

H3C WX5860H Access Controller Installation Guide

New H3C Technologies Co., Ltd.
<http://www.h3c.com>

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Environmental protection

This product has been designed to comply with the environmental protection requirements. The storage, use, and disposal of this product must meet the applicable national laws and regulations.

Preface

H3C WX5860H Access Controller Installation Guide describes the procedures for installing, troubleshooting, and maintaining the WX5860H access controller.

This preface includes the following topics about the documentation:

- [Audience.](#)
- [Conventions.](#)
- [Documentation feedback.](#)

Audience

This documentation is intended for:

- Network planners.
- Field technical support and servicing engineers.
- Network administrators working with the WX5860H access controller.

Conventions

The following information describes the conventions used in the documentation.





Command conventions

Convention	Description
Boldface	Bold text represents commands and keywords that you enter literally as shown.
<i>Italic</i>	<i>Italic</i> text represents arguments that you replace with actual values.
[]	Square brackets enclose syntax choices (keywords or arguments) that are optional.
{ x y ... }	Braces enclose a set of required syntax choices separated by vertical bars, from which you select one.
[x y ...]	Square brackets enclose a set of optional syntax choices separated by vertical bars, from which you select one or none.
{ x y ... } *	Asterisk marked braces enclose a set of required syntax choices separated by vertical bars, from which you select a minimum of one.
[x y ...] *	Asterisk marked square brackets enclose optional syntax choices separated by vertical bars, from which you select one choice, multiple choices, or none.
&<1-n>	The argument or keyword and argument combination before the ampersand (&) sign can be entered 1 to n times.
#	A line that starts with a pound (#) sign is comments.













GUI conventions

Convention	Description
Boldface	Window names, button names, field names, and menu items are in Boldface. For example, the New User window opens; click OK .
>	Multi-level menus are separated by angle brackets. For example, File > Create > Folder .

Symbols

Convention	Description
 WARNING!	An alert that calls attention to important information that if not understood or followed can result in personal injury.
 CAUTION:	An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.
 IMPORTANT:	An alert that calls attention to essential information.
NOTE:	An alert that contains additional or supplementary information.
 TIP:	An alert that provides helpful information.

Network topology icons

Convention	Description
	Represents a generic network device, such as a router, switch, or firewall.
	Represents a routing-capable device, such as a router or Layer 3 switch.
	Represents a generic switch, such as a Layer 2 or Layer 3 switch, or a router that supports Layer 2 forwarding and other Layer 2 features.
	Represents an access controller, a unified wired-WLAN module, or the access controller engine on a unified wired-WLAN switch.
	Represents an access point.
	Represents a wireless terminator unit.
	Represents a wireless terminator.
	Represents a mesh access point.
	Represents omnidirectional signals.
	Represents directional signals.
	Represents a security product, such as a firewall, UTM, multiservice security gateway, or load balancing device.
	Represents a security module, such as a firewall, load balancing, NetStream, SSL VPN, IPS, or ACG module.

Examples provided in this document

Examples in this document might use devices that differ from your device in hardware model, configuration, or software version. It is normal that the port numbers, sample output, screenshots, and other information in the examples differ from what you have on your device.

Documentation feedback

You can e-mail your comments about product documentation to info@h3c.com.

We appreciate your comments.

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Preparing for installation

Safety recommendations

Safety symbols

When reading this document, note the following symbols:

⚠ WARNING means an alert that calls attention to important information that if not understood or followed can result in personal injury.

⚠ CAUTION means an alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.

General safety recommendations

To avoid any equipment damage or bodily injury, read the following safety recommendations before installation. Note that the recommendations do not cover every possible hazardous condition.

- Do not place the device on an unstable case or desk. The device might be severely damaged in case of a fall.
- Make sure the ground is dry and flat and anti-slip measures are in place.
- Keep the chassis and installation tools away from walk areas.
- Keep the chassis clean and dust-free.
- Do not place the device near water or in a damp environment. Prevent water or moisture from entering the device chassis.
- Ensure good ventilation of the equipment room and keep the air inlet and outlet vents of the device free of obstruction.
- Make sure the operating voltage is in the required range.
- Use a screwdriver to fasten screws.
- To prevent condensation, unpack the device at least half an hour after you move the device from a location below 0°C (32°F) to the equipment room, and power on the device at least 2 hours after you move the device from a location below 0°C (32°F) to the equipment room.

Electrical safety

- Carefully examine your work area for possible hazards, such as moist floors, ungrounded power extension cables, or missing safety grounds.
- Locate the emergency power-off switch in the room before installation. Shut off the power immediately if an accident occurs.
- Unplug all the external cables (including power cables) before moving the chassis.
- Do not work alone when you operate the device with the device powered on.
- Always verify that the power has been disconnected when you perform operations that require the device to be powered off.

Laser safety

WARNING!

Do not stare into any fiber port when the device is powered on. The laser light emitted from the optical fiber might hurt your eyes.

- Before you disconnect the fiber connector, execute the **shutdown** command in interface view to disable the optical source.
- Install the dust covers to the optical fiber connector to avoid connector damage.

Examining the installation site

The device can only be used indoors. To ensure correct operation and a long lifespan for your device, the installation site must meet the requirements in this section.

Temperature and humidity

Maintain the temperature and humidity in the equipment room at acceptable levels.

- Lasting high relative humidity can cause poor insulation, electricity leakage, mechanical property change of materials, and metal corrosion.
- Lasting low relative humidity can cause washer contraction and ESD and cause problems including loose mounting screws and circuit failure.
- High temperature can accelerate the aging of insulation materials and significantly lower the reliability and lifespan of the switch.

To ensure correct operation of the device, the equipment room must meet the temperature and humidity requirements listed in [Table 1](#).

Table 1 Temperature/humidity requirements in the equipment room

Temperature	Relative humidity
0°C to 45°C (32°F to 113°F)	5% to 95%, noncondensing

Cleanliness

Dust buildup on the chassis might result in electrostatic adsorption, which causes poor contact of metal components and contact points, especially when indoor relative humidity is low. In the worst case, electrostatic adsorption can cause communication failure.

Table 2 Dust concentration limit in the equipment room

Substance	Concentration limit (particles/m ³)
Dust particles	≤ 3 x 10 ⁴ (no visible dust on the tabletop over three days)
NOTE: Dust particle diameter ≥ 5 μm	

To eliminate corrosion and premature aging of components, the equipment room must also meet limits on salts, acids, and sulfides, as shown in [Table 3](#).

Table 3 Harmful gas limits in an equipment room

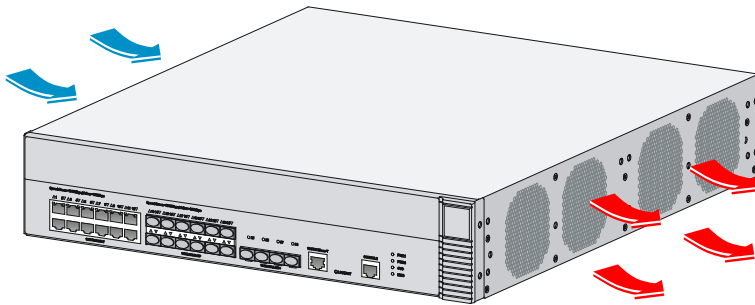
Gas	Max. (mg/m ³)
SO ₂	0.2
H ₂ S	0.006
NH ₃	0.05
Cl ₂	0.01

Cooling

The device uses left to right airflow for heat dissipation. Plan the installation site for adequate ventilation.

- As a best practice, leave a minimum of 10 cm (3.94 in) of clearance around the air vents.
- Make sure the rack or workbench has a good ventilation system.

Figure 1 Airflow through the chassis



ESD prevention

To prevent electrostatic discharge (ESD), follow these guidelines:

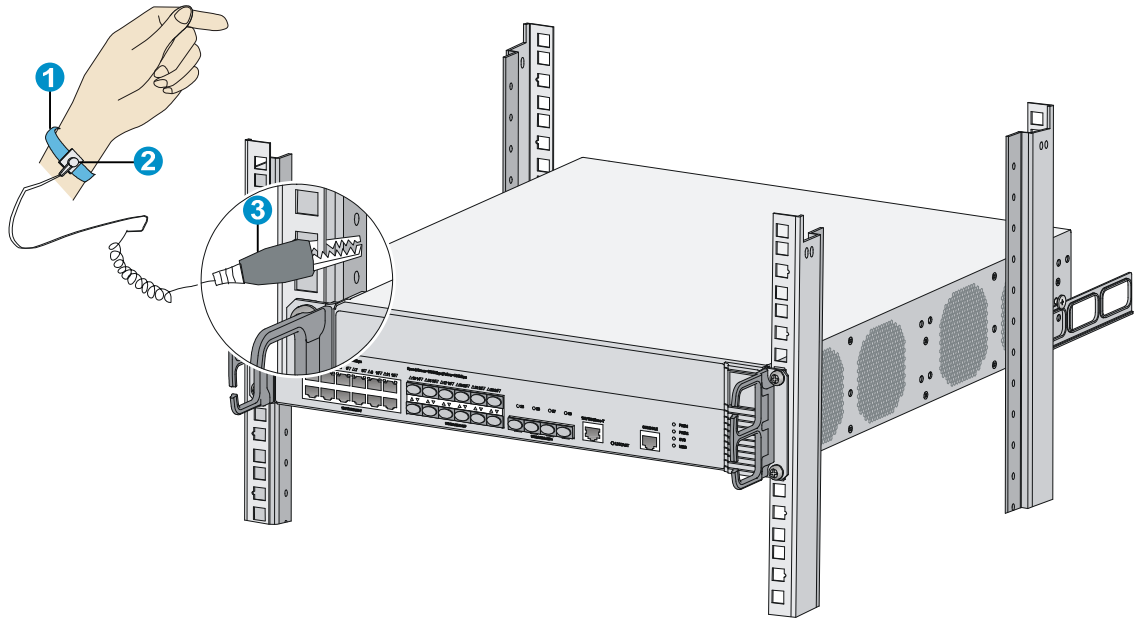
- Ground the device reliably.
- Take dust-proof measures for the equipment room. For more information, see "[Cleanliness](#)."
- Maintain the humidity and temperature at acceptable levels. For more information, see "[Temperature and humidity](#)."
- Always wear an ESD wrist strap. Make sure the wrist strap makes skin contact and is reliably grounded when installing the transceiver module.

The ESD wrist strap is not provided with the device. Order it yourself.

To attach an ESD wrist strap:

1. Wear the wrist strap on your wrist.
2. Lock the wrist strap tight around your wrist to maintain good contact with the skin.
3. Secure the wrist strap lock and the alligator clip lock together.
4. Attach the alligator clip to the rack.
5. Make sure the rack is reliably grounded.

Figure 2 Attaching an ESD wrist strap



(1) ESD wrist strap

(2) Lock

(3) Alligator clip

EMI

All electromagnetic interference (EMI) sources, from outside or inside of the device and application system, adversely affect the device in the following ways:

- A conduction pattern of capacitance coupling.
- Inductance coupling.
- Electromagnetic wave radiation.
- Common impedance (including the grounding system) coupling.

To prevent EMI, perform the following tasks:



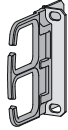
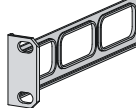
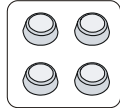
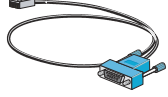




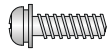
- If AC power is used, use a single-phase three-wire power receptacle with protection earth (PE) to filter interference from the power grid.
- Keep the device far away from radio transmitting stations, radar stations, and high-frequency devices.
- Use electromagnetic shielding, for example, shielded interface cables, when necessary.

Lightning protection

To better protect the device from lightning, follow these guidelines:

- Make sure the grounding cable of the chassis is reliably grounded.
- Make sure the grounding terminal of the AC power receptacle is reliably grounded.
- Install a lightning protector at the input end of the power supply to enhance the lightning protection capability of the power supply.

Installation accessories

					
Grounding cable (provided)	M4 screw (provided)	Front mounting bracket (provided)	Rear mounting bracket (provided)	Rubber feet (provided)	Console cable (provided)
					
M6 cage nut (user supplied)	M6 screw (user supplied)	Removable cable tie (user supplied)	ESD wrist strap (user supplied)	M5 screw (provided)	

Pre-installation checklist

Table 4 Pre-installation checklist

Item		Requirements	Result
Installation site	Ventilation	<ul style="list-style-type: none"> There is a minimum clearance of 10 cm (3.9 in) around the inlet and exhaust vents for heat dissipation of the device chassis. A good ventilation system is available at the installation site. 	
	Temperature	0°C to 45°C (32°F to 113°F)	
	Relative humidity	5% to 95% (noncondensing)	
	Cleanness	<ul style="list-style-type: none"> Dust concentration $\leq 3 \times 10^4$ particles/m³ No dust on desk within three days 	
	ESD prevention	<ul style="list-style-type: none"> The equipment and rack are reliably grounded. The equipment room is dust-proof. The humidity and temperature are at acceptable levels. Wear an ESD wrist strap. Make sure the wrist strap makes good skin contact and is reliably grounded when installing FRUs. Place the removed interface card on an antistatic workbench, with the face upward, or put it into an antistatic bag. Touch only the edges instead of electronic components when observing or moving a removed interface card. 	
	EMI prevention	<ul style="list-style-type: none"> Take effective measures to protect the power system from the power grid system. Separate the protection ground of the device from the grounding device or lightning protection grounding device as far as possible. Keep the device far away from radio stations and radar and high-frequency devices working in high 	

Item	Requirements	Result
	<p>current.</p> <ul style="list-style-type: none"> • Use electromagnetic shielding when necessary. <p>Lightning protection</p> <ul style="list-style-type: none"> • The grounding cable of the chassis is reliably grounded. • The grounding terminal of the AC power receptacle is reliably grounded. • A port lightning arrester is installed. (Optional) <p>Electricity safety</p> <ul style="list-style-type: none"> • Equip a UPS. • In case of emergency during operation, switch off the external power switch. <p>Rack-mounting requirements</p> <ul style="list-style-type: none"> • Install the device in an open rack if possible. If you install the device in a closed cabinet, make sure that the cabinet is equipped with a good ventilation system. • The rack is sturdy enough to support the weight of the device and installation accessories. • The size of the rack is appropriate for the device. • The front and rear of the rack are at least 0.8 m (31.50 in) away from walls or other devices. 	
Safety precautions	<ul style="list-style-type: none"> • The device is far away from any moist area and heat source. • You have located the emergency power switch in the equipment room. 	
Accessories	Accessories provided with the device.	
Reference	<ul style="list-style-type: none"> • Documents shipped with the device. • Online documents. 	

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Installing the device



WARNING!

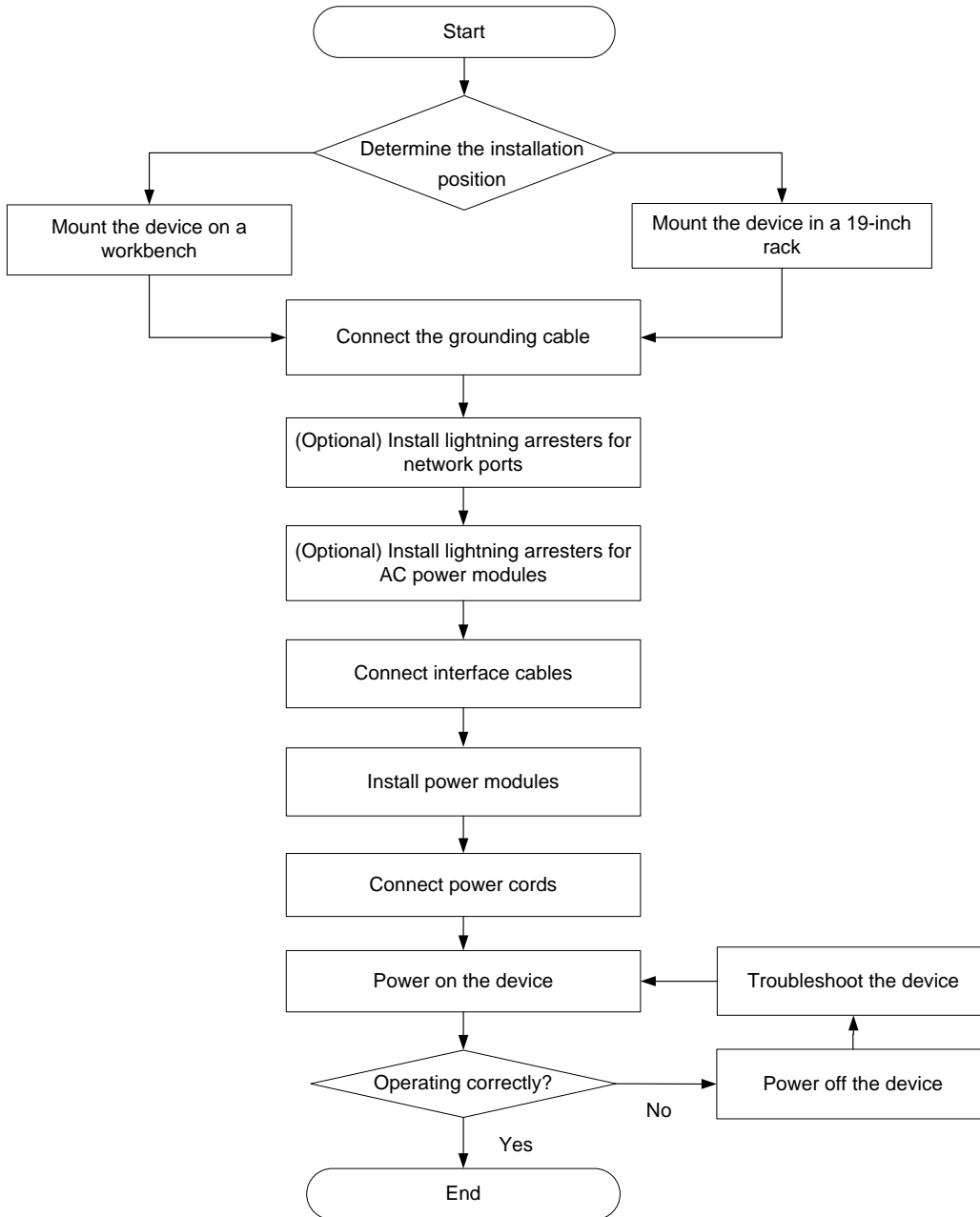
Keep the tamper-proof seal on a mounting screw on the chassis cover intact, and if you want to open the chassis, contact H3C Support for permission. Otherwise, H3C will not be liable for any consequence caused thereby.

Confirming installation preparations

Before you install the device, verify that you have read "Preparing for installation" carefully and the installation site meets all the requirements.

Installation flow

Figure 1 Installation flow



Mounting the device on a workbench

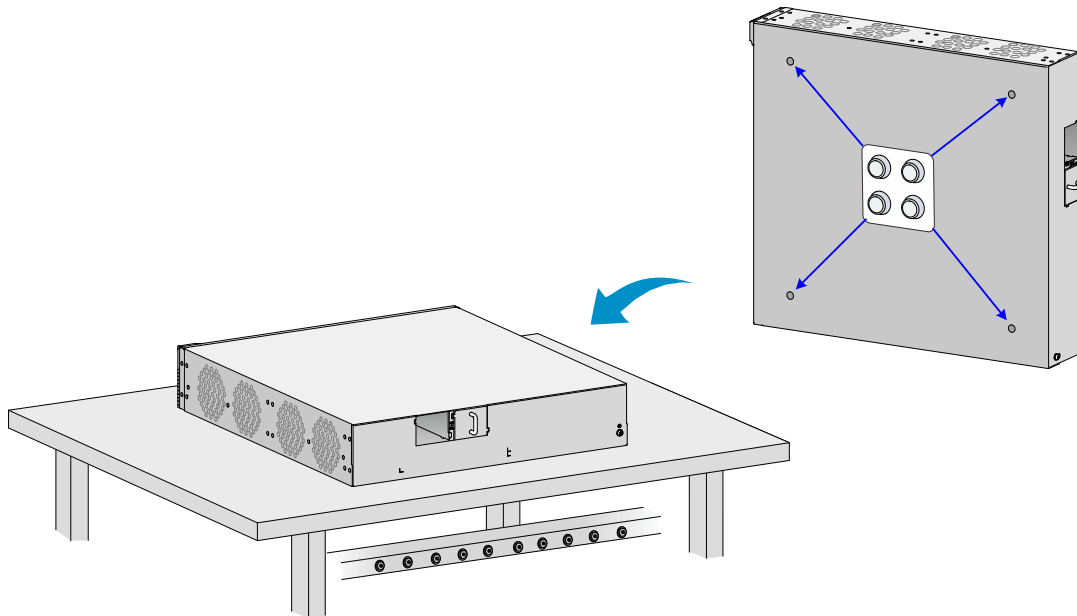
△ CAUTION:
Do not place heavy objects on the device.

If a standard 19-inch rack is not available, you can mount the device on a clean, flat workbench.

To mount the device on a workbench:

1. Place the device upside down. Clean the recessed areas in the chassis bottom.
2. Attach the four rubber feet to the recessed areas in the chassis bottom.
3. Place the device on the workbench with the upside up.

Figure 2 Mounting the device on a workbench



Installing the device in a 19-inch rack

You can install the device in a 19-inch rack by using the following methods:

- Installing the device by using front and rear mounting brackets.
- Installing the device by using front mounting brackets and a rack shelf.
- Installing the device by using front mounting brackets and slide rails.

Mounting brackets

Figure 3 Front mounting bracket

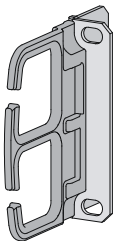
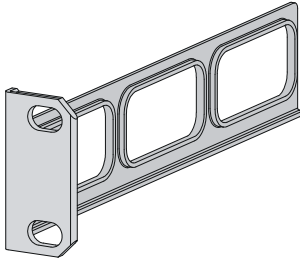


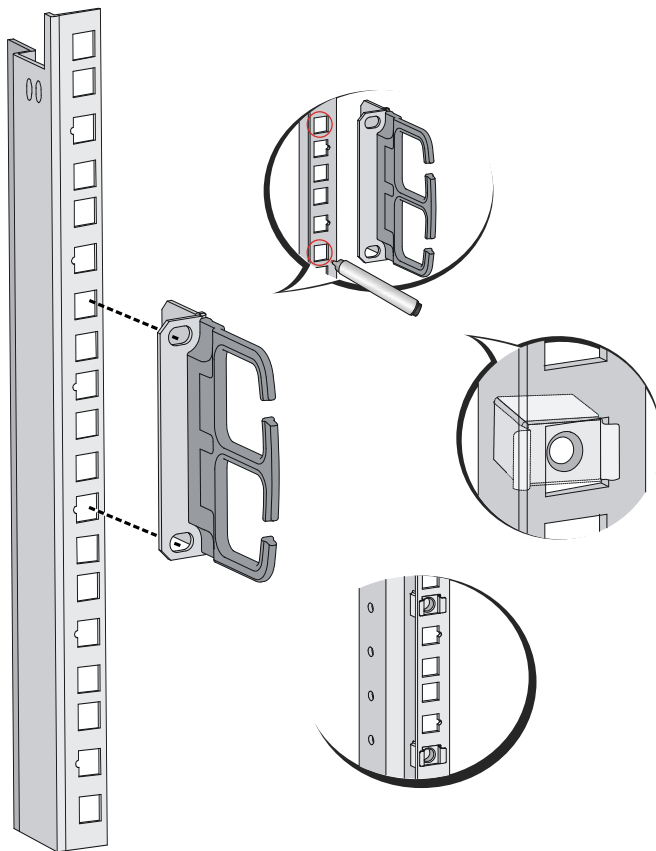
Figure 4 Rear mounting bracket



Installing the device by using front and rear mounting brackets

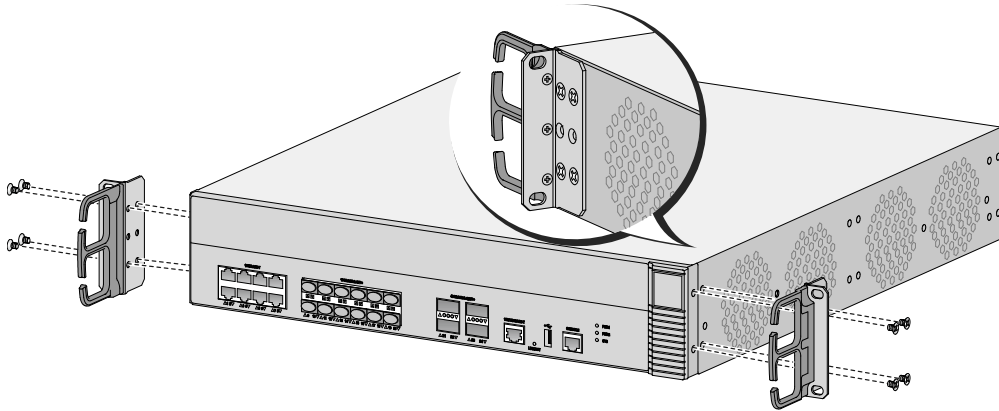
1. Wear an ESD wrist strap and make sure the rack is sturdy and is reliably grounded.
2. Use a front mounting bracket to mark the cage nut installation position on the front rack posts. Install cage nuts.

Figure 5 Installing cage nuts



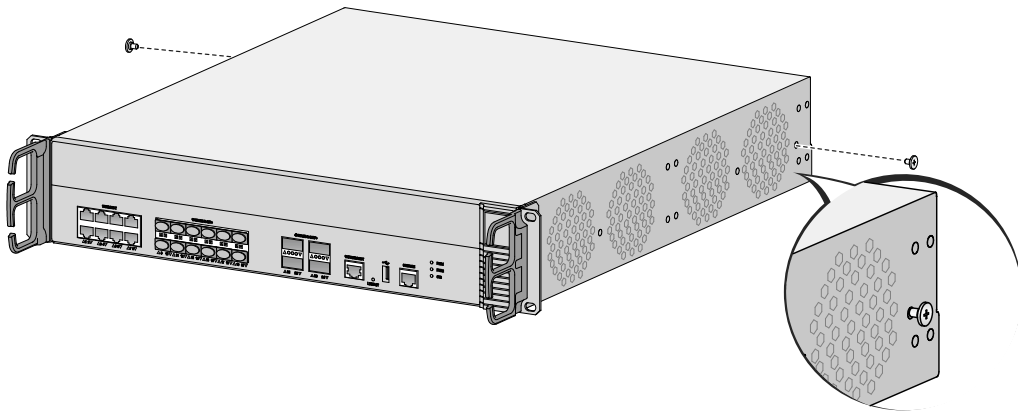
3. Use the screws supplied with the front mounting brackets to attach the front mounting brackets to both sides of the device.

Figure 6 Attaching the front mounting brackets to the device



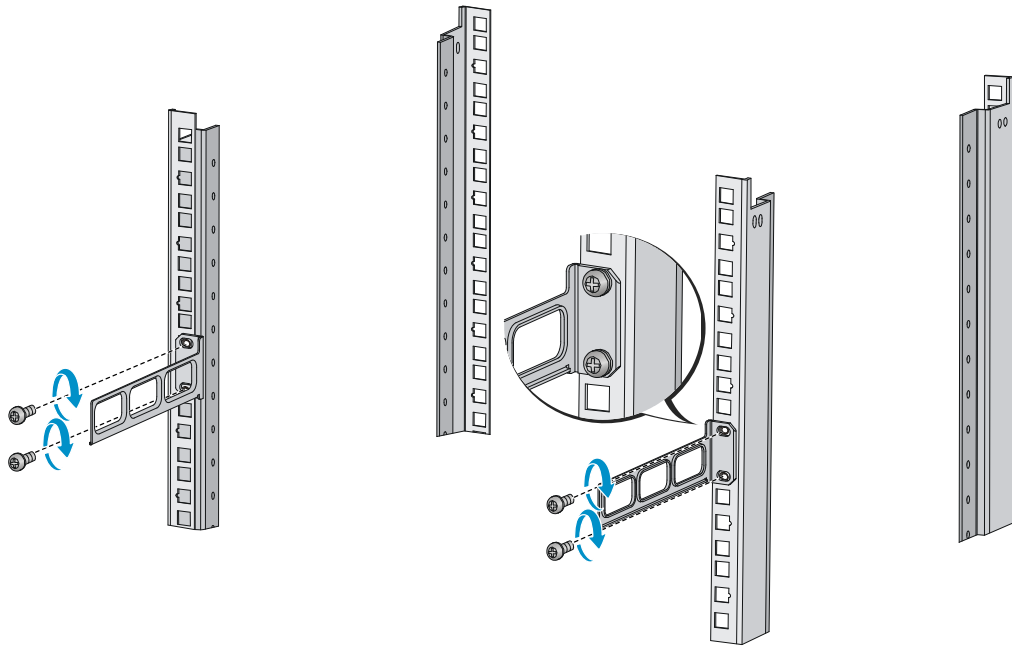
4. Attach the load-bearing screws supplied with the rear mounting brackets to both sides of the device.
The load-bearing screws will be in close touch with the rear mounting brackets to support the device.

Figure 7 Installing the load-bearing screws



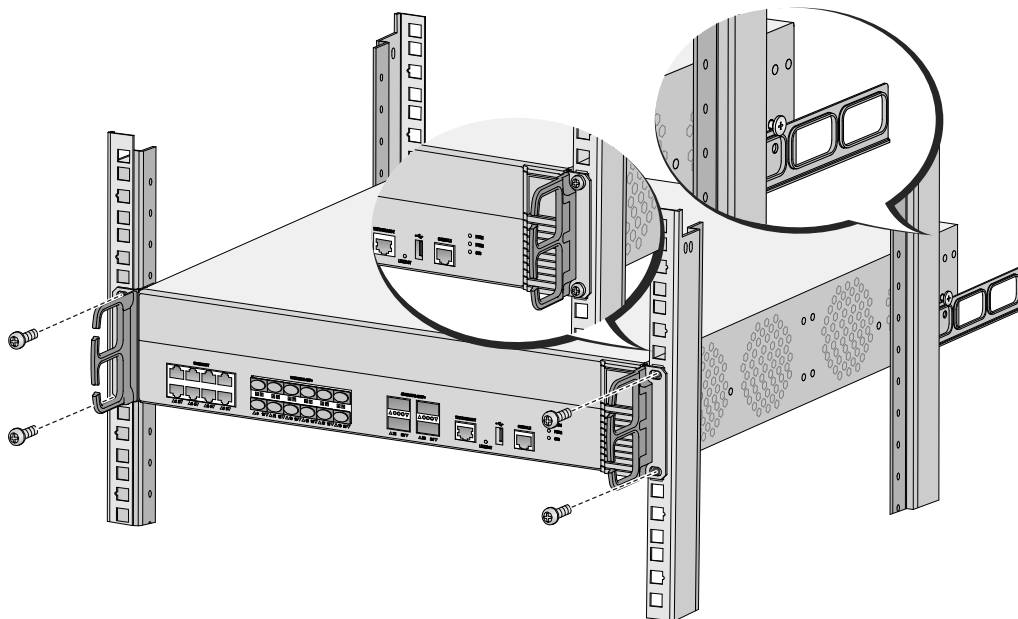
5. According to the device installation position in the rack, use screws and cage nuts to attach the rear mounting brackets to the rear rack posts.

Figure 8 Installing rear mounting brackets



6. Supporting the bottom of the device with one hand and holding the front of the device with the other, place the device slowly in the rack. Attach the front mounting brackets on the device to the front rack posts with screws and cage nuts, as shown in [Figure 9](#). Make sure the load-bearing screws are in close contact with the upper edges of the rear mounting brackets.

Figure 9 Installing the device in the rack



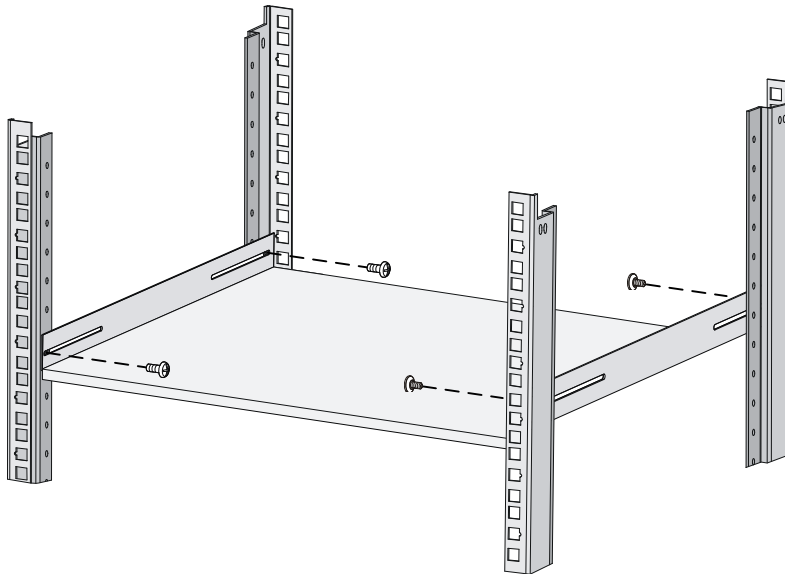
Installing the device by using front mounting brackets and a rack shelf

The rack shelf is an optional component that needs to be separately ordered if needed. The rack shelf in this example is for illustration only.

To install the device by using front mounting brackets and a rack shelf:

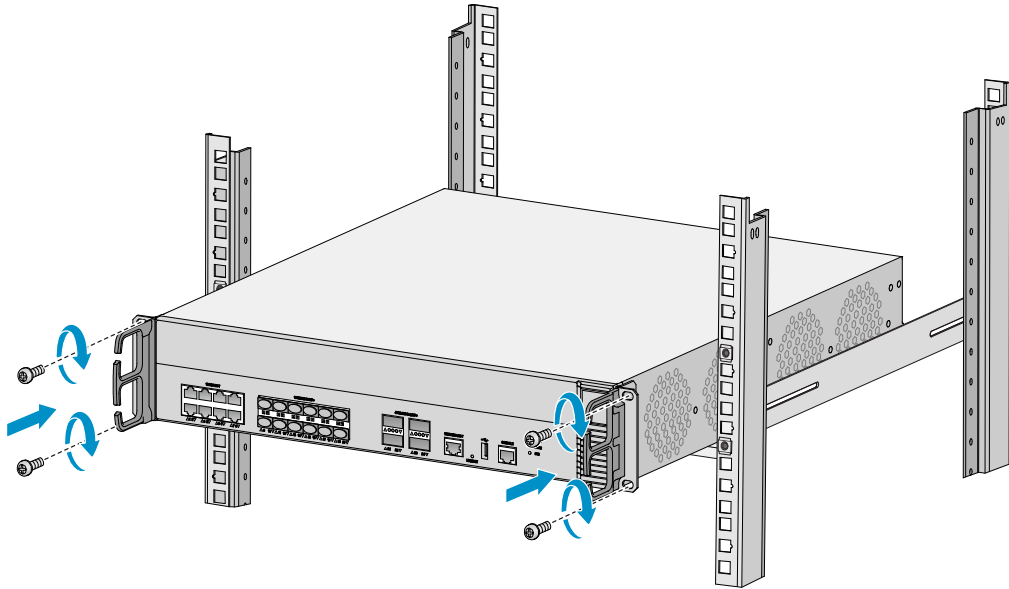
1. Wear the ESD wrist strap and verify that the rack is sturdy and is reliably grounded.
2. Use the screws supplied with the front mounting brackets to attach the front mounting brackets to the device, as shown in [Figure 6](#).
3. Attach the rack shelf to the desired position in the rack. See [Figure 10](#) for reference.

Figure 10 Installing the rack shelf



4. Place the device on the rack shelf and push the device in the rack. Attach the front mounting brackets on the device to the front rack posts by using screws and cage nuts, as shown in [Figure 11](#).

Figure 11 Installing the device in the rack



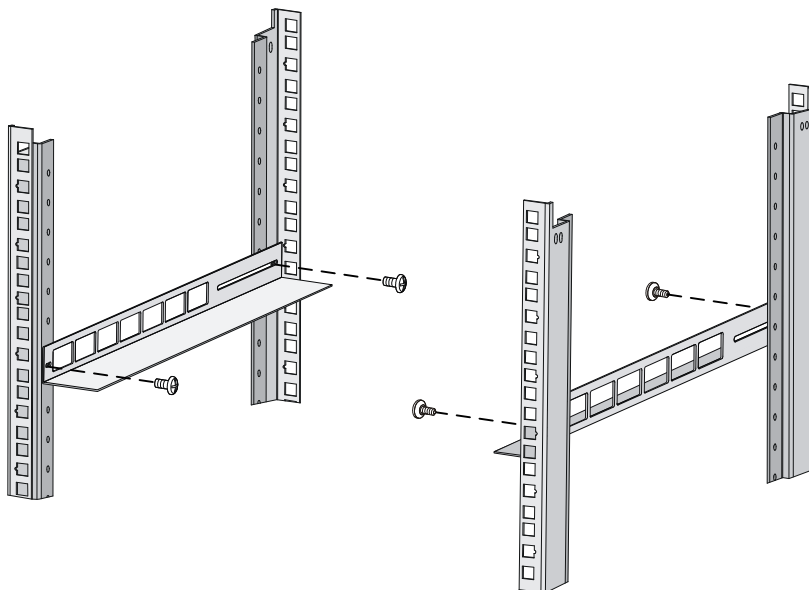
Installing the device by using front mounting brackets and slide rails

The slide rails are optional components that need to be separately ordered if needed. The slide rails in this example are for illustration only.

To install the device by using front mounting brackets and slide rails:

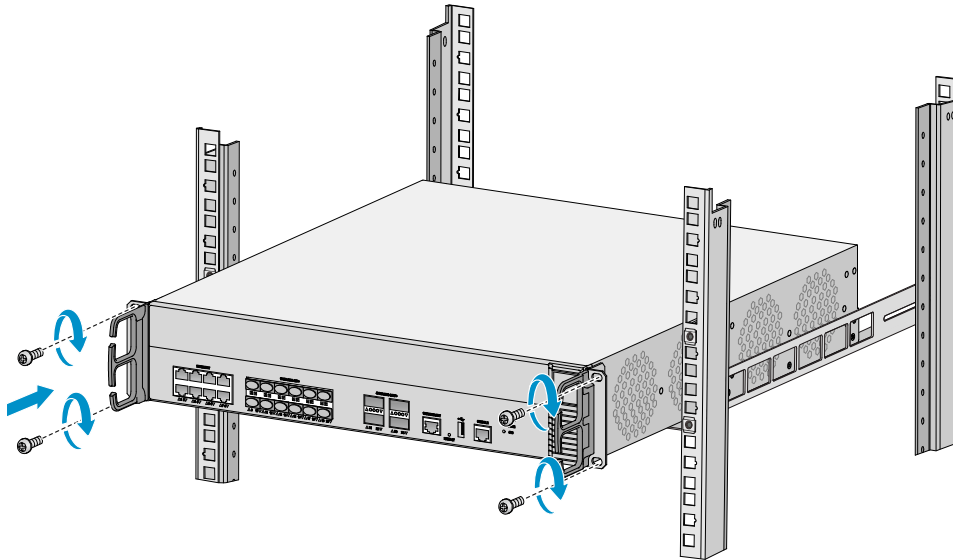
1. Wear the ESD wrist strap and verify that the rack is sturdy and is reliably grounded.
2. Use the screws supplied with the front mounting brackets to attach the front mounting brackets to the device, as shown in [Figure 6](#).
3. Attach the slide rails to the rack. See [Figure 12](#) for reference.

Figure 12 Installing slide rails



4. Holding both sides of the device, push the device in the rack along the slide rails, as shown in Figure 13. Make sure the chassis bottom makes close contact with the bottom flanges of the slide rails.

Figure 13 Installing the device to the rack



5. Attach the front mounting brackets on the device to the front rack posts with M6 screws and cage nuts.

NOTE:

Keep a minimum distance of 1 U (44.45 mm, or 1.75 in) between devices for heat dissipation.

Grounding the device

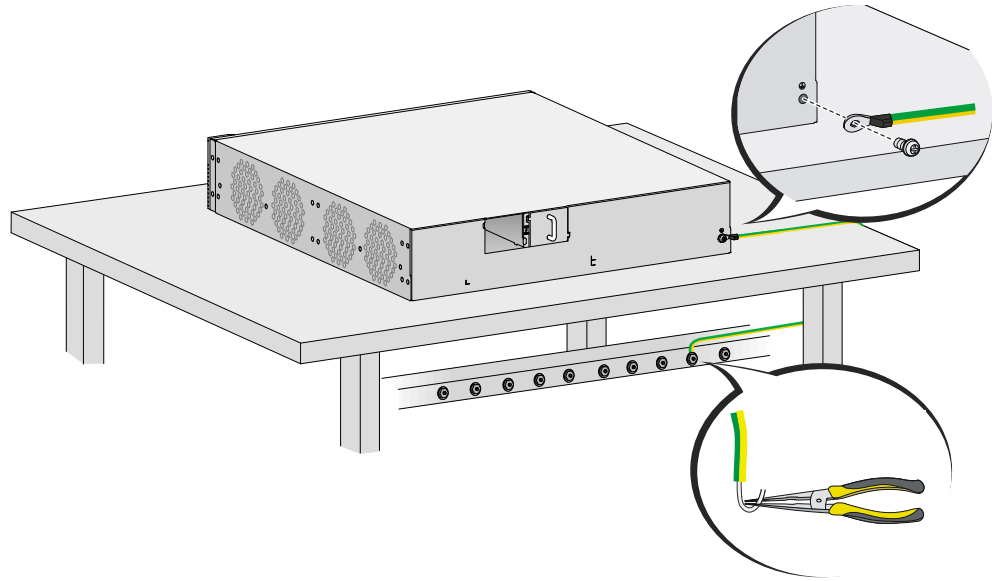
⚠ WARNING!

- Correctly connecting the grounding cable is crucial to lightning protection and EMI protection. Before you install and use the device, make sure the device is reliably grounded.
 - Connect the grounding cable to the grounding system in the equipment room. Do not connect it to a fire main or lightning rod.
-

To ground the device:

1. Use a Phillips screwdriver to remove the grounding screw from the chassis.
2. Use the grounding screw to attach one end (with ring terminal) of the grounding cable to the chassis.
3. Connect the other end of the grounding cable according to the grounding method you use:
 - **Ground the device with a grounding strip**—If a grounding strip is available at the installation site, connect the other end of the grounding cable to the grounding strip and make sure the grounding strip has been reliably grounded.

Figure 14 Grounding the device with a grounding strip



- **Ground the device with the rack**—Connect the other end of the grounding cable to the grounding point on the rack and make sure the rack has been reliably grounded.

Figure 15 Grounding the device with the rack (1)

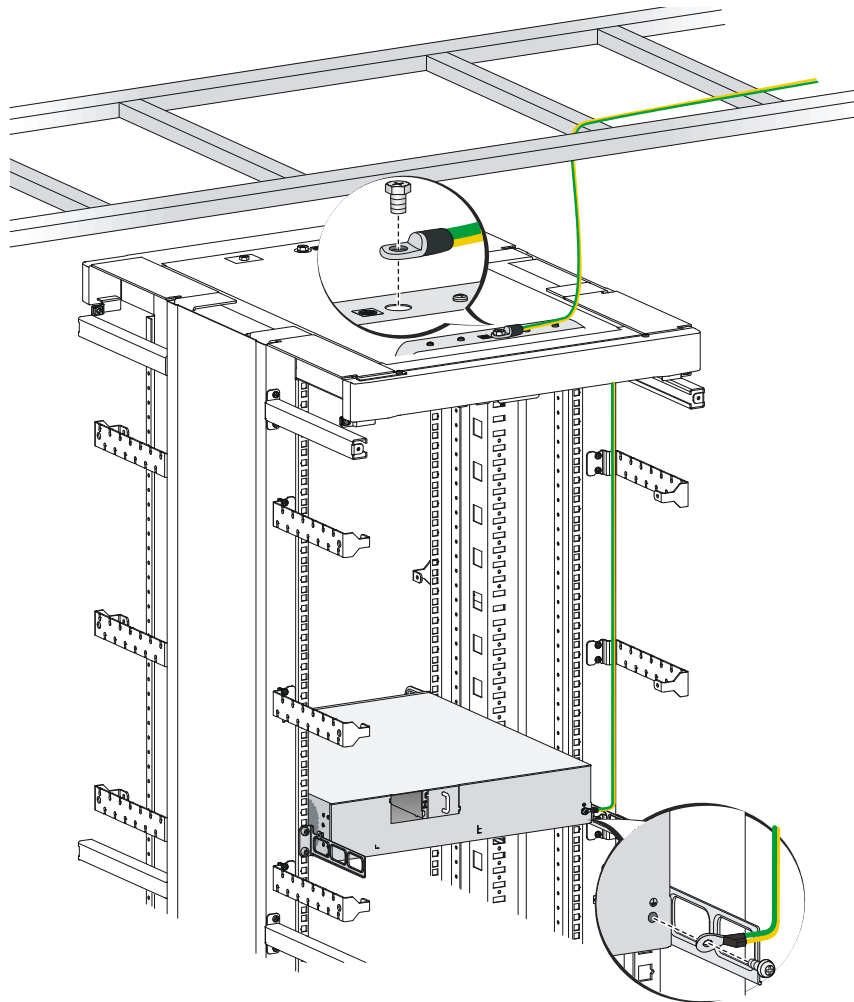
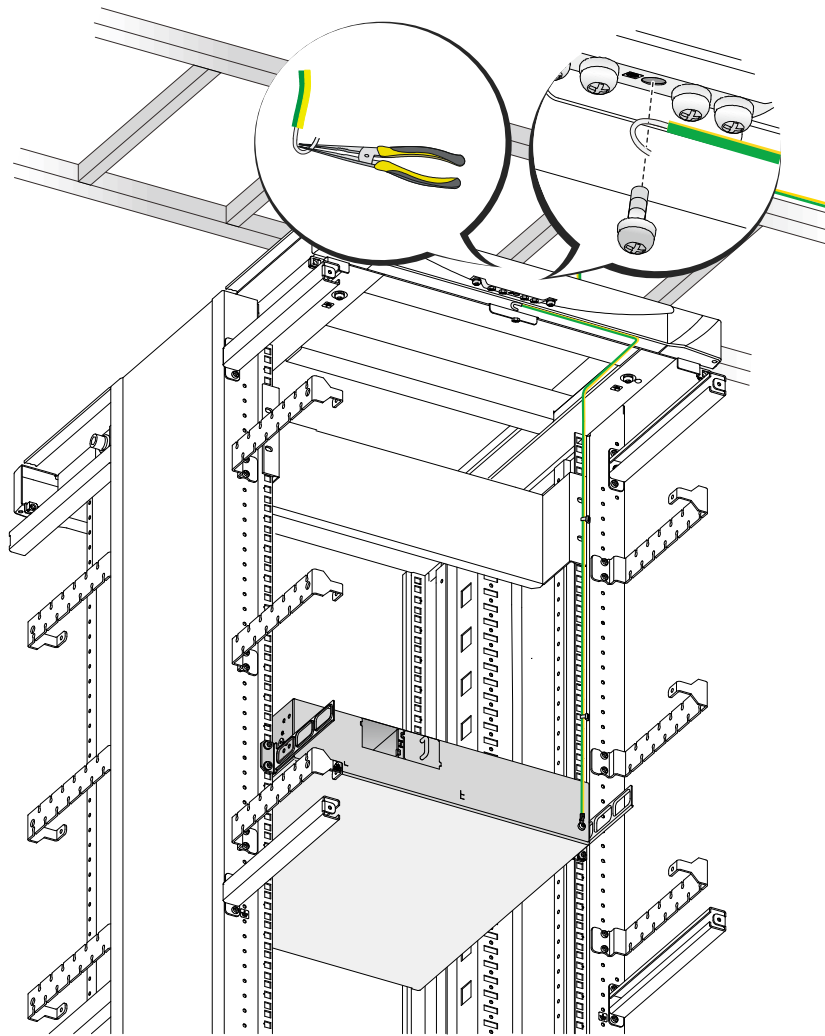
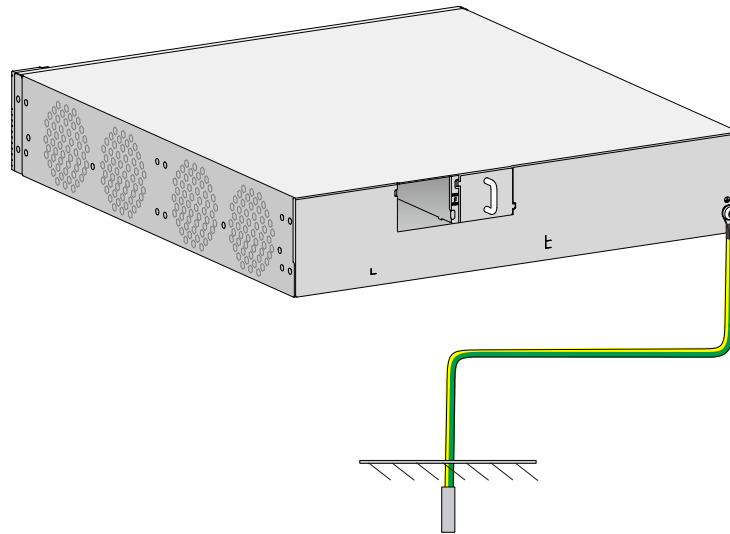


Figure 16 Grounding the device with the rack (2)



- **Grounding the device with a grounding conductor buried in the earth**—If earth is available at the installation site, hammer a 0.5 m (1.64 ft) or longer angle iron or steel tube into the earth to serve as a grounding conductor. Weld the yellow-green grounding cable to the angel iron or steel tube and treat the joint for corrosion protection.

Figure 17 Grounding the device by burying the grounding conductor into the earth



Installing optional components

Installing a lightning arrester for a network port

! **IMPORTANT:**

Before installing a lightning arrester for a network port, read the instructions that come with the lightning arrester.

No lightning arrester is provided with the device. Purchase a lightning arrester yourself as required.

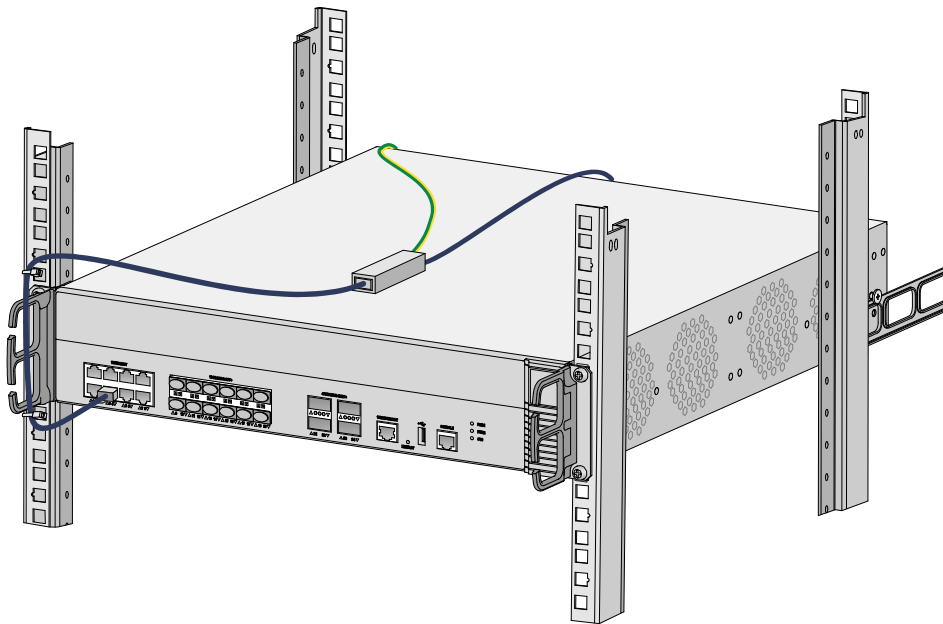
If part of the network cable of a 10/100/1000 Mbps RJ-45 copper Ethernet port must be routed outdoors, install a lightning arrester for the network port.

Installation procedure

To install a lightning arrester for a network port:

1. Use a double-faced adhesive tape to stick the lightning arrester onto the device chassis, and make sure it is as close to the grounding screw of the device as possible.
2. Measure the distance between the arrester and the grounding screw of the device, cut the ground wire of the arrester as needed, and securely tighten the ground wire to the grounding screw of the device.
3. Use the multimeter to measure whether the ground wire of the arrester makes contact with the grounding screw of the chassis.
4. Insert the outdoor network cable into the arrester's Surge end, and insert the cable connected to the device into the Protect end. Examine the indicators on the lightning arrester to verify that the connection is correct.

Figure 18 Installing a lightning arrester for a network port



Precautions

If the performance of the lightning arrester is adversely affected in the following situations, follow the recommended solution:

- **Problem 1**—The lightning arrester is installed in reverse direction.
Solution—Connect the Surge end to the outdoor network cable and the Protect end to the network port on the device.
- **Problem 2**—The lightning arrester is not correctly grounded.
Solution—Use the multimeter to confirm that the ground wire for the arrester is as short as possible to make sure it makes good contact with the grounding screw of the device.
- **Problem 3**—The installed lightning arresters are not sufficient.
Solution—If the device has more than one network port to connect to other devices through outdoor cables, install a lightning arrester for each network port.

Installing a lightning arrester for an AC power module

⚠ IMPORTANT:

Before installing a lightning arrester for an AC power module, read the instructions in the document that comes with the arrester.

No lightning arrester is provided with the device. Purchase one as needed.

If part of the AC power cord is routed outdoors, install a lightning arrester to protect the device from being damaged by lightning strikes. First connect the AC power cord routed from outdoors to the lightning arrester and then connect the power cord from the device to the arrester.

You can attach the lightning arrester to the rack, workbench, or a wall of the equipment room.

Connecting the console cable and setting terminal parameters

To configure and manage the device through the console port, you must run a terminal emulator program, TeraTermPro or PuTTY, on your configuration terminal. You can use the emulator program to connect a network device, a Telnet site, or an SSH site. For more information about the terminal emulator programs, see the user guides for these programs

The following are the required terminal settings:

- **Bits per second**—9600.
- **Data bits**—8.
- **Stop bits**—1.
- **Parity**—None.
- **Flow control**—None.

Connecting the Ethernet cables

Connecting a copper Ethernet port

1. Connect one end of the Ethernet cable to the copper Ethernet port of the device, and the other end to the Ethernet port of the peer device.
2. After powering on the device, examine the LEDs of the fixed copper Ethernet port.
For more information about the LED description, see "Appendix B LEDs."

Connecting a fiber port

No transceiver module is provided with the device. The device supports only LC-type fiber connectors. For transceiver module specifications, see "Appendix A Chassis views and technical specifications."

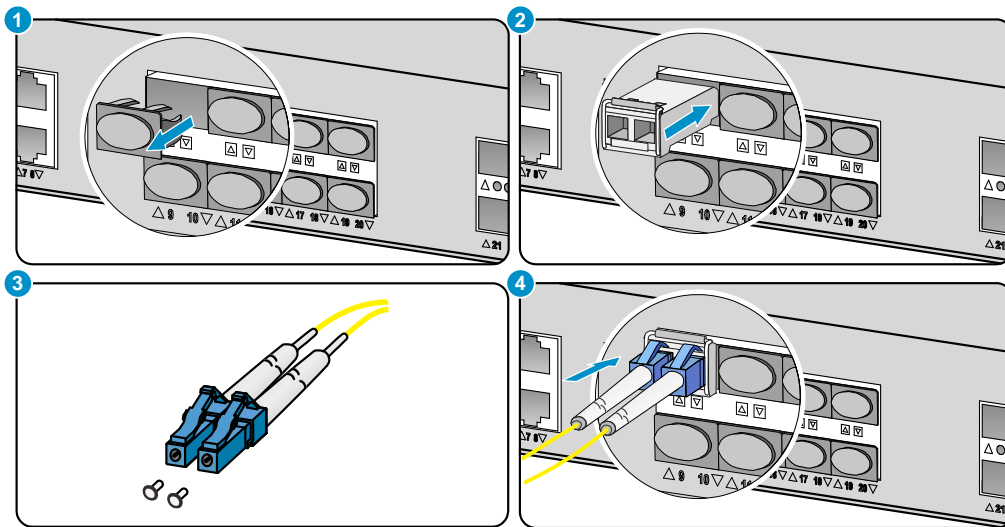
Follow these guidelines when you connect an optical fiber:

- Never stare into an open fiber port, because invisible rays might be emitted from the fiber port.
- Cover the dust plug if no optical fiber connector is connected to the fiber port.
- Never bend or curve a fiber when connecting it. After a fiber is installed correctly, the bend radius must be not less than 10 cm (3.94 in).
- Keep the fiber end clean.
- Make sure the Tx and Rx ports on a transceiver module are correctly connected.

To connect the device to the network through an optical fiber:

1. Remove the dust plug on the fiber port.
2. Remove the dust cover from the transceiver module, and insert the transceiver module into the fiber port.
3. Remove the dust cover of the optical fiber connector.
4. Identify the Rx and Tx ports on the transceiver module. Use optical fibers with LC connectors to connect the Rx port and Tx port on the transceiver module to the Tx port and Rx port on the peer end, respectively.

Figure 19 Connecting an optical fiber



5. Power on the device, and examine the SFP port LEDs:
 - If the LED is on, a fiber link has been set up.
 - If the LED is off, no link has been set up. The reason might be wrong connection of the Tx and Rx ends. Connect the Tx and Rx ends at one end of the fiber again.

Installing power modules

⚠ CAUTION:

Do not install AC and DC power modules on the same device.

To install a power module:

1. Remove the filler panel (if any) from the target slot.
Keep the remove filler panel for future use.
2. Holding the handle of the power module with one hand and supporting the bottom of the power module with the other, push the power module into the slot along the guide rails until it clicks into the place.

Figure 20 Installing an AC power module

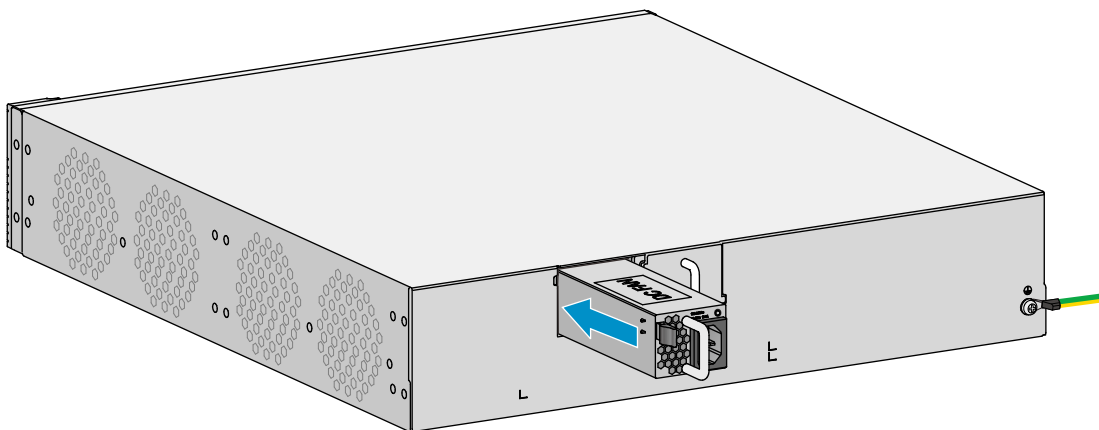
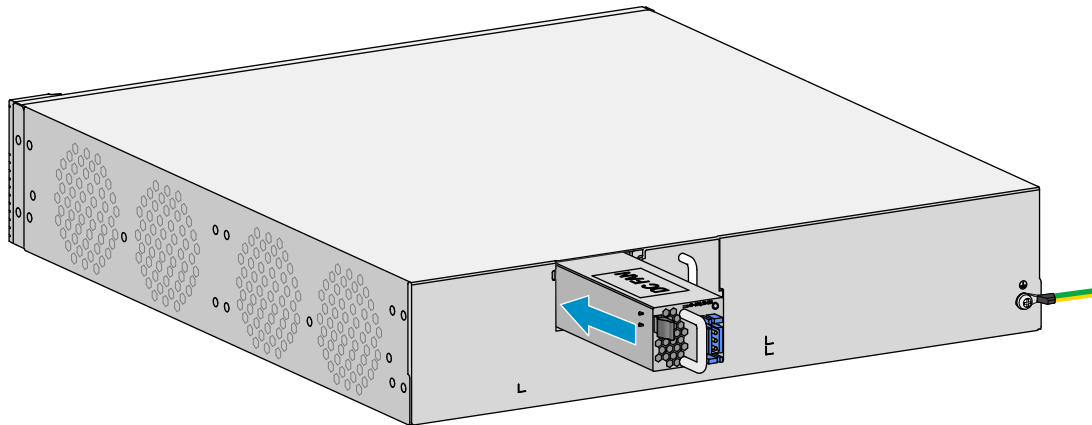


Figure 21 Installing a DC power module



Connecting the AC power cord

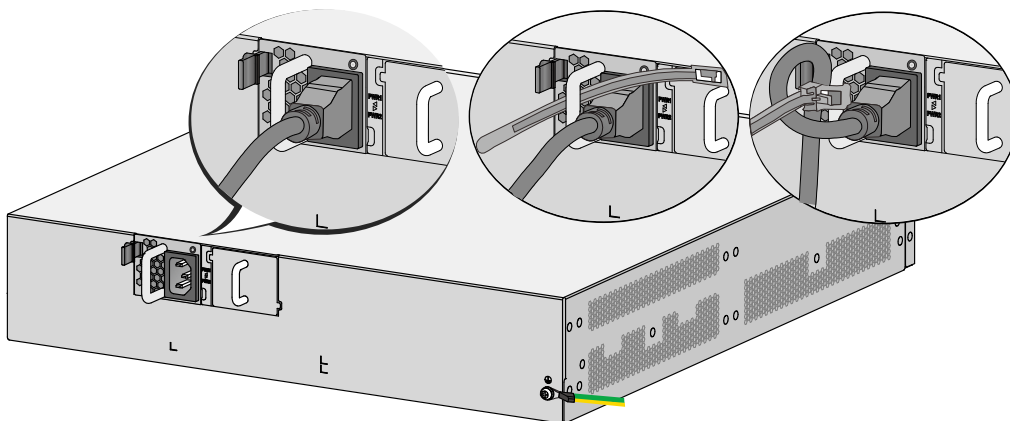
⚠ CAUTION:

Before connecting the AC power cord, make sure the device is reliably grounded.

To connect the AC power cord:

1. Connect one end of the AC power cord to the AC-input power receptacle on the device.
2. Use a cable tie to secure the power cord to the power module handle.
3. Connect the other end of the AC power cord to the AC power source.

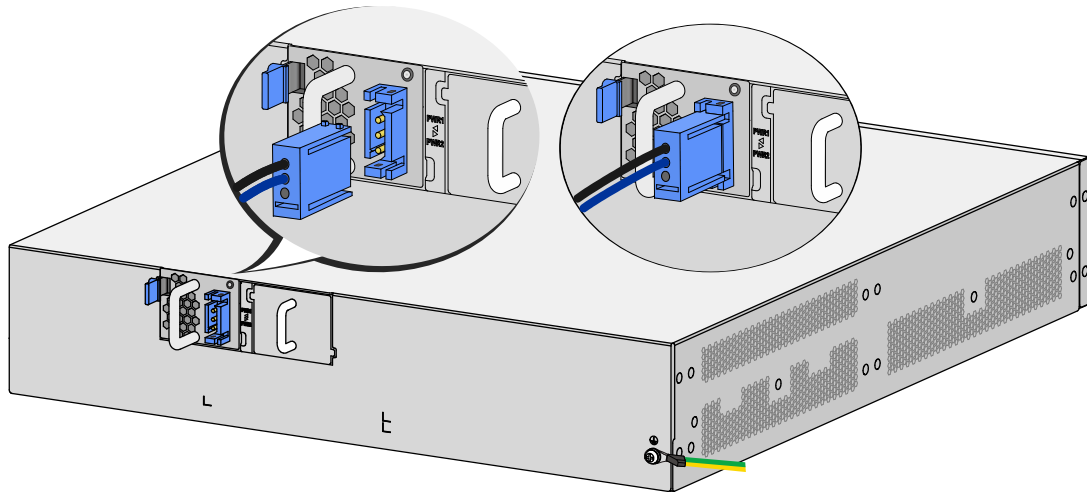
Figure 22 Connecting an AC power cord



Connecting the DC power cord

1. Correctly orient the DC power cord plug and insert the power cord into the DC-input receptacle. The plug and receptacle are fool proof. If you orient the plug with the upside down, you cannot insert the plug into the receptacle.
2. Connect the other end of the DC power cord to the DC power source.

Figure 23 Connecting a DC power cord



Verifying the installation

Before powering on the device, verify the following information:

- The correct power source is used.
- The grounding cable is securely connected.
- The console cable and power cord are correctly connected.
- All the interface cables are cabled indoors. If any cable is routed outdoors, verify that the socket strip with a lightning arrester for network ports has been properly connected.

Powering on the device

1. Power on the device. The device initializes its memory and runs the BootWare. The following information appears on the terminal screen:

```
System is starting...
Press Ctrl+D to access BASIC-BOOTWARE MENU
Press Ctrl+T to start heavy memory test
Booting Normal Extended BootWare
The Extended BootWare is self-decompressing....Done.

*****
*
*          H3C WX5860H BootWare, Version 7.1.064          *
*
*****

Compiled Date       : Jan 1 2018
CPU Type           : XLP432
CPU Clock Speed    : 1400MHz
Memory Type        : DDR3 SDRAM
Memory Size        : 32768MB
Memory Speed       : 1333MHz
```

```
BootWare Size      : 768KB
Flash Size         : 16MB
cfa0 Size          : 4002MB
CPLD1 Version     : 001
CPLD2 Version     : 001
PCB Version       : Ver.A
```

BootWare Validating...

Press Ctrl+B to access EXTENDED-BOOTWARE MENU...

2. Press **Ctrl + B** at the prompt within 4 seconds to access the Boot menu. Otherwise, the system enters the system image file reading and self-compressing process.

To access the Boot menu after the system enters the system image file reading and self-compressing process, restart the device.

Loading the main image files...

```
Loading file cfa0:/wx5860h-system.bin.....
.....Done.
```

```
Loading file cfa0:/wx5860h-boot.bin.....
.....Done.
```

```
Image file cfa0:/wx5860h-boot.bin is self-decompressing.....
.....Done.
```

System image is starting...

...

Press Ctrl+I to enter inter-initiate mode... 0 s

...

Line con0 is available.

Press ENTER to get started.

3. Press **Enter** at the prompt, and you can configure the device when the prompt **<H3C>** appears. During the startup process, the CPLD is automatically upgraded to the most recent version.

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Solution	2

Troubleshooting

Power module failure

Symptom

The device cannot be powered on and the power module status LED PWR is off.

Solution

To resolve the problem:

1. Verify that the power source is as required.
2. Verify that the power cord is connected securely.
3. Verify that the power cord is in good condition.
4. If the problem persists, contact H3C Support.

No display or garbled display on the configuration terminal

Symptom

The configuration terminal does not have display or have a garbled display when the device is powered on.

Solution

To resolve the problem:

1. Verify that the power system is operation correctly.
2. Verify that the console cable is connected correctly to the specified serial port on the configuration terminal.
3. Verify that the following settings are configured for the terminal:
 - **Baud rate**—9,600.
 - **Data bits**—8.
 - **Parity**—none.
 - **Stop bits**—1.
 - **Flow control**—none.
 - **Emulation**—VT100.
4. Verify that the console cable is in good condition.
5. If the problem persists, contact H3C Support.

Software loading failure

Symptom

The device fails in software loading.

Solution

To resolve the problem:

1. Verify that the physical ports are connected securely and correctly. If a port is not connected securely, reconnect the port and make sure the connections are correct.
2. View the software loading process displayed on the HyperTerminal to check for errors. If an error exists, correct the error.

For example, check for the following errors that might occur:

- When you use XMODEM to load software, you select a baud rate other than 9600 bps, but you have not reset the baud rate for the HyperTerminal.
 - When you use TFTP to load software, you entered an incorrect IP address, software name, or TFTP serve path.
 - When you use FTP to load software, you entered an incorrect IP address, software name, username, or password.
3. If the problem persists, contact H3C Support.

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Hardware management and maintenance

The command lines and outputs depend on the software version that runs on the device..

Displaying hardware information for the device

Displaying software and hardware version information for the device

Use the **display version** command to display software and hardware version information about the device. The output includes the following information:

- The current software.
- The hardware version.
- The device operating time.

The output depends on the software and hardware version of the device.

```
<H3C> display version
H3C Comware Software, Version 7.1.064, ESS 5113
Copyright (c) 2004-2016 Hangzhou H3C Tech. Co., Ltd. All rights reserved.
H3C WX5860H uptime is 0 weeks, 0 days, 1 hour, 50 minutes
Last reboot reason : Power on
```

```
Boot image: cfa0:/wx5860h-boot.bin
Boot image version: 7.1.064, ESS 5113
  Compiled Jan 1 2016 16:00:00
System image: cfa0:/wx5860h-system.bin
System image version: 7.1.064, ESS 5113
  Compiled Jan 1 2016 16:00:00
```

```
Slot 1
```

```
with 1 RMI XLP 432 1400MHz Processor
32736M bytes DDR3
16M bytes NorFlash Memory
4002M bytes CFCard Memory
```

```
Hardware Version is Ver.A
CPLD 1 CPLD Version is 001
CPLD 2 CPLD Version is 001
FPGA1 Logic Version is f06
Basic Bootrom Version is 5.05
Extend Bootrom Version is 5.05
[Subslot 0]H3C wx5860h Hardware Version is Ver.A
```

Displaying operational statistics for the device

When you perform routine maintenance or the system fails, you might need to display the operational information of each feature module to locate failures. Typically, you need to run the **display** commands individually. However, you can use the **display diagnostic-information** command in any view to display or save the operational statistics of multiple feature modules of the device. This command displays the output of the **display clock**, **display version**, **display device**, and **display current-configuration** commands.

- Save the operational statistics for each feature module of the device:

```
<H3C> display diagnostic-information
Save or display diagnostic information (Y=save, N=display)? [Y/N]:y
Please input the file name(*.tar.gz)[cfa0:/diag_H3C_20230403-073957.tar.gz]:
Diagnostic information is outputting to cfa0:/diag_H3C_20230403-073957.tar.gz.
Please wait...
Save successfully.
```

To view the contents of the **default.diag** file, execute the **more default.diag** command in user view, and then press the **Page Up** and **Page Down** keys.

- Display the operational statistics for each feature module of the device. (Details not shown.)

```
<H3C> display diagnostic-information

Save or display diagnostic information (Y=save, N=display)? [Y/N]:n
=====
=====display clock=====
16:21:41 UTC Jan 01/11/2016
=====
=====display version=====
H3C Comware Software, Version 7.1.064, ESS 5113
Copyright (c) 2004-2016 Hangzhou H3C Tech. Co., Ltd. All rights reserved.
H3C WX5860H uptime is 0 weeks, 0 day, 1 hours, 30 minutes
Last reboot reason : power on

Boot image: cfa0:/wx5860h-boot.bin
Boot image version: 7.1.064, ESS 5113
  Compiled Jan 1 2016 16:00:00, DEBUG SOFTWARE
System image: cfa0:/wx5860h-system.bin
System image version: 7.1.064, ESS 5113
  Compiled Jan 1 2016 16:00:00, DEBUG SOFTWARE

Slot 1

with 1 RMI XLP 432 1400MHz Processor
32736M bytes DDR3
16M bytes NorFlash Memory
4002M bytes CFCard Memory

Hardware Version is Ver.A
CPLD 1 CPLD Version is 001
CPLD 2 CPLD Version is 001
```

```
FPGA1 Logic Version is 506
Basic Bootrom Version is 5.05
Extend Bootrom Version is 5.05
[Subslot 0]H3C WX5860H Hardware Version is Ver.A
```

```
=====
=====display device verbose=====
Slot No.  Subslot No.  Board Type          Status    Max Ports
1          0           H3C WX5860H        Normal    25
...
```

Displaying detailed information about the device

Use the **display device verbose** command to display detailed information about the device.

```
<H3C> display device verbose
```

```
Slot No.  Subslot No.  Board Type          Status    Max Ports
1          0           H3C WX5860H        Normal    25
```

Table 1 Command output

Field	Description
Slot No.	Member ID of the IRF member device.
Board Type	Device type.
Status	Device status: <ul style="list-style-type: none"> Fault—The device is not operating correctly. Normal—The device is operating correctly.
Max Ports	Maximum number of ports supported.

Displaying the electronic label data for the device

An electronic label is a profile of a device. It contains the permanent configuration, including the serial number, manufacturing date, MAC address, and vendor name.

Use the **display device manuinfo** command to display the electronic label data for the device.

```
<H3C> display device manuinfo
```

```
Slot 1 CPU 0:
DEVICE_NAME:WX5860H
DEVICE_SERIAL_NUMBER: 210235A1JR4572168240
MAC_ADDRESS:000c-293c-5b55
MANUFACTURING_DATE:2018-10-08
VENDOR_NAME:H3C
```

Table 2 Command output

Field	Description
DEVICE_NAME	Device model.
DEVICE_SERIAL_NUMBER	Serial number of the device.
MAC_ADDRESS	MAC address of the device.

Field	Description
MANUFACTURING_DATE	Manufacturing data of the device.
VENDOR_NAME	Vendor name.

Displaying the CPU usage of the device

Use the **display cpu-usage** command to display the CPU usage statistics for the device.

```
<H3C>display cpu-usage
Slot 1 CPU 0 CPU usage:
    1% in last 5 seconds
    1% in last 1 minute
    1% in last 5 minutes
```

Table 3 Command output

Field	Description
Slot 1 CPU 0 CPU usage	Usage of CPU 0 on IRF member device 1.
1% in last 5 seconds	Average CPU usage in the last 5 seconds (after the device boots, the device calculates and records the average CPU usage at the interval of 5 seconds).
1% in last 1 minute	Average CPU usage in the last minute (after the device boots, the device calculates and records the average CPU usage at the interval of 1 minute).
1% in last 5 minutes	Average CPU usage in the last 5 minutes (after the device boots, the device calculates and records the average CPU usage at the interval of 5 minutes).

Displaying the memory usage of the device

Use the **display memory** command to display the memory usage statistics for the device.

```
<H3C> display memory
Memory statistics are measured in KB:
Slot 1:
      Total      Used      Free      Shared  Buffers  Cached  FreeRatio
Mem:    32470896  4086600  28384296      0      2252   559868    87.4%
-/+ Buffers/Cache:  3524480  28946416
Swap:         0         0         0
```

Table 4 Command output

Field	Description
Slot x	Member ID of the IRF member device.
Mem	Memory usage information.
Total	Total size of the physical memory space that can be allocated.
Used	Used physical memory.
Free	Free physical memory.
Shared	Physical memory shared by processes.
Buffers	Physical memory used for buffers.
Cached	Used physical memory for cache.

Field	Description
FreeRatio	Free memory ratio.
-/+ Buffers/Cache	<ul style="list-style-type: none"> -/+ Buffers/Cache:used = Mem:Used – Mem:Buffers – Mem:Cached, which indicates the physical memory used by applications. -/+ Buffers/Cache:free = Mem:Free + Mem:Buffers + Mem:Cached, which indicates the physical memory available for applications.
Swap	Swap memory.

Displaying the operational status of the built-in fans

Use the **display fan** command to display the operating states of fans.

```
<H3C>display fan
Fan 1 State: Normal
Fan 2 State: Normal
Fan 3 State: Normal
Fan 4 State: Normal
```

Table 5 Command output

Field	Description
Fan <i>n</i>	Number of the fan.
State	Fan state: <ul style="list-style-type: none"> Normal—The fan is operating correctly. Abnormal—The fan is not in position. Fault—The fan has failed.

Displaying the operating state of a power module

Use the **display power** command to display the operating state of a power module.

```
<H3C>display power
Power 1 State: Normal
Power 2 State: Abnormal
```

Table 6 Command output

Field	Description
Power 1, 2	Number of the power module.
State	Power module state: <ul style="list-style-type: none"> Normal—The power module is operating correctly. Abnormal—The power module is not in position. Fault—The power module has failed.

Rebooting the device

To reboot the device, use one of the following methods:

- Reboot the device at the CLI. You can remotely reboot the device in either of the following ways:
 - Reboot the device immediately by using the **reboot** command.

- Schedule a reboot to occur at a specific time or date or after a delay by using the **schedule reboot** command.
- Power off and power on the device. This method cuts off the power of the device forcibly, which might cause data loss. It is the least-preferred method.

Restrictions and guidelines

- Before you reboot the device, perform the following tasks:
 - Use the **save** command to save the running configuration. For more information about the **save** command, see *H3C WX5860H Access Controller Fundamentals Command Reference*.
 - Use the **display startup** and **display boot-loader** commands to make sure you have specified the correct next-startup configuration files and startup software images. If the main startup software image is corrupt or does not exist, a reboot failure will occur. To avoid a reboot failure, use the **boot-loader file** command to specify a new startup software image. For more information about the **display startup** and **display boot-loader** commands, see *H3C WX5860H Access Controller Fundamentals Command Reference*.
- The device will not reboot if a file is being accessed.

Configuration procedure

Rebooting the device immediately

Task	Command	Remarks
Reboot the device immediately.	reboot [force]	Available in user view.

Scheduling a reboot for the device

Task	Command	Remarks
Schedule a reboot.	<ul style="list-style-type: none"> ● Schedule a reboot to occur at a specific time or date: schedule reboot at time [date] ● Schedule a reboot to occur after a delay: schedule reboot delay time 	<p>Use either command.</p> <p>By default, no reboot date or time or reboot delay time is specified.</p> <p>Available in user view.</p> <p>The most recent configuration takes effect if you execute the scheduler reboot at or scheduler reboot delay command multiple times.</p>

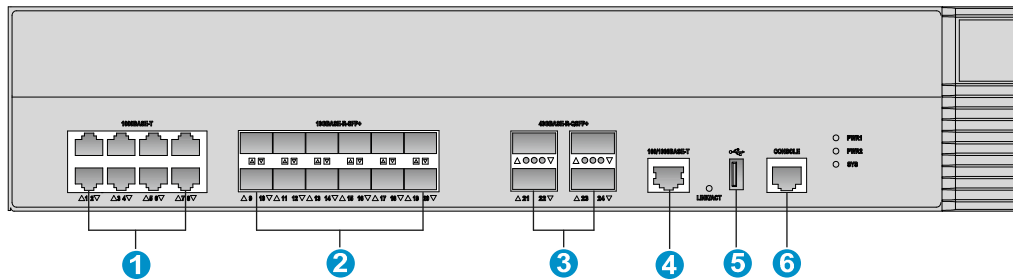
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Appendix A Chassis views and technical specifications

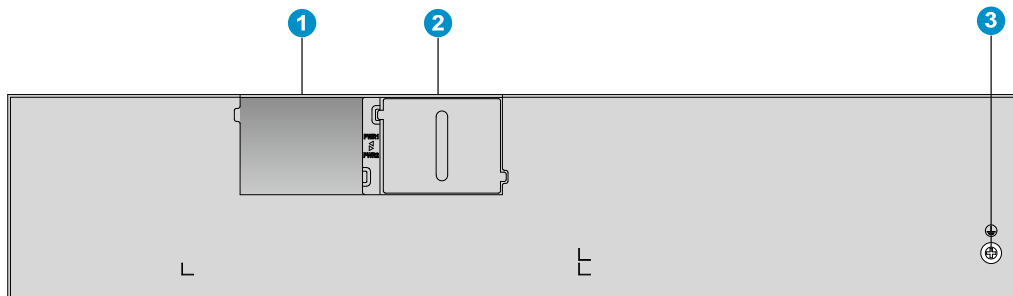
Chassis views

Figure 1 Front view



- | | |
|---|---|
| (1) 1000BASE-T Ethernet ports 1 through 8 | (2) 10GBASE-R SFP+/SFP ports 9 through 20 |
| (3) 40GBASE-R QSFP+ ports 21 through 24 | (4) 100/1000BASE-T management Ethernet port |
| (5) USB port | (6) Console port |

Figure 2 Rear view

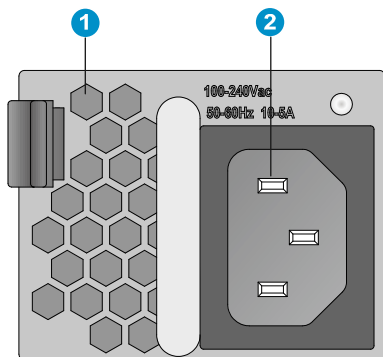


- | | | |
|--------------------------------|--------------------------------|---------------------|
| (1) Power module slot 1 (PWR1) | (2) Power module slot 2 (PWR2) | (3) Grounding screw |
|--------------------------------|--------------------------------|---------------------|

Power module views

AC power module

Figure 3 AC power module

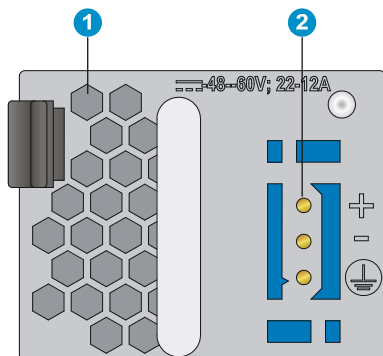


(1) Air outlet vent

(2) Power receptacle

DC power module

Figure 4 DC power module



(1) Air outlet vent

(2) Power receptacle

Transceiver module, fiber connector, and optical fiber views

To connect a fiber port, use an SFP or SFP+ transceiver module and a pair of optical fibers that use an LC connector.

Figure 5 SFP transceiver module

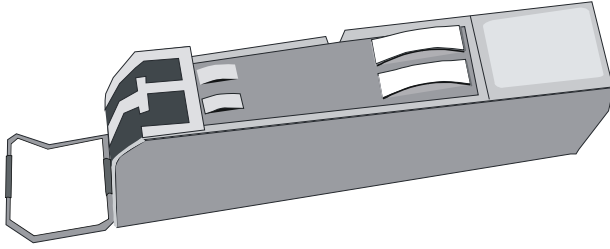


Figure 6 SFP+ transceiver module

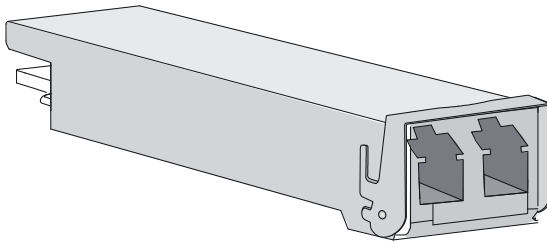
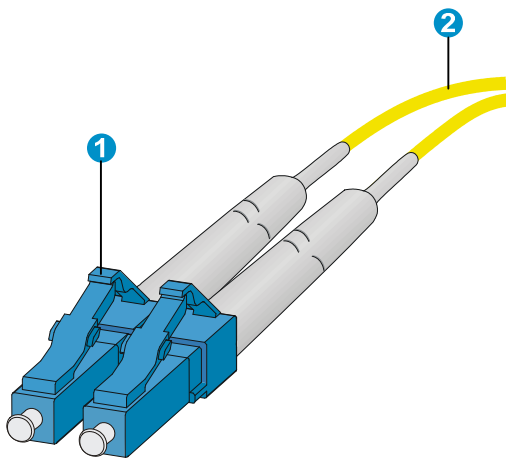


Figure 7 A pair of optical fibers that uses an LC connector



(1) LC connector

(2) Optical fiber

Technical specifications

Table 1 Technical specifications

Item	Specification
Console port	One, 9600 bps (default) to 115200 bps
Gigabit Ethernet port	8 × 1000BASE-T autosensing Ethernet port
SFP+ port	12 × 10GBASE-R SFP+ port
QSFP+ port	4 × 40GBase-R QSFP+ port
Memory	4 × 8 GB DDR3

Item	Specification
Storage media	4 GB CF card
Dimensions (H × W × D) (excluding rubber feet and mounting brackets)	88.1 × 440 × 480 mm (3.47 × 17.32 × 18.90 in)
Rated AC voltage range	100 VAC to 240 VAC @ 50 Hz or 60 Hz
Rated DC voltage range	–48 VDC to –60 VDC
System power consumption	215 W to 440 W
Weight	12.86 kg (28.35 lb) (without power modules)
Operating temperature	0°C to 45°C (32°F to 113°F)
Relative humidity (noncondensing)	5% to 95%

Table 2 AC power module specifications

Item	Specification
Model	PSR650B-12A1
Rated input voltage range	100 VAC to 240 VAC @ 50 Hz or 60 Hz
Rated power	650 W

Table 3 DC power module specifications

Item	Specification
Model	PSR650B-12D1
Rated input voltage range	–48 VDC to –60 VDC
Rated power	650 W

Transceiver module specifications

The transceiver modules whose names contain MM and SM support multi-mode optical fibers and single-mode optical fibers, respectively.

Table 4 SFP-GE-SX-MM850-A specifications

Item	Specification
Central wavelength	850 nm
Transmission distance	550 m (1804.46 ft)
Transmission rate	1250 Mbps
Connector type	Duplex LC
Fiber mode	MMF
Fiber diameter	50 μm
Transmit power	–9.5 to 0 dBm
Receive sensitivity	≤ –17 dBm
Saturation	≤ –3 dBm

Table 5 SFP-GE-LX-SM1310-A specifications

Item	Specification
Central wavelength	1310 nm
Transmission distance	10 km (6.21 miles)
Transmission rate	1250 Mbps
Connector type	Duplex LC
Fiber mode	SMF
Fiber diameter	9 μ m
Transmit power	-9.5 to -3 dBm
Receive sensitivity	\leq -20 dBm
Saturation	\leq -3 dBm

Table 6 SFP-GE-LH40-SM1310 specifications

Item	Specification
Central wavelength	1310 nm
Transmission distance	40 km (24.86 miles)
Transmission rate	1250 Mbps
Connector type	Duplex LC
Fiber mode	SMF
Fiber diameter	9 μ m
Transmit power	-2 to +5 dBm
Receive sensitivity	\leq -22 dBm
Saturation	\leq -3 dBm

Table 7 SFP-GE-LH40-SM1550 specifications

Item	Specification
Central wavelength	1550 nm
Transmission distance	40 km (24.86 miles)
Transmission rate	1250 Mbps
Connector type	Duplex LC
Fiber mode	SMF
Fiber diameter	9 μ m
Transmit power	-4 to +1 dBm
Receive sensitivity	\leq -21 dBm
Saturation	\leq -3 dBm

Table 8 SFP-GE-LH70-SM1550 specifications

Item	Specification
Central wavelength	1550 nm
Transmission distance	70 km (43.50 miles)
Transmission rate	1250 Mbps
Connector type	Duplex LC
Fiber mode	SMF
Fiber diameter	9 μ m
Transmit power	-4 to +5 dBm
Receive sensitivity	≤ -22 dBm
Saturation	≤ -3 dBm

Table 9 SFP-XG-SX-MM850-A specifications

Item	Specification
Central wavelength	850 nm
Transmission distance	300 m (984.25 ft)
Transmission rate	10.3125 Gbps
Connector type	Duplex LC
Fiber mode	MMF
Fiber diameter	50 μ m
Transmit power	-7.3 to -1 dBm
Receive sensitivity	≤ -9.9 dBm
Saturation	≤ 0.5 dBm

Table 10 SFP-XG-LX220-MM1310 specifications

Item	Specification
Central wavelength	1310 nm
Transmission distance	220 m (721.78 ft)
Transmission rate	10.3125 Gbps
Connector type	Duplex LC
Fiber mode	MMF
Fiber diameter	62.5 μ m
Transmit power	-6.5 to +0.5 dBm
Receive sensitivity	≤ -6.5 dBm
Saturation	≤ 1.5 dBm

Table 11 SFP-XG-LX-SM1310 specifications

Item	Specification
Central wavelength	1310 nm
Transmission distance	10 km (6.21 miles)
Transmission rate	10.3125 Gbps
Connector type	Duplex LC
Fiber mode	SMF
Fiber diameter	9 μ m
Transmit power	-8.2 to +0.5 dBm
Receive sensitivity	≤ -14.4 dBm
Saturation	≤ 0.5 dBm

Table 12 SFP-XG-LH40-SM1550 specifications

Item	Specification
Central wavelength	1550 nm
Transmission distance	40 km (24.86 miles)
Transmission rate	10.3125 Gbps
Connector type	Duplex LC
Fiber mode	SMF
Fiber diameter	9 μ m
Transmit power	-4.7 to +4 dBm
Receive sensitivity	≤ -15.8 dBm
Saturation	≤ -1 dBm

Interface arrangement

The device provides fixed interfaces GigabitEthernet 1/0/1 through GigabitEthernet 1/0/32. X in GigabitEthernet 1/0/X represents the interface mark on the front panel.

- **GigabitEthernet 1/0/1 through GigabitEthernet 1/0/8**—1000BASE-T autosensing Ethernet ports.
- **GigabitEthernet 1/0/9 through GigabitEthernet 1/0/20**—10GBase-R SFP+ ports.
- **GigabitEthernet 1/0/21 through GigabitEthernet 1/0/24**—40GBase-R QSFP+ ports.

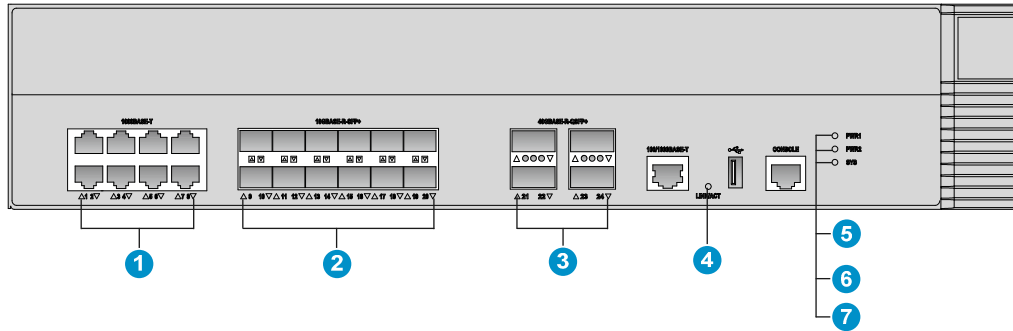
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Appendix B LEDs

Front panel LEDs

Figure 1 Front panel LEDs



- (1) 1000BASE-T autosensing Ethernet port status LEDs
- (2) 10GBase-R SFP+/SFP port status LEDs
- (3) 40GBASE-R QSFP+ port status LEDs
- (4) 100/1000 BASE-T out-of-band management Ethernet port status LEDs (LINK/ACT)
- (5) Power module 1 status LED (PWR1)
- (6) Power module 2 status LED (PWR2)
- (7) System status LED (SYS)

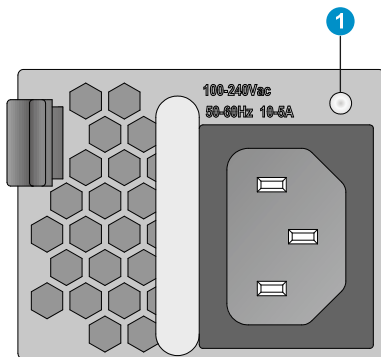
Table 1 LED description

LED	Mark	Status	Description
1000BASE-T autosensing Ethernet port status LED	N/A	Steady green	A 1000 Mbps link is present on the port.
		Flashing green	The port is receiving or transmitting data at 1000 Mbps.
		Off	No link is present on the port.
10GBase-R SFP+ port status LED	N/A	Steady green	A 10 Gbps or 1000 Mbps link is present on the port.
		Flashing green	The port is receiving or transmitting data at 10 Gbps or 1000 Mbps.
		Steady yellow	The transceiver module has failed the test.
		Off	No link is present on the port.
40GBase-R QSFP+ port status LED	N/A	Steady green	A 40 Gbps link is present on the port.
		Flashing green	The port is receiving or transmitting data at 40 Gbps.
		Steady yellow	The transceiver module has failed the test.
		Off	No link is present on the port.
100/1000Base-T out-of-band management Ethernet port status LED	LINK/ACT	Off	No link is present on the port.
		Steady green	A link is present on the port.
		Flashing green	The port is transmitting and receiving data.

LED	Mark	Status	Description
Power module 1 status LED	PWR1	Steady green	Power module 1 is operating correctly.
		Steady red	Power module 1 is faulty
		Off	No power module is present.
Power module 2 status LED	PWR2	Steady green	Power module 2 is operating correctly.
		Steady red	Power module 2 is faulty.
		Off	No power module is present.
System status LED	SYS	Fast flashing green	The system is loading software.
		Slow flashing green	The system is operating correctly.
		Steady red	The system has failed the power on self test (POST) or has detected a serious fault.
		Off	No power is input.

Power module LEDs

Figure 2 AC power module LED

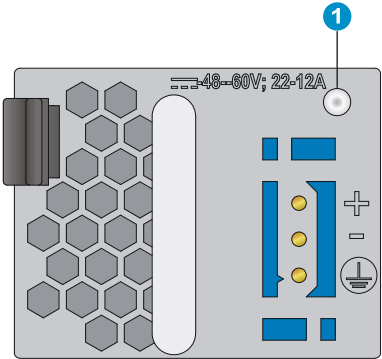


(1) Status LED

Table 2 AC power module LED description

Status	Description
Steady green	The power module is inputting and outputting power correctly.
Off	The power module is not inputting or outputting power, or the power module has an input or output problem.

Figure 3 DC power module LED



(1) Status LED

Table 3 DC power module LED description

Status	Description
Steady green	The power module is inputting and outputting power correctly.
Off	The power module is not inputting or outputting power, or the power module has an input or output problem.