Ruijie RG-AP840-L Access Point

Hardware Installation and Reference Guide

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Preface

Intended Audience

This document is intended for:

- Network engineers

- Technical support and servicing engineers

- Network administrators

Technical Support

- Ruijie Networks Website: https://www.ruijienetworks.com/

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Conventions

1. Signs

The signs used in this document are described as follows:

⊕ **Warning**

An alert that calls attention to important rules and information that if not understood or followed can result in data loss or equipment damage.

⚠ **Caution**

An alert that calls attention to essential information that if not understood or followed can result in function failure or performance degradation.

ⓘ **Note**

An alert that contains additional or supplementary information that if not understood or followed will not lead to serious consequences.

✅ **Specification**

An alert that contains a description of product or version support.

2. Note

The manual offers information (including model, port type and command line interface) for indicative purpose only. In case of any discrepancy or inconsistency between the manual and the actual version, the actual version prevails.

Contents

1 Product Overview

1.1   About the RG-AP840-L Access Point

The RG-AP840-L is a dual-radio Wi-Fi 6 wireless access point (AP) developed for indoor scenarios covering higher education, government, general education, finance, and business. Compliant with the IEEE 802.11ax standard, the AP works in both 2.4 GHz and 5 GHz frequency bands. It delivers a combined data rate of 5.375 Gbps, with up to 575 Mbps in the 2.4 GHz band and 4.8 Gbps in the 5 GHz band. This eliminates the performance bottleneck.

The RG-AP840-L provides wireless network security, RF control, mobile access, QoS guarantee, and seamless roaming. It works with a wireless access controller to perform data forwarding, security, and access control for wireless users.

The RG-AP840-L complies with IEEE 802.11n/ac/ax concurrently. The AP can be installed on a ceiling or wall. The RG-AP840-L adopts either local or PoE power supply. Users can flexibly select power supply modes based on various scenarios. The AP is an ideal choice for the scenarios including large-scale campuses, enterprise offices, and Wi-Fi hotspots.

1.2   Hardware Features

The RG-AP840-L provides two RF connectors, two electrical ports (LAN1 port supports PoE power supply in compliance with IEEE 802.3af/at/bt, and LAN2/IoT port can supply a maximum power of 12.95 W (48 V/1 A) to IoT units), one 5GE SFP port, one RJ45 console port, one power socket, one USB port, and one Reset hole.

Figure 1-1 Top View

Figure 1-2 Bottom View

Figure 1-3 **Front View**

Table 1-1 LED

No.	LED	Description
1	System status LED	Indicates the system operating status.

Figure 1-4Side View
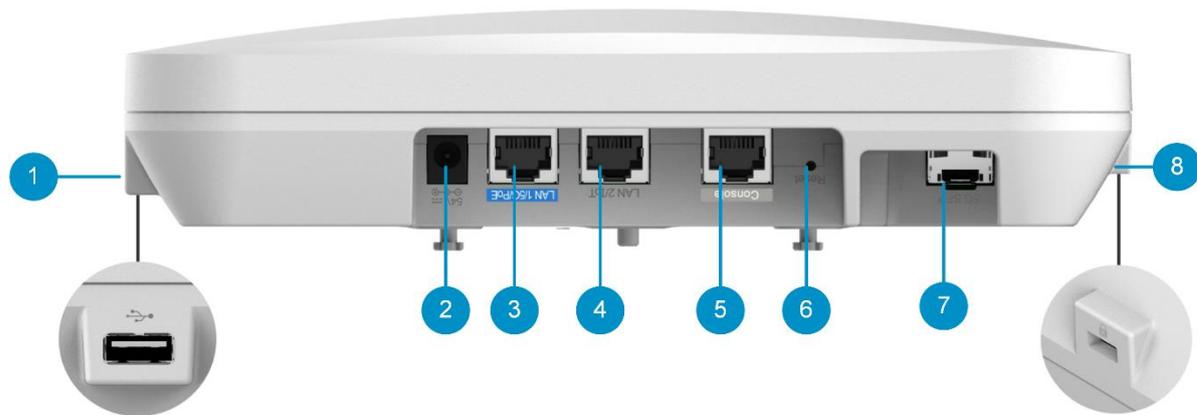
Table 1-2 Reset Hole and Ports

No.	Reset Hole and Ports	Description
1	USB port	Connected to a USB flash drive.
2	DC power connector	Connected to a 54 V DC power adapter to supply power to the AP.
3	LAN1/PoE electrical port	Uplink service port for wired connection and service data transmission, supporting PoE power supply in compliance with IEEE 802.3af/at/bt.
4	LAN2/IoT electrical port	Downlink service port for wired connection and service data transmission, supplying power to IoT units (48 V/12.95 W).
5	Console port	Connected to the serial port with a console cable for device management.
6	Reset hole	Restarts the AP or restores the AP to the factory settings.
7	5GE SFP port	Uplink service port for service data transmission.
8	Lock slot	Inserts the securing latch into the lock slot.

> ℹ️ **Note**
>
> The nameplate is at the bottom of the access point.

1.3 Package Contents

Table 1-3 Package Contents

Item	Quantity
RG-AP840-L access point	1
Mounting bracket	1
Wall anchor	4
4.2 mm x 20 mm Phillips pan head self-tapping screw	4
Warranty card and hazardous substance table	1
User manual	1

1.4 Technical Specifications

1.4.1 Dimensions and Weight

Table 1-4 Dimensions and Weight

Dimensions and Weight	RG-AP840-L
Dimensions (W x D x H)	230 mm x 230 mm x 51 mm (9.06 in. x 9.06 in, x 2.01 in.)

Dimensions and Weight	RG-AP840-L
Weight	Main unit: 1.0 kg (2.20 lbs.) Mounting bracket: 0.1 kg (0.22 lbs.)
Installation	Ceiling mounting and wall mounting
Lock option	Kensington lock and securing latch
Mounting bracket dimensions (W x D x H)	120 mm x 120 mm x 8 mm (4.72 in. x 4.72 in. x 0.31 in.)
Mounting hole pattern	53 mm x 53 mm (2.09 in. x 2.09 in.). For details, see 3.2 Before You Begin.
Mounting hole diameter	6.5 mm (0.26 in.)

1.4.2 Radio Specifications

Table 1-5 Radio Specifications

Radio Specifications	RG-AP840-L
Radio design	Dual-radio, six spatial streams Radio1: 2.4 GHz, two spatial streams: 2x2, MU-MIMO Radio2: 5 GHz, four spatial streams: 4x4, MU-MIMO
Operating frequencies	Radio1: 802.11b/g/n/ax, 2.400 GHz to 2.4835 GHz Radio2: 802.11a/n/ac/ax, 5.150 GHz to 5.350 GHz, 5.725 GHz to 5.850 GHz Note: The operating frequency is country-specific.
Data rate	Radio1: 2.4 GHz, 575 Mbps Radio2: 5 GHz, 4.8 Gbps Combined: 2.4 GHz + 5 GHz, 5.375 Gbps

Radio Specifications	RG-AP840-L
Antenna type	Built-in omnidirectional antennas
Antenna gain	3 dBi
Max. transmit power	20 dBm Note: The transmit power is limited by local regulatory requirements.
Power increment	1 dBm
Modulation	802.11b: BPSK, QPSK, and CCK 802.11a/g/n: BPSK, QPSK, 16-QAM, and 64-QAM 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, and 256-QAM 802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, and 1024-QAM
Receive sensitivity	11b: –96 dBm (1 Mbps), –93 dBm (5 Mbps), and –89 dBm (11 Mbps) 11a/g: –91 dBm (6 Mbps), –85 dBm (24 Mbps), –80 dBm (36 Mbps), and –74 dBm (54 Mbps) 11n: –90 dBm@MCS0, –70 dBm@MCS7, –89 dBm @MCS8, and –68 dBm@MCS15 11ac: HT20: –88 dBm (MCS0) and –63 dBm (MCS9) 11ac: HT40: –85 dBm (MCS0) and –60 dBm (MCS9) 11ac: HT80: –82 dBm (MCS0) and –57 dBm (MCS9) 11ax: HE80: –82 dBm (MCS0), –57 dBm (MCS9), and –52 dBm (MCS11) 11ax: HE160: –79 dBm (MCS0), –53 dBm (MCS9), and –50 dBm (MCS11)

1.4.3 Port Specifications

Table 1-6 Port Specifications

Port Specifications	RG-AP840-L
Bluetooth	Bluetooth 5.1
USB port	USB 3.0
Fixed service port	Uplink: One 100/1000/2500/5000Base-T Ethernet port with auto-negotiation, supporting IEEE 802.3af/at/bt-compliant PoE One 5GE SFP port, backward conformity to 1GE and 2.5GE SFP, a combo port Downlink: One 10/100/1000Base-T Ethernet port with auto-negotiation, supplying 48 V/12.95 W power to IoT units
Fixed management port	One RJ45 console port
Status LED	One system status LED
Reset hole	One Reset hole

1.4.4 Power Supply and Consumption

Table 1-7 Power Supply and Consumption

Power Supply and Consumption	RG-AP840-L
Input power supply	● 54 V DC/1.1 A power supply ● PoE/PoE+/PoE++ power supply (IEEE 802.3af/at/bt-compliant)
External power supply	Supported, supplying power to IoT units through the Ethernet ports.
Max. power consumption	40 W

⚠ **Caution**

● If the AP is powered by PoE power supply, the power sourcing equipment (PSE) must be at least 802.3af-capable.

● The AP adopts a fanless design. Maintain a sufficient clearance around the AP for proper ventilation.

● By default, the AP works in the 802.3at power supply mode. To enable the functions in the 802.3bt power supply mode, run related commands.

● If powered by 802.3af-compliant PoE, the AP can start up normally. But only one spatial stream is supported in the 2.4 GHz and 5 GHz frequency bands, and LAN2 port as well as USB port cannot supply power to external devices.

● If powered by 802.3at-compliant PoE, the AP can start up normally. But LAN2 port and USB port cannot supply power to external devices.

1.4.5 Environment and Reliability

Table 1-8 Standards Compliance

Environment and Reliability	RG-AP840-L
Temperature	Working temperature: –10°C to +50°C (+14°F to +122°F)
	Storage temperature: –40°C to +70°C (–40°F to +158°F)
	Note: At an altitude between 3000 m (9842.52 ft.) and 5000 m (16404.20 ft.), every time the altitude increases by 220 m (721.78 ft.), the maximum temperature decreases by 1°C (1.8 °F).
Humidity	Working humidity: 5% RH to 95% RH (non-condensing)
	Storage humidity: 5% RH to 95% RH (non-condensing)
Safety standard	GB 4943.1 and IEC 62368-1
EMC standard	EN 300386, GB/T 19286, and GB/T 17618

1.5 LED and Reset Hole

> ℹ️ **Note**
>
> LED status descriptions are applicable to both Fit and Fat APs, unless otherwise specified.

Table 1-9 LED

Color	Status	Description
Off	N/A	● The AP is not powered on. ● The AP is powered on, but the status LED is turned off through the software.
Solid green	N/A	The software system is being initialized.

Color	Status	Description
Solid red	N/A	The system is running normally, but the uplink service port of the AP is Down.
Slow blinking in red	On for 3s Off for 1s	In Fit AP mode, CAPWAP tunnel establishment between the AP and the AC has timed out.
Fast blinking in blue	On for 0.2s Off for 0.2s	In Fit AP or MACC AP mode, the software system is being updated.
Solid blue	N/A	The software system is running normally. The AP is working normally but no STA is online.
Blinking blue	On for 1s Off for 1s	The software system is running normally. The AP is working normally and STAs are online.
Fast blinking in red	On for 0.2s Off for 0.2s	In Fit AP mode, LED locating function is enabled on the AP to discover a specific AP.

Table 1-10   Reset Hole

Type	Action	Description
Reset hole	Press and hold the pin to the Reset hole for less than 2 seconds.	Restart the access point.
	Press and hold the pin to the Reset hole for more than 5 seconds.	Restore the AP to factory settings.

1.5.2 SFP Module

The peer device that is directly connected to the 5GE SFP port of the AP supports electrical and optical ports. However, the negotiation rates are different when the devices at both ends use different port rates or use different SFP modules. For details, see Table 1-11 and Table 1-12.

Table 1-11   Rate Negotiation Result When the Peer is Electrical Port (Unit: bps)

AP SFP Port Rate	SFP Module Rate	Negotiation Rate Supported by Peer Port		
		1G	1G/10G/auto	1G/2.5G/5G/10G/auto
1G	3G	1G	1G	1G
1G	1G	1G	1G	1G
2.5G	3G	Not supported	Not supported	2.5G
2.5G	1G	1G	1G	1G
5G	6G	Not supported	Not supported	5G
5G	1G	1G	1G	1G

Table 1-12   Rate Negotiation Result When the Peer is Optical Port (Unit: bps)

AP SFP Port Rate	O/E Converter Rate	Negotiation Rate Supported by Peer Port		
		1G	1G/10G/auto	1G/2.5G/5G/10G/auto
1G	2.5G	Not supported	Not supported	Not supported
1G	1G	1G	1G	1G
2.5G	2.5G	Not supported	Not supported	2.5G
2.5G	1G	Not supported	Not supported	Not supported

AP SFP Port Rate	O/E Converter Rate	Negotiation Rate Supported by Peer Port		
		1G	1G/10G/auto	1G/2.5G/5G/10G/auto
5G	5G	Not supported	Not supported	5G
5G	1G	Not supported	Not supported	Not supported

⚠ Caution

● The 2.5GE SFP port of the AP does not support rate negotiation. When the O/E converter is used, ensure that the rates of AP, O/E converter, and peer port are the same.

● The AP provides a combo port. If Ethernet cables are connected to both uplink optical port and uplink electrical port, the optical port is preferentially selected for data transmission (the electrical port is automatically disabled). When the cable is removed from the optical port, the electrical port is automatically enabled.

2 Preparing for Installation

2.1 Safety Precautions

> ℹ️ **Note**
>
> ● To avoid personal injury and device damage, carefully read the safety precautions before you install the device.
>
> ● The following safety precautions may not cover all possible dangers.

2.1.1 General Safety Precautions

● Do not expose the access point to high temperature, dusts, or harmful gases. Do not install the access point in an inflammable or explosive environment. Keep the access point away from EMI sources such as large radar stations, radio stations, and substations. Do not subject the access point to unstable voltage, vibration, and noises.

● The installation site should be free from water flooding, seepage, dripping, or condensation. The installation site should be selected according to network planning, communications equipment features, and considerations such as climate, hydrology, geology, earthquake, electrical power, and transportation.

● The installation site should be dry. It is not recommended that the access point be installed in a place near the sea. Keep the device at least 500 meters away from the ocean and do not face it towards the sea breeze.

● Do not place the device in walking areas.

● During the installation and maintenance, do not wear loose clothes, ornaments, or other items that may be hooked by the device.

● Keep tools and device away from walking areas.

2.1.2 Handling Safety

● Do not move the device frequently.

● Turn off all power sources and unplug all power sources and cables before moving or handling the device.

2.1.3 Electric Safety

⚠ **Warning**

- Improper or incorrect electric operations may cause a fire, electric shock, and other accidents, and lead to severe and fatal personal injury and device damage.
- Direct or indirect contact with high voltage or mains power supply via wet objects may cause fatal dangers.

- Observe local regulations and specifications during electric operations. Only personnel with relevant qualifications can perform such operations.

- Check whether there are potential risks in the work area. For example, check whether the ground is wet.

- Learn about the position of the indoor emergency power switch before installation. Cut off the power switch in case of accidents.

- Check the access point carefully before shutting down the power supply.

- Do not place the device in a damp or wet location. Do not let any liquid enter the chassis.

- Keep the access point far away from grounding or lightning protection devices for power equipment.

- Keep the access point away from radio stations, radar stations, high-frequency high-current devices, and microwave ovens.

2.2 Installation Environment Requirements

Use the access point indoors to ensure normal operation and a prolonged service life. The installation site must meet the following requirement.

2.2.1 Bearing Requirements

Evaluate the weight of the device and its accessories (such as the bracket and power supply), and ensure that the ground of the installation site meets the requirements.

2.2.2 Ventilation Requirements

Reserve sufficient space in front of the air vents to ensure normal heat dissipation. After various cables are connected, bundle the cables or place them in the cable management bracket to avoid blocking air inlets.

2.2.3 Space Requirements

Maintain a minimum clearance of 0.4 m (15.75 in.) around the device to ensure proper cooling and ventilation.

2.2.4 Temperature/Humidity Requirements

To ensure normal operation and a prolonged service life of the access point, maintain an appropriate temperature and humidity in the installation environment.

The installation environment with too high or too low temperature and humidity for a long period of time may damage the access point.

- In an environment with high relative humidity, the insulating material may have bad insulation or even leak electricity.

- In an environment with low relative humidity, the insulating strip may dry and shrink, loosening screws.

- In a dry environment, static electricity is prone to occur and damage the internal circuits of the access point.

- Too high temperatures can accelerate the aging of insulation materials, greatly reducing the reliability of the access point and severely affecting its service life.

ⓘ **Note**

The ambient temperature and humidity of the device are measured at the point that is 1.5 m (59.06 in.) above the floor and 0.4 m (15.75 in.) before the device when there is no protective plate in front or at the back of the device.

2.2.5 Cleanliness Requirements

Dust poses the top threat to the running of the device. The indoor dust falling on the device may be adhered by the static electricity, causing poor contact of the metallic joint. Such electrostatic adherence may occur more easily when the relative humidity is low, not only affecting the service life of the device, but also causing communication faults.

The following table shows the requirements for the dust content and granularity in the equipment room.

Table 2-1 Requirements for Dust

Dust	Unit	Content
Dust particles (diameter ≤ 0.5 μm)	Particles/m^3	≤ 1.4×10^7
Dust particles (0.5 μm ≤ diameter ≤ 1 μm)	Particles/m^3	≤ 7×10^5
Dust particles (1 μm ≤ diameter ≤ 3 μm)	Particles/m^3	≤ 2.4×10^5
Dust particles (3 μm ≤ diameter ≤ 5 μm)	Particles/m^3	≤ 1.3×10^5

Apart from dust, the salt, acid and sulfide in the air in the equipment room must also meet strict requirements; as such poisonous substances may accelerate the corrosion of the metal and the aging of some parts. The equipment room should be protected from the intrusion of harmful gases (for example, SO_2, H_2S, NO_2, NH_3, and Cl_2), whose requirements are listed in the following table.

Table 2-2 Requirements for Gases

Gas	Average (mg/m³)	Maximum (mg/m³)
Sulfur dioxide (SO_2)	0.2	1.5
Hydrogen sulfide (H_2S)	0.006	0.03
Nitrogen dioxide (NO_2)	0.04	0.15
Ammonia gas (NH_3)	0.05	0.15
Chlorine gas (Cl_2)	0.01	0.3

> **ⓘ Note**
>
> The **Average** refers to the average value of harmful gas in one week. The **Maximum** value is the upper limit of the harmful gas in one week, and maximum value can last for up to 30 minutes every day.

2.2.6 Anti-interference Requirements

- Take interference prevention measures for the power supply system.

- Keep the access point away from the grounding equipment or lightning and grounding equipment of the power device as much as possible.

- Keep the access point far away from high-frequency current devices such as the high-power radio transmitting station and radar launcher.

- Take electromagnetic shielding measures when necessary.

2.2.7 Lightning Protection Requirements

The access point can guard against lightning strikes. As an electric device, too strong lightning strikes may still damage the device. Take the following lightning protection measures.

- Ensure that the neutral point of the AC power socket is in good contact with the ground.

- You are advised to install a power lightning arrester in front of the power input end to enhance the lightning prevention for the power supply.

2.2.8 Installation Site Requirements

Regardless of whether the device is installed on a wall or ceiling, the following requirements must be met.

- Sufficient space is reserved at the air inlet and air vents of the device, to facilitate heat dissipation of the device.

- The installation site allows for proper cooling and ventilation.

- The installation side is sturdy enough to support the weight of the device and its accessories.

- The access point is properly grounded.

2.3 Installation Tools

Table 2-3 Tool List

Common Tools	Phillips screwdriver, power cables, Ethernet cables, cage nuts, diagonal pliers, and binding straps
Dedicated Tools	Anti-static gloves, wire strippers, crimping pliers, and wire cutters
Meters	Multimeter and bit error rate tester (BERT)
Related Devices	PC, display, and keyboard

> ℹ️ **Note**
>
> The RG-AP840-L is delivered without a tool kit. The tool kit is customer-supplied.
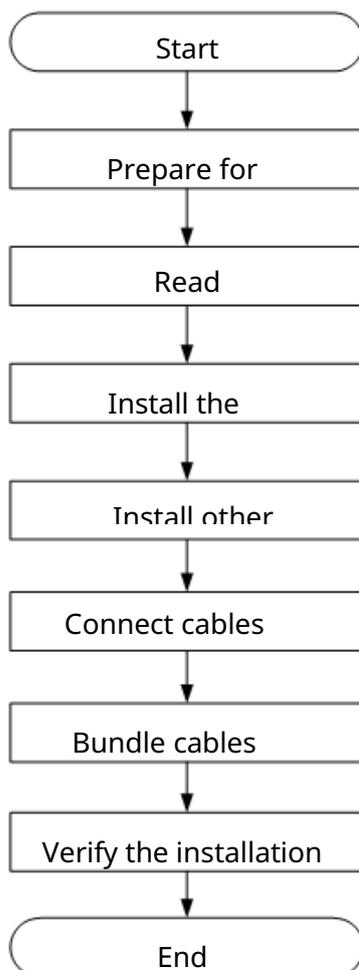
3 Installing the Access Point

The RG-AP840-L must be used indoors and installed at a fixed position.

> ⚠ **Caution**
>
> Ensure that you have carefully read the requirements described in Chapter 2, and the requirements have been met.

## 3.1 Installation Flowchart

Figure 3-1 Installation Flowchart

3.2   Before You Begin

Carefully plan and arrange the installation location, networking mode, power supply, and cabling before installing the device.

Confirm the following requirements before installation:

- The installation site can provides sufficient space for heat dissipation.

- The installation site meets the temperature and humidity requirements of the device.

- The power supply and required current are available at the installation site.

- The Ethernet cables have been deployed in the installation site.

- The selected power supply meets the system power requirements.

- Learn about the position of the indoor emergency power switch before installation. Cut off the power switch in case of accidents.

- For ceiling-mount or wall-mount access points, the dimensions of the mounting bracket, mounting hole pattern, and mounting hole diameter should meet the requirements described in Table 1-4 Dimensions and Weight.

Figure 3-2Dimensions of Mounting Bracket
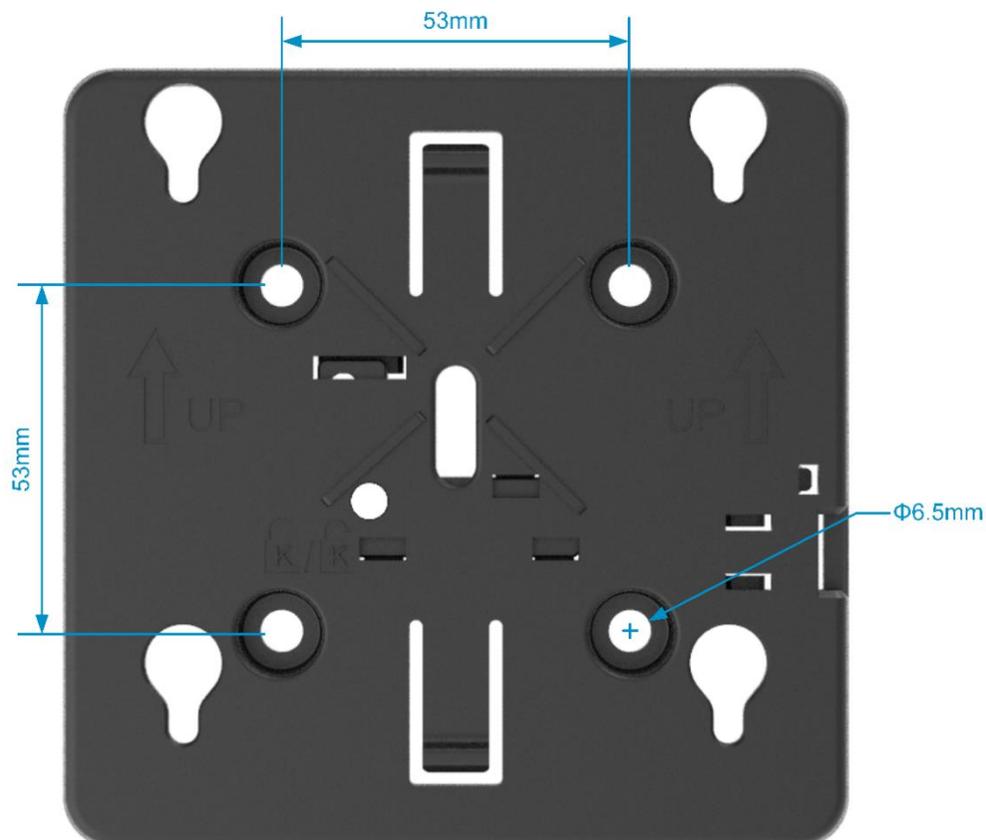
3.3 Precautions

To ensure the normal operation and prolonged service life of the access point, observe the following safety precautions.

- Do not power on the device during installation.

- Place the device in a well-ventilated environment.

- Do not expose the device to high temperatures.

- Keep the device far away from high-voltage power cables.

- Install the device indoors.

- Do not expose the device to a thunderstorm or strong electric field.

- Keep the device clean and dust-free.

- Cut off the power switch before cleaning the device.

- Do not wipe the device with a damp cloth.

- Do not wash the device with liquid.

- Do not open the enclosure when the device is working.

- Secure the device properly.

## 3.4 Installing the Access Point

> ℹ **Note**
>
> - You are advised to install the access point where you can get the optimal Wi-Fi coverage.
>
> - In indoor scenarios, the Wi-Fi coverage of a ceiling-mount AP is larger than that of a wall-mount AP. You are advised to install the AP on a ceiling.

3.4.1 Ceiling Mount

(1) Drill four holes with a diameter of 6.5 mm (0.26 in.) at 53 mm (2.09 in) spacing on a ceiling. Tap four wall anchors into the mounting holes. Drive the screws into the wall anchors to secure the mounting bracket to the ceiling.

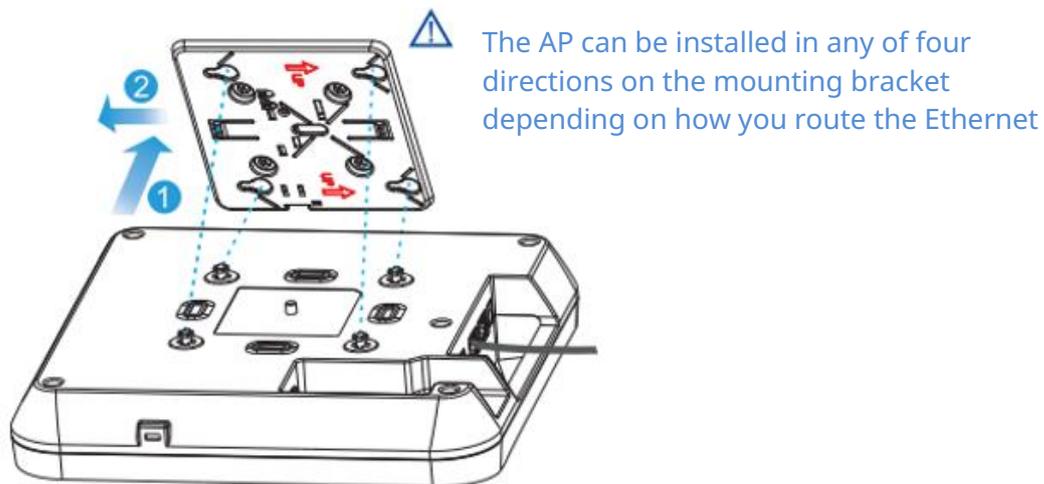**Figure 3-3Securing the Mounting Bracket to a Ceiling**
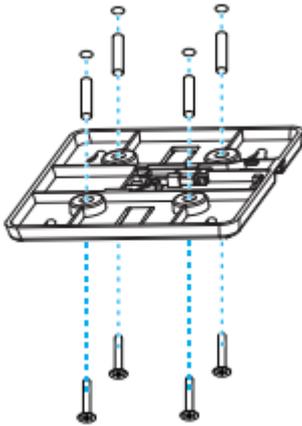
(2) Align the feet on the rear of the AP over the mounting holes on the bracket.

Figure 3-4Aligning the AP with the Mounting Bracket

Install the Ethernet cable before sliding the AP into the mounting

DC power supply
PoE power supply
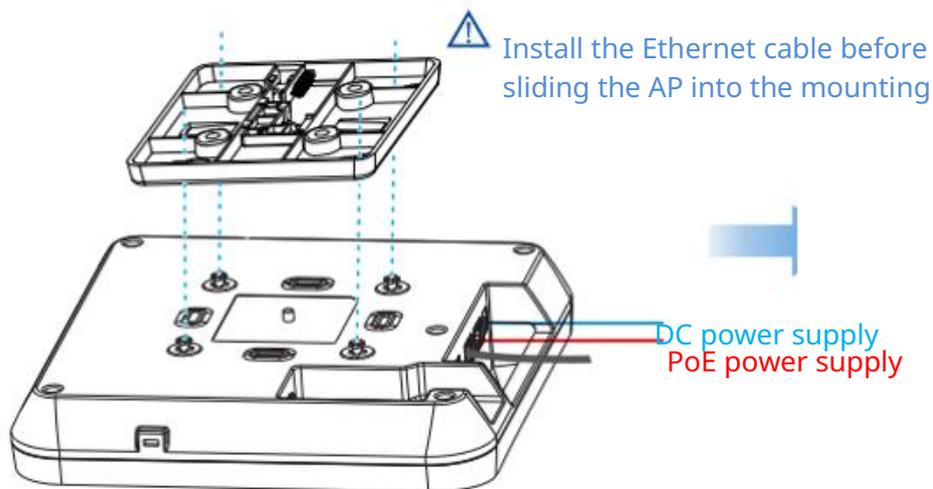
⚠ **Caution**

Install the Ethernet cable properly before sliding the AP into the mounting bracket.

(3) Slide the AP into the mounting bracket in the opposite direction against the arrow on the bracket until the AP clicks into place.
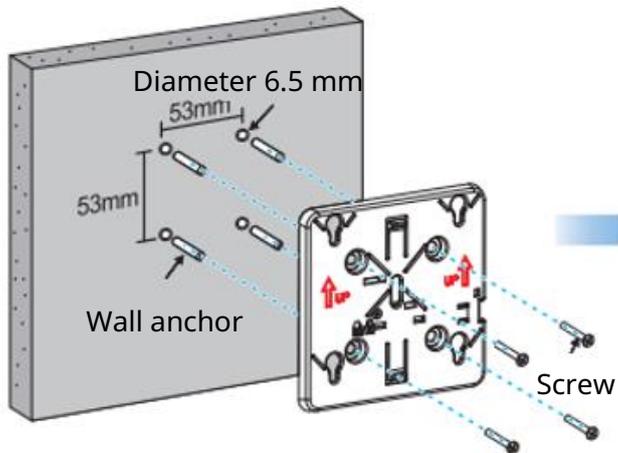
Figure 3-5Sliding the AP into the Mounting Bracket

The AP can be installed in any of four directions on the mounting bracket depending on how you route the Ethernet
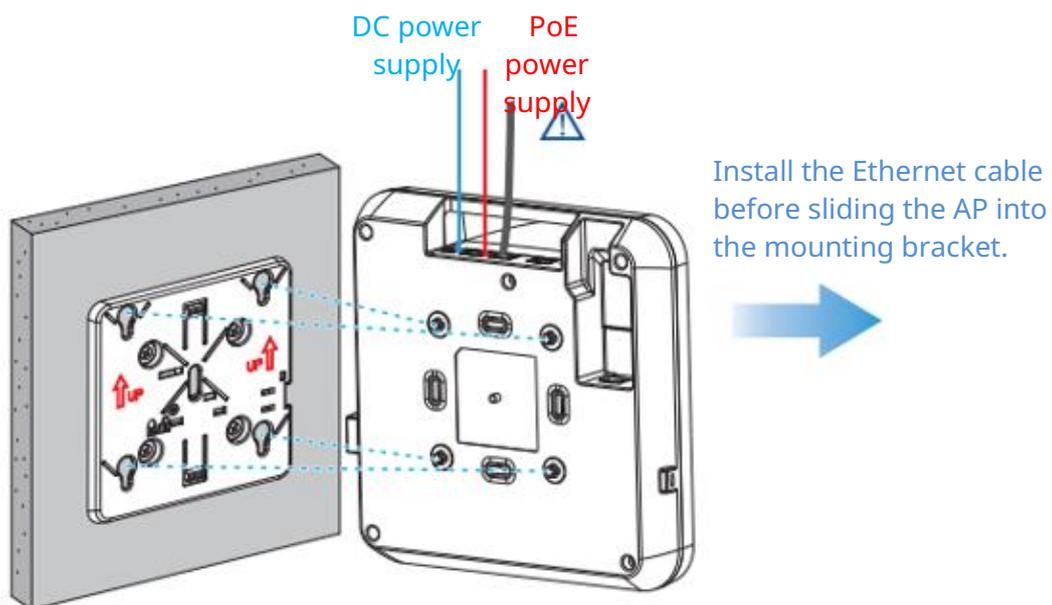
⚠ **Caution**

● The AP can be installed in any of four directions on the mounting bracket depending on how you route the Ethernet cable.

● The feet of the AP should fit easily into the mounting holes. Do not force the feet into the mounting holes.

● After installation, verify that the access point is secured properly.

3.4.2 Wall Mount

(1) Drill four holes with a diameter of 6.5 mm (0.26 in.) at 53 mm (2.09 in) spacing on a wall. Tap four wall anchors into the mounting holes. Drive the screws into the wall anchors to secure the mounting bracket to the wall.

Figure 3-6Securing the Mounting Bracket to a Wall

(2) Align the feet on the rear of the AP over the mounting holes on the bracket.

Figure 3-7Aligning the AP with the Mounting Bracket

⚠ **Caution**

Install the Ethernet cable before sliding the AP into the mounting bracket.

(3) Slide the AP into the mounting bracket in the opposite direction against the arrow on the mounting bracket until the AP clicks into space.

Figure 3-8 Sliding the AP into the Mounting Bracket

> ⚠ Keep the **Ruijie** logo on top when installing the AP on a wall.
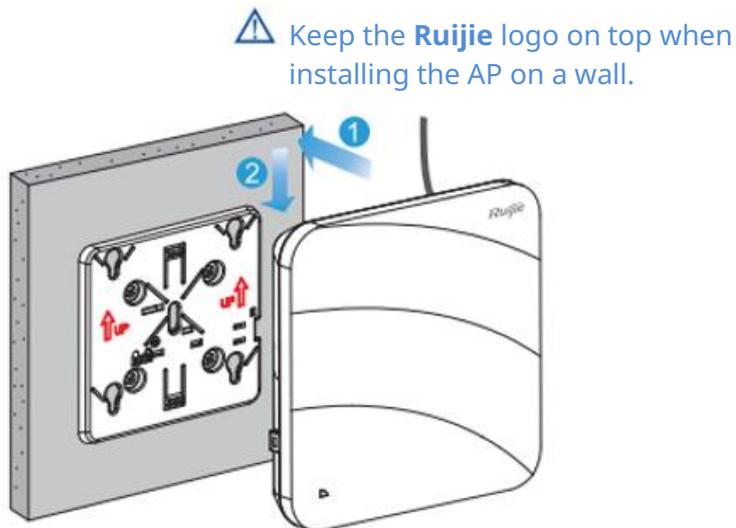

⚠ Caution

- Keep the **Ruijie** logo on top when installing the AP on a wall.

- The AP can be installed in any of four directions on the mounting bracket depending on how you route the Ethernet cable.

- After installation, verify that the access point is secured properly.

3.4.3 Removing the Access Point

(1) Hold the ceiling-mount AP in your hands and push it out of the mounting bracket in the direction of the Ethernet port.

**Figure 3-9Removing the Ceiling-Mount AP from the Mounting Bracket**
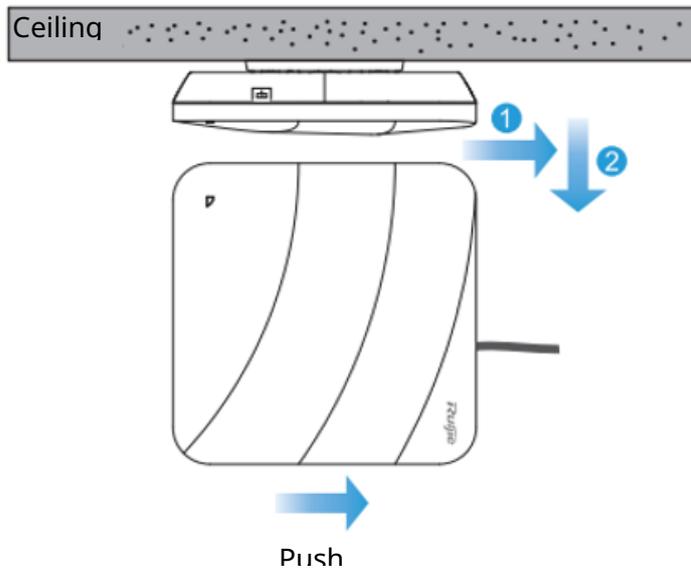
(2) Hold the wall-mount AP in your hands and push it out of the mounting bracket in the direction of the Ethernet port.

**Figure 3-10　　Removing the Wall-Mount AP from the Mounting Bracket**
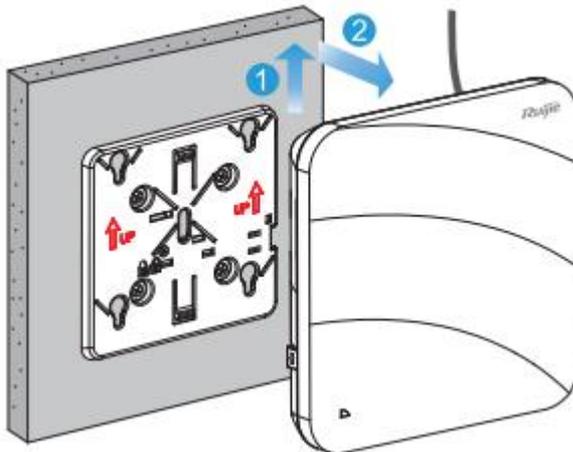
3.5　Installing Other Modules

3.5.1　Installing the Securing Latch

(1) Loosen the screw and engage the securing latch.

Figure 3-11   Engaging the Securing Latch
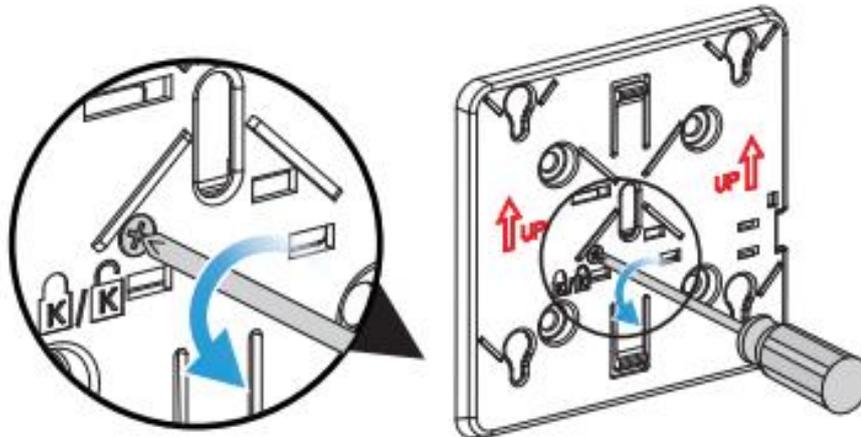
(2) Align the feet on the rear of the AP over the mounting holes on the bracket. Slide the AP into the mounting bracket in the opposite direction against the arrow on the bracket until the AP clicks in place.

Figure 3-12   Sliding the AP into the Mounting Bracket

⚠ Install the Ethernet cable before sliding the AP into the mounting
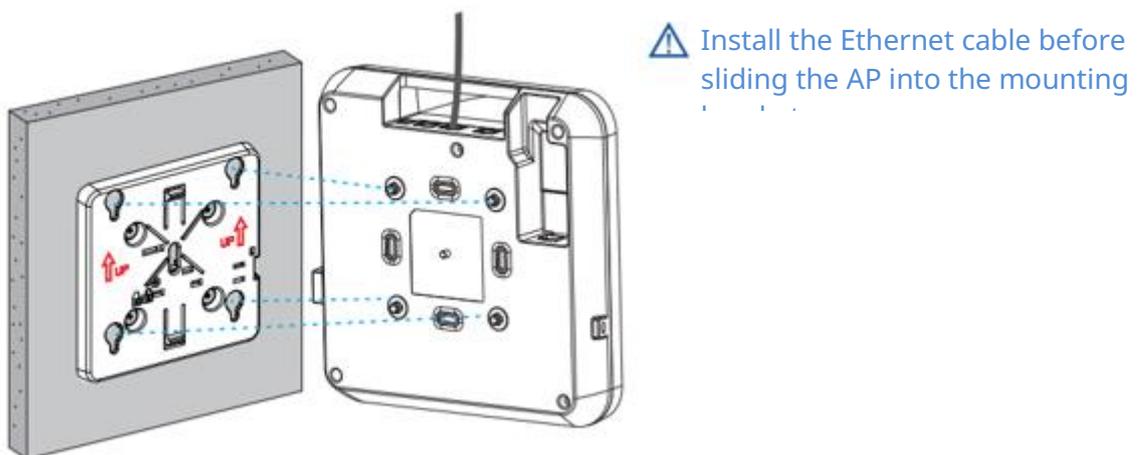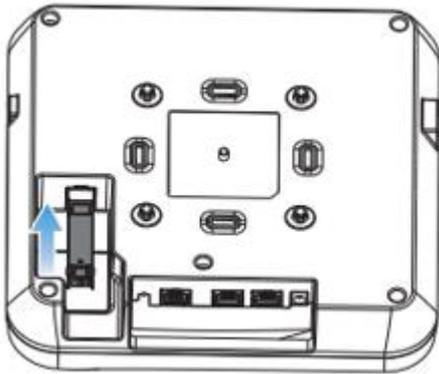
Align the feet on the rear of the AP over the mounting holes on the bracket.
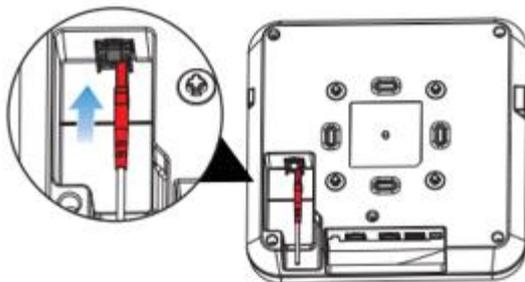

⚠ **Caution**

● Install the Ethernet cable before sliding the AP into the mounting bracket.

● Engage the securing latch as required.

3.5.2 Installing an SFP Module

(1) Insert an SFP module into the SFP port.

Figure 3-13   Inserting an SFP Module into the SFP Port

(2) Connect a fiber-optic cable to the SFP module.

Figure 3-14   Connecting a Fiber-Optic Cable to the SFP Module

3.6 Connecting Cables

Connect a twisted pair cable to the LAN/PoE port of the AP. For details about the twisted pairs, see 7.1   Connectors and Media.

⚠ **Caution**

The console port of the AP supports a baud rate of 9600, data bits of 8, parity check (none), stop bit of 1, and flow control (none) by default. The parameters need to be set only when the AP is manually configured.

3.7   Bundling Cables

3.7.1 Precautions

- The power cords and other cables should be bound in a visually pleasing way.

- When you bundle twisted pairs, make sure that the cables at the connectors have natural bends or bends of large radius.

- Do not over tighten cable bundle as it may reduce the cable life and performance.

3.7.2 Steps

(1) Bind the drooping part of the cables and place the bundle as near the LAN/PoE port as possible.

(2) Fasten the cables inside the cable management trough.

(3) Route the cables under the access point and run in straight line.

3.8   Checklist After Installation

3.8.1 Checking Access Point

- Verify that the external power supply matches with the requirement of the access point.

- Verify that the access point is secured properly.

3.8.2 Checking Cable Connection

- Verify that the UTP/STP cable matches with the port type.

- Verify that cables are properly bundled.

3.8.3 Checking Power Supply

- Verify that the power cord is properly connected and compliant with safety requirements.

- Verify that the access point is operational after power-on.

4 Verifying Operating Status

4.1 Setting up Configuration Environment

The AP adopts PoE or DC power supply.

- When the AP is powered by PoE or DC power supply, verify that the power supply functions properly and meets safety requirements.

- Connect the AP to a wireless controller through a twisted pair cable.

- When the console port of the AP is connected to the serial port of a PC for debugging, verify that the PC and PoE switch are properly grounded.

4.2 Powering on the Access Point

4.2.1 Checklist Before Power-on

- Verify that the power cord is properly connected.

- Verify that the input voltage meets with the requirement of the AP.

4.2.2 Checklist After Power-on (Recommended)

After power-on, check the following items:

- Verify that there are system logs printed on the terminal interface.

- Verify the LED status of the AP.

5 Monitoring and Maintenance

5.1 Monitoring

5.1.1 LED

When the AP is operating, monitor the system status by observing the LED.

5.1.2 CLI Commands

Run related commands on the CLI to monitor the AP, including:

- Port configuration and status

- System logs

> **ℹ Note**
> - For details about the commands, see the configuration guide.
> - The AP supports remote maintenance.
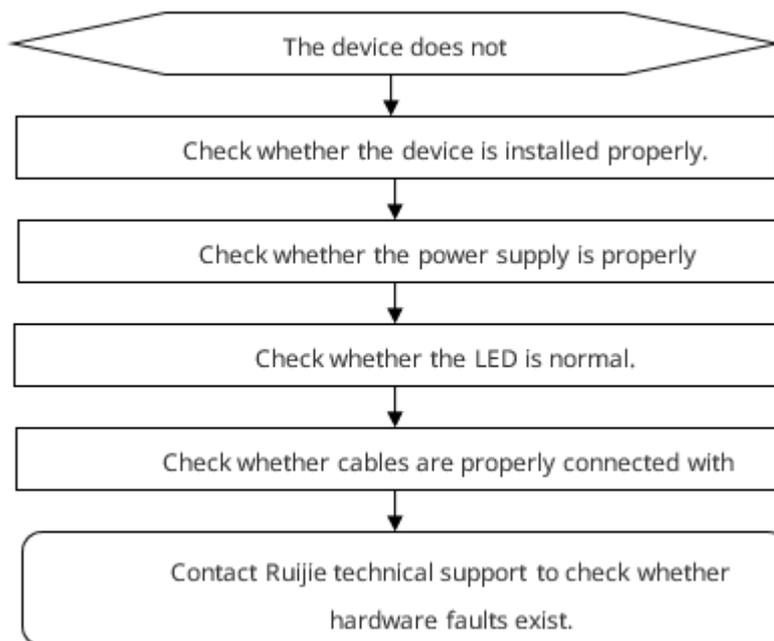
5.2 Remote Maintenance

- When the AP works in the fat mode, log in to the AP for remote maintenance.

- When the AP works in the fit mode, use a wireless controller to manage and maintain the AP uniformly.

5.3 Hardware Maintenance

If the hardware is faulty, please contact Ruijie technical support for help.

6 Common Troubleshooting

6.1 General Troubleshooting Flowchart

6.2 Common Faults

6.2.1 Ethernet Port Is Not Working After the Ethernet Cable Is Plugged In

Verify that the peer device is working properly. And verify that the Ethernet cable is capable of providing the required data rate and is properly connected.

6.2.2 LED Is Off for a Long Time

- If the AP is powered by PoE, verify that the power sourcing equipment (PSE) is at least 802.3af-capable, and then verify that the Ethernet cable is properly connected.

- If the AP is powered by a DC adapter, verify that the adapter has mains input and works properly.

6.2.3 LED Is Solid Red

The LED keeps solid red for a long time, indicating that the Ethernet port is not connected. Verify the Ethernet port connection.

6.2.4 LED Is Solid Green

The AP needs to be initialized after power-on. During this period, the LED keeps solid green and does not turn blue until the initialization is completed. If the LED is still solid green after an hour, the device initialization fails and the device is faulty.

6.2.5 LED Keeps Blinking Blue at an Interval of 0.2s (in Fit Mode)

The software is being upgraded after the AP is powered on. During this period, the LED keeps blinking blue at an interval of 0.2s and does not turn solid blue until the upgrade is completed. Do not plug or unplug the power cord when the LED is blinking as software upgrade takes time. If the blinking persists for 10 minutes, software upgrade is not completed and the device is faulty.

6.2.6 LED Does Not Turn Solid Blue or Blinking Blue

If the LED does not turn solid blue or blinking blue after the system starts up, the access point probably has not established a proper CAPWAP connection with the wireless controller. Verify that the wireless controller is operational and configured properly.

6.2.7 STAs Can Not Find the Access Point

(1) Verify that the AP is properly powered.

(2) Verify that the Ethernet port is correctly connected.

(3) Verify that the AP is correctly configured.

(4) Move the STA closer to the access point.

7 Appendix

7.1 Connectors and Media

1000BASE-T/100BASE-TX/10BASE-T port

1000BASE-T/100BASE-TX/10BASE-T port is a 10/100/1000 Mbps port that supports auto-negotiation and auto MDI/MDIX Crossover.

Compliant with IEEE 802.3ab, the 1000BASE-T port requires Category 5/5e 100-ohm UTP or STP with a maximum distance of 100 meters (328.08 feet).

1000BASE-T port uses four twisted pairs for data transmission, all of which must be connected. Twisted pairs for the 1000BASE-T port are connected as shown in the following figure.

Figure 7-1 Four Twisted Pairs Connection
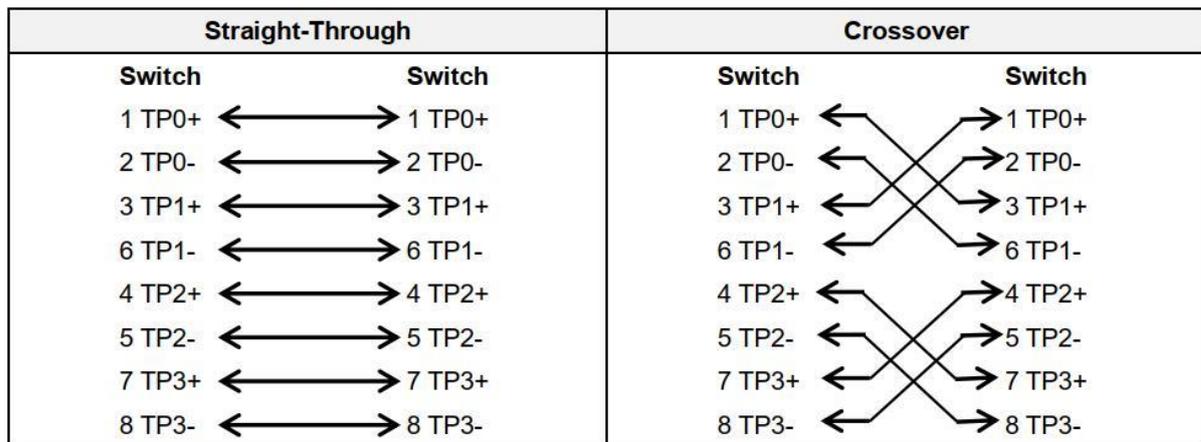
100BASE-TX/10BASE-T port can also be connected by cables of the preceding specifications. Besides, the 10BASE-T port can be connected by 100-ohm Category 3, Category 4, and Category 5 cables with a maximum distance of 100 meters (328.08 feet). 100BASE-TX port can be connected by 100-ohm Category 5 cables with a maximum distance of 100 meters (328.08 feet). The following figure lists definitions of pin signals for the 100BASE-TX/10BASE-T port.

Figure 7-2100BASE-TX/10BASE-T Pin Assignments

Pin	Socket	Plug
1	Input Receive Data+	Output Transmit Data+
2	Input Receive Data-	Output Transmit Data-
3	Output Transmit Data+	Input Receive Data+
6	Output Transmit Data-	Input Receive Data-
4,5,7,8	Not used	Not used

The following figure shows feasible connections of the straight-through and crossover twisted pairs for a 100BASE-TX/10BASE-T port.

Figure 7-3100BASE-TX/10BASE-T Connection
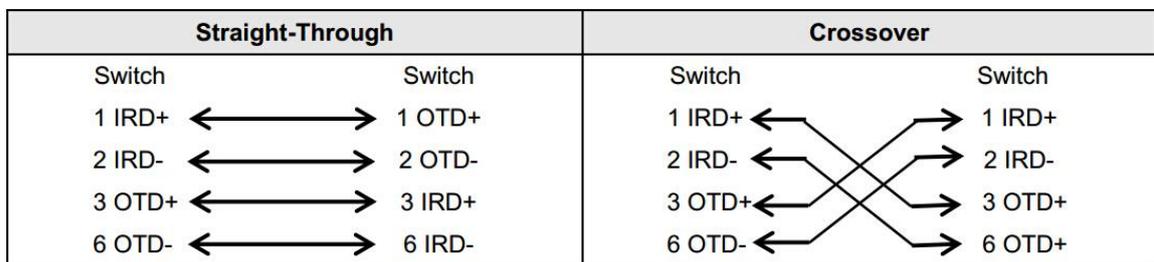
7.2 SFP Module and Specifications

We provide appropriate SFP modules according to the port types. You can select the module to suit your specific needs. The SFP module and specifications are provided for reference.

Table 7-1 Technical Specifications

Wavelength (nm)	Fiber Type	DDM	Transmit Power (dBm)		Receive Power (dBm)	
			Min	Max	Min	Max
1310Tx/1550Rx	SMF	Not supported	−9	−3	N/A	−18

Table 7-2 Cabling Specifications

| Connector	Fiber Type	Core Size (um)	Max. Cable Distance
LC	SMF	9/125	0.3 km (984.25 ft.)

⚠ Caution

● For optical modules with a maximum cable distance of over 40 km (24.85 miles), install an optical attenuator to avoid overload when using short-distance SMFs.

● The SFP module is a laser transceiver. Do not look into the laser beam directly.

● To keep the SFP module clean and dust-free, install a dust cap on the SFP module when the fiber-optic cable is not connected.

7.3 Cabling

During installation, route cable bundles upward or downward along the sides of the rack depending on the actual situation in the equipment room. All cable connectors used for transit should be placed at the bottom of the cabinet rather than be exposed outside of the cabinet. Power cords are routed beside the cabinet, and top cabling or bottom cabling is adopted according to the actual situation in the equipment room, such as the positions of the DC power distribution box, AC socket, or lightning protection box.

● Requirements for Cable Bend Radius

    ○ The bend radius of a fixed power cord, network cable, or flat cable should be over five times greater than their respective diameters. The bend radius of these cables that are often bent or plugged should be over seven times greater than their respective diameters.

    ○ The bend radius of a fixed common coaxial cable should be over seven times greater than its diameter. The bend radius of the common coaxial cable that is often bent or plugged should be over 10 times greater than its diameter.

    ○ The bend radius of a fixed high-speed cable (such as an SFP+ cable) should be over five times greater than its diameter. The bend radius of the fixed high-speed cable that is often bent or plugged should be over 10 times greater than its diameter.

● Precautions for Cable Bundling

    ○ Before cables are bundled, mark labels and stick the labels to cables wherever appropriate.

    ○ Cables should be neatly and properly bundled in the rack without twisting or bending.

Figure 7-4 Bundling Cables
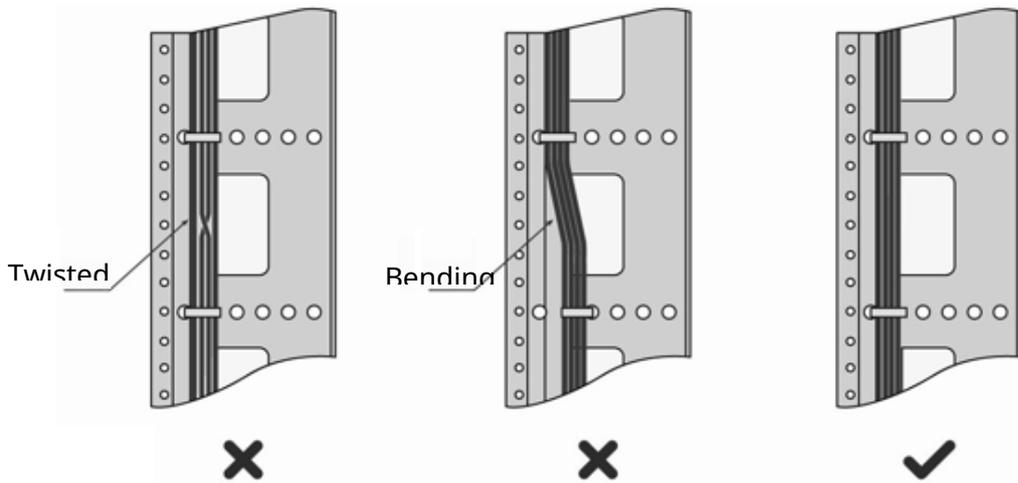
- Cables of different types (such as power cords, signal cables, and grounding cables) should be separated in cabling and bundling. Mixed bundling is disallowed. When they are close to each other, you are advised to adopt crossover cabling. In the case of parallel cabling, maintain a minimum distance of 30 mm (1.18 in.) between power cords and signal cables.

- The cable management brackets and cabling troughs inside and outside the cabinet should be smooth without sharp corners.

- The metal hole traversed by cables should have a smooth and fully rounding surface or an insulated lining.

- Use cable ties to bundle up cables properly. Please do not connect two or more cable ties to bundle up cables.

- After bundling up cables with cable ties, cut off the remaining part. The cut should be smooth and trim, without sharp corners.

Figure 7-5 Bundling Cables
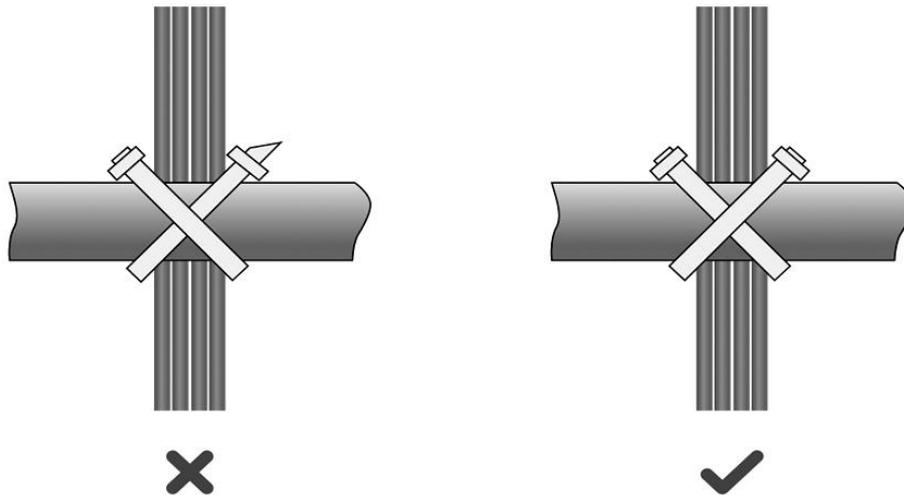
o   When cables need to be bent, you should first bundle them up. However, the buckle cannot be bundled within the bend area. Otherwise, considerable stress may be generated in cables, breaking cable cores.

Figure 7-6 Bundling Cables
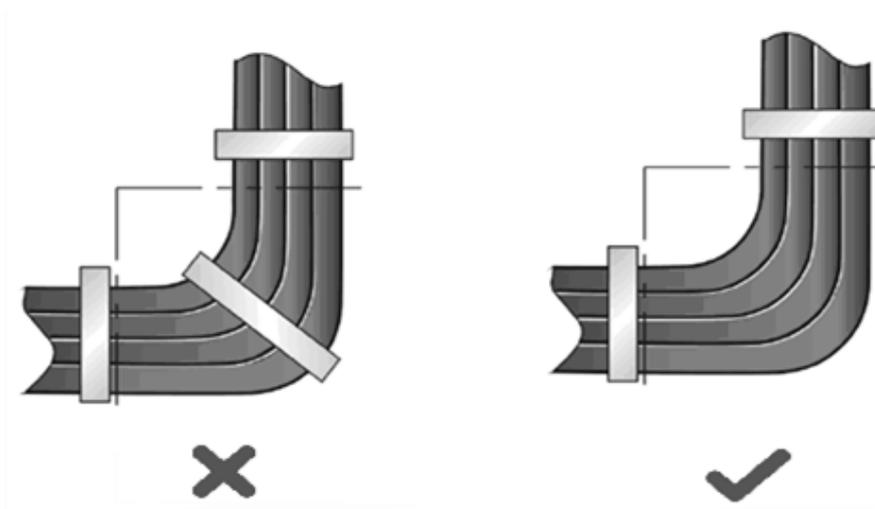
o   Cables not to be assembled or remaining parts of cables should be folded and placed in a proper position of the rack or cable trough. The proper position refers to a position that does not affect device running or damage the device or cable.

o   220 V and –48 V power cords must not be bundled on the guide rails of moving parts.

o   The power cords connecting moving parts such as grounding cables should be reserved with some access after being assembled to avoid suffering tension or stress. After the moving part is installed, the remaining cable part should not touch heat sources, sharp corners, or sharp edges. If heat sources cannot be avoided,

high-temperature cables should be used. If heat sources cannot be avoided, high-temperature cables should be used.

○ When screw threads are used to fasten cable terminals, the anchor or screw must be tightly fastened.

Figure 7-7 **Cable Fastening**
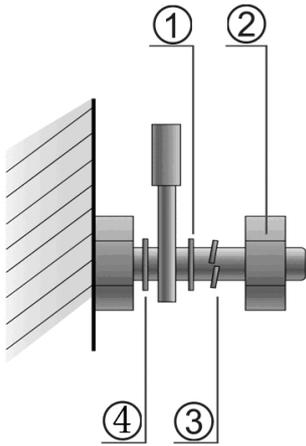
①	Flat washer	③	Spring washer
②	Nut	④	Flat washer

○ Hard power cords should be fastened in the terminal connection area to prevent stress on terminal connection and cable.

○ Do not use self-tapping screws to fasten terminals.

○ Power cords of the same type and in the same cabling direction should be bundled up into cable bunches, with cables in cable bunches clean and straight.

○ Bind the cords with buckles according to the following table.

Table 7-3 **Cable Bunch**

Cable Bundle Diameter (mm)	Distance between Every Binding Point
10 mm (0.39 in.)	80 mm to 150 mm (3.15 in. to 5.91 in.)
10 mm to 30 mm (0.39 in. to 1.18 in.)	150 mm to 200 mm (5.91 in. to 7.87 in.)
30 mm (1.18 in.)	200 mm to 300 mm (7.87 in. to 11.81 in.)

- No knot is allowed in cabling or bundling.

- For wiring terminal blocks (such as air switches) of the cold pressing terminal type, the metal part of the cord end terminal should not be exposed outside the terminal block when assembled.

7.4 DC Connector Specifications

- Input voltage: 54 V DC

- Rate current: 1.1 A

Table 7-4 DC Connector Specifications

Inner Diameter	Outer Diameter	Depth	Polarity Symbol
2.1 mm (0.08 in.)	5.5 mm (0.22 in.)	9.5 mm (0.37 in.)	Center (tip) of the output plug: Positive (+) Barrel (ring) of the output plug: Negative (-)

Figure 7-8 DC Connector Dimensions