HUAWEI eKit

SOHO Multi-Service Gateway Installation Guide

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Contents

1 About This Document

Intended Audience

This document describes installation procedures, troubleshooting methods, and maintenance instructions for the S series devices.

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

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
⚠ DANGER	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

Symbol	Description
☐☐ NOTE	Supplements the important information in the main text.
	NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Command Conventions

The command conventions that may be found in this document are defined as follows.

Convention	Description
Boldface	The keywords of a command line are in **boldface**.
Italic	Command arguments are in *italics*.
[ ]	Items (keywords or arguments) in brackets [ ] are optional.
{ x	y	... }	Optional items are grouped in braces and separated by vertical bars. One item is selected.
[x	y	...]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x	y	... }*	Optional items are grouped in braces and separated by vertical bars. A minimum of one item or a maximum of all items can be selected.
[x	y	...]*	Optional items are grouped in brackets and separated by vertical bars. Several items or no item can be selected.
&<1-n>	The parameter before the & sign can be repeated 1 to n times.
#	A line starting with the # sign is comments.

Disclaimer

- This document is designed as a reference for you to configure your devices. Its contents, including web pages, command line input and output, are based on laboratory conditions. It provides instructions for general scenarios, but does not cover all use cases of all product models. The examples given may differ from your use case due to differences in software versions, models, and configuration files. When configuring your device, alter the configuration depending on your use case.

- The specifications provided in this document are tested in a lab environment (for example, a certain type of cards have been installed on the tested device or only one protocol is run on the device). Results may differ from the listed specifications when you attempt to obtain the maximum values due to factors such as differences in hardware configurations and carried services.
- In this document, public IP addresses may be used in feature introduction and configuration examples and are for reference only unless otherwise specified.

Device Dimension Conventions

The dimensions described in this document are theoretically typical dimensions and do not include dimension tolerances.

2 Device Overview

Huawei S380 series devices are integrated with the routing and switching functions.

📖 **NOTE**

- All figures are for illustration purposes only and may not accurately depict the actual device or module.
- The nameplate is attached to the bottom of the device.

⚠️ **CAUTION**

All devices 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 models differ in appearance and basic dimensions (excluding the parts protruding from the body).

Chassis basic dimensions determine where and how a device can be installed. For details, see **6.1 Installation Scenario Overview**. For the dimensions of specific models, see the *Hardware Description*.

3 Installation Overview

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

Figure 3-1 Installation flowchart
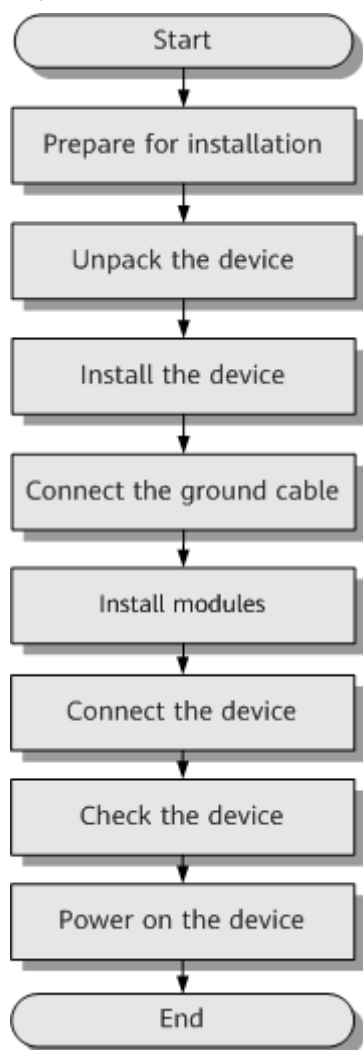
4 Preparing for Installation

4.1 Safety Precautions

Before you start the installation procedure, read all safety precautions described in this document and observe any warning labels affixed to the device. Doing so ensures your safety and protects the device 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 device. 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 device 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 device in an environment with flammable or explosive gases or smoke.

NOTICE

Install the device 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 devices 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 device or power cables while the power is on.

⚠ DANGER

To ensure personal and equipment safety, ground the device 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 device. 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 device 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).

4.2 Checking the Installation Site

The S series devices are used only in indoor equipment rooms with controllable temperature. **Table 4-1** describes the requirements for the installation site.

Table 4-1 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 devices. Take protective measures to prevent insects, water, animal excrement, or other foreign matter from entering the device 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 device.
Temperature and humidity	The device 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 device, 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 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.
Service port surge protection	● If power and network cables of a device need to be routed outdoors, bury them underground or put them in steel pipes to protect the device 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. ● 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 device. ● If fiber reinforcing ribs are used, ensure that they are properly grounded to protect the devices from lightning.
Power supply surge protection	In all installation scenarios, devices, cabinets, independent power modules, and surge protectors must be separately grounded.

4.3 Checking the Cabinet or Rack

Table 4-2 describes the requirements for the cabinet or rack where a device will be installed in indoor equipment rooms.

Table 4-2 Requirements for the cabinet or rack

Item	Requirement
Width	For models that support rack installation, the dimensions of the device comply with industry standards and can be installed in a standard 19-inch cabinet or rack, such as the N66E or N68E cabinet.
Depth	If you use a non-standard cabinet or rack, ensure that there is a sufficient space.
Grounding	The cabinet or rack must have reliable ground points for grounding the chassis.

4.4 Checking the Power Supply System

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

Table 4-3 Power supply requirements

Item	Requirement
Input voltage	The input voltage must be within device 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	● If the external power supply system provides AC power outlets, use AC power cables or AC power adapters complying with local standards. ● If the external power supply system provides power distribution unit (PDU), use C13 straight female to C14 straight male power cables. ● The power cables and plugs delivered with a device are for use with this device 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.

4.5 Preparing Installation Tools and Accessories

Table 4-4 and Table 4-5 show the tools and accessories required for installing a device.

Table 4-4 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.	
ESD gloves	Used to prevent electrostatic discharge.	
Protective gloves	Used to protect hands against lacerations and abrasions.	
Utility knife	Used to cut open cartons.	

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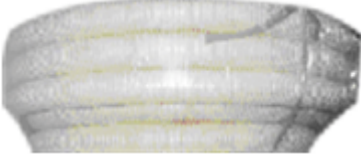
Tool	Description	Picture
Multimeter	Used to test the electrical characteristics, such as voltage, current, and resistance, of the device, cabinet, and cables.	
Hammer drill	Used to drill holes with appropriately sized drill bits (selected based on depth of holes and type of expansion bolts).	
Adjustable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

Table 4-5 Installation accessories

Accessory	Description	Picture
Cable tie	Used to bundle cables.	
Fiber binding tape	Used to bundle optical fibers.	

Accessory	Description	Picture
Insulation tape	Used to insulate power wires or other conductors.	
Corrugated pipe	Used to protect optical fibers.	

5 Unpacking a Device

Context

The methods for unpacking models of different dimensions 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 device over a long distance may damage the device. Do not unpack the device 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 device model is correct.
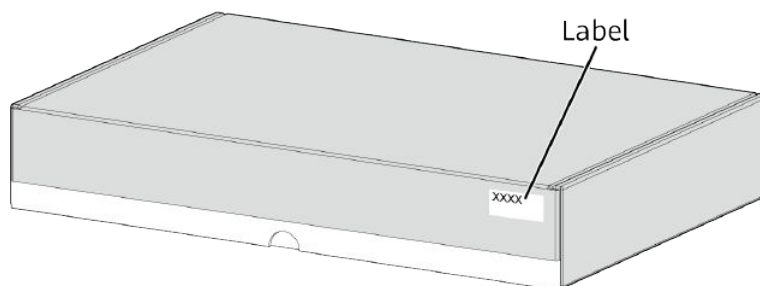
Step 3 Use a utility knife to cut the adhesive tape around the cover of the carton.
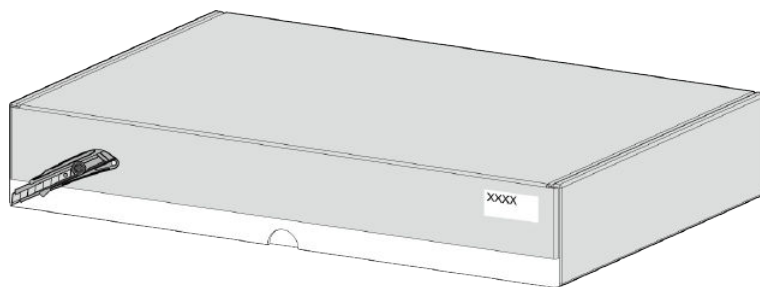
Step 4 Open the carton and take out the installation accessory package and the *Documentation Roadmap* or *Quick Start Guide*.

📖 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 device out of the carton and remove the foam packing materials.
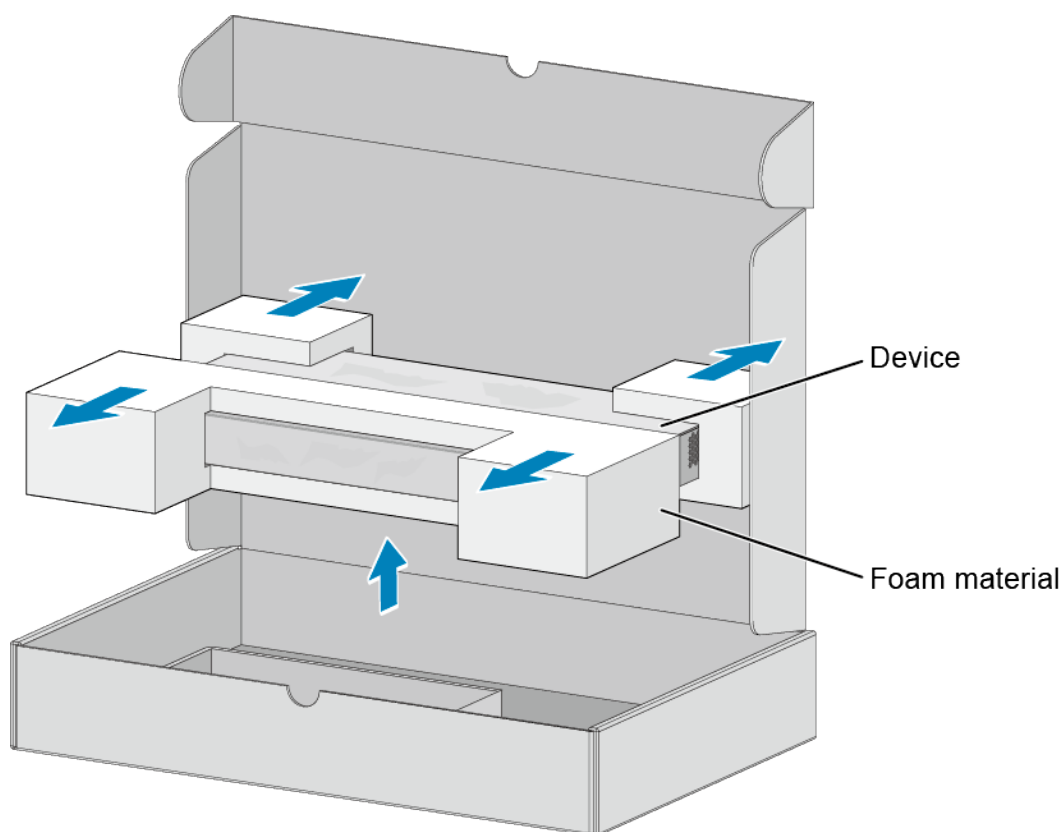
Step 6 Take the device out of the bag and check device surfaces and the warranty seal on the device. If the device is found eroded or damp or if the warranty seal is damaged, stop unpacking and contact the supplier.

Bag
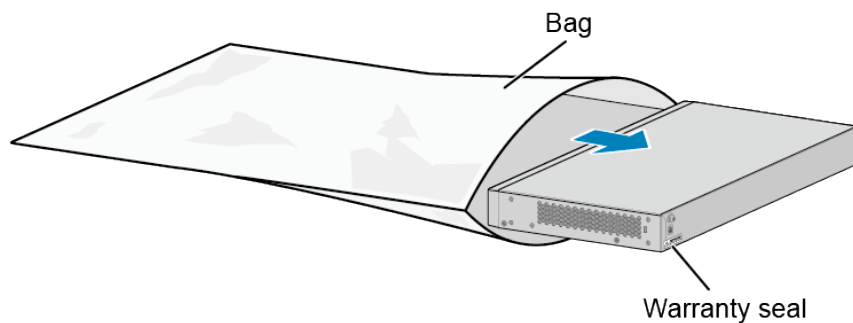
Warranty seal

☐ **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 the 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, and dust plugs.

☐ **NOTE**

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

6 Installing a Device

6.1 Installation Scenario Overview

The S series devices of different sizes support different installation scenarios.

Table 6-1 Installation scenarios for S380

Dimensions (H x W x D)	Scenario: Cabinet/Rack Mounting	Scenario: Desk Mounting	Scenario: Wall Mounting
35.0 mm x 210.0 mm x 130.0 mm (1.38 in. x 8.27 in. x 5.12 in.)	Not supported	Supported	Supported
43.6 mm x 442.0 mm x 160.0 mm (1.72 in. x 17.4 in. x 6.3 in.)	Supported	Supported	Supported

6.2 Scenario: Cabinet/Rack Mounting

6.2.1 Using Front Mounting Brackets

Context

This installation method applies to the following devices:

Some S380 models, including the S380-S8T2T and S380-H8T3ST

Follow these precautions before or during the installation:

- Ensure that the cabinet is stable and meets the requirements specified in **4.3 Checking the Cabinet or Rack**.

- Leave sufficient vertical space in the cabinet or rack for the device.

- 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.

- To install multiple devices in one cabinet or rack, leave at least 1 U (1 U = 44.45 mm) between devices that use natural heat dissipation. For devices 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 device may distort the chassis.

Tools and Accessories

- ESD wrist strap or ESD gloves
- Phillips screwdriver
- Flat-head screwdriver
- Floating nuts (four per device, purchased separately)
- M4 screws (four per device)
- M6 screws (four per device, purchased separately)
- Front mounting brackets (two per device)
- 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 device to each side of the device.

Figure 6-1 Installing front mounting brackets
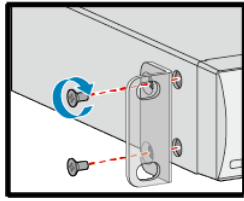
Figure 6-2 Spacing of mounting holes for mounting ears
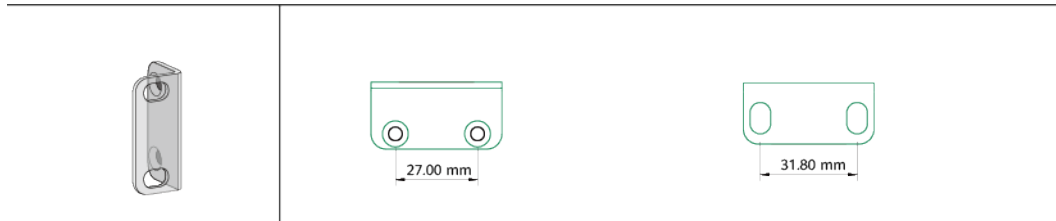
Step 3 Connect the ground cable to the device. For details, see step 2 and step 3 in **6.5 Connecting the Ground Cable**.

☐ NOTE

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

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

Determine the installation position of the device 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.
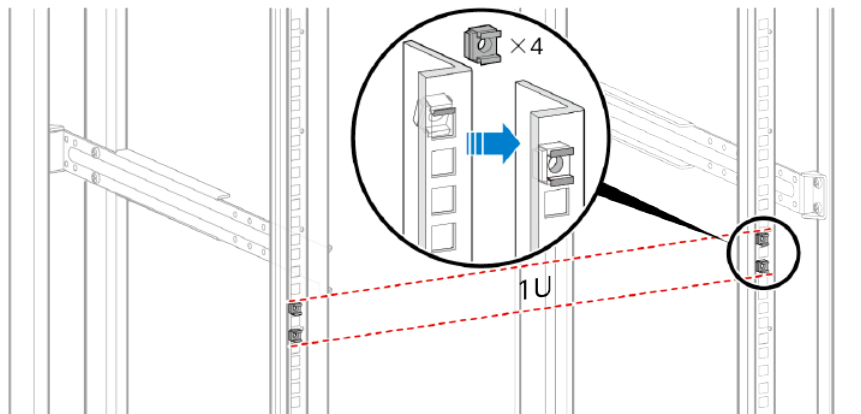
☐ NOTE

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

Step 5 Install the device in the cabinet.

1. Hold the bottom of the device 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 6-3 Installing the device in the cabinet
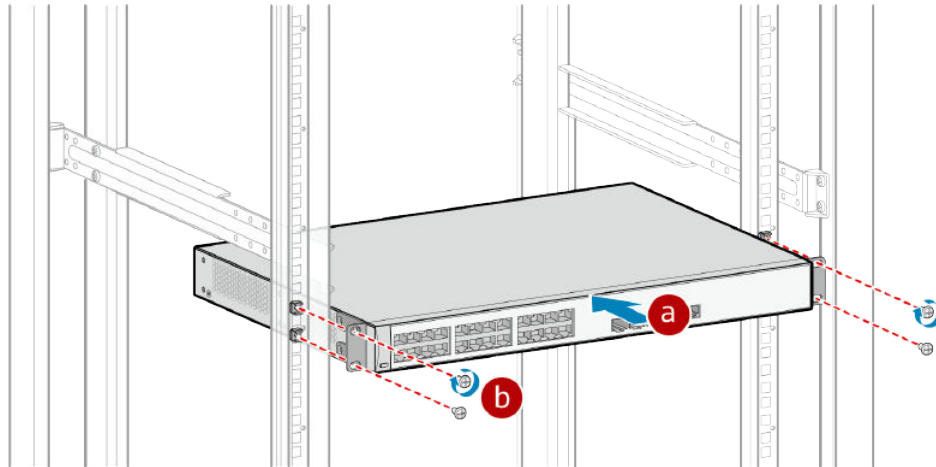
----End

6.3 Scenario: Desk Mounting

Context

This installation method applies to all models.

Follow these precautions:

- Ensure that the desk is flat, sturdy, and properly grounded.
- 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.
- Do not place any objects on the device.

Tools and Accessories

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

📖 **NOTE**

Rubber pads are delivered with the device.

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 device. See **a** in **Figure 6-4**.

Step 3 Place the device gently on the desk. See **b** in **Figure 6-4**.

Step 4 (Optional) Install a security lock to lock the device to the desk. See **c** in **Figure 6-4**.

Figure 6-4 Installing a device on a desk
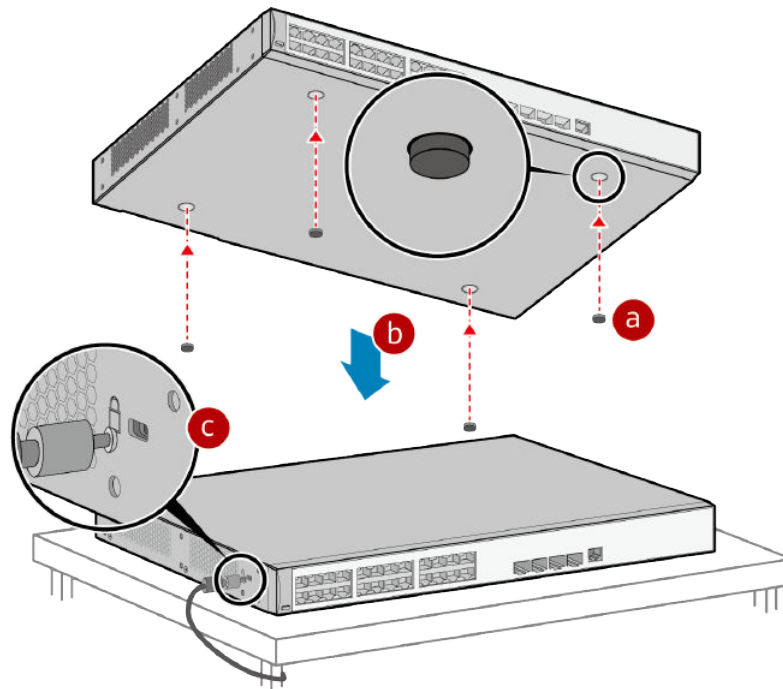
 NOTE

To determine whether a security lock can be installed, check for the security slot marked with a padlock icon on the chassis. If there is no security slot on the device, 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.
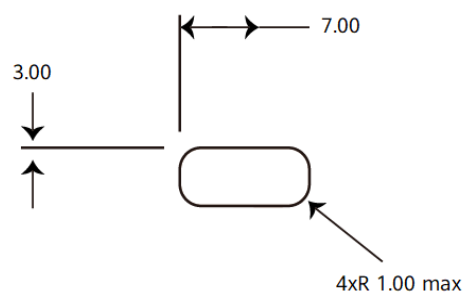
----End

6.4 Scenario: Wall Mounting

6.4.1 Mounting a Device on the Wall Using Expansion Bolts (With Mounting Brackets)

Context

This installation method applies to the following devices:

Some S380 models, including the S380-S8T2T and S380-H8T3ST

⚠️ **DANGER**

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

NOTICE

- For a wall-mounted device, take water-proofing and dust-proofing measures to protect the device from damage caused by water and dust.
- Ensure that there are no flammable or explosive materials nearby the device.
- Ensure that the device 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 per device)
- M6 expansion bolts (four per device, purchased separately)
- Front mounting brackets (two per device)

📖 **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 device.

Figure 6-5 Installing mounting brackets
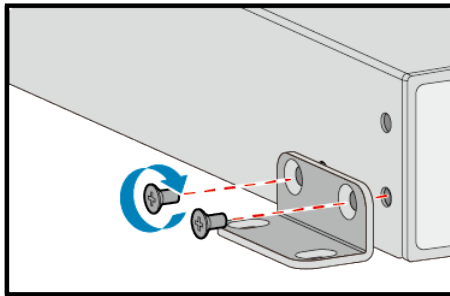
Step 3 Place the device against the wall and mark the drilling positions through the holes of the mounting brackets. See **Figure 6-6**.

Figure 6-6 Marking the drilling positions
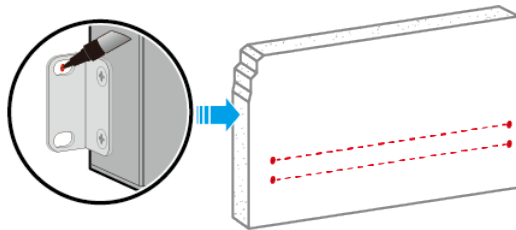
Step 4 Install M6 expansion bolts in the wall.

1.   Use a hammer drill (with φ8 drill bit) to drill holes in the marked positions.
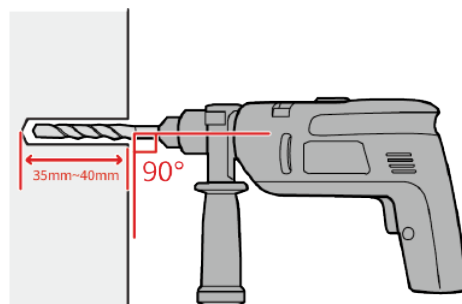
2.   Insert M6 expansion bolts into the holes and tighten the nuts to secure the bolts in place.
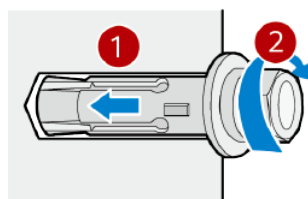
3.   Loosen and remove the nuts from M6 expansion bolts.
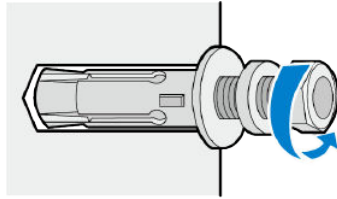
Step 5 Mount the device on the wall.

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 6-7 Wall mounting a device
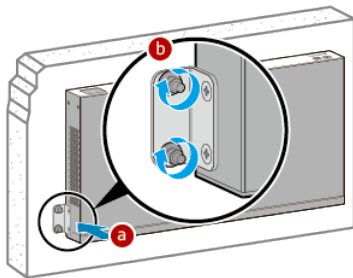
----End

6.4.2 Mounting a Device on the Wall Using Expansion Bolts (Without Mounting Brackets)

Context

This installation method applies to the following devices:

Some S380 models, including the S380-L4T1T, S380-L4P1T, and S380-S8P2T

⚠ DANGER

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

NOTICE

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

Tools and Accessories

- Hammer drill
- 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 device.

Step 2 Mark the holes accordingly on the wall. See **Figure 6-8**.

Figure 6-8 Marking the drilling positions
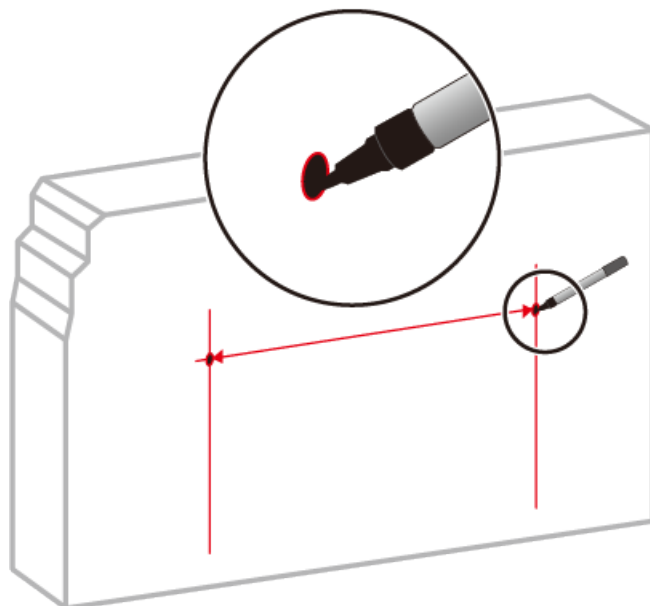
Step 3 Use a hammer drill to drill holes, and fix expansion bolts on the wall.

Figure 6-9 Drilling holes in marked positions
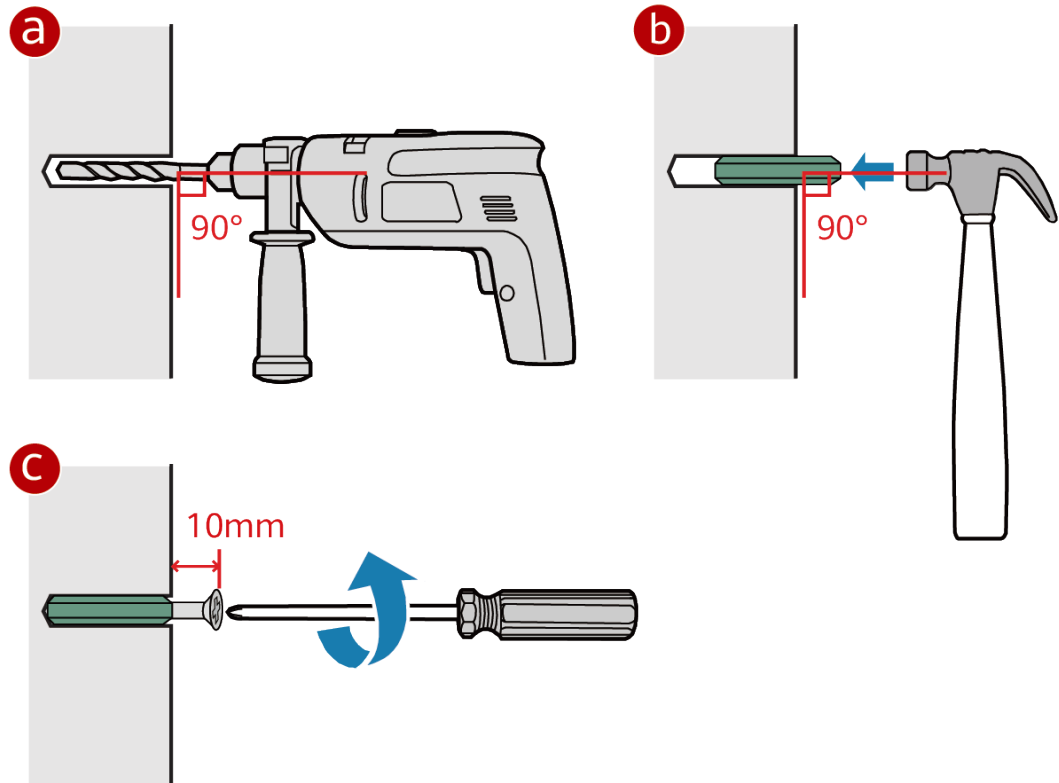
Step 4 Mount the device on the wall.

1. Insert the screws into the expansion bolts on the wall.

2. Mount the device onto the screws.

Figure 6-10 Wall mounting a device
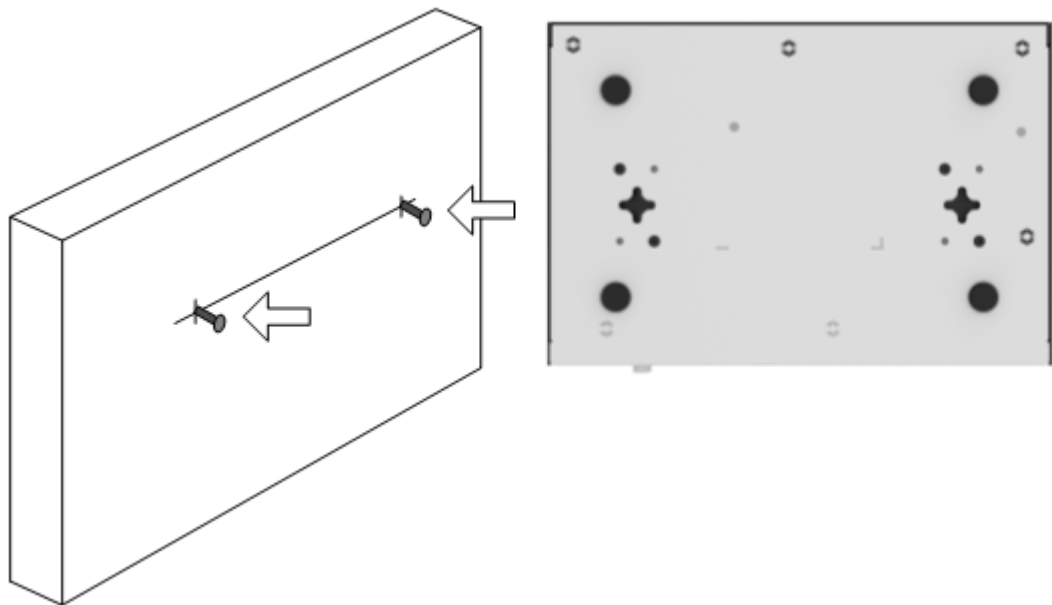
----End

6.5 Connecting the Ground Cable

Context

Grounding the device helps protect it from lightning, electromagnetic interference, and electrostatic discharge, and is the prerequisite for a PoE device 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 device 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.

Tools and Accessories

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

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 device. Keep the M4 screw for later use.

Figure 6-11 Removing the M4 screw from the ground point
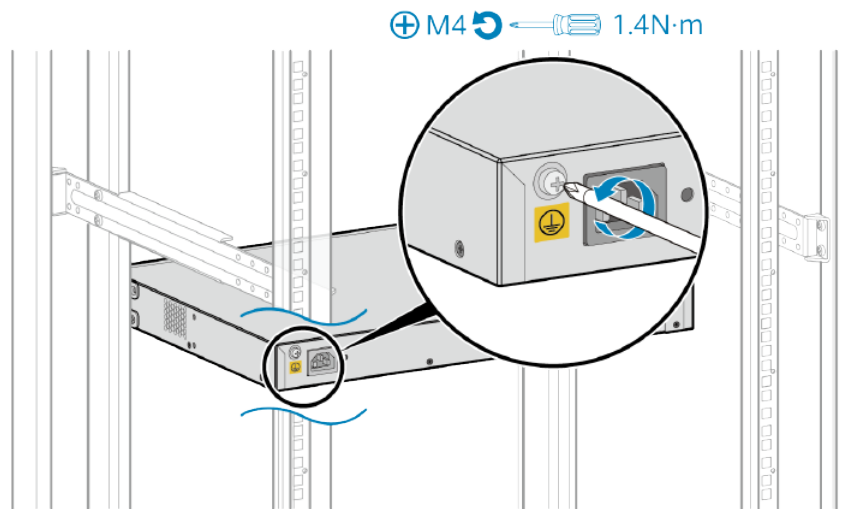
Step 3 Attach the M4 lug of the ground cable to the ground point on the device with the M4 screw you removed in step 2. Tighten the M4 screw with a torque of 1.4 N m.

☐ 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 6-12 Connecting the ground cable to the device
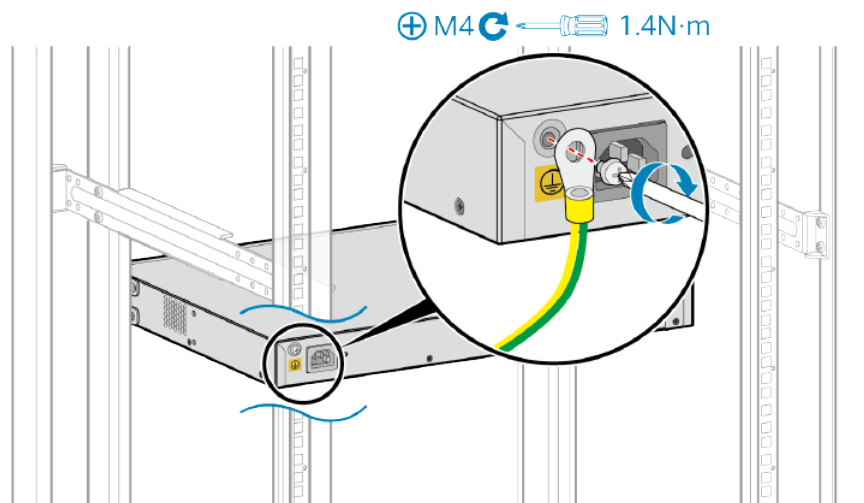
Step 4 Attach the M6 lug of the ground cable to a ground point on the cabinet or ground bar with an M6 screw. Tighten the M6 screw with a torque of 4.8 N m.

Figure 6-13 Connecting the ground cable to a ground point on the cabinet

$\oplus$ M6 $\circlearrowright$ ←—🔲 4.8N·m

----End
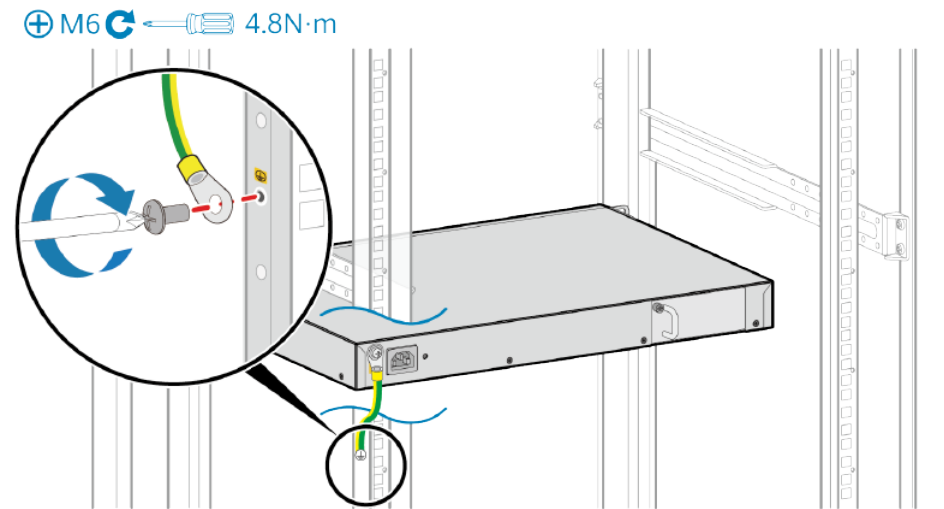
Follow-up Procedure

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.

6.6 Installing Modules

6.6.1 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 6-14 Installing an optical module
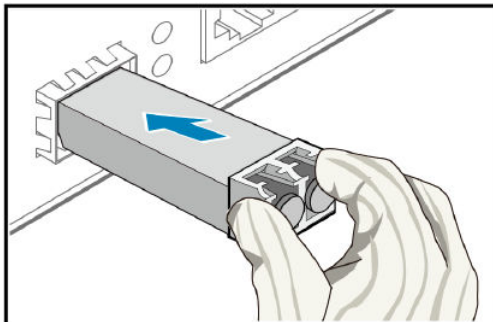
Step 4 Check whether the transceiver module is securely seated. While keeping the handle of the transceiver module closed, grasp the two sides of the transceiver module with your thumb and forefinger and gently pull it.

- 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

6.7 Connecting a Device

6.7.1 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 device 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 device until you finish installing the device and connecting all cables.
- Power cables delivered with the device are for use with this device only.

📖 **NOTE**

> The AC power cable parameters vary in different countries or regions. The figures in this section are only for reference.
>
> Some models uses the power adapter delivered with the device. The connection method is similar to that of the AC power cable.

Tools and Accessories

- (Optional) AC terminal locking latch

Procedure

Step 1 Turn off the external power supply system for the device.

Step 2 Connect a power cable to the device.

- To connect an AC power cable to a built-in AC power supply unit, perform the following steps:

  a. (Optional) Install the AC power cable locking strap.

The AC power cable locking strap is not delivered with the device.
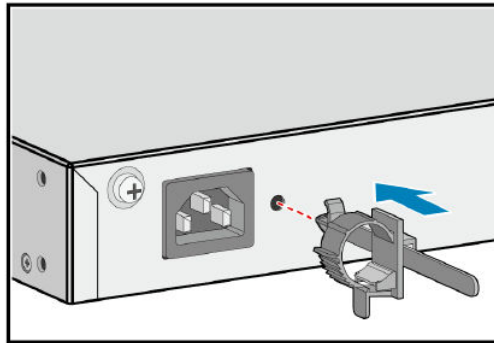
b.   Insert the AC power cable plug into the power socket on the device.
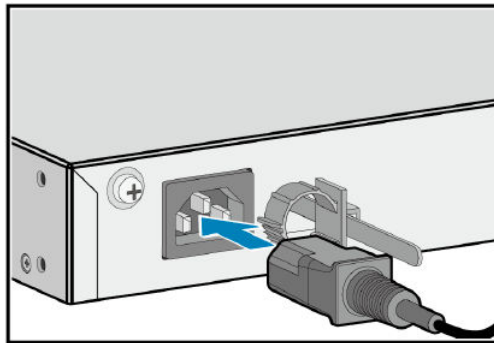
c.   (Optional) If an AC power cable locking strap is installed, adjust its size to fit the AC power cable plug.
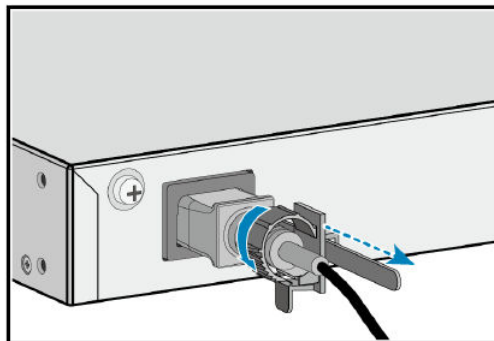
Step 3 Connect the power cables to the external power supply system.

- 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.

----End

Follow-up Procedure

Complete a post-installation check before powering on the device. For the post-installation checklist, see **7 Post-installation Checks**. For details about how to power on the device, see **8 Powering on a Device for the First Time**.

6.7.2 Connecting Ethernet Cables

Context

> **NOTICE**
>
> - Before deploying Ethernet cables, test their continuity.
> - If Ethernet cables of the device need to be routed outdoors, bury them underground or put them through steel pipes to avoid lightning strikes to the device. Do not aerially route Ethernet cables outdoors.
> - Keep signal cables more than 10 cm away from power cables.
> - 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.

If a device does not support or is not installed with a rear card, the Ethernet cables used on its electrical ports and the distance between the device front panel and cabinet front door must meet the requirements described in **Table 6-2**.

Table 6-2 Requirements for Ethernet cables

Network Cable Type	Distance (Excluding the Length of a Copper Module) Between the Device Front Panel and Cabinet Front Door (X)
Category 5 unshielded twisted pair	X ≥ 80 mm (3.1 in.)
Category 5 shielded twisted pair	X ≥ 110 mm (4.3 in.)
Category 6 twisted pair	X ≥ 120 mm (4.7 in.)

□ NOTE

- For a device 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 device 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.

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.
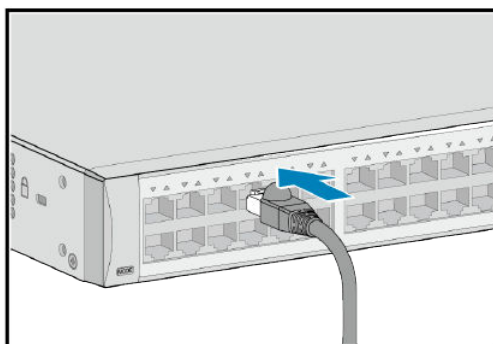
Step 7 Arrange the Ethernet cables so that they are parallel, and then bundle them with cable ties loosely according to **Table 6-3**. Use a cable tie gun to cut off redundant cable ties. The use of protective pads under the cable ties is recommended, as shown in **Figure 6-15**.

📖 **NOTE**

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

Table 6-3 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 6-15 Bundling Ethernet cables
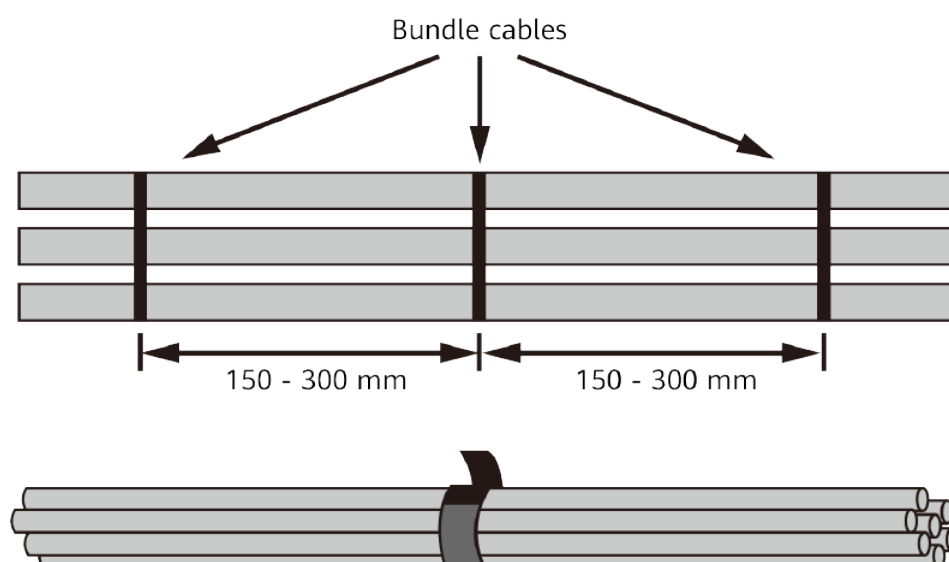
Step 8 Replace all the temporary labels on the Ethernet cables with permanent labels.

----End

6.7.3 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.
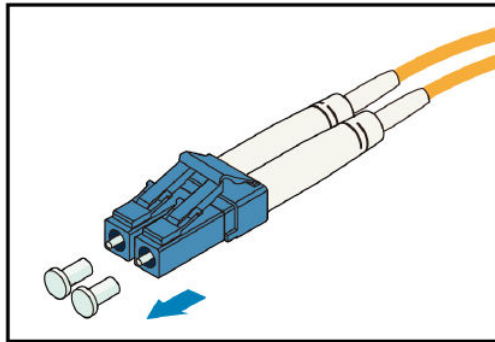
Step 6 Connect optical fibers to the optical modules on the device, matching the numbers on the optical fibers to those on the ports. To connect them, align the fiber connector with the bores on the optical module and insert the fiber connector. When you hear a click, the fiber connector is securely connected. See **Figure 6-16**. 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 6-16 Connecting optical fibers to an optical module
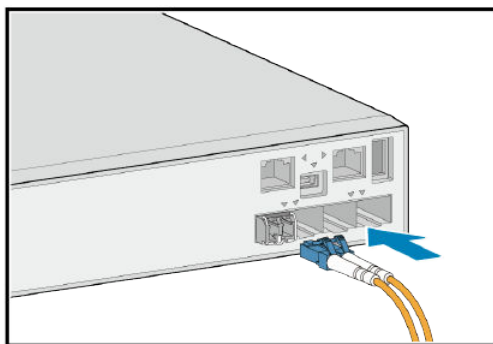
To remove optical fibers from an optical module, gently push the fiber connector inward, and then pull the fiber connector out while pressing the locking clips. Do not forcibly pull the fiber connector. See **Figure 6-17**.

📖 **NOTE**

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

Figure 6-17 Removing optical fibers
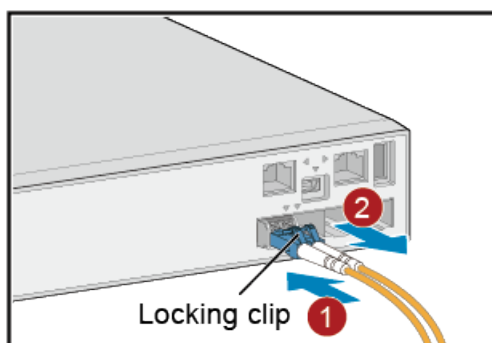
Step 7 Arrange the optical fibers to make them parallel and bundle them with fiber binding tape at a spacing of 150-300 mm (5.9-11.8 in.).

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

----End

7 Post-installation Checks

Table 7-1 lists the post-installation items to be checked.

Table 7-1 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

8 Powering on a Device 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 device:

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 device.
3. Check that the power switches of the external power supply system are turned off.
4. Check that the power cables are correctly connected.

Step 2 Turn on the external power supply system connected to the device.

Step 3 After the device completes its startup, check the indicators on the device.

For details about the indicators, see the *Hardware Description*.

----End

9 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 login.

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 9-1 Configuration guide links

Model	Configuration Guide (Example)
S380	**S380 V600R022C10 Configuration Guide**

10 Component Replacement

NOTICE

Before sending a device for repair or discarding it, format its flash storage to ensure data security.

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

10.1 Replacing an Optical Module

10.2 Replacing a Device

10.1 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

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 10-1** shows the locking clips on an LC/PC connector. Hold down the locking clips when pulling the optical fibers.
- **Figure 10-2** shows the locking clip on an MPO connector. The locking clip is released automatically when you pull the MPO connector.
- **Figure 10-3** shows the locking clip on an SC/PC connector. The locking clip is released automatically when you pull the SC/PC connector.

Figure 10-1 LC/PC connector
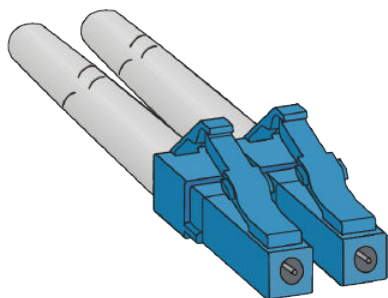
Figure 10-2 MPO connector
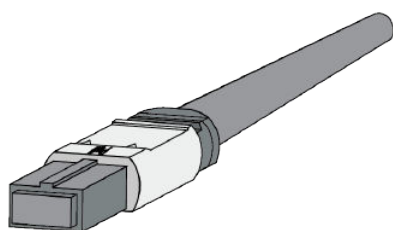
Figure 10-3 SC/PC connector
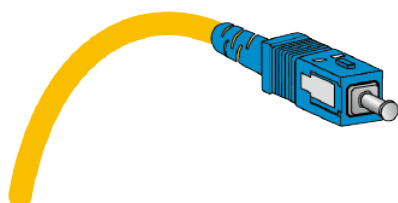
Step 4 Remove the optical module and cover the bores with dust plugs. Store optical module safely.

The latch varies on different optical modules. **Figure 10-4** shows an optical module with a clasp latch. To release the clasp latch, rotate it down. **Figure 10-5** shows an optical module with a tab latch. The tab latch is released when you pull it.

Figure 10-4 Optical module with a clasp latch
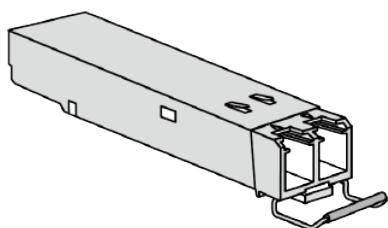
Figure 10-5 Optical module with a tab latch
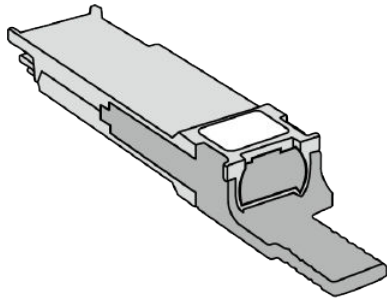
Step 5 Take out the new optical module from the package. Ensure that the optical module is correctly oriented and gently push it into the optical port until you hear a click.

📖 **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.

10.2 Replacing a Device

Context

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

NOTICE

Power off the device 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 devices 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 device.

Step 4 Back up configuration data of the original device.

Step 5 Power off the original device.

> ⚠️ **CAUTION**
>
> The device is successfully powered off when all indicators are off.

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

Step 7 Remove M6 screws from the mounting brackets and remove the device from the cabinet (skip this step if the device has no mounting ear or is installed on the desktop).

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

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

Step 9 Install the new device in the same position as the original device 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 device and observe indicators on it. Normally, the SYS indicator on the device should be blinking green slowly.

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

----End

Follow-up Procedure

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