Ruijie RG-RAP73Pro 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

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- Ruijie Networks website: https://www.ruijie.com
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Conventions

1. Signs

The signs used in this document are described as follows:

Danger

An alert that contains important safety instructions. Before you work on any equipment, be aware of the hazards involved and be familiar with standard practices in case of accidents.

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 provides configuration information, including models, port types, and command line interfaces, for reference purposes only. In the event of any discrepancy or inconsistency between the manual and the actual version, the actual version shall take precedence.

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1 Product Overview

1.1 About the RG-RAP73Pro

The RG-RAP73Pro access point (AP) is a powerful Wi-Fi 7 14000 Mbps tri-band ceiling AP designed for indoor scenarios such as offices, hotels, and schools. Featuring multiple advanced technologies, this AP can deliver high-speed, stable, and secure Wi-Fi connectivity to meet the diverse needs of users.

The RG-RAP73Pro supports the IEEE 802.3at- and 802.3bt-compliant PoE, as well as 54 V DC power supply, offering flexibility to choose the most suitable power supply mode based on specific conditions. It is compatible with the IEEE 802.11a/b/g/n/ac/ax/be standards, and operates in the 2.4 GHz, 5 GHz, and 6 GHz frequency bands. The RG-RAP73Pro delivers data rates of 688 Mbps in the 2.4 GHz band, 4323 Mbps in the 5 GHz band, and 8646 Mbps in the 6 GHz band, with a maximum data rate of 13657 Mbps, meeting the requirements for high-speed wireless connectivity.

Moreover, the RG-RAP73Pro provides one 10G optical port and one 2.5G Ethernet port, bringing the high-speed wireless performance into full play. Leveraging Self-Organizing Network technology, it can cater to diverse networking needs while ensuring complete Wi-Fi coverage.

1.2 Package Contents

Table 1-1 Package Contents

Item	Quantity
RG-RAP73Pro access point	1
Alignment sticker	1
Mounting template	1
Key to security lock	1
Cross pan head screws (ST4.2 x 20 mm)	4
Plastic expansion anchors (φ9 x 25.4 mm)	4
User Manual	1
Warranty card	1

Note

The package contents generally contain the preceding items. The actual delivery is subject to the order contract. Please check your goods carefully against the order contract. If you have any questions, please contact the distributor.

1.3 Product Appearance

Figure 1-1 Appearance

1.3.1 Front Panel

Figure 1-2 Front Panel

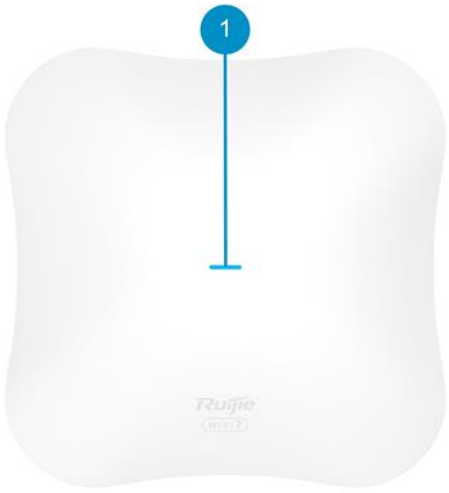


Table 1-2 LEDs

No.	Status	Description
1	Solid blue	The device is working properly.
	Off	The device is not receiving power.
	Fast blinking blue	The device is starting up.

No.	Status	Description
	Blinking blue (one blink per 2 seconds)	The device is not connected to the Internet.
	Blinking blue twice	Possible cases: ● The device is resetting. ● The device is recovering. **Caution** Do not power off the device when the LED is in this state.
	Solid blue (one long blink and three short blinks)	Other faults have occurred.

1.3.2 Rear Panel

Figure 1-3 Rear Panel

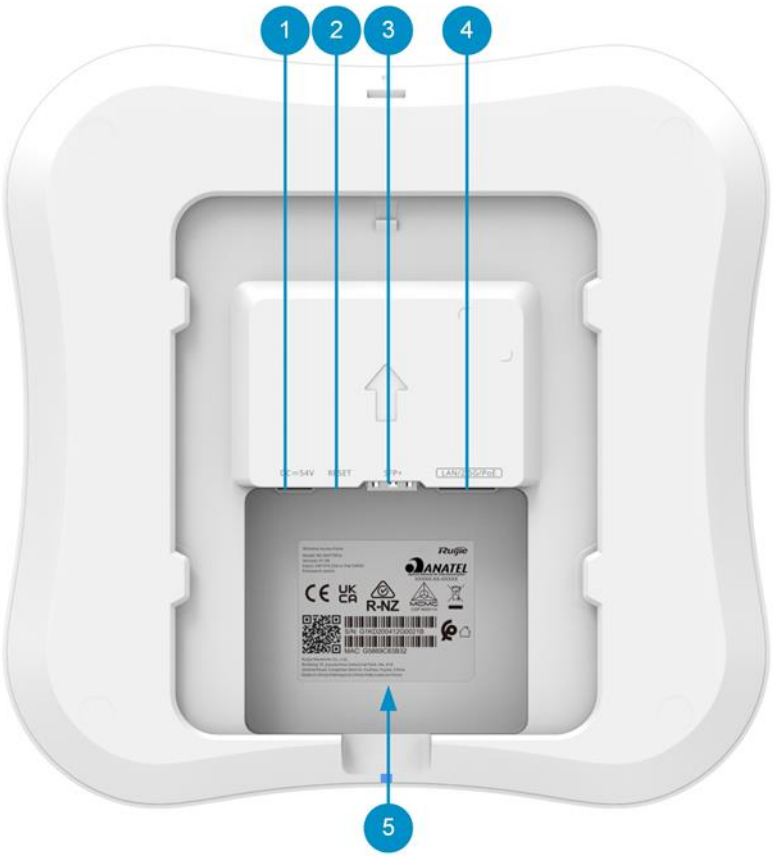


Table 1-3 Ports, Buttons, and Label on the Rear Panel

No.	Item	Description
1	DC power connector	Supplies power to the AP, with a power supply specification of DC 54 V
2	Reset button	Press and hold for less than 2 seconds: Restart the device.
		Press and hold for more than 5 seconds: Restore the device to factory settings.
3	SFP+ port	1G/10G BASE-X SFP+ optical port (SFP+ optical transceiver module is optional)
4	LAN/2.5G/PoE port	100/1000/2500 BASE-T port with auto-negotiation, supporting PoE input
5	Label	The label is at the bottom of the device.

1.4 Technical Specifications

Table 1-4 Specifications

System Specifications	Flash memory	256 MB
	RAM	1024 MB DDR4
Wi-Fi Radio	6 GHz Wi-Fi	Wi-Fi 6 (IEEE 802.11ax) Wi-Fi 7 (IEEE 802.11be)
	5 GHz Wi-Fi	Wi-Fi 4 (IEEE 802.11a/n) Wi-Fi 5 (IEEE 802.11ac) Wi-Fi 6 (IEEE 802.11ax) Wi-Fi 7 (IEEE 802.11be)
	2.4 GHz Wi-Fi	Wi-Fi 4 (IEEE 802.11b/g/n) Wi-Fi 6 (IEEE 802.11ax) Wi-Fi 7 (IEEE 802.11be)
	Operating band	IEEE 802.11b/g/n/ax/be, 2.400 GHz to 2.4835 GHz IEEE 802.11a/n/ac/ax/be, 5.150 GHz to 5.350 GHz, 5.470 GHz to 5.725 GHz, 5.725 GHz to 5.850 GHz IEEE 802.11a/ax/be, 5.925 GHz to 7.125 GHz 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	Tri-radio 8 spatial streams ● 2.4 GHz: 2 x 2, MU-MIMO ● 5 GHz: 3 x 3, MU-MIMO ● 6 GHz: 3 x 3, MU-MIMO
	6 GHz channel width	Auto/20/40/80/160/320 MHz
	5 GHz channel width	Auto/20/40/80/160 MHz
	2.4 GHz channel width	Auto/20/40 MHz
	Maximum wireless data rate	13657 Mbps
	6 GHz wireless data rate	8646 Mbps
	5 GHz wireless data rate	4323 Mbps
	2.4 GHz wireless data rate	688 Mbps
	Maximum transmit power (6 GHz)	Combined power: 22.7 dBm (single-stream power: 18 dBm) Note: The transmit power varies according to regulations in different countries and regions.
	Maximum transmit power (5 GHz)	Combined power: 25.7 dBm (single-stream power: 21 dBm) Note: The transmit power varies according to regulations in different countries and regions.
	Maximum transmit power (2.4 GHz)	Combined power: 25 dBm (single-stream power: 22 dBm) 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): Note: Country specific restrictions apply. ● European Union & United Kingdom ○ 2400 – 2483.5 MHz, EIRP ⩽ 20 dBm ○ 5150 – 5350 MHz, EIRP ⩽ 23 dBm ○ 5470 – 5725 MHz, EIRP ⩽ 30 dBm ○ 5945–6425 MHz, EIRP ⩽ 23 dBm ● United States: ○ 2400 – 2483.5 MHz, max output power ⩽ 30 dBm & EIRP ⩽ 36 dBm ○ 5150 – 5250 MHz, max output power ⩽ 30 dBm & EIRP ⩽ 36 dBm

		○ 5250 – 5350 MHz, max output power < 24 dBm & EIRP ⩽ 30 dBm ○ 5470 – 5725 MHz, max output power < 24 dBm & EIRP ⩽ 30 dBm ○ 5725 – 5850 MHz, max output power ⩽ 30 dBm & EIRP ⩽ 36 dBm ○ 5925 – 7125 MHz, EIRP ⩽ 30 dBm ● Thailand: ○ 2400 – 2483.5 MHz, EIRP ⩽ 20 dBm ○ 5150 – 5350 MHz, EIRP ⩽ 23 dBm ○ 5470 – 5725 MHz, EIRP ⩽ 30 dBm ○ 5725 – 5825 MHz, EIRP ⩽ 30 dBm ○ 5945 – 6425 MHz, EIRP ⩽ 23 dBm
	Coverage range	145 ㎡ (1560.77 square ft.) 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, and 64-QAM @ 48/54 Mbps DSSS: DBPSK @ 1 Mbps, DQPSK @ 2 Mbps, and CCK @ 5.5/11 Mbps MIMO-OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM, and 4096-QAM OFDMA
	Receive sensitivity	11b: –91 dBm (1 Mbps), –88 dBm (5.5 Mbps), –85 dBm (11 Mbps) 11a/g: –89 dBm (6 Mbps), –80 dBm (24 Mbps), –76 dBm (36 Mbps), –71 dBm (54 Mbps) 11n: –83 dBm (MCS0), –65 dBm (MCS7), –83 dBm (MCS8), –65 dBm (MCS15) 11ac: 20 MHz: –83 dBm (MCS0), –57 dBm (MCS9) 11ac: 40 MHz: –79 dBm (MCS0), –57 dBm (MCS9) 11ac: 80 MHz: –76 dBm (MCS0), –51 dBm (MCS9) 11ac: 160 MHz: –76 dBm (MCS0), –50 dBm (MCS9)

		11ax: 20 MHz: –85 dBm (MCS0), –58 dBm (MCS11) 11ax: 40 MHz: –82 dBm (MCS0), –54 dBm (MCS11) 11ax: 80 MHz: –79 dBm (MCS0), –52 dBm (MCS11) 11ax: 160 MHz: –76 dBm (MCS0), –49 dBm (MCS11) 11be: 20 MHz: –85 dBm (MCS0), –52 dBm (MCS13) 11be: 40 MHz: –82 dBm (MCS0), –49 dBm (MCS13) 11be: 80 MHz: –82 dBm (MCS0), –46 dBm (MCS13) 11be: 160 MHz: –79 dBm (MCS0), –44 dBm (MCS13) 11be: 320 MHz: –76 dBm (MCS0), –41 dBm (MCS13)
Antenna	Antenna	2.4 GHz: 2 built-in omnidirectional antennas 5 GHz: 3 built-in omnidirectional antennas 6 GHz: 3 built-in omnidirectional antennas
	Antenna gain (6 GHz)	5.20 dBi
	Antenna gain (5 GHz)	5.90 dBi
	Antenna gain (2.4 GHz)	3.60 dBi
Port Specifications	Number of 10/100/1000/2500BASE-T ports	1
	Number of 10GE SFP+ ports	1
	Maximum rate of the LAN port	2500 Mbps
	Reset button	1
	LEDs	1 x system status LED
	Power supply	● DC power adapter ● PoE+/PoE++

Power Supply and Consumption		Note: If both the DC power adapter and PoE+/PoE++ are available for power supply, the DC power adapter is preferred.
	Local power supply	Yes, one DC power connector (54 V, 0.55 A)
	Dimensions of the DC connector	Outer diameter: 5.5 mm (0.22 in.) Inner diameter: 2.1 mm (0.08 in.) Length: 10 mm (0.39 in.)
	PoE In standard	● IEEE 802.3at (PoE+) ● IEEE 802.3bt (PoE++)
	Maximum power consumption	30 W
Dimensions and Weight	Product dimensions (W x D x H)	220 mm x 220 mm x 45 mm (8.66 in. x 8.66 in. x 1.77 in.) (excluding the mounting bracket)
	Package dimensions (W x D x H)	280 mm x 265 mm x 80 mm (11.02 in. x 10.43 in. x 3.15 in.)
	Color	White
	Weight	≤ 1.1 kg (2.43 lbs.) (without packaging materials)
	Shipping weight	≤ 1.44 kg (3.17 lbs.)
Environment and Reliability	Operating temperature	0°C to 40°C (32°F to 104°F)
	Storage temperature	–40°C to +70°C (–40°F to +158°F)
	Operating humidity	5% RH to 95% RH (non-condensing)
	Storage humidity	5%RH to 95% RH (non-condensing)
	Mounting options	Ceiling/Wall
	IP rating	IP41
	Surge protection	Ethernet port: ±2 kV for common mode
	MTBF	400,000 hours
Certification and Regulatory Compliance	RoHS	Yes
	Certification	CE, CB, FCC, ISED, cTUVus

1.5 Power Supply Technical Specifications

The RG-RAP73Pro can be powered by the DC power supply or PoE.

- When a DC power adapter is used for power supply, the power adapter with a voltage of 54 V and a current of 0.55 A or higher provided by Ruijie needs to be used, which needs to be purchased separately from Ruijie.
- When the AP is powered by PoE, the Ethernet cable must be connected to the LAN/2.5G/PoE port of the AP, and the other end of the Ethernet cable must be connected to the PoE-capable switch port or a PoE power sourcing equipment. Ensure that the power sourcing equipment (PSE) is compliant with IEEE 802.3at or IEEE 802.3bt.

1.6 Cooling

The RG-RAP73Pro adopts a fanless design.

Caution

Ensure that there is sufficient space around the AP for heat dissipation.

2 Preparing for Installation

2.1 Safety Precautions

Note

- To avoid personal injury and device damage, review the safety guidelines in this chapter before you begin the installation.
- The following safety precautions may not include all the potentially hazardous situations.

2.1.1 Safety Precautions

- 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 Electro-Magnetic Interference (EMI) sources such as large radar stations, radio stations, and substations. Do not subject the AP to unstable voltage, vibration, and noises.
- The installation site should be dry. You are not advised to install the AP in a place near the sea. Keep the device at least 500 meters (1,640.41 ft.) away from the ocean and do not face it towards the sea breeze.
- The installation site should be free from water flooding, seepage, dripping, or condensation. The installation site should be selected according to communication network planning and technical requirements for communication equipment, and considerations such as climate, hydrology, geology, earthquake, electrical power, and transportation.

Caution

Follow the installation instructions in the user manual to correctly install or remove the AP.

2.1.2 Handling Safety

- After the AP is installed, avoid handling it frequently.
- Turn off all power supplies and unplug all power cables before you handle the AP.

2.1.3 Electrical 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 through wet objects with high voltage or mains power supply may be fatal.

- Always observe the local regulations and standards. Only trained and qualified personnel should be allowed to operate the AP.
- Check potential risks in the work area, such as wet floor.
- Find out the position of the indoor emergency power switch before installation. Cut off the power supply in case of accidents.

- Make sure that the AP is powered off when you cut off the power supply.
- Do not place the AP in a wet position, and keep it away from liquid.
- Keep the AP far away from grounding or lightning protection devices for power equipment.
- Keep the AP away from radio stations, radar stations, high-frequency and high-current devices, microwave ovens, and other high-power wireless devices.

2.1.4 Laser Safety

The RG-RAP73Pro supports optical transceiver modules. It is a Class I laser product.
Precautions:

- When an optical transceiver is working, ensure that its port is connected to an optical cable or covered by a dust cap to keep out dust and prevent it from burning your eyes.
- Do not stare at any optical port.

Warning

Do not approach or look into any optical port under any circumstances. This may cause permanent damage to your eyes.

2.2 Installation Site Requirements

The RG-RAP73Pro must be used indoors. For normal operation and prolonged service life of the access point, the installation site must meet the following requirements.

2.2.1 Bearing

Ensure that the installation site is firm enough to support the weight of the RG-RAP73Pro and its accessories.

2.2.2 Space

- The AP should be installed in an open environment if possible. If the AP is to be installed in an enclosed environment, ensure that a good ventilation and heat dissipation system is available.
- Ensure that the installation site has sufficient space for heat dissipation.

2.2.3 Ventilation

The RG-RAP73Pro adopts natural cooling. When installing the AP, ensure that there is sufficient space in front, back, left, and right of the AP for heat dissipation.

2.2.4 Temperature and Humidity

To ensure that the RG-RAP73Pro works properly and has a long service life, maintain a proper temperature and humidity in the working environment. Improper room temperature and humidity can cause damage to the AP.

- High relative humidity may affect insulation materials, resulting in poor insulation and even electrical leakage. Sometimes it may lead to changes in the mechanical properties of materials and corrosion of metal parts.
- Low relative humidity can dry and shrink insulation sheets and cause static electricity that can damage the circuitry.
- High temperatures greatly reduce device reliability and shorten service life.

2.2.5 Cleanliness

Dust poses a major threat to the device. The indoor dust can cause electrostatic adhesion when falling on the device, causing poor contact of the metallic joint. Such electrostatic adhesion occurs more easily when the indoor relative humidity is low, not only affecting the service life of the device, but also causing communication failure easily. The following table lists the requirements on the dust content and diameter in the equipment room.

Table 2-1 Dust and Particles

Particle Size	Unit	Content
≥ 0.5 μm	Particles/m^3	≤ 1.4 x 10^7
≥ 1 μm	Particles/m^3	≤ 7 x 10^5
≥ 3 μm	Particles/m^3	≤ 2.4 x 10^5
≥ 5 μm	Particles/m^3	≤ 1.3 x 10^5

Apart from dust, the salt, acid, and sulfide in the air of the equipment room must meet strict requirement. These harmful substances will accelerate metal corrosion and component aging. The equipment room should be protected from harmful gases (such as sulfur dioxide, hydrogen sulfide, nitrogen dioxide, ammonia, and chlorine). The following table lists the limits of harmful gases in the equipment room.

Table 2-2 Hazardous Gases

Gas	Average (mg/m^3)	Maximum (mg/m^3)
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 value is measured over one week. The maximum value is the upper limit of the harmful gas measured in one week for up to 30 minutes every day.

2.2.6 EMI

- Keep the AP as far away from the grounding equipment of the power device and the lightning prevention equipment as possible.
- Keep the device away from radio stations, radar stations, high-frequency and high-current devices, microwave ovens, and other high-power wireless devices.

2.3 Tools

Table 2-3 Tools

Common Tools	Phillips screwdriver, cables, fastening bolts, diagonal plier, cable ties
Special Tools	ESD gloves, wire stripper, crimping plier, RJ45 crimping plier, wire cutter, and waterproof adhesive tape
Meters	Multimeter and bit error rate tester (BERT)

Note

A tool kit is not supplied. You need to prepare the tools by yourself.

3 Installing the AP

The RG-RAP73Pro must be installed indoors, and used in a fixed place.

Caution

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

3.1 Before You Begin

Before installing the RG-RAP73Pro, carefully plan and arrange the installation location, networking mode, power supply, and cabling. Confirm the following requirements before installation:

- The installation site should provide sufficient space for heat dissipation.
- The installation site meets the temperature and humidity requirements of the AP.
- The power supply and required current are available in the installation site.
- The selected power supply modules meet the system power requirements.
- The installation site meets the cabling requirements of the AP.
- The installation site meets the site requirements of the AP.
- The customized AP meets the client-specific requirements.

3.2 Safety Precautions During Installation

To ensure the normal operation and prolonged service life of the AP, observe the following safety precautions:

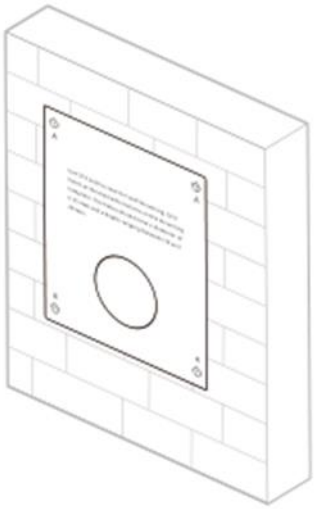
- Do not power on the AP during installation.
- Place the AP in a well-ventilated environment.
- Do not expose the AP to high temperature.
- Keep the AP away from high-voltage power cables.
- Install the AP indoors.
- Do not expose the AP to a thunderstorm or strong electric field.
- Keep the AP clean and dust-free.
- Cut off the power supply before cleaning the AP.
- Do not wipe the AP with a damp cloth.
- Do not wash the AP with liquid.
- Do not open the enclosure when the AP is working.
- Secure the AP properly.

3.3 Installing the AP

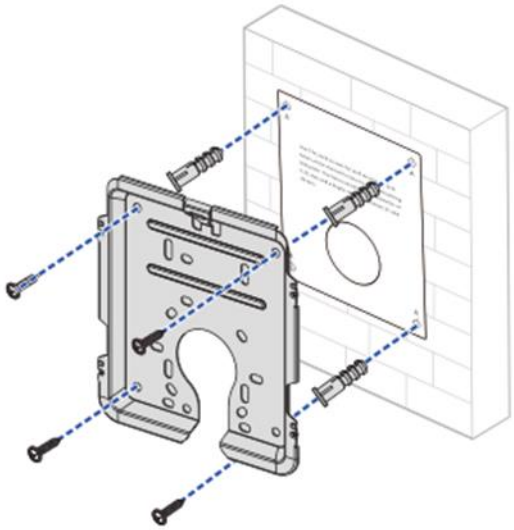
Note

- In an indoor environment, a ceiling-mounted AP offers broader antenna radiation coverage compared to a wall-mounted one. Hence, ceiling mounting is the preferred option.
- The schematic diagram provided is for reference purposes only. The actual product should be installed based on its physical specifications and design.

(1) Drill holes on the ceiling or wall using the Alignment sticker.



(2) Use four cross pan head screws (ST4.2 x 20 mm) to secure the mounting template to the ceiling or wall.



Caution

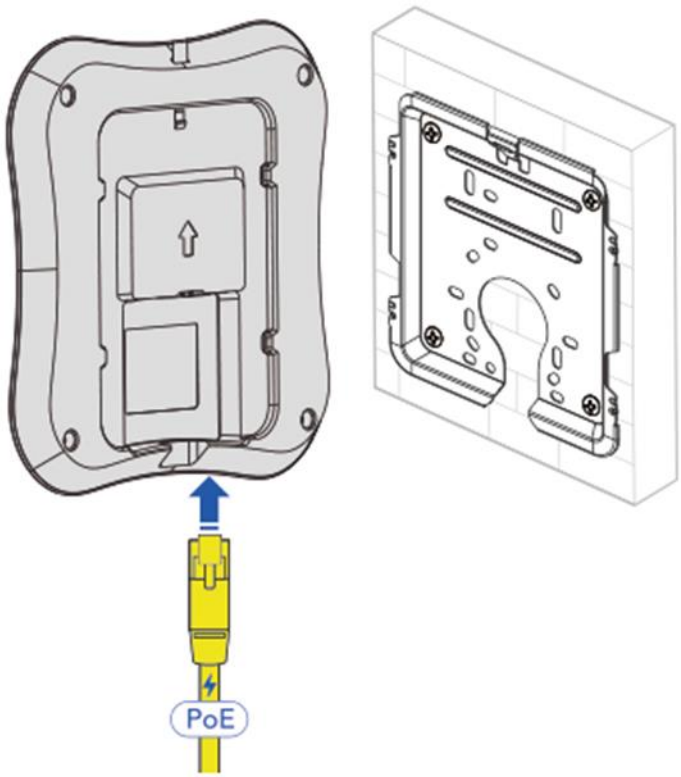
The plane deviation of the wall in a specific area should be within 2 mm, and the recommended torque for installation is 4 kgf.cm. In case of uneven installation site, please mount the AP on a protruding wall.

(3) Connect cables according to the actual networking. The following describes how to connect cables on the AP side.

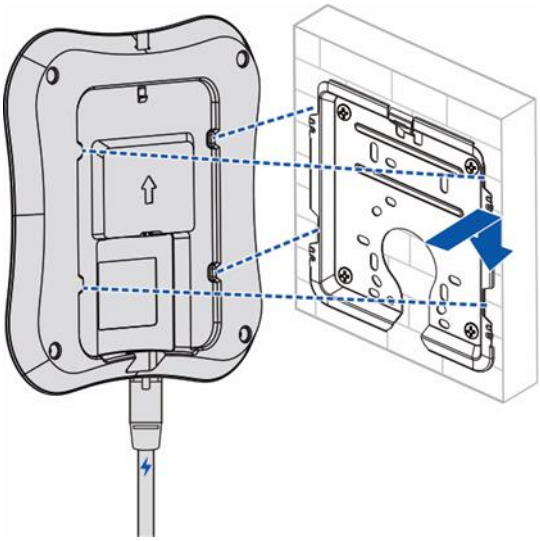
- Ethernet cable: Connect one end of the Ethernet cable to the LAN/2.5G/PoE port on the back of the AP.
- Optical cable: Connect one end of the optical cable to the SFP+ port on the back of the AP.
- DC power cord: When DC power supply is used, connect one end of the power cord to the DC 54 V connector on the back of the AP.

Caution

- Avoid a small bend radius at the connector.
- It is not recommended to use Ethernet cables with a protective sheath as it can hinder the assembly of Ethernet cables.
- When using an optical cable for data transmission, insert and remove the optical cable gently. If you pull the optical cable too hard, the fiber core may be displaced, affecting the optical communication quality. Do not bend or coil the optical cable excessively, as this will increase the attenuation of light during transmission.



(4) Align the slots on the back of the AP with the square feet on the mounting template, and slide the AP into the mounting template slowly to ensure that the AP is securely fixed.

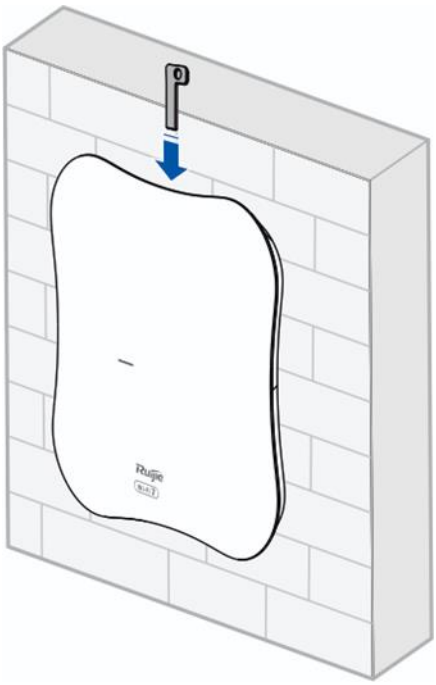


Caution

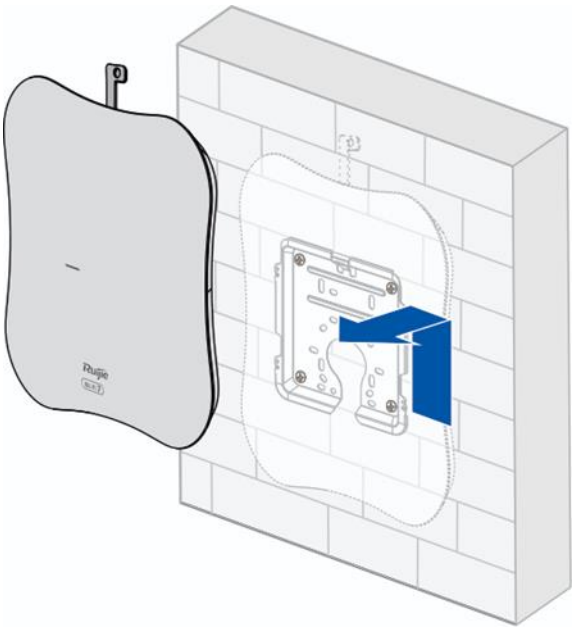
- Before securing the AP to the mounting template, connect the cables first.
- The slots on the back of the AP must be aligned with and slid into the square feet on the mounting template. Do not press the slots into the square feet by force.
- After installation, check whether the AP is secured.

3.4 Removing the AP

(1) Insert the key into the reserved slot.



(2) Slide down the AP as indicated by the arrow.



3.5 Bundling Cables

Caution

- Bundle the cable in a visually pleasing way.
- Make sure that the fibers at the connectors have natural bends or bends of large radius.
- Do not bundle the cables too tightly, as this may reduce the cable service life and transmission performance.

The steps of cable bundling are as follows:

(1) Bundle the drooping part of the cables and place the bundle as near the ports as possible.

(2) Route the cables under the AP and run them in straight line.

3.6 Checklist After Installation

- Checking the AP
  - Verify that the external power supply meets the requirement of the AP.
  - Verify that the AP is securely fastened.
- Checking the Cable Connection
  - Verify that the cable type matches the port type.
  - Verify that the cables are properly bundled.
- Checking the Power Supply
  - Verify that the power cord is properly connected and meets safety requirements.
  - Verify that the AP works properly when powered by the power supply.

4 Debugging

4.1 Setting Up the Configuration Environment

After powering on the AP through a DC power adapter or a PoE power source equipment, ensure that the power cord is properly connected and meets safety requirements.

4.2 Powering on the AP

4.2.1 Checklist Before Power-On

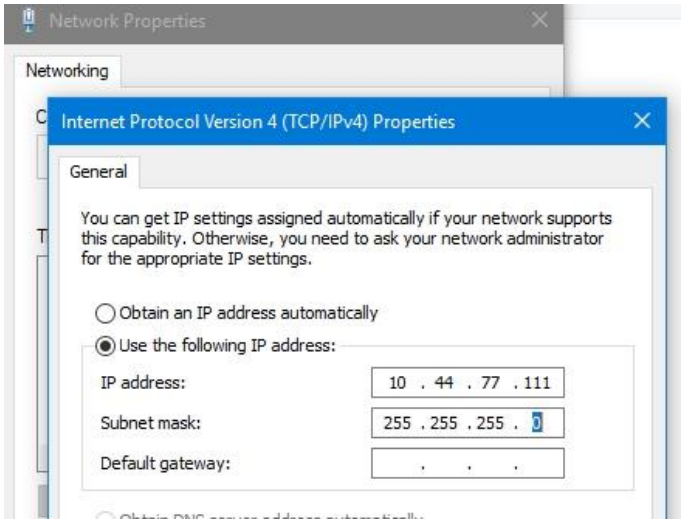
- The power cord is properly connected.
- The input voltage meets the requirement.

4.2.2 Checklist After Power-on

- Verify the LED status.
- After the AP is powered on, check whether the SSID (@Ruijie-mXXXX for multiple devices or @Ruijie-sXXXX for a single device) can be searched by a mobile phone or other wireless devices.

4.3 Logging in to the Web GUI

(1) Power on the PC and configure the local connection attribute on the PC. Set the IP address of the PC to 10.44.77.XXX (1 to 255, excluding 254).



(2) Open a browser on the PC and enter 10.44.77.254 to log in to the web interface. The default password is "admin" for the first login. For security purposes, change the default password after login.

5 Monitoring and Maintenance

5.1 Monitoring

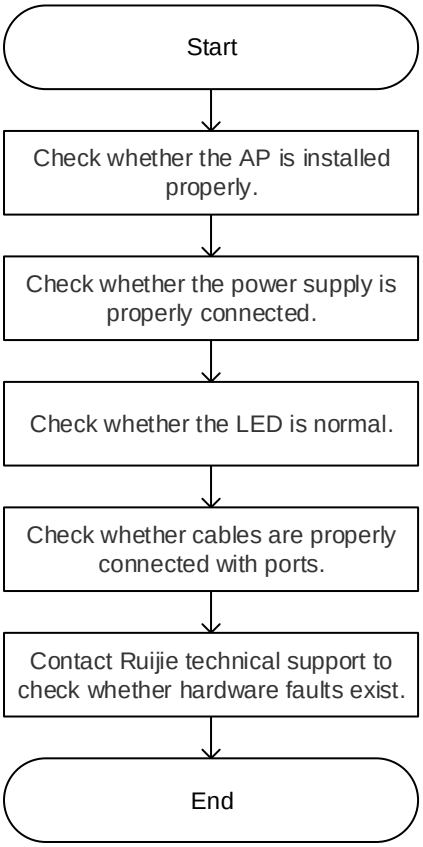
When the RG-RAP73Pro is operating, you can monitor the device running status by observing the LED.

5.2 Maintenance

If the hardware is faulty, please contact the local distributor.

6 Troubleshooting

6.1 General Troubleshooting Flowchart



6.2 Common Faults

6.2.1 The Status LED Is Off After the AP Is Powered On

- If the AP is powered by PoE, verify that the PSE is IEEE 802.3at- or 802.3bt-compliant and the Ethernet cable is connected properly.
- If the AP is powered by a DC adapter, verify that the adapter has mains input and works properly and the adapter supports 54 V DC output.

6.2.2 After an Ethernet Cable or Optical Cable is Connected, the Ethernet Interface or Optical Port Cannot Be Used

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

6.2.3 A Client Cannot Discover the AP

(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 client device closer to the AP.

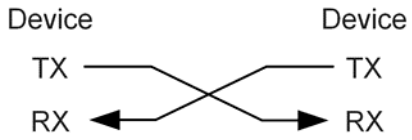
7 Appendix

7.1 Connectors and Media

7.1.1 1G/10G BASE-X SFP+ port

For the optical ports, select single-mode or multimode optical cables for connections according to the optical module connected. Figure 7-1 shows the connection schematic diagram.

Figure 7-1 Optical Cable Connections



7.1.2 2500 BASE-T/1000 BASE-T/100 BASE-TX

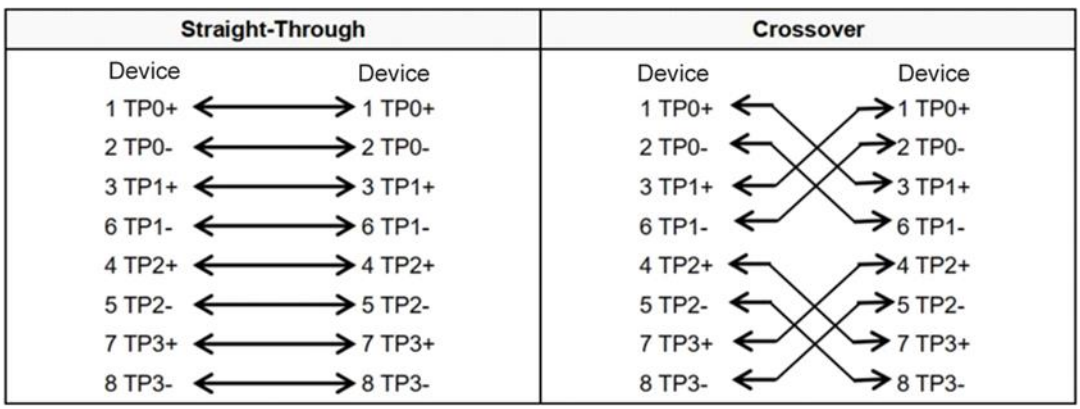
The 2500BASE-T/1000BASE-T/100BASE-TX port is a 100/1000/2500 Mbps port that supports auto MDI/MDIX Crossover.

Compliant with the IEEE 802.3bz standard, 2500BASE-T requires a Category 6 (Cat 6) or Category 5e (Cat 5e) 100-ohm UTP or STP (recommended) cable with a maximum distance of 100 meters (328 feet). When PoE power supply is used at the same time, a CAT6 STP cable is recommended, and both the port and cable should be properly shielded.

Compliant with the IEEE 802.3ab standard, 1000BASE-T port requires a Cat 6 or Cat 5e 100-ohm UTP or STP (recommended) cable with a maximum distance of 100 meters (328 feet). When PoE power supply is used at the same time, a CAT6 STP cable is recommended, and both the port and cable should be properly shielded.

The 2500BASE-T/1000BASE-T port requires four pairs of wires to be connected for data transmission. Figure 7-2 shows the four pairs of wires for the 2500BASE-T/1000BASE-T port.

Figure 7-2 2500BASE-T/1000BASE-T Twisted Pair Connections



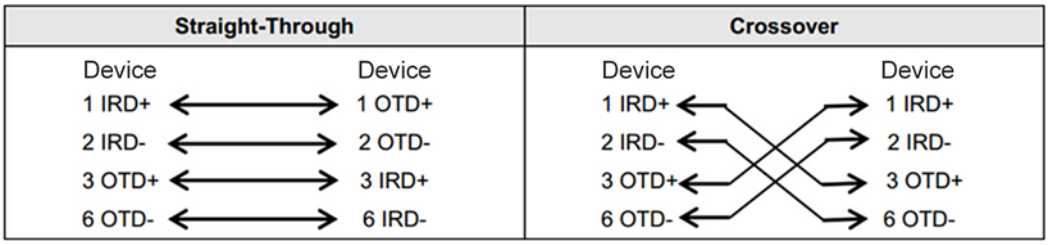
The 100BASE-TX port can be connected using 100-ohm Category 5 (Cat 5) cables with a maximum distance of 100 meters (328 ft.). Table 7-1 shows 100BASE-TX pin assignments.

Table 7-1 100BASE-TX 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 7-3 show feasible connections of the straight-through and crossover twisted pairs for a 100BASE-TX port.

Figure 7-3 100BASE-TX Twisted Pair Connection



7.2 Optical Transceivers and Specifications

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

Table 7-2 Models and Technical Specifications of SFP Transceivers

Model.	Speed	Wavelength (nm)	DDM	Transmit Power (dBm)		Receive Power (dBm)	
				Min.	Max.	Min.	Max.
XG-SFP-LR-SM1310	10G	1310 nm	Supported	-8.2	0.5	-14.4	0.5
XG-SFP-ER-SM1550	10G	1550 nm	Supported	-4.7	4.0	-11.3	-1.0
XG-SFP-LR10-SM1270-BIDI-I	10G	TX1270/RX1330	Supported	-8.2	0.5	-14.4	0.5
XG-SFP-LR10-	10G	TX1330/RX1270	Supported	-8.2	0.5	-14.4	0.5

Model.	Speed	Wavelength (nm)	DDM	Transmit Power (dBm)		Receive Power (dBm)	
				Min.	Max.	Min.	Max.
SM1330-BIDI-I							
XG-SFP-SR-MM850	10G	850 nm	Supported	-7.3	-1.0	-9.9	-1.0
MINI-GBIC-LX-SM1310	1G	1310 nm	Supported	-11.0	-3.0	-19.0	-3.0
MINI-GBIC-LH40-SM1310	1G	1310 nm	Supported	-5.0	0.0	-23.0	-3.0
GE-SFP-LX03-SM1310-BIDI-I	1G	TX1330/RX1550	Supported	-9.0	-3.0	-19.0	-3.0
GE-SFP-LX03-SM1550-BIDI-I	1G	TX1550/RX1310	Supported	-9.0	-3.0	-19.0	-3.0
MINI-GBIC-SX-MM850	1G	850 nm	Supported	-9.5	0.0	-17.0	0.0
GE-SFP-LX20-SM1550-BIDI	1.25G	TX1550/RX1310	Supported	-9.0	-3.0	-20.0	-3.0
GE-SFP-LX20-SM1310-BIDI	1.25G	TX1310/RX1550	Supported	-9.0	-3.0	-20.0	-3.0

Note

Only partial transceiver models are listed. For more supported models, contact Ruijie pre-sales engineers.

Table 7-3 SFP Module Cabling Specifications

Model	Connector Type	Fiber Type	Core Size (μm)	Max. Cabling Distance
XG-SFP-LR-SM1310	LC	SMF(G.652)	9/125 um	10 km
XG-SFP-ER-SM1550	LC	SMF(G.652)	9/125 um	40 km
XG-SFP-LR10-SM1270-BIDI-I	LC	SMF(G.652)	9/125 um	10 km

Model	Connector Type	Fiber Type	Core Size (μm)	Max. Cabling Distance
XG-SFP-LR10-SM1330-BIDI-I	LC	SMF(G.652)	9/125 um	10 km
XG-SFP-SR-MM850	LC	MMF(OM3/OM4)	50/125 um	300 m
MINI-GBIC-LX-SM1310	LC	SMF(G.652)	9/125 um	10 km
MINI-GBIC-LH40-SM1310	LC	SMF(G.652)	9/125 um	40 km
GE-SFP-LX03-SM1310-BIDI-I	LC	SMF(G.652)	9/125 um	3 km
GE-SFP-LX03-SM1550-BIDI-I	LC	SMF(G.652)	9/125 um	3 km
MINI-GBIC-SX-MM850	LC	MMF(OM3/OM4)	50/125 um	550 m
GE-SFP-LX20-SM1550-BIDI	LC	SMF(G.652)	9/125 um	20 km
GE-SFP-LX20-SM1310-BIDI	LC	SMF(G.652)	9/125 um	20 km

Caution

- For optical transceivers with a cabling distance of over 40 km/24.85 miles (including 40 km), install an optical attenuator to avoid overload on the optical receiver when using short-distance single-mode fibers (SMFs).
- An optical transceiver is a laser transmitter. Do not look into the laser beam to avoid burning your eyes.
- To keep an optical transceiver clean and dust-free, make sure that the unused ports remain capped.

Table 7-4 Pairing of BIDI Optical Transceivers

Speed/Distance	Pairing Model
1G / 3 km	GE-SFP-LX03-SM1310-BIDI-I GE-SFP-LX03-SM1550-BIDI-I
1.25 G / 20 km	GE-SFP-LX20-SM1310-BIDI GE-SFP-LX20-SM1550-BIDI
10 G / 10 km	XG-SFP-LR10-SM1270-BIDI-I

Speed/Distance	Pairing Model
	XG-SFP-LR10-SM1330-BIDI-I

Caution

BIDI optical transceivers must be used in pairs. For example, if a GE-SFP-LX20-SM1310-BIDI optical module is used at one end, a GE-SFP-LX20-SM1550-BIDI optical module must be used at the other end.

7.3 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 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.

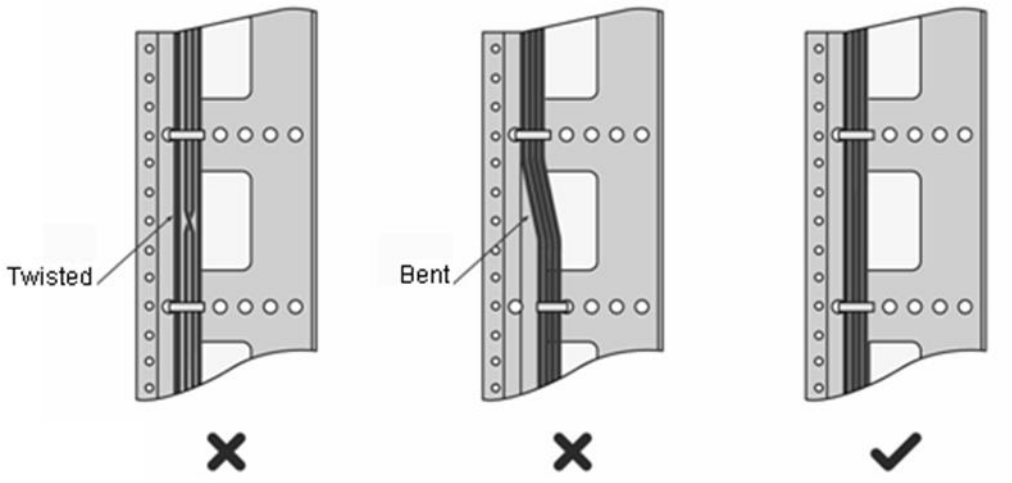
Requirements for Cable Bend Radius

- 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 Bundling up Cables

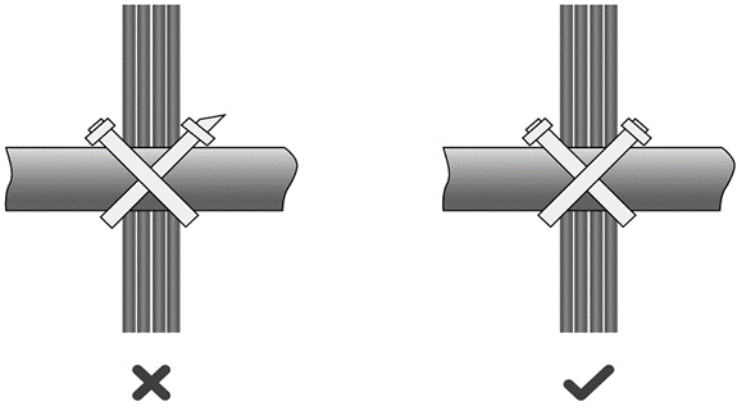
- Before cables are bundled, mark labels and stick the labels to cables wherever appropriate.
- Cables should be neatly and properly bundled in the rack without twisting or bending, as shown in Figure 7-4.

Figure 7-4 Bundling up Cables (1)



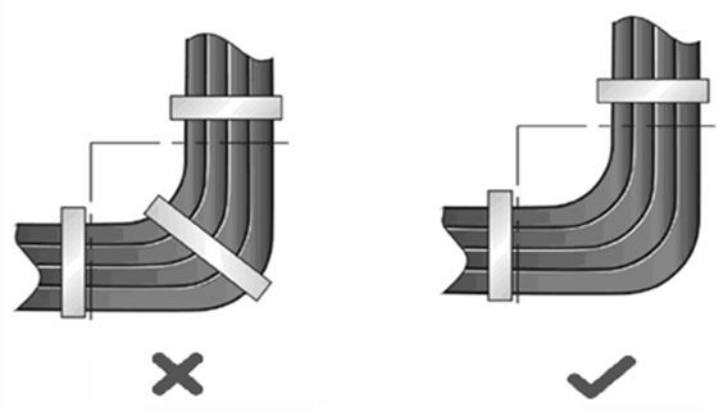
- Cables of different types (such as power cords, signal cables, and grounding cables) should be separated in cabling and bundling. Mixed bundling is disallowed. When they are close to each other, you are advised to adopt crossover cabling. In the case of parallel cabling, maintain a minimum distance 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. 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, as shown in Figure 7-5.

Figure 7-5 Bundling up Cables (2)



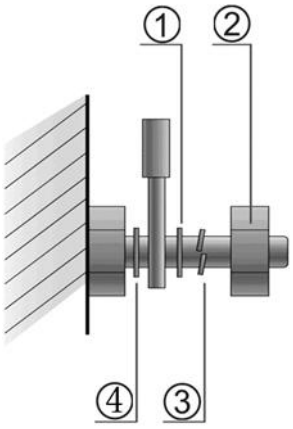
- When cables need to be bent, you should first bundle them up, as shown in Figure 7-6. However, the buckle cannot be bundled within the bend area. Otherwise, considerable stress may be generated in cables, breaking cable cores.

Figure 7-6 Bundling up Cables (3)



- 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.
- 220 V and –48 V power cords must not be bundled on the guide rails of moving parts.
- 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.
- When screw threads are used to fasten cable terminals, the anchor or screw must be tightly fastened, as shown in Figure 7-7.

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.
- Binding by using buckles should be performed according to Table 7-5.

Table 7-5 Cable Bunch

Cable Bunch Diameter	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 cord end terminal type, the metal part of the cord end terminal should not be exposed outside the terminal block when assembled.