# Ruijie Reyee RG-RAP6260(G) Access Point

## Installation 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 Reyee website: https://reyee.ruijie.com
- Online support center: https://reyee.ruijie.com/en-global/support
- Case portal: https://www.ruijie.com/support/caseportal
- Community: https://community.ruijie.com
- Email support: service_rj@ruijie.com
- Live chat: https://reyee.ruijie.com/en-global/rita

## Conventions

### 1. Signs

The signs used in this document are described as follows:

**Danger**

An alert that calls attention to safety instruction that if not understood or followed can result in personal injury.

**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. Notes

This manual provides installation steps, troubleshooting, technical specifications, and usage guidelines for cables and connectors. It is intended for users who want to understand the above and have extensive experience in network deployment and management, and assume that users are familiar with related terms and concepts.

# Contents

Preface ..... I

1 Product Overview ..... 1

1.1 Package Contents ..... 1

1.2 Technical Specifications ..... 2

1.3 Product Image ..... 5

1.4 LED Indicators ..... 6

2 Preparing for Installation ..... 8

2.1 Installation ..... 8

2.2 Movement ..... 8

2.3 EMI ..... 8

2.4 Ventilation ..... 9

2.5 Temperature and Humidity ..... 9

2.6 Waterproof ..... 9

2.7 Power Supply ..... 9

2.8 Installation Tools ..... 10

3 Installing the Access Point ..... 11

3.1 Installation Flowchart ..... 11

3.2 Before You Begin ..... 11

3.3 Precautions ..... 12

3.4 Installing the Access Point ..... 12

3.5 Connecting Cables ..... 16

3.6 Bundling Cables ..... 16

3.7 Checking after Installation ..... 17

3.8 Setting up a Debugging Environment....17
3.9 Powering up the AP....17
4 Monitoring and Maintenance....18
4.1 Monitoring....18
4.2 Hardware Maintenance....18
5 Troubleshooting....19
5.1 Troubleshooting Flowchart....19
5.2 Troubleshooting....19
6 Appendix....21
6.1 Connectors and Media....21
6.2 Mini-GBIC Module Specifications....22
6.3 Cabling Recommendations....23

# 1 Product Overview

RG-RAP6260(G) supports IEEE 802.11a/b/g/n/ac/ax and provides dual-radio and dual-band performance speeding up to 573 Mbps in 2.4 GHz and 1201 Mbps in 5 GHz. The IP68 design adapts to inclement outdoor environments such as the cold and humidity. This substantially simplifies installation and maintenance. RG-RAP6260(G) supports PoE to take over challenges in a wide variety of deployment scenarios, including large-scaled campuses, enterprises, hospitals and Wi-Fi hotspots.

## 1.1 Package Contents

**Table 1-1 Package Contents**

| No. | Item | Quantity |
|---|---|---|
| 1 | RG-RAP6260(G) access point | 1 |
| 2 | Pole clamps | 2 |
| 3 | Mounting bracket | 1 |
| 4 | Cross pan head screws (M4 x 10 mm) | 2 |
| 5 | Internal/External hex machine screws (M8 x 20 mm) | 2 |
| 6 | Expansion anchors (M8 x 60 mm) | 4 |
| 7 | Cable gland for an SFP port | 1 |
| 8 | Cable gland for an Ethernet port (pre-installed) | 1 |
| 9 | SFP port plug (pre-installed) | 1 |
| 10 | Mounting arm (pre-installed) | 1 |
| 11 | Warranty Card | 1 |
| 12 | User Manual | 1 |

**Note**

A normal delivery should contain the above mentioned items, which may differ from the actual delivery, depending on purchase contracts. Please check your goods carefully against the package contents list or purchase contract. If you have any questions or there are any errors, please contact your distributor.

## 1.2 Technical Specifications

**Table 1-2 Technical Specifications of RG-RAP6260(G)**

| | | |
|---|---|---|
| **System Specifications** | Flash memory | 16 MB |
| | RAM | 256 MB DDR3 |
| **Wi-Fi Radio** | 5 GHz Wi-Fi | Wi-Fi 4 (IEEE 802.11a/n)<br>Wi-Fi 5 (IEEE 802.11ac)<br>Wi-Fi 6 (IEEE 802.11ax) |
| | 2.4 GHz Wi-Fi | Wi-Fi 4 (IEEE 802.11b/g/n)<br>Wi-Fi 6 (IEEE 802.11ax) |
| | Operating band | IEEE 802.11b/g/n/ax, 2.400 GHz to 2.4835 GHz<br>IEEE 802.11a/n/ac/ax, 5.150 GHz to 5.350 GHz, 5.470 GHz to 5.725 GHz, 5.725 GHz to 5.850 GHz<br>Note: Available bands vary with countries and regions. To use the preceding frequency bands, ensure that your country or region supports these frequency bands. |
| | Radio design | Dual-radio<br>4 spatial streams<br>● 2.4 GHz: 2 x 2, MU-MIMO<br>● 5 GHz: 2 x 2, MU-MIMO |
| | 5 GHz channel width | Auto/20/40/80 MHz |
| | 2.4 GHz channel width | Auto/20/40 MHz |
| | Maximum wireless data rate | 1774 Mbps |
| | 5 GHz wireless data rate | 1201 Mbps |
| | 2.4 GHz wireless data rate | 573 Mbps |
| | Maximum transmit power (5 GHz) | Combined power: 28 dBm (single-stream power: 25 dBm)<br>Note: The transmit power varies according to regulations in different countries and regions. |
| | Maximum transmit power (2.4 GHz) | Combined power: 29 dBm (single-stream power: 26 dBm)<br>Note: The transmit power varies according to regulations in different countries and regions. |

| | | |
|---|---|---|
| | Maximum transmit power | Frequency bands and maximum Effective Isotropic Radiated Power (EIRP):<br>Note: Country specific restrictions apply.<br>● European Union & United Kingdom:<br>○ 2400–2483.5 MHz, EIRP ≤ 20 dBm<br>○ 5470–5725 MHz, EIRP ≤ 30 dBm<br>● Myanmar:<br>○ 2400–2483.5 MHz, EIRP ≤ 23 dBm<br>○ 5725–5825 MHz, EIRP ≤ 30 dBm<br>● Thailand:<br>○ 2400–2483.5 MHz, EIRP ≤ 20 dBm<br>○ 5470–5725 MHz, EIRP ≤ 30 dBm<br>○ 5725–5825 MHz, EIRP ≤ 30 dBm<br>● Indonesia:<br>○ 2400–2483.5 MHz, EIRP ≤ 36 dBm<br>○ 5725–5825 MHz, EIRP ≤ 36 dBm<br>● Egypt:<br>○ 2400–2483.5 MHz, EIRP ≤ 20 dBm<br>○ 5150–5350 MHz, EIRP ≤ 23 dBm |
| | Coverage range | 5 GHz max: 400 m (1312.34 ft.)<br>2.4 GHz max: 150 m (492.13 ft.)<br>5 GHz recommended: 200 m (656.17 ft.)<br>2.4 GHz recommended: 50 m (164.04 ft.)<br>Note: The data is obtained in an ideal environment without obstruction. The signal coverage radius depends on client performance and environmental interference. |
| | Modulation | OFDM: BPSK @ 6/9 Mbps, QPSK @ 12/18 Mbps, 16-QAM @ 24 Mbps, 64-QAM @ 48/54 Mbps<br>DSSS: DBPSK @ 1 Mbps, DQPSK @ 2 Mbps, and CCK @ 5.5/11 Mbps<br>MIMO-OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM and 1024-QAM<br>OFDMA |
| | Receive sensitivity | 11b: –91 dBm (1 Mbps), –88 dBm (5.5 Mbps), –85 dBm (11 Mbps)<br>11a/g: –89 dBm (6 Mbps), –80 dBm (24 Mbps), –76 dBm (36 Mbps), –71 dBm (54 Mbps)<br>11n: –83 dBm (MCS0), –65 dBm (MCS7), –83 dBm (MCS8), –65 dBm (MCS15) |

| | | |
|---|---|---|
| | | 11ac: 20 MHz: –83 dBm (MCS0), –57 dBm (MCS9)<br>11ac: 40 MHz: –79 dBm (MCS0), –57 dBm (MCS9)<br>11ac: 80 MHz: –76 dBm (MCS0), –51 dBm (MCS9)<br>11ax: 20 MHz: –85 dBm (MCS0), –58 dBm (MCS11)<br>11ax: 40 MHz: –82 dBm (MCS0), –54 dBm (MCS11)<br>11ax: 80 MHz: –79 dBm (MCS0), –52 dBm (MCS11) |
| **Antenna** | Antenna | 2.4 GHz: 2 built-in omnidirectional antennas<br>5 GHz: 2 built-in omnidirectional antennas |
| | Antenna gain (5 GHz) | 6.00 dBi |
| | Antenna gain (2.4 GHz) | 4.00 dBi |
| **Port Specifications** | Number of 10/100/1000BASE-T ports | 1 |
| | Number of 1GE SFP ports | 1 |
| | Maximum rate of the LAN port | 1000 Mbps |
| | Reset button | 1 |
| | LEDs | 1 x system status LED |
| **Power Supply and Consumption** | Power supply | PoE+ |
| | PoE In standard | IEEE 802.3at (PoE+) |
| | Maximum power consumption | 18 W |
| **Dimensions and Weight** | Product dimensions (W x D x H) | 298 mm x 298 mm x 65 mm (11.73 in. x 11.73 in. x 2.56 in.) (excluding the mounting bracket) |
| | Package dimensions (W x D x H) | 435 mm x 385 mm x 182 mm (17.13 in. x 15.16 in. x 7.17 in.) |
| | Color | White |
| | Weight | ≤ 1.35 kg (2.98 lbs.) (without packaging materials) |

| | | |
|---|---|---|
| | Shipping weight | ≤ 3.32 kg (7.32 lbs.) |
| **Environment and Reliability** | Operating temperature | –40°C to +65°C (–40°F to +149°F) |
| | Storage temperature | –40°C to +85°C (–40°F to +185°F) |
| | Operating humidity | 0% RH to 100% RH (non-condensing) |
| | Storage humidity | 0% RH to 100% RH (non-condensing) |
| | Mounting options | Wall/Pole |
| | IP rating | IP68 |
| | Surge protection | Ethernet port: ±4 kV for common mode |
| | MTBF | 400,000 hours |
| **Certification and Regulatory Compliance** | RoHS | Yes |
| | Certification | CE, CB |

**Note**

The weight refers to the weight of host and mounting arm.

## 1.3 Product Image

The RG-RAP6260(G) provides one 10/100/1000Base-T Ethernet port (Support PoE) and one 1000Base-X SFP port (optional). The label is located on the bottom of the device.

**Figure 1-1 Appearance of RG-RAP6260(G)**



## 1.4 LED Indicators

| State | Frequency | Meaning |
|---|---|---|
| Off | N/A | The AP is NOT receiving power. |
| Slow Blinking | 0.5Hz | Normal operation, but the device is not connected to Ruijie Cloud. |
| Fast Blinking | 10Hz | (1) Restoring the factory settings.<br>(2) Upgrading the firmware. |

| State | Frequency | Meaning |
|---|---|---|
| | | (3) Restoring the image file.<br>(4) Initializing the device. |
| Solid Blue | On | Normal operation. |
| Reset Button | Press for less than 2s | Restart the device. |
| | Press for more than 5s | Restore the factory settings. |

**Power Source**

The RG-RAP6260(G) is powered through Power over Ethernet (PoE).

**Note**

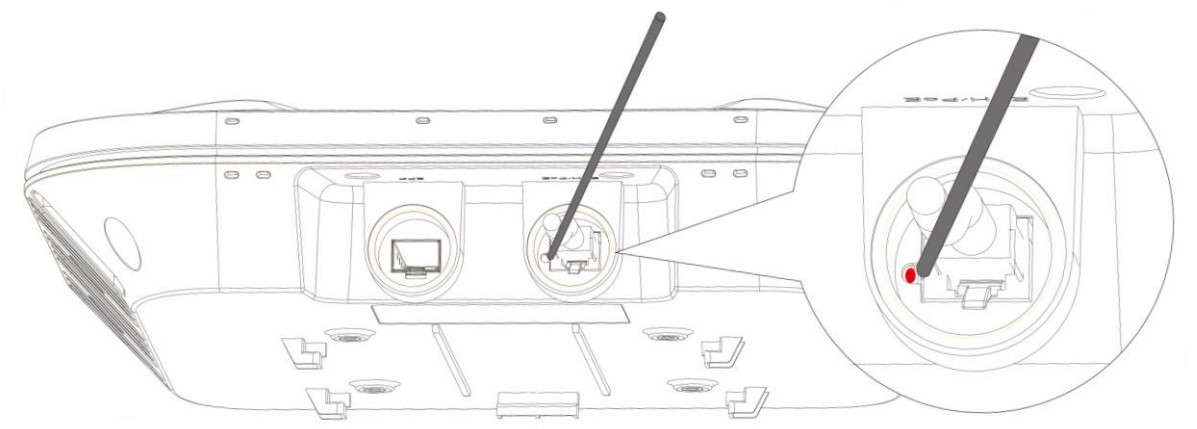
To use a PoE device, make sure it supports the IEEE 802.3at standard.

**Reset**

The RG-RAP6260(G) supports Cloud management. To reset the device, you can bring the device online and reset it on Ruijie Cloud.

If the device can not access the Internet, power on the device, press the reset button with a thin rod (as shown in the figure) for more than 5 seconds, and the device will restore the factory settings.

**Figure 1-2 Reset the Device**



**Note**

Before pressing the reset button, please remove the waterproof joint first. Refer to the Chapter 3.5 Connecting Cables for more information.

**Cooling Solution**

The AP adopts fanless design.

**Note**

Leave sufficient space at the surrounding of the AP when place the AP to permit airflow for proper ventilation.

# 2 Preparing for Installation

**Note**

- To prevent device damage and bodily injury, please read carefully the safety recommendations described in this chapter.
- The recommendations do not cover all possible hazardous situations.

## 2.1 Installation

To ensure its normal operation, the installation site must meet the following requirements.

- Install the AP in a well-ventilated environment. If it is installed in a closed room, make sure there is a good cooling system.
- Make sure the site is sturdy enough to support the AP and its accessories.
- Make sure the site has enough space for installing the AP and leave sufficient room around the AP for ventilation.
- Do not expose the AP to high temperature, dusts, or harmful gases.
- Do not install the AP in an inflammable or explosive environment.
- Keep the AP away from EMI sources such as large radar stations, radio stations, and substations.
- Do not subject the AP to unstable voltage, vibration, and noises.
- Keep the AP at least 500 meters away from the seaside and do not face it toward the wind from the sea.
- The installation site should be free from water flooding, seepage, dripping, or condensation.
- The installation site shall be selected according to network planning and features of communications equipment, and considerations such as climate, hydrology, geology, earthquake, electric power, and transportation.

**Caution**

Please follow the correct method described in the installation guide to install and remove the device.

## 2.2 Movement

- Avoid moving the device frequently.
- Turn off all power supplies and unplug all power cables before you move the device.

## 2.3 EMI

- Please observe local regulations and specifications when performing electrical operations. Relevant operators must be qualified.
- Please carefully check for any potential danger in the working area, for example, damp/wet ground or floor.

- Find out the location of the emergency power supply switch in the room before installation. First cut off the power supply in case of an accident.
- Be sure to make a careful check before you shut down the power supply.
- Do not place the device in a damp/wet location. Do not let any liquid enter the chassis
- Keep the AP far away from the grounding or lightning protection devices of power equipment.
- Keep the AP away from radio stations, radar stations, high-frequency high-current devices, and microwave ovens.

**Caution**

- Any nonstandard and inaccurate electrical operation can cause an accident such as fire or electric shock, thus causing severe even fatal damages to human bodies and device.
- Direct or indirect touch through a wet object on high voltage and power line can bring a fatal danger.

## 2.4 Ventilation

For proper ventilation, leave sufficient space around the AP.

## 2.5 Temperature and Humidity

To ensure normal operation and service life of the device, maintain appropriate temperature and humidity levels in your equipment room. See Table 2-1. Improper room temperature and humidity can cause damages to the device.

- Relatively high humidity may affect insulation materials, resulting in poor insulation and even electrical leakage, and sometimes may lead to change of mechanical properties of materials and corrosion of metal parts.
- Relatively low humidity may dry and shrink insulation sheets and cause static electricity that can damage the circuitry inside the device.
- High temperature greatly reduces reliability of the device and shortens its service life.
- When the SFP module is used for data transmission, ensure its operating temperature matches the actual operating environment.

**Table 2-1 Required Temperature and Humidity for the RG-RAP6260(G)**

| Temperature | Relative Humidity |
|---|---|
| -40℃ to 65℃ (-40℉ to 149℉) | 0% to 100% |

## 2.6 Waterproof

Use a seal plug to seal the unused ports.

Use a waterproof plug to connect cables to the AP. For details, see Chapter 3 “Installing the Access Point”.

## 2.7 Power Supply

- PoE injector: IEEE 802.3at compliant

**Note**

The input power should be greater than the power actually consumed by the system. The input power for the RG-RAP6260(G) should be greater than 18W.

**Caution**

Please use Ruijie certified PoE injectors.

## 2.8 Installation Tools

| | |
|---|---|
| Common Tools | Phillips screwdriver, related copper and fiber cables, bolts, diagonal pliers, cable ties |
| Special Tools | Wire stripper, crimping pliers, RJ-45 crimping pliers, punch down tool |
| Meter | Multimeter, bit error rate tester (BERT) |

**Note**

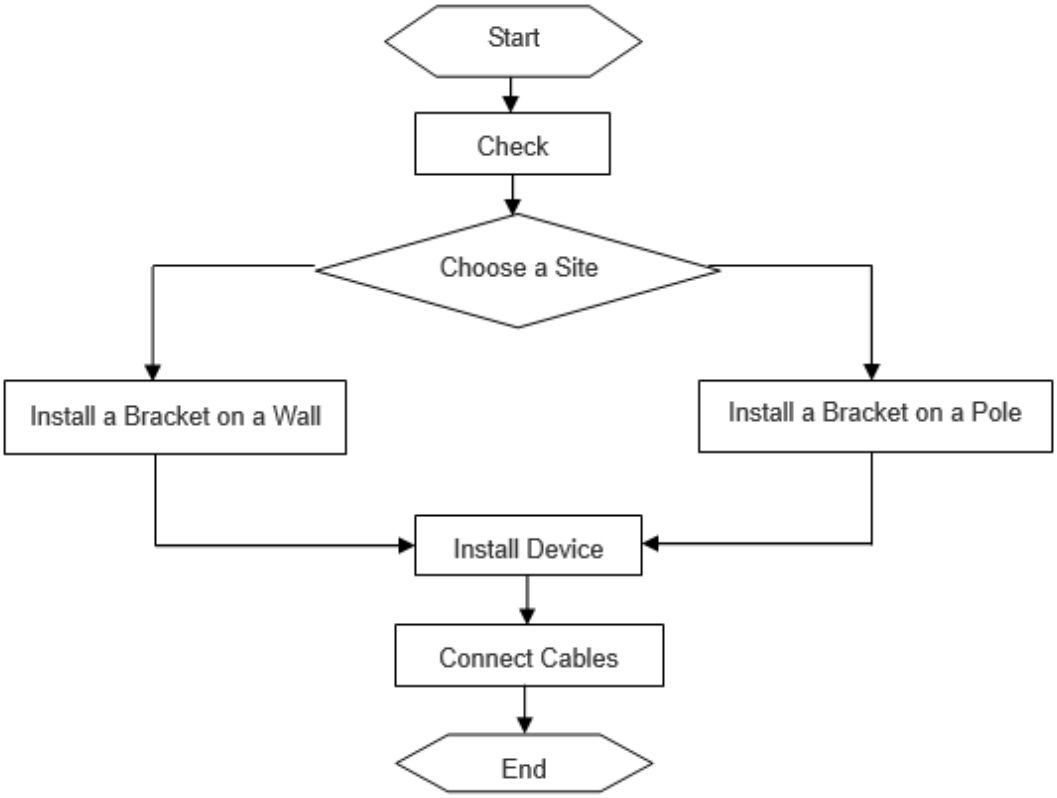
The listed tools are customer supplied.

# 3 Installing the Access Point

**Note**

Before installing the AP, make sure you have carefully read the requirements described in Chapter 2.

## 3.1 Installation Flowchart




## 3.2 Before You Begin

Before you install the AP, verify that:

- The installation site provides sufficient ventilation for the AP.
- The installation site meets temperature and humidity requirements.
- The installation site is equipped with proper power supply.
- Network cables are in place.
- The installation site meets all described requirements.
- The custom AP meets the customers' requirements.

## 3.3 Precautions

The device can be mounted on a wall or a pole (diameter: 50 mm to 70 mm). If the diameter of the pole is out of the range, the pole clamp is customer-supplied (thickness ≥ 2.5mm). The installation site can vary due to on-the-spot surveys conducted by technical personnel.

Please make full preparations as described in Chapter 2 and observe the following precautions before installing the device.

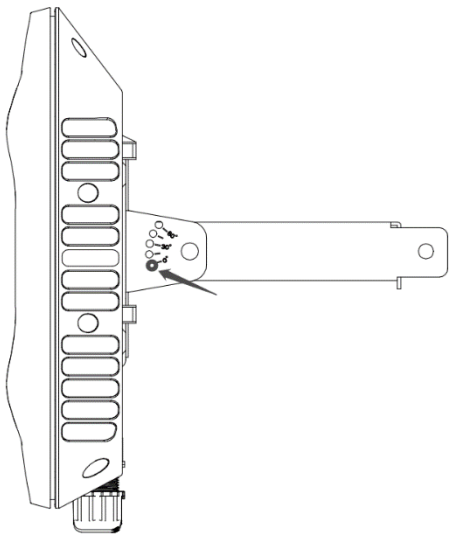
- Do not power the device during installation.
- Install the device in a well-ventilated location.
- Do not subject the device to high temperatures.
- Keep away from high voltage cables.
- Do not expose the device in a thunderstorm or strong electric field.
- Keep the device clean and dust-free.
- Disconnect the device before cleaning it.
- Do not wipe the device with a damp cloth.
- Do not wash the device with liquid.
- Do not open the enclosure when the AP is working.
- Fasten the device tightly.

## 3.4 Installing the Access Point

- Preparation before Installing

  Adjust the angle of the access point to 0°, and fix the access point with cross pan head screws (M4 x 10 mm).

**Figure 3-1 Adjust the Angle of Access Point**

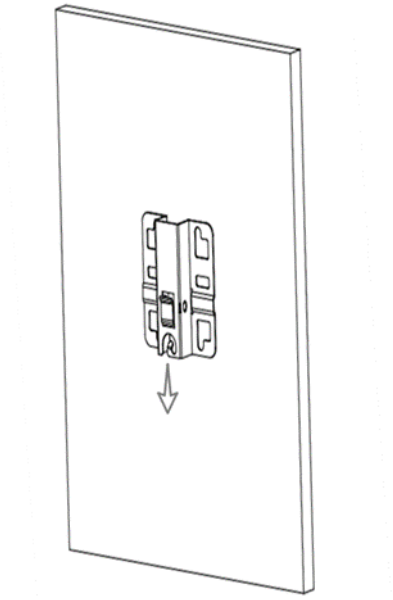


- Wall mount

  Use expansion anchors (M8 x 60 mm) to implement the wall mount.

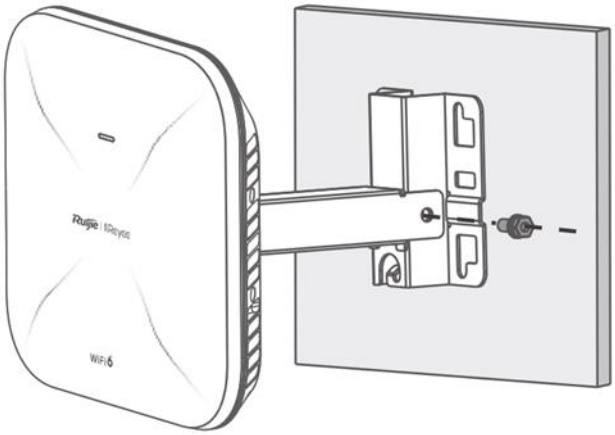
a. Attach the mounting bracket to the wall and mark the screw hole locations. Secure the mounting bracket on the wall using expansion anchors (M8 x 60 mm).

**Figure 3-2 Installing the Bracket**



b. Align the host, mounting arm and mounting bracket to the mounting bracket on the wall, and tighten the internal/external hex machine screws (M8 x 20 mm) to complete installation.

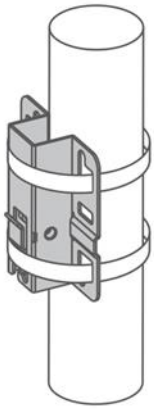
**Figure 3-3 Mounting the Bracket on Wall**



- Pole mount (Vertical)

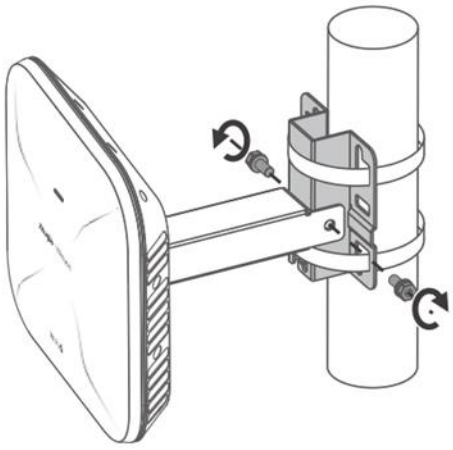
  a Attach the mounting arm to a pole with pole clamps and fasten the clamps with screws and nuts.

**Figure 3-4 Mounting the Bracket on a Pole**



b Align the host, mounting arm and mounting bracket to the mounting bracket on the pole, and tighten the internal/external hex machine screws (M8 x 20 mm) to complete installation.

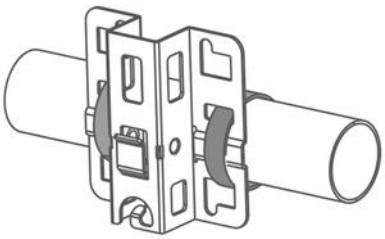
**Figure 3-5 Vertical Pole Mounting**



- Pole mount (Horizontal)

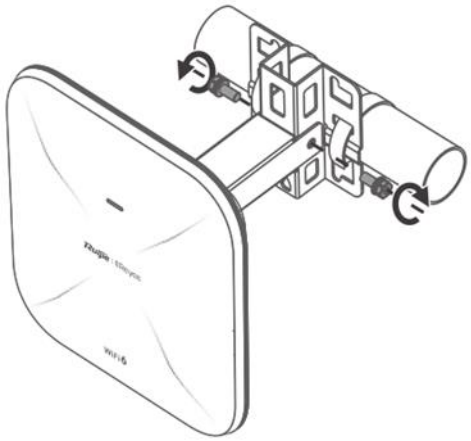
a Attach the mounting arm to a pole with pole clamps and fasten the clamps with screws and nuts.

**Figure 3-6 Mounting the Bracket on a Pole**



b Align the host, mounting arm and mounting bracket to the mounting bracket the pole, and tighten the internal/external hex machine screws (M8 x 20 mm) to complete installation.

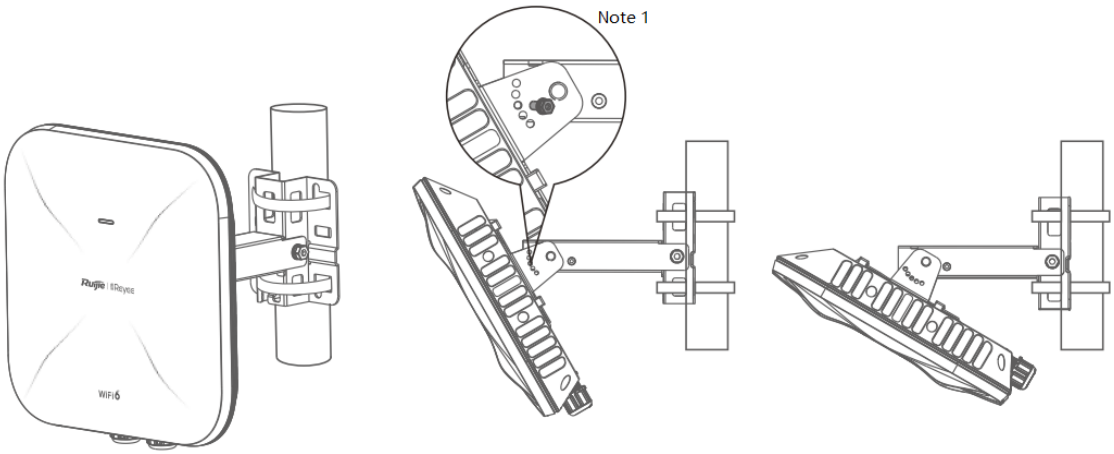
**Figure 3-7 Horizontal Pole Mounting**



- Angle Adjustment

a To cover the specified area, adjust the angle (five stages from 0º to 60º).

**Figure 3-8 Adjust the Angle**




b When the angle of the access point is properly adjusted, secure the access point with cross pan head screws (M4 x 10 mm) in the position shown in Note 1.

**Caution**

- The device uses high-gain omnidirectional antenna. It is recommended to set the joint downward to be perpendicular to the ground to obtain the maximum coverage radius.
- After installation, verify that the AP is securely fastened.

## 3.5 Connecting Cables

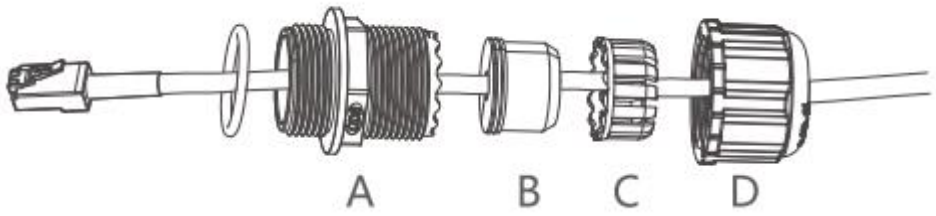
- Connecting to Network Port or Fiber (optional)

(1) Screw off the waterproof joint, and the joint consists of four parts: A (main body), B (rubber plug), C (grab) and D (tightening nut).

(2) Run a network cable or fiber (optional) through the joint according to the order shown in the figure, and combine parts B and C and place them in part A.

(3) Screw part D, and wrap the joint tightly with a waterproof tape.

**Figure 3-9 Cable Connection**




**Caution**

- The waterproof materials are customer supplied.
- Avoid bending the cable in a small radius close to the connector.
- It is not recommended to use Ethernet cables with protective sleeves as they could make installation of Ethernet cables more difficult. The Ethernet cable must have a diameter of 5.5±1mm, because any thicker or thinner cable does not ensure waterproof performance.
- As an optical module (optional) is enabled, the LC-LC fiber jumper cable must have a diameter of 3.0±0.2mm, because any thicker or thinner cable does not ensure waterproof performance.
- When the joint is removed, take down the parts in the order of D, B, C and A. That is, first screw off the tightening nut (D), then remove the rubber plug (B) and the grab (C), and finally dismantle the cable connected to the AP device; otherwise, the cable will be damaged.

## 3.6 Bundling Cables

### Precautions

- Make sure the cable bundles are neat and orderly.
- Bend twisted pairs naturally or to a large radius close to the connector.
- Do not over tighten cable bundle as it may reduce the cable life and performance.

### Bundling Steps

(1) Bundle the drop UTP/STP cables and route them to the ETH/PoE port.

(2) Attach the cables in the cable tray of the rack.

(3) Extend the cables under the AP and run in straight line.

## 3.7 Checking after Installation

**Checking the Host**

- Make sure the external power supply matches the specifications of device.
- Make sure the device and all cables are securely fastened and stable.

**Checking Cable Connection**

- Make sure the UTP/STP cable matches the interface type.
- Make sure cables are properly bundled.

**Checking the Power Supply**

- Make sure all power cables are properly connected and safe.
- Make sure the AP is operational after power-on.System Debugging

## 3.8 Setting up a Debugging Environment

Power on the AP through PoE.

**Setting up the Environment**

- Verify that the AP is properly connected to the power source.
- Connect the AP to an AC through network cable.
- When the AP is connected to a PC for debugging, verify that the PC and PoE switch are properly grounded.

## 3.9 Powering up the AP

**Checking before power-up**

- Verify that the power supply is properly connected.
- Verify that the input voltage matches the specification of the AP.

**Checking after power-up (recommended)**

After powering up, it is recommended that you check the following to ensure normal operation of the AP.

- Check if any message is printed on the Web-based configuration interface of the AC.
- Check if the LED works normally.

# 4 Monitoring and Maintenance

## 4.1 Monitoring

**LED**

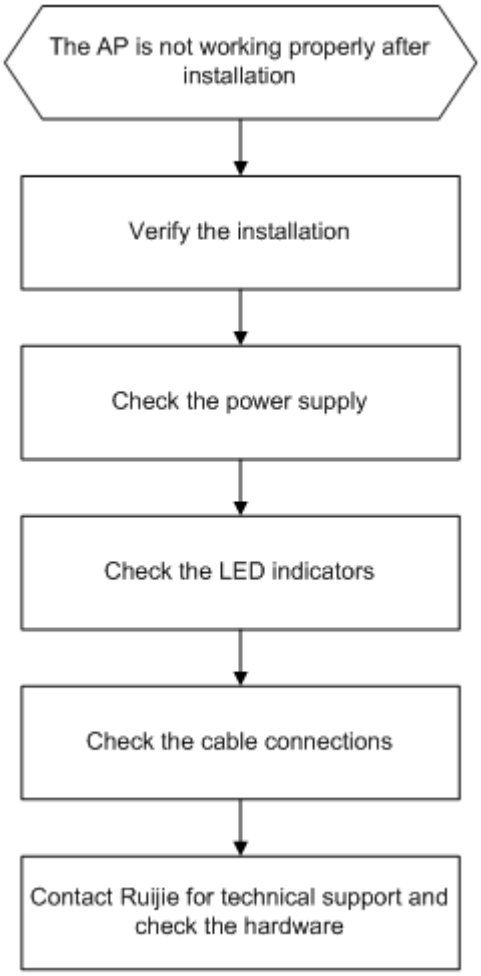
You can observe the LED to monitor the AP in operation.

## 4.2 Hardware Maintenance

If the hardware is faulty, please contact our Technical Assistance Center (TAC) for help.

# 5 Troubleshooting

## 5.1 Troubleshooting Flowchart




## 5.2 Troubleshooting

**LED does not light up after the AP is powered on**

Verify that the power source is IEEE 802.3at compliant, and then verify that the cable is connected properly.

**Ethernet port is not working after the Ethernet port is connected**

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

**Wireless client cannot find the AP**

(1) Check whether the power supply is normal.

(2) Check the Ethernet port connection.

(3) Verify that the AP is configured correctly.

(4) Move the client device to adjust the distance between the client and the AP.

# 6 Appendix

## 6.1 Connectors and Media

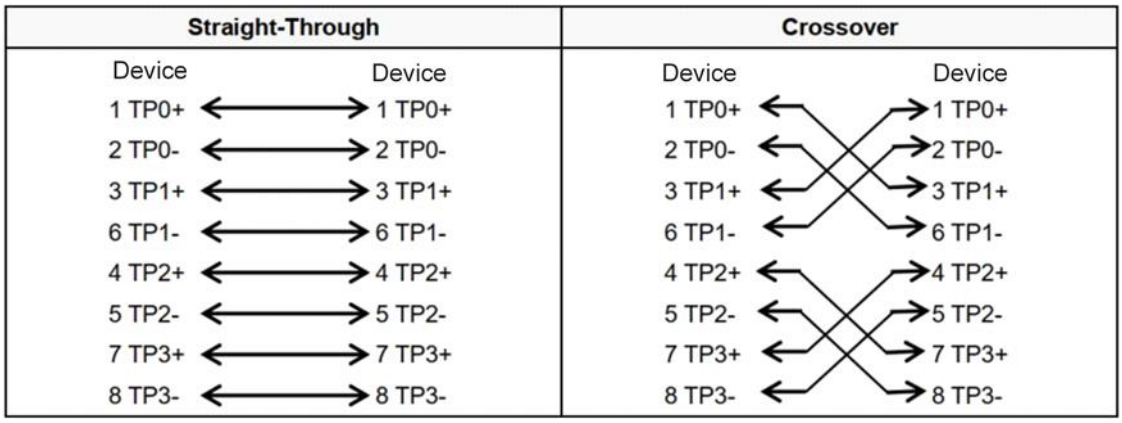
**1000BASE-T/100BASE-TX/10BASE-T**

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

Compliant with IEEE 802.3ab, 1000BASE-T requires Category 5e 100-ohm UTP or STP (STP is recommended) with a maximum distance of 100 meters (328 feet).

1000BASE-T requires all four pairs of wires to be connected for data transmission, as shown in Figure 6-1

**Figure 6-1 1000BASE-T Connection**



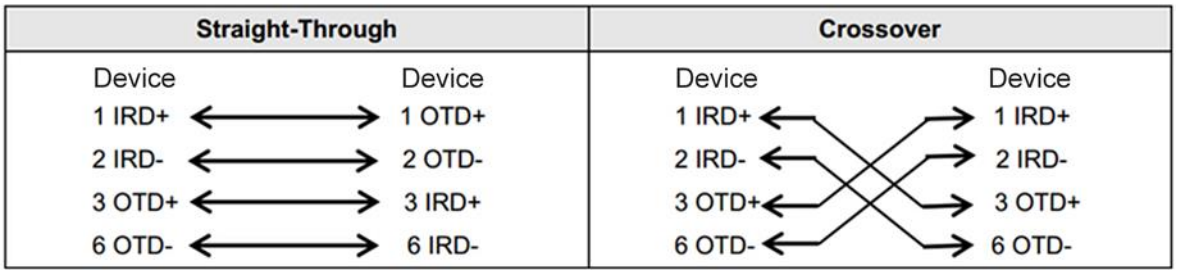

10BASE-T uses Category 3, 4, 5 100-ohm UTP/STP and 1000BASE-T uses Category 5 100-ohm UTP/STP for connections. Both support a maximum length of 100 meters. Table 6-1 shows 100BASE-TX/10BASE-T pin assignments.

**Table 6-1 Table A-1 100BASE-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 |

Figure 6-2 shows wiring of straight-through and crossover cables for 100BASE-TX/10BASE-T.

**Figure 6-2 100BASE-TX/10BASE-T Connection**




## 6.2 Mini-GBIC Module Specifications

Ruijie provides various Gigabit SFP transceivers (Mini-GBIC modules) for interfaces of wireless access controllers. You can select the most suitable SFP modules as needed. This appendix describes the models and specifications of some of the Gigabit SFP transceivers for your reference.

**Mini-GBIC (SFP) Models and Specifications**

**Table 6-2 Models and Specifications of SFP Modules**

| Mini-GBIC (SFP) | Wavelength (nm) | Fiber Type | Core Size (micron) | Modal Bandwidth (MHz/km) | Cable Distance | Max Transmit (dBm) | Max Receive (dBm) | Standards |
|---|---|---|---|---|---|---|---|---|
| FE-SFP-LX-MM1310 | 1310 | MMF[1] | 62.5/125 | — | 2 km | -14 | -14 | IEEE802.3 |
| FE-SFP-LH15-SM1310 | 1310 | SMF[2] | 9/125 | — | 15 km | -8 | -8 | |
| MINI-GBIC-SX-MM850 | 850 | MMF[1] | 62.5<br>62.5<br>50.0<br>50.0 | 160<br>200<br>400<br>500 | 220 m<br>275 m<br>500 m<br>550 m | -4 | -17 | |
| MINI-GBIC-LX-SM1310 | 1310 | MMF[1]<br>SMF[2] | 62.5<br>50.0<br>50.0<br>9/10 | 500<br>400<br>500<br>— | 550 m<br>550 m<br>550 m<br>10 km | -3 | -20 | |

| Mini-GBIC (SFP) | Wavelength (nm) | Fiber Type | Core Size (micron) | Modal Bandwidth (MHz/km) | Cable Distance | Max Transmit (dBm) | Max Receive (dBm) | Standards |
|---|---|---|---|---|---|---|---|---|
| MINI-GBIC-LH40-SM1310 | 1310 | SMF[2] | 9/125 | — | 40 km | 3 | -3 | |
| MINI-GBIC-ZX50-SM1550 | 1550 | SMF[2] | — | — | 50 km | 0 | -22 | |
| MINI-GBIC-ZX80-SM1550 | | | | | 80 km | 4.7 | -22 | |
| MINI-GBIC-ZX100-SM1550 | | | | | 100 km | 5 | -9 | |
| Mini-GBIC-GT | — | Cat 5 UTP | — | — | 100 m | — | — | |

[1] MMF=Multimode fiber

[2] SMF=Single mode fiber

**Note**

When using shorter distances of single-mode fiber for optical SFP transceivers with cable distance greater than 40 km (including 40 km), you may need to insert an in-line optical attenuator in the link to avoid overloading the receiver.

## 6.3 Cabling Recommendations

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 should be placed at the bottom of the cabinet rather than be exposed outside of the cabinet. Power cords should be routed upward or downward beside the cabinet close to the location of the DC power distribution cabinet, AC power outlet, or lightning protection box.

**Required Minimum Cable Bend Radius**

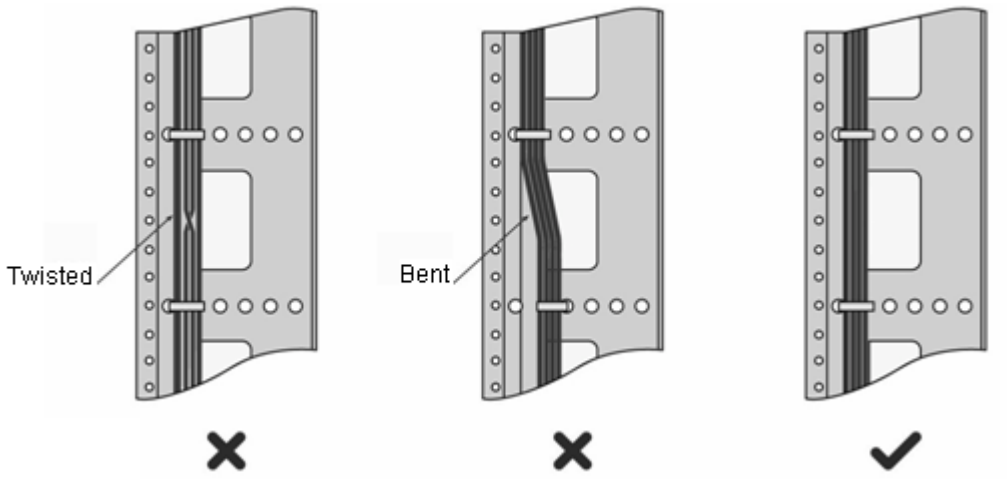
- The minimum bend radius of a power, communication or flat cable should be 5 times the overall diameter of the cable. If the cable is constantly bent, plugged or unplugged, the bend radius should be 7 times the overall diameter.

- The minimum bend radius of a coaxial cable should be 7 times the overall diameter of the cable. If the cable is constantly bent, plugged or unplugged, the bend radius should be 10 times the overall diameter.
- The minimum bend radius of a high-speed cable, such as an SFP+ cable should be 5 times the overall diameter of the cable. If the cable is constantly bent, plugged or unplugged, the bend radius should be 10 times the overall diameter.

**Precautions for Cable Bundling**

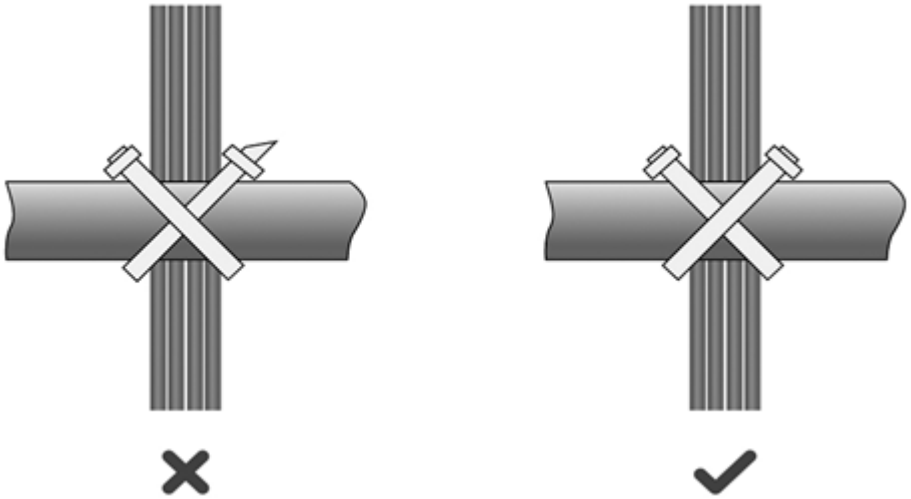
- Before bundling cables, correctly mark labels and stick the labels to cables where appropriate.
- Cables should be neatly and properly bundled, as shown in Figure 6-3.

**Figure 6-3 Bundling Cables**



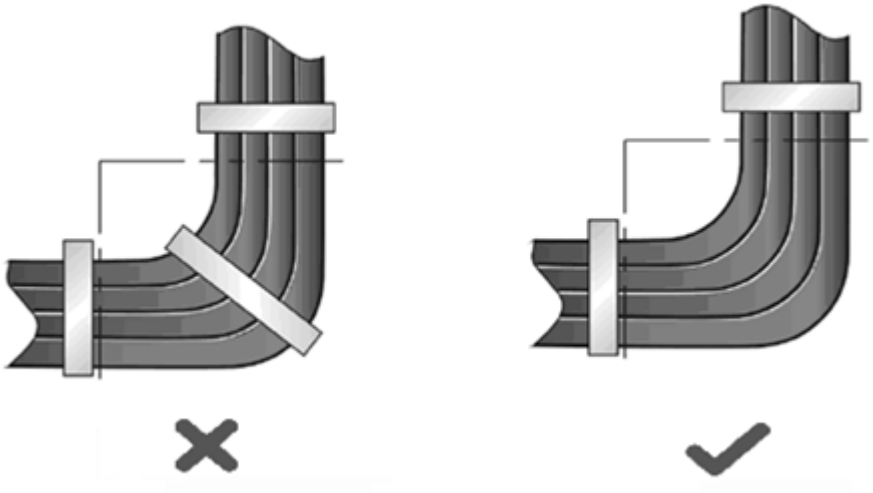

- Route and bundle power, signal, ground cables separately. When the cables are close to each other, cross them. When power cables run parallel to signal cables, the distance between them must be greater than 30 mm.
- All cable trays and their accessories shall be smooth and free from sharp edges.
- Holes in metal, through which cables pass shall have smooth, well-rounded surfaces or be protected with insulating bushings.
- Use proper cable ties to bind cables together. Do not tie two or more cable ties to bind cables.
- Cut off excess cable tie cleanly with no sharp edges after bundling cables, as shown in Figure 6-4.

**Figure 6-4 Cutting off Excess Cable Tie**



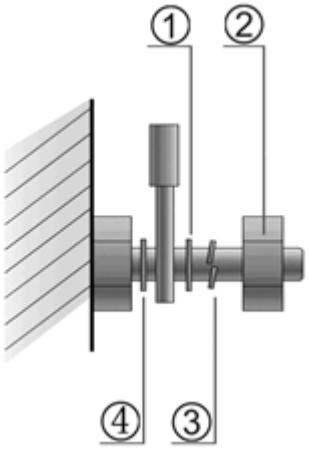
- If cables are to be bent, bind them first but do not tie cable ties within the bend to avoid stress on the cables, which may otherwise cause the wires inside to break, as shown in Figure 6-5.

**Figure 6-5 Do Not Tie Cable Ties within the Bend**



- Wrap up unnecessary or excess cables and bind them to the appropriate rack position, where device operation is not affected and no damages occur to the device and cables during debugging.
- Do not bind power cords to the rails for moving parts.
- Leave a certain length of the cable connecting moving parts, such as the ground wire of the cabinet door, to avoid stress on the cable; When moving parts are in place, ensure the excess cable length shall not contact heat sources, sharp corners or edges. If heat sources are unavoidable, use high-temperature cables instead.
- When using screws to fasten cable lugs, the bolts or nuts shall be tightened and prevented from loosening, as shown in Figure 6-6.

**Figure 6-6 Fastening Cable Lugs**




| | | |
|---|---|---|
| **Note** | 1. Flat washer | 3. Spring washer |
| | 2. Nut | 4. Flat washer |

- When using a stiff cable, fix it near the cable lug to avoid stress on the lug and cable.
- Do not use self-tapping screws to fasten terminals.
- Bundle cables of the same type and running in the same direction into groups. Keep cables clean and straight.
- Cables shall be tied according to the following table.

| Diameter of Cable Bundle (mm) | Space between Bundles (mm) |
|---|---|
| 10 | 80 to 150 |
| 10 to 30 | 150 to 200 |
| 30 | 200 to 300 |

- Do not tie knots for cables or cable bundles.
- The metal parts of the cold-pressed terminal blocks, such as air circuit breakers, shall not be exposed outside of the blocks.