Ruijie RG-AP840-I(V2) 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/

- Technical Support Website: https://ruijienetworks.com/support

- Case Portal: https://caseportal.ruijienetworks.com

- Community: https://community.ruijienetworks.com

- Technical Support Email: service_rj@ruijienetworks.com

- Skype: service_rj@ruijienetworks.com

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 Overview

RG-AP840-I(V2) is an 802.11ax-compliant wireless access point product developed for indoor scenarios such as higher education, government, general education, finance, and business. It uses dual-radio technology, of which the 2.4 GHz frequency can provide up to 575 Mbps access rate and 5 GHz can provide up to 4.804 Gbps access rate. The whole machine can provide the maximum wireless access rate of 5.378 Gbps. The ultra-fast wireless access rate takes performance out of the equation.

The important factors such as wireless network security, RF control, mobile access, service quality assurance, and seamless roaming are fully considered in the design of RG-AP840-I(V2). It works with a wireless controller to guarantee data forwarding, security and access control of wireless users.

RG-AP840-I(V2) can be operated in 802.11ax, 802.11ac, and 802.11n modes concurrently. The product supports ceiling and wall-mounted installation modes, and can be safely and conveniently installed on ceiling and walls. RG-AP840-I(V2) supports local power feeding or power feeding over Ethernet (PoE). You can flexibly select appropriate power feeding methods according to the on-site power feeding environment. The product is especially suitable for large campus, enterprise offices, and operating hotspots.

1.2 Appearance

RG-AP840-I(V2) provides 2 radio frequency ports, 2 Ethernet copper ports (LAN1 supports PoE in compliance with IEEE 802.3af, 802.3at and 802.3bt, and LAN2/IoT port supports power feeding to IoT units (48 V/0.27 A, MAX: 12.95 W), 1 5GE SFP, 1 RJ45 Console port, 1 DC power connector, 1 USB port, and 1 reset key. The appearance is as follows:

Figure 1-1   Top view

Figure 1-2   Bottom view

Figure 1-3   Front view

Table 1-1   Front view description

No.	Button and Port	Function Description
1	Indicator	Indicates the system working status.

Figure 1-4   Side view
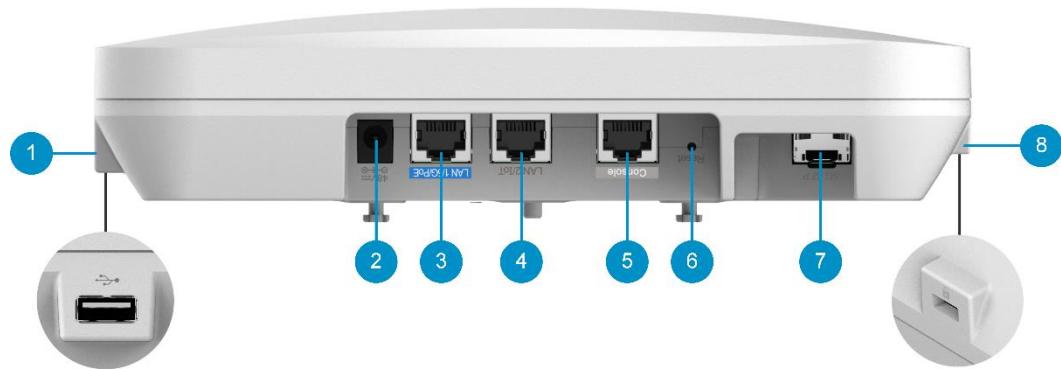
Table 1-2   Button and port description

No.	Button and Port	Function Description
1	USB port	Connected to USB flash drive.
2	DC power port	54 V DC power supply to source power to the AP.
3	LAN1/PoE copper port	Uplinked to service port for wired Ethernet connection and service data transmission, supporting PoE in compliance with IEEE 802.3af, 802.3at and 802.3bt.
4	LAN2/IoT copper port	Downlinked to service port for wired Ethernet connection and service data transmission, providing power to IoT units (48 V/12.95 W).
5	Console port	Connected to serial port cable management device.
6	Reset key	Restarts the device or restores the factory settings.
7	5GE SFP	Uplinked to service port for service data transmission.
8	Security lock hole	Connected to security lock.

🛈 Note

The nameplate is at the bottom of the access point.

1.3 Package Contents

Table 1-3   Package contents

Name	Quantity
Master AP	1
Mounting plate	1
Wall anchor	4
Phillips pan head tapping screw 4.2*20	4
Hardware Installation and Reference Guide	1

1.4 Product Technical Specifications

1.4.1 Dimensions and Weight

Table 1-4   Dimensions and Weight

Dimensions and Weight	RG-AP840-I(V2)
Dimensions (W x D x H)	Main unit: 230 mm x 230 mm x 51 mm (9.06 in. x 9.06 in. x 2.01 in.) Shipping: 284 mm x 262 mm x 124 mm (11.18 in. x 10.31 in. x 4.88 in.)
Weight	Main unit: 1.0 kg (2.20 lbs) Mounting bracket: 0.1 kg (0.22 lbs) Shipping: 1.25 kg (2.76 lbs)
Mounting	Wall/Ceiling-mount (a mounting bracket is delivered with the main unit)
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 interval	53 mm x 53 mm (2.09 in. x 2.09 in.). For the diagram of mounting plate, see 3.2 Installation Preparation.
Mounting hole diameter	6.5 mm (0.26 in.)

1.4.2 System Specifications

Table 1-5   System Specifications

System Specifications	RG-AP840-I(V2)
Memory	512 MB DRAM
Flash memory	256 MB

1.4.3 Wi-Fi Radio

Table 1-6   Wi-Fi Radio

Wi-Fi Radio	RG-AP840-I(V2)
Radio design	Dual-radio, six spatial streams per device: ● Radio 1 – 2.4GHz: 2x2 MU-MIMO, 2 spatial streams ● Radio 2 – 5GHz: 4x4 MU-MIMO, 4 spatial streams
Operating frequencies	Radio1, 802.11b/g/n/ax: ● 2.400 GHz to 2.4835GHz ISM , channels 1 to 13 Radio2, 802.11a/n/ac/ax: ● 5.150 GHz to 5.250 GHz, U-NII-1, channels 36, 40, 44, and 48 ● 5.250 GHz to 5.350 GHz, U-NII-2A, channels 52, 56, 60, and 64 ● 5.470 GHz to 5.725GHz, U-NII-2C, channels 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, and 140 ● 5.725GHz to 5.850 GHz, U-NII-3/ISM, channels 149, 153, 157, 161, and 165 Note: Available frequency bands may vary with countries or regions. To use the above-mentioned frequency bands, ensure that they are supported in your country or region. For details, see *WLAN Country or Region Codes and Channel Compliance*.
Packet aggregation	802.11n/ac/ax: A-MPDU, A-MSDU
802.11n	Six spatial streams ● Radio 1 – 2.4 GHz: 2x2 MIMO, two spatial streams ● Radio 2 – 5 GHz: 4x4 MIMO, four spatial streams Channels: ● Radio 1 – 2.4 GHz: 20 MHz and 40 MHz ● Radio 2 – 5 GHz: 20 MHz and 40 MHz Combined peak data rate: 900 Mbps ● Radio 1 – 2.4 GHz: 6.5 Mbps to 300 Mbps (MCS0 to MCS15) ● Radio 2 – 5 GHz: 6.5 Mbps to 600 Mbps (MCS0 to MCS31) Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM Packet aggregation:

Wi-Fi Radio	RG-AP840-I(V2)
	● Aggregate MAC Protocol Data Unit (A-MPDU) ● Aggregate MAC Service Data Unit (A-MSDU) Dynamic Frequency Selection (DFS) Cyclic Delay/Shift Diversity (CDD/CSD) Maximum Ratio Combining (MRC) Space-Time Block Coding (STBC) Low-Density Parity Check (LDPC) Transmit beam-forming (TxBF)
802.11ac	Four spatial streams ● Radio 2 – 5 GHz: 4x4 MIMO, four spatial streams Channels: ● Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz Combined peak data rate: 3.467 Gbps ● Radio 2 – 5 GHz: 6.5 Mbps to 3.467 Gbps (MCS0 to MCS9) Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM Packet aggregation: ● Aggregate MAC Protocol Data Unit (A-MPDU) ● Aggregate MAC Service Data Unit (A-MSDU) Dynamic Frequency Selection (DFS) Cyclic Delay/Shift Diversity (CDD/CSD) Maximum Ratio Combining (MRC) Space-Time Block Coding (STBC) Low-Density Parity Check (LDPC) Transmit beam-forming (TxBF)
802.11ax	Six spatial streams ● Radio 1 – 2.4 GHz: 2x2 uplink/downlink MU-MIMO, two spatial streams ● Radio 2 – 5 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams Channels: ● Radio 1 – 2.4 GHz: 20 MHz and 40 MHz ● Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz Combined peak data rate: 5.378 Gbps: ● Radio 1 – 2.4 GHz: 8.6 Mbps to 0.574 Gbps (MCS0 to MCS11) ● Radio 2 – 5 GHz: 8.6 Mbps to 4.804 Gbps (MCS0 to MCS11) Radio technologies: uplink/downlink Orthogonal Frequency-Division Multiple Access (OFDMA) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM Packet aggregation:

Wi-Fi Radio	RG-AP840-I(V2)
	● Aggregate MAC Protocol Data Unit (A-MPDU) ● Aggregate MAC Service Data Unit (A-MSDU) Dynamic Frequency Selection (DFS) Cyclic Delay/Shift Diversity (CDD/CSD) Maximum Ratio Combining (MRC) Space-Time Block Coding (STBC) Low-Density Parity Check (LDPC) Transmit beam-forming (TxBF) WPA3
Antenna	Wi-Fi ● 2.4 GHz: two built-in omnidirectional antennas, with peak antenna gain of 5.9 dBi. ● 5 GHz: two built-in omnidirectional antennas, with peak antenna gain of 6.2 dBi. Bluetooth ● One integrated vertically polarized omnidirectional antenna, with peak antenna gain of 4.6 dBi.
Transmit power	2.4 GHz ● Maximum transmit power: 27 dBm (500 mW) ● Minimum transmit power: 7 dBm (5.01 mW) 5 GHz ● Maximum transmit power: 30 dBm (1000 mW) ● Minimum transmit power: 9 dBm (7.94 mW) Note: ● Adjusting the transmit power by percentage (recommended) and in 1dBm increments. ● The transmit power is limited by local regulatory requirements. For details, see *WLAN Country or Region Codes and Channel Compliance*.
Radio technologies	802.11b: Direct-Sequence Spread-Spectrum (DSSS) 802.11a/g/n/ac: Orthogonal Frequency-Division Multiplexing (OFDM) 802.11ax: Orthogonal Frequency Division Multiple Access (OFDMA)
Modulation types	802.11b: BPSK, QPSK, CCK 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM 802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM

The following table lists the radio frequency performance of Wi-Fi including different frequency bands, protocols, and date rates. It is country-specific, and Ruijie Networks reserves the right of interpretation.

Radio Frequency Performance	RG-AP840-I(V2)		
Frequency Band and Protocol	Data Rate	Maximum Transmit Power per Transmit Chain	Maximum Receive Sensitivity per Receive Chain
2.4 GHz, 802.11b	1 Mbps	24 dBm	–96 dBm
	2 Mbps	24 dBm	–95 dBm
	5.5 Mbps	23 dBm	–93 dBm
	11 Mbps	22 dBm	–89 dBm
2.4 GHz, 802.11g	6 Mbps	24 dBm	–91 dBm
	24 Mbps	23 dBm	–85 dBm
	36 Mbps	23 dBm	–80 dBm
	54 Mbps	21 dBm	–74 dBm
2.4 GHz, 802.11n (HT20)	MCS0	24 dBm	–90 dBm
	MCS7	20 dBm	–70 dBm
2.4 GHz, 802.11n (HT40)	MCS0	24 dBm	–90 dBm
	MCS7	20 dBm	–70 dBm
2.4 GHz, 802.11ax (HE20)	MCS0	24 dBm	–90 dBm
	MCS11	16 dBm	–62 dBm
2.4 GHz, 802.11ax (HE40)	MCS0	24 dBm	–88 dBm
	MCS11	16 dBm	–60 dBm
5 GHz, 802.11a	6 Mbps	24 dBm	–91 dBm
	24 Mbps	23 dBm	–85 dBm
	36 Mbps	23 dBm	–80 dBm
	54 Mbps	21 dBm	–74 dBm
5 GHz, 802.11n (HT20)	MCS0	24 dBm	–90 dBm
	MCS7	20 dBm	–68 dBm
5 GHz, 802.11n (HT40)	MCS0	24 dBm	–88 dBm
	MCS7	20 dBm	–68 dBm
5 GHz, 802.11ac (VHT20)	MCS0	24 dBm	–90 dBm
	MCS9	18 dBm	–68 dBm

Radio Frequency Performance	RG-AP840-I(V2)		
Frequency Band and Protocol	**Data Rate**	**Maximum Transmit Power per Transmit Chain**	**Maximum Receive Sensitivity per Receive Chain**
5 GHz, 802.11ac (VHT40)	MCS0	24 dBm	–88 dBm
	MCS9	18 dBm	–63 dBm
5 GHz, 802.11ac (VHT80)	MCS0	24 dBm	–85 dBm
	MCS9	18 dBm	–60 dBm
5 GHz, 802.11ax (HE20)	MCS0	24 dBm	–90 dBm
	MCS11	16 dBm	–60 dBm
5 GHz, 802.11ax (HE40)	MCS0	24 dBm	–86 dBm
	MCS11	16 dBm	–56 dBm
5 GHz, 802.11ax (HE80)	MCS0	23 dBm	–83 dBm
	MCS11	16 dBm	–53 dBm
5 GHz, 802.11ax (HE160)	MCS0	23 dBm	–81 dBm
	MCS11	16 dBm	–51 dBm

Note: Available frequency bands may vary with countries or regions. To use the above-mentioned frequency bands, ensure that they are supported in your country or region. For details, see *WLAN Country or Region Codes and Channel Compliance*.

1.4.4 Bluetooth Radio

Table 1-7   Bluetooth Radio

Bluetooth Radio	RG-AP840-I(V2)
Bluetooth	Bluetooth 5.1
Antenna type	Integrated vertically polarized omnidirectional antenna
Maximum antenna gain	4.6 dBi, with a downtilt angle of roughly 30 degrees
Maximum transmit power	10 dBm (Class 1)
Receive sensitivity	-98 dBm

1.4.5 Port Specifications

Table 1-8   Port specifications description

Port Specifications	RG-AP840-I(V2)
USB	1 x USB 3.0 (Type-A connector)
Fixed service ports	1 x 100/1000/2.5G/5GBASE-T port ● Auto MDI/MDIX crossover ● NBASE-T/IEEE802.3bz-compliant 5 Gbps ● PoE-PD: 48 V DC (nominal value) 802.3af/at/bt (Class 3 or higher) ● 802.3az EEE 1 x 5GE SFP/RJ45 combo port, compatibility with 1GE and 2.5GE modules, shared with one 100/1000/2.5G/5GBASE-T port 1 x 10/100/1000BASE-T RJ45 port ● Supplying 48 V/12.95 W power to an IoT unit ● Auto MDI/MDIX crossover ● 802.3az EEE
Fixed management port	1 x RJ45 console port (serial console port)
Status LED	1 x multi-color system status LED ● AP power-on status ● Software initialization status and upgrade status ● Uplink service interface status ● Wireless user online status ● CAPWAP tunnel timeout ● Specific AP locating
Button	1 x Reset button ● Press the button for shorter than 2 seconds. Then the device restarts. ● Press the button for longer than 5 seconds. Then the device restores to factory settings.

1.4.6 Power Supply and Consumption

Table 1-9   Power Supply and Consumption

Power Supply and Consumption	RG-AP840-I(V2)
Input power supply	The AP supports the following two power supply modes: ● 54 V DC/1.1 A power input over DC connector: The DC connector accepts 2.1 mm/5.5 mm center-positive circular plug. A DC power supply needs to be purchased independently. ● PoE input over LAN 1: The power source equipment (PSE) complies with IEEE 802.3af/at/bt standard (PoE/PoE+/PoE++). Note: If both DC power and PoE are available, DC power is preferred.

Power Supply and Consumption	RG-AP840-I(V2)
External power supply	When powered by 802.3bt (PoE++), the AP can supply power to an external device. ● The USB port can source 1 A/5 W power to an attached device. ● The LAN 2 port can source 48 V/12.95 W power to an IoT unit.
Maximum power consumption	Maximum power consumption: 40 W ● DC power: 40 W, 2.4 GHz radio 2x2, 5 GHz radio 4x4, LAN 2 for PoE supply, and USB port enabled ● 802.3bt (PoE++): 40 W, 2.4 GHz radio 2x2, 5 GHz radio 4x4, LAN 2 for PoE supply, and USB port enabled ● 802.3at (PoE+): 22 W, 2.4 GHz radio 2x2, 5 GHz radio 4x4, LAN 2 and USB port that fail to provide power for external devices (PoE out disabled of LAN 2 and USB port disabled) ● 802.3af (PoE): 12.95 W, 2.4 GHz radio 1x1, 5 GHz radio 1x1, LAN 2 and USB port that fail to provide power for external devices (PoE out disabled of LAN 2 and USB port disabled) ● Idle mode: 10.3 W

⚠ Caution

● The power adapter is an optional device. If you need to use a DC power adapter, purchase a matching power adapter that meets the requirements of the corresponding safety standards.

● When the device provides PoE powering, it is necessary to ensure that the other end of the Ethernet has 802.3af-compliant power feeding capability.

● This product uses a fanless design. When placing the AP, ensure that there is enough space around to facilitate air circulation.

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

● If 802.3af is used for power feeding, when the AP starts, the 2.4 GHz and 5 GHz frequencies can only work in 1-stream mode, and the LAN2 port and USB port cannot supply power to external devices.

● If 802.3at is used for power feeding, when the AP starts, the LAN2 port and USB port cannot supply power to external devices.

1.4.7 Environment and Reliability

Table 1-10   Environment and Reliability

Environment and Reliability	RG-AP840-I(V2)
Temperature	Operating 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 in the range of 2,000–5,000 m (6,561.68–16,404.20 ft.), every time the altitude increases by 166 m (544.62 ft.), the maximum temperature decreases by 1°C (1.8°F).

Environment and Reliability	RG-AP840-I(V2)
Humidity	Operating humidity: 5% RH to 95% RH (non-condensing) Storage humidity: 5% RH to 95% RH (non-condensing)
Altitude	Operating altitude: –500 m to +5,000 m (–1640.42 ft. to +16,404.20 ft.) Storage altitude: –500 m to +5,000 m (–1640.42 ft. to +16,404.20 ft.)
Mean Time Between Failure (MTBF)	200,000 hours (22 years) at the operating temperature of 25°C (77°F)

1.4.8 Regulatory Compliance

Table 1-11 Regulatory Compliance

Regulatory compliance	RG-AP840-I(V2)
Regulatory compliance	EN 55032, EN 55035, EN 61000-3-3, EN IEC 61000-3-2, EN 301 489-1, EN 301 489-3, EN 301 489-17, EN 300 328, EN 301 893, EN 300 440, FCC Part 15, EN IEC 62311, IEC 62368-1, and EN 62368-1

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with minimum distance 30cm between the radiator and your body.

1.5 LEDs

ℹ️ Note

The description of LED status applies to both Fit AP and Fat AP, unless otherwise noted.

Table 1-12 System indicator status description

Indicator Color	Blinking Frequency	Description
Off	None	The AP is not powered on, or has been powered on but the indicator is turned off by software.
Steady green	None	The AP is performing software system initialization.
Steady red	None	The system is running normally, but the uplink service port of the AP is Link Down.
Slow blink in red	On for 3s Off for 1s	In Fit AP mode, the establishment of a CAPWAP tunnel between the AP and the AC times out.
Fast blink in blue	On for 0.2s Off for 0.2s	In Fit AP or MACC AP mode, the AP is updating software system.
Steady blue	None	The software system is running normally, and the AP is working normally but no wireless users are online.
Blinking blue	On for 1s Off for 1s	The software system is running normally. The AP is working normally and wireless users are online.
Fast blink in red	On for 0.2s Off for 0.2s	In Fit AP mode, the AP enables the indicator positioning function to find a specific AP.

1.6 SFP Module Description

The peer device that is directly connected to the 5GE SFP port of the AP supports fiber ports and copper ports. However, the negotiated rates are different when the devices at both ends use different port rates or use different SFP modules. For details, see Table 1-13 and Table 1-14.

Table 1-13   Rate negotiation result when the peer is fiber 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 1-14   Rate negotiation result when the peer is copper 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
5G	5G	Not supported	Not supported	5G
5G	1G	Not supported	Not supported	Not supported

⚠ Caution

1.   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.

2.   The device supports the combo ports. If both the uplink fiber port and the uplink copper port are connected to cables, the AP will preferentially select the fiber port as the data transmission port (automatically disables the copper port). When the cable is removed from uplink fiber port, the copper port is automatically enabled.

2 Installation Preparation

2.1 Safety Recommendations

> **Note**
> ● To avoid injury to human body and equipment, read the safety recommendations in this manual carefully before installation.
> ● The following safety recommendations may not cover all possible hazardous situations.

2.1.1 Universal Safety Recommendations

● High temperature, dust, harmful gas, flammable and explosive factors, electromagnetic interference (large radar stations, transmitting stations, or substations) and the environment with unstable voltage, large vibration or strong noise may affect the operating of AP. Do not install the device in such environment.

● It is strictly forbidden to install the device in places prone to water accumulation, seepage, dripping, or condensation. When performing engineering design, comprehensively consider the factors such as climate, hydrology, geology, earthquake, electricity, transportation, and select the address that meets the requirements of communication device engineering environment design according to the communication network planning and technical requirements.

● The installation site should be dry, and it is not recommended to install the device in a place very close to the sea. The distance between the device and the sea should be greater than 500 meters, and it is not recommended to place the device on the windward side of the sea.

● Do not place the device in walking areas.

● During installation and maintenance, do not wear loose clothing, jewelry, or other items that may be hooked by the chassis.

● Keep tools and device away from walking areas.

2.1.2 Moving 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 Electrical Safety

> **Warning**
> ● Irregular and improper electrical operations may cause accidents such as fire or electric shock, and cause serious or fatal injury to human body and device.
> ● Do not directly contact high voltage and mains or contact them through wet objects; otherwise, it may bring fatal danger.

● When performing electrical operations, comply with local regulations and rules. The relevant staff must have

the corresponding qualifications.

- Check carefully whether there are potential dangers in the work area, such as whether the ground is wet.

- Before installation, you need to know the location of the emergency power switch in the room. When an accident occurs, the power switch must be turned off.

- Check carefully before turning off the power.

- Do not place the device in moist places and prevent liquid from entering the device.

- It is not recommended to use the AP working ground together with the ground device of electrical equipment or lightning protection ground device, and separate them as far as possible.

- Keep the device far away from wireless transmitters, radar transmitters, high-frequency high-current devices, microwave ovens and other high-power wireless devices.

2.1.4 Storage Safety

To ensure the normal operating of the device, see the storage temperature/humidity requirements in the specifications for the storage environment of the device.

⚠ Caution

If the storage time exceeds 18 months, the device needs to be powered on and run for 24 hours without interruption for device activation.

2.2 Installation Environment Requirements

The device must be used indoors to ensure normal operating and prolong its service life.

The installation site should meet the following requirements.

2.2.1 Load-bearing Requirements

Evaluate the floor load-bearing requirements according to the actual weight of the installed device and its accessories (such as mounting plate and power supplies), and ensure that the load-bearing capacity of the installation site meets the requirements.

2.2.2 Ventilation Requirements

Reserve the position for vent to ensure heat dissipation. After connecting all cables, arrange them into bundles or place them on the cable distribution frame to avoid blocking the air inlet.

2.2.3 Space Requirements

To facilitate heat dissipation and maintenance of the device, do not install the device against the wall. Leave a certain space (not less than 0.4 m) for the left and right panels to facilitate heat dissipation.

2.2.4 Temperature and Humidity Requirements

To ensure the normal operating of the device and prolong its service life, maintain certain temperature and humidity in the equipment room.

If the equipment room is in the environment that does not meet the temperature/humidity requirements for a long time, the device may be damaged.

- When the relative humidity is too high, it is easy to cause poor insulation of insulating materials and even mechanical properties such as leakage.

- When the relative humidity is too low, the insulating washer may dry out and cause loosening of the fastening screws.

- In dry environment, it is easy to generate static electricity and harm the internal circuit of the device.

- In the high-temperature environment, the aging process of insulating materials will be accelerated, the reliability of the device will be greatly reduced, and its service life will be seriously affected.

ℹ️ Note

The temperature and humidity of the working environment of the device are measured at 1.5 m above the floor and 0.4 m in front of the device rack when there is no protective plate before and after the rack.

2.2.5 Cleanliness Requirements

Dust is a major hazard to device operating. Indoor dust falling on the device body will cause electrostatic adsorption and poor contact of metal contacts. Especially when the indoor relative humidity is low, it is more likely to cause electrostatic adsorption, which will not only affect the service life of the device, but also cause communication failures. The dust content and granule size requirements in the equipment room are as follows:

Table 1-15   Dust requirements

Dust	Unit	Content
Dust granule (diameter ≤ 0.5 um)	Number of granules/m³	≤ 1.4 x 10^7
Dust granule (0.5 um < diameter ≤ 1 um)	Number of granules/m³	≤ 7 x 10^5
Dust granule (1 um < diameter ≤ 3 um)	Number of granules/m³	≤ 2.4 x 10^5
Dust granule (3 um < diameter ≤ 5 um)	Number of granules/m³	≤ 1.3 x 10^5

In addition to dust, the equipment room must strictly meet the requirements on the salt, acid and sulfide contained in the air. These harmful substances can accelerate metal corrosion and component aging. The equipment room should prevent the intrusion of harmful gases (such as sulfur dioxide, hydrogen sulfide, nitrogen dioxide, and chlorine), and the specific limits are as follows:

Table 1-16   Gas requirements

Gas	Average (mg/m³)	Maximum (mg/m³)
Sulfur dioxide	0.2	1.5
Hydrogen sulfide	0.006	0.03
Nitrogen dioxide	0.04	0.15
Ammonia gas	0.05	0.15

Chlorine	0.01	0.3

> **Note**
>
> The average is the average value within a week. The maximum value is the upper limit within a week, which does not exceed 30 minutes per day.

2.2.6 Anti-interference Requirements

- Take effective measures to prevent grid interference to the power feeding system.
- It is not recommended to use the device working ground together with the ground device of electrical equipment or lightning protection ground device, and separate them as far as possible.
- Keep away from high-frequency current devices such as high-power radio transmitters and radar transmitters.
- Take electromagnetic shielding measures if necessary.

2.2.7 Lightning Protection Requirements

Lightning protection has been designed on the device, but as an electrical device, excessive lightning strike may still cause damage. The following lightning protection measures need to be taken:

- Ensure that the neutral point of the AC power socket is in good contact with the ground.
- To enhance the lightning protection effect of the power supply, consider adding a power lightning arrester to the input end of the power supply.

2.2.8 Checking the Installation Conditions

The following conditions must be met no matter whether the device is installed on the wall or ceiling:

- Ensure that there is space reserved at the air inlets and vents of the device to facilitate the heat dissipation of the device chassis.
- Ensure that the installation site has good ventilation and heat dissipation systems.
- Ensure that the installation position is strong enough to support the device and its mounting accessories.

2.3 Installation Tools

Table 1-17 Tool list

Common tools	Phillips screwdriver, related cables, network cables, mounting bolts, diagonal pliers, and strapping straps
Dedicated tools	Anti-static gloves, wire strippers, crimping pliers, crystal head crimping pliers, and wire cutters
Meters	Multimeter, bit error tester
Related devices	PC, display, keyboard

ℹ️ Note

RG-AP840-I(V2) does not come with a tool kit, so the tools on the tool list need to be prepared by users.

3 Installation

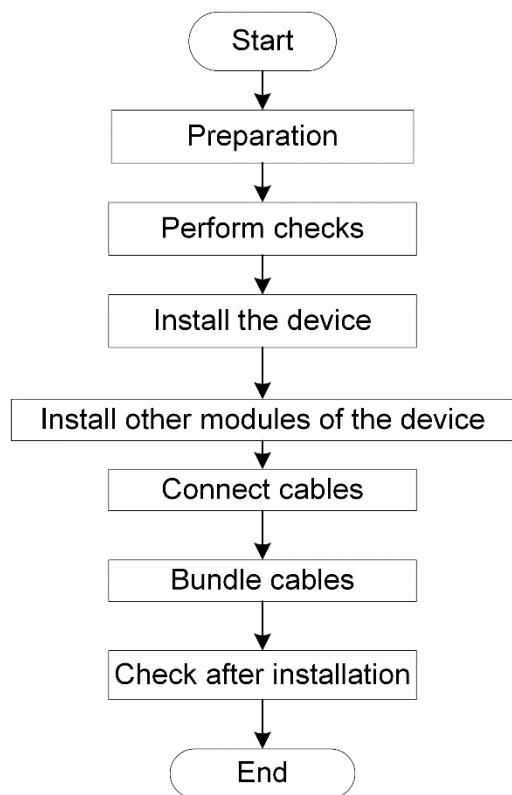RG-AP840-I(V2) must be used indoors and must be fixed.

⚠ Caution

Ensure that you have carefully read the contents of Chapter 2, and the requirements described in Chapter 2 have been met.

3.1 Installation Process

The installation process is as shown in the following figure.

Figure 1-5   Installation Flowchart

```
                    ( Start )
                        │
                        ▼
              ┌──────────────────┐
              │   Preparation    │
              └──────────────────┘
                        │
                        ▼
              ┌──────────────────┐
              │  Perform checks  │
              └──────────────────┘
                        │
                        ▼
              ┌──────────────────┐
              │ Install the device│
              └──────────────────┘
                        │
                        ▼
         ┌─────────────────────────────────┐
         │ Install other modules of the device│
         └─────────────────────────────────┘
                        │
                        ▼
              ┌──────────────────┐
              │  Connect cables  │
              └──────────────────┘
                        │
                        ▼
              ┌──────────────────┐
              │   Bundle cables  │
              └──────────────────┘
                        │
                        ▼
         ┌──────────────────────────┐
         │ Check after installation │
         └──────────────────────────┘
                        │
                        ▼
                    (  End  )
```

3.2 Installation Preparation

Before the device is installed, carefully plan and arrange the installation position, networking method, power feeding and wiring.

Before the installation, ensure that:

● The installation site can provide enough space to meet the heat dissipation requirements.

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

● The power supply is ready at the installation site and meets the current requirements.

- The relevant network cables have been arranged at the installation site.

- The selected power supply can meet the system power requirements.

- The location of the emergency power switch in the room is confirmed. When an accident occurs, turn off the power switch immediately.

- For wireless products that support ceiling-mounted or wall-mounted installation, the size of the mounting plate and the spacing between the holes of the mounting plate must meet the parameter value requirements in Table 1-4 Dimensions and Weight. An example of the spacing between the holes of the mounting plate is as follows:
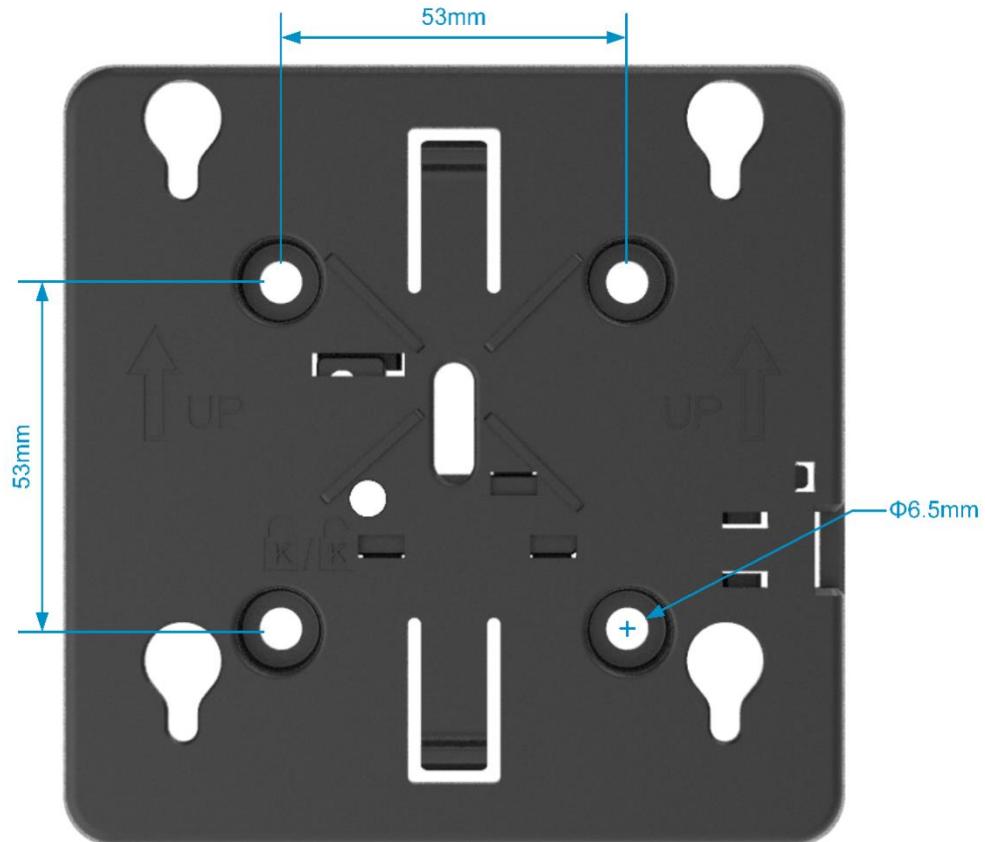
3.3 Precautions

To ensure the normal operating of the wireless AP and prolong its service life, observe the following rules:

- Do not power on the device before you finish the installation.

- Place the device in a ventilated place.

- Do not place the device in high temperature environment.

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

- Install the device indoors.

- Keep the device far away from strong thunderstorms and strong electric fields.

- Keep the device clean and protect it against dust.

- Disconnect the power of device before cleaning it.

- Do not wipe the device with a wet cloth.

- Do not clean the device with liquids.

- Do not open the shell while the device is working.

- Fix the device firmly.
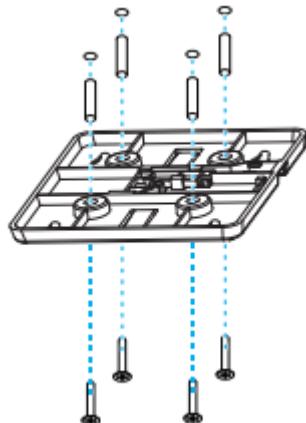
3.4 Installing the Master AP

ℹ️ Note

- An area with large antenna radiation coverage is preferred to install the master AP.

- In the indoor environment, the radiation coverage area of the ceiling-mounted antenna is larger than that of the wall-mounted antenna. Therefore, the ceiling-mounted mode is preferred.

3.4.1 Ceiling-Mounted

(2) Drill 4 mounting holes with a diameter of 6.5 mm on the ceiling, and the center distance of the mounting holes is 53 mm. After tapping the anchors into the mounting holes, screw the mounting plate in and fix it.
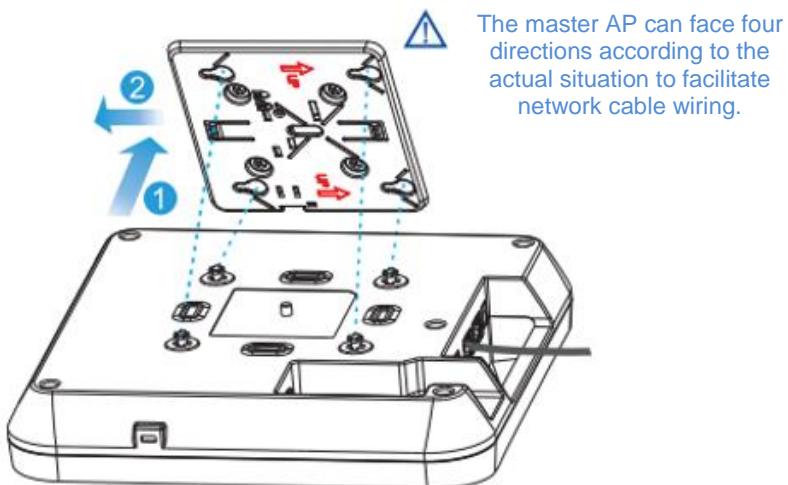
Figure 1-6   Ceiling-mounted mounting plate

(3) Align the buckle on the back of the master AP with the hole on the mounting plate.

Figure 1-7   Aligning the AP with the mounting plate
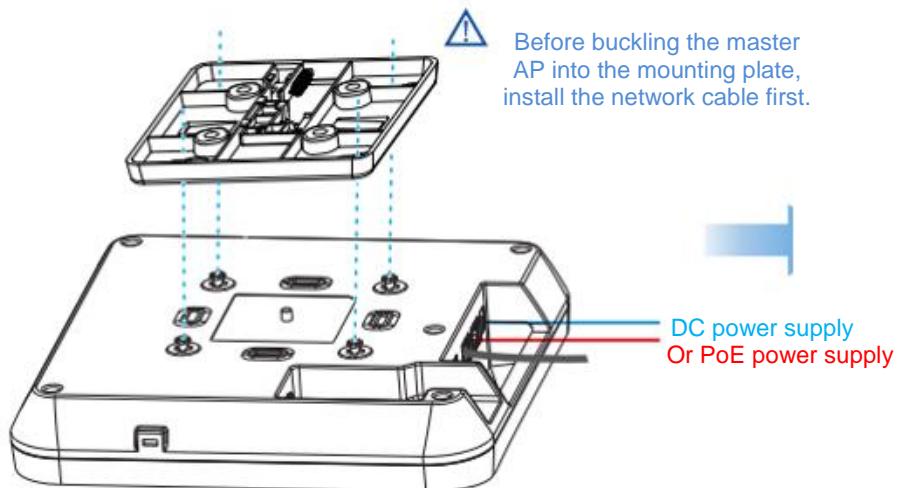
Before buckling the master
AP into the mounting plate,
install the network cable first.

DC power supply
Or PoE power supply

⚠ Caution

Before buckling the master AP into the mounting plate, install the network cable first.

(4) Push the master AP into the buckle in the opposite direction of the arrow on the mounting plate to fasten it.

Figure 1-8   Buckling AP into mounting plate

The master AP can face four
directions according to the
actual situation to facilitate
network cable wiring.

⚠ Caution

● The mounting plate of this master AP supports four installation directions. When installing the master AP in the mounting plate, you can choose one of the directions to install the master AP according to the network cable wiring.

● During installation, slide and fasten the master AP along the direction of the installation guide holes on the mounting plate. Do not forcibly push the master AP into the buckle of the mounting plate.

● After installation, carefully check whether the master AP is fastened, so as to prevent the master AP from falling.

3.4.2 Wall-Mounted

(5) Drill 4 mounting holes with a diameter of 6.5 mm on the wall, and the center distance of the mounting holes is 53 mm. The arrow direction on the mounting plate is upwards. After tapping the anchors into the mounting holes, screw the mounting plate in and fix it.

Figure 1-9   Wall-Mounted mounting plate
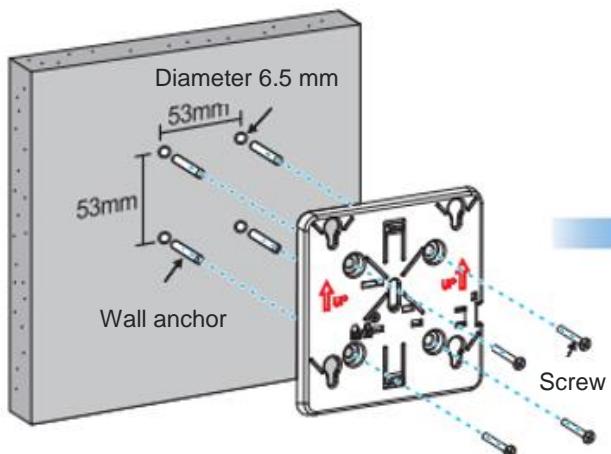
(6) Align the buckle on the back of the master AP with the hole on the mounting plate.
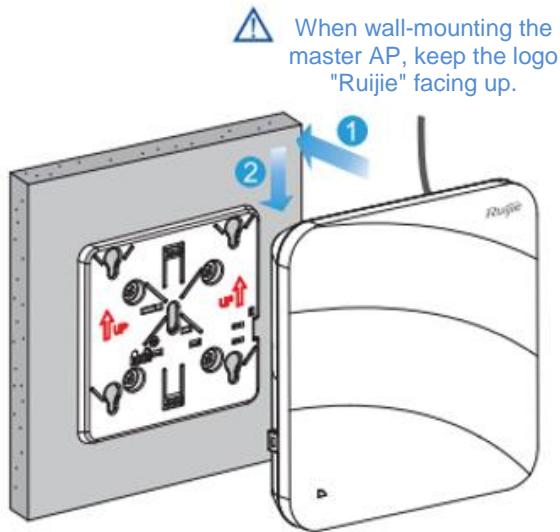
Figure 1-10 Aligning the AP with the mounting plate
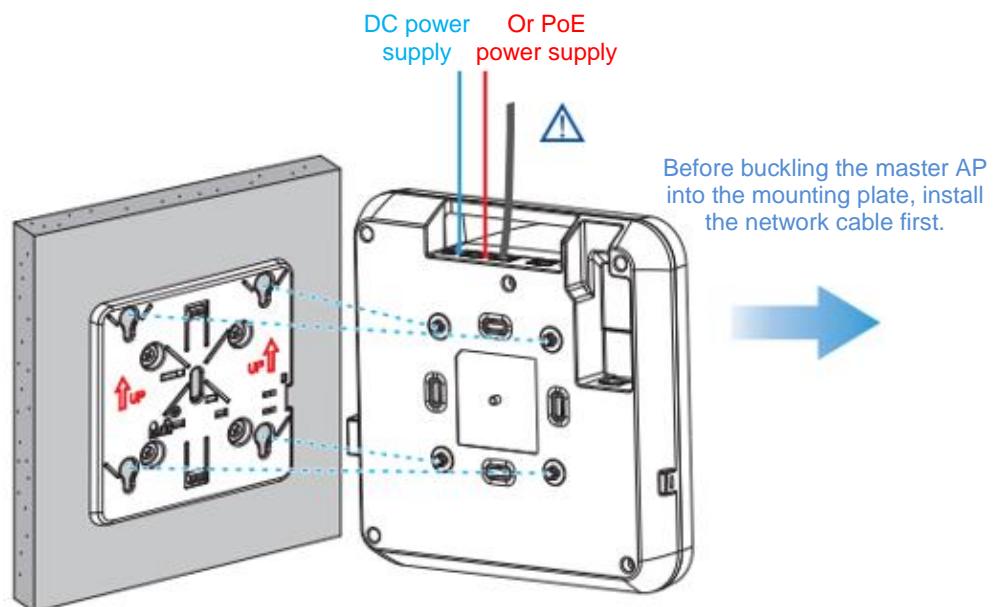
⚠ Caution

Before buckling the master AP into the mounting plate, install the network cable first.

(7) In the opposite direction of the arrow on the mounting plate, push the master AP buckle into the buckle hole from top to bottom to fasten it.

**Figure 1-11 Buckling AP into mounting plate**

⚠ Caution

- When wall-mounting the master AP, keep the product logo on the master AP panel facing upwards.

- During installation, slide and fasten the master AP along the direction of the installation guide holes on the mounting plate. Do not forcibly push the master AP into the buckle of the mounting plate.

- After installation, carefully check whether the master AP is fastened, so as to prevent the master AP from falling.

3.4.3 Disassembling Device

(8) In the ceiling-mounted mode, you need to hold the two sides of the master AP with your hands and push it out along the direction of the network port.

**Figure 1-12 Removing the AP**

Ceiling
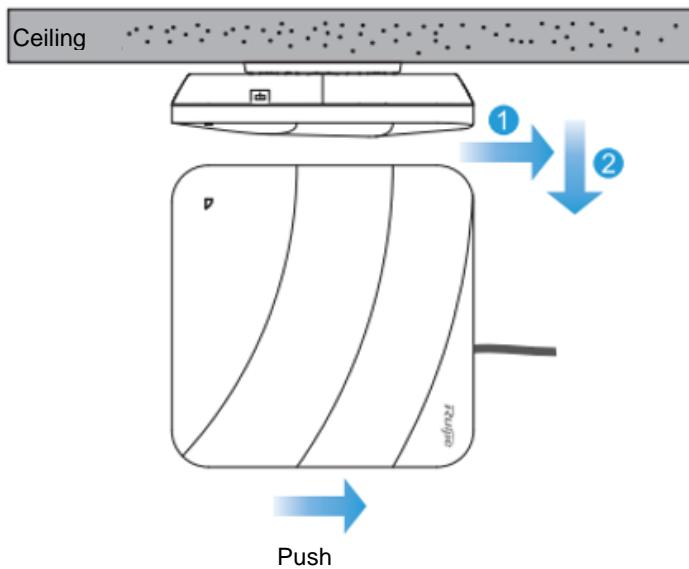
Push

(9) In the wall-mounted mode, you need to hold the two sides of the master AP with your hands and push it out along the direction of the network port.

Figure 1-13 Removing the AP
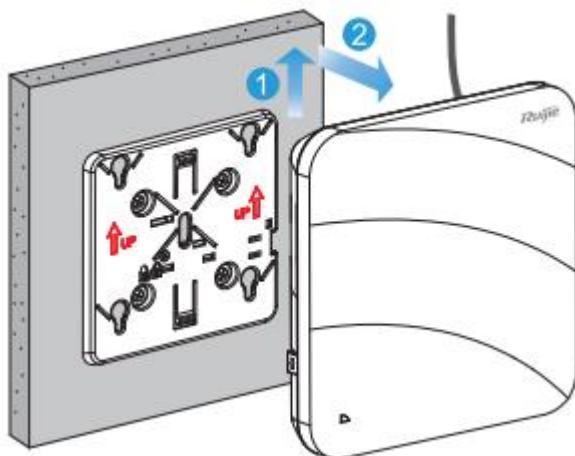
3.5   Installing Other Modules

3.5.1 Installing Security Lock

(10) Unscrew the screw on the mounting plate to open the security lock.

Figure 1-14 Opening dormant lock
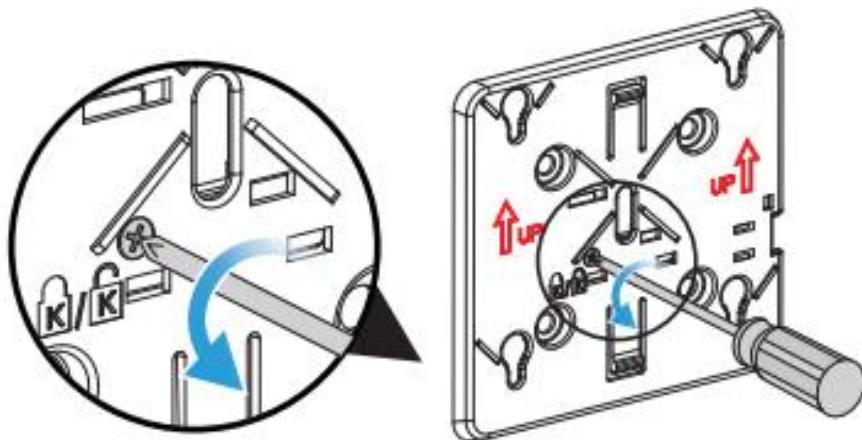
(11) Align the buckle on the back of the master AP with the hole on the mounting plate. Fasten the master AP in the opposite direction of the arrow on the mounting plate.

Figure 1-15 Buckling AP into mounting plate
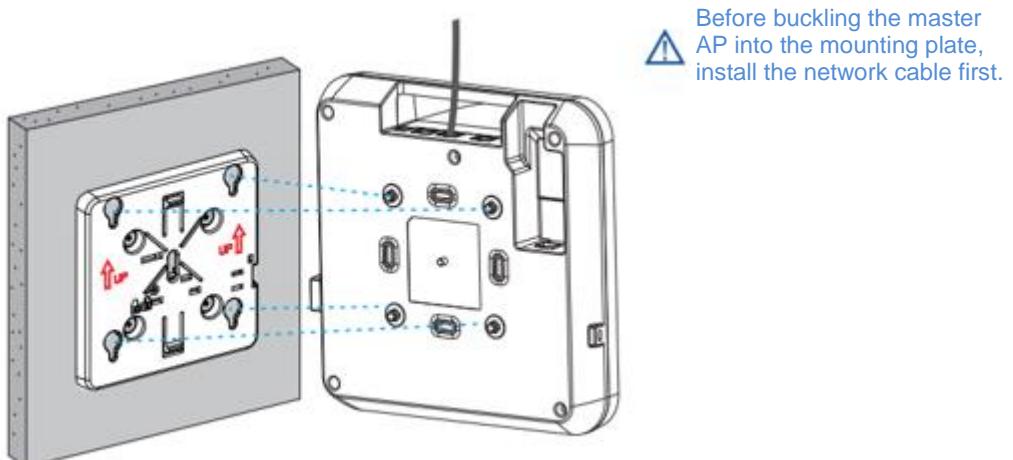
⚠ Before buckling the master AP into the mounting plate, install the network cable first.
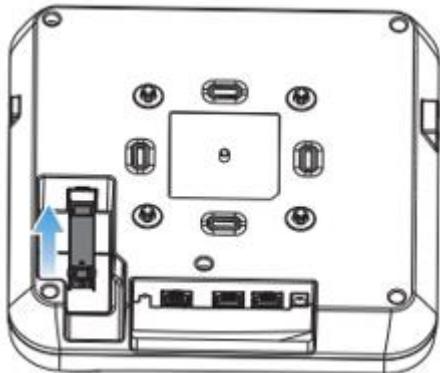

Align the buckle on the back of the master AP with the hole on the mounting plate.

⚠ Caution

● Before buckling the master AP into the mounting plate, install the network cable first.

● You can decide whether to install a security lock according to your needs.
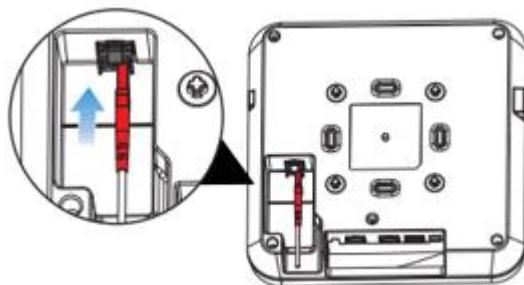
3.5.2 Installing SFP Module

(12) Insert the SFP module.

Insert the SFP module.

(13) Insert the fiber.

3.6 Connecting Cables

Connect a twisted pair to the LAN/PoE port of the AP. For the twisted pair line sequence supported by the AP, see 7.1   Connector and Connection Media Description.

⚠ Caution

The default baud rate of the master AP's console port is 9600, the data bits are 8, the parity check is none, the stop bit is 1, and the flow control is none. The parameters need to be set only when the AP needs to be manually configured.

3.7 Bundling Cables

3.7.1 Precautions

- The bundles of power cords and cables should be tidy and neat.
- When bundling twisted pairs, the twisted pairs at the plug should be in natural bending or large curvature.
- When bundling twisted pairs, do not tie them too tightly, avoiding too much stress on cables to affect the service life and transmission performance of the cables.

3.7.2 Simplified Steps of Cable Bundling

1)   Bundle the drooping part of the twisted pairs and route them to the master AP's LAN/PoE port as convenient.

2)   Secure the twisted pairs inside the cable management bracket of the mounting plate.

3)   When twisted pairs are bundled, the bundle should extend close to the bottom of the master AP and should be as straight as possible.

3.8 Check After Installation

3.8.1 Master AP Check

- Check that the type of external power feeding matches the master AP.
- Check that the master AP is fully seated and will not move or fall.

3.8.2 Cable Connection Check

- Check that the twisted pairs match the ports.
- Check that the cables are bundled correctly.

3.8.3 Power Check

- Check that the power cord is in good contact and meets safety requirements.
- Turn on the power to supply power to the master AP, and check that the AP can work normally.

4 Commissioning

4.1 Setting Up Configuration Environment

Power on the AP by using DC power supply or PoE.

Keys to set up the environment:

● When the AP is powered by using DC power supply or PoE, ensure that the power supply is in good contact and meets safety requirements.

● Connect the AP connected to power supply to the AC through twisted pairs.

● When you commission the AP through a PC connected to the serial port, note that both the PC and the PoE switch must be well grounded.

4.2 Power-on

4.2.1 Check Before Power-on

● Check whether the power cord is correctly connected.

● Check whether the power feeding voltage meets the device requirements.

4.2.2 Check After Power-on

After the AP is powered on, it is recommended to perform the following checks to ensure that the subsequent configuration can be successful:

● After power-on, check whether there is printed information on the configuration interface of the device.

● Check whether the indicators of the device are normal.

5 Monitoring and Maintenance

5.1 Monitoring

5.1.1 Indicator

When the device is running, monitor the device status by observing the indicators.

5.1.2 CLI

The device can monitor various states of the system by running related commands of the CLI, including:

- Configuration information and status of ports
- Monitoring information in system log

Note
- For monitoring commands, see Configuration Guide.
- The device supports remote maintenance.
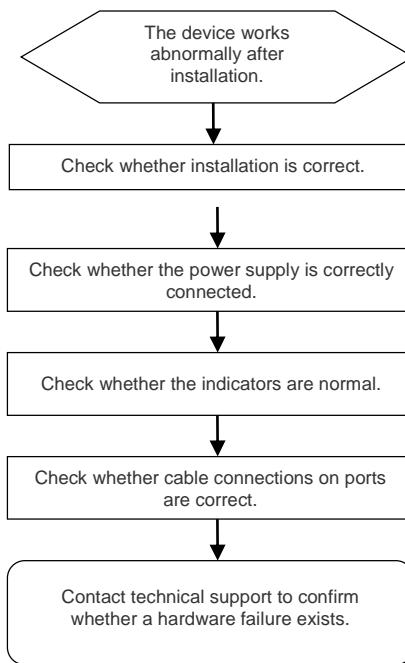
5.2 Remote Maintenance

- When the AP works in the fat AP mode, log in directly to the AP for remote maintenance.
- When the AP works in the fit AP mode, manage the AP through AC for unified remote management and maintenance.

5.3 Hardware Maintenance

When a hardware failure occurs, contact the technical support of the customer service department, and the technicians will handle it.

6 **Troubleshooting**

6.1 **Universal Troubleshooting Process**

```
         The device works
         abnormally after
           installation.
                │
                ▼
   Check whether installation is correct.
                │
                ▼
 Check whether the power supply is correctly
                connected.
                │
                ▼
   Check whether the indicators are normal.
                │
                ▼
  Check whether cable connections on ports
                are correct.
                │
                ▼
    Contact technical support to confirm
    whether a hardware failure exists.
```

6.2 **Typical Troubleshooting Cases**

6.2.1 **Ethernet Port Does Not Work After Being Connected to an Ethernet Cable**

Check whether the device on the other end of the Ethernet is working normally, and then check whether the Ethernet cable matches the current working speed. In addition, check whether the cable is connected normally.

6.2.2 **Indicator Is Off for a Long Time**

● PoE power feeding: Check whether the other end of the PoE cable supports 802.11af or higher PoE standards, and then check whether the Ethernet cable is properly connected.

● Power adapter: Detect whether the adapter has received mains electricity, and then check whether the adapter works normally.

6.2.3 **Indicator Remains Red for a Long Time**

If the indicator stays red for a long time, it means that the Ethernet port cannot be connected. Check the connection on the Ethernet port.

6.2.4 Indicator Remains Green for a Long Time

The device needs to be initialized when it is powered on. During the initialization, the indicator is in steady green. When the initialization is finished, the indicator turns blue. Note: If the indicator is still green after 1 hour, the device initialization fails, and you can determine that the device is faulty.

6.2.5 Indicator Fast Blinks in Blue (Fit AP)

The software may be upgraded after the device is powered on. The indicator fast blinks in blue during software upgrade. When the software upgrade is finished, the indicator is steady blue. Note: The software upgrade time is uncertain, so do not turn off the device when the indicator is blinking. If the indicator still blinks after 10 minutes, the software upgrade fails, and you can determine that the device is faulty.

6.2.6 Indicator Is Not Steady Blue or Does Not Blink in Blue

After the system is started, if the indicator is not steady blue or does not blink in blue, the AP and the AC may not establish CAPWAP communication. Ensure that the AC has been started and the network configuration is correct.

6.2.7 Users Cannot Find Wireless Signals

(14) Check whether the power feeding to the device is normal.

(15) Check whether the link on Ethernet port is normal.

(16) Check whether the AP is correctly configured.

(17) Move the users' terminals to adjust the distance between terminals and AP.

7 Appendix

7.1 Connector and Connection Media Description

● 1000BASE-T/100BASE-TX/10BASE-T port

The 1000BASE-T/100BASE-TX/10BASE-T port is adaptive to three rates, and supports automatic MDI/MDIX Crossover functions at the three rates.

1000BASE-T complies with the IEEE 802.3ab standard, the connected cable is 100-ohm CAT5 or CAT 5e unshielded twisted pair UTP or shielded twisted pair STP. The maximum distance supported is 100 meters.

The 1000BASE-T port uses 4 pairs of wires for data transmission, and all 4 pairs of wires need to be connected. The connection of the twisted pair used by the 1000BASE-T port is shown in the following figure:

Figure 1-16 1000BASE-T 4 twisted pairs
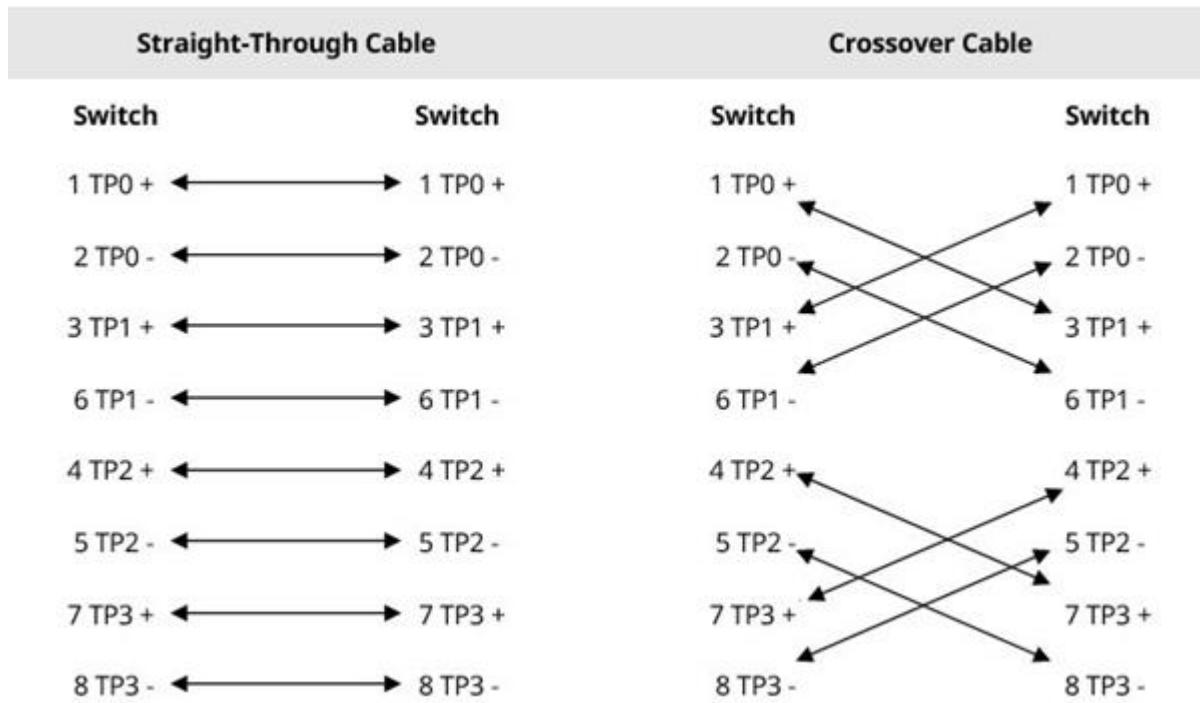
In addition to the above cables, the 100BASE-TX/10BASE-T port can use 100-ohm CAT3/4/5 cables for 10 Mbps transmission and 100-ohm CAT5 cables for 100 Mbps transmission. All of them can support a maximum of 100 m distance. The following are the definitions of the pinouts of 100BASE-TX/10BASE-T:

Figure 1-17 Pinouts of 100BASE-TX/10BASE-T

Pin	Socket	Connector
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 are the possible connection methods of straight-through and cross twisted pairs for 100BASE-TX/10BASE-T:

Figure 1-18 Connections for 100BASE-TX/10BASE-T

7.2 SFP Module Type and Technical Specifications

The corresponding SFP modules are provided according to the port type of the controller module. You can choose the proper SFP module according to the actual requirements. This document provides the description of some SFP models and technical parameters for reference.

Table 1-18 SFP Module Technical Specifications

Wavelength (nm)	Fiber Type	DDM	Transmitted Intensity (dBm)		Received Intensity (dBm)	
			Min	Max	Min	Max
1310Tx/1550Rx	Single mode	Not supported	-9	-3	–	-18

Table 1-19 SFP module wiring layout

Port Type	Fiber Type	Core Specification (um)	Maximum Wiring Distance
LC	Single mode	9/125	0.3 km

⚠ Caution

● For the SFP module of which wiring distances is more than 40 km (including 40 km), if a short-distance single-mode fiber is used, an in-line optical attenuator should be inserted into the link to avoid overloading the optical receiver.

● The SFP module is a laser transmitter. Do not look directly at the light source to protect eye safety.

● To protect the cleanliness of the SFP module, use a dust cover when the optical fiber cable is not connected.

Table 1-20 FP module wiring layout

| Port Type	Fiber Type	Core Specification (um)	Maximum Wiring Distance
LC	Single mode	9/125	0.3 km

⚠ Caution

- For the SFP module of which wiring distances is more than 40 km (including 40 km), if a short-distance single-mode fiber is used, an in-line optical attenuator should be inserted into the link to avoid overloading the optical receiver.

- The SFP module is a laser transmitter. Do not look directly at the light source to protect eye safety.

- To protect the cleanliness of the SFP module, use a dust cover when the optical fiber cable is not connected.

7.3 Recommendations on Wiring During Installation

When the device is installed, the connected cables are bundled on the cable binding frame of the cabinet through the cable management bracket. Choose upper or lower wiring according to the actual situation of the equipment room. Arrange and place all cable connectors at the bottom of the cabinet (not outside the cabinet where it is easy to be touched). The power cables are routed from the side of the cabinet. Choose upper or lower wiring according to the actual situation of the equipment room (locations of DC power distribution box, AC socket, and lightning resistant box.

- Requirements for minimum bending radius of cables
  - After power cords, communication cables, and flat cables are laid and fixed, their bending radius should be more than 5 times the outer diameter of the cables. For the cables that are often bent and plugged, their bending radius should be more than 7 times the outer diameter of the cables.
  - After common coaxial cables are laid and fixed, their bending radius should be more than 7 times the outer diameter of the cables. For the cables that are often bent and plugged, their bending radius should be more than 10 times the outer diameter of the cables.
  - The bending radius of high-speed cables (such as SFP+ cables) should be more than 5 times the outer diameter of the cables. For the cables that are often bent and plugged, their bending radius should be more than 10 times the outer diameter of the cables.
- Precautions for Cable Bundling
  - Before bundling the cables, the labels need to be filled in correctly and affixed to the appropriate positions of the cables.
  - After the cables are bundled in the cabinet, they should be straight and neatly bundled without twisting or bending, as shown in Figure 1-19.

Figure 1-19 Cable bundling diagram (1)
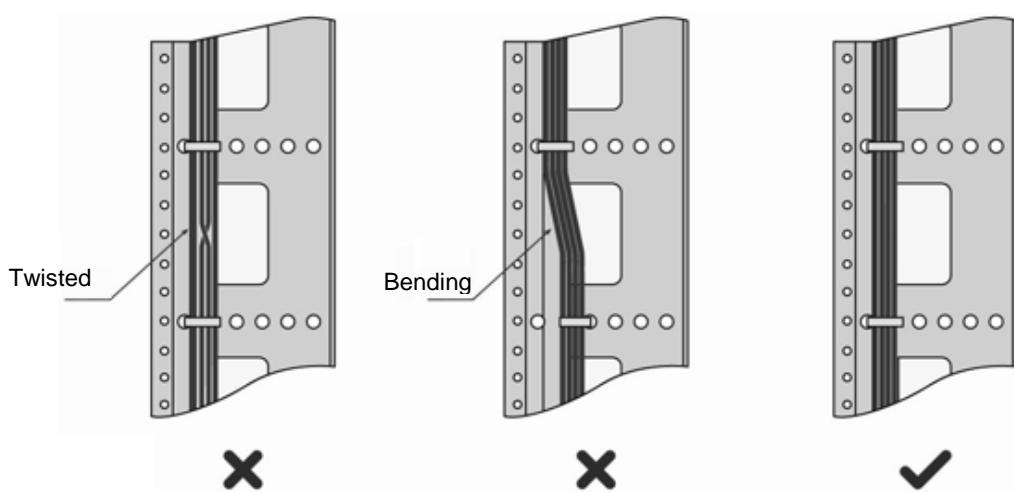
  - Different types of cables (power cables, signal cables, such as ground cables) should be routed and bound separately in the cabinet. Do not mix them. When the distance is short, cross wiring can be used. When deploying cables in parallel, the distance between the power cord and the signal cable should not be less than 30 mm.

○ The cable binding frames and cable troughs inside and outside the cabinet should be smooth without sharp edges and corners.

○ Metal holes through which cables pass should have smooth, rounding surfaces, or have insulating bushings.

○ Select the appropriate buckle to bind cables. Do not tie two or more buckles together for binding.

○ After tying the cables with buckle, cut off the excess part. The incision should be smooth and neat, and no sharp corner exists, as shown in Figure 1-20.

Figure 1-20 Cable bundling diagram (2)
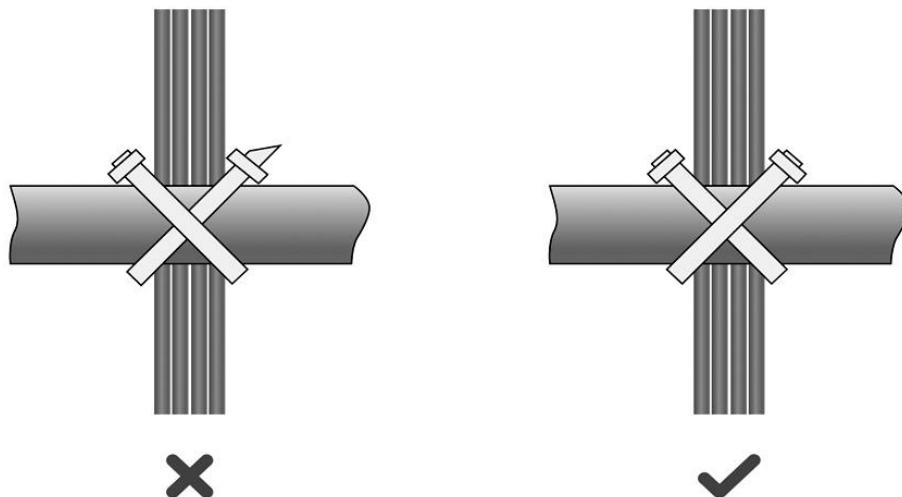
○ When the cables need to be bent, bind the cables before binding. However, the buckle cannot be bound in the curved part; otherwise, a large stress is generated on the cables and breaks the cable core, as shown in Figure 1-21.

Figure 1-21 Cable bundling diagram (3)
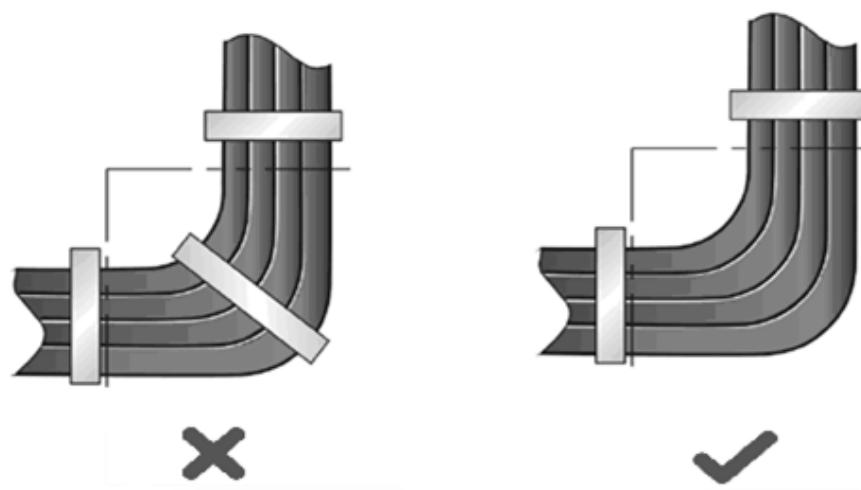
○ For the cables that do not need to be assembled or are too long, fold and tie them at the appropriate position in the cabinet or cable trough. The proper position refers to the position that will not affect the operating of the device to cause device or cable damage during commissioning.

○ The 220 V and -48 V power cords cannot be bound on the guide rails of moving parts.

- o   For the power cord connected to the movable parts, such as the door ground wire, an extra section should be reserved to avoid stress on the cable. When the moving parts arrive at the installation position, the extra section of cable will not touch heat sources, sharp corners, or sharp edges. If the heat sources cannot be avoided, heat-resisting cables must be used.

- o   If cable terminals are fixed with threads, the screws or nuts should be firmly fixed, and anti-loosening measures should be taken, as shown in Figure 1-22.

Figure 1-22 Cable fixing diagram
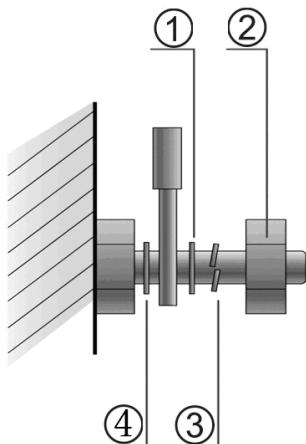
Note:	① Flat washer	③ Spring washer
	② Nut	④ Flat washer

- o   For stiff power cords, secure them near the connector to prevent stress on the connector and on the cable.

- o   Do not use self-tapping screws to fasten the terminals.

- o   Bind the power cords of the same type and same direction into a bundle, and the cords in the bundle should be clean and straight.

- o   Bind the cords with buckles according to the following table.

Cable Bundle Diameter (mm)	Bundle Interval (mm)
10	80-150
10-30	150-200
30	200-300

- o   Cables or bundles cannot be knotted.

- o   When crimping the cord end terminals (for example, circuit breaker), the metal part of the terminal should not be exposed outside the terminal block.

7.4 DC Power Specifications

● Input voltage: 54 V DC; rate current: 1.1 A

Table 1-21 Specifications of DC power connector connector

Inner Diameter	Outer Diameter	Insert Depth	Polarity
2.1 mm	5.5 mm	9.5 mm	Inner positive, outer negative

Figure 1-23 DC power connector dimensions