730S-S48P4S-A)
- All S2700 series
- All S3700 series
- Some S5700 models:
  - S5700-LI, S5700S-LI, S5710-LI, S5720-LI, S5720S-LI, S5700-SI, S5720-SI (except 420-mm deep models), S5720S-SI, S5700-EI, S5720-EI (except 420-mm deep models), S5700-HI, S5720I-12X-SI-AC, S5720I-12X-PWH-SI-DC, S5720I-28X-SI-AC, S5720I-28X-PWH-SI-AC, S5731-S (except 420-mm deep models), S5731S-S (except 420-mm deep models), S5736-S (except 420-mm deep models), S5735-L (except 420-mm deep models), S5735S-L (except 420-mm deep models), S5735-L1, S5735S-L1, S5735-L-I, S5735S-L-M, S5731-L16P2SR-RUA, and S5731S-L16P2SR-RUA
  - S5735-L-V2 (except 420-mm deep models) and S5735I-L-V2
- Some S6700 models, including the S6700-EI, S6720S-EI, S6720-LI, S6720S-LI, and S6730-H (except 420-mm deep models)
- All S200 series
- All S300 series
- All S500 series

Follow these precautions before or during the installation:

- Ensure that the cabinet is stable and meets the requirements specified in **3.3.3 Checking the Cabinet or Rack**.
- Leave sufficient vertical space in the cabinet or rack for the switch.
- Leave at least 50 mm (2.0 in.) clearance around the switch for heat dissipation. Do not install a switch with its air intake vent facing or close to the air exhaust vent of other devices.
- To install multiple switches in one cabinet or rack, leave at least 1 U (1 U = 44.45 mm) between switches that use natural heat dissipation. For switches that use forced or intelligent air cooling, the recommended spacing between them is 1 U.
- Align the mounting brackets on the left and right mounting rails. If they are not on a horizontal line, forcibly mounting the switch may distort the chassis.
- For an S6700-EI switch, using guide rails (purchased separately) to support the chassis is recommended.
- The S5720I-12X-SI-AC, S5720I-12X-PWH-SI-DC, S5720I-28X-SI-AC, and S5720I-28X-PWH-SI-AC switches can also be installed in outdoor cabinets. The installation method and requirements are the same as those in the indoor cabinets.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Phillips screwdriver
- Flat-head screwdriver
- Floating nuts (four per switch, purchased separately)
- M4 screws (The quantity depends on the switch. See **Figure 3-3**.)
- M6 screws (four per switch, purchased separately)
- Front mounting brackets (two per switch)
- Ground cable
- Guide rails (optional)

NOTE

The M4 screws and front mounting brackets are included in the installation accessory package.

When installing mounting ears, use screws of the same specifications as those configured by the manufacturer. Do not use screws that are too long to prevent damage to the device.

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 2 Use M4 screws to attach a front mounting bracket delivered with the switch to each side of the switch. **Figure 3-3** shows the front mounting brackets delivered with different switch models and associated installation methods.

NOTE

- To install a 250 mm x 180 mm (9.8 in. x 7.1 in. W x D) switch in a 19-inch cabinet, use the front mounting brackets shown in **c** of **Figure 3-3** (some models need purchased separately, part number of 21240477).
- To install a 220 mm (8.7 in.) deep switch in a 21-inch cabinet, install the front mounting brackets according to **g** of **Figure 3-3**.
- See **Figure 3-3** for the number of screws required for each mounting bracket.
- When installing mounting ear j, pay attention to the R/L label on the mounting ear. The mounting ear labeled R is installed on the right side of the device, and the mounting ear labeled L is installed on the left side of the device. In addition, the mounting ear marked with R has a ground hole for connecting a ground cable to provide the grounding function.

Figure 3-3 Installing front mounting brackets

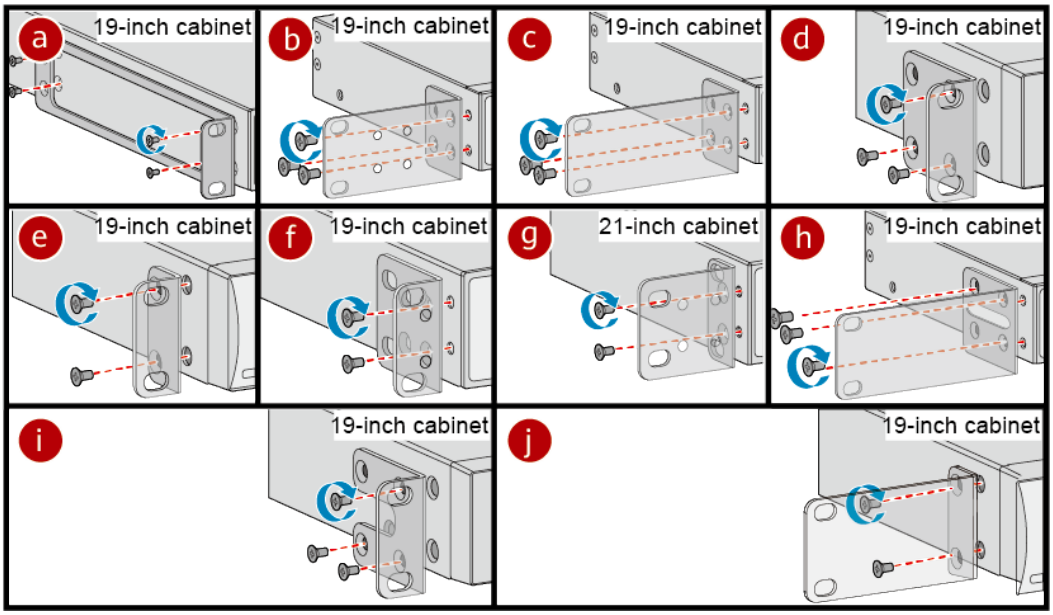
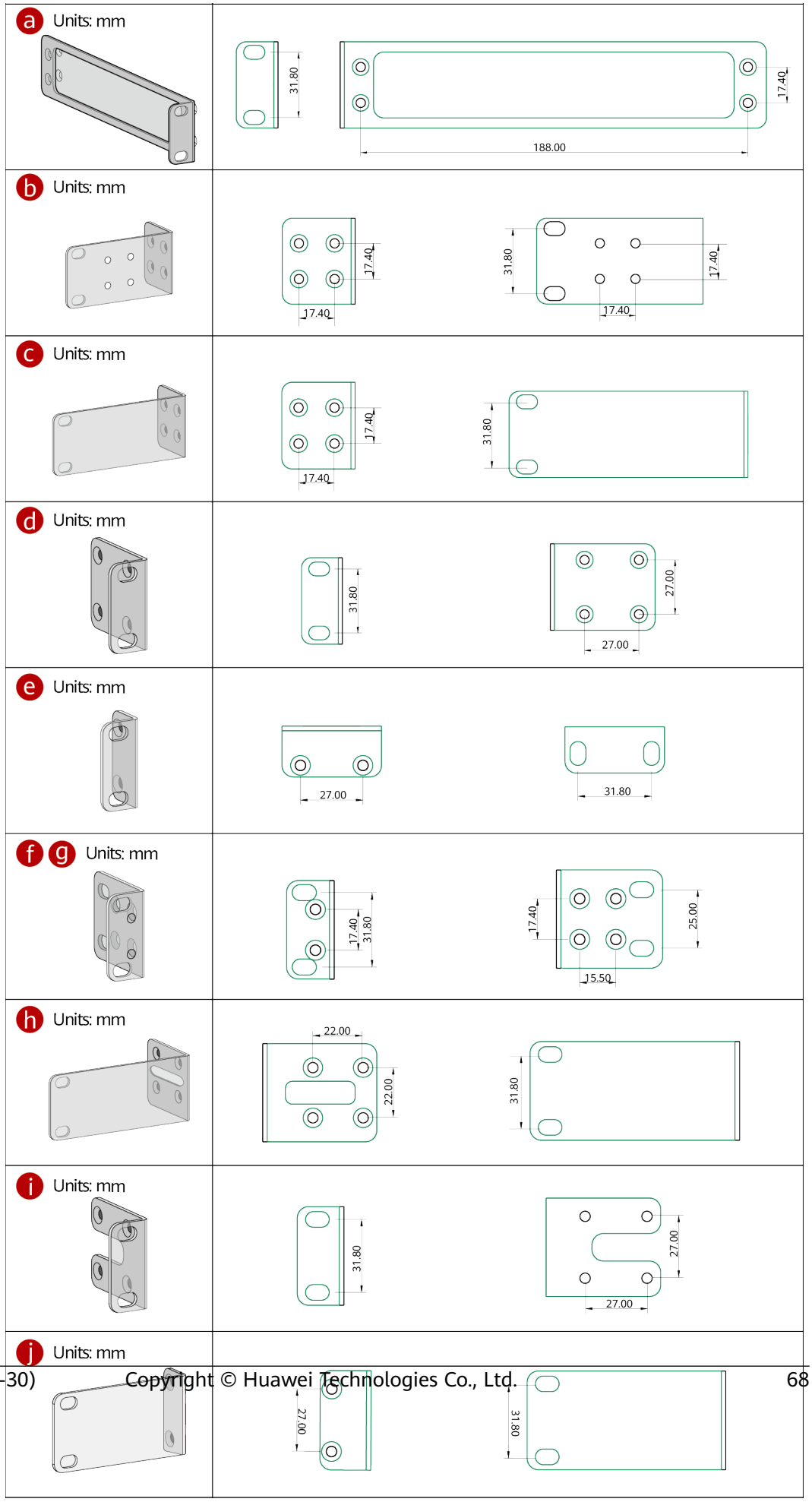


Figure 3-4 Spacing of mounting holes for different mounting ears



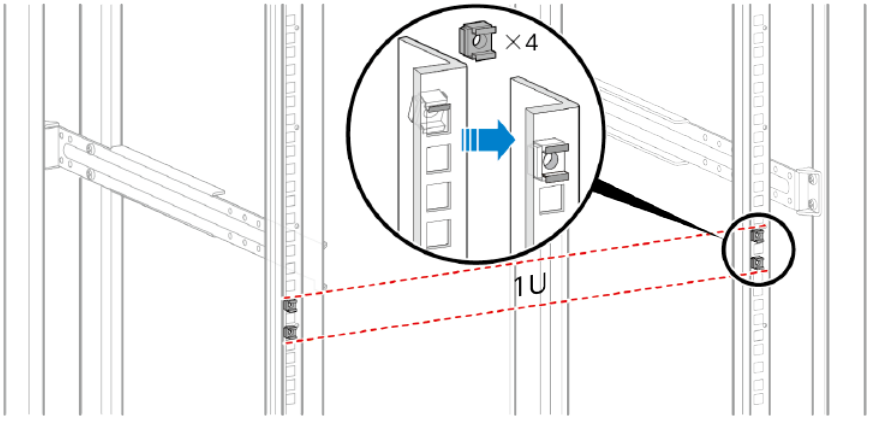
Step 3 Connect the ground cable to the switch. For details, see step 2 and step 3 in **3.5.8 Connecting the Ground Cable**.

NOTE

This step is optional. For switch models with the ground point at the left or right side of the chassis, connect the ground cable before mounting the switch in the cabinet or rack.

Step 4 Install floating nuts on the mounting rails of the cabinet.

Determine the installation position of the switch and use a flat-head screwdriver to install two floating nuts on each front mounting rail accordingly. Leave a gap of one mounting hole between the two floating nuts and ensure that they are level with those on the other rail.



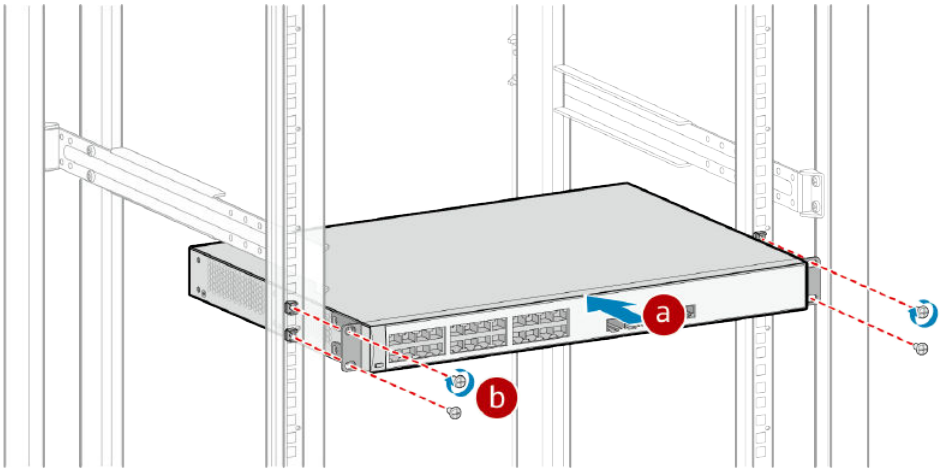
NOTE

Pay attention to the scale markings on the mounting rails because three adjacent mounting holes may not be 1 U.

Step 5 Install the switch in the cabinet. The methods for installing switches that use different front mounting brackets are the same. **Figure 3-5** shows an example.

1. Hold the bottom of the switch and align the holes on the front mounting brackets with the floating nuts on the front mounting rails.
2. Secure the mounting brackets to the mounting rails with M6 screws (two on each side) using a Phillips screwdriver.

Figure 3-5 Installing the switch in the cabinet



----End

3.5.2.2 Using Front and Rear Mounting Brackets

Context

This installation method applies to the following switches:

- S1730S-S48P4S-A
- Some S5700 models:
  - S5710-EI, S5720-SI (420-mm deep models), S5720-EI (420-mm deep models), S5720-HI, S5730-SI, S5730S-EI, S5730-HI, S5731-H, S5731-S (420-mm deep models), S5731S-S (420-mm deep models), S5731S-H, S5732-H, S5735-L (420-mm deep models), S5735S-L (420-mm deep models), S5735-S, S5735S-H, S5736-S, and S5735S-S
  - S5732-H-V2, S5735-L-V2 (420-mm deep models), S5735-S-V2, and S5735I-S-V2 (420-mm deep models)
- Some S6700 models:
  - S6720-SI, S6720S-SI, S6720-EI, S6720-HI, S6730-H (420-mm deep models), S6730S-H, S6730-S, S6735-S, and S6730S-S
  - S6732-H-V2

Follow these precautions before or during the installation:

- Ensure that the cabinet is stable and meets the requirements specified in **3.3.3 Checking the Cabinet or Rack**.
- Leave sufficient vertical space in the cabinet or rack for the switch.
- Leave at least 50 mm (2.0 in.) clearance around the switch for heat dissipation. Do not install a switch with its air intake vent facing or close to the air exhaust vent of other devices.
- To install multiple switches in one cabinet or rack, leave at least 1 U (1 U = 44.45 mm) between switches that use natural heat dissipation. For switches that use forced or intelligent air cooling, the recommended spacing between them is 1 U.
- Align the mounting brackets on the left and right mounting rails. If they are not on a horizontal line, forcibly mounting the switch may distort the chassis.
- If guide rails are installed in the cabinet, install only front mounting brackets on the switch.
- The distance data provided in this section is calculated theoretically and does not include tolerances.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Phillips screwdriver
- Flat-head screwdriver
- Measuring tape

- Floating nuts (eight per switch, purchased separately)
- M4 screws (eight or fourteen per switch)
- M6 screws (eight per switch, purchased separately)
- Front mounting brackets (two per switch)
- Rear mounting brackets (two per switch)
- Rear mounting bracket guide rails (two per switch)

NOTE

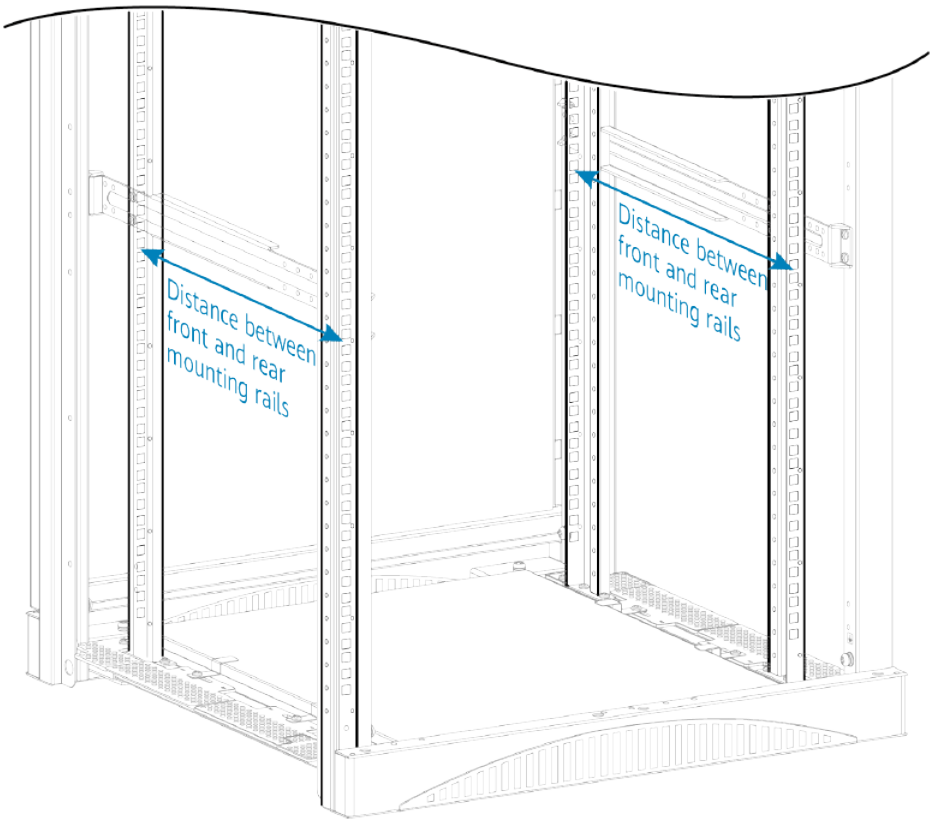
The M4 screws, front and rear mounting brackets, and rear mounting bracket guide rails are included in the installation accessory package.

When installing mounting ears, use screws of the same specifications as those configured by the manufacturer. Do not use screws that are too long to prevent damage to the device.

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

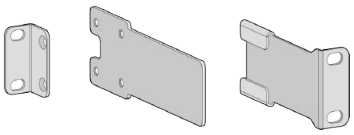
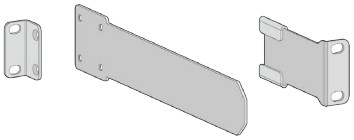
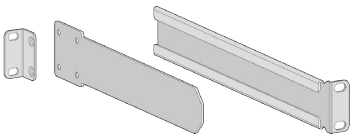
Step 2 Use a measuring tape to measure the distance between the front and rear mounting rails in the cabinet.



Step 3 Select front mounting brackets, rear mounting brackets, and rear mounting bracket guide rails based on the distance between the front and rear mounting rails in the cabinet. Use M4 screws to attach front and rear mounting brackets to each side of the switch.

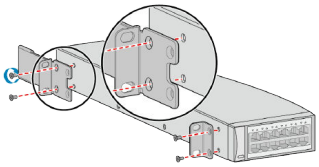
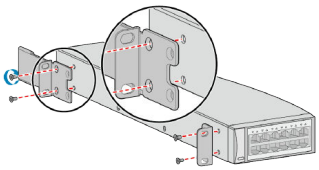
- **Applicable to the S5710-EI, S5720-SI (420-mm deep models), S5720-EI (420-mm deep models), S5720-HI, S5730-SI, S5730S-EI, S5730-HI, S6720-SI, S6720S-SI, and S6720-EI:**

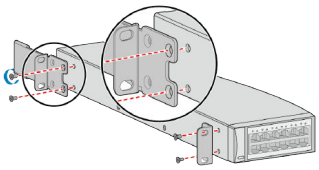
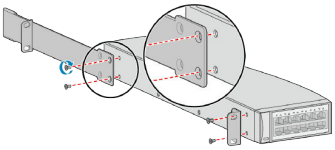
  Table 3-13 Front mounting brackets, rear mounting brackets, and rear mounting bracket guide rails (1)

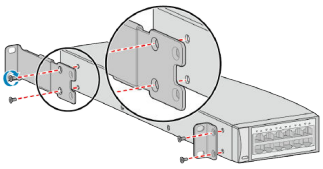
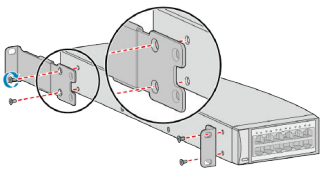
Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
	Standard front mounting bracket, rear mounting bracket, and rear mounting bracket guide rail
	Standard front mounting bracket, and custom rear mounting bracket and rear mounting bracket guide rail (part number: 21240538)
	Standard front mounting bracket, and custom rear mounting bracket and rear mounting bracket guide rail (part number: 21240537)

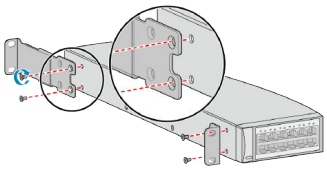
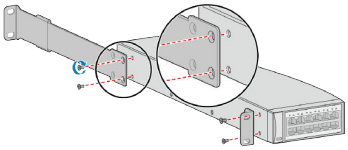
  The distance between the front and rear mounting rails in the cabinet determines the installation position of front mounting brackets, rear mounting brackets, and rear mounting bracket guide rails. See **Table 3-14**.

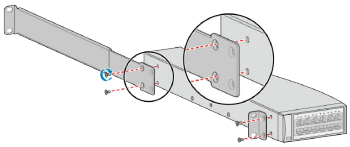
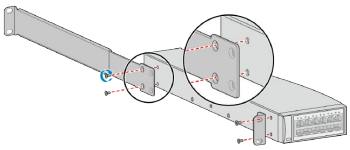
Table 3-14 Installation of the front mounting brackets, rear mounting brackets, and rear mounting bracket guide rails (1)

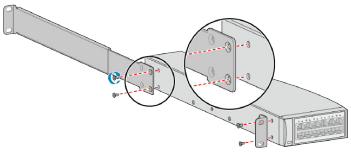
Distance Between Front and Rear Mounting Rails	Installation of the Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
335-380 mm (13.2-15.0 in.)		Use standard mounting brackets. If the distance between the front and rear mounting rails is 335-365 mm (13.2-14.4 in.), you can only install the front mounting brackets in the opposite direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 51 mm (2.0 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling.
365-415 mm (14.4-16.3 in.)		Use standard mounting brackets. Install front mounting brackets in the normal direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 19 mm (0.75 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling.

Distance Between Front and Rear Mounting Rails	Installation of the Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
378-442 mm (14.9-17.4 in.)		Use standard mounting brackets. Install front mounting brackets in the normal direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 19 mm (0.75 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling.
442-460 mm (17.4-18.1 in.)		Use custom mounting brackets (part number: 21240538). Install front mounting brackets in the normal direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 19 mm (0.75 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling. Only custom rear mounting brackets (part number: 21240538) can cover this distance range. However, there is a risk that the rear mounting brackets protrude from the mounting rails and reach the rear door of the cabinet.

Distance Between Front and Rear Mounting Rails	Installation of the Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
460-510 mm (18.1-20.1 in.)		Use standard mounting brackets or custom mounting brackets (part number: 21240538). If the distance between front and rear mounting rails is 460-495 mm (18.1-19.5 in.): – When standard mounting brackets are used, you can only install the front mounting brackets in the opposite direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 51 mm (2.0 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling. – When custom mounting brackets (part number: 21240538) are used, install front mounting brackets in the normal direction.
495-543 mm (19.5-21.4 in.)		Use standard mounting brackets. Install front mounting brackets in the normal direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 19 mm (0.75 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling.

Distance Between Front and Rear Mounting Rails	Installation of the Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
506-570 mm (20.0-22.4 in.)		Use standard mounting brackets. Install front mounting brackets in the normal direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 19 mm (0.75 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling.
570-662 mm (22.4-26.1 in.)		Use custom mounting brackets (part number: 21240538). Install front mounting brackets in the normal direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 19 mm (0.75 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling.

Distance Between Front and Rear Mounting Rails	Installation of the Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
662-800 mm (26.1-31.5 in.)		Use custom mounting brackets (part number: 21240537). If the distance between the front and rear mounting rails is 662-694 mm (26.1-27.3 in.), you can only install the front mounting brackets in the opposite direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 51 mm (2.0 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling.
694-830 mm (27.3-32.7 in.)		Use custom mounting brackets (part number: 21240537). Install front mounting brackets in the normal direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 19 mm (0.75 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling.

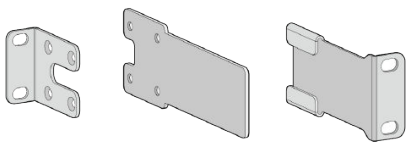
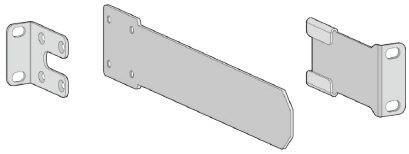
Distance Between Front and Rear Mounting Rails	Installation of the Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
708-855 mm (27.9-33.7 in.)		Use custom mounting brackets (part number: 21240537). Install front mounting brackets in the normal direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 19 mm (0.75 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling.

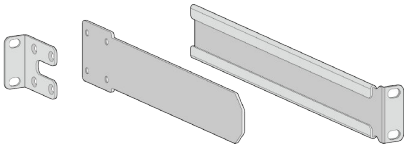
- **Applicable to:**

  S1730S-S48P4S-A, S5731-H, S5731-S (420-mm deep models), S5731S-S (420-mm deep models), S5731S-H, S5732-H, S5735-L (420-mm deep models), S5735S-L (420-mm deep models), S5735-S, S5735S-S, S5735S-H, S5736-S, S6730-S, S6730S-S, S6720-HI, S6730S-H, S6735-S, and S6730-H (420-mm deep models)

  S5732-H-V2, S5735-L-V2 (420-mm deep models), S5735-S-V2, S5735I-S-V2 (420-mm deep models), and S6732-H-V2

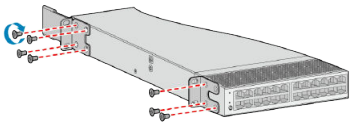
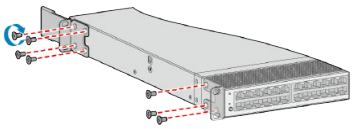
  Table 3-15 Front mounting brackets, rear mounting brackets, and rear mounting bracket guide rails (2)

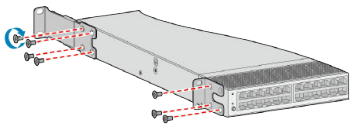
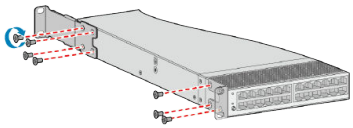
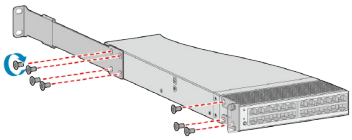
Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
	Standard front mounting bracket, rear mounting bracket, and rear mounting bracket guide rail
	Standard front mounting bracket, and custom rear mounting bracket and rear mounting bracket guide rail (part number: 21240538)

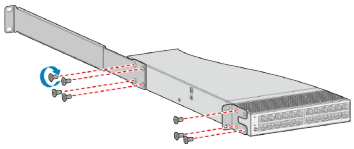
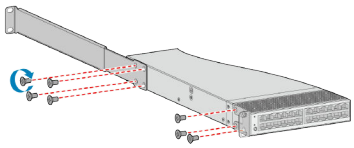
Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
	Standard front mounting bracket, and custom rear mounting bracket and rear mounting bracket guide rail (part number: 21240537)

The distance between the front and rear mounting rails in the cabinet determines the installation position of front mounting brackets, rear mounting brackets, and rear mounting bracket guide rails. See **Table 3-16**.

Table 3-16 Installation of the front mounting brackets, rear mounting brackets, and rear mounting bracket guide rails (2)

Distance Between Front and Rear Mounting Rails	Installation of the Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
310-351 mm (12.2-13.8 in.)		Use standard mounting brackets. You can only install the front mounting brackets in the opposite direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 64 mm (2.5 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling.
369-410 mm (14.5-16.1 in.)		Use standard mounting brackets. Install front mounting brackets in the normal direction (see figure).

Distance Between Front and Rear Mounting Rails	Installation of the Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
438-479 mm (17.2-18.9 in.)		Use standard mounting brackets or custom mounting brackets (part number: 21240538). – When standard mounting brackets are used, you can only install the front mounting brackets in the opposite direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 64 mm (2.5 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling. – When custom mounting brackets (part number: 21240538) are used, install front mounting brackets in the normal direction and install rear mounting bracket guide rails in the opposite direction.
497-538 mm (19.6-21.2 in.)		Use standard mounting brackets. Install front mounting brackets in the normal direction (see figure).
539-637 mm (21.2-25.1 in.)		Use custom mounting brackets (part number: 21240538). Install front mounting brackets in the normal direction (see figure).

Distance Between Front and Rear Mounting Rails	Installation of the Front Mounting Bracket, Rear Mounting Bracket, and Rear Mounting Bracket Guide Rail	Remarks
638-696 mm (25.1-27.4 in.)		Use custom mounting brackets (part number: 21240537). You can only install the front mounting brackets in the opposite direction (see figure). In this installation mode, the front panel of a switch protrudes from the mounting rails of the cabinet 64 mm (2.5 in.). Ensure that there is enough space between the front panel of the switch and the front cabinet door for cabling.
697-835 mm (27.4-32.9 in.)		Use custom mounting brackets (part number: 21240537). Install front mounting brackets in the normal direction (see figure).

NOTE

If the distance between the front and rear mounting rails in a cabinet is out of the ranges listed in **Table 3-14** and **Table 3-16**, use a tray together with the front mounting brackets.

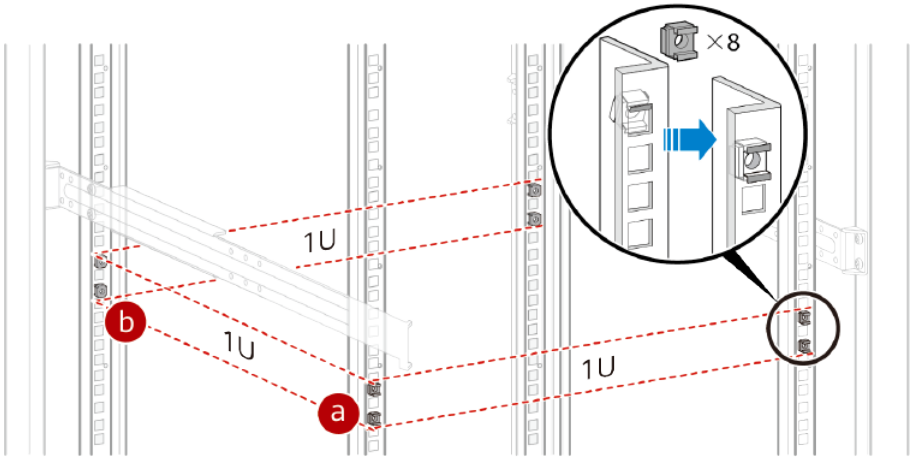
Step 4 Connect the ground cable to the switch. For details, see step 2 and step 3 in **3.5.8 Connecting the Ground Cable**.

NOTE

This step is optional. For switch models with the ground point at the left or right side of the chassis, connect the ground cable before mounting the switch in the cabinet or rack.

Step 5 Install floating nuts on the mounting rails of the cabinet.

1. Determine the installation position of the switch and use a flat-head screwdriver to install two floating nuts on each front mounting rail accordingly. Leave a gap of 1 U between the two floating nuts and ensure that they are level with those on the other front mounting rail.
2. Install two floating nuts on each rear mounting rail. Leave a gap of 1 U between the two floating nuts. Ensure that the lower floating nuts on the four mounting rails are level with one another.



Step 6 Install two rear mounting bracket guide rails on the rear mounting rails. The distance between the front and rear mounting rails determines the direction in which the guide rails should face. See **Table 3-14** and **Table 3-16**.

1. Align the holes on the guide rails with the floating nuts on the rear mounting rails.
2. Secure the guide rails to the mounting rails with M6 screws (two on each side) using a Phillips screwdriver.

Figure 3-6 Installing rear mounting bracket guide rails (using the distance of 497-538 mm between front and rear mounting rails as an example)

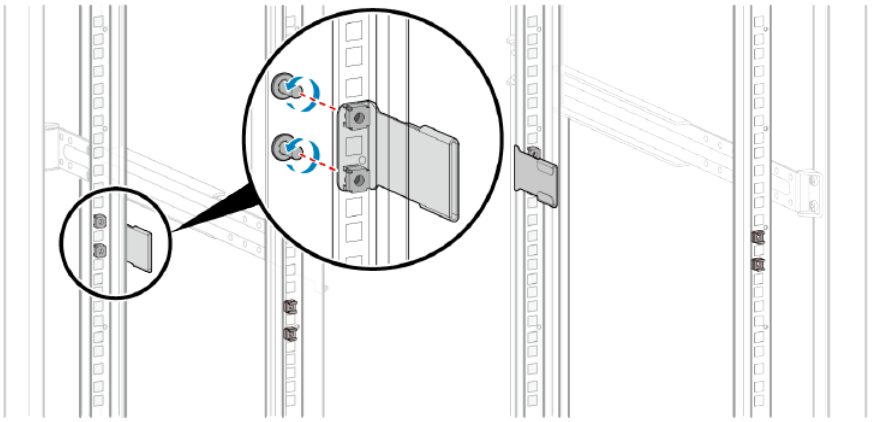
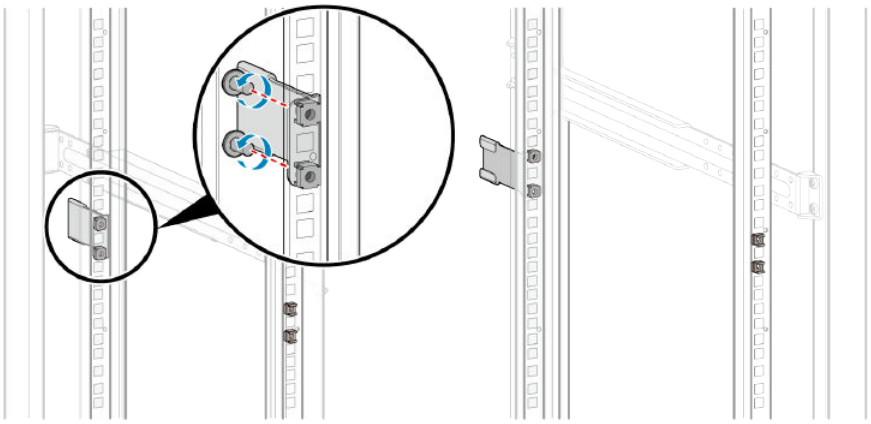


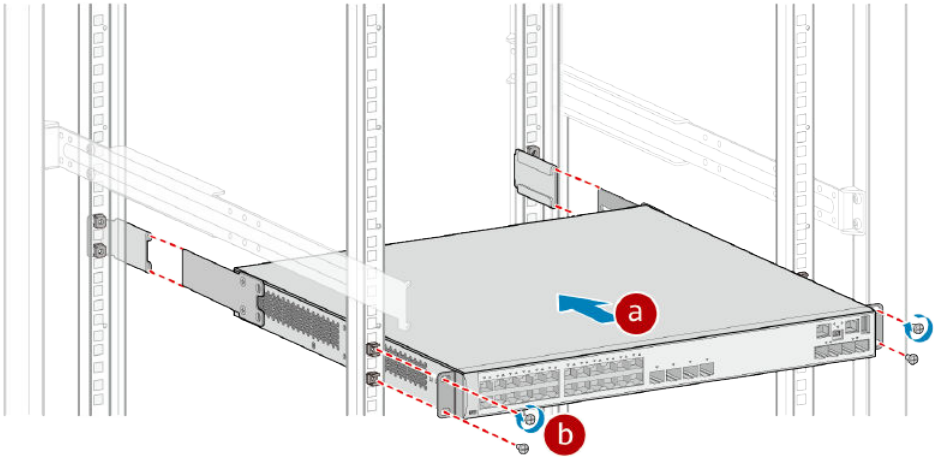
Figure 3-7 Installing rear mounting bracket guide rails (using the distance of 369-410 mm between front and rear mounting rails as an example)



Step 7 Install the switch in the cabinet. In **Figure 3-8**, the distance between front and rear mounting rails is 497-538 mm.

1. Align the rear mounting brackets with the rear mounting bracket guide rails. Then, gently slide the switch into the cabinet along the guide rails.
2. Align the holes on the front mounting brackets with the floating nuts on the front mounting rails, and secure each mounting bracket with two M6 screws using a Phillips screwdriver.

Figure 3-8 Installing the switch in the cabinet



----End

3.5.2.3 Using Front Mounting Brackets or Cable Management Frames and Rear Mounting Brackets

Context

This installation method applies to S5710-HI switches.

Follow these precautions before or during the installation:

- Ensure that the cabinet is stable and meets the requirements specified in **3.3.3 Checking the Cabinet or Rack**.
- Leave sufficient vertical space in the cabinet or rack for the switch.
- Leave at least 50 mm (2.0 in.) clearance around the switch for heat dissipation. Do not install a switch with its air intake vent facing or close to the air exhaust vent of other devices.
- To install multiple switches in one cabinet or rack, leave at least 1 U (1 U = 44.45 mm) between switches that use natural heat dissipation. For switches that use forced or intelligent air cooling, the recommended spacing between them is 1 U.
- Align the mounting brackets on the left and right mounting rails. If they are not on a horizontal line, forcibly mounting the switch may distort the chassis.
- To install an S5710-HI switch, install front mounting brackets or cable management frames and rear mounting brackets on the switch. If guide rails are installed in the cabinet, install only front mounting brackets or cable management frames on the switch.
- If all ports on the switch need to be used, many cables will be connected to the switch. Cable management frames are recommended in this case.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Phillips screwdriver
- Flat-head screwdriver
- Measuring tape
- Floating nuts (eight per switch, purchased separately)
- M4 screws (sixteen per switch)
- M6 screws (eight per switch, purchased separately)
- Front mounting brackets or cable management frames (two per switch)
- Rear mounting brackets (two per switch)
- Rear mounting bracket guide rails (two per switch)

NOTE

The M4 screws, front and rear mounting brackets, cable management frames, and rear mounting bracket guide rails are included in the installation accessory package.

When installing mounting ears, use screws of the same specifications as those configured by the manufacturer. Do not use screws that are too long to prevent damage to the device.

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 2 Use M4 screws to attach front mounting brackets or cable management frames and rear mounting brackets to the switch. **Figure 3-9** and **Figure 3-10** show the mounting brackets and cable management frames of an S5710-HI and associated installation methods.

Figure 3-9 Installing front and rear mounting brackets

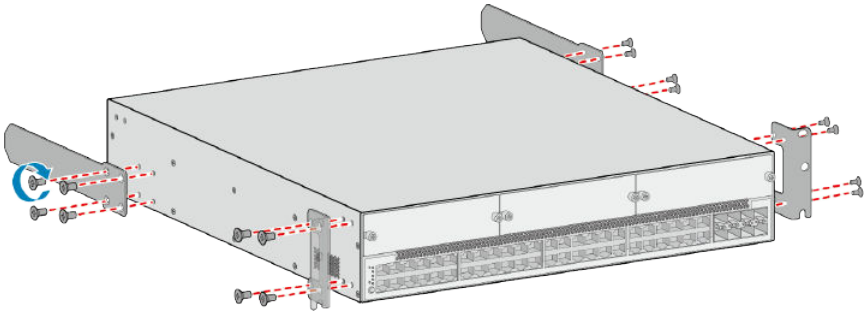
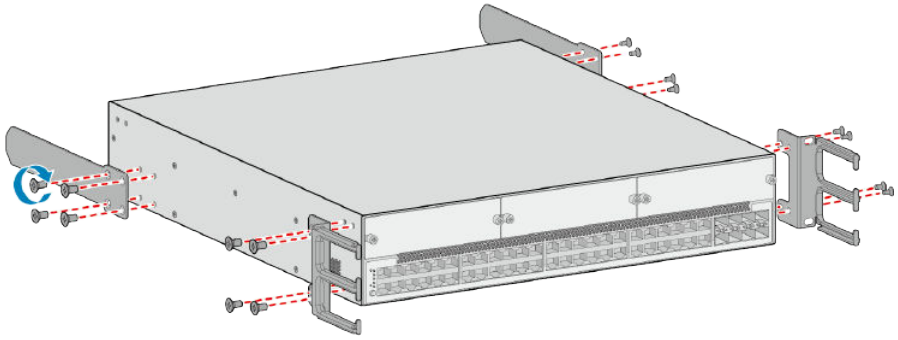


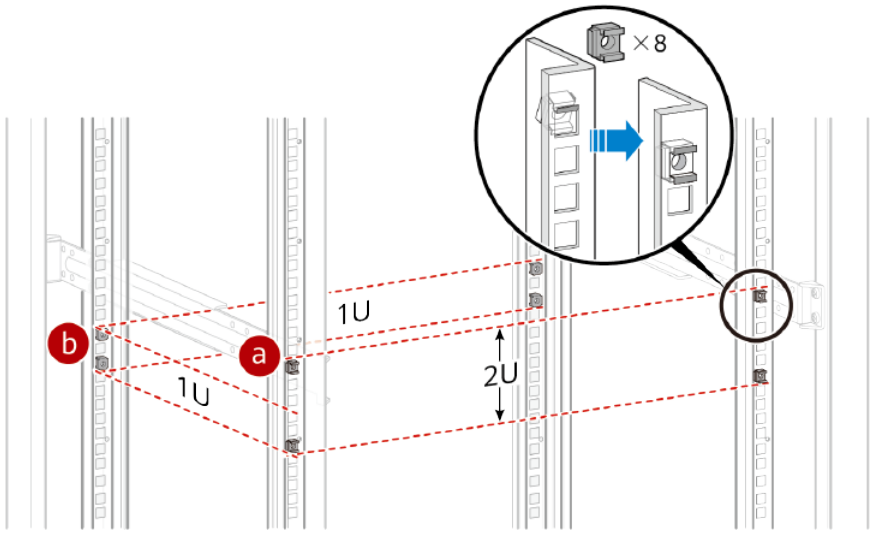
Figure 3-10 Installing cable management frames and rear mounting brackets



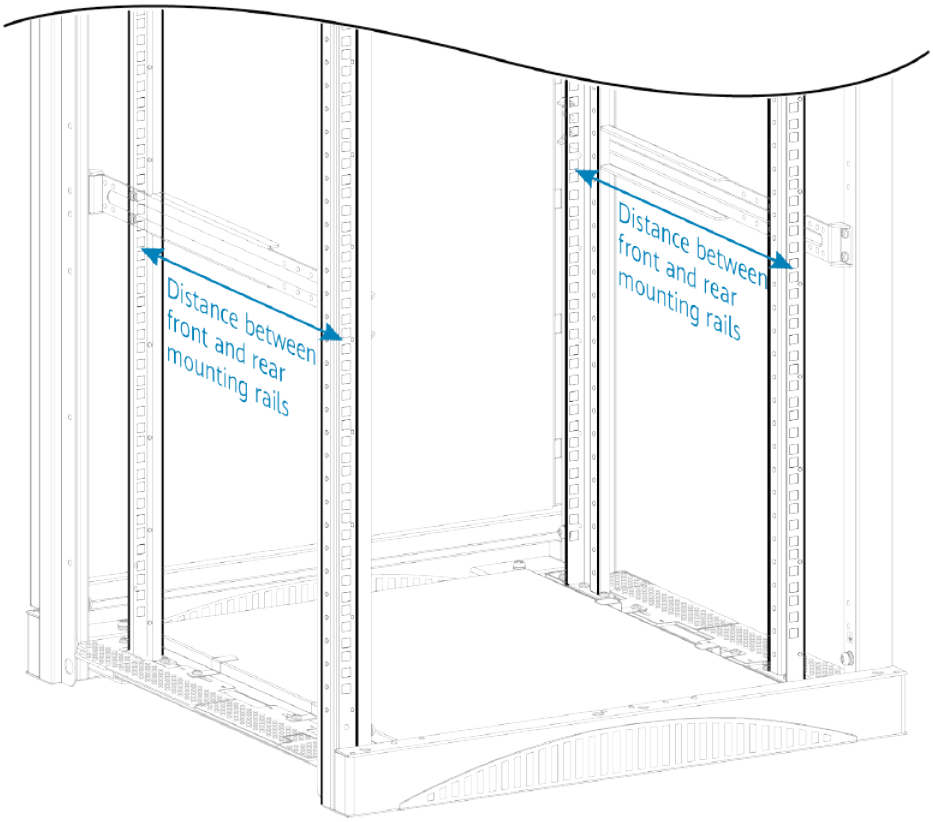
Step 3 Install floating nuts on the mounting rails of the cabinet. See **Figure 3-11**.

1. Determine the installation position of the switch and use a flat-head screwdriver to install two floating nuts on each front mounting rail accordingly. Leave a gap of 2 U between the two floating nuts and ensure that they are level with those on the other front mounting rail.
2. Install two floating nuts on each rear mounting rail. Leave a gap of 1 U between the two floating nuts. Ensure that the lower floating nuts on the four mounting rails are level with one another.

Figure 3-11 Installing floating nuts



Step 4 Use a measuring tape to measure the distance between the front and rear mounting rails.



Step 5 Install two rear mounting bracket guide rails on the rear mounting rails. The distance between the front and rear mounting rails determines the direction in which the guide rails should face. See **Figure 3-12** and **Figure 3-13**.

1. Align the holes on the guide rails with the floating nuts on the rear mounting rails.
2. Secure the rear mounting bracket guide rails with M6 screws (two on each side) using a Phillips screwdriver.

Figure 3-12 Installing rear mounting bracket guide rails (545-655 mm [21.5-25.8 in.] between front and rear mounting rails)

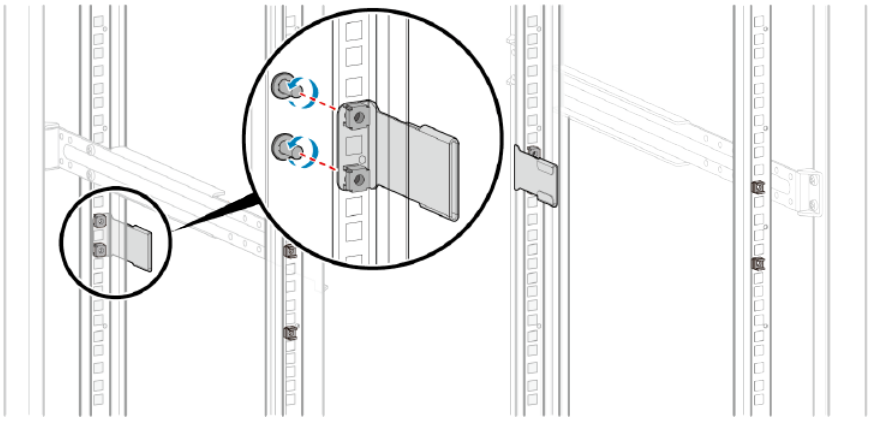
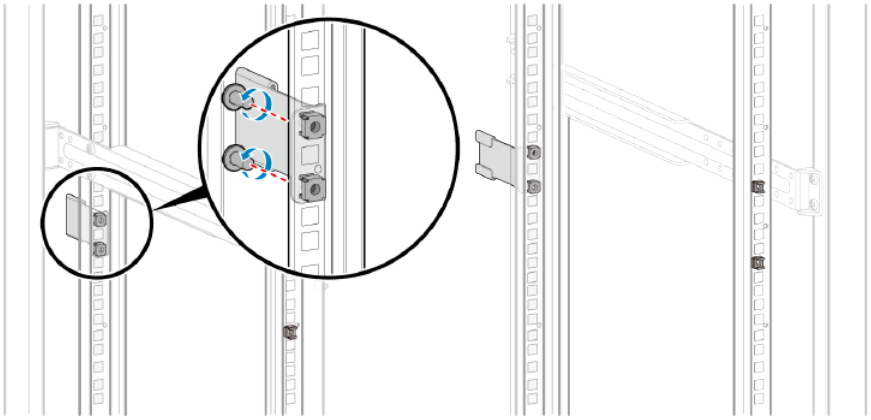


Figure 3-13 Installing rear mounting bracket guide rails (418-528 mm [16.5-20.8 in.] between front and rear mounting rails)

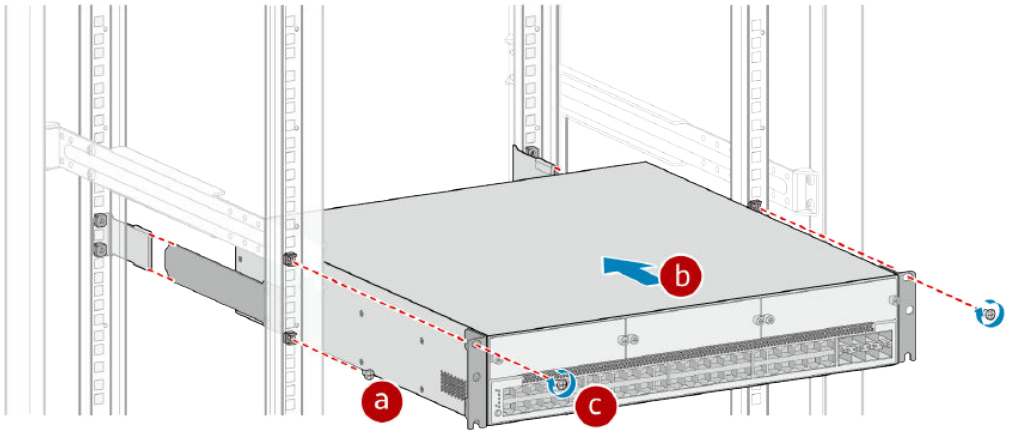


Step 6 Install the switch in the cabinet.

- If you have installed front and rear mounting brackets on the switch, perform the following steps:
  a. Place M6 screws on the two lower floating nuts on the front mounting rails. Reserve a clearance between the top of the screws and the floating nuts for installing front mounting brackets.
  b. Align the rear mounting brackets with the rear mounting bracket guide rails. Then, gently slide the switch into the cabinet along the guide rails.
  c. Align the holes on the front mounting brackets with floating nuts on the front mounting rails, place the recesses at the bottom of the front mounting brackets on the M6 screws, and then use a Phillips screwdriver to tighten the M6 screws.

  In **Figure 3-14**, the distance between front and rear mounting rails is 545-655 mm (21.5-25.8 in.).

  Figure 3-14 Supporting the switch using front and rear mounting brackets



- If you have installed cable management frames and rear mounting brackets on the switch, perform the following steps:

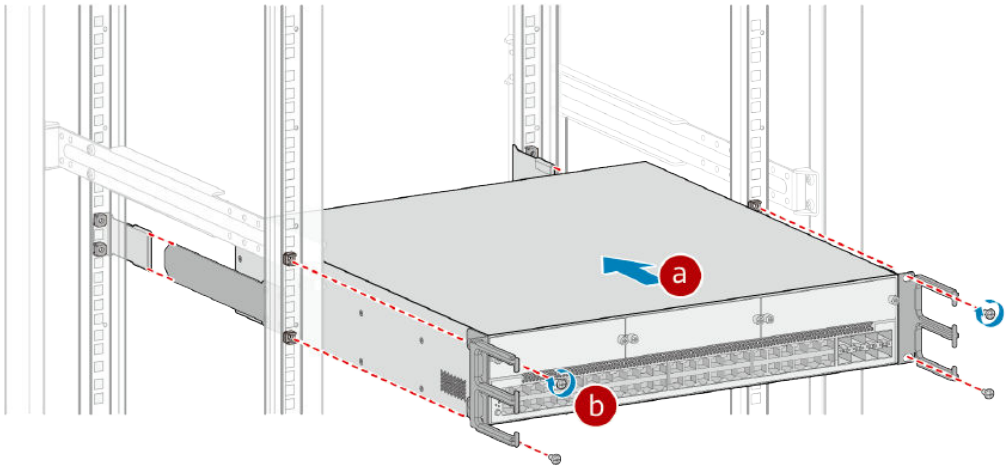
a. Align the rear mounting brackets with the rear mounting bracket guide rails. Then, gently slide the switch into the cabinet along the guide rails.
b. Align the holes on the cable management frames with the floating nuts on the front mounting rails, and secure the cable management frames with M6 screws using a Phillips screwdriver.

NOTICE

Do not hold the cable management frames to move the switch as doing so may damage the cable management frames.

In **Figure 3-15**, the distance between front and rear mounting rails is 545-655 mm (21.5-25.8 in.).

Figure 3-15 Supporting the switch using cable management frames and rear mounting brackets



----End

3.5.2.4 Using Horizontal Rack-mounting Kit

Context

This installation method applies to the S5735I-S8T4SN-V2, S5735I-S8T4XN-V2, S5735I-S8T4XN-T-V2, and S5735I-S8U4XN-V2.

NOTICE

When multiple S5735I-S8T4SN-V2 switches are installed on the same horizontal rack-mounting kit, there must be a clearance of at least 88 mm between two neighboring switches. The clearance above a switch must be at least two times the switch's height and that below must be greater than or equal to the switch's height.

When multiple S5735I-S8T4XN-V2, S5735I-S8T4XN-T-V2, and S5735I-S8U4XN-V2 switches are installed on the same horizontal rack-mounting kit, there must be a clearance of at least 66 mm between two neighboring switches. The clearance above a switch must be at least two times the switch's height and that below must be greater than or equal to the switch's height.

Make sure the following prerequisites are met before the installation:

- The cabinet is well fixed.
- The switch installation position in the cabinet is determined and arranged properly.
- The switch to be installed is available and located near the cabinet for convenient movement.

Tools and Accessories

- Phillips screwdriver
- Flat-head screwdriver
- Floating nuts
- M6 screws
- Horizontal rack-mounting kit

NOTE

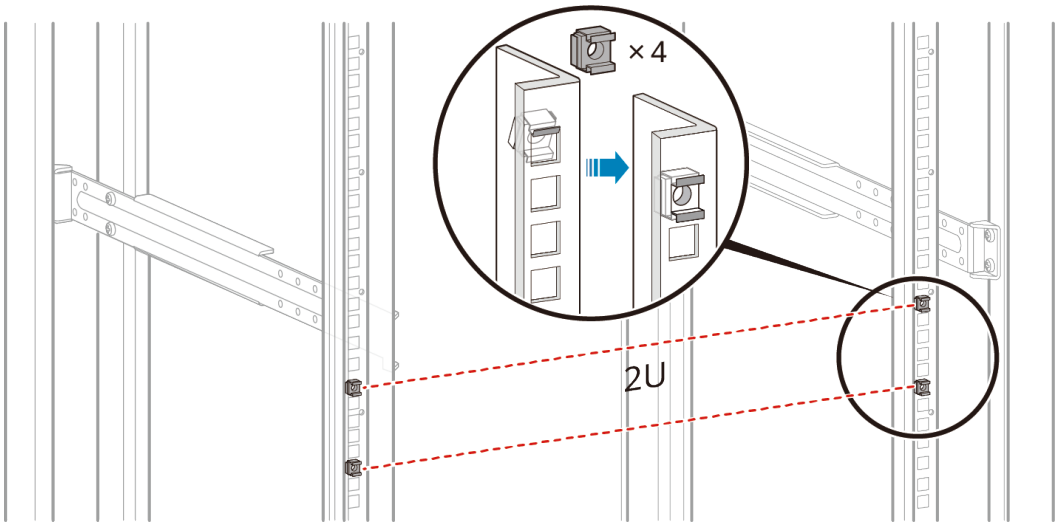
The horizontal rack-mounting kit (part number: 21241946), floating nuts, and M6 screws are not included in the installation accessory package and needs to be purchased separately.

Procedure

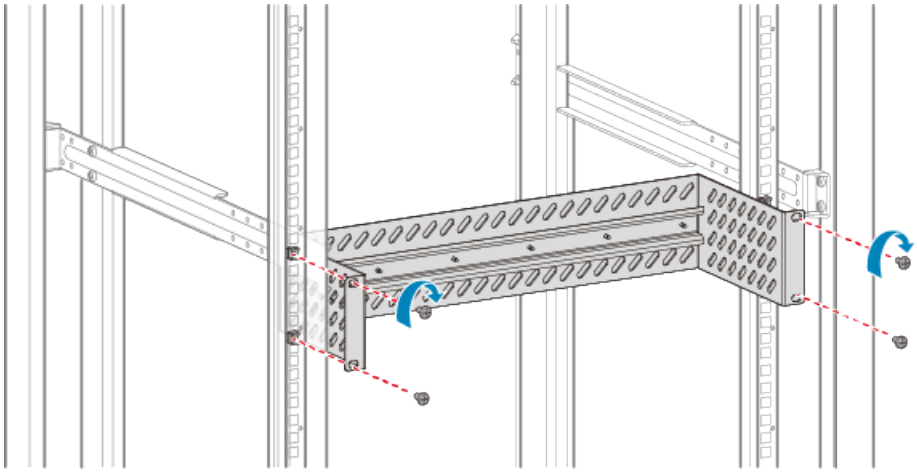
Step 1 Install two floating nuts on each front mounting rail of the cabinet. Leave four mounting holes between the two floating nuts on the same mounting rail.

NOTE

- The length of six adjacent mounting holes may not be 2 U. Observe the scale ticks on the mounting rails when installing floating nuts.
- You can use a flat-head screwdriver to install floating nuts.



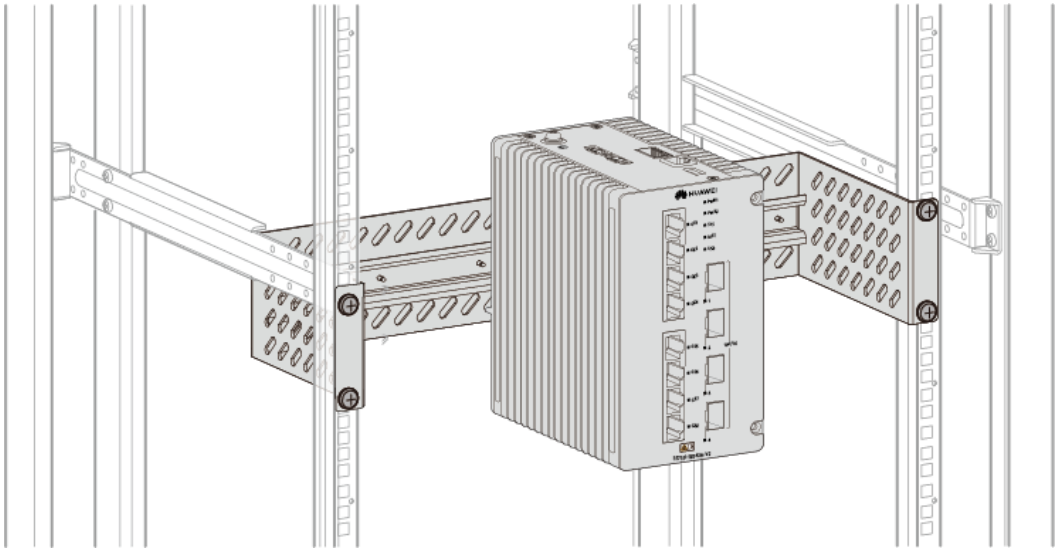
Step 2 Attach the brackets of the horizontal rack-mounting kit on the front mounting rails of the cabinet and insert M6 screws in the mounting holes. Use a Phillips screwdriver to tighten the lower M6 screws and then the upper ones to fix the rack-mounting kit.



Step 3 Place the rear panel of the switch in front of the DIN rail on the rack-mounting kit and ensure that the DIN rail fits in between the fixture near the top of the switch and the spring latch near the bottom.

Step 4 Make the switch incline forward with the bottom away from the DIN rail, and place the fixture at the rear of the switch on the top of the DIN rail.

Step 5 Slowly push the switch toward the DIN rail to make the spring latch at the rear of the switch move down. The spring latch then bounces back to fix the switch on the DIN rail.



NOTE

If the spring latch is too tight to move down, you can use a flat-head screwdriver to hold down the spring latch during the installation.

For details about how to install a switch on a DIN rail, see **3.5.7 Scenario: DIN Rail Mounting**.

----End

3.5.3 Scenario: Desk Mounting

Context

This installation method applies to all fixed switches except the following models:

- S5710-HI, S6700-EI, and S6720-HI
- S5735I-S8T4SN-V2, S5735I-S8T4XN-V2, S5735I-S8T4XN-T-V2, and S5735I-S8U4XN-V2
- S1730S-L4P1T-BUA, S1730S-L8LP2T-BUA, and S1730S-L8P2T-BUA

Follow these precautions:

- Ensure that the desk is flat, sturdy, and properly grounded.
- Leave at least 50 mm (2.0 in.) clearance around the switch for heat dissipation. Do not install a switch with its air intake vent facing or close to the air exhaust vent of other devices.
- Do not place any objects on the switch.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Rubber pads (four per switch)
- Security lock (optional, purchased separately)

NOTE

No rubber pads are delivered with a switch that does not support desk mounting.

For some models, rubber pads have been installed before delivery. In this case, you do not need to install additional rubber pads.

Procedure

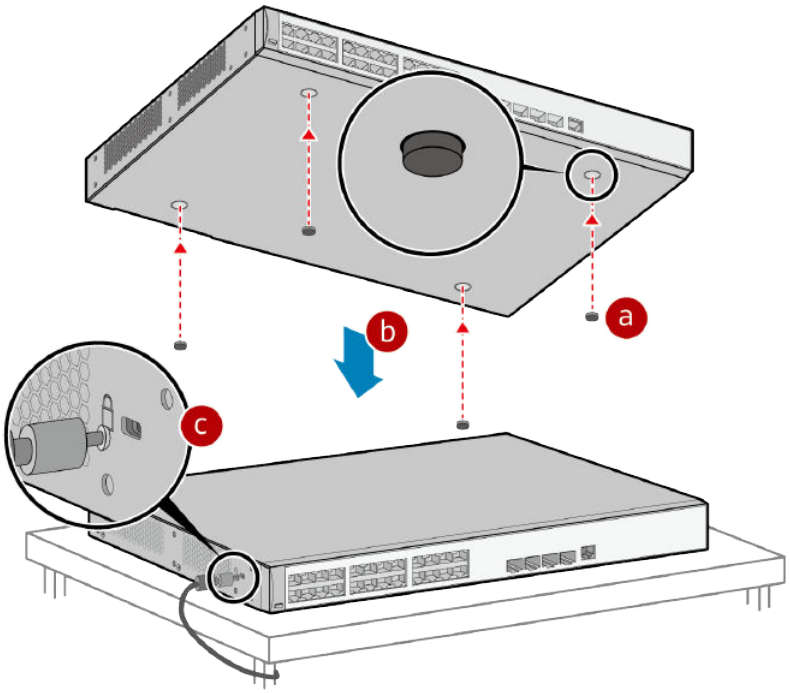
Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 2 Attach the rubber pads to the imprinted round areas at the bottom of the switch. See **a** in **Figure 3-16**.

Step 3 Place the switch gently on the desk. See **b** in **Figure 3-16**.

Step 4 (Optional) Install a security lock to lock the switch to the desk. See **c** in **Figure 3-16**.

Figure 3-16 Installing a switch on a desk



NOTE

To determine whether a security lock can be installed, check for the security slot marked with a padlock icon on the chassis. See **Figure 3-17**. If there is no security slot on the switch, it means that the security lock is not supported.

The security slot is 7 mm long and 3 mm wide. The maximum radius of its four round corners is 1 mm.

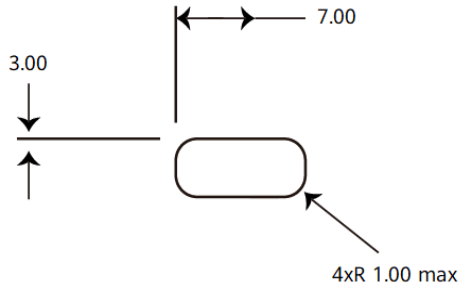
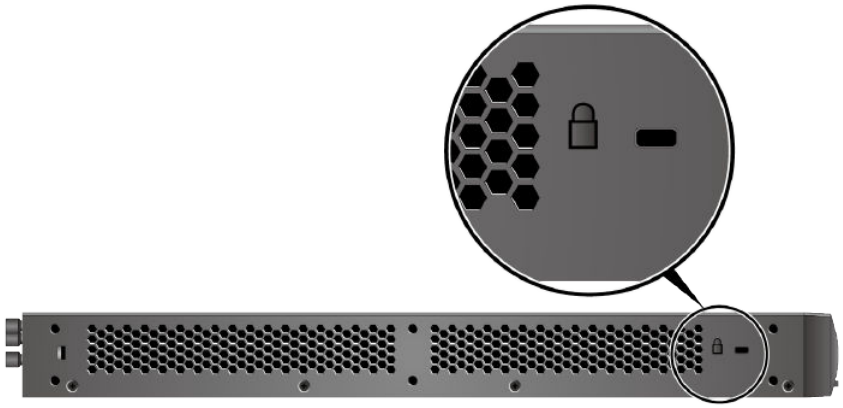


Figure 3-17 Security slot marked with padlock icon



----End

3.5.4 Scenario: Wall Mounting

3.5.4.1 Mounting a Switch on the Wall Using Expansion Bolts (With Mounting Brackets)

Context

This installation method applies to all switch models except the S3700-HI, S5700-HI, S6720S-EI, and 420 mm deep switches.

DANGER

Before drilling holes on a wall, make sure that no power cables are hidden in the wall.

NOTICE

- For a wall-mounted switch, take water-proofing and dust-proofing measures to protect the switch from damage caused by water and dust.
- The S5720-16X-PWH-LI-AC, and S6730 (220-mm deep models) need to be installed with the port side facing up.
- Ensure that there are no flammable or explosive materials nearby the switch.
- Ensure that the switch has at least 100 mm (3.9 in.) free space in all directions.
- When installing a device on a wall using mounting brackets, reserve proper spacing (59 mm at most) between the device top and the wall.

Tools and Accessories

- Protective gloves
- ESD wrist strap or ESD gloves
- Phillips screwdriver
- Hammer drill (with ϕ8 drill bit)
- Adjustable wrench
- Marker
- M4 screws (four or six, depending on the switch model. See **Figure 3-18**.)
- M6 expansion bolts (four per switch, purchased separately)
- Front mounting brackets (two per switch)

NOTE

The M4 screws and front mounting brackets are included in the installation accessory package.

When installing mounting ears, use screws of the same specifications as those configured by the manufacturer. Do not use screws that are too long to prevent damage to the device.

Procedure

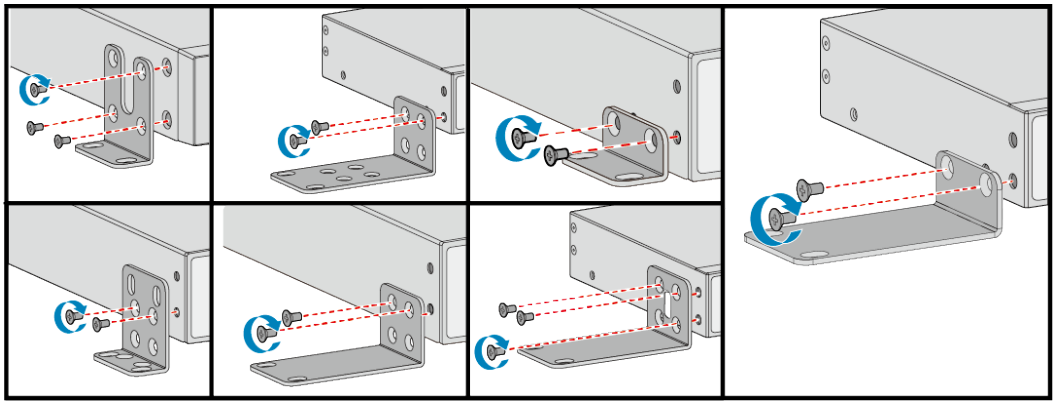
Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 2 Use M4 screws to attach a front mounting bracket to each side of the switch. The type of mounting brackets and the installation method differ depending on switch model. **Figure 3-18** shows the installation methods of different mounting brackets.

NOTE

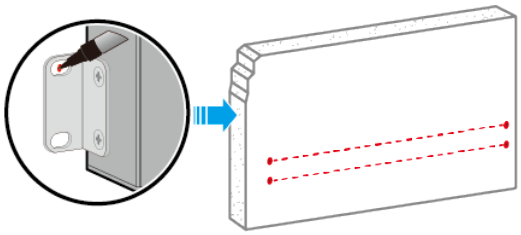
If the mounting ear is labeled R/L, install the mounting ear labeled R on the right side of the device, and install the mounting ear labeled L on the left side of the device. In addition, the mounting ear marked with R has a ground hole for connecting a ground cable to provide the grounding function.

Figure 3-18 Installing mounting brackets



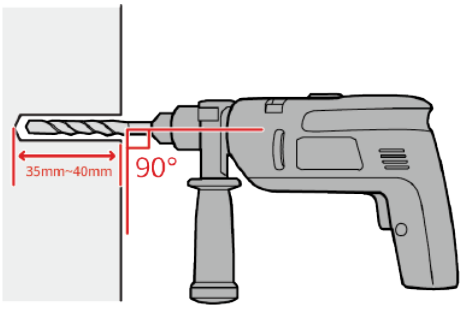
Step 3 Place the switch against the wall and mark the drilling positions through the holes of the mounting brackets. See **Figure 3-19**.

Figure 3-19 Marking the drilling positions

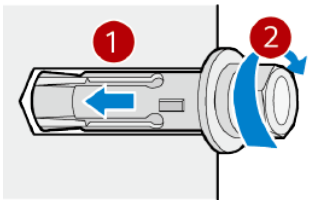


Step 4 Install M6 expansion bolts in the wall.

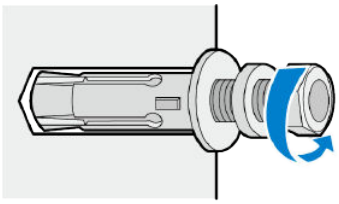
1. Use a hammer drill (with ϕ8 drill bit) to drill holes in the marked positions.



2. Insert M6 expansion bolts into the holes and tighten the nuts to secure the bolts in place.



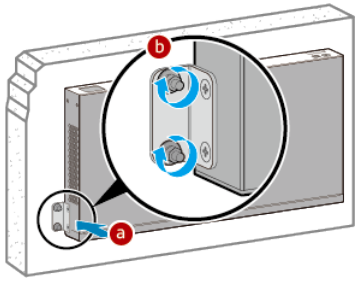
3. Loosen and remove the nuts from M6 expansion bolts.



Step 5 Mount the switch on the wall.

1. Align the holes on the mounting brackets with the M6 expansion bolts and push the brackets onto the M6 expansion bolts.
2. Fasten the nuts on the M6 expansion bolts.

Figure 3-20 Wall mounting a switch



----End

3.5.4.2 Mounting a Switch on the Wall Using Expansion Bolts (Without Mounting Brackets)

Context

This installation method applies to the S1700-8-AC, S1700-8G-AC, S1730S-L8T-A, and S1730S-L8T-MA.

DANGER

Before drilling holes on a wall, make sure that no power cables are hidden in the wall.

NOTICE

- For a wall-mounted switch, take water-proofing and dust-proofing measures to protect the switch from damage caused by water and dust.
- Ensure that there are no flammable or explosive materials nearby the switch.
- Ensure that the switch has at least 100 mm (3.9 in.) free space in all directions.

Tools and Accessories

- Hammer drill (with ϕ6 drill bit)

- Expansion Bolts (two)
- Screws (two)

NOTE

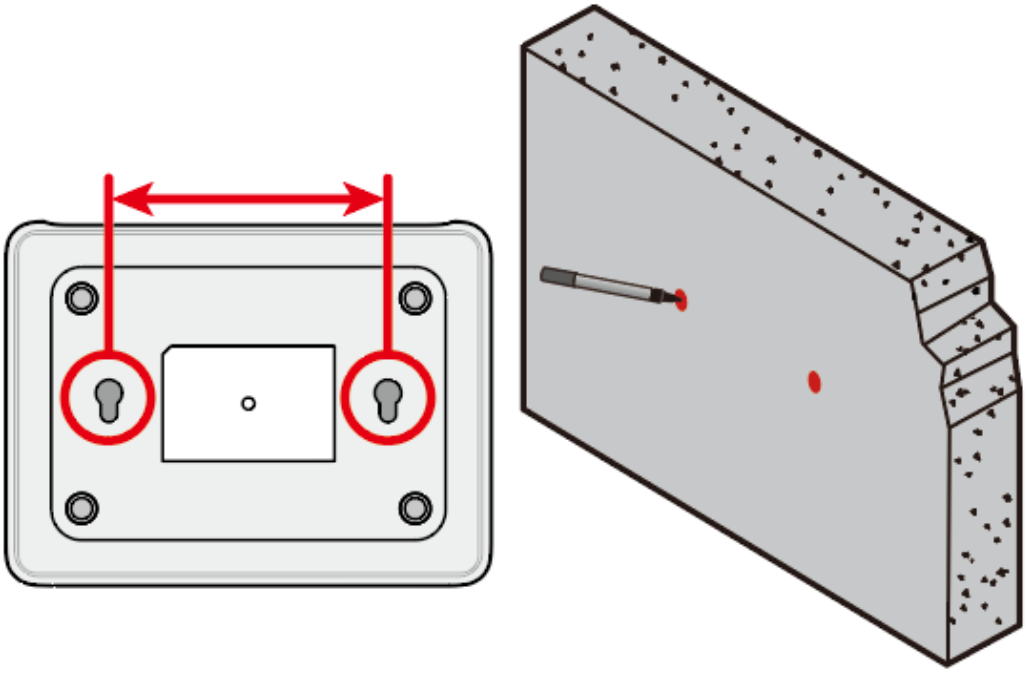
The Screws and expansion bolts need to be purchased separately.

Procedure

Step 1 Measure the distance between the two mounting holes on the rear panel of the switch.

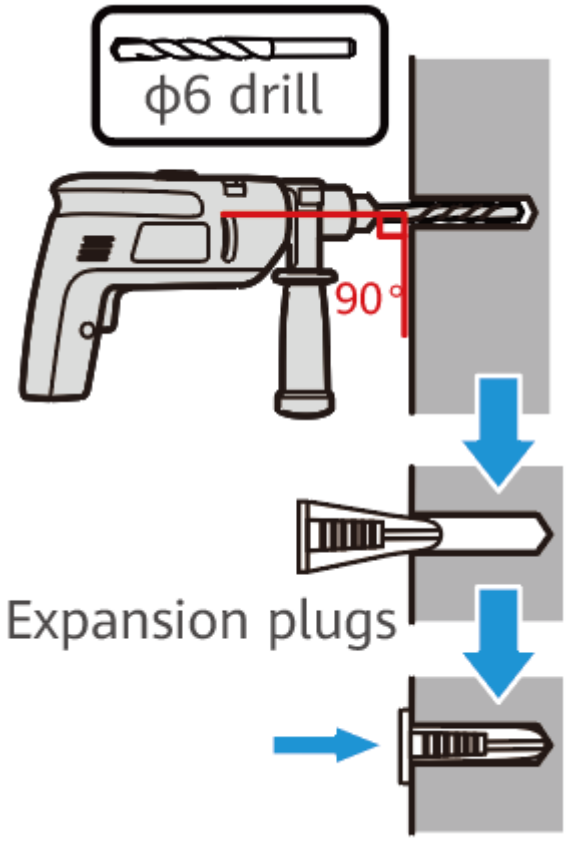
Step 2 Mark the holes accordingly on the wall. See **Figure 3-21**.

Figure 3-21 Marking the drilling positions



Step 3 Use a hammer drill (with ϕ6 drill bit) to drill holes, and fix expansion bolts on the wall.

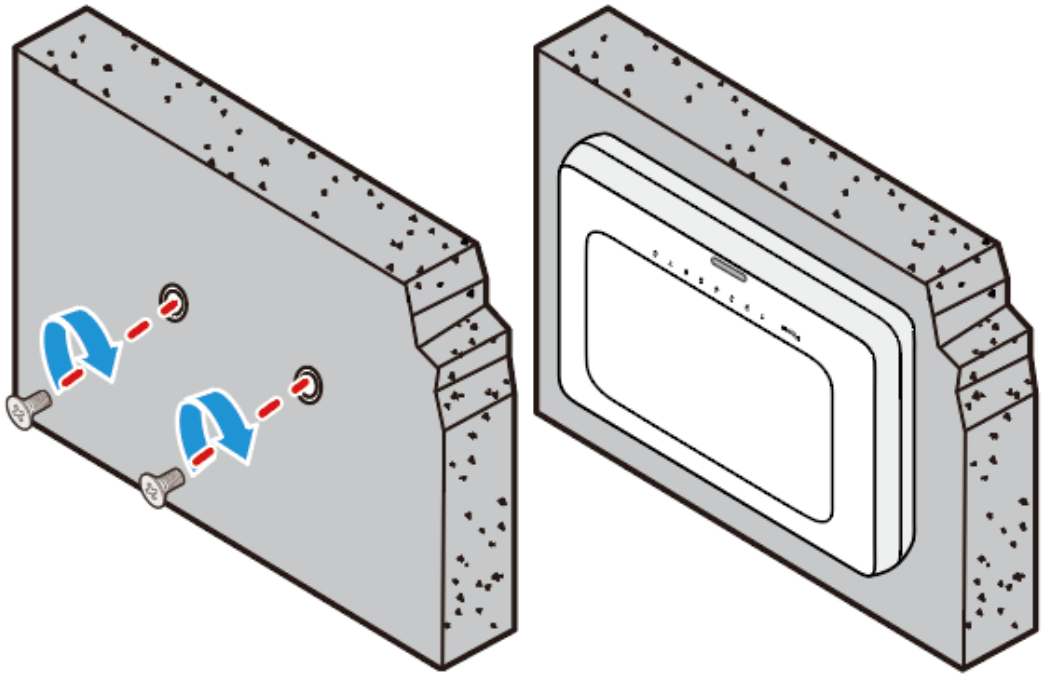
Figure 3-22 Drilling holes in marked positions



Step 4 Mount the switch on the wall.

1. Insert the M4 screws into the expansion bolts on the wall.
2. Mount the device onto the M4 screws.

Figure 3-23 Wall mounting a switch



----End

3.5.5 Scenario: Top Wall Mounting

Context

Only the S5720-16X-PWH-LI-AC can be installed on the top wall.

DANGER

Before drilling holes on a wall, make sure that no power cables are hidden in the wall.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Phillips screwdriver
- Hammer drill (with ϕ8 drill bit)
- Adjustable wrench
- M6 expansion bolts (four for each switch)
- M4 screws (six for each switch)
- Top-mounting brackets (two for each switch)

NOTE

The M4 screws are included in the installation accessory package, whereas the M6 expansion bolts and top-mounting brackets need to be purchased separately.

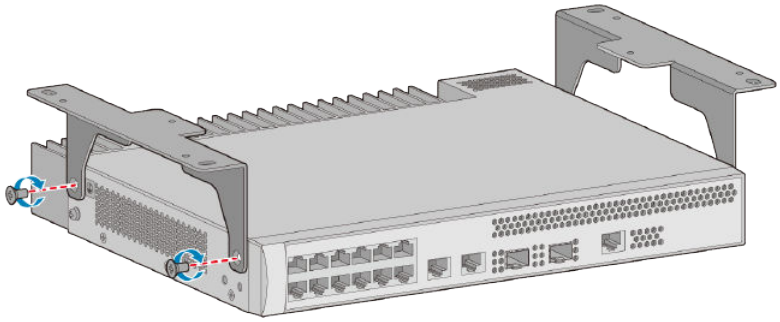
When installing mounting ears, use screws of the same specifications as those configured by the manufacturer. Do not use screws that are too long to prevent damage to the device.

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

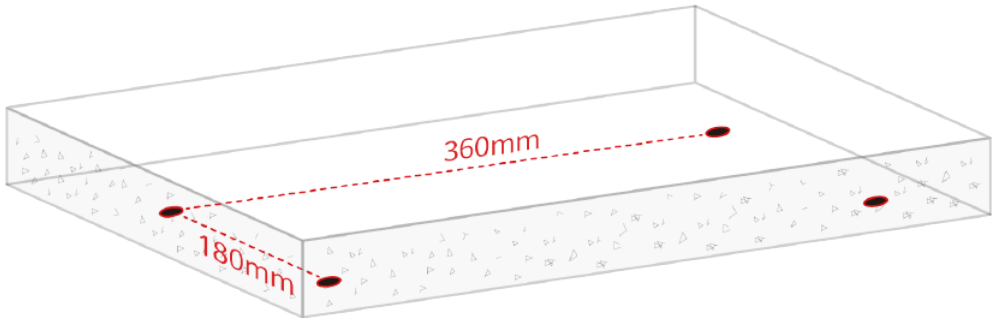
Step 2 Use M4 screws to attach a top-mounting bracket to each side of the switch.

Figure 3-24 Installing top-mounting brackets



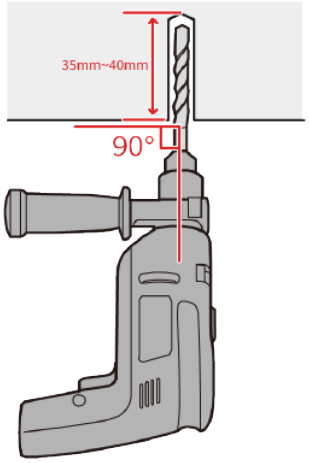
Step 3 Use a marker to mark the positions of mounting holes according to the size of the switch and positions of the top-mounting brackets. See **Figure 3-25**.

Figure 3-25 Marking mounting holes

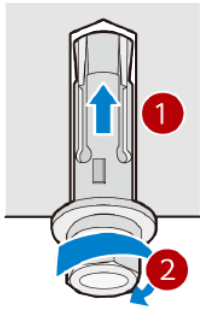


Step 4 Install M6 expansion bolts on the top wall.

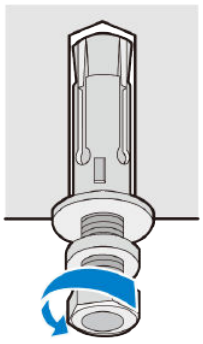
1. Use a hammer drill (with ϕ8 drill bit) to drill holes in the marked positions.



2. Insert M6 expansion bolts into the holes and tighten the nuts to secure the bolts in place.



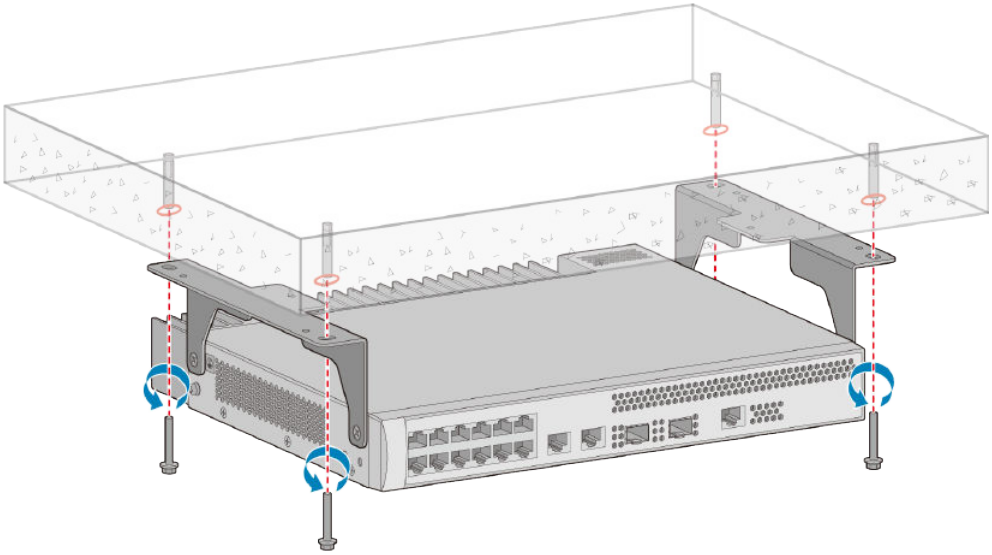
3. Loosen and remove the nuts from M6 expansion bolts.



Step 5 Mount the switch on the top wall.

1. Align the holes on the top-mounting brackets with the M6 expansion bolts and push the brackets onto the M6 expansion bolts.
2. Fasten the nuts on the M6 expansion bolts.

Figure 3-26 Mounting the switch on the top wall



----End

3.5.6 Scenario: Network Box Mounting

Context

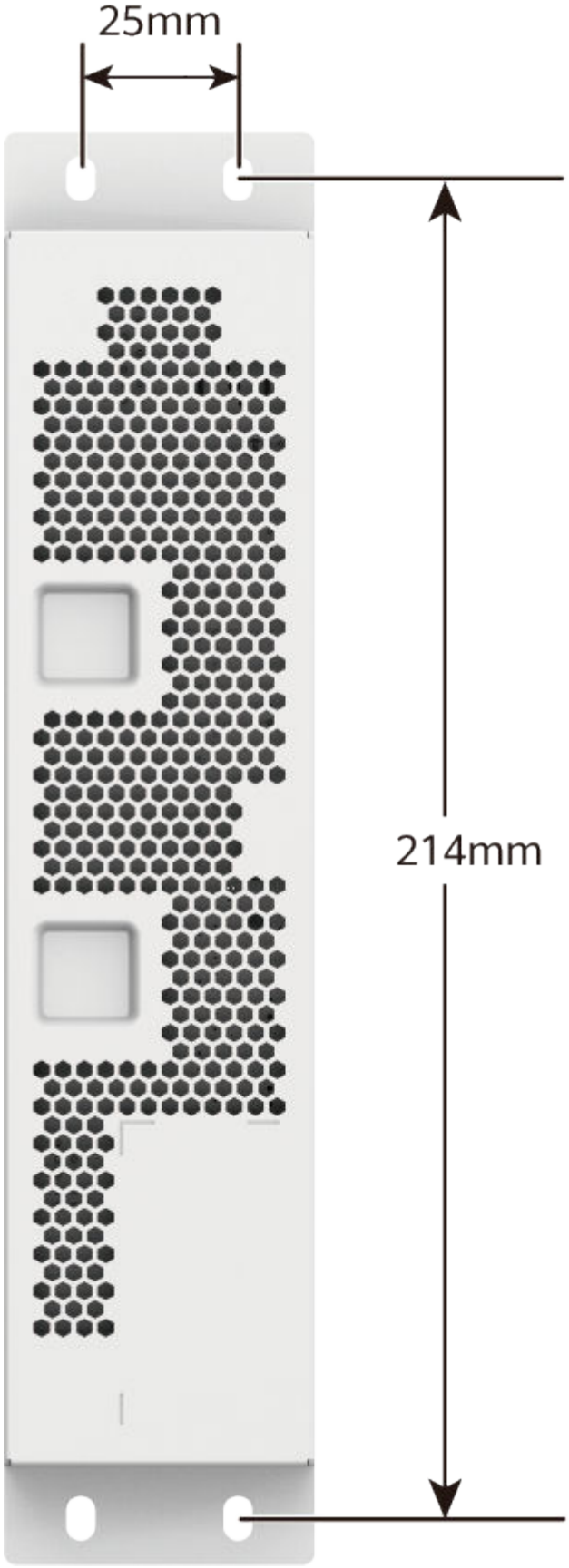
This installation method applies to the S1730S-L4P1T-BUA, S1730S-L8LP2T-BUA, and S1730S-L8P2T-BUA.

NOTICE

- Do not install the switch outdoors. This switch can only be installed indoors.
- Use standard power adapter delivered with the switch to supply power. Otherwise, the switch may not work properly or security risks may be introduced.
- Do not route Ethernet cables or power adapter cables outside a network box.
- The switch installed in a network box must be operated and maintained by professionals.
- Do not use an enclosed network box and ensure that the air intake and exhaust vents are not blocked to ensure proper heat dissipation of the switch.
- If the network box is installed indoors or in a corridor that is free from rain, the network box must meet the requirements of IP31 rating protection. (The first number "3" indicates that the network box can prevent a solid object with the diameter greater than or equal to 2.5 mm from entering the network box. The second number "1" indicates that vertically falling drops shall have no harmful effects.)
- The vertical distance between the door of the network box and the device must be greater than 60 mm.

The switch provides four screw mounting holes. When the switch is installed in a network box, the distance between the mounting holes in the network box must meet the requirements shown in **Figure 3-27**.

Figure 3-27 Spacing of mounting holes on the switch



Installing a remote unit in a network box

1. Align the mounting holes on both sides of the switch with the holes on the mounting kits of the network box.
2. Use a Phillips screwdriver and M4 screws (four delivered with the device) to secure the switch to the mounting kits of the network box.

Figure 3-28 Installing a switch in a network box

3.5.7 Scenario: DIN Rail Mounting

Context

This installation method applies to the S5735I-S8T4SN-V2, S5735I-S8T4XN-V2, S5735I-S8T4XN-T-V2, and S5735I-S8U4XN-V2.

Make sure the following prerequisites are met before the installation:

- The DIN rail has been secured in position.
- The switch is placed near the DIN rail for convenient movement.

NOTICE

When multiple S5735I-S8T4SN-V2 switches are installed on the same DIN rail, there must be a clearance of at least 88 mm between two neighboring switches. The clearance above a switch must be at least two times the switch's height and that below must be greater than or equal to the switch's height.

When multiple S5735I-S8T4XN-V2, S5735I-S8T4XN-T-V2, and S5735I-S8U4XN-V2 switches are installed on the same DIN rail, there must be a clearance of at least 66 mm between two neighboring switches. The clearance above a switch must be at least two times the switch's height and that below must be greater than or equal to the switch's height.

Tools and Accessories

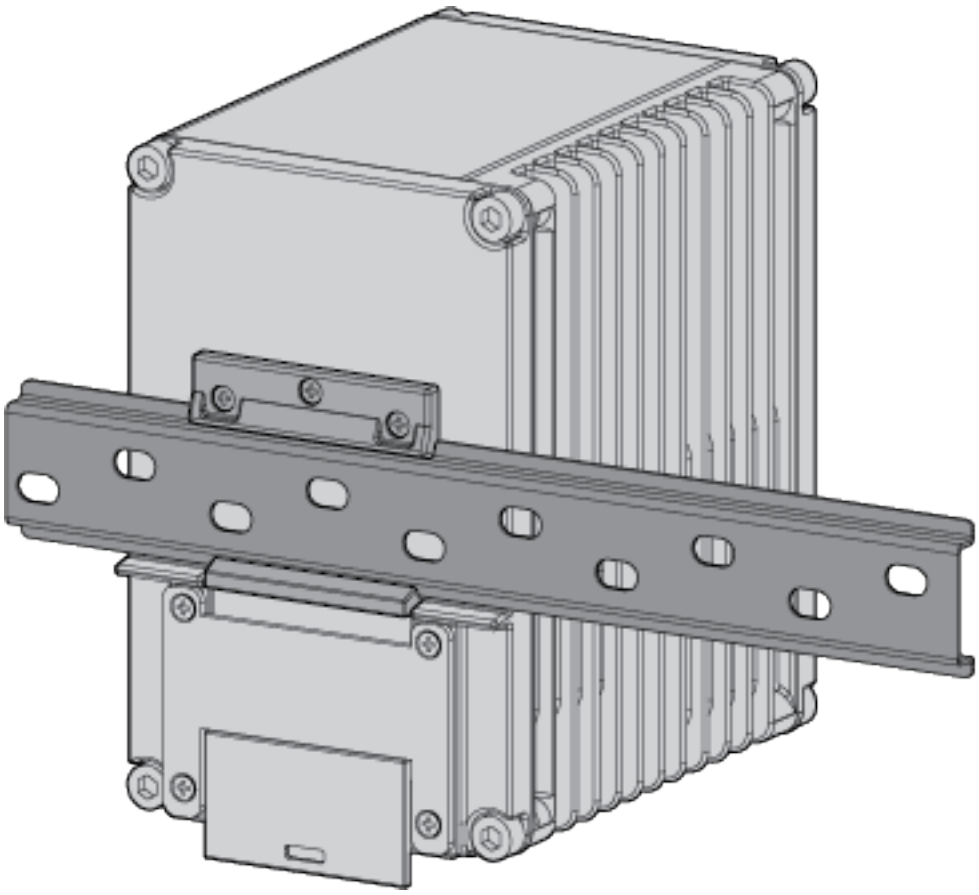
- DIN rail (DIN35-7.5 or DIN35-15, prepared by the customer)

Procedure

Step 1 Place the switch's rear panel in front of the DIN rail and ensure that the DIN rail fits in between the fixture near the top of the switch and spring latch near the bottom.

Step 2 Make the switch incline forward with the bottom away from the DIN rail, and place the fixture on the top of the DIN rail.

Step 3 Slowly push the switch toward the DIN rail to make the spring latch at the rear of the switch move down. The spring latch then bounces back to fix the switch on the DIN rail.



NOTE

- If the spring latch is too tight to move down, you can pull down the spring latch during the installation.
- You can also take fixing measures in the horizontal direction of the switch.

----End

3.5.8 Connecting the Ground Cable

Context

Grounding the switch helps protect it from lightning, electromagnetic interference, and electrostatic discharge, and is the prerequisite for a PoE switch to provide power for a PD.

The ground cable can be connected to a ground bar or a ground point on the cabinet or rack. The following procedure uses the connection to a ground point as an example.

WARNING

The switch must be grounded before it is powered on. This protects operators from electric shock and avoids equipment damage caused by lightning, electromagnetic interference, or electrostatic discharge.

NOTE

If a cabinet or rack has a protective coating, remove this coating from around the ground point to ensure a reliable connection.

Some switches have ground points both on the rear, left, or right side of the chassis. You can use ground points based on the installation scenario.

If a 220 mm deep switch is installed in a 300 mm deep cabinet, remove the ground screw from the rear of the switch and install it to the ground point on the side of the switch.

For switch models with the ground point at the left or right side of the chassis, connect the ground cable before mounting the switch in the cabinet or rack.

Some switch models have two ground screws. You need to connect a ground cable to one of the ground screws.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Phillips screwdriver
- Ground cable (one per switch)
- M4 screw (already installed on the switch ground point)
- M6 screw (one, purchased separately)

NOTE

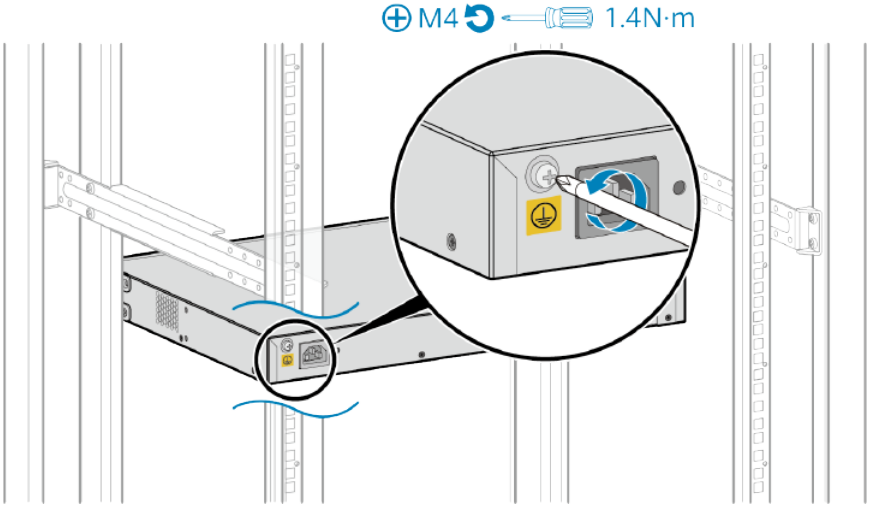
The ground cable is included in the installation accessory package.

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 2 Use a Phillips screwdriver to remove the M4 screw from the ground point on the switch, as shown in **Figure 3-29**. Keep the M4 screw for later use.

Figure 3-29 Removing the M4 screw from the ground point

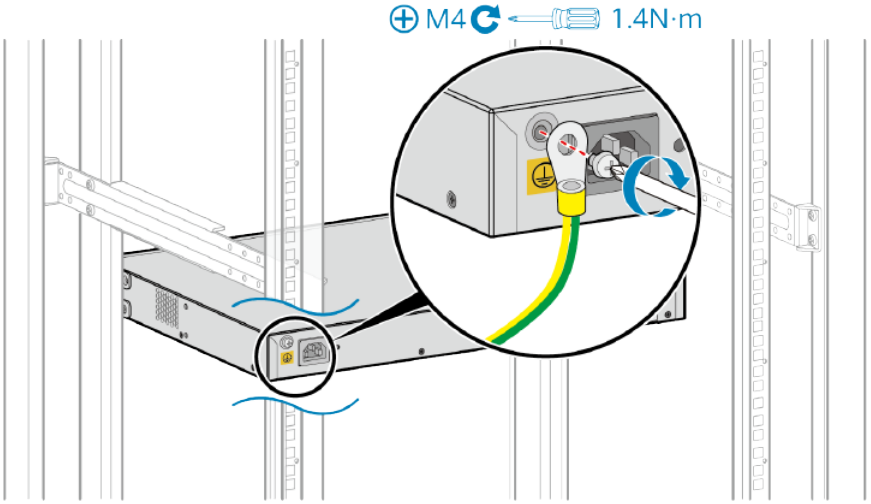


Step 3 Attach the M4 lug of the ground cable to the ground point on the switch with the M4 screw you removed in step 2. Tighten the M4 screw with a torque of 1.4 N m. See **Figure 3-30**.

NOTE

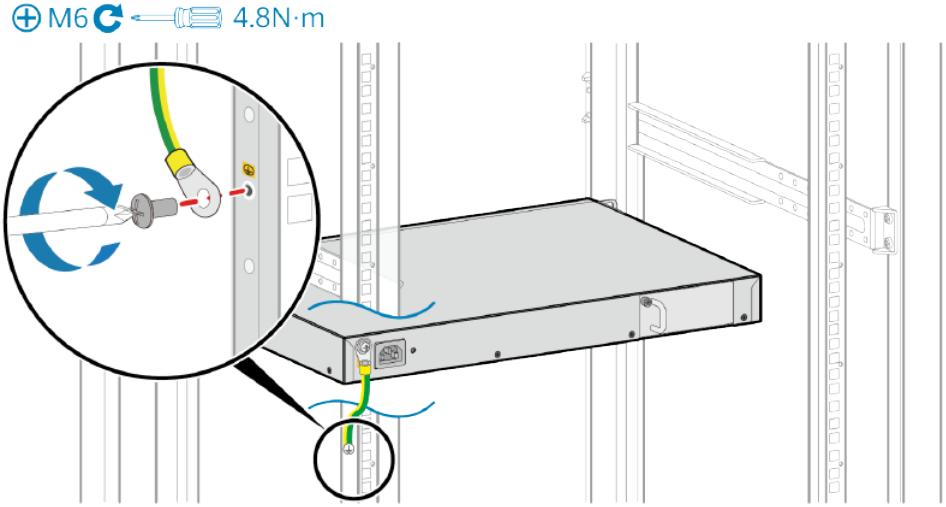
The ground cable has an M4 lug at one end and an M6 lug at the other end. The M4 lug is the smaller of the two.

Figure 3-30 Connecting the ground cable to the switch



Step 4 Attach the M6 lug of the ground cable to a ground point on the cabinet or rack with an M6 screw. Tighten the M6 screw with a torque of 4.8 N m. See **Figure 3-31**.

Figure 3-31 Connecting the ground cable to a ground point on the cabinet



----End

Follow-up Procedure

After the ground cable is connected, verify that the electrical resistance between the ground terminal and ground point is less than 0.1 ohm on a multimeter.

3.6 Installing Modules

3.6.1 Installing a Pluggable Power Module

Context

If a switch is delivered with the power modules and fan modules installed in the chassis, you do not need to install the power modules and fan modules again.

The methods for installing a fan module and a power module are the same. Fan modules and power modules are both classified into two types: one type is secured by a captive screw and the other is secured by a lock. Power modules are used as an example here to describe the installation procedure. All the power modules and fan modules are hot swappable (except the 870 W PoE power module).

NOTICE

- If you feel resistance or find the module inclined during the installation, pull the module out and push it into the slot again. Do not force the module into the slot as doing this may damage module or the connectors on the backplane.
- Filler panels must be installed in power slots where no power module is installed.
- A switch can only use power modules matching its chassis model. Using unsupported power modules will cause unexpected risks.
- If a fan module needs to be replaced, complete the replacement procedure within 3 minutes.
- Fan modules of different types or with different airflow directions cannot be used on the same switch.

Tools and Accessories

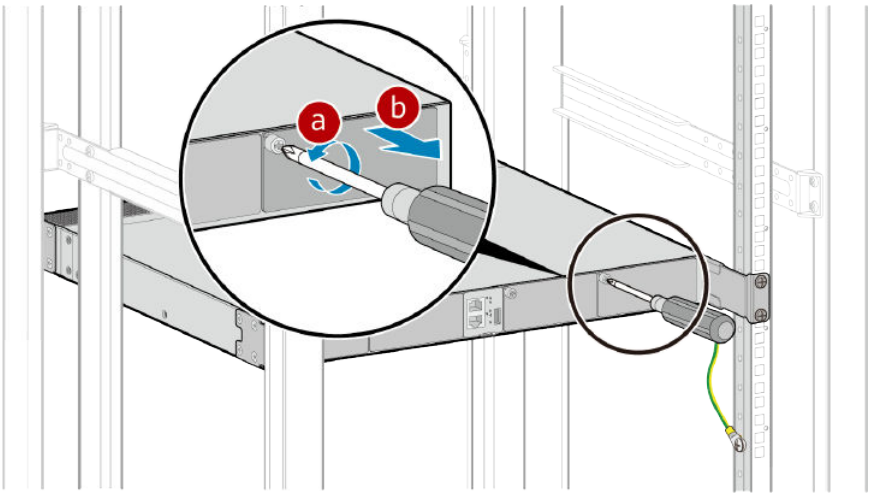
- ESD wrist strap or ESD gloves
- Phillips screwdriver

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

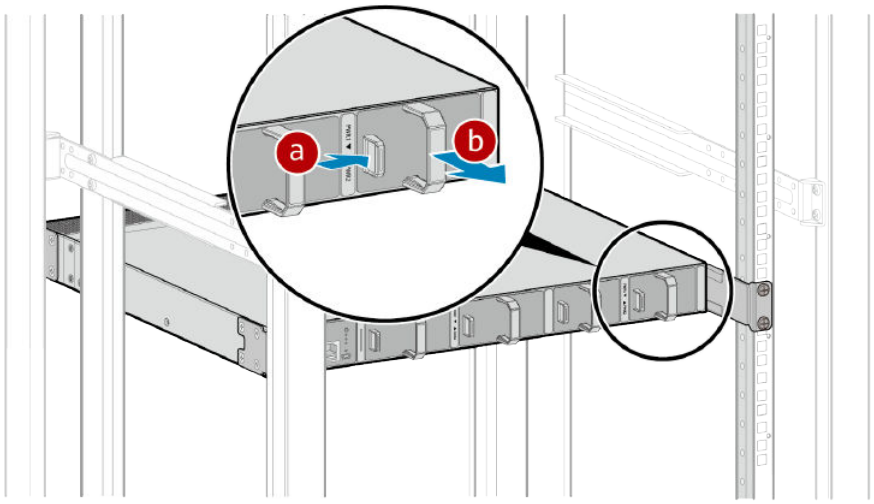
Step 2 Remove the filler panel from the slot where the power module needs to be installed. Keep the filler panel for future use.

- To remove a filler panel secured by a captive screw, perform the following steps:
  a. Use a Phillips screwdriver to loosen the captive screw on the filler panel counterclockwise.
  b. Pull the filler panel out by the captive screw.



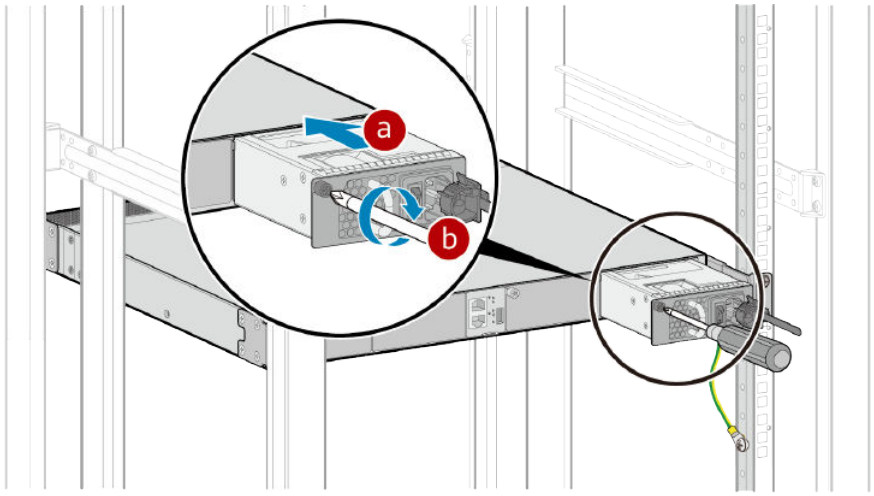
- To remove a filler panel secured by a lock, perform the following steps:
  a. Press and hold the lock on the filler panel rightward with your thumb.

b. Pull the filler panel out by the handle.

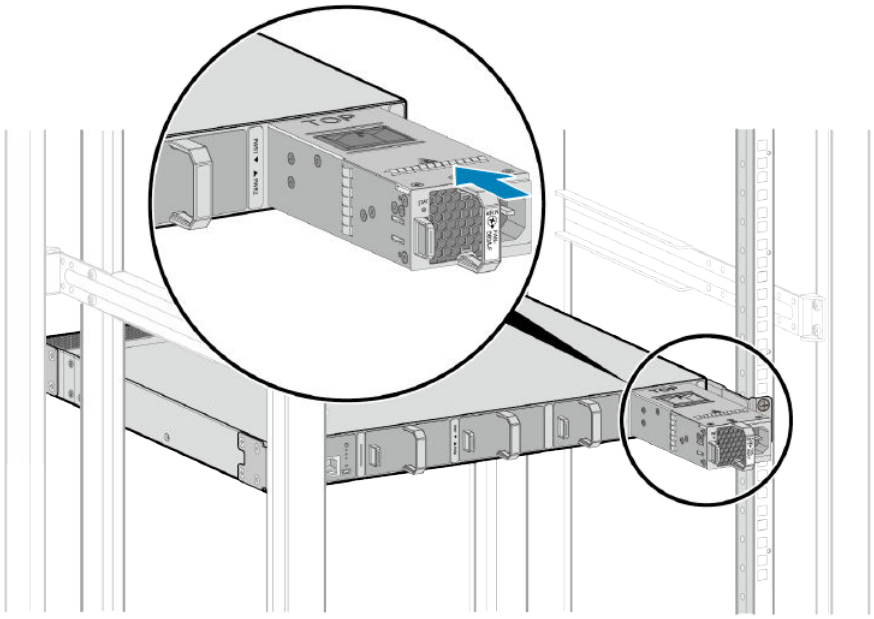


Step 3 Install a power module.

- To install a power module secured by a captive screw, perform the following steps:
  a. Hold the handle on the power module with one hand and support the bottom with the other hand. Horizontally push the power module into the slot until it is completely in the slot.
  b. Use the Phillips screwdriver to fasten the captive screw on the power module clockwise.



- To install a power module secured by a lock, hold the handle of the power module with one hand and support the bottom with the other hand, and horizontally push the power module into the slot. When the power module is completely seated in the slot, the lock is locked automatically.



----End

3.6.2 Installing a 260 W or 240 W Independent Power Module

Context

The S5720I-12X-PWH-SI-DC can be powered by an external independent 260 W AC power module (PAC-260WA-E) or 240 W AC power module (PAC240S56-CN).

The S5735I-S8U4XN-V2 can be powered by an external independent 240 W AC power module (PAC240S56-CN).

- The PAC-260WA-E power module uses 220 V AC input and provides one 56 V DC output. When the S5720I-12X-PWH-SI-DC is installed in a scenario where only 220 V AC power is provided, the PAC-260WA-E can be used to transfer power. The methods for installing the PAC-260WA-E and the S5720I-12X-PWH-SI-DC are the same. They are installed in the same cabinet using mounting brackets, and can be installed in the same 1 U space (one in front of the other).
- The PAC240S56-CN power module uses 220 V AC or 240 V DC input and provides four 56 V DC outputs. When the switch is installed in a scenario where 220 V AC or 240 V DC power is provided, the PAC240S56-CN can be used to transfer power. A DIN rail is required for installing a PAC240S56-CN in a cabinet. This section describes how to install the PAC240S56-CN.

Ensure that the following prerequisites are met before the installation:

- The DIN rail has been secured on the switch.
- Place the PAC240S56-CN near the DIN rail for convenient movement.

Tools and Accessories

- ESD wrist strap

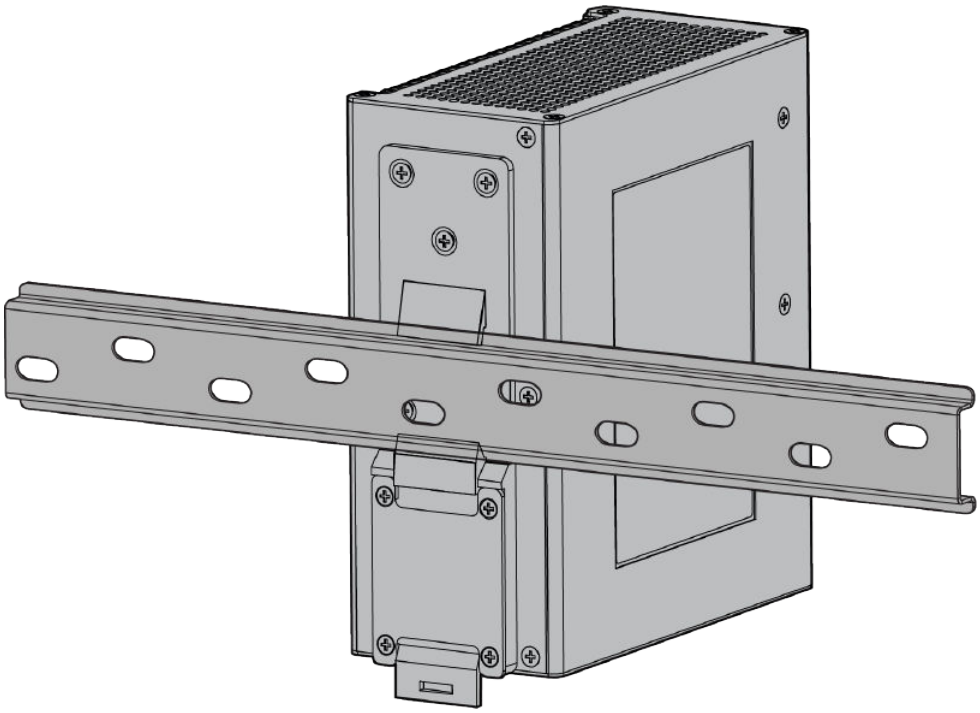
- DIN rail (DIN35-7.5 or DIN35-15, prepared by the customer)
- PAC240S56-CN 240 W AC power module

Procedure

Step 1 Place the real panel of the power module in front of the DIN rail, and ensure that the DIN rail fits in between the fixture near the top of the DIN mounting kit and spring latch near the bottom.

Step 2 Make the power module incline forward with the bottom away from the DIN rail, and place the fixture at the rear of the DIN mounting kit on the top of the DIN rail.

Step 3 Slowly push the power module toward the DIN rail to make the spring latch near the bottom of the DIN mounting kit move down. The spring latch then bounces back to fix the switch on the DIN rail.



NOTE

If the spring latch is too tight to move down, you can pull down the spring latch during the installation.

----End

3.6.3 Installing a 60 W Independent Power Module

Context

DANGER

To avoid electric shock, do not connect power cables while the power is on.

Make sure the following prerequisites are met before the installation:

- The DIN rail has been secured in position.
- The 60 W AC power module is placed near the DIN rail for convenient movement.

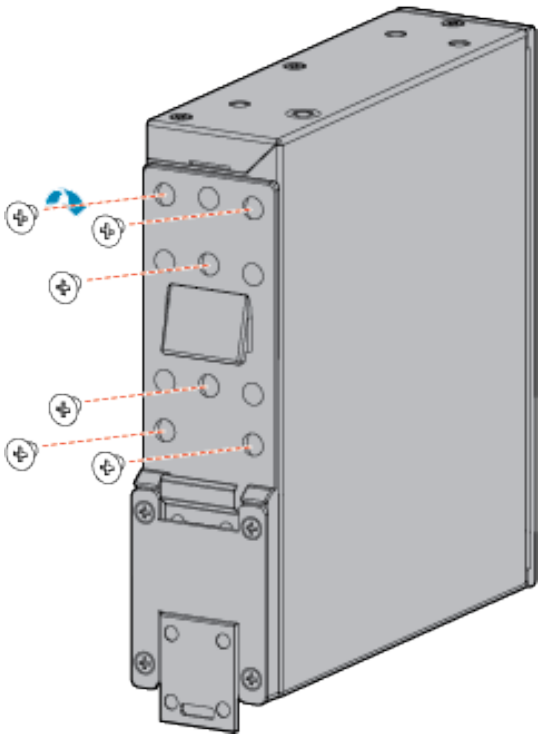
Tools and Accessories

- ESD wrist strap
- Phillips screwdriver
- M3 screws
- DIN rail
- 60 W AC power module

Procedure

Step 1 Wear an ESD wrist strap. Ensure that the ESD wrist strap is grounded and in a close contact with your wrist.

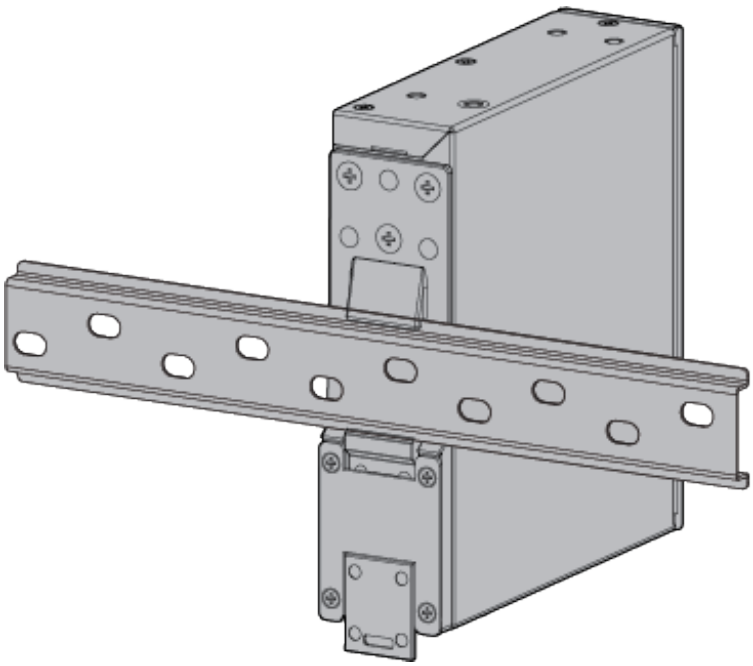
Step 2 Mount the DIN mounting kit onto the rear panel of the 60 W AC power module with M3 screws, and then use a Phillips screwdriver to tighten the M3 screws.



Step 3 Place the rear panel of the 60 W AC power module in front of the DIN rail and ensure that the DIN rail fits in between the fixture near the top of the DIN mounting kit and spring latch near the bottom.

Step 4 Make the power module incline forward with the bottom away from the DIN rail, and place the fixture at the rear of the DIN mounting kit on the top of the DIN rail.

Step 5 Slowly push the power module toward the DIN rail to make the spring latch near the bottom of the DIN mounting kit move down. The spring latch then bounces back to fix the power module on the DIN rail.



NOTE

If the spring latch is too tight to move down, you can pull down the spring latch during the installation.

----End

3.6.4 Installing a Card

Context

This section describes how to install a pluggable card in the S series fixed switches, using a 4-port front card as an example. The installation method is the same for all switch models that support pluggable cards. For details about which models support what cards, see "Cards" in the *Hardware Description*.

NOTICE

- Only switch models S5700-SI, S5710-LI, and S5700-EI do not support hot swappable cards, the switch must be powered off before a card can be installed.
- To use a front 4xGE or 4x10GE optical interface card on the S5700-SI, S5710-LI, and S5700-EI, you must also install an extended rear card.
- If you feel resistance or find the card inclined during the installation, pull the card out and push it into the slot again. Do not force the card into the slot as doing this may damage the connectors on the card and the backplane.
- Install filler panels in vacant slots.

Tools and Accessories

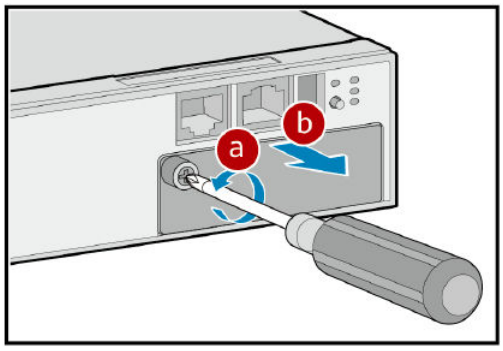
- ESD wrist strap or ESD gloves
- Phillips screwdriver

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

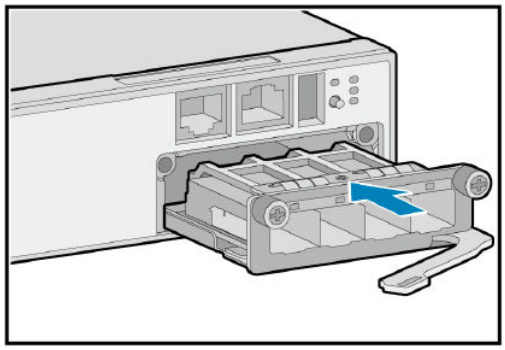
Step 2 Remove the filler panel from the slot into which the card will be installed. Keep the filler panel for future use.

1. Use a Phillips screwdriver to loosen the captive screw on the filler panel.
2. Holding the captive screw, pull out the filler panel.



Step 3 Install the card in the switch.

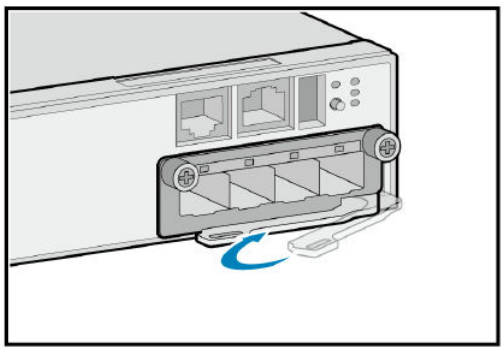
1. Pull the ejector lever of the card 45 degrees outward. Gently push the card into the chassis with your thumbs placed below the captive screws, until the screw on the front panel is completely in the chassis.



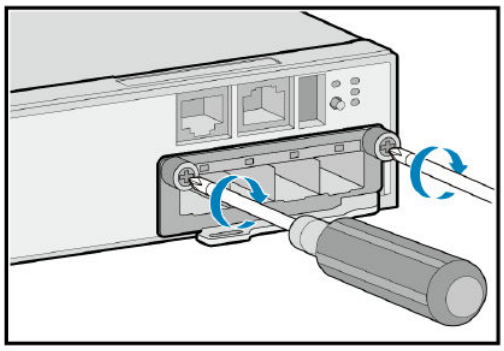
NOTE

Front cards for the S3700-HI, S5700-HI, and S5710-HI have no screws. However, the installation method is similar.

2. Push the ejector lever inward to lock the card.



3. Use a Phillips screwdriver to tighten the captive screws.



----End

3.6.5 Installing an Optical Module

Context

This section describes how to install an optical module. The method used to install a copper transceiver module is the same, except that the copper transceiver module connects to a network cable instead of optical fibers.

DANGER

Never look directly into an optical module or the ends of optical fibers. Optical modules and connected fibers emit laser radiation that can cause eye damage.

NOTICE

- Do not touch the edge connector of an optical module during the installation.
- Install an optical module on a port before connecting optical fibers to the transceiver module.
- Install dust plugs on idle optical ports.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Dust plugs

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

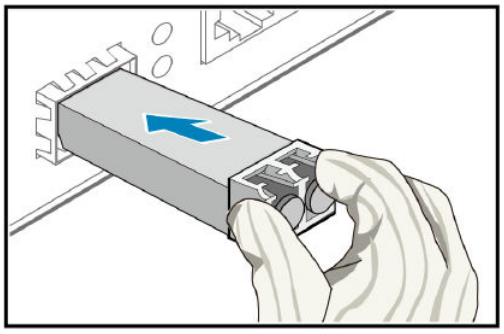
Step 2 Remove the dust plug from an optical port. Keep the dust plug for future use.

Step 3 Ensure that the optical module is correctly oriented and gently push it into the optical port until you hear a click.

NOTICE

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 and try again.

Figure 3-32 Installing an optical module



Step 4 Check whether the transceiver module is securely seated. While keeping the handle of the transceiver module closed, grasp the two sides of the transceiver module with your thumb and forefinger and gently pull it.

- If the transceiver module does not pull out, it is installed correctly.
- If the transceiver module pulls out, reinstall it.

NOTE

Ensure that transceiver modules are fitted with dust plugs when not in use and remove the dust plugs only when you are ready to connect optical fibers.

----End

3.7 Installing an HDF

Context

This section describes how to install the HCDF48PDLC00 hybrid cable distribution frame (HDF) in a 19-inch standard cabinet.

Before installation, ensure that:

- The cabinet has been secured and meets the requirements specified in **3.3.3 Checking the Cabinet or Rack**.
- The installation position of the HDF has been planned.
- The HDF to be installed has been placed near the cabinet for convenient movement.
- Before the installation, ESD measures have been taken. For example, you are already wearing ESD gloves or an ESD wrist strap.
- The left and right sides of the HDF have been aligned horizontally before it is secured to the cabinet. If not, do not forcibly install the HDF; otherwise, it will be distorted.

Tools and Accessories

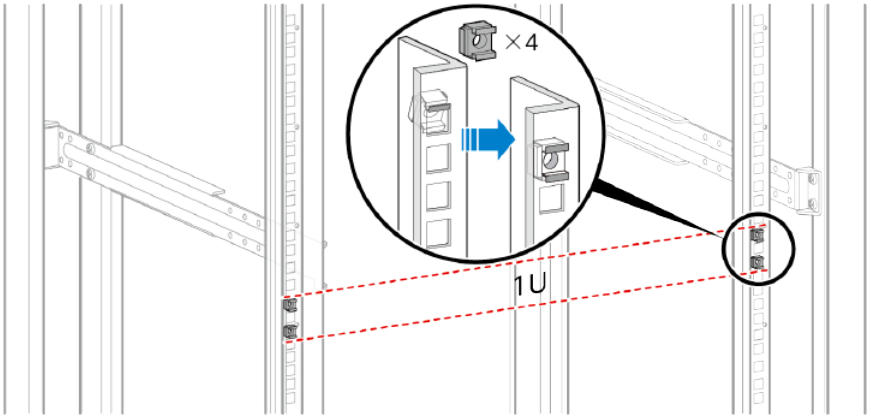
- ESD wrist strap or ESD gloves
- Phillips screwdriver
- Flat-head screwdriver
- Floating nuts (four for each HDF)
- M6 screws (four for each HDF)

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. If you wear an ESD wrist strap, ensure that one end of the ESD wrist strap is grounded and the other end is in close contact with your wrist.

Step 2 Install floating nuts on the mounting rails of the cabinet.

Determine the installation positions of floating nuts on the mounting rails according to the planned installation position of the HDF. Use a flat-head screwdriver to install four floating nuts on the front mounting rails, two on each side. Align the mounting holes on the mounting brackets with two holes with one hole between them on the mounting rails. Ensure that the floating nuts on both sides are aligned horizontally.



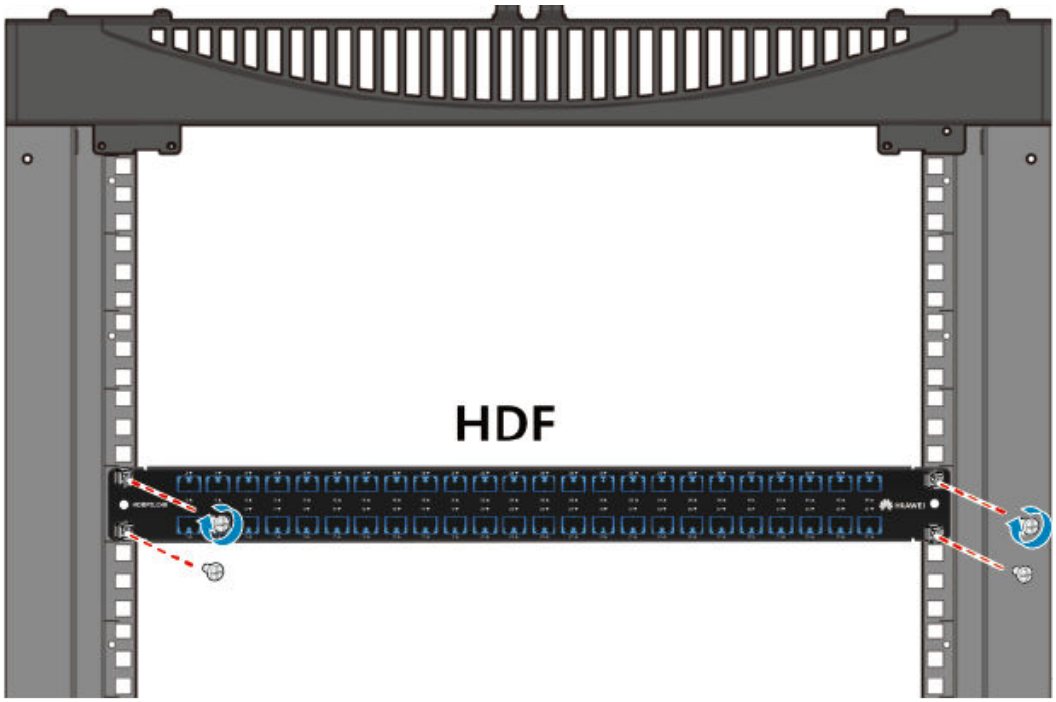
NOTE

Pay attention to the scale markings on the mounting rails because three adjacent mounting holes may not be 1 U.

Step 3 Install the HDF into the cabinet.

1. Hold the bottom of the HDF and align the holes on the mounting brackets on both sides of the HDF with the floating nuts on the front mounting rails.
2. Hold the HDF with one hand, and use a Phillips screwdriver to tighten the M6 screws on the HDF with the other hand to secure the HDF to the mounting rails of the cabinet.

Figure 3-33 Installing an HDF into a cabinet



Step 4 Connect hybrid cables to the HDF. For details, see **3.8.8 Connecting Second-Generation Hybrid Cable**.

----End

3.8 Connecting a Switch

3.8.1 Connecting Power Cables

Context

DANGER

There is a risk of electrical shock when connecting power cables. To avoid electric shock, do not connect power cable while the power is on.

NOTICE

- Power cables of the switch must be routed indoors or buried underground if they are led in from the outside. Do not aerially route the power cables outdoors.
- Do not power on the switch until you finish installing the switch and connecting all cables.
- Power cables delivered with the switch are for use with this switch only.
- When routing power cables for the S5735-L8T4X-IA1, S5735-L8P4X-IA1, and S5735-L24T4X-IA1, do not bind multiple power cables together.

The S series switches have a built-in power supply unit or support pluggable or independent power modules. The required power cables and their connection methods vary according to the power modules used on the switches.

For non-S5720I-SI series switches:

- To connect to an AC power outlet, the switch must have a built-in AC power supply unit or use a pluggable AC power module, which must be connected using an AC power cable or AC power adapters complying with local standards.
- To connect to an AC power distribution unit (PDU), the switch must have a built-in AC power supply unit or use a pluggable AC power module, which must be connected using a C13 straight female to C14 straight male AC power cable.
- To connect to a DC power distribution box, the switch must have a built-in DC power supply unit or use a pluggable DC power module, which must be connected using DC power cables.
- If the external power supply system provides high-voltage DC power, the switch must use AC power cables for the built-in or pluggable AC power modules that support high-voltage DC power input. For such an AC power cable, the PE wire must be grounded, and the L or N wire must be connected to the positive or negative terminal of the high-voltage DC input.

NOTE

The AC power cable parameters vary in different countries or regions. The figures in this section are only for reference.

For a desk-mounted DC switch, use 18 AWG (1 mm^2) DC power cables with a maximum insulation diameter of no more than 2.1 mm (0.08 in.). UL1007 DC power cables are recommended.

The S5735-L8P4S-QA1 uses the power adapter delivered with the device. The connection method is similar to that of the AC power cable. After the cable is connected, bind the cable with the power adapter cable locking strap delivered with the device.

For the S5720I-SI series switches and the PAC-260WA-E or PAC240S56-CN, Phoenix connectors and power cables are required.

For the S5735I-S-V2 series switches and the PAC60S12-AN or PAC240S56-CN, Phoenix connectors and power cables are required.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Phillips screwdriver
- (Optional) AC terminal locking latch
- (Optional) Wire stripper

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 2 Turn off the external power supply system for the switch.

Step 3 Turn off the power switch on the switch or power module.

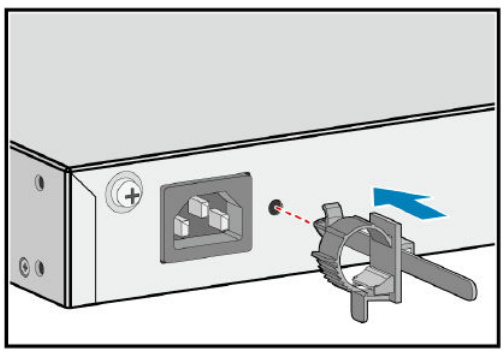
NOTE

Skip this step if there is no power switch on the switch or power module.

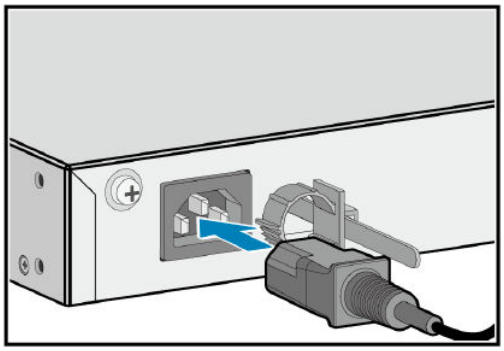
Step 4 Connect a power cable to the switch or power module.

- To connect an AC power cable to a built-in AC power supply unit or AC power module (except for the S5720I-SI), perform the following steps (built-in AC power supply used as an example):
  a. (Optional) Install the AC power cable locking strap.

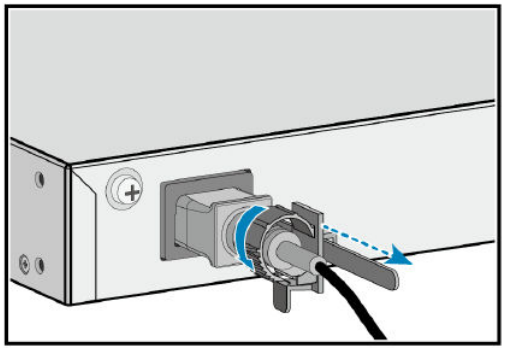
     The AC power cable locking strap is not delivered with the switch.

  b. Insert the AC power cable plug into the power socket on the switch or AC power module.



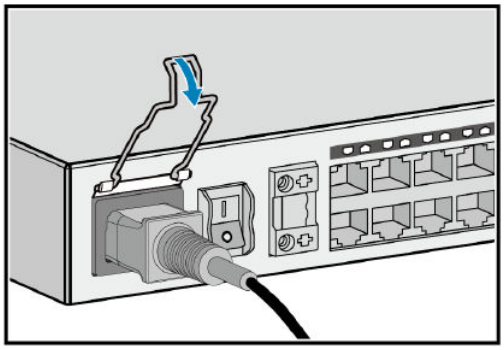
c. (Optional) If an AC power cable locking strap is installed, adjust its size to fit the AC power cable plug.



NOTE

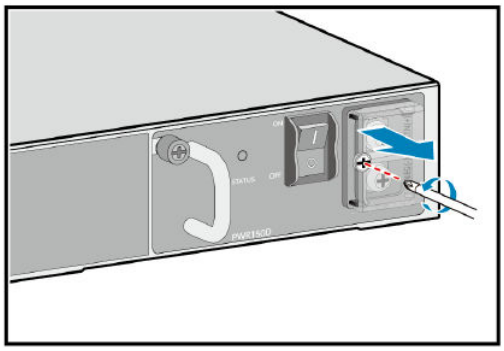
Some models use metal locking latches. **Figure 3-34** shows a metal locking latch.

Figure 3-34 Using a metal locking latch

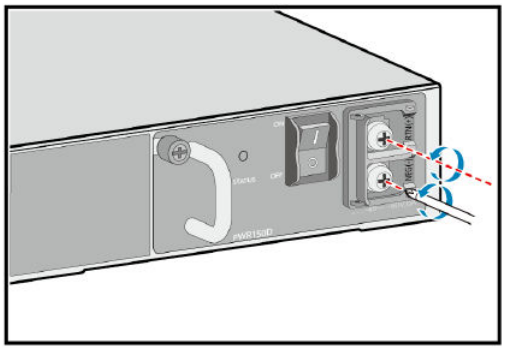


- To connect DC power cables to a built-in DC power supply unit or a 150 W or 170 W DC power module (except for the S5720I-SI), perform the following steps (150 W DC power module used as an example):

  a. Use a Phillips screwdriver to loosen the screw on the DC terminal protective cover, and then remove the protective cover.

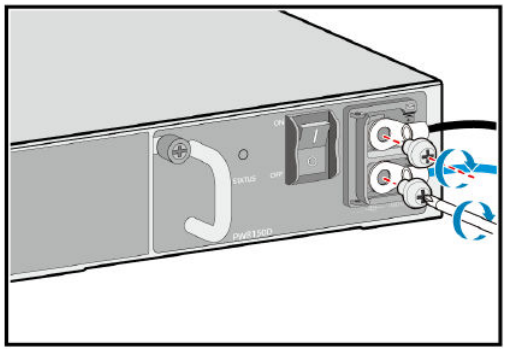


b. Use the Phillips screwdriver to remove the screws on the two DC terminals.

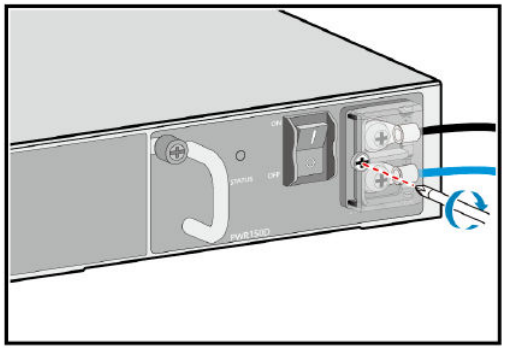


c. Secure the DC power cables to the DC power module with the screws you removed in step b.

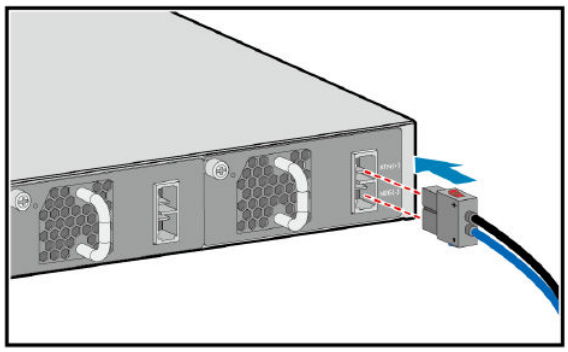
Ensure the correct polarity of connected cables. If you use DC power cables delivered from Huawei, connect the -48 V return ground cable (black) to the RTN(+) terminal, and connect -48 V power cable (blue) to the NEG(-) terminal.



d. Install the protective cover and fasten the screw.



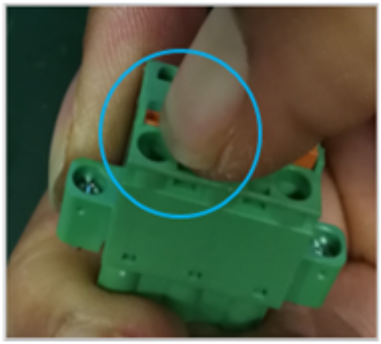
- To connect DC power cables to a 180 W, 260 W, 350 W, 650 W, 1000 W DC , or 1200 W DC power module, insert the DC power cable plug into the power sockets on the DC power module. Ensure that the positive and negative poles of the plug are connected to the positive and negative sockets, respectively.

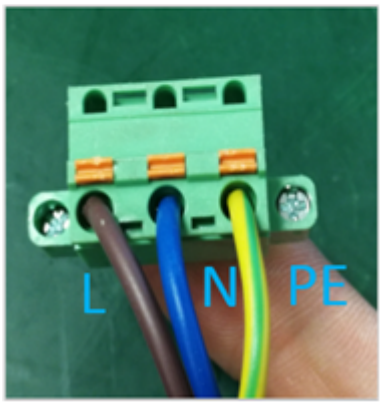


- For the AC input of the S5720I-SI or the PAC-260WA-E, PAC60S12-AN or PAC240S56-CN power module, connect the power cables as follows:
  - If the AC power cables are semi-finished cables:
    i. Cut the power cables to a proper length based on the installation position of the switch in the cabinet.

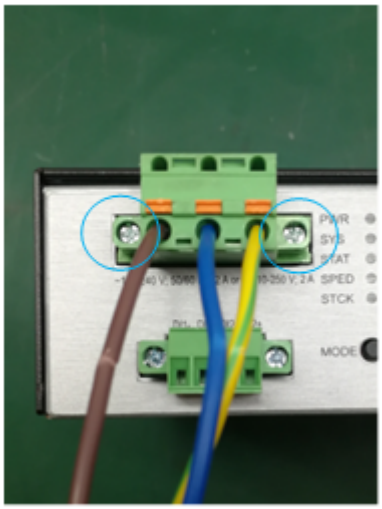
    ii. Use a wire stripper to peel 7-10 mm length of insulation off one end of the power cables.

iii. Press and hold the spring in the middle of the Phoenix connector, insert the live wire (L), neutral wire (N), and ground wire (PE) into the terminals according to the sequence shown in the following figure, and release the spring to lock the cables.





iv. Insert the Phoenix connector into the AC input port on the switch or power module, and tighten the screws on both sides of the Phoenix connector.



v. If a three-pin AC power plug purchased by the customer is used, connect the power cable to the three-pin AC power plug as follows:

1) Use a tool (such as a screwdriver, depending on the plug type) to open the three-wire AC power plug.
2) Use a wire stripper to remove the required length of insulation (depending on the plug type) off one end of the power cable.
3) Secure the live wire (L), neutral wire (N), and ground wire (PE) to the corresponding L, N, and PE terminals in the power plug.
4) Use the tool to reassemble the power plug.

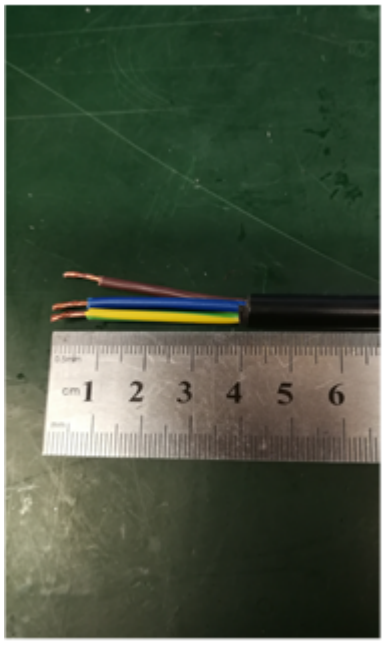
DANGER

- Ensure the live wire (L), neutral wire (N), and ground wire (PE) are securely installed in the correct terminals. Pull each wire to check whether they are securely installed.
- Ensure that no metal wire is exposed outside the power plug.

– If the AC power cables are finished cables:

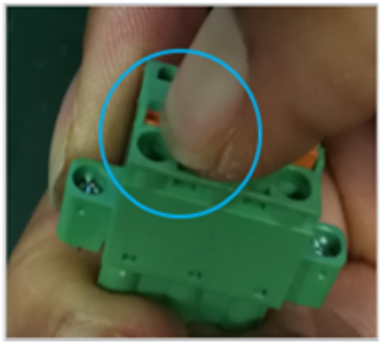
i. Cut off the C13 straight female of the finished AC power cable.

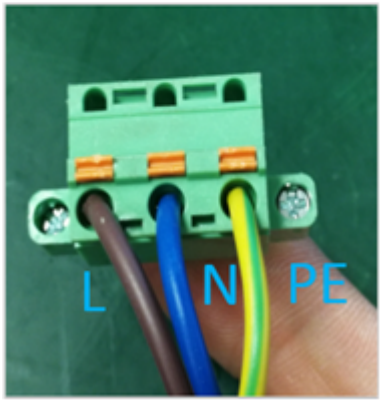
ii. Use a wire stripper to peel 40 mm length of the outer sheath and then peel 7-10 mm length of inner insulation.



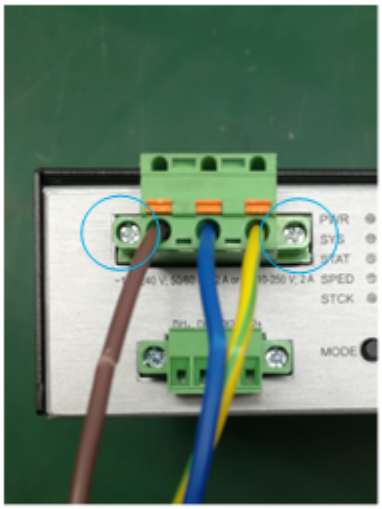
iii. Use a multimeter to distinguish the live wire (L), neutral wire (N), and ground wire (PE). Generally, L is red, N is blue, and PE is yellow-green.

iv. Press and hold the spring in the middle of the Phoenix connector, insert the live wire (L), neutral wire (N), and ground wire (PE) into the terminals according to the sequence shown in the following figure, and release the spring to lock the cables.





v. Insert the Phoenix connector into the AC input port on the switch or power module, and tighten the screws on both sides of the Phoenix connector.



DANGER

There is a risk of electric shock when handling the Phoenix connector. To avoid electric shock, ensure that the L/N/PE wires are connected in sequence.

After power cables are connected to the Phoenix connector, ensure that copper conductors are not bent and there are no exposed metal parts.

Ensure that power cables are securely connected to the Phoenix connector (you can pull the cables one by one for check).

Figure 3-35 Connections of AC input power cables for the PAC-260WA-E

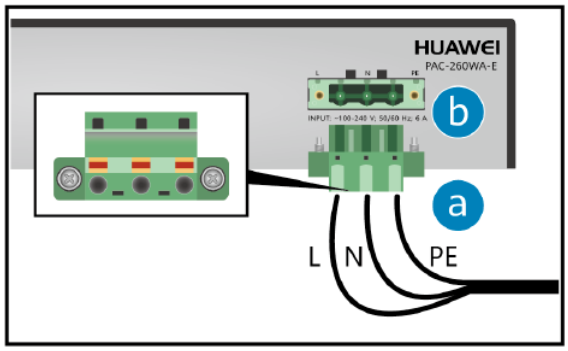
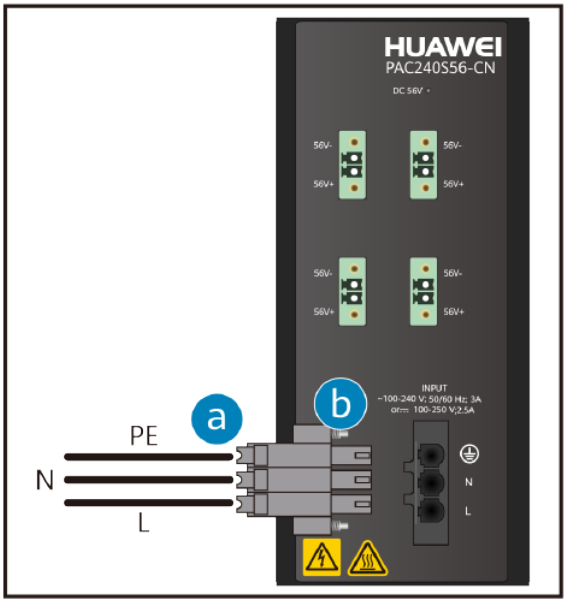
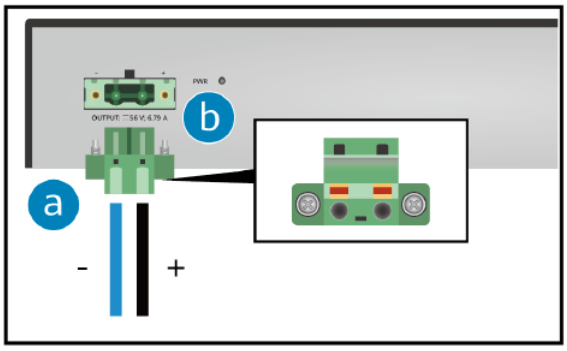


Figure 3-36 Connections of AC input power cables for the PAC240S56-CN or PAC60S12-AN



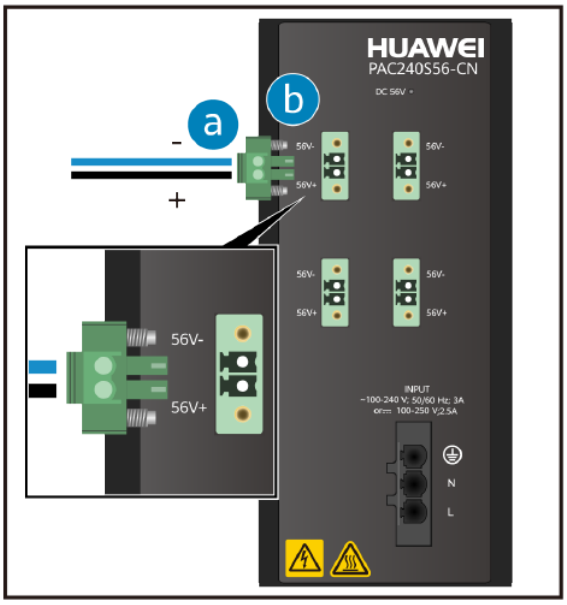
- For the DC input of the S5720I-SI or DC output of the PAC-260WA-E power module, connect the power cables as follows:
  a. Use a wire stripper to peel about 7 mm length of insulation coating off one end of the positive and negative cables. Press and hold the spring in the middle of the Phoenix connector, insert the bare wires of the power cable into the socket according to the sequence shown in the figure, and release the spring to lock the cable.
  b. Insert the Phoenix connector into the DC input port on the switch or the DC output port on the power module, and tighten the screws on both sides of the Phoenix connector.

Figure 3-37 Connections of DC output power cables for the PAC-260WA-E



- For the DC output of the PAC240S56-CN or PAC60S12-AN power module, connect the power cables as follows:
  a. Use a wire stripper to peel about 7 mm length of insulation coating off one end of the positive and negative cables. Insert the bare wires of the power cable into the Phoenix connector according to the sequence shown in the figure, and tighten the screws to lock the cable.
  b. Insert the Phoenix connector into the DC output port on the power module, and tighten the screws on both sides of the Phoenix connector.

Figure 3-38 Connections of DC output power cables for the PAC240S56-CN



Step 5 Connect the power cables to the external power supply system.

- If you are using the standard AC power cables for your geographical location, connect them to an AC power strip or power distribution box.
- If you are using C13 straight female to C14 straight male AC power cables, connect them to a PDU.
- If you are using DC power cables, connect them to a DC power distribution box. Ensure correct connections of the positive and negative power cables.

For the AC input of the S5720I-SI or the PAC-260WA-E, the 220 V mains power is used.

For the PAC240S56-CN or PAC60S12-AN, the 220 V AC or 240 V DC power is used.

----End

Follow-up Procedure

Complete a post-installation check before powering on the switch. For the post-installation checklist, see **3.9 Post-installation Checks**. For details about how to power on the switch, see **3.11 Powering on a Switch for the First Time**.

3.8.2 Connecting Ethernet Cables

Context

NOTICE

- Before deploying Ethernet cables, test their continuity.
- If Ethernet cables of the switch need to be routed outdoors, bury them underground or put them through steel pipes to avoid lightning strikes to the switch. Do not aerially route Ethernet cables outdoors.
- Keep signal cables more than 10 cm away from power cables.
- When a switch with 48 optical ports and copper modules is installed in a 600 mm deep cabinet, only Category 5 unshielded twisted pairs can be used.
- When a switch with 48 electrical ports fully used is installed in a 600 mm deep cabinet, only Category 5 unshielded twisted pairs can be used.
- Ensure Ethernet cables have a stable environment. There should be no external power cables in contact with Ethernet cables or devices at either end of the Ethernet cables, as external power cables may damage the devices or Ethernet cables through leakage current.
- When connecting Ethernet cables to a copper module, organize the cables and wrap them up at the position parallel with the cabinet to prevent the cables from hanging down naturally and to prevent the copper module from being affected when the cables are routed.
- For 10GBASE-T electrical ports, use Category 6A STP or higher category twisted pairs. Category 6A STP and Category 7 twisted pairs can prevent alien crosstalk. These cables can be used together with other types of cables and must be bundled on supporting objects because they are heavy.
- Strong interference may cause a bit error rate of no more than 10^{-7} on multi-GE ports (10GBASE-T and IEEE802.3bz). To prevent this problem, keep the switch away from interference sources or take adequate interference shielding measures. Triggering the fast retrain function will cause a large number of bit errors in a period of around 30 ms.
- If the management port is located at the rear of the device, reserve space for cabling when connecting the network cable to the management port to prevent the insertion and removal of cards, fans, and power modules.

If a switch does not support or is not installed with a rear card, the Ethernet cables used on its electrical ports and the distance between the switch front panel and cabinet front door must meet the requirements described in **Table 3-17**.

Table 3-17 Requirements for Ethernet cables

Network Cable Type	Distance (Excluding the Length of a Copper Module) Between the Switch Front Panel and Cabinet Front Door (X)
Category 5 unshielded twisted pair	X ≥ 80 mm (3.1 in.)

Network Cable Type	Distance (Excluding the Length of a Copper Module) Between the Switch Front Panel and Cabinet Front Door (X)
Category 5 shielded twisted pair	X ≥ 110 mm (4.3 in.)
Category 6 twisted pair	X ≥ 120 mm (4.7 in.)

When a switch is installed with a rear card:

- In a cabinet deeper than 600 mm, the Ethernet cables used on its electrical ports and the distance between the switch front panel and cabinet front door must meet the requirements described in **Table 3-17**. There is no specific requirement for the distance between the switch rear panel and cabinet rear door.
- In a 600 mm deep cabinet, the Ethernet cables used on its electrical ports, the optical fibers used on the rear card, and the distances between the switch panels and cabinet doors must meet the requirements described in **Table 3-18**.

Table 3-18 Requirements for Ethernet cables and optical fibers

Network Cable Type	Distance (Excluding the Length of a Copper Module) Between the Switch Front Panel and Cabinet Front Door (X)	Distance Between the Switch Rear Panel and Cabinet Rear Door (Y)		
		Ultra-short Pigtail	Short Pigtail	Regular Fiber or QSFP+ Fiber
Category 5 unshielded twisted pair	80 mm (3.1 in.) < X < 100 mm (3.9 in.)	Y ≥ 60 mm (2.4 in.)	Y ≥ 72 mm (2.8 in.)	Y ≥ 80 mm (3.1 in.)
Category 5 shielded twisted pair	X = 110 mm (4.3 in.)	Y ≥ 60 mm (2.4 in.) Route Ethernet cables from both sides of the cabinet.	Y ≥ 72 mm (2.8 in.) Route Ethernet cables from both sides of the cabinet.	Cannot be used together with Category 5 shielded twisted pair Ethernet cables.

Network Cable Type	Distance (Excluding the Length of a Copper Module) Between the Switch Front Panel and Cabinet Front Door (X)	Distance Between the Switch Rear Panel and Cabinet Rear Door (Y)		
		Ultra-short Pigtail	Short Pigtail	Regular Fiber or QSFP+ Fiber
Category 6 twisted pair	X = 120 mm (4.7 in.)	Y ≥ 60 mm (2.4 in.) Route Ethernet cables from both sides of the cabinet.	Cannot be used together with Category 6 twisted pair Ethernet cables.	Cannot be used together with Category 6 twisted pair Ethernet cables.

NOTE

- For a switch with 48 electrical ports, route Ethernet cables from both sides of the cabinet. Specifically, route cables to the first 24 ports from the left of the cabinet, and to the last 24 ports from the right of the cabinet.
- If the cabinet is densely cabled from both sides, it is recommended to reserve 1 U of clearance below the switch for a cable tray. Route the Ethernet cables through the cable tray and bundle the cables on both sides of the cabinet, to ensure that the weight of the cables is supported by the cabinet.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Cable tie gun
- Cable ties
- Marker
- Network cable labels

Procedure

Step 1 Determine the number and type of ports to be connected and plan the cabling routes.

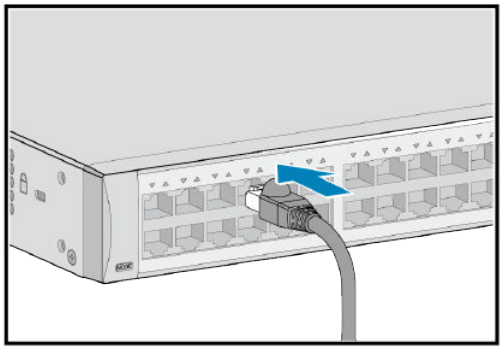
Step 2 Obtain the desired quantity and lengths of Ethernet cables.

Step 3 Attach temporary labels to both ends of each Ethernet cable and number them corresponding to port numbers. For details, see **4.4.2 Engineering Labels for Network Cables**.

Step 4 Route the Ethernet cables, arrange the cables in the cabinet, and then install cable connectors. Cable connectors made onsite must be securely attached and comply with related standards.

Step 5 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 6 Connect the cable connectors to the ports, matching the numbers on the Ethernet cables to those on the ports. After connecting the cables, verify that they are all correctly connected.



Step 7 Arrange the Ethernet cables so that they are parallel, and then bundle them with cable ties loosely according to **Table 3-19**. Use a cable tie gun to cut off redundant cable ties. The use of protective pads under the cable ties is recommended, as shown in **Figure 3-39**.

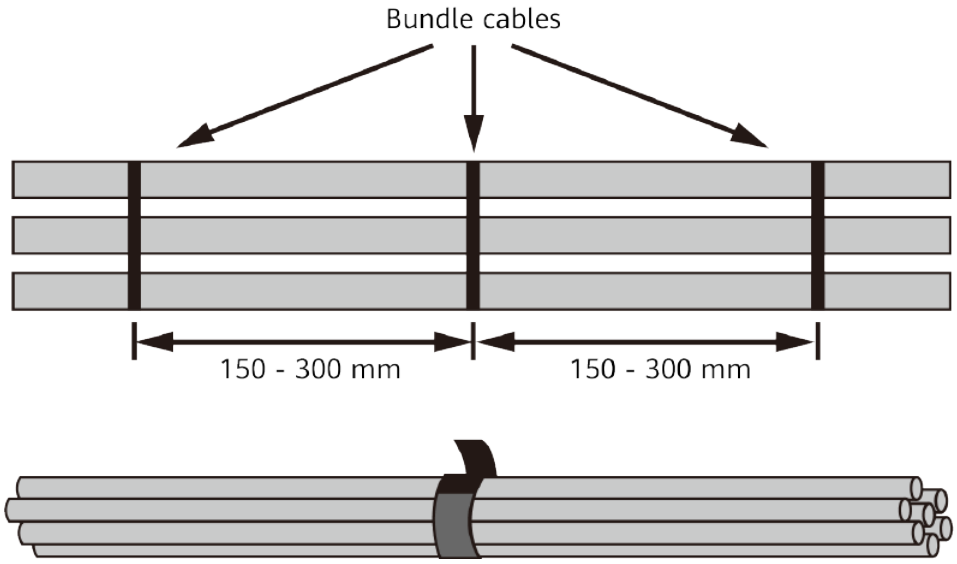
NOTE

A bundle cannot have more than 24 cables. A bundle of no more than 12 cables is recommended.

Table 3-19 Spacing between cable ties

Diameter of a Bundle	Spacing Between Cable Ties
< 10 mm (0.39 in.)	150 mm (5.91 in.)
10-30 mm (0.39-1.18 ft.)	200 mm (7.87 in.)
> 30 mm (1.18 ft.)	300 mm (11.81 in.)

Figure 3-39 Bundling Ethernet cables



Step 8 Replace all the temporary labels on the Ethernet cables with permanent labels.

----End

3.8.3 Connecting Optical Fibers

Context

DANGER

Never look directly into an optical module or the ends of optical fibers. Optical modules and connected fibers emit laser radiation that can cause eye damage.

NOTICE

Before deploying optical fibers, test connectivity of the optical fibers.

NOTICE

- Keep optical fibers more than 10 cm (3.9 in.) away from power cables.
- Use corrugated pipes to protect optical fibers routed in a cabinet. The bend radius of an optical fiber must be at least 20 times larger than its diameter. Generally, the bend radius of optical fibers should be no less than 40 mm (1.57 in.).

NOTICE

Fiber connectors must be tidy and clean to ensure normal communication. If a fiber connector is contaminated, clean it with fiber cleaning fabric.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Corrugated pipe
- Fiber binding tape
- Marker
- Engineering labels for optical fibers
- (Optional) Tweezers

Procedure

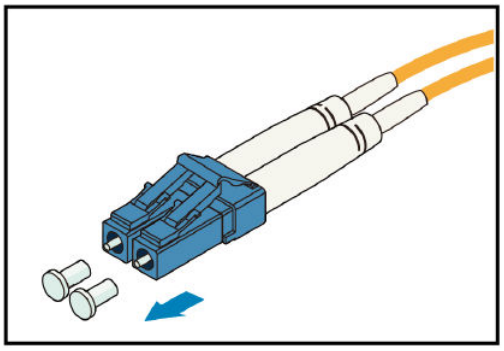
Step 1 Determine the number and type of ports to be connected and plan the cabling routes.

Step 2 Obtain the desired types, quantity, and lengths of optical fibers.

Step 3 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 4 Attach temporary labels to both ends of each optical fiber and number them corresponding to port numbers.

Step 5 Remove the dust plugs from optical modules and the dust caps from the optical fibers to be connected.

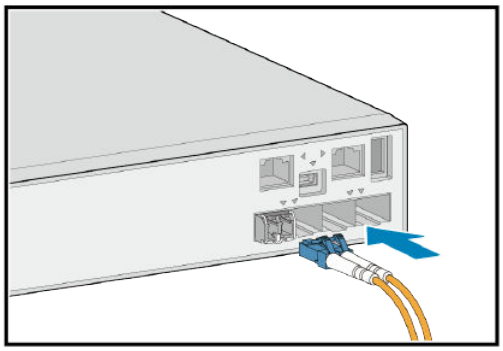


Step 6 Connect optical fibers to the optical modules on the device, matching the numbers on the optical fibers to those on the ports. To connect them, align the fiber connector with the bores on the optical module and insert the fiber connector. When you hear a click, the fiber connector is securely connected. See **Figure 3-40**. After connecting the optical fibers, verify that they are all correctly connected.

NOTE

Connect the receive and transmit ends of a fiber connector to the receive and transmit bores of the optical module.

Figure 3-40 Connecting optical fibers to an optical module

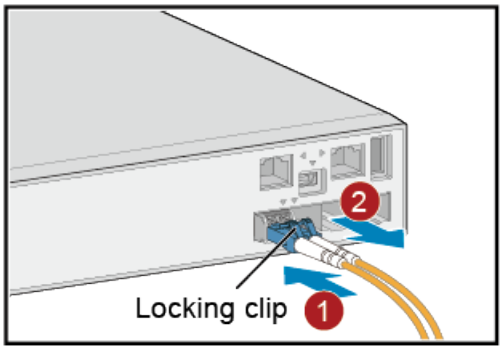


To remove optical fibers from an optical module, gently push the fiber connector inward, and then pull the fiber connector out while pressing the locking clips. Do not forcibly pull the fiber connector. See **Figure 3-41**.

NOTE

If optical ports are densely populated, use the tweezers to remove optical fibers.

Figure 3-41 Removing optical fibers



Step 7 Arrange the optical fibers to make them parallel and bundle them with fiber binding tape at a spacing of 150-300 mm (5.9-11.8 in.).

Step 8 Replace all the temporary labels on the optical fibers with permanent labels.

----End

3.8.4 Connecting Copper Cables

Context

NOTICE

- Both ends of an idle copper cable must be covered by an ESD cap.
- Do not bend copper cables over their minimum bend radius. Doing so may damage wires in the cables.
- Connectors of copper cables must be clean to ensure normal communication. If a connector is contaminated, clean it with cleaning fabric.
- Ensure that the bend radius of the copper cables or optical fibers is greater than the minimum bend radius required. For specific bend radiuses of various cables, see "Cables" in the Hardware Description of the product.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Cable tie gun
- Cable ties
- Marker
- Copper cable labels

Procedure

Step 1 Determine the number and type of ports to be connected and plan the cabling routes.

Step 2 Obtain the desired quantity and lengths of copper cables.

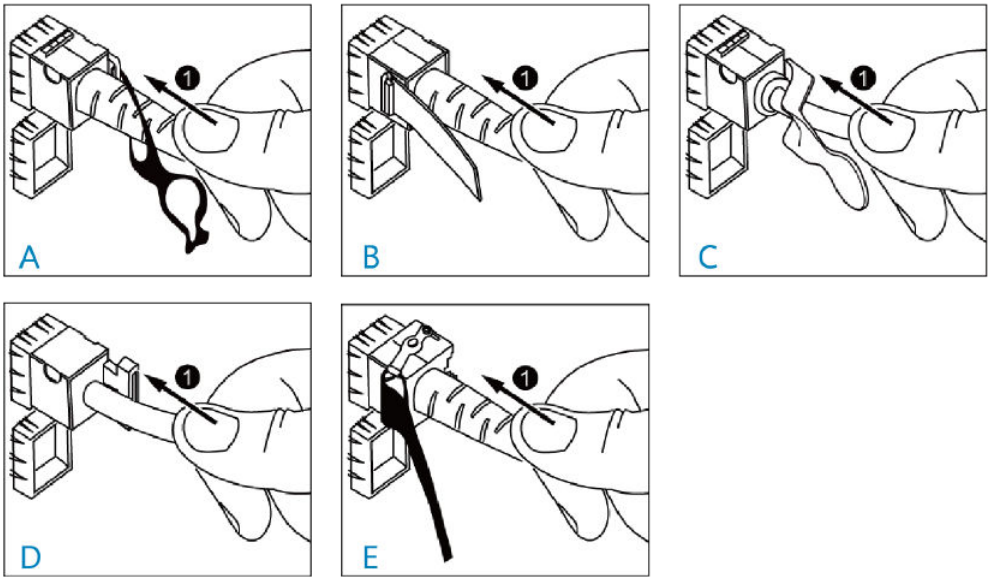
Step 3 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 4 Attach temporary labels to both ends of each copper cable and number them corresponding to port numbers. For details, see **4.4.3 Engineering Labels for User Cables**.

Step 5 Connect the copper cables to ports on the switch, matching the numbers on the copper cables to those on the ports. To connect them, align the copper cable connector with the port and insert the connector. When you hear a click, the copper cable is securely connected. See **Figure 3-42**.

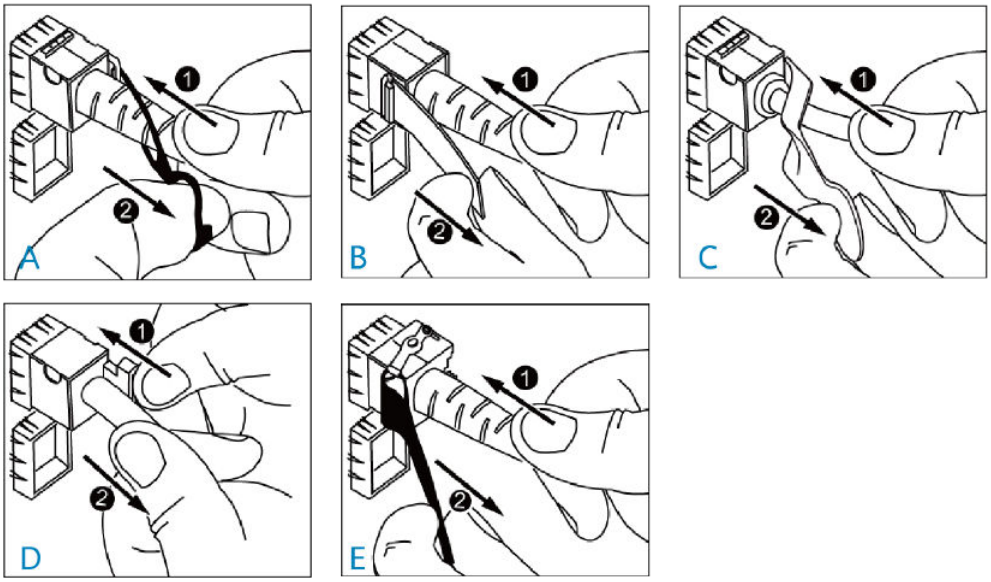
After connecting copper cables, verify that they are all correctly connected.

Figure 3-42 Connecting a copper cable



To remove a copper cable, gently push the cable connector inward and then pull the handle of the connector. Do not forcibly pull the cable connector. See **Figure 3-43**.

Figure 3-43 Removing a copper cable



Step 6 Arrange the copper cables to make them parallel, and bundle them with cable ties at a spacing of 150-300 mm (5.9-11.8 in.). Use a cable tie gun to cut off redundant cable ties.

Step 7 Replace all the temporary labels on the copper cables with permanent labels.

----End

3.8.5 Assembling the First-Generation Hybrid Cables

Context

The first-generation hybrid cable is composed of optical fibers and copper cores. It is mainly used to connect a hybrid optical-electrical switch to an AP or a remote unit for PoE power supply and data transmission.

The first-generation hybrid cables must be made onsite using the purchased bare wires, auxiliary material packages that contain RJ45 connectors, and auxiliary material packages used for mechanical or fusion splicing of optical fibers.

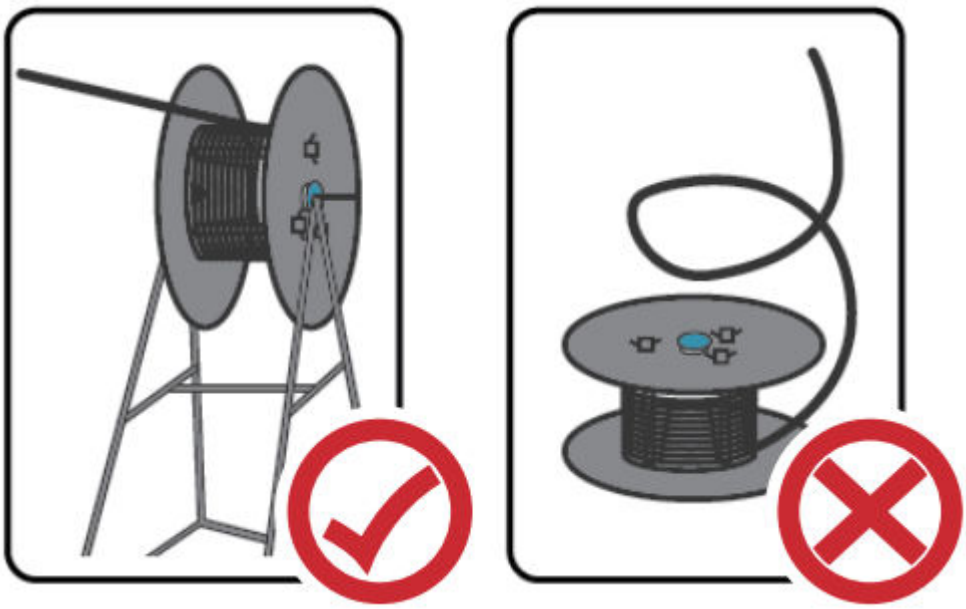
NOTICE

- The first-generation hybrid cables can only be used indoors and cannot be connected to outdoor APs.
- The first-generation hybrid cables cannot be connected through a cable distribution frame. Copper cores in a hybrid cable must be directly connected to a switch and an AP.
- Assembling cables onsite must be performed with no power supply connected.
- Do not stretch, step on, or place heavy objects on hybrid cables. Keep the cables away from sharp objects.
- At least three trained and qualified persons are required for laying out hybrid cables. Cabling is allowed only when communication facilities are available.
- Route cables according to the planned positions and mark the cables in advance to eliminate the need to differentiate cables on the switch side after the cables are routed. Reserve a sufficient length of cable at the end where the cable label is attached, avoiding cutting off the cable label during cable assembling.
- A maximum of 100 hybrid cables can be bundled when no pipe is used. When a pipe is used, ensure that one-third space inside the pipe is vacant.
- When routing hybrid cables, coil the excess optical fibers around dedicated devices, such as a fiber management tray. Even force needs to be applied when cables are coiled to ensure the cables are not overly bent.
- After hybrid cables are assembled onside, you are advised to use a red pointer and an optical fiber adapter to check whether optical fibers are broken or not.
- Optical fiber connectors not in use must be covered with dustproof caps. Ensure that the end face of optical fiber connectors is clean. When an optical fiber connector is installed or removed, you need to protect its end face from touching other objects, preventing contamination or damage. If any dirt is found, use alcohol or dust-free paper to clean it. If the end face is damaged, start from the very beginning to assemble the cable.
- Optical fiber connectors must be assembled by engineers experienced in optical fiber mechanical connection and equipped with professional optical fiber assembling and testing tools. When assembling optical fiber connectors, do not bend optical fibers or contaminate the end faces. Otherwise, services may be adversely affected.
- The bending radius of a hybrid cable is at least five times its diameter. The minimum bending radius of a branch optical fiber inside a hybrid cable is 15 mm.
- To facilitate cabling, it is recommended that hybrid cables connected to the first twelve multi-GE ports and 10GE optical ports (ports 1 to 12) of a hybrid optical-electrical switch be routed along the left side of the cabinet. In addition to this, those connected to the last twelve multi-GE ports and 10GE optical ports (ports 13 to 24) be routed along the right side of the cabinet.
- After hybrid cables are connected to switches and APs, you are advised to bind the optical fibers together using binding straps. Then bind the copper cores and optical fibers together using cable ties to prevent the cables from reaching the cabinet door.

- It is recommended that the exposed optical fibers and copper cores on the AP side be protected by corrugated pipes.

Hybrid cables must be led to target positions by slowly and evenly turning the cable drum. It is recommended that a 5 m to 15 m length be led every minute. Do not place the cable drum upside down and manually lead out the cables, as shown in **Figure 3-44**.

Figure 3-44 Correct and incorrect routing of hybrid cables

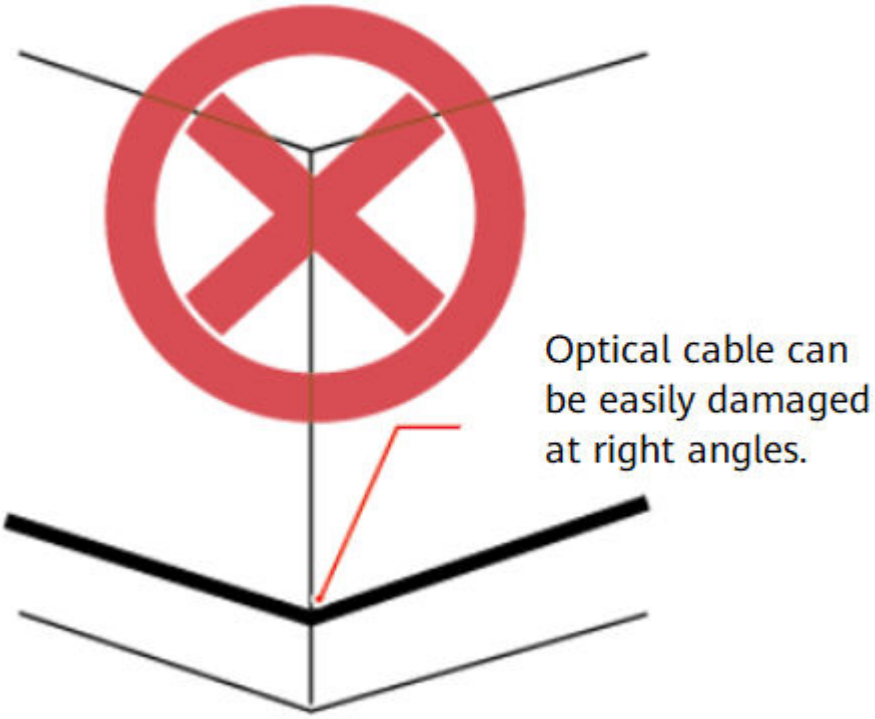


Do not circle or twist hybrid cables or bind them at the bend, as shown in **Figure 3-45**.

Figure 3-45 Circled or twisted cables

At corners and turns, hybrid cables must be laid out by an appointed person to ensure they are not blocked or stuck. The minimum bending radius must be guaranteed, as shown in **Figure 3-46**.

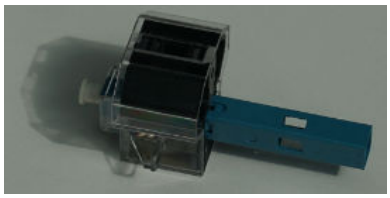
Figure 3-46 Incorrect routing of a hybrid cable at a 90° corner

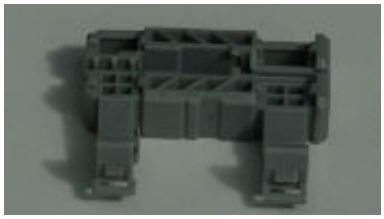
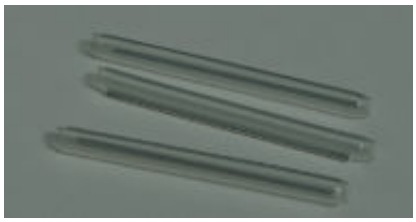


Tools and Accessories

Table 3-20 Tools and accessories

Tool	Appearance	Description
Cable stripper		Used to peel off the outer sheath of hybrid cables. This item does not come with the device and needs to be purchased separately.
Flat drop cable stripper		Used to remove the jacket of optical fibers in hybrid cables. This item does not come with the device and needs to be purchased separately.

Tool	Appearance	Description
Fiber cleaver		Used to cut optical fibers. This item does not come with the device and needs to be purchased separately.
Duckbilled wire stripper		Used to remove the jacket of copper cores in hybrid cables. This item does not come with the device and needs to be purchased separately.
Fiber cleaning paper	-	Used to clean bare fibers. This item does not come with the device and needs to be purchased separately.
Alcohol (concentration: 99.5%)	-	Used to clean bare fibers. This item does not come with the device and needs to be purchased separately.
RJ45 connector		Included in the 02233FKX auxiliary material package, which needs to be purchased.
LC connector and wedge unit		Included in the 02233FKY and 02233FLA auxiliary material packages, which need to be purchased.
Fiber clamp		Included in the 02233FKY and 02233FLA auxiliary material packages, which need to be purchased.

Tool	Appearance	Description
Fiber holder		Included in the 02233FKY and 02233FLA auxiliary material packages, which need to be purchased.
Fiber coating stripper		Included in the 02233FKY and 02233FLA auxiliary material packages, which need to be purchased.
Fiber clamp release tool		Included in the 02233FKY and 02233FLA auxiliary material packages, which need to be purchased.
Fiber stripper pliers		Used to strip a pigtail. This item is used only in the fusion splicing scenario and needs to be purchased separately.
Single-core fiber fusion splicer		Used to fusion splice the optical fiber and pigtail. This item is used only in the fusion splicing scenario and needs to be purchased separately.
Heat shrink tubing		Used only in the fusion splicing scenario. It is included in the 02233FLA and 02233FLB auxiliary material packages, which need to be purchased.

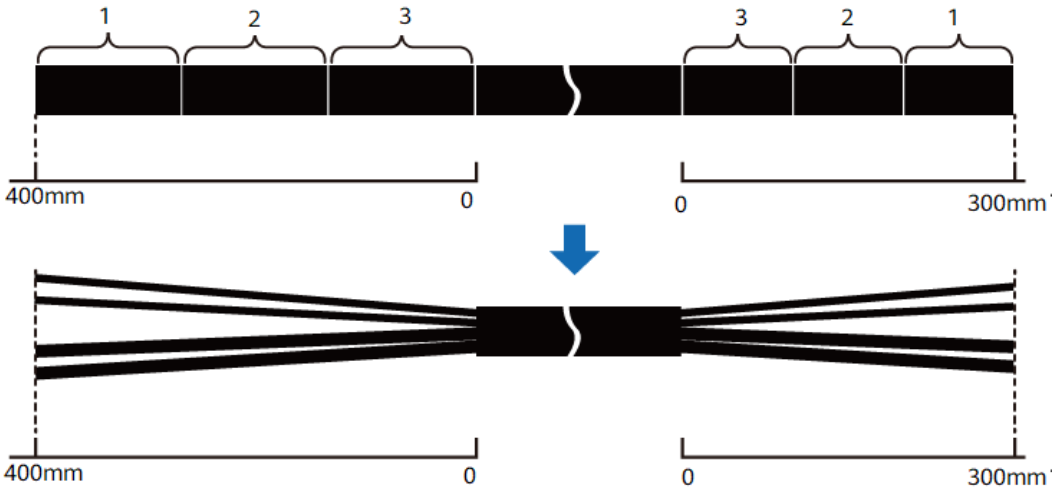
Tool	Appearance	Description
Fiber pigtail		Used only in the fusion splicing scenario. It is included in the 02233FLA and 02233FLB auxiliary material packages, which need to be purchased.
Fusion splice protection sleeve		Used only in the fusion splicing scenario. It is included in the 02233FLA and 02233FLB auxiliary material packages, which need to be purchased.
Red pointer		Used to test the connectivity of optical cables. This item does not come with the device and needs to be purchased separately.
Laser source		Used to test the insertion loss of optical fibers. This item does not come with the device and needs to be purchased separately.

Tool	Appearance	Description
Optical power meter		Used to test the insertion loss of optical fibers. This item does not come with the device and needs to be purchased separately.

Procedure

Step 1 Peel off at least a 400 mm long section of the outer sheath from one end, for connecting to a switch of a hybrid cable. Peel off at least 300 mm from the other end, for connecting to an AP. All figures in this section assume that the left end of the cable is connected to a switch and the right end is connected to an AP.

Figure 3-47 Peeling off the outer sheath



NOTICE

- You are advised to peel off the outer sheath in two or three sections, allowing the outer sheath to be easily peeled off and preventing optical fibers from being broken.
- Do not damage the copper cores or optical fibers.
- Do not overly bend the cable at the stripping positions.

Step 2 Cut the cable according to the cabling direction in a cabinet.

NOTE

Cut the copper cores or optical fibers connected to a switch depending on the side of the cabinet along which hybrid cables connect to the switch:

- Left side: The optical fibers must be 100 mm longer than the copper cores. In this case, cut the copper cores.
- Right side: The copper cores must be 100 mm longer than the optical fibers. In this case, cut the optical fibers.

The copper cores and optical fibers connected to an AP do not need to be cut.

Figure 3-48 Cutting 100 mm of the copper cores (switch cabling along the left side of the cabinet)

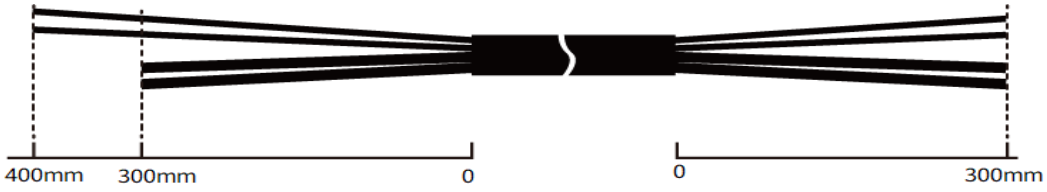
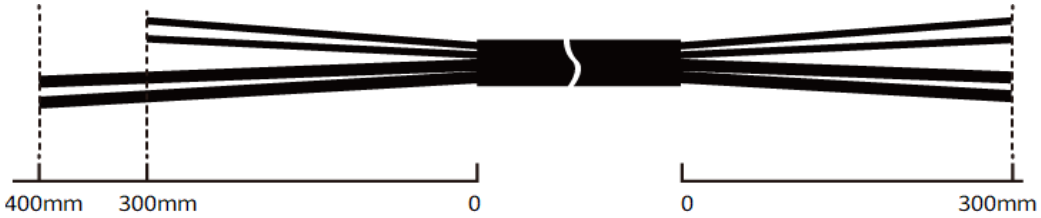


Figure 3-49 Cutting 100 mm of the optical fibers (switch cabling along the right side of the cabinet)



Step 3 Assemble optical fibers by referring to **3.8.5.1 Assembling Optical Fibers in the First-Generation Hybrid Cable in Mechanical Splicing Mode** or **3.8.5.2 Assembling Optical Fibers in the First-Generation Hybrid Cable in Fusion Splicing Mode**.

Step 4 Assemble RJ45 connectors by referring to **3.8.5.3 Assembling Copper Cores in the First-Generation Hybrid Cables**.

Figure 3-50 Hybrid cable with connectors assembled (switch cabling along the left side of the cabinet)

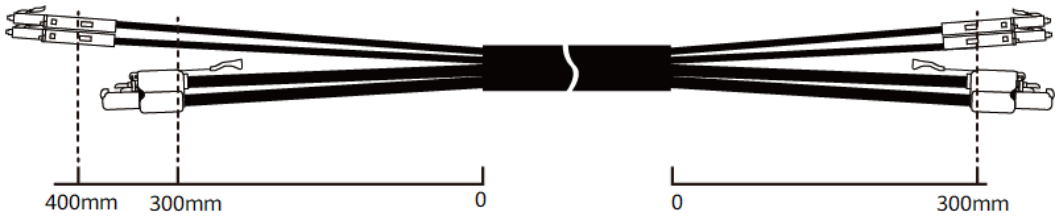
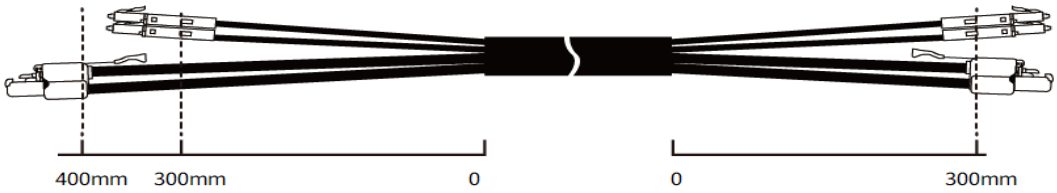


Figure 3-51 Hybrid cable with connectors assembled (switch cabling along the right side of the cabinet)



Step 5 Use a red pointer and an optical power meter to test the connectivity and insertion loss of optical fibers in the finished hybrid cable. The insertion loss of optical fibers must be less than 1.2 dB.

----End

3.8.5.1 Assembling Optical Fibers in the First-Generation Hybrid Cable in Mechanical Splicing Mode

Context

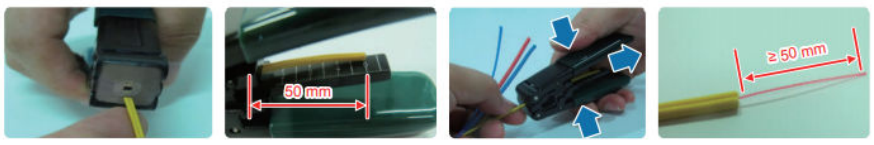
Optical fibers in the first-generation hybrid cable can be assembled in either of the two modes: mechanical splicing and fusion splicing.

- In mechanical splicing mode, LC connectors in the purchased 02233FKY or 02233FLA auxiliary material package are used to terminate optical fibers.
- In fusion splicing mode, optical fibers are fusion spliced with fiber pigtails in the purchased 02233FLA or 02233FLB auxiliary material package, without the need of LC connectors.

Procedure

Step 1 Assemble an optical fiber.

1. Use a flat drop cable stripper to remove the unwanted fiber jacket. Note that using fiber stripper pliers may damage the optical fiber and is therefore not recommended.



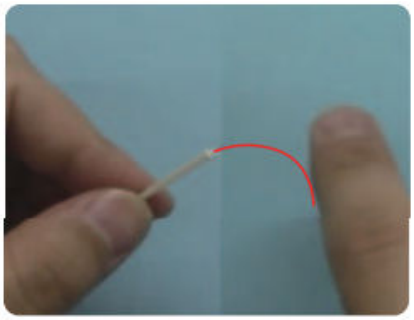
CAUTION

The bare fiber must be at least 50 mm long, without any damages.

Replace the flat drop cable stripper if it is not sharp enough to cut off the steel wire or damages the optical fiber.

Ensure that the cut surfaces are neat and even, the optical fiber is not damaged, and the steel wire in the jacket is not bent.

2. Bend the bare fiber to an angle greater than 60° in the upward and downward directions, three times in each direction.

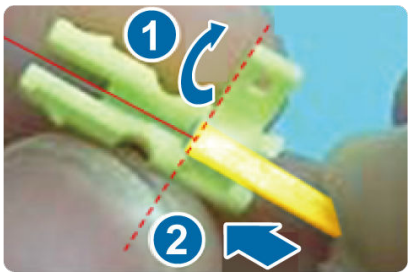


CAUTION

If the optical fiber is broken during the bending, start from the very beginning to assemble the optical fiber.

Step 2 Clamp the optical fiber.

1. Open the fiber clamp and insert the optical fiber.

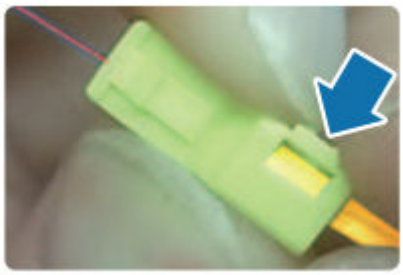


CAUTION

Vertically place the optical fiber inside the fiber clamp, with the narrow side facing the notch.

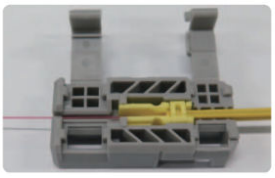
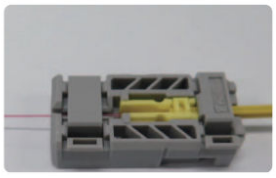
Ensure that there is no gap between the fiber clamp and the cut surfaces. (See the red dotted line.)

2. Close the fiber clamp and press it tight.

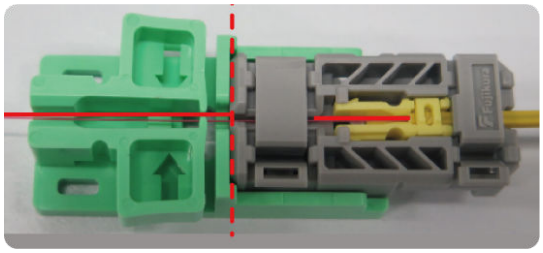


Step 3 Strip the optical fiber.

1. Place the assembly inside the fiber holder and close the buckles.

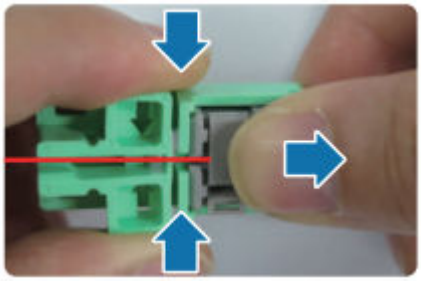
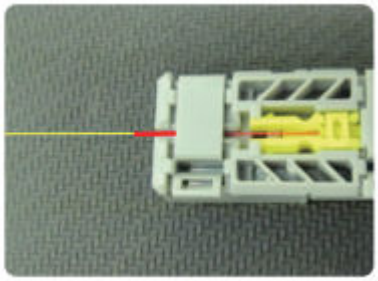
2. Place the fiber holder (with the assembly) inside the fiber coating stripper.



CAUTION

Ensure that there is no gap between the fiber holder and the fiber coating stripper. (See the red dotted line.)

3. Press the fiber coating stripper and pull out the fiber holder at an even speed to remove the fiber coating.

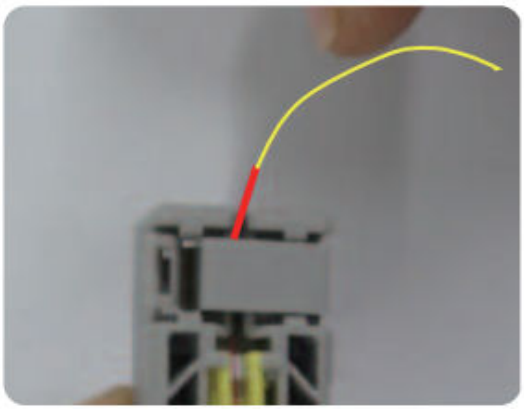



CAUTION

Be sure not to tilt the fiber holder when pulling it out. Otherwise, the optical fiber will break.

Step 4 Cut the optical fiber.

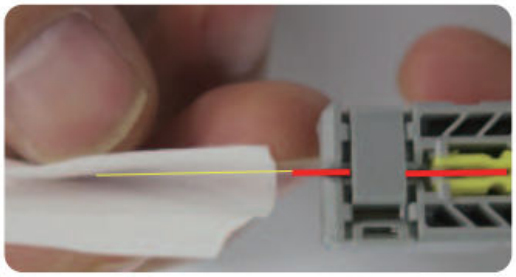
1. Bend the bare fiber to an angle greater than 60° in the upward and downward directions, three times in each direction.



CAUTION

If the optical fiber is broken during the bending, start from the very beginning to assemble the optical fiber.

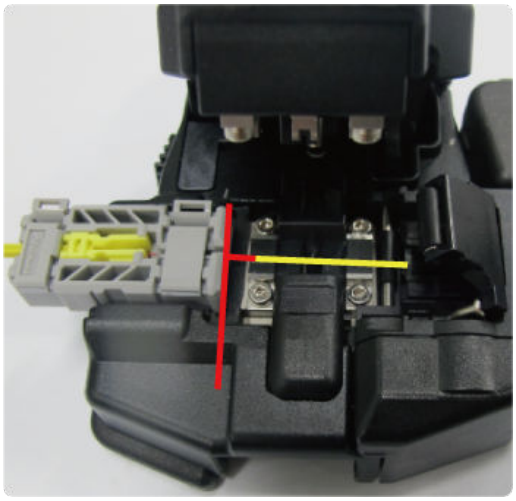
2. Clean the bare fiber using fiber cleaning papers with absolute alcohol.



CAUTION

Do not break the optical fiber during the cleaning.

3. Place the fiber holder on the fiber cleaver, ensuring there is no gap between them.



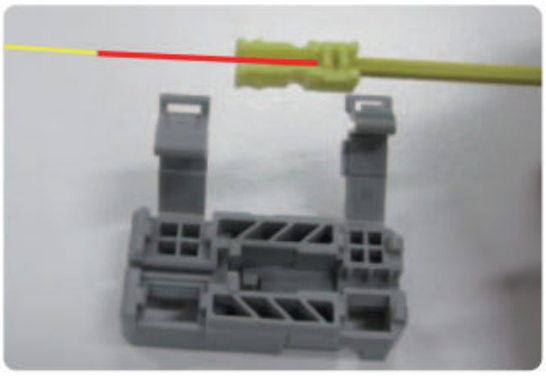
CAUTION

If the cutting is not completed at a time, start from the very beginning to assemble the optical fiber.

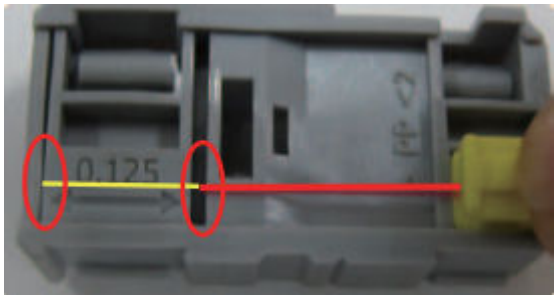
If the cutter blade is worn out, replace it immediately.

4. Cut the optical fiber.

5. Take out the assembly from the fiber holder.

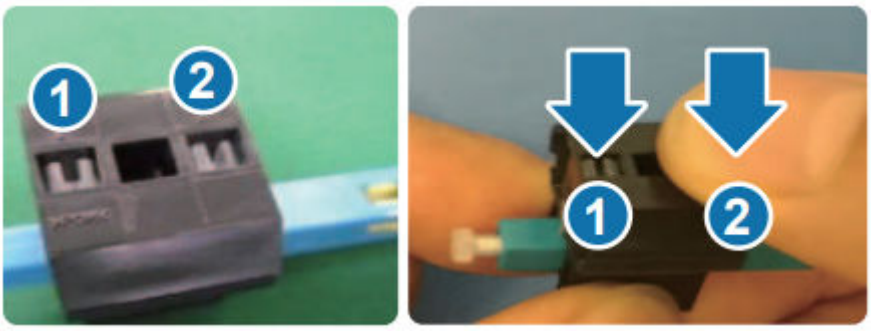


6. Use the fiber holder to check the fiber length. If the lengths of the bare fiber without coating and the bare fiber with coating exceed the scale on the fiber holder, start from the very beginning to assemble the optical fiber.

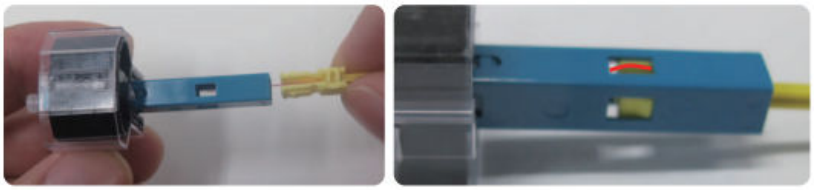


Step 5 Assemble the optical fiber.

1. Press the wedge unit and ensure that the wedge unit is firmly seated on the LC connector. Press the wedge unit first at part 1 and then at part 2. Then follow directions indicated by numbers 1 and 2 on the wedge unit.



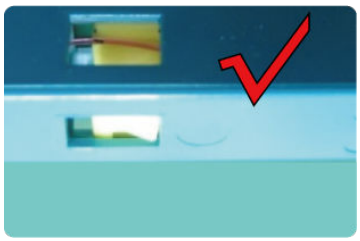
2. Insert the optical fiber until the fiber clamp is entirely within the LC connector (you will hear a click).



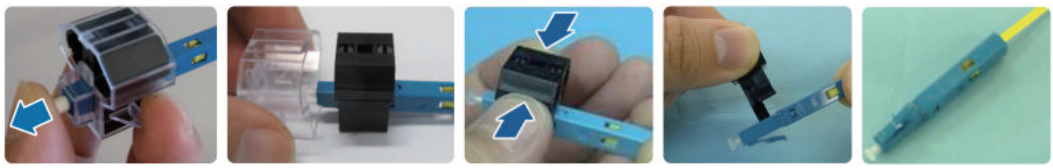
CAUTION

Do not squeeze the wedge unit during the assembly.

3. Inspect the bare wire on the LC connector. The bare fiber should be slightly bent and should not protrude from the LC connector.



Step 6 Remove the protection cover of the wedge unit, and release the wedge unit by squeezing it.



CAUTION

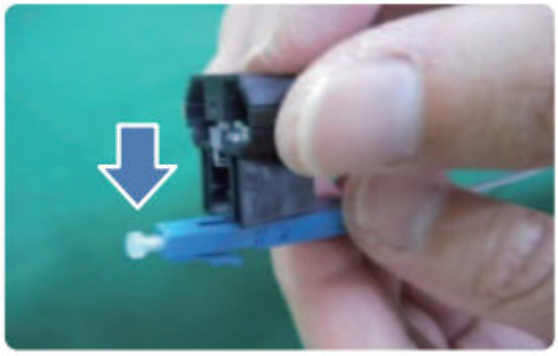
Do not overly bend the optical fiber near the LC connector.

Step 7 (Optional) Disassemble the optical fiber.

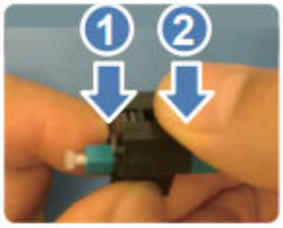
NOTE

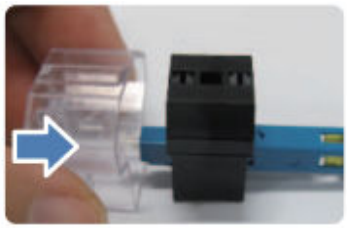
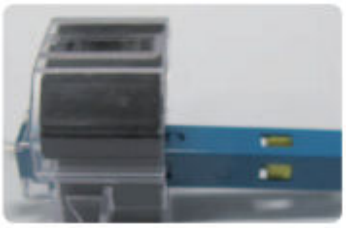
If the optical fiber fails the performance test, disassemble and re-assemble it.

1. Seat the wedge unit on the LC connector.

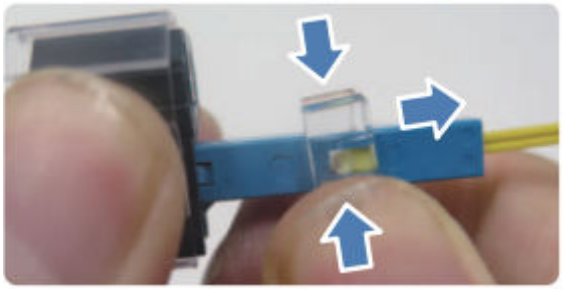


2. Press the wedge unit first at part 1 and then at part 2 until you hear a click.



3. Place the fiber clamp release tool at the hole on the connector and slide it to withdraw the fiber clamp.



4. Pull out the optical fiber.


CAUTION

If the length of the bare fiber without coating is less than 10 mm, it can be determined that the fiber is broken inside the connector. In this case, the connector can no longer be used.

----End

3.8.5.2 Assembling Optical Fibers in the First-Generation Hybrid Cable in Fusion Splicing Mode

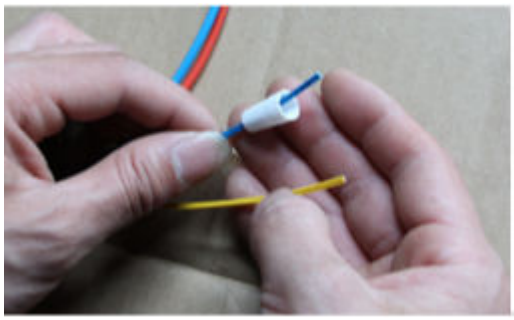
Context

Optical fibers in the first-generation hybrid cable can be assembled in either of the two modes: mechanical splicing and fusion splicing.

- In mechanical splicing mode, LC connectors in the purchased 02233FKY or 02233FLA auxiliary material package are used to terminate optical fibers.
- In fusion splicing mode, optical fibers are fusion spliced with fiber pigtails in the purchased 02233FLA or 02233FLB auxiliary material package, without the need of LC connectors.

Procedure

Step 1 Feed one end of an optical fiber and one end of a pigtail through the caps of a fusion splice protection sleeve.

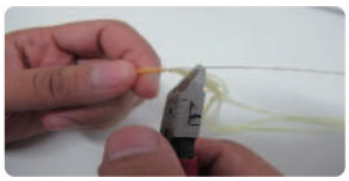
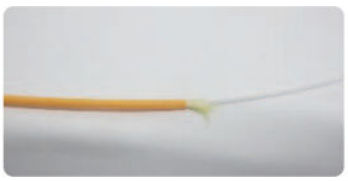
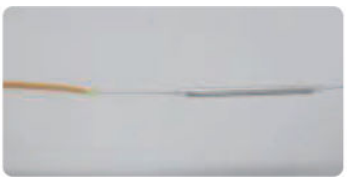



Step 2 Assemble the optical fiber. Remove the fiber jacket and fiber coating in the same way as in the mechanical splicing scenario.

NOTE

If no 02233FKY or 02233FLA auxiliary material package is purchased, you can use fiber stripper pliers.

Step 3 Process the pigtail. Use fiber stripper pliers to strip a pigtail, cut off the unwanted aramid yarn, strip the fiber coating, and route the pigtail into the heat shrink tubing.

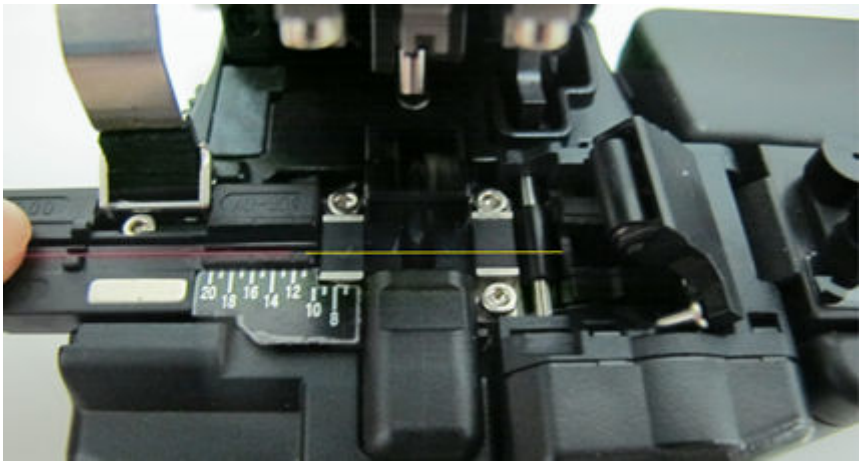




Step 4 Clean bare fibers in the optical fibers and pigtails with pure alcohol using fiber cleaning papers.

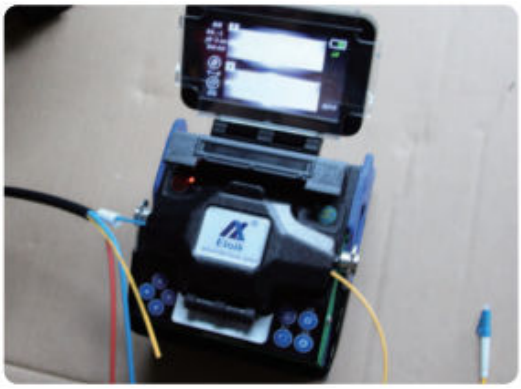
Step 5 Cut the optical fiber and pigtail. Place the fiber holder on the fiber cleaver and use the trough matching the optical fiber and pigtail.

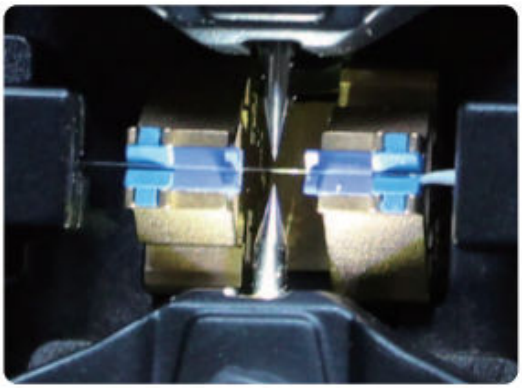
1. Use a 0.9 mm trough for the pigtail.

2. Use a 0.25 mm trough for the optical fiber.



Step 6 Fusion splice the optical fiber and pigtail. Place the optical fiber and pigtail on the fiber fusion splicer, while ensuring that they do not outreach the electrodes.

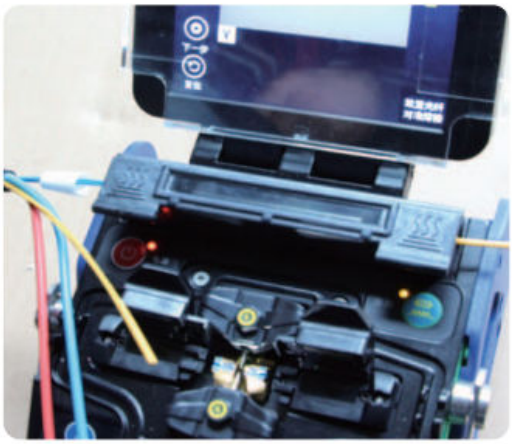
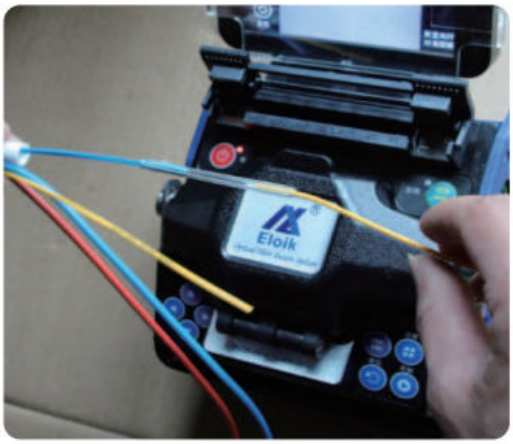




NOTE

Test the insertion loss of the spliced optical fiber. If the value is greater than 0.05 dB, repeat the preceding fusion splicing operations. (The fiber fusion splicer will display the cause, such as uneven end face, bubbles, or fiber core damage.)

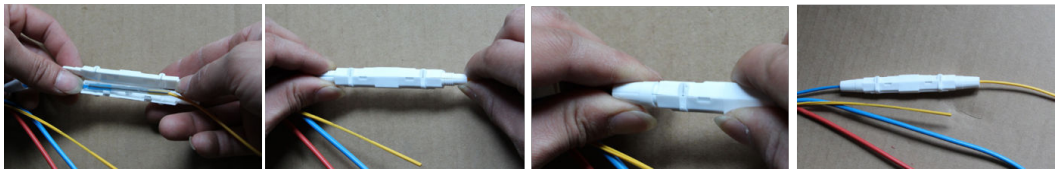
Step 7 Heat the heat shrink tubing. Cover the splicing point with the heat shrink tubing, secure the heat shrink tubing to the heat shrink trough, and start heating.

NOTE

Check whether the heat shrink tubing is tightly wrapped around the jacket of the optical fiber. If not, continue to heat it.

Step 8 Assemble the fusion splice protection sleeve. Place the spliced optical fiber into the fusion splice protection sleeve, and tighten the caps at both ends.



CAUTION

Ensure that the heat shrink tubing has cooled down before you assemble the fusion splice protection sleeve.

Step 9 Repeat steps 1 to 8 to fusion splice the other optical fiber.

----End

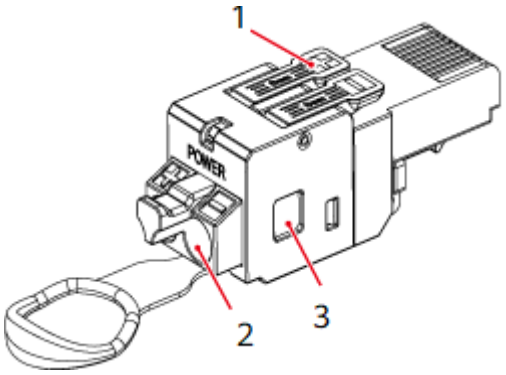
3.8.5.3 Assembling Copper Cores in the First-Generation Hybrid Cables

Context

Copper cores in a hybrid cable need to be terminated by RJ45 connectors before being connected to devices.

No screw is required to assemble RJ45 connectors. **Figure 3-52** shows the appearance of a screw-free RJ45 connector.

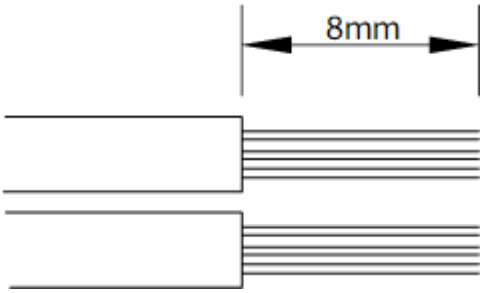
Figure 3-52 Screw-free RJ45 connector



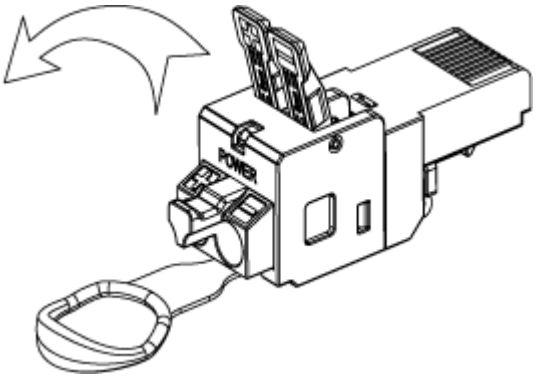
1. Lever	2. Cable inlet	(3) Observation window

Procedure

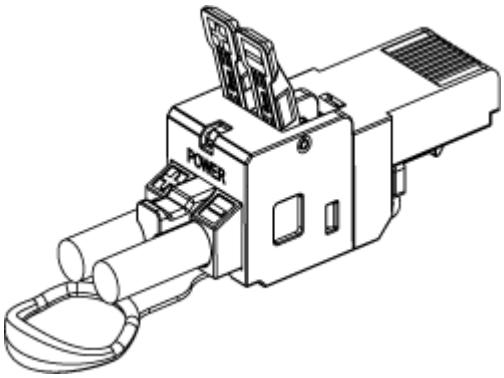
Step 1 Strip 8 mm of the insulation layer off each copper core.



Step 2 Raise the levers of an RJ45 connector.



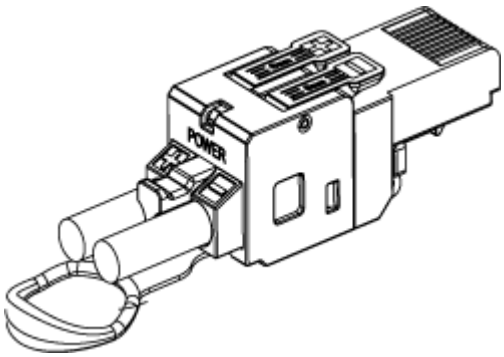
Step 3 Insert the copper cores all the way into the cable inlets. Ensure that no copper conductors are bent or exposed.



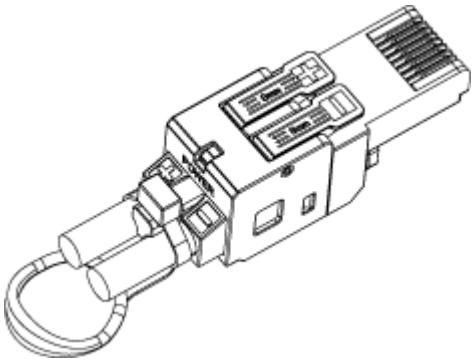
CAUTION

Connect the copper cores of the corresponding colors to the positive (+) and negative (-) terminals on a connector by following the routing requirements for specific colors of cables in the local country or region. Ensure that both ends of a single copper core are connected to the same type of terminals (positive or negative).

Step 4 Lower the levers and look through the observation windows to verify that the springs do not overlap with the insulation layers.



Step 5 Pull each copper core with a force of about 10 N and ensure that each copper core is properly connected. Bind the copper cores with cable ties in the same direction and cut off the excess cable ties.



----End

3.8.6 Connecting the First-Generation Hybrid Cables

Context

For details related to precautions for using the first-generation hybrid cables, see **3.8.5 Assembling the First-Generation Hybrid Cables**.

NOTE

Connectors at two ends of each optical fiber in a hybrid cable must be connected to the TX and RX ports on optical modules, one end to a TX port and the other end to an RX port.

Optical fibers in all hybrid cables must be connected according to the same rules. **Table 3-21** provides the recommended connection rules.

Table 3-21 Recommended optical fiber connections

Optical Fiber Color	Optical Module on a Switch	Optical Module on an AP
Blue	TX	RX
Yellow	RX	TX

Procedure

Step 1 Assemble and test hybrid cables according to **3.8.5 Assembling the First-Generation Hybrid Cables**.

Step 2 Remove dust plugs from the optical ports on a switch and an AP, and install optical modules (only SFP-10G-iLR-S optical modules are supported). For details, see **3.6.5 Installing an Optical Module**.

Step 3 Connect the RJ45 connector at one end of each hybrid cable to a multi-GE port on the switch, and then connect the LC connectors at the same end to the RX and TX ports of an optical module installed on the switch. To ensure convenient cabling, a hybrid cable must be connected to a multi-GE port and an optical port with the same number.

CAUTION

When connecting optical fibers, ensure that the bending of optical fibers at the end of LC connectors does not exceed 180°.

Step 4 Connect the RJ45 connector at the other end of the hybrid copper-fiber cable to the PoE port on the AP, and connect the LC connector at the same end to the TX and RX ports on the optical module installed on the AP.

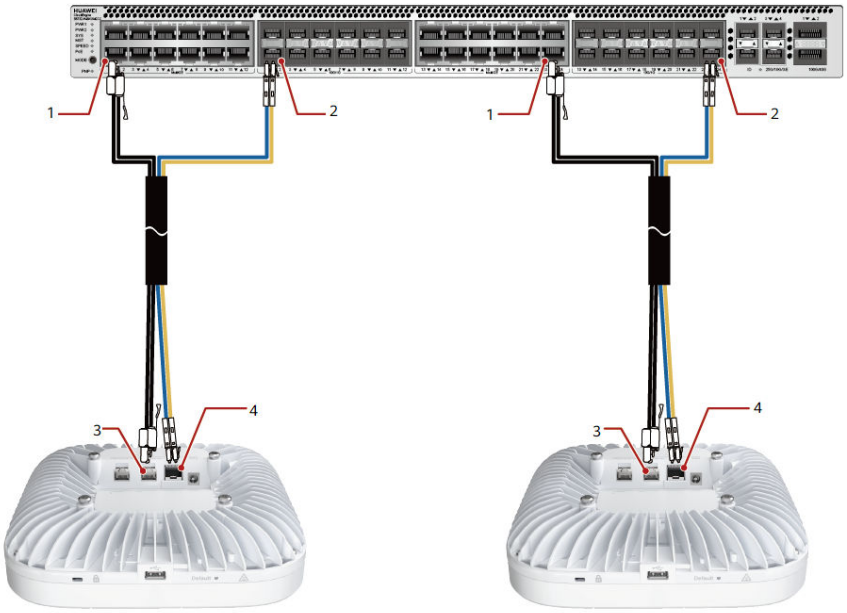
Step 5 Route the cables according to the cabling requirements in **3.8.5 Assembling the First-Generation Hybrid Cables**, and then use cable ties to bind the cables.

NOTE

In mechanical splicing scenarios, reserve at least 90 mm cabling space between the inner side of the cabinet door and the front panel of the switch. In fusion splicing scenarios, minimize the pigtail length and reserve sufficient cabling space based on the pigtail length.

Step 6 Attach a label to each cable.

Figure 3-53 Connections of the first-generation hybrid cable



1. Multi-GE port on a switch	2. 10GE/GE SFP+ port on a switch
3. PoE_IN port on an AP	4. Uplink 10GE/GE SFP+ port on an AP

----End

3.8.7 Assembling Second-Generation Hybrid Cable

Context

The second-generation hybrid cable (hybrid cable 2.0) is composed of optical fibers and copper cores. It is mainly used to connect a hybrid optical-electrical switch to an AP or remote unit so that the switch can provide power and transmit data for the AP or remote unit. During construction, onsite cable connection is required.

NOTICE

- Do not stretch, step on, or place heavy objects on hybrid cables 2.0. Keep the cables away from sharp objects. A maximum of 100 hybrid cables 2.0 can be bundled when no pipe is used. When a pipe is used, ensure that one-third space inside the pipe is vacant.
- Cabling is allowed only when communication facilities are available. Preparing cables onsite must be performed with no power supply connected. After hybrid cables 2.0 are made onside, you are advised to use a red pointer and an optical fiber adapter to check whether optical fibers are broken or not.
- Route cables according to the planned positions and mark the cables in advance to eliminate the need to differentiate cables on the switch side after the cables are routed. Reserve a sufficient length of cable at the end where the cable label is attached, avoiding cutting off the cable label during cable assembling.
- When routing hybrid cables 2.0, coil the excess optical fibers around dedicated devices, such as a fiber management tray. Even force needs to be applied when cables are coiled to ensure the cables are not overly bent. The bending radius of a hybrid cable 2.0 is at least five times its diameter. The minimum bending radius of a branch optical fiber inside a hybrid cable 2.0 is 15 mm.
- Vacant hybrid connectors must be covered with dustproof caps. Ensure that the end faces of hybrid connectors are clean. When a hybrid connector is installed or removed, protect its end face from touching other objects, preventing contamination or damage. If any dirt is found, use alcohol or dust-free paper to clean it. If the end face is damaged, start from the very beginning to assemble the pigtail.
- After connecting the pigtails on both sides of a hybrid cable, you need to test the link loss. If the fiber splicing or cable crimping does not meet the requirements, you are advised to cut off the connection point between the main cable and the pigtail and then reconnect them.
- The connector of a hybrid cable 2.0 cannot be inserted into a common optical module and must be used with a hybrid module (SFP-GE-Hybrid or SFP-10G-Hybrid).
- After splicing optical fibers and crimping power cables in one hybrid cable are complete, make another hybrid cable.

Tools and Accessories

Table 3-22 Fusion splicing tools (prepared by the customer)

Tool	Appearance	Description
Cable stripper		Used to peel off the outer sheath of hybrid cables.

Tool	Appearance	Description
Wire stripper		Used to peel off the rubber layer and coating layer of hybrid cables, and only involved in fusion splicing scenarios.
Fiber cleaver		Used to cut optical fibers.
Duckbilled wire stripper		Used to remove the rubber layer of copper cores in hybrid cables.
Fiber cleaning paper and alcohol (concentration: 99.5%)	-	Used to clean optical fibers.
Optical fiber splicer		Used to fusion splice the optical fiber and pigtail, and only involved in fusion splicing scenarios.
Crimping tool		Used to connect power cables.

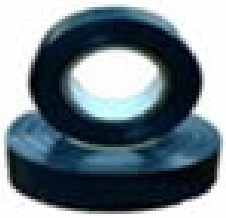
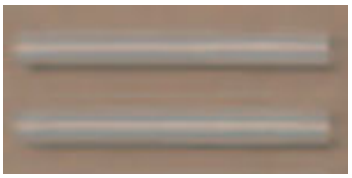
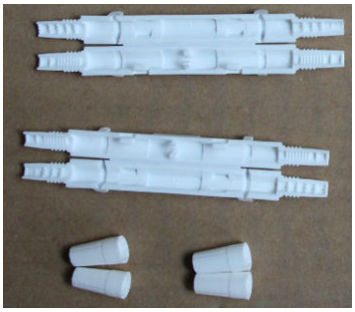
Tool	Appearance	Description
Long measuring tape		Used to measure dimensions.
Insulation tape		Used to fix cables or wrap the damaged part for protection.
Red pointer		Used to test the connectivity of optical fibers.

Table 3-23 Accessories

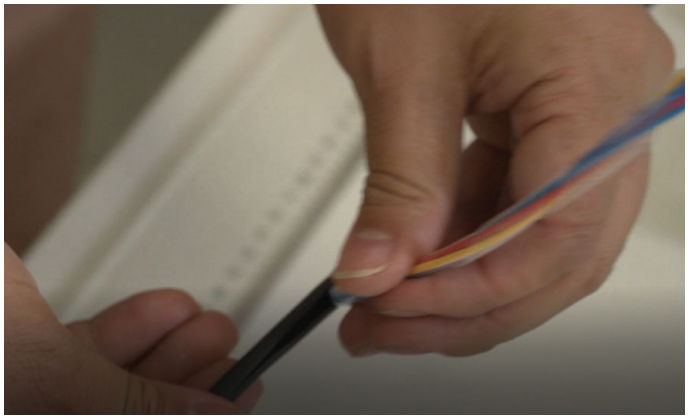
Tool	Part Number	Appearance	Description
Heat shrink tubing	02233PJA		Used only in fusion splicing scenarios.

Tool	Part Number	Appearance	Description
Fiber splice protector			Used only in fusion splicing scenarios.
Bare crimp terminal			Used to connect power cables.

Procedure

Step 1 Strip the adhesive tape off the main cable and pigtail.

Use a cable stripper to peel off a 300 mm long section of the outer sheath from one end of a hybrid cable 2.0 for connecting to a switch, and peel off 300 mm from the other end for connecting to an AP.



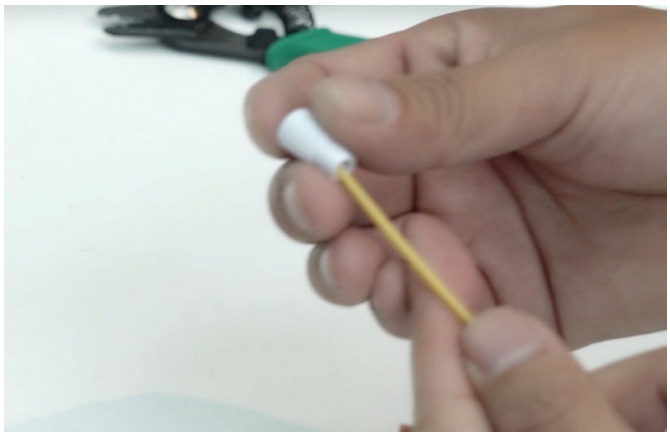
NOTICE

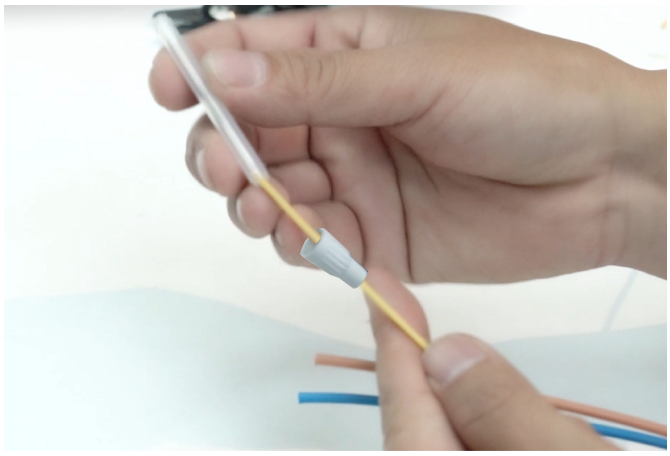
Skip this step if the pigtail does not have a rubber layer.

Step 2 Splice the optical fiber.

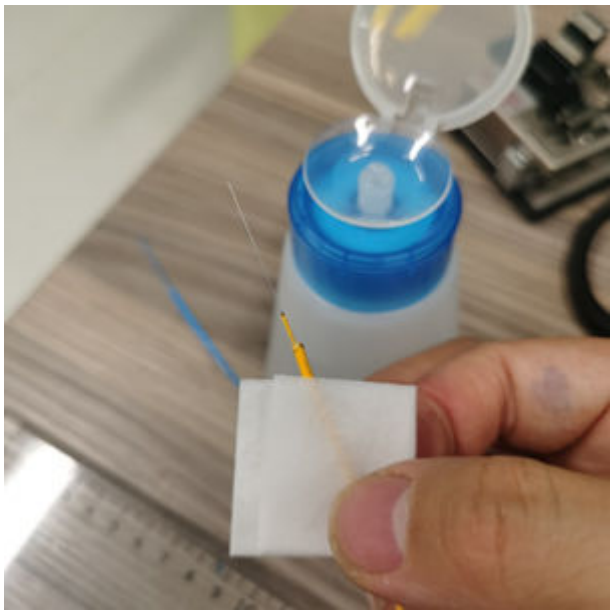
1. Find two optical fibers from the main cable and pigtail, remove the middle rubber layer, and cut off the extra aramid yarn to expose the 30 mm long internal cable.

2. Feed an optical fiber through the caps of a fiber splice protector and a heat-shrink tubing.

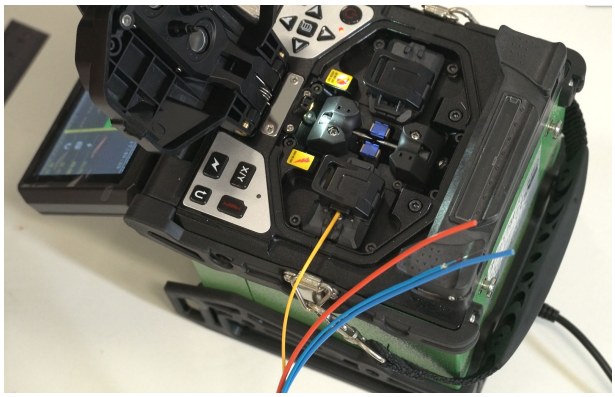




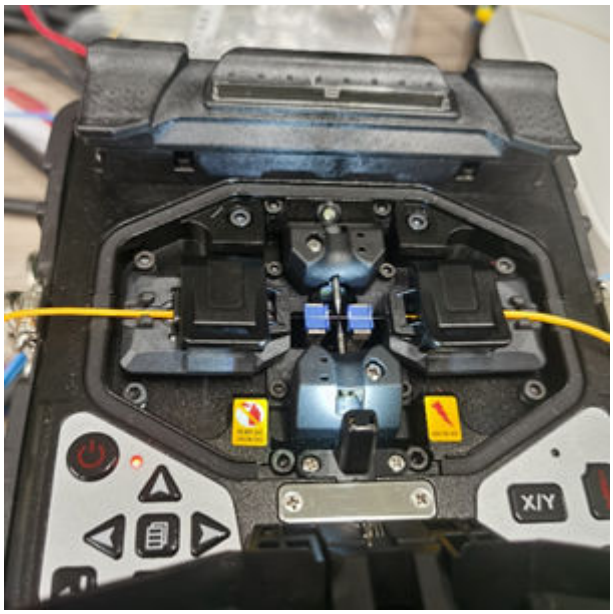
3. Use a wire stripper to strip the inner rubber layer and the fiber coating layer to expose the 25 mm optical fiber. Then, use the fiber cleaning paper dipped in alcohol to clean the optical fiber.



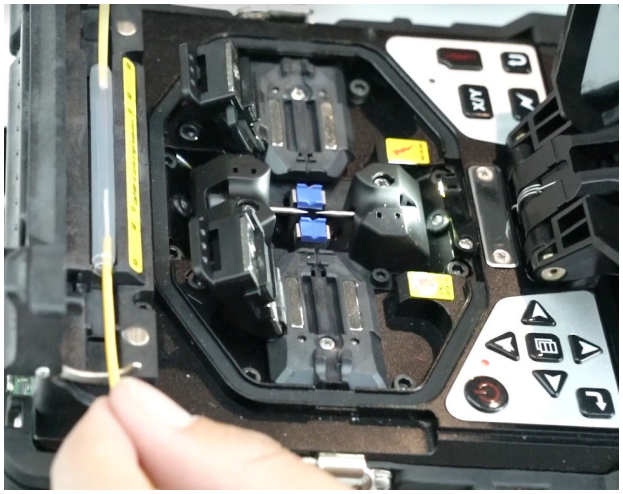
4. Use a fiber cutter to cut the optical fiber and insert the optical fiber into one side of the fiber splicer.

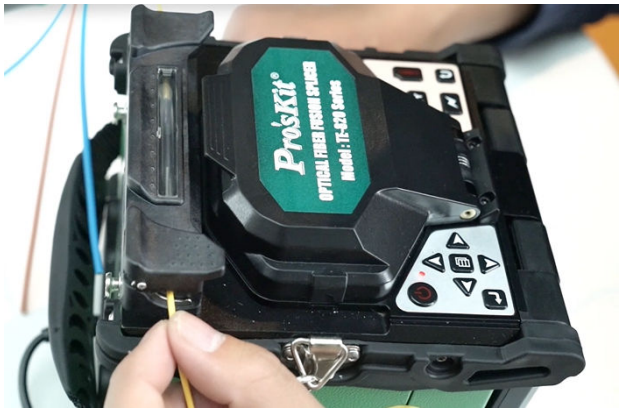


5. For the pigtails of the same color, put on the caps of a fiber splice protector, strip the inner rubber layer and the coating layer of the optical fiber, insert them into the other side of the fiber splicer, and start fiber splicing.

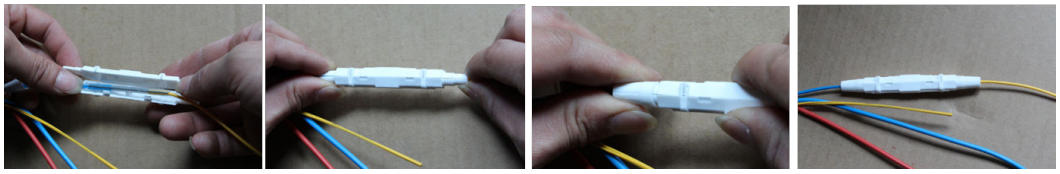


6. Use a heat shrink tubing to secure the fiber splicing point.





7. Assemble the fiber splice protector. Place the spliced optical fiber into the fiber splice protector, and tighten the caps at both ends.



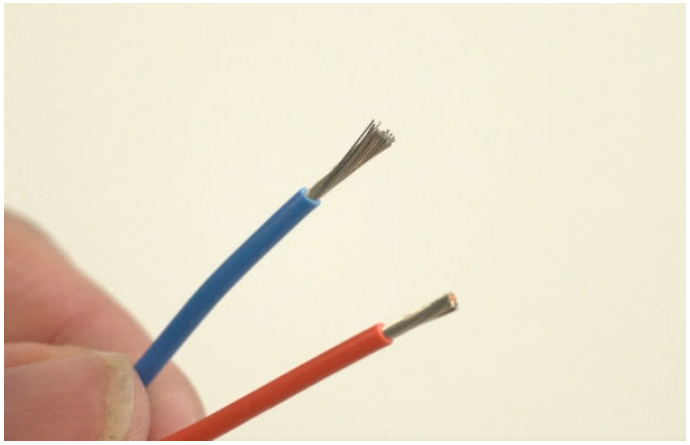
CAUTION

- Ensure that the heat shrink tubing has cooled down before you assemble the fusion splice protection sleeve.
- For the fiber management tray on the front panel, fiber splicing cannot be performed with a fiber splice protector. Otherwise, fiber coiling will be affected.
- If the fiber splicing point is coiled in the fiber management tray, the fiber splice protector is not required.

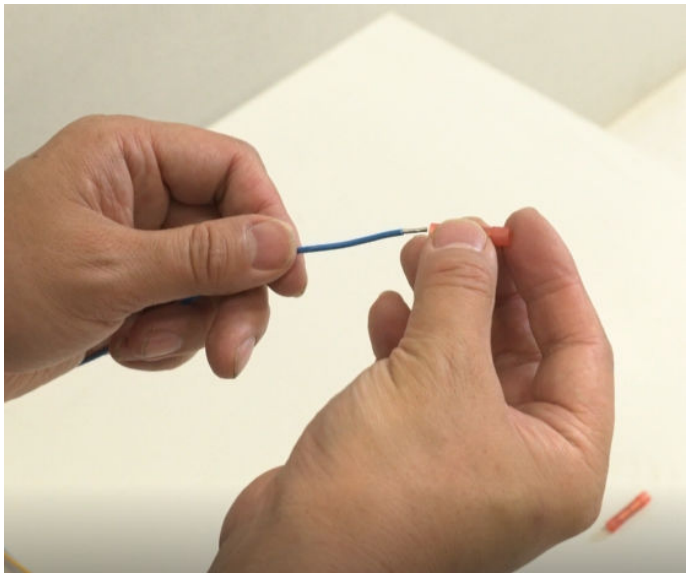
8. Repeat the preceding steps to splice the main optical cable and the other optical fiber in the pigtail.

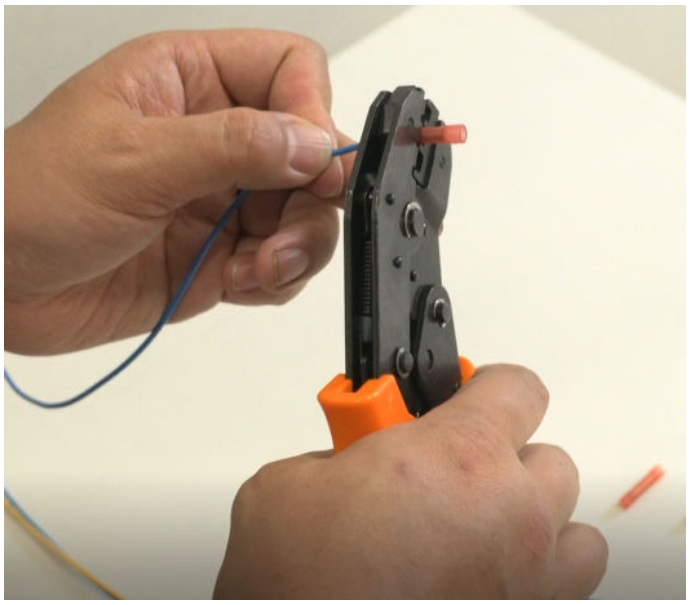
Step 3 Crimp the power cable.

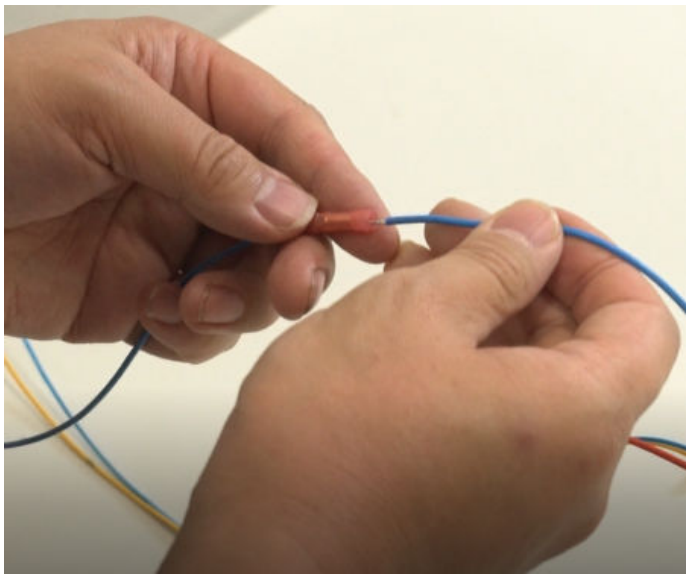
1. Find two power cables from the main cable and pigtail, and strip the insulation layer to expose a 7 mm copper wire.

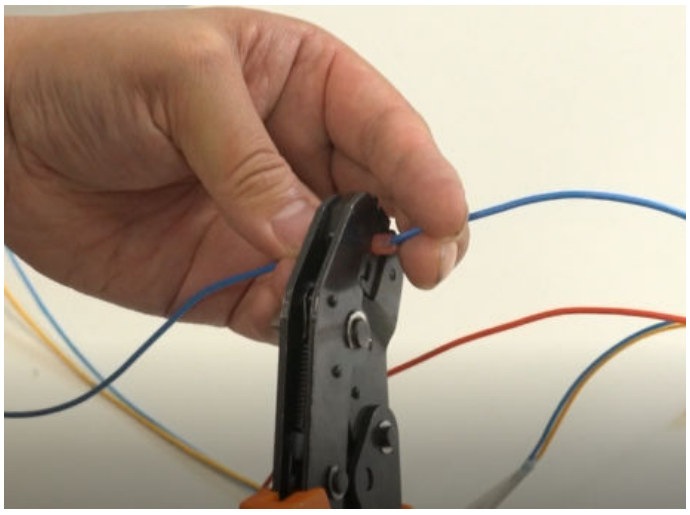


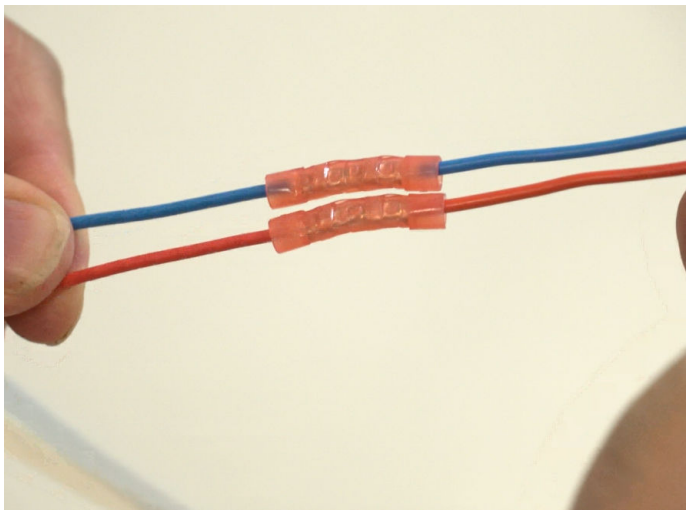
2. Insert the copper wires of the power cables of the same color in the main cable and pigtail into the two ends of the bare crimp terminal, and use the ratchet crimping pliers to crimp the copper wires.











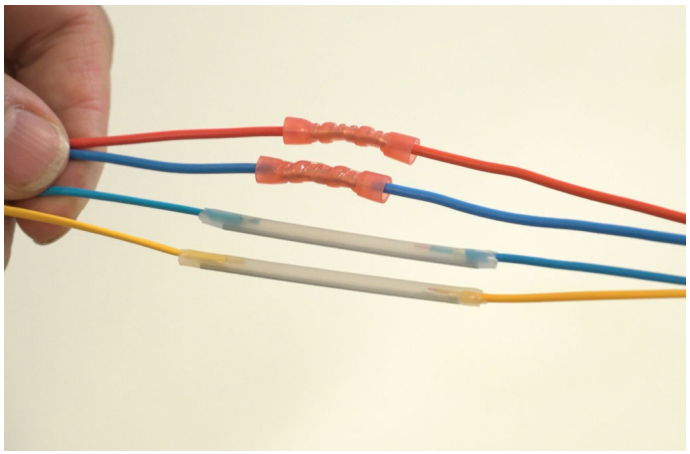
NOTICE

When crimping a 17 AWG power cable on site, use a pair of pliers with a cross-sectional area of 1 mm^2 to 1.5 mm^2.

When crimping a 21 AWG power cable on site, use the pliers with a diameter of 0.5 mm^2, or select the corresponding pliers according to the actual situation.

When crimping the power cable, ensure that the side of the crimping pliers is close to the step surface in the middle of the bare crimp terminal. If the insulation tube of the bare crimp terminal is damaged, wrap the bare crimp terminal with insulation tape.

In this way, the assembling operation of the hybrid cable 2.0 is completed.



----End

3.8.8 Connecting Second-Generation Hybrid Cable

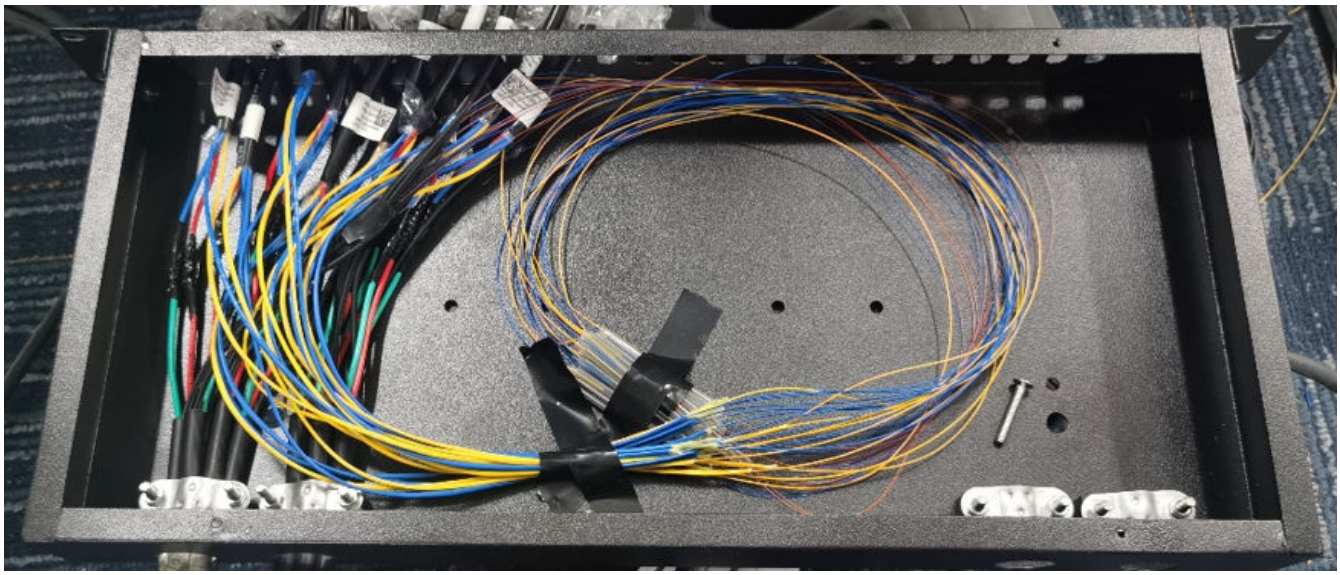
Context

For details related to precautions for using the second-generation hybrid cable (hybrid cable 2.0), see **3.8.7 Assembling Second-Generation Hybrid Cable**. A hybrid optical-electrical switch can be directly connected using hybrid cables or connected to an HDF.

Table 3-24 Connection scenario using hybrid cable 2.0

Scenario	Connection Description
Direct connection	Splice the pigtail on the switch side to the main cable and directly connect the pigtail to the switch. If no HDF is used, place the main cable and splicing part of the pigtail into the fiber splice tray to prevent the spliced cable from being damaged or contaminated. The customer needs to prepare the fiber splice tray. It is recommended that the fiber splice tray be installed near the hybrid optical-electrical switch in the cabinet.
HDF-based connection	Splice the pigtail on the switch side to the main cable and directly connect the pigtail to the HDF. The HDF and switch are connected using jumpers.

Figure 3-54 Appearance of a fiber splice tray



For details about how to splice pigtails in the direct connection scenario, see **3.8.7 Assembling Second-Generation Hybrid Cable**. The cabling method on the switch

port side is the same as that in the scenario where an HDF is used. The following uses the HDF as an example.

The HDF and switch can be installed in the same cabinet or in different cabinets, and jumpers of different lengths are used. The procedure for installing the HDF and switch in the same cabinet using 1.5 m and 0.3 m jumpers is used as an example.

Table 3-25 HDF-based connection

HDF-Based Connection	Cable	Connection Requirements
The HDF and switch are installed in the same cabinet.	0.3 m jumper	The recommended distance between the hybrid optical-electrical switch and the HDF is 1 U to 3 U.
	1.5 m jumper	The recommended distance between the hybrid optical-electrical switch and the HDF is 14 U to 16 U.
	3 m jumper	The recommended distance between the hybrid optical-electrical switch and the HDF is 17 U to 40 U.
The HDF and switch are installed in different cabinets.	7 m jumper	-

NOTE

Connectors at two ends of each optical fiber in a hybrid cable must be connected to the TX and RX ports on optical modules, one end to a TX port and the other end to an RX port.

Optical fibers in all hybrid cables must be connected according to the same rules. **Table 3-26** provides the recommended connection rules.

Table 3-26 Recommended optical fiber connections

Optical Fiber Color	Optical Module on a Switch	Optical Module on an AP
Blue	TX	RX
Yellow	RX	TX

Procedure

Step 1 Prepare and test the hybrid cable 2.0 according to **3.8.7 Assembling Second-Generation Hybrid Cable**.

Step 2 Connect the 1.5 m jumper.

1. Install the switch and HDF in the cabinet. It is recommended that the distance between the HDF and the slot where the hybrid optical-electrical switch is installed be 14 U to 16 U.

   NOTE

   - If multiple switches and HDFs need to be installed in a cabinet, plan the installation position of each device in the cabinet in advance.
   - The distance between two HDFs must be greater than 1 U.
   - It is recommended that switches connected to hybrid cables be installed at an interval of 1 U to facilitate cable insertion and removal.

2. Lead the jumper into the cabling space on the side of the cabinet.
3. Insert the copper module into the port on the hybrid optical-electrical switch.
4. Remove the dustproof cap from of the optical connector. Connect the jumper to the corresponding ports on the HDF and hybrid optical-electrical switch. During the connection, ensure that the port numbers on the HDF are the same as those on the switch.
5. Connect the main cable with the pigtail spliced to the corresponding port at the rear of the HDF.
6. Connect the jumpers to other ports in the same way, and then use cable ties to fix the jumpers. If there are more than 24 cables, route them along both sides of the cabinet. The cabling mode can be left-right or top-bottom.

Table 3-27 Cabling mode

Cabling	Precaution
Left-right cabling	Vertical distance between the switch front panel and the inner side of the cabinet door: ≥ 110 mm If each switch requires 48 ports in full configuration, it is recommended that the vertical distance between the front panel of the switch and the inner side of the cabinet door be greater than or equal to 110 mm. If the distance does not meet requirements, you are advised to use the top and bottom cabling mode.
Top-bottom cabling	The distance between two HDFs or switches must be greater than 1 U.

Step 3 Connect the 0.3 m jumper.

1. Install the switch and HDF in the cabinet. It is recommended that the distance between the HDF and the slot where the hybrid optical-electrical switch is installed be 3 U.
2. Insert the copper module into the port on the hybrid optical-electrical switch.
3. Remove the dustproof cap from of the optical connector. Connect the jumper to the corresponding ports on the HDF and hybrid optical-electrical switch.
4. Connect the main cable with the pigtail spliced to the corresponding port at the rear of the HDF.
5. Connect the jumpers to other ports in the same way, and then use cable ties to fix the jumpers. You are advised to use velcro straps to fix cables.

----End

3.9 Post-installation Checks

Table 3-28 lists the post-installation items to be checked.

Table 3-28 Post-installation checklist

No.	Check Item	Method
1	The installation position of the device meets the requirement in the associated engineering design document.	Observe
2	The surfaces of the device are clean and smooth, free from fingerprints, stains, and scratches.	Observe
3	Components are correctly installed in the cabinet. No component is loose or damaged.	Observe
4	All screws are correctly tightened.	Observe
5	There are no objects on the chassis.	Observe
6	Leave at least 50 mm (2.0 in.) clearance around the device for heat dissipation. Do not install a device with its air intake vent facing or close to the air exhaust vent of other devices.	Measure
7	Signal cables are not damaged or broken and have no splices.	Observe
8	Signal cable connectors are clean, intact, and correctly connected. Wires of each signal cable are securely clamped in the connectors.	Observe
9	Each signal cable has labels attached at both ends, with clear text facing the same direction.	Observe
10	The power cables and ground cable are all copper wires, and are not spliced or damaged.	Observe

No.	Check Item	Method
11	The power cables and ground cable are routed in compliance with the associated engineering design document and meet the power distribution requirements.	Observe
12	The power cables and ground cable are securely connected in compliance with regulations. Ground cable lugs are protected with spring washers on flat washers.	Observe
13	The power cables and ground cable are separated from the signal cables.	Observe
14	The power cables and ground cable are routed straightly and bundled neatly. Sufficient slack is left at the bent part of the cables.	Observe
15	Optical fibers routed out of the cabinet are protected. For example, they are routed in a corrugated pipe or trough.	Observe
16	The bend radius of optical fibers is 20 times larger than their diameter. Generally, the bend radius is larger than 40 mm.	Measure
17	Optical fibers are bundled neatly using binding tape with suitable force.	Observe
18	No signal cables are routed near the heat vents on the cabinet.	Observe
19	Cables in the cabinet do not cross each other and cables outside the cabinet are bundled.	Observe

3.10 (Optional) Installing an RPS1800

3.10.1 Installing the RPS1800 in a Cabinet or Rack

An RPS1800 is a redundant power supply system that provides power redundancy for connected switches to ensure uninterrupted services. When the internal power supply of a switch fails, the RPS1800 detects the power failure and supplies power to the switch immediately. This allows the switch to continue operating, thereby ensuring service continuity.

The RPS1800 can be installed in a cabinet or rack only. The installation procedure is the same as that used for a switch of the same dimensions, which are (H x W x D) 43.6 mm x 442.0 mm x 310.0 mm (1.72 in. x 17.4 in. x 12.2 in.). For details, see **3.5.2.1 Using Front Mounting Brackets**.

NOTICE

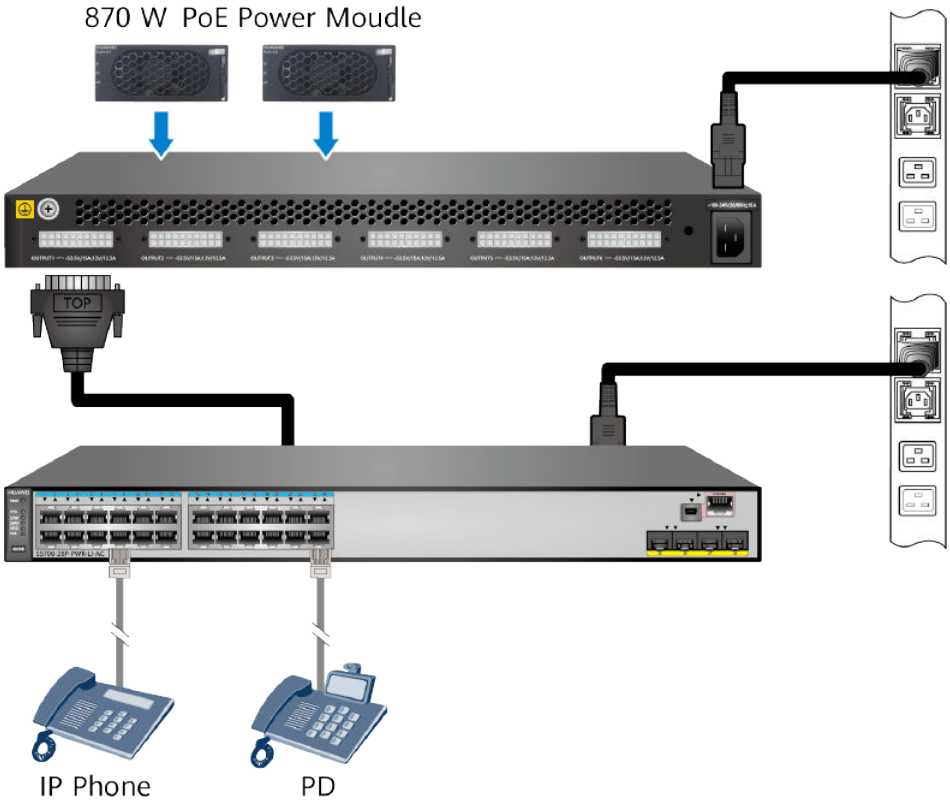
- Before the installation, take ESD protective measures, for example, wear ESD gloves or an ESD wrist strap.
- Leave at least 50 mm (2.0 in.) clearance around the device for heat dissipation. Do not install a device with its air intake vent facing or close to the air exhaust vent of other devices.
- Align the mounting brackets on the left and right mounting rails. If they are not on a horizontal line, forcibly mounting the RPS1800 may distort the chassis.

3.10.2 Installing a Power Module in the RPS1800

Context

An RPS1800 that has 870 W PoE power modules installed can provide PoE power redundancy or PoE power supply for a PoE switch, as shown in **Figure 3-55**.

Figure 3-55 RPS1800 providing PoE power for connected switches



NOTE

When providing power for non-PoE switches, the RPS1800 does not need 870 W PoE power modules. The 870 W PoE power modules and RPS cables are not hot swappable.

Tools and Accessories

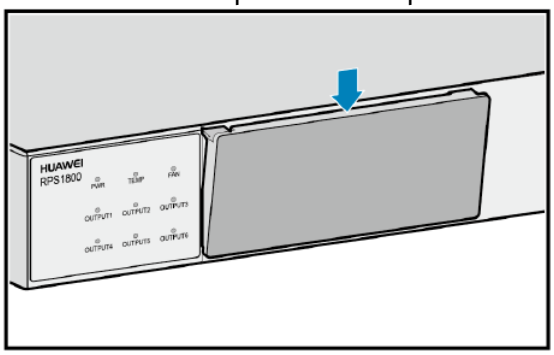
- ESD wrist strap or ESD gloves

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

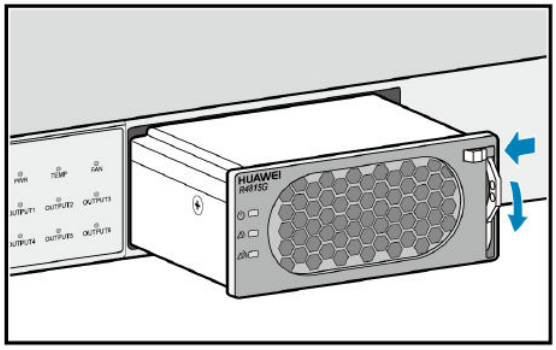
Step 2 Remove the filler panel from the slot into which the power module will be installed. Keep the filler panel for future use.

Hold the upper edge of the filler panel and pull the filler panel downward to remove it. Do not pull the filler panel horizontally.

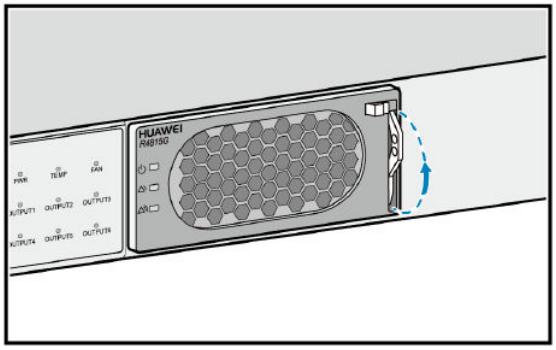


Step 3 Install the power module.

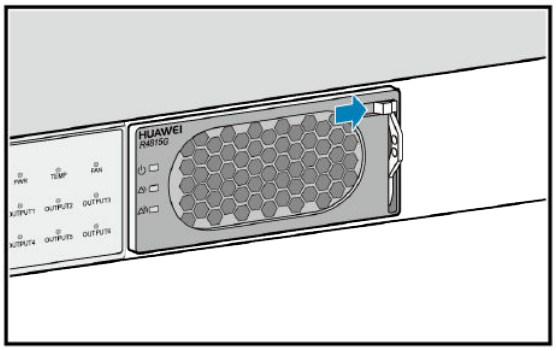
1. Slide to left the white button on the power module and pull out the handle.



2. Insert the power module into the slot and push the handle inward.



3. Slide to right the white button.



NOTE

To remove the power module, reverse this procedure.

----End

3.10.3 Connecting the RPS1800 to a Switch

Context

The RPS1800 can connect to a maximum of six switches and ensure seamless failover for one switch if the internal power module of the switch fails. Among the six DC output ports, port 1 has the highest priority. The switch connected to port 1 preferentially receives power from the RPS1800.

If the RPS1800 uses the same external power supply system as the connected switches, it can prevent service interruption caused by failures of the switches' internal power modules. However, for improved reliability, if the RPS1800 uses a different external power supply system than the connected switches, it can prevent service interruption caused by failure of internal power modules and external power supply systems of the switches.

DANGER

Ensure that the power is off before connecting power cables.

NOTICE

- Power cables of the RPS1800 must be routed indoors or buried underground if they are led in from the outside. Do not aerially route the power cables outdoors.
- Do not power on the switch until you finish installing the switch and connecting all cables.
- Power cables delivered with a switch are for use with this switch only.

Tools and Accessories

- ESD wrist strap or ESD gloves

- Phillips screwdriver
- RPS cable
- RPS AC power cable

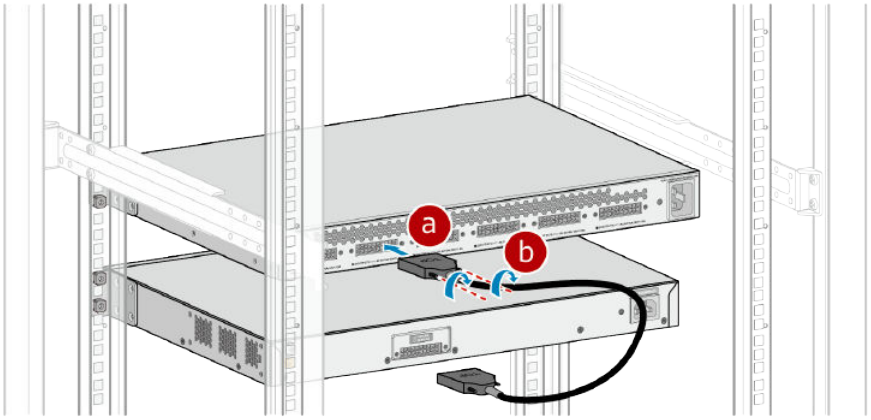
Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 2 Connect an RPS cable to the RPS1800.

1. Insert one end of the RPS cable into an output port on the RPS1800 according to the networking plan. Ensure that the top side of the plug (marked "TOP") faces up.
2. Tighten the captive screws on the plug.

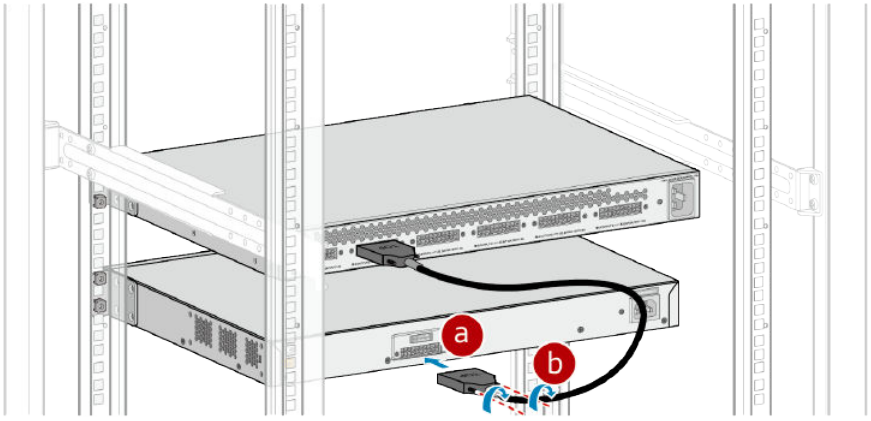
Figure 3-56 Connecting an RPS cable to the RPS1800



Step 3 Connect the RPS cable to a switch.

1. Insert the other end of the RPS cable to the RPS input port at the rear of the switch. Ensure that the top side of the plug (marked "TOP") faces up.
2. Tighten the captive screws on the plug.

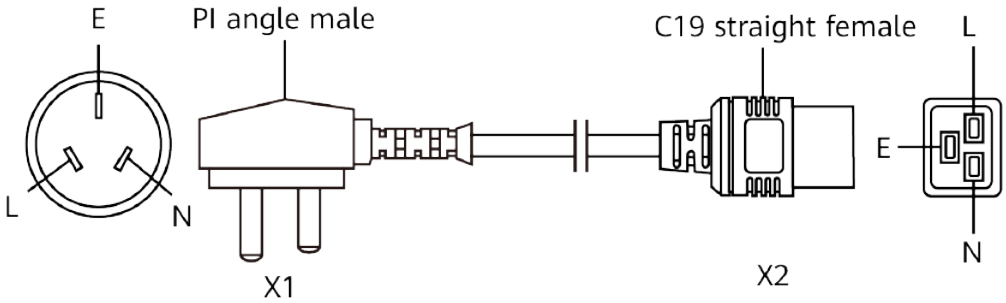
Figure 3-57 Connecting the RPS cable to a switch



Step 4 Connect the RPS1800 power cable to the RPS1800.

The RPS1800 uses a C19 straight female to PI angle male AC power cable, as shown in **Figure 3-58**. An RPS1800 power cable is connected in the same way as the AC power cable of a switch. For details, see **3.8.1 Connecting Power Cables**.

Figure 3-58 RPS1800 power cable



Step 5 Connect the RPS1800 power cable to an external power supply system.

The power cables of the RPS1800 and switch can be connected to the same or different external power supply systems, as shown in **Figure 3-59** and **Figure 3-60**, according to power reliability requirements.

Figure 3-59 Connecting the RPS1800 and switch to the same external power supply system

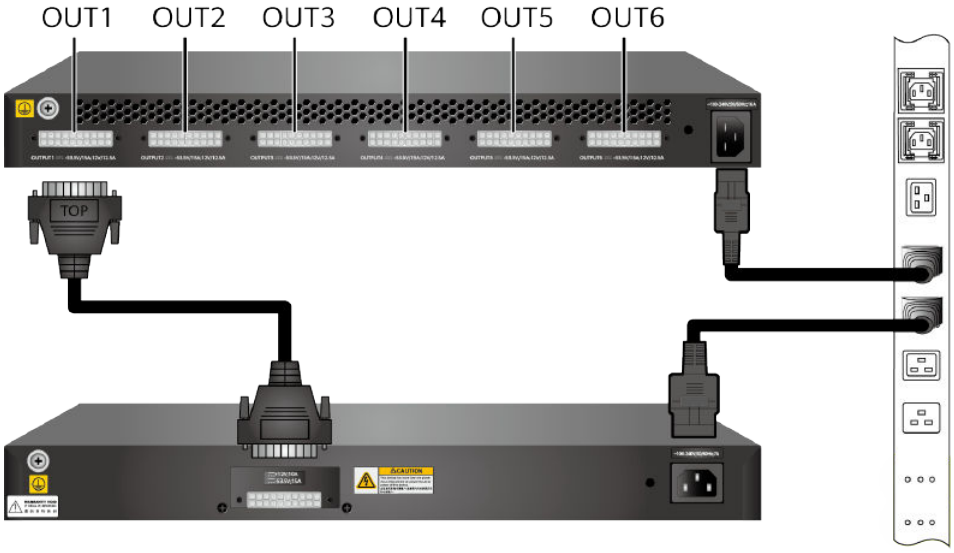
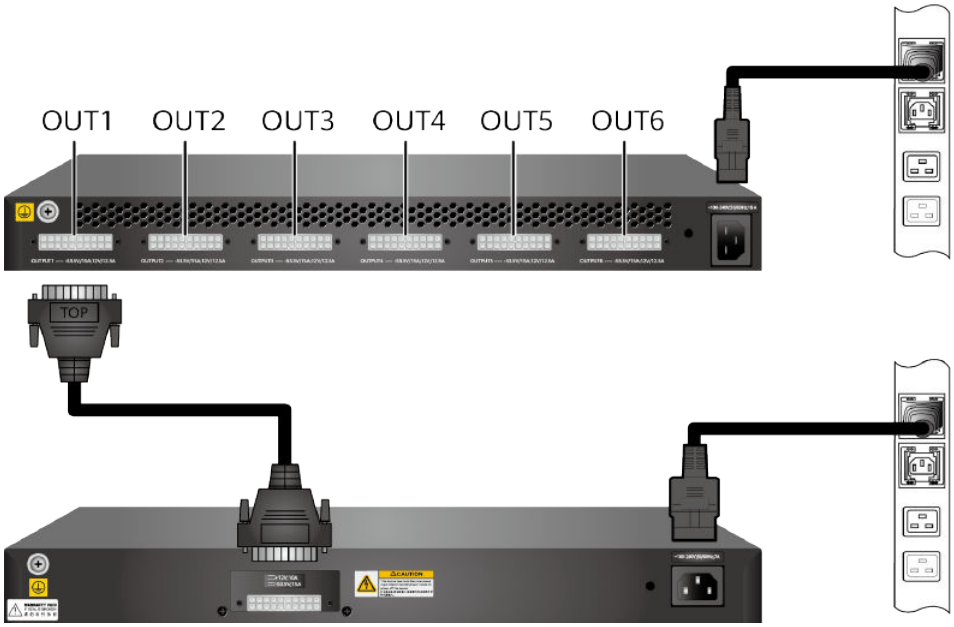


Figure 3-60 Connecting the RPS1800 and switch to different external power supply systems



----End

3.11 Powering on a Switch for the First Time

Tools and Accessories

- ESD wrist strap or ESD gloves
- Multimeter

Procedure

Step 1 Perform the following checks before powering on a switch:

1. Use a multimeter to check that there is no short-circuit condition between the phase wire (live wire), ground wire, and neutral wire in each power outlet.
2. Use the multimeter to check that the input voltage provided by the external power supply system is within the operating voltage range for the switch. For the operating voltage range, see **3.3.4 Checking the Power Supply System**.
3. Check that the power switches of the external power supply system and the switch or the power module are both turned off.
4. Check that the power cables are correctly connected.

Step 2 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 3 Turn on the external power supply system connected to the switch.

Step 4 Turn on the power switch on the switch or power module.

NOTE

Skip this step if the switch does not support pluggable power modules or does not have a power switch.

Step 5 After the switch completes its startup, check the indicators on the switch and power modules.

For details about the indicators of specific switch models, see the *Hardware Description*.

----End

Follow-up Procedure

To power off the switch, perform the following steps:

NOTICE

Powering off the switch will interrupt all services on the switch. Exercise caution when you perform this operation.

1. Turn off the power switch on the switch or power module.
2. Turn off the external power supply system connected to the switch.
3. Check that the switch and all its modules are powered off. (All indicators are off.)

3.12 First Login to a Device

Before configuring services on a new device, you need to log in to the device locally. Once logging in, you can configure the device name, management IP address, and system time, and configure Telnet or STelnet to implement remote management.

The first login methods and procedures supported by a device vary according to the device model and software version. For details, see the configuration guide of the corresponding model and version.

Table 3-29 Configuration guide links

Model	Configuration Guide (Example)
S1700 unmanaged switches	Unmanaged switch models, requiring no configuration
S1700 web-managed switches and fully-managed switches	**S1700 V200R022C00 Web User Guide**
S200	**S200 V200R022C00 Web User Guide**

Model	Configuration Guide (Example)
S300, S500, S2700, S5700, and S6700 running V200	**S300, S500, S2700, S5700, and S6700 V200R022C00 Configuration Guide - Basic Configuration**
S5700 and S6700 running V600	**S5700 and S6700 V600R022C00 Configuration Guide - Basic Configuration**
S3710 running V600	**S3700 V600R022C10 Configuration Guide - Basic Configuration**

3.13 Component Replacement

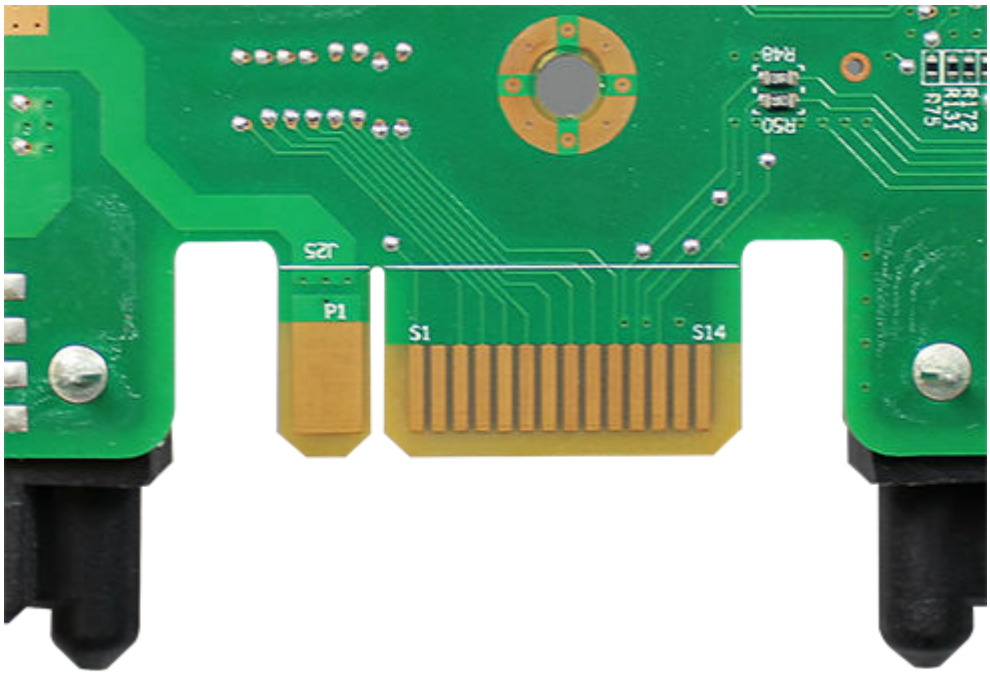
NOTICE

Before sending a switch for repair or discarding it, format its flash storage to ensure data security and reset its BootLoad menu password.

When installed in a normal operating environment, fixed switches do not need dust cleaning. Do not disassemble the equipment.

Some switch models provide the JTAG function through edge connectors on the PCB, as shown in **Figure 3-61**. The JTAG function is used for equipment checks and fault diagnosis during maintenance.

Figure 3-61 Edge connectors



If the device is faulty, fill in the **Repair Transmission Sheet** and send the faulty module with the Repair Transmission Sheet to the equipment supplier or the specified repair service provider.

3.13.1 Replacing a Power Module or Fan Module

Context

This section describes how to replace a power module. The procedure for replacing a fan module is similar. All the power modules and fan modules are hot swappable (except the 870 W PoE power module).

NOTICE

- Before replacing a power module, ensure that the switch is powered by the other power module. Replacing the only power module of a switch will interrupt services.
- If two power modules are installed in a switch, they work in 1+1 backup mode. If three power modules are installed in a switch, they work in 1+1+1 backup mode. Replacing one power module will not power off the switch. If you are replacing both power modules, replace the second one only after the first replaced one starts to work (its indicator is steady green).
- If a fan module needs to be replaced, complete the replacement procedure within 3 minutes.
- Fan modules of different types or with different airflow directions cannot be used on the same switch.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Phillips screwdriver

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

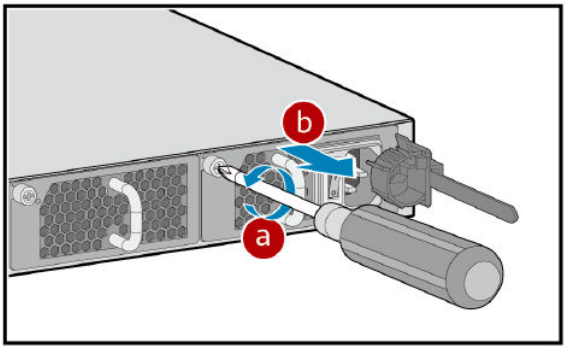
Step 2 Turn off the power module.

Step 3 Remove the power cable from the power module. The procedure for removing a power cable is the reverse of the procedure for installing the power cable. For details, see **3.8.1 Connecting Power Cables**.

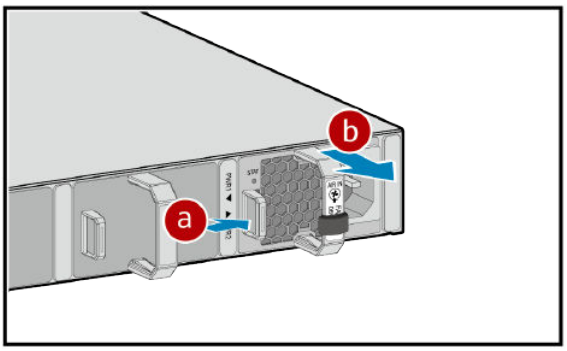
Step 4 Remove the power module from the switch.

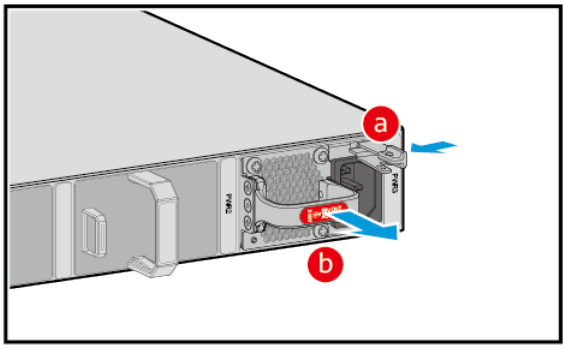
- To remove the power module secured by a captive screw, perform the following steps:
  a. Use a Phillips screwdriver to loosen the captive screw on the power module counterclockwise.

b. Slowly pull the power module out by the handle.



- To remove the power module secured by a lock, perform the following steps:
  a. Press and hold the lock on the power module in the direction shown in the figure.
  b. Slowly pull the power module out by the handle.





Step 5 Install the replacement power module in the switch. For details, see **3.6.1 Installing a Pluggable Power Module**.

Step 6 Connect the power cable to the new power module. For details, see **3.8.1 Connecting Power Cables**.

Step 7 Turn on the power module. (Skip this step if the power module does not have a power switch.)

Step 8 Use either of the following methods to check whether the new power module is working normally:

- Observe the STATUS indicator on the panel. If the indicator is steady green, the power module works normally.

- Run the **display device** command to check the running status of the new power module.

----End

Follow-up Procedure

If the new power module does not work normally, contact the equipment supplier or local maintenance personnel for technical support.

After replacing the power or fan module, collect all tools. If the old power or fan module is faulty, fill in the **Repair Transmission Sheet** and send the faulty module with the Repair Transmission Sheet to the equipment supplier or the specified repair service provider.

3.13.2 Replacing an Optical Module

Context

CAUTION

Never look directly into an optical module or the ends of optical fibers. Optical modules and connected fibers emit laser radiation that will cause eye damage.

NOTICE

Use optical modules certified for Huawei switches. Using other optical modules may affect service stability and Huawei can accept no liability for the outcome.

NOTICE

Ensure that the new optical module has the same center wavelength and complies with the same standards as the old one.

NOTICE

Optical modules are electrostatic-sensitive components. Take ESD protection measures when replacing optical modules.

NOTICE

- Unplug the optical fibers from the optical module before removing it. Install or remove optical fibers carefully to avoid damaging the fiber connectors. Applying too much force to the optical fibers may damage the optical module.
- If an optical module cannot be completely inserted into an optical port, turn the optical module over and try again.
- Cover unconnected optical modules with dust plugs.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Dust caps
- Dust plugs
- Alcohol swab

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. Ensure that the ESD wrist strap is grounded and in a close contact with your wrist.

Step 2 Record the location of each optical fiber on the old optical module and check whether the labels on the optical fibers are correct and clear. If any labels are unclear, replace them and ensure that the details are correct.

Step 3 Release the locking clip on the fiber connector, gently push the fiber connector inward, and then pull out the optical fiber. After removing the optical fibers from the optical module, cover the connectors with dust caps.

The locking clip varies on different fiber connectors.

- **Figure 3-62** shows the locking clips on an LC/PC connector. Hold down the locking clips when pulling the optical fibers.
- **Figure 3-63** shows the locking clip on an MPO connector. The locking clip is released automatically when you pull the MPO connector.
- **Figure 3-64** shows the locking clip on an SC/PC connector. The locking clip is released automatically when you pull the SC/PC connector.

Figure 3-62 LC/PC connector

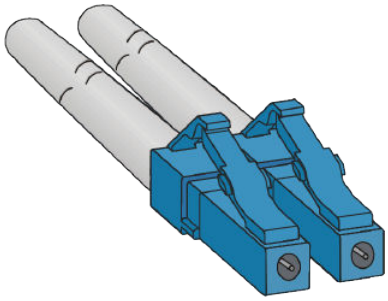


Figure 3-63 MPO connector

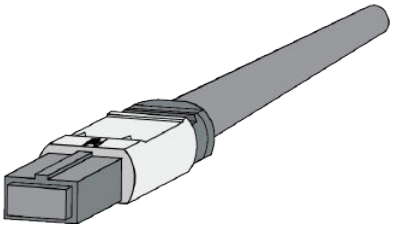
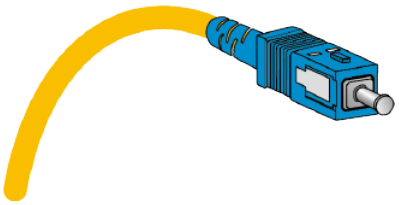


Figure 3-64 SC/PC connector



Step 4 Remove the optical module and cover the bores with dust plugs. Store optical module safely.

The latch varies on different optical modules. **Figure 3-65** shows an optical module with a clasp latch. To release the clasp latch, rotate it down. **Figure 3-66** shows an optical module with a tab latch. The tab latch is released when you pull it.

Figure 3-65 Optical module with a clasp latch

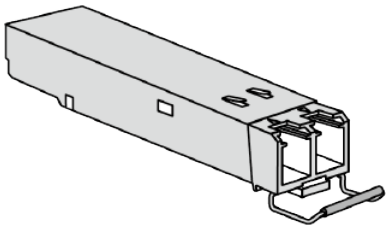
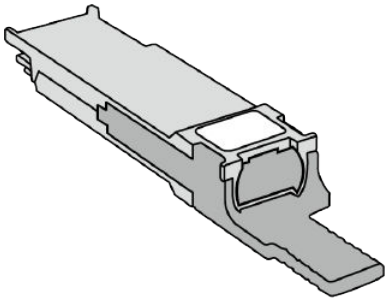


Figure 3-66 Optical module with a tab latch



Step 5 Take out the new optical module from the package. Ensure that the optical module is correctly oriented and gently push it into the optical port until you hear a click.

NOTE

The new optical module must have the same optical parameters as the remote optical module connected to it.

Step 6 Identify the optical fibers to be connected to the optical module. Remove the dust caps from the optical fibers and insert the optical fibers to the bores of the optical module.

----End

Follow-up Procedure

If the new optical module does not work, unplug the optical fibers and clean their connectors in one direction with an alcohol swab. Then, re-connect them. If this fails to resolve the issue, contact the equipment supplier or local maintenance personnel for technical support.

3.13.3 Replacing a Card

Context

Some switch models support pluggable interface cards. This section describes how to replace a 4-port front card. The replacement method is the same for other cards. For details about which models support what cards, see "Cards" in the *Hardware Description*.

NOTICE

Only switch models S5700-SI, S5710-LI, and S5700-EI do not support hot swappable cards. To replace cards of this switch models, power off the switch before removing the card from the switch.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Phillips screwdriver

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

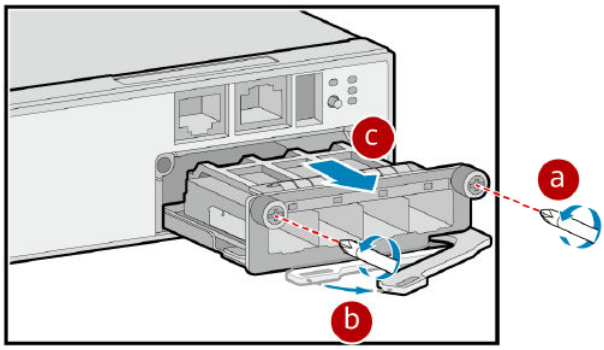
Step 2 If the card you want to replace is not hot swappable, power off the switch.

NOTICE

Powering off the switch will interrupt all services on the switch. Exercise caution when performing this operation.

Step 3 Remove the card from the switch.

1. Use a Phillips screwdriver to loosen the captive screws at two sides of the card.
2. Rotate the ejector lever outward to release the card from the slot.
3. Holding the two sides of the card, gently slide the card out of the slot.



Step 4 Install the new card. For details, see **3.6.4 Installing a Card**.

----End

Follow-up Procedure

If the new card does not work normally, contact the equipment supplier or local maintenance personnel for technical support.

After replacing the card, collect all tools. If the old card is faulty, fill in the **Repair Transmission Sheet** and send the faulty module with the Repair Transmission Sheet to the equipment supplier or the specified repair service provider.

3.13.4 Replacing a Switch

Context

The chassis is severely damaged or a hardware fault occurs due to external forces.

NOTICE

Power off the switch before replacing it, which will interrupt services.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Phillips screwdriver

Procedure

Step 1 Wear an ESD wrist strap or ESD gloves. When wearing an ESD wrist strap, ensure that it is in close contact with your wrist and grounded properly.

Step 2 Confirm that the names, models, and specifications of the new and original switches are the same. If a mismatch is found, contact technical support as soon as possible.

Step 3 Record the IDs of slots where modules are installed and cable connections on ports of the original switch.

Step 4 Back up configuration data of the original switch as follows: Run the **save** command to save configuration data into a configuration file on the storage medium, and copy the configuration file to a maintenance terminal (skip this step for the unmanaged switch).

Step 5 Power off the original switch.

CAUTION

The switch is successfully powered off when all indicators are off.

Step 6 Remove all cables and pluggable modules from the switch.

Step 7 Remove M6 screws from the mounting brackets and remove the switch from the cabinet (skip this step if the switch is installed on the desktop).

CAUTION

When removing screws from the mounting brackets, hold the bottom of the switch to prevent it from falling down to cause personnel injury or damage to other devices.

Step 8 Remove mounting brackets from the original switch and install the mounting brackets on the new switch.

Step 9 Install the new switch in the same position as the original switch and secure it with M6 screws.

Step 10 Install the original modules and cables according to the recorded information.

Step 11 Power on the new switch and observe indicators on it. For details about the indicators of specific switch models, see the *Hardware Description*.

Step 12 Log in to the new switch and check whether the switch is working properly.

Run the **display device** command to check the running status of the new switch.

----End

Follow-up Procedure

If the new switch does not work normally, contact the equipment supplier or local maintenance personnel for technical support.

After the replacement is complete, collect all tools. When you confirm that the replaced switch is faulty, fill in the **Repair Transmission Sheet** and send the faulty switch and the sheet to Huawei.

3.13.5 3D Videos for Parts Replacement

Table 3-30 3D Videos for Parts Replacement

Scenario	Link of Video
Replacing an ES0W2PSA0150 Power Module	**Replacing an ES0W2PSA0150 Power Module**
Replacing a FAN-028A-B Fan Module	**Replacing a FAN-028A-B Fan Module**
Replacing an ES5D21X04S01 Card	**Replacing an ES5D21X04S01 Card**
Replacing an ES5D21X02T01 Card	**Replacing an ES5D21X02T01 Card**