H3C WX1800H Series Access Controllers
Installation Guide

Preface

This installation guide describes the installation procedure for the H3C WX1800H series access controllers.

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 H3C WX1800H series access controllers.

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.
Italic	*Italic* 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.
① 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.

Contents

1 Preparing for installation

H3C WX1800H series access controllers include the following models:

- WX1804H-PWR
- WX1810H-PWR
- WX1820H
- WX1840H

The supported models vary depending on your country or region.

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.

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

- Make sure the installation site is flat, vibration-free, and away from electromagnetic interferences. Make sure ESD and anti-slip measures are in place.
- Keep the chassis and installation tools away from walk areas.
- Do not place the device on an unstable case or desk. The device might be severely damaged in case of a fall.
- 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.
- Remove all cables from the device before moving it.
- Ensure good ventilation in the equipment room and make sure the air inlet and outlet vents of the device are not blocked.
- Make sure the power voltage for the device is in the acceptable range.
- Use a screwdriver to fasten screws.
- After you move the device from a location below 0°C (32°F) to the equipment room, follow these guidelines to prevent condensation:
  - Wait a minimum of 30 minutes before unpacking the device.
  - Wait a minimum of 2 hours before powering on the device.

Electricity safety

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

Laser safety

⚠ **WARNING!**

Disconnected optical fibers or connectors might emit invisible laser light. Do not stare into beams or view directly with optical instruments when the switch is operating.

⚠ **CAUTION:**

- Before you remove the optical fiber connector from a fiber port, execute the **shutdown** command in interface view to shut down the port.
- Insert a dust cap into any open optical fiber connector and a dust plug into any open fiber port or transceiver module port to protect them from contamination and ESD damage.

Examining the installation site

The device can only be used indoors. For the device to operate correctly and have a prolonged service time, the installation site must meet the following requirements.

Temperature and humidity

Make sure the temperature and humidity in the equipment room meet the requirements described in Table1-1.

- 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 device.

Table1-1 Temperature and humidity requirements for the equipment room

Temperature	Humidity
• WX1804H-PWR/WX1820H: 0°C to 40°C (32°F to 104°F) • WX1810H-PWR/WX1840H: 0°C to 45°C (32°F to 113°F)	5% RH to 95% RH, 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.

Table1-2 Dust concentration limit in the equipment room

Substance	Concentration limit (particles/m^3)
Dust particles	$\leq 3 \times 10^4$ (No visible dust on desk in three days)
NOTE: Dust particle diameter ≥ 5 μm	

The equipment room must also meet limits on salts, acids, and sulfides to eliminate corrosion and premature aging of components, as shown in Table1-3.

Table1-3 Harmful gas limits in the equipment room

Gas	Max. (mg/m^3)
SO_2	0.2
H_2S	0.006
NH_3	0.05
Cl_2	0.01
NO_2	0.04

Cooling

The device uses left-to-right airflow. For adequate heat dissipation, plan the installation site for the device based on its airflow direction and make sure the following requirements are met:

- A minimum clearance of 100 mm (3.94 in) is reserved around the device.
- The workbench or rack where the device is to be installed has a good ventilation system.

Figure1-1 Airflow through the chassis (WX1840H)
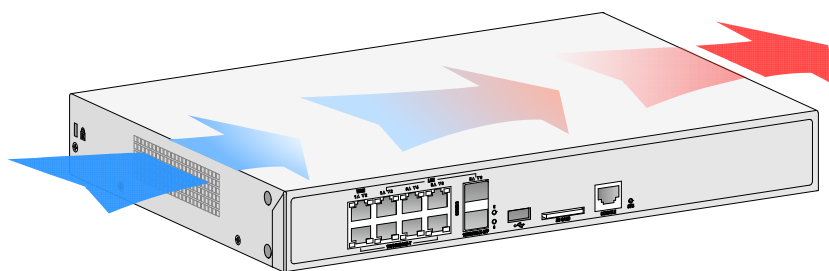
ESD prevention

ESD prevention guidelines

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

- Make sure the device is reliably grounded.

- Take dust-proof measures for the equipment room.
- Maintain the humidity and temperature in the equipment room at acceptable levels.
- When working with the device, always wear an ESD wrist strap or gloves and ESD garment, and remove conductive objects such as jewelry or watch. Make sure the wrist strap makes good skin contact and is reliably grounded.

Attaching an ESD wrist strap

No ESD wrist strap is provided with the device. Prepare one 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.

Figure1-2 Attaching an ESD wrist strap (WX1840H)
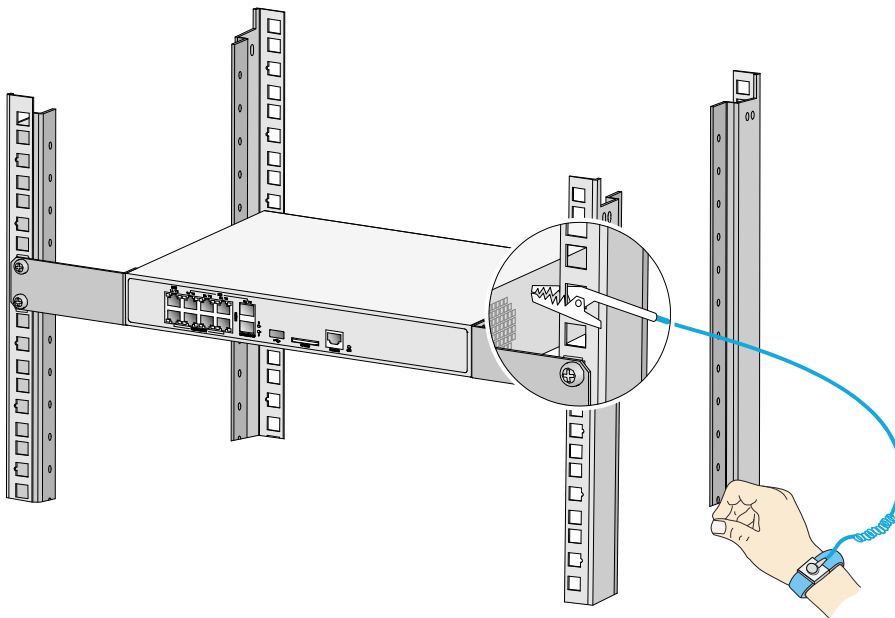
EMI

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, use the following guidelines:

- Take effective measures 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.

- To prevent signal ports from getting damaged by overvoltage or overcurrent caused by lightning strikes, route interface cables only indoors.
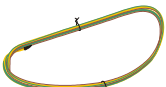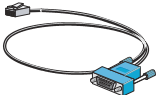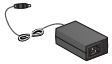
Lightning protection
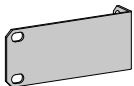
To enhance lightning protection for the device, follow these guidelines:
- Make sure the device is reliably grounded.
- Make sure the AC power outlet is reliably grounded.
- Install a surge protected power strip at the power input end.

Installation accessories

Figure1-3 Installation accessories

Installation accessory		WX1804H-PWR	WX1810H-PWR	WX1820H	WX1840H
Cage nut		N/A	4, user supplied	N/A	4, user supplied
M6 rack screw		N/A	4, user supplied	N/A	4, user supplied
M4 mounting bracket screw		N/A	4	N/A	4
Rubber feet		1	1	1	1
Grounding cable		N/A	1	N/A	1
Ring terminal		1	N/A	1	N/A
Console cable		N/A	1	1	1
Power adapter		1	N/A	N/A	N/A
Power adapter		N/A	N/A	1	N/A
Power cord		1	N/A	1	N/A

Installation accessory		WX1804H-PWR	WX1810H-PWR	WX1820H	WX1840H
Bail latch		N/A	N/A	N/A	1
Front mounting bracket		N/A	N/A	N/A	2
Front mounting bracket		N/A	2	N/A	N/A

Installation tools

No installation tools are provided with the device. Prepare them yourself as required.

Figure1-4 Installation tools

Flathead screwdriver   Phillips screwdriver   Needle-nose pliers   Wire-stripping pliers
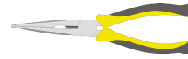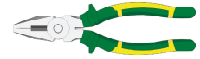
Diagonal pliers   Marker   ESD wrist strap

Pre-installation checklist

Table1-4 Pre-installation checklist

Item		Requirements	Result
Installation site	Ventilation	• A minimum clearance of 10 cm (3.9 in) is reserved around the chassis. • The installation site has a good ventilation system.	
	Temperature	• WX1804H-PWR/WX1820H: 0°C to 40°C (32°F to 104°F) • WX1810H-PWR/WX1840H: 0°C to 45°C (32°F to 113°F)	
	Humidity	5% RH to 95% RH (noncondensing).	
	Cleanliness	• Dust concentration ≤ 3 x 10^4 particles/m^3. • No visible dust on desk within three days.	
	ESD prevention	• The device is reliably grounded. • Dust-proof measures are taken in the equipment room. • Humidity and temperature are maintained in the acceptable range.	
	EMI prevention	• Effective measures are taken for filtering interference from the power grid. • The protection ground of the device is away from the grounding facility of power equipment or lightning protection grounding facility. • The device is far away from radio transmitting stations, radar stations, and high-frequency devices. • Electromagnetic shielding, for example, shielded interface cables, is used as required.	
	Lightning protection	• The device is reliably grounded. • The AC power source is reliably grounded. • (Optional.) Network port lightning protectors are available. • (Optional.) A surge protected power strip is available.	
	Electricity safety	• A UPS is available. • The power-off switch in the equipment room is identified and accessible so that the power can be immediately shut off when an accident occurs.	
Safety precautions		The device is far away from any sources of heat or moisture.	
Accessories		Installation accessories supplied with the device are available.	
Reference		• Documents shipped with the device are available. • Online documents are available.	

Contents

2 Installing the device

> **(!) IMPORTANT:**
> Keep the tamper-proof seal on a mounting screw on the chassis cover intact, and if you want to open the chassis, contact H3C for permission. Otherwise, H3C shall not be liable for any consequence.

Installation prerequisites

- You have read "Preparing for installation" carefully.
- All requirements in "Preparing for installation" are met.

Installation flowchart

Figure2-1 Installation flowchart for the WX1804H-PWR/WX1820H access controller

```
                    ┌─────────────┐
                    │    Start    │
                    └──────┬──────┘
                           │
                    ┌──────▼──────────┐
                    │ Install the device on a │
                    │     workbench   │
                    └──────┬──────────┘
                           │
                    ┌──────▼──────────────┐
                    │ Connect the grounding cable │
                    └──────┬──────────────┘
                           │
                    ┌──────▼──────────┐
                    │ Connect the device to the │
                    │      network    │
                    └──────┬──────────┘
                           │
                    ┌──────▼──────────┐
                    │ Connect the power cord │
                    └──────┬──────────┘
                           │
                    ┌──────▼──────────┐       ┌──────────────────────┐
                    │ Power on the device │◄──│ Troubleshoot the device │
                    └──────┬──────────┘       └──────────▲───────────┘
                           │                             │
                    ┌──────▼──────────┐   No   ┌──────────┴───────────┐
                    │ Operating correctly? ├───────►│ Power off the device │
                    └──────┬──────────┘        └──────────────────────┘
                           │ Yes
                    ┌──────▼──────┐
                    │     End     │
                    └─────────────┘
```
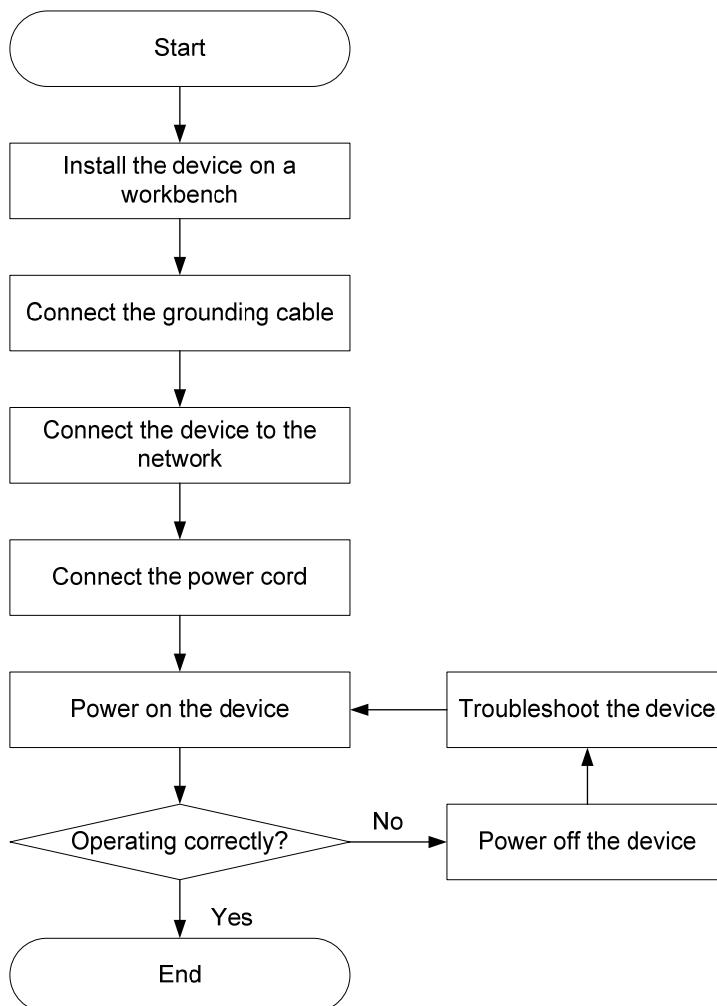
Figure2-2 Installation flowchart for the WX1810H-PWR/WX1840H access controller

```
                          ┌──────────┐
                          │  Start   │
                          └──────────┘
                               │
                               ▼
                        ╱───────────────╲
                       ╱  Determine the  ╲
          ┌───────────<  installation     >───────────┐
          │            ╲   position      ╱             │
          │             ╲───────────────╱              │
          ▼                                            ▼
  ┌─────────────────┐                         ┌─────────────────────┐
  │ Mount the device│                         │ Mount the device in │
  │ on a workbench  │                         │ a 19-inch rack      │
  └─────────────────┘                         └─────────────────────┘
          │              ┌─────────────────────┐           │
          └─────────────>│ Connect the         │<──────────┘
                         │ grounding cable     │
                         └─────────────────────┘
                                   │
                                   ▼
                         ┌─────────────────────┐
                         │ (Optional) Install  │
                         │ network port        │
                         │ lightning protectors│
                         └─────────────────────┘
                                   │
                                   ▼
                         ┌─────────────────────┐
                         │ (Optional) Install a│
                         │ surge protected     │
                         │ power strip         │
                         └─────────────────────┘
                                   │
                                   ▼
                         ┌─────────────────────┐
                         │ Connect the device  │
                         │ to the network      │
                         └─────────────────────┘
                                   │
                                   ▼
                         ┌─────────────────────┐
                         │ Connect the power   │
                         │ cord                │
                         └─────────────────────┘
                                   │
                                   ▼
                         ┌─────────────────────┐
                         │ Verify the          │
                         │ installation        │
                         └─────────────────────┘
                                   │
                                   ▼
                         ┌─────────────────────┐      ┌─────────────────────┐
                         │ Power on the device │<─────│ Troubleshoot the    │
                         └─────────────────────┘      │ device              │
                                   │                  └─────────────────────┘
                                   ▼                            ▲
                        ╱───────────────╲                       │
                       ╱  Operating       ╲    No     ┌─────────────────────┐
                      <   correctly?       >─────────>│ Power off the device│
                       ╲                 ╱            └─────────────────────┘
                        ╲───────────────╱
                                   │ Yes
                                   ▼
                          ┌──────────┐
                          │   End    │
                          └──────────┘
```

Mounting the device on a workbench

⚠ **CAUTION:**
- To avoid damaging the device and affecting heat dissipation, do not place heavy objects on the device.
- Make sure the workbench is anti-static.

The workbench-mounting procedure is similar for WX1800H series access controllers. The following procedure uses the WX1804H-PWR access controller as an example.

To mount the device on an anti-static workbench:

1. Place the device upside down on the workbench. Use a cloth to clean the recessed areas on the bottom.
2. Attach rubber feet to the four recessed areas.
3. Place the device upside up on the workbench. Make sure the four rubber feet stand firmly on the workbench.

Figure2-3 Mounting the device on a workbench
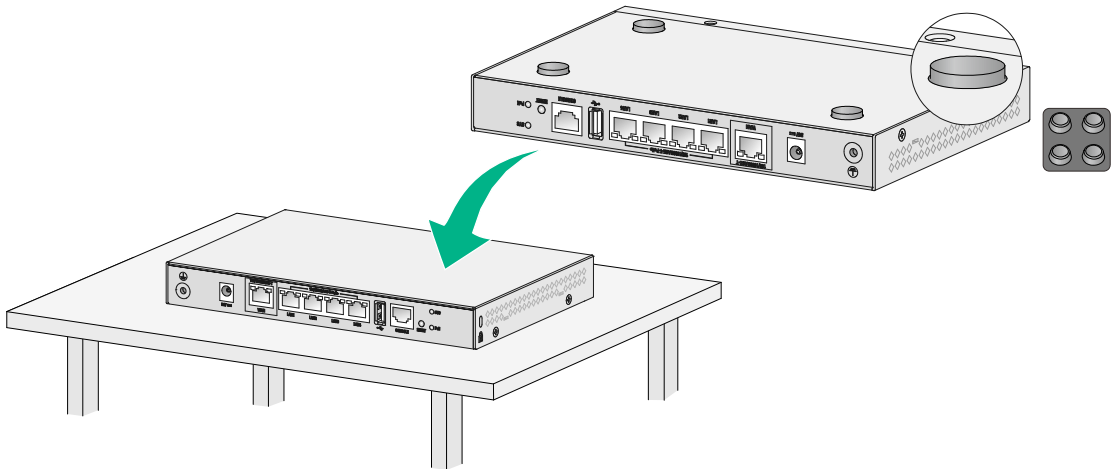
Mounting the device in a 19-inch rack

(!) **IMPORTANT:**

As a best practice, reserve a clearance of 1U/44.45 mm (1.75 in) between adjacent devices for adequate heat dissipation.

Only the WX1810H-PWR and WX1840H access controllers support rack mounting. The following procedure uses the WX1840H access controller as an example.

To mount the device in a 19-inch rack:

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

Figure2-4 Installing cage nuts
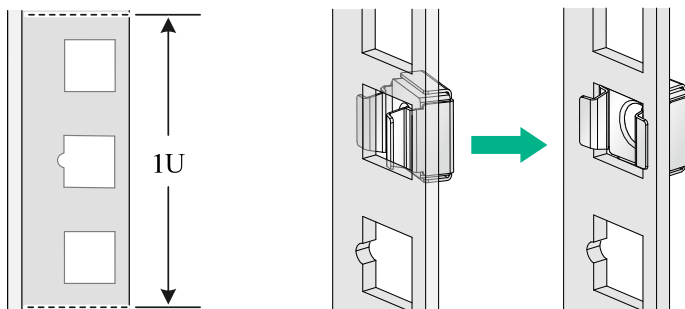
3. Use the M4 screws supplied with the mounting brackets to attach the mounting brackets to both sides of the device.
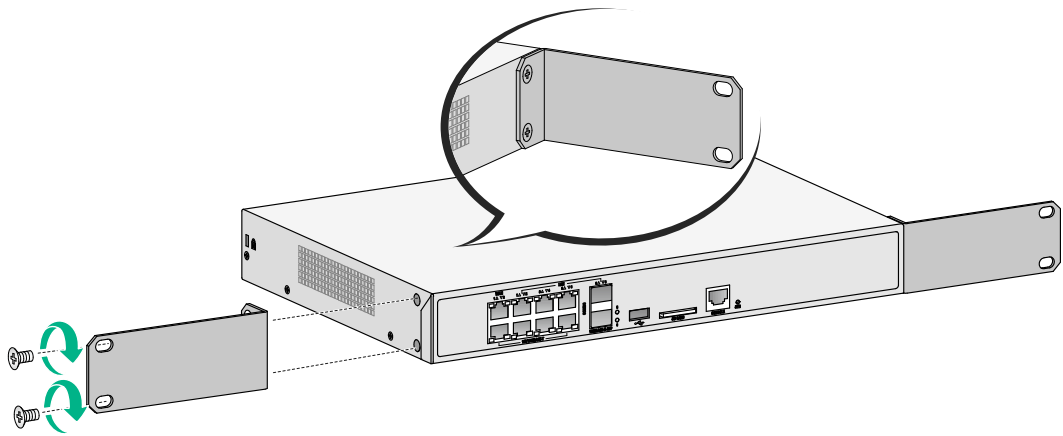
Figure2-5 Attaching the mounting brackets to the device

4. Supporting the bottom of the device with one hand and holding the front of the device with the other, put the device in the rack. Use M6 rack screws and cage nuts to attach the mounting brackets to the front rack posts, as shown in Figure2-6. Make sure the device is installed securely in the rack.

Figure2-6 Installing the device in the rack
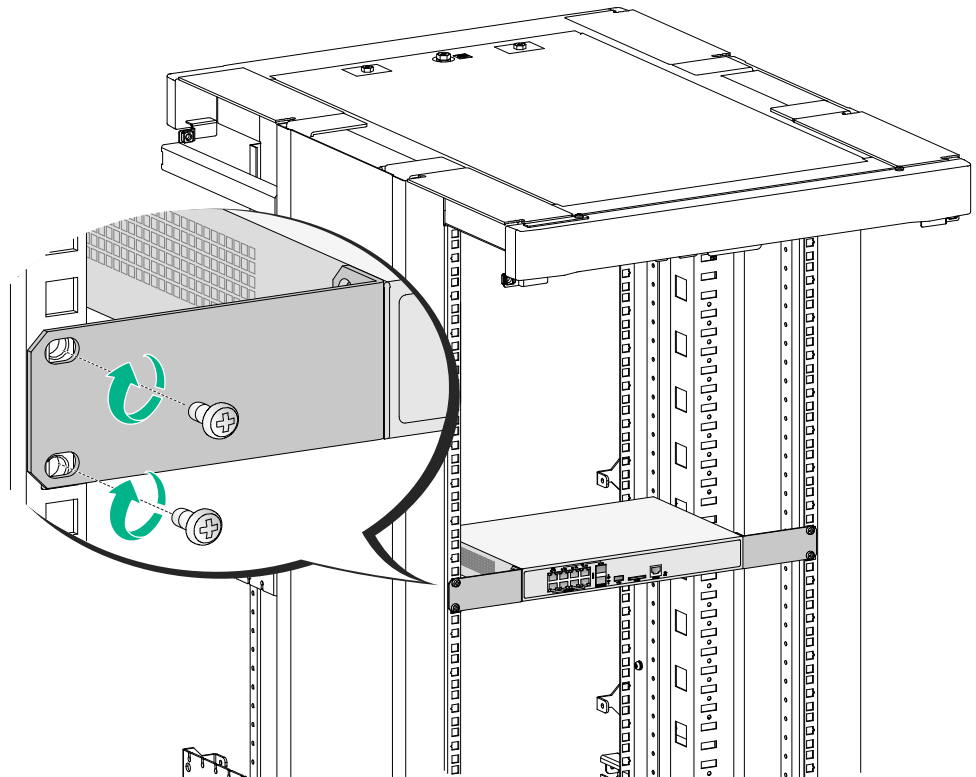
Connecting the grounding cable

⚠️ **CAUTION:**

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

## Attaching the ring terminal to a grounding cable

No grounding cable is provided with the WX1804H-PWR or WX1820H access controller. You need to purchase a grounding cable and attach the ring terminal provided with the access controller to the grounding cable.

The WX1810H-PWR and WX1840H access controllers each are provided with a grounding cable that has a ring terminal attached.

To attach the ring terminal to a grounding cable:

1. Cut the grounding cable to a length as required by the connection distance.
2. Use a wire stripper to strip 5 mm (0.20 in) of insulation off the end of the grounding cable.
3. Slide the heat-shrink tubing onto the cable and insert the bare metal part into the end of the ring terminal.
4. Use a crimper to secure the metal part of the cable to the ring terminal.
5. Slide the heat-shrink tubing down the cable until the tube covers the joint.
6. Use a heat gun to shrink the tubing around the cable.

Figure2-7 Attaching the ring terminal to a grounding cable
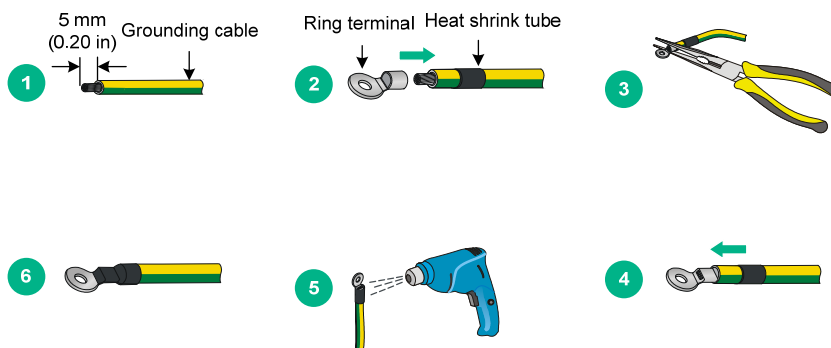
Connecting the grounding cable

Grounding the device by using a grounding strip

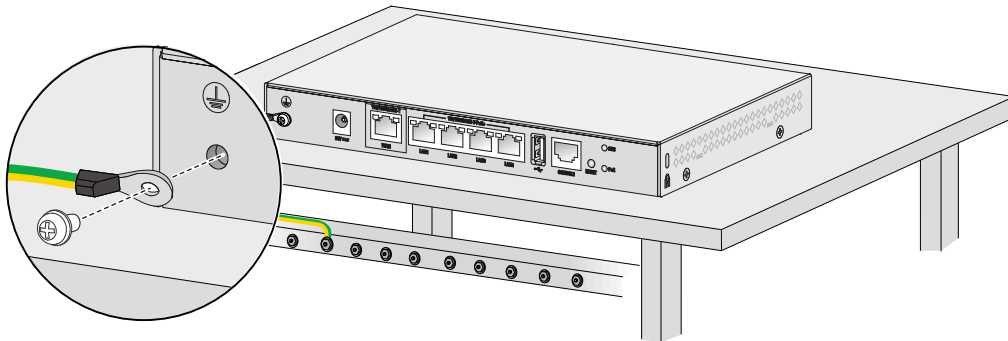The WX1800H series access controllers use the same procedure for grounding by using a grounding strip. The following procedure uses the WX1804H-PWR access controller as an example.

To ground the device by using a grounding strip:

1. Connect the grounding cable to the device.
   a. Use a Phillips screwdriver to remove the grounding screw from the grounding hole in the rear panel of the chassis.

b. Use the grounding screw to attach the ring terminal of the grounding cable to the grounding hole and fasten the screw.

2. Connect the other end of the grounding cable to the grounding strip. Make sure the grounding strip is reliably grounded.

Figure2-8 Grounding the device by using a grounding strip

Grounding the device by using a grounding point on the rack

⚠ **CAUTION:**

To ground the device by using a grounding point on the rack, make sure the rack is reliably grounded.

The WX1810H-PWR and WX1840H access controllers support grounding by using a grounding point on the rack. The following procedure uses the WX1840H access controller as an example.

To ground the device by using a grounding point on the rack:

1. Connect the grounding cable to the device. For the connection procedure, see "Grounding the device by using a grounding strip."

2. Connect the other end of the grounding cable to a grounding point on the rack.

Figure2-9 Grounding the device by using a grounding point the rack
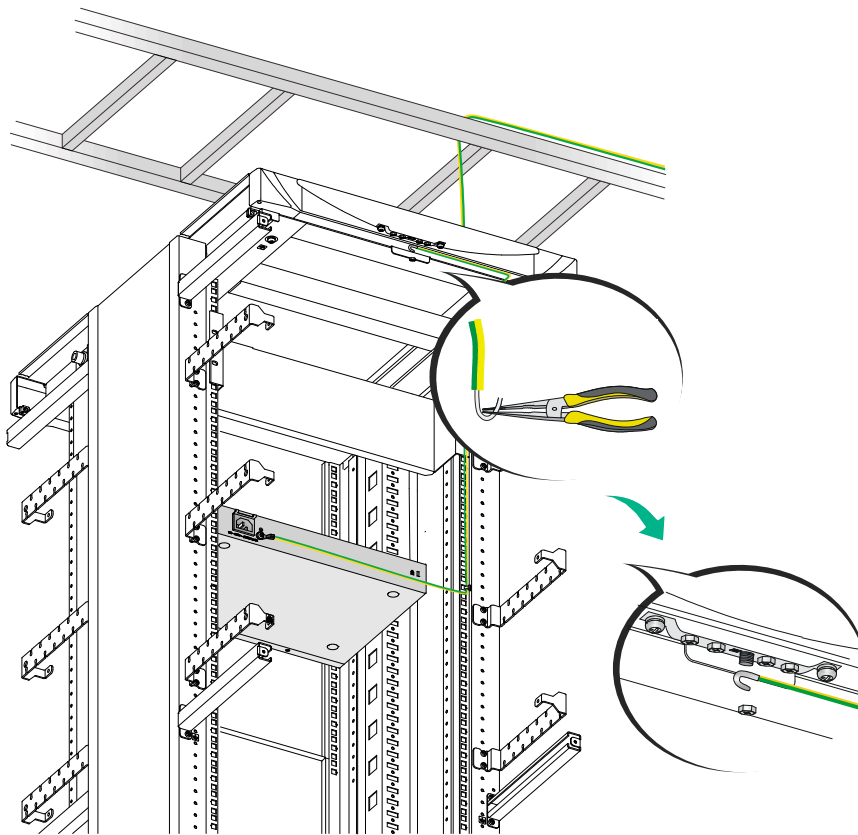
Grounding the device by using a grounding conductor buried in the earth

The WX1800H series access controllers use the same procedure for grounding by using a grounding conductor buried in the earth. The following uses the WX1840H access controller as an example.

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.

Figure2-10 Grounding the device by burying a grounding conductor into the earth
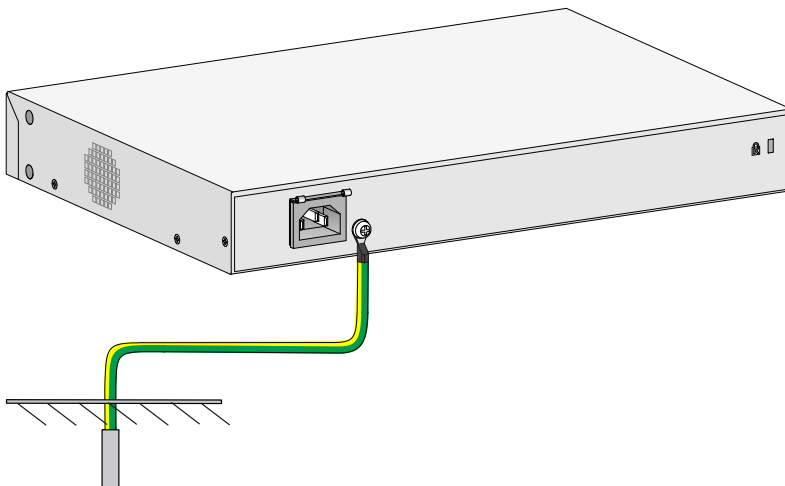
(Optional) Installing network port lightning protectors

> **IMPORTANT:**
> - Before installing a network port lightning protector, read the instructions in the document that comes with the protector.
> - Network port lightning protectors are available only for 10M/100M/1000M RJ-45 Ethernet copper ports.
> - If multiple network ports have network cables routed outdoors, install a network port lightning protector for each network port.

If part of the network cable for a network port is routed outdoors, install a network port lightning protector for the port to protect against damages caused by lightning strikes.

No network port lightning protectors are provided with the device. Purchase them yourself as required.

The network port lightning protector installation procedure is the same for the WX1800H series access controllers. The following procedure uses the WX1840H access controller as an example.

To install a network port lightning protector for a network port:

1. Use a double-faced adhesive tape to stick the network port lightning protector onto the device chassis, and make sure it is as close to the grounding screw of the device as possible.
2. Cut the ground wire of the protector to a length (as short as possible) as required by the distance between the protector and the grounding screw of the device. Attach the ground wire securely to the grounding screw of the device.

   Make sure the grounding screw of the device is reliably grounded.
3. Use a multimeter to verify that the ground wire of the protector makes good contact with the grounding screw of the chassis.
4. Insert the outdoor network cable into the protector's Surge end, and insert the cable from the network port into the Protect end.
5. Examine the port LED to verify that the port is operating correctly.

Figure2-11 Installing a lightning protector for a network port
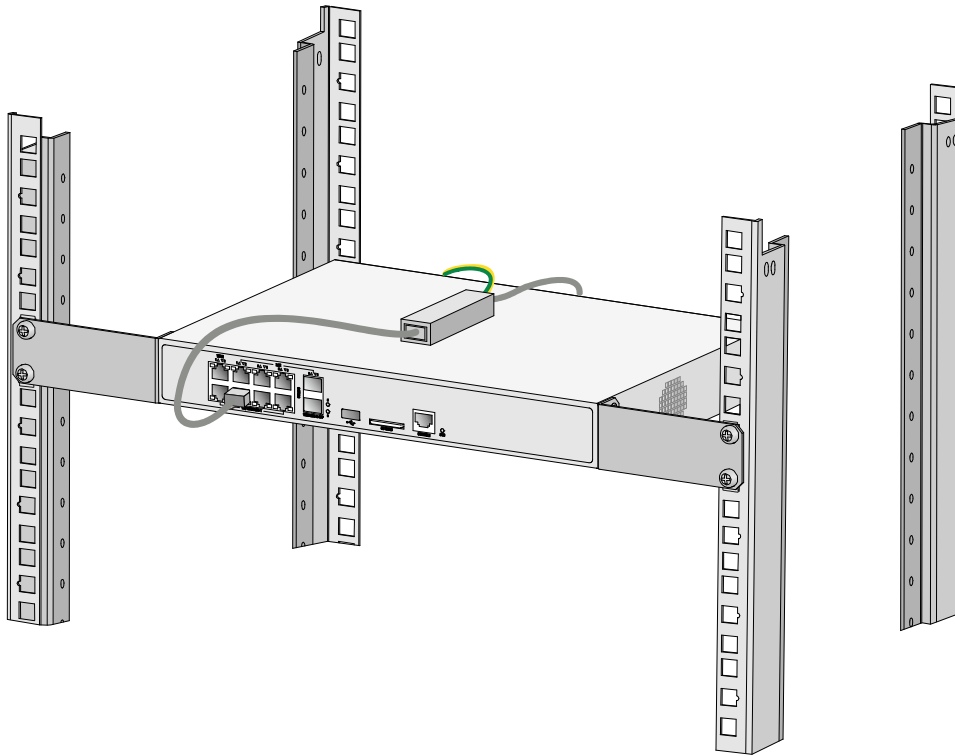
(Optional) Installing a surge protected power strip

> (!) **IMPORTANT:**
>
> Before installing a surge protected power strip, read the instructions in the document that comes with the strip.

If you use an AC power line routed from outdoors for the device, use a surge protected power strip for the device to protect against damages caused by lightning strikes. No surge protected power strip is provided with the device. Purchase one yourself if required.

To use a surge protected power strip, first connect the AC power line routed from outdoors to the strip and then connect the power cord from the device to the strip.

You can attach the surge protected power strip to the rack, workbench, or wall of the equipment room.

Connecting interface cables

Connecting the console cable and setting terminal parameters

To configure and manage the device from the console port, you must run a terminal emulator program, TeraTermPro or PuTTY, on your configuration terminal. 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 Ethernet cables

Connecting an Ethernet copper port

1. Connect one end of the Ethernet cable to an Ethernet copper port on the device, and the other end to an Ethernet port on the peer device.
2. After powering on the device, examine the LEDs for the Ethernet copper port.

   For information about the LED description, see "Appendix B LEDs."

Connecting a fiber port

⚠ **WARNING!**

Disconnected optical fibers or connectors might emit invisible laser light. Do not stare into beams or view directly with optical instruments when the switch is operating.

⚠ **CAUTION:**

- To connect a fiber port by using an optical fiber, first install a transceiver module in the port and then connect the optical fiber to the transceiver module.
- Insert a dust cap into any open optical fiber connector and a dust plug into any open fiber port or transceiver module port to protect them from contamination and ESD damage.
- Never bend an optical fiber excessively. The bend radius of an optical fiber must be not less than 100 mm (3.94 in).
- Keep the fiber end clean.
- Make sure the Tx and Rx ports on a transceiver module are connected to the Rx and Tx ports on the peer end, respectively.

Only the WX1840H access controller provides fiber ports.

No transceiver modules are provided with the device. Purchase transceiver modules yourself as required. For transceiver module specifications, see "Appendix A Chassis views and technical specifications."

The fiber ports on the device support only LC connectors.

To connect an optical fiber for a fiber port:

1. Remove the dust plug from the fiber port.
2. Pivot the bail latch of the transceiver module up so that it catches a knob on the top of the transceiver module.
3. Holding both sides of the transceiver module, insert the transceiver module slowly into the port.
4. Identify the Rx and Tx ports on the transceiver module. Use the optical fiber to connect the Rx port and Tx port on the transceiver module to the Tx port and Rx port on the peer end, respectively.
5. Examine the port LEDs:
   - If the LED is on, a fiber link has been set up.

o If the LED is off, the link has not been set up. The reason might be wrong connection of the Tx and Rx ends. Swap the fiber cables in the Tx and Rx ports at one end of the fiber connection.

Figure2-12 Connecting an optical fiber
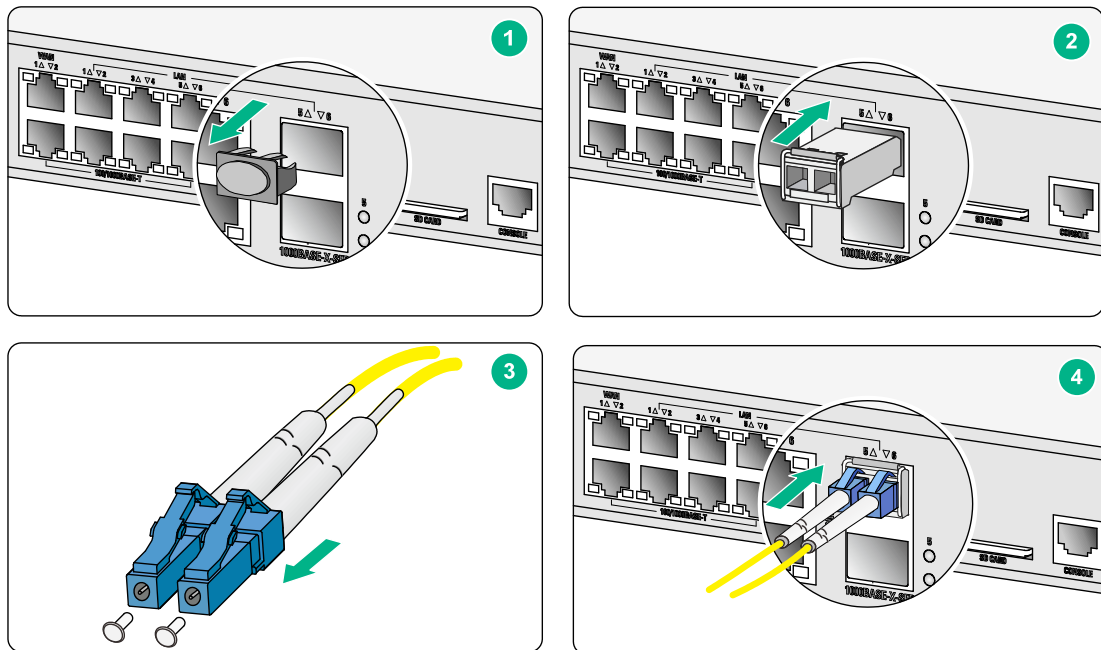
Connecting the power cord

⚠ **CAUTION:**

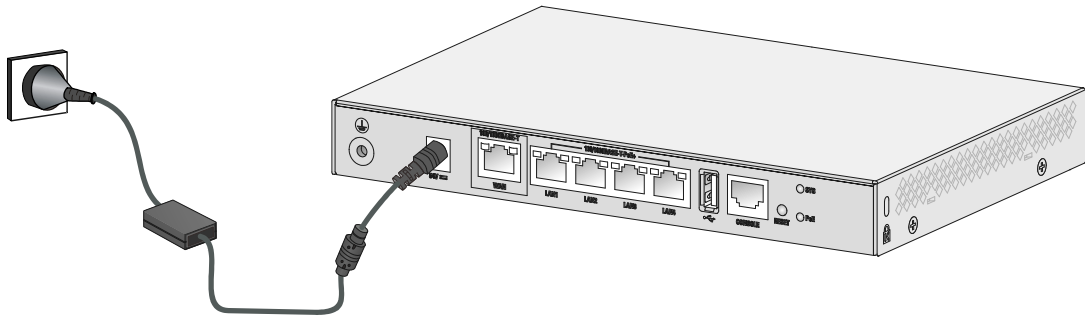Before connecting the power cord, make sure the local AC power source is reliably grounded.

Connecting the power adapter for the WX1804H-PWR/WX1820H access controller

If you use the local power source for the WX1804H-PWR/WX1820H access controller, use a power adapter to connect the device to the power source.

To connect the power adapter for the WX1804H-PWR/WX1820H access controller:

1. Make sure the device is reliably grounded.
2. Connect the power adapter to the DC power receptacle on the front panel of the device.
3. Connect the power adapter to the power source.
4. Observe the LEDs on the device to verify that the power adapter is connected correctly. For information about LEDs, see "Appendix A Chassis views and technical specifications."

Figure2-13 Connecting the power adapter for the WX1804H-PWR access controller

Connecting the AC power cord for the WX1810H-PWR/WX1840H access controller

1. Make sure the device is reliably grounded.
2. Connect one end of the AC power cord to the AC power receptacle on the device.
3. Connect the other end of the AC power cord to the AC power source.
4. Observe the LEDs on the device to verify that the power cord is connected correctly. For information about LEDs, see "Appendix A Chassis views and technical specifications."

Figure2-14 Connecting the AC power cord for the WX1810H-PWR access controller
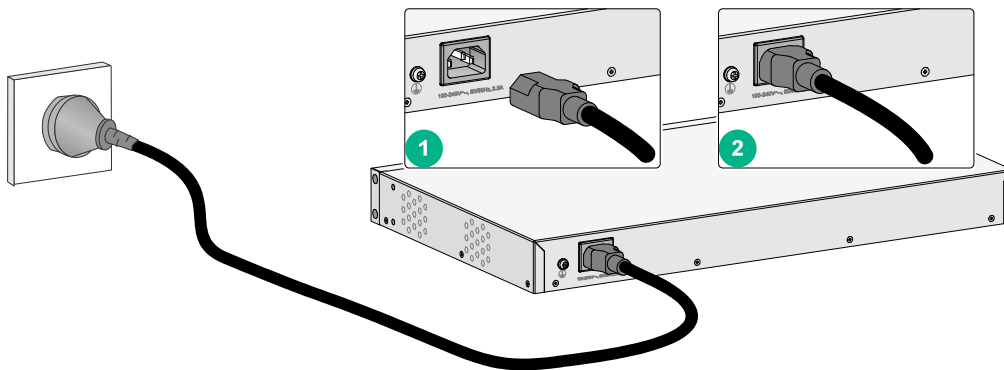
Verifying the installation

Verify the following items before you power on the device:

- There is enough space around the device for heat dissipation.
- The power source specifications are as required by the device.
- The grounding cable, console cable, power cord, and interface cables are connected correctly.
- If part of the network cable for a port is routed outdoors, verify that a network port lightning protector is used for the port.
- If the power line is routed from outdoors, verify that a surge protected power strip is used for the device.

Starting the device

The following procedure uses the WX1804H-PWR access controller as an example.

To start the device:

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

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


******************************************************************************
*                                                                            *
*                   H3C WX1804H-PWR BootWare, Version 1.06                    *
*                                                                            *
******************************************************************************
Copyright (c) 2004-2020 New H3C Technologies Co., Ltd.


Compiled Date         : Mar 10 2018
CPU Type              : 1000MHz Multi-core Processor
Memory Type           : DDR3 SDRAM
Memory Size           : 1024MB
Memory Speed          : 1333MHz
BootWare Size         : 768KB
Flash Size            : 1024MB
CPLD Version          : 002
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 BootWare menu.

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

```
Loading the main image files...
Loading file flash:/system.bin...........................................
......Done.
Loading file flash:/boot.bin.........Done.
Image file flash:/boot.bin is self-decompressing...........................
.........................Done.
System image is starting...
............
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.

NOTE:

The CPLD version is automatically upgraded during the start-up process.

Contents

3 Troubleshooting

Power failure

Symptom

The device cannot be powered on. The system status LED (SYS) is off.

Solution

To resolve the issue:

1. Verify that the power source is as required by the device.
2. Verify that the power cord is connected securely.
3. Verify that the power cord is in good condition.
4. If the issue 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 issue:

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:
   o **Baud rate**—9,600.
   o **Data bits**—8.
   o **Parity**—none.
   o **Stop bits**—1.
   o **Flow control**—none.
   o **Emulation**—VT100.
4. Verify that the console cable is in good condition.
5. If the issue persists, contact H3C Support.

Software loading failure

Symptom

The device fails to load software.

Solution

To resolve the issue:

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:

   o You used XMODEM to load software and set a baud rate other than 9600 bps, but you have not reset the baud rate for the HyperTerminal.

   o You used TFTP to load software and entered an incorrect IP address, software name, or TFTP serve path.

   o You used FTP to load software and entered an incorrect IP address, software name, username, or password.

3. If the issue persists, contact H3C Support.

Contents

4 Hardware management and maintenance

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

This section uses the WX1804H-PWR access controller as an example.

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 versions of the device.

```
<H3C> display version
H3C Comware Software, Version 7.1.064, Release 5204P01
Copyright (c) 2004-2020 New H3C Tech. Co., Ltd. All rights reserved.
H3C WX1804H-PWR uptime is 0 weeks, 0 days, 0 hours, 4 minutes
Last reboot reason : Watchdog reboot

Boot image: flash:/boot.bin
Boot image version: 7.1.064, Release 5204P01
  Compiled Feb 22 2017 16:00:00
System image: flash:/system.bin
System image version: 7.1.064, Release 5204P01
  Compiled Feb 22 2017 16:00:00

with 1 800MHz Processor
1024M bytes DDR3
1024M bytes NandFlash Memory

Hardware Version is Ver.A
Basic Bootrom Version is 0.22
Extend Bootrom Version is 0.22
[Subslot 0]WX1804H-PWR 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 execute 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 from 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)[flash:/diag_WX1804H_20170101-142944.tar.gz]
:
Diagnostic information is outputting to flash:/diag_WX1804H_20170101-142944.tar.
gz.
Please wait...
Save successfully.
```

To view the contents of the *XXXX*.tar.gz file, perform the following steps:

a. Execute the **tar extract** command to extract the *XXXX*.gz file from the *XXXX*.tar.gz file.

b. Execute the **gunzip** command to decompress the *XXXX*.gz file to *XXXX* file.

c. Execute the **more** command to view the *XXXX* file.

- 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==============
00:04:29 UTC Mon 01/01/2018
===============================================
  ==============display version==============
H3C Comware Software, Version 7.1.064, Release 5204P01
Copyright (c) 2004-2020 New H3C Tech. Co., Ltd. All rights reserved.
H3C WX1804H-PWR uptime is 0 weeks, 0 days, 0 hours, 4 minutes
Last reboot reason : Watchdog reboot

Boot image: flash:/boot.bin
Boot image version: 7.1.064, Release 5204P01
  Compiled Feb 22 2017 16:00:00
System image: flash:/system.bin
System image version: 7.1.064, Release 5204P01
  Compiled Feb 22 2017 16:00:00

with 1 800MHz Processor
1024M bytes DDR3
1024M bytes NandFlash Memory

Hardware Version is Ver.A
Basic Bootrom Version is 0.22
Extend Bootrom Version is 0.22
[Subslot 0]WX1804H-PWR Hardware Version is Ver.A

===============================================
```

```
===============display device verbose===============
Slot No.   Subslot No. Board Type       Status    Max Ports
1          0           WX1804H-PWR      Normal      5


Slot 1
Status: Normal
Type: WX1804H-PWR
Hardware: A
Driver: 0.22
…
```

Displaying information about the device

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

```
<H3C> display device
Slot No.   Subslot No. Board Type       Status    Max Ports
1          0           WX1804H-PWR      Normal      5
```

Table4-1 Command output

Field	Description
Slot No.	Slot number.
Board Type	Device type.
Status	Device status: • **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
DEVICE_NAME:WX1804H-PWR
DEVICE_SERIAL_NUMBER:219801A17YH133000015
MAC_ADDRESS:000f-e212-6103
MANUFACTURING_DATE:2017-02-08
VENDOR_NAME:H3C
```

Table4-2 Command output

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

Field	Description
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
Unit CPU usage:
        4% in last 5 seconds
        4% in last 1 minute
        7% in last 5 minutes
```

Table4-3 Command output

Field	Description
4% 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 an interval of 5 seconds).
4% 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 an interval of 1 minute).
7% 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 an 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:        1016548    646756    369792        0      1776    416544       36.4%
-/+ Buffers/Cache:     228436    788112
Swap:             0         0         0
```

Table4-4 Command output

Field	Description
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.
FreeRatio	Free memory ratio.
–/+ Buffers/Cache	• -/+ Buffers/Cache:used = Mem:Used – Mem:Buffers – Mem:Cached, which indicates the physical memory used by applications.

Field	Description
	• -/+ Buffers/Cache:free = Mem:Free + Mem:Buffers + Mem:Cached, which indicates the physical memory available for applications.
Swap	Swap memory.

Configuring the exception handling method

You can configure the device to handle system exceptions by using one of the following methods:

- reboot—The device automatically reboots to recover from the error condition.
- maintain—The device stays in the error condition so you can collect complete data, including error messages, for diagnosis.

To configure the exception handling method:

Step	Command	Remarks
1. Enter system view.	**system-view**	N/A
2. (Optional.) Configure the exception handling method.	**system-failure** { **maintain** | **reboot** }	By default, the system reboots when an exception occurs.

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 configuration file management commands in *H3C WX1800H Series Access Controller Fundamentals Command Reference*.
    - Use the **display startup** and **display boot-loader** commands to verify that 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 software upgrade commands in *H3C WX1800H Series 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**	Available in user view.

Scheduling a reboot for the device

Task	Command	Remarks
Schedule a reboot.	• 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*	Use either command. By default, no reboot date or time or reboot delay time is specified. Available in user view. The most recent configuration takes effect if you execute the **scheduler reboot a**t or **scheduler reboot delay** command multiple times.

Contents

5 Appendix A Chassis views and technical specifications

Chassis views

WX1804H-PWR

Figure5-1 Front panel
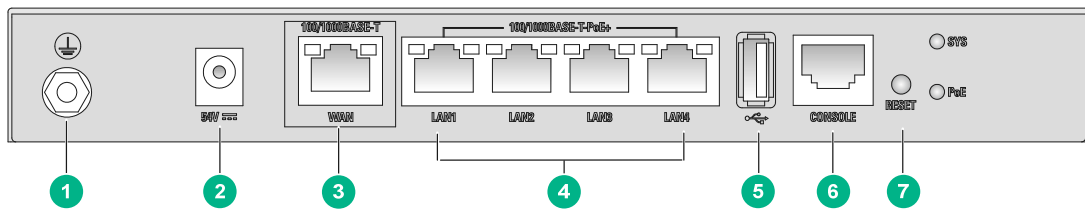
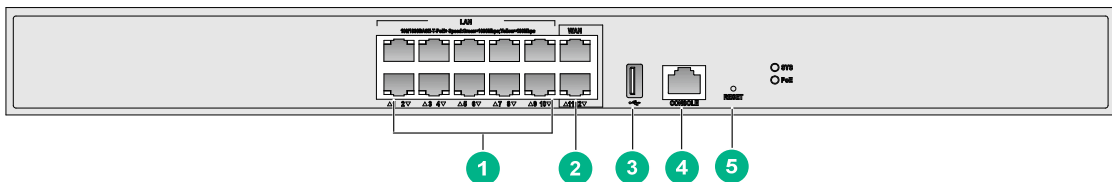(1) Grounding screw | (2) Power receptacle

(3) 100/1000BASE-T autosensing Ethernet copper port (WAN)

(4) 100/1000BASE-T PoE+ autosensing Ethernet copper ports (LAN1 to LAN4)

(5) USB port | (6) Console port (CONSOLE)

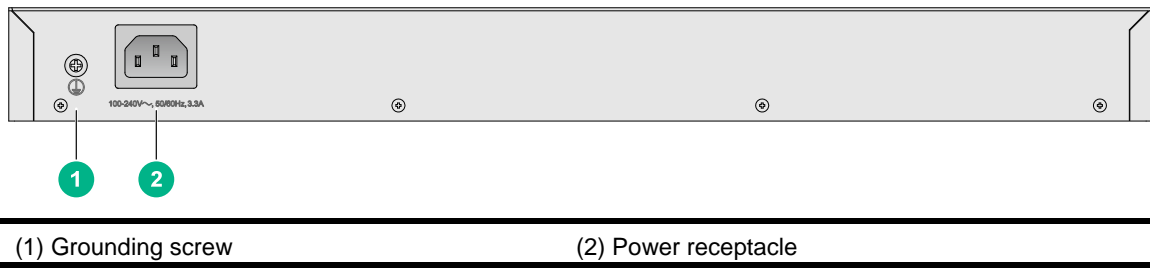(7) Reset button (RESET)

Figure5-2 Rear panel

WX1810H-PWR

Figure5-3 Front panel

(1) 100/1000BASE-T PoE+ autosensing Ethernet copper ports (LAN 1 to LAN 10)

(2) 100/1000BASE-T autosensing Ethernet copper ports (WAN 11 and WAN 12)

(3) USB port | (4) Console port (CONSOLE)

(5) Reset button (RESET)

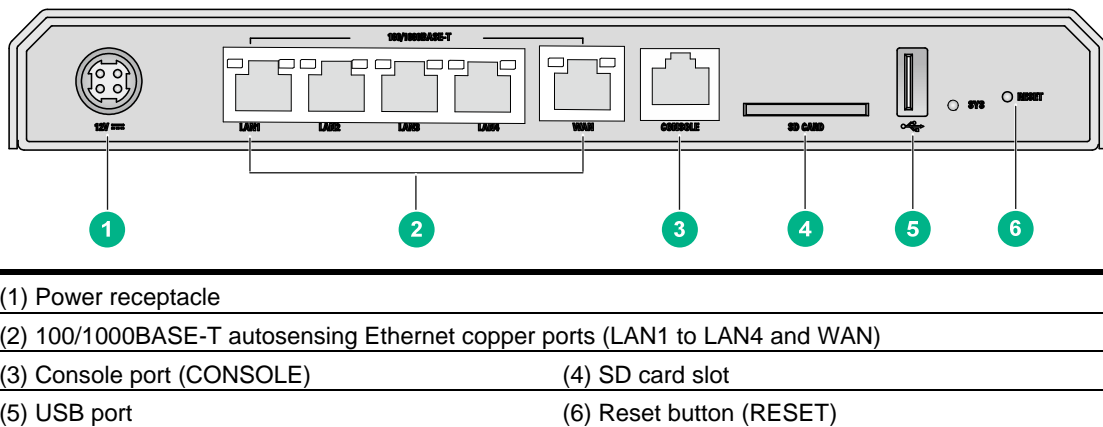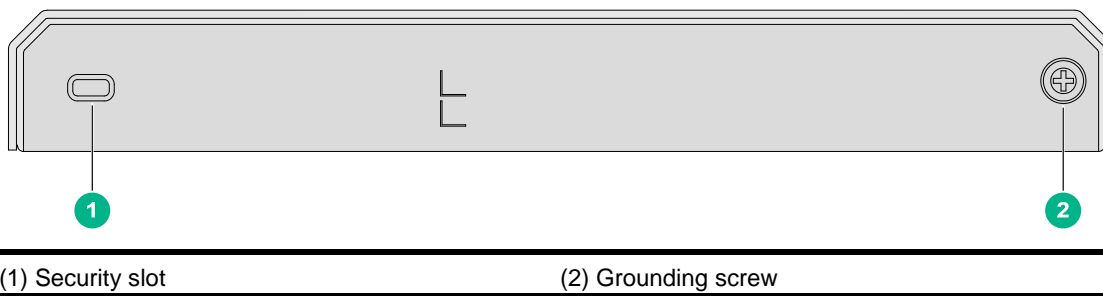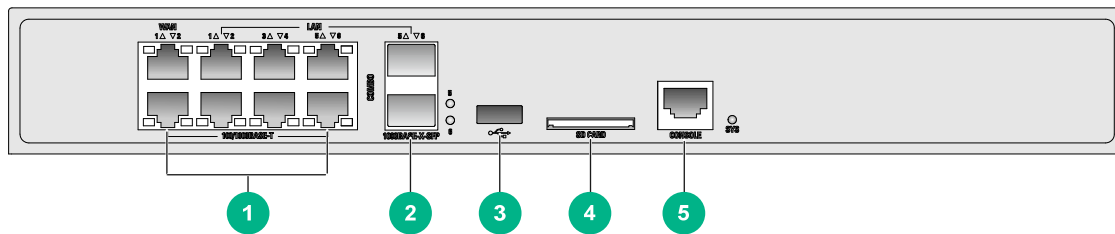**Figure5-4 Rear panel**

(1) Grounding screw	(2) Power receptacle

WX1820H

Figure5-5 Front panel

(1) Power receptacle	
(2) 100/1000BASE-T autosensing Ethernet copper ports (LAN1 to LAN4 and WAN)	
(3) Console port (CONSOLE)	(4) SD card slot
(5) USB port	(6) Reset button (RESET)

Figure5-6 Rear panel

(1) Security slot	(2) Grounding screw

WX1840H

Figure5-7 Front panel

(1) 100/1000BASE-T autosensing Ethernet copper ports (WAN 1, WAN2, and LAN1 to LAN6)

(2) 1000BASE-X SFP port 5 and 6	(3) USB port
(4) SD card slot	(5) Console port (CONSOLE)

Figure5-8 Rear panel
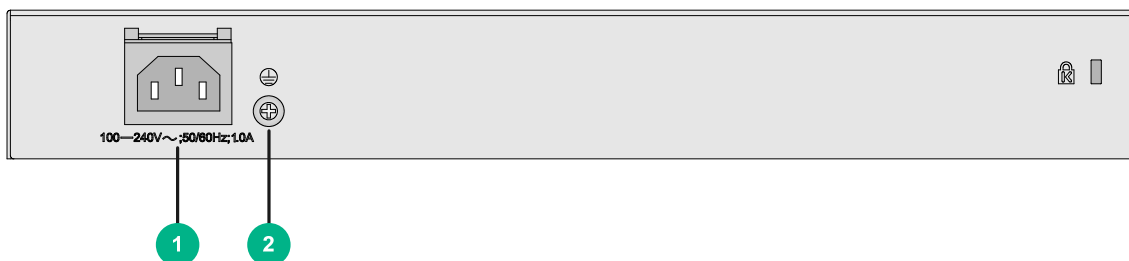
(1) AC power receptacle	(2) Grounding screw

Interface numbering

WX1804H-PWR

Fixed ports on a WX1804H-PWR access controller are numbered as follows:

- 100/1000BASE-T autosensing Ethernet copper port WAN is represented by interface number GigabitEthernet 1/0/1.
- 100/1000BASE-T-PoE+ autosensing Ethernet copper ports LAN1 through LAN4 are represented by interface numbers GigabitEthernet 1/0/2 through GigabitEthernet 1/0/5, respectively.

WX1810H-PWR

Fixed ports on a WX1810H-PWR access controller are numbered as follows:

- 100/1000BASE-T-PoE+ autosensing Ethernet copper ports LAN 1 through LAN 10 are represented by interface numbers GigabitEthernet 1/0/1 through GigabitEthernet 1/0/10, respectively.
- 100/1000BASE-T autosensing Ethernet copper ports WAN 11 and WAN 12 are represented by interface numbers GigabitEthernet 1/0/11 and GigabitEthernet 1/0/12, respectively.

WX1820H

Fixed ports on a WX1820H access controller are numbered as follows:

- 100/1000BASE-T autosensing Ethernet copper ports LAN1 through LAN4 are represented by interface numbers GigabitEthernet 1/0/1 through GigabitEthernet 1/0/4, respectively.
- 100/1000BASE-T autosensing Ethernet copper port WAN is represented by interface number GigabitEthernet 1/0/5.

WX1840H

Fixed ports on a WX1840H access controller are numbered as follows:

- 100/1000BASE-T autosensing Ethernet copper ports LAN 1 through LAN 4 are represented by interface numbers GigabitEthernet 1/0/1 through GigabitEthernet 1/0/4, respectively.
- 100/1000BASE-T autosensing Ethernet copper ports LAN 5 and LAN 6 form combo interfaces (GigabitEthernet 1/0/5 and GigabitEthernet 1/0/6) with 1000BASE-X SFP ports 5 and 6, respectively.
- 100/1000BASE-T autosensing Ethernet copper port WAN 1 and WAN 2 are represented by interface numbers GigabitEthernet 1/0/7 and GigabitEthernet 1/0/8, respectively.

Technical specifications

Table5-1 Technical specifications

Item	WX1804H-PWR	WX1810H-PWR	WX1820H	WX1840H
Console port	One, 9600 bps (default) to 115200 bps	One, 9600 bps (default) to 115200 bps	One, 9600 bps (default) to 115200 bps	One, 9600 bps (default) to 115200 bps
100/1000BASE-T autosensing Ethernet copper port	5, including four LAN ports and one WAN port	12, including ten LAN ports and two WAN ports	5, including four LAN ports and one WAN port	8, including six LAN ports and two WAN ports
SFP port	N/A	N/A	N/A	1000BASE-X SFP ports 5 and 6 form combo interfaces with 100/1000BASE-T autosensing Ethernet copper ports LAN 5 and LAN 6, respectively.
Memory	1 GB	1 GB	1 GB	1 GB
Storage medium	1GB NAND flash memory	1GB NAND flash memory	1GB NAND flash memory	1GB NAND flash memory
Dimensions (H × W × D)	27 × 220 × 145.5 mm (1.06 × 8.66 × 5.73 in)	43.6 × 440 × 260 mm (1.72 × 17.32 × 10.24 in)	28 × 220 × 147 mm (1.10 × 8.66 × 5.79 in)	43.6 × 330 × 230 mm (1.72 × 13.00 × 9.06 in)
Rated AC voltage	100 VAC to 240 VAC @ 50 to 60 Hz	100 VAC to 240 VAC @ 50 to 60 Hz	100 VAC to 240 VAC @ 50 to 60 Hz	100 VAC to 240 VAC @ 50 to 60 Hz

| Item	WX1804H-PWR	WX1810H-PWR	WX1820H	WX1840H
Power consumption	4.8 to 10.7 W	15.2 to 33.5 W	5.7 to 8.7 W	20 to 32 W
PoE port	4	10	N/A	N/A
Max. output capacity per PoE port	30 W	30 W	N/A	N/A
Max. PoE output capacity	70 W (The system allows two PoE ports to supply the max. output concurrently.)	196 W (The system allows six PoE ports to supply the max. output concurrently.)	N/A	N/A
Weight	1.45 kg (3.20 lb)	3.60 kg (7.94 lb)	0.90 kg (1.98 lb)	2.0 kg (4.41 lb)

Contents

6 Appendix B LEDs

WX1804H-PWR

Figure6-1 WX1804H-PWR LEDs
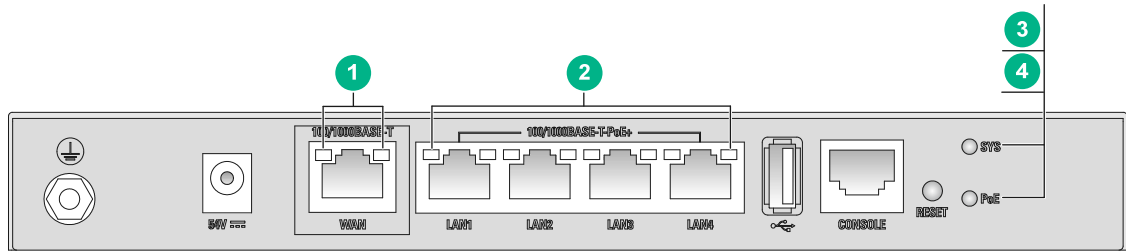
(1) LEDs for the 100/1000BASE-T autosensing Ethernet copper port

(2) LEDs for the 100/1000BASE-T PoE+ autosensing Ethernet copper ports

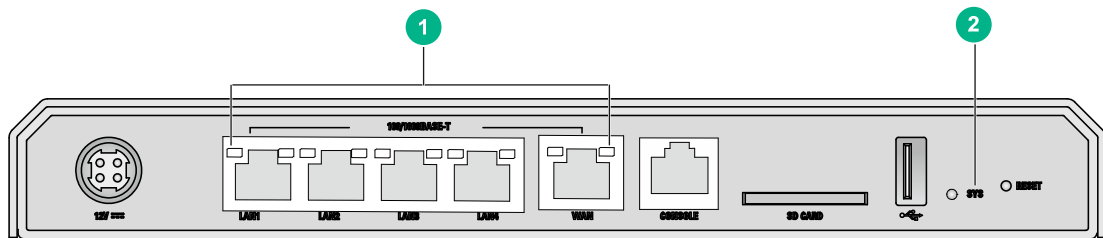(3) System status LED (SYS)　　　　　(4) PoE status LED (PoE)

WX1810H-PWR

Figure6-2 WX1810H-PWR LEDs
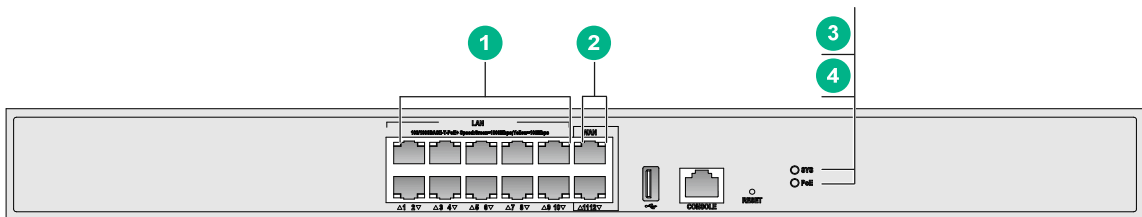
(1) LEDs for the 100/1000BASE-T PoE+ autosensing Ethernet copper ports

(2) LEDs for the 100/1000BASE-T autosensing Ethernet copper port

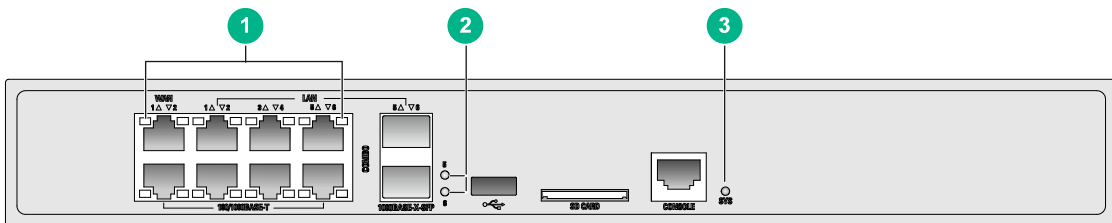(3) System status LED (SYS)　　　　　(4) PoE status LED (PoE)

WX1820H

Figure6-3 WX1820H LEDs

(1) LEDs for the 100/1000BASE-T autosensing Ethernet copper ports
(2) System status LED (SYS)

WX1840H

Figure6-4 WX1840H LEDs

(1) LEDs for the 100/1000BASE-T autosensing Ethernet copper ports	
(2) LEDs for the 1000BASE-X SFP ports	(3) System status LED (SYS)

LED description

LED	Status	Description
100/1000BASE-T or 100/1000BASE-T PoE+ autosensing Ethernet copper port LED	Steady green	A 1000 Mbps link is present.
	Flashing green	Data is being received or transmitted at 1000 Mbps.
	Steady yellow	A 100 Mbps link is present.
	Flashing yellow	Data is being received or transmitted at 100 Mbps.
	Off	No link is present.
System status LED (SYS)	Fast flashing green	The system is loading software.
	Slow flashing green	The system is operating correctly
	Steady red	A problem, such as startup failure, power failure, or overtemperature has occurred.
	Off	The device is in the reset process, or the system is not operating.

LED	Status	Description
PoE power supply status LED (PoE)	Steady green	A PoE port is supplying power.
	Flashing green	PoE power supply failure or overload has occurred.
	Off	No PoE port is supplying power.
1000BASE-X SFP port LED	Steady green	A 1000 Mbps link is present on the port.
	Flashing green	The port is sending or receiving data at 1000 Mbps.
	Off	No link is present on the port.

Contents

7 Appendix C Optional transceiver modules

Transceiver module, fiber connector, and optical fiber views

The WX1840H access controller provides SFP ports. To connect a SFP port on the device, use an SFP transceiver module and an optical fiber with LC connectors.
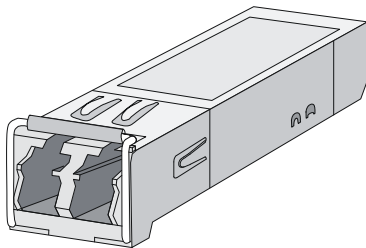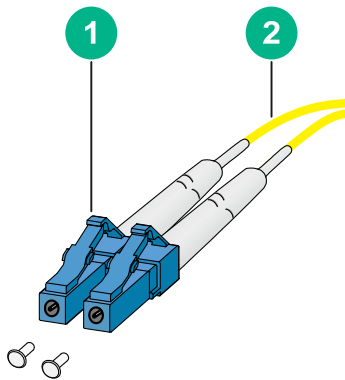
Figure7-1 SFP transceiver module

Figure7-2 Optical fiber with LC connectors

(1) LC connector	(2) Optical fiber

Transceiver module specifications

The transceiver modules that have **MM** and **SM** in their names support multi-mode optical fibers and single-mode optical fibers, respectively.

The SFP ports on the WX1840H access controller support the following transceiver modules:

- SFP-GE-LX-SM1310-A (seeTable7-1)
- SFP-GE-SX-MM850-A (see Table7-2)

Table7-1 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 μm
Transmit power	–9.5 to –3 dBm
Receive sensitivity	≤ –20 dBm
Saturation	≤ –3 dBm

Table7-2 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