# Ruijie Reyee RG-RAP1261 Access Point

## Installation Guide

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# Preface

## 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. GUI Symbols

| Interface symbol | Description | Example |
| --- | --- | --- |
| **Boldface** | 1. Button names<br>2. Window names, tab name, field name and menu items<br>3. Link | 1. Click **OK**.<br>2. Select **Config Wizard**.<br>3. Click the **Download File** link. |
| > | Multi-level menus items | Select **System** > **Time**. |

### 2. 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.

### 3. Note

This manual provides the device installation steps, hardware troubleshooting, module technical specifications, and specifications and usage guidelines for cables and connectors. It is intended for the users who have some experience in installing and maintaining network hardware. At the same time, it is assumed that the users are already familiar with the related terms and concepts.

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# 1 Product Overview

## 1.1 About the RG-RAP1261 Access Point

The RG-RAP1261 is a dual-radio Wi-Fi 6 wall plate access point designed for small- or medium-sized indoor scenarios covering hotels, apartments, villas, residential buildings, and small business offices. It can be powered by IEEE 802.3af/at PoE power supply. Compliant with the IEEE 802.11a/b/g/n/ac/ax standards, the access point operates in the 2.4 GHz and 5 GHz frequency bands simultaneously, and supports four spatial streams and MU-MIMO. The access point delivers a combined data rate of 2974 Mbps, with up to 573 Mbps in the 2.4 GHz band and 2401 Mbps in the 5 GHz band. The access point provides one WAN port and one 1GE LAN port that can be connected to a terminal through an Ethernet cable. This satisfies requirements of wired and wireless network deployment in indoor areas.

## 1.2 Package Contents

**Table 1-1 Package Contents**

| No. | Item | Quantity |
|---|---|---|
| 1 | RG-RAP1261 access point (with a decorative cover) | 1 |
| 2 | Cross pan head screws (M4 x 40 mm) | 2 |
| 3 | User Manual | 1 |
| 4 | Warranty Card | 1 |

**Note**

The package contents generally contain the above 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 Hardware Features

## 1.3.1 Front Panel

**Figure 1-1 Front View of a RG-RAP1261 Access Point**




**Table 1-2 LED**

| Status | Description |
|---|---|
| Off | The access point is not receiving power. |
| Fast flashing (at 8 Hz) | The access point is starting up. |
| Solid on | The access point functions properly. |
| Slow flashing (at 0.5 Hz) | The network is unreachable. |
| Flashing twice in succession | The access point is being upgraded. Do not power off the access point. |

**Table 1-3 Ports and Reset Hole**

| Ports and Reset Hole | Description |
|---|---|
| Reset Hole | ● Stick the pin to the Reset hole: Restart the access point.<br>● Press and hold the pin to the Reset hole for more than 5 seconds: Restore the access point to factory settings. |
| LAN Port | One 10/100/1000Base-T Ethernet port with auto-negotiation for wired connection |

### 1.3.2 Rear Panel

**Figure 1-2 Rear Panel of a RG-RAP1261 Access Point**




**Table 1-4 Port**

| No. | Port | Description |
|---|---|---|
| 1 | WAN/PoE Port | One 10/100/1000Base-T Ethernet port with auto-negotiation, providing data and power transmission through an Ethernet cable. |
| 2 | Label | The label is located on the back of the device. |

## 1.4 Technical Specifications

**Table 1-5 Technical Specifications**

| | | |
|---|---|---|
| **System Specifications** | Flash memory | 128 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 |

| | | |
|---|---|---|
| | | 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/20/40/80/160 MHz |
| | 2.4 GHz channel width | Auto/20/40 MHz |
| | Maximum wireless data rate | 2974 Mbps |
| | 5 GHz wireless data rate | 2401 Mbps |
| | 2.4 GHz wireless data rate | 573 Mbps |
| | Maximum transmit power (5 GHz) | Combined power: 21 dBm (single-stream power: 18 dBm)<br>Note: The transmit power varies according to regulations in different countries and regions. |
| | Maximum transmit power (2.4 GHz) | Combined power: 21 dBm (single-stream power: 18 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>o 2400–2483.5 MHz, EIRP ≤ 20 dBm<br>o 5150–5350 MHz, EIRP ≤ 23 dBm<br>o 5470–5725 MHz, EIRP ≤ 30 dBm<br>● United States:<br>o 2400–2483.5 MHz, max output power ≤ 30 dBm & EIRP ≤ 36 dBm<br>o 5150–5250 MHz, max output power ≤ 30 dBm & EIRP ≤ 36 dBm |

| | | |
|---|---|---|
| | | ○ 5250–5350 MHz, max output power < 24 dBm & EIRP ≤ 30 dBm<br>○ 5470–5725 MHz, max output power < 24 dBm & EIRP ≤ 30 dBm<br>○ 5725–5850 MHz, max output power ≤ 30 dBm & EIRP ≤ 36 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>○ 5150–5350 MHz, EIRP ≤ 23 dBm<br>○ 5470–5725 MHz, EIRP ≤ 30 dBm<br>○ 5725–5825 MHz, EIRP ≤ 30 dBm<br>● Indonesia:<br>○ 2400–2483.5 MHz, EIRP ≤ 27 dBm<br>○ 5150–5350 MHz, EIRP ≤ 23 dBm<br>○ 5725–5825 MHz, EIRP ≤ 23 dBm<br>● Egypt:<br>○ 2400–2483.5 MHz, EIRP ≤ 20 dBm<br>○ 5150–5350 MHz, EIRP ≤ 23 dBm |
| | Coverage range | 45 ㎡ (484.38 square 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) |

| | | |
|---|---|---|
| | | 11n: –83 dBm (MCS0), –65 dBm (MCS7), –83 dBm (MCS8), –65 dBm (MCS15)<br>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>11ac: 160 MHz: –76 dBm (MCS0), –50 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)<br>11ax: 160 MHz: –76 dBm (MCS0), –49 dBm (MCS11) |
| **Antenna** | Antenna | Integrated 2.4 GHz and 5 GHz: 2 built-in omnidirectional antennas |
| | Antenna gain (5 GHz) | 3.00 dBi |
| | Antenna gain (2.4 GHz) | 3.00 dBi |
| **Port Specifications** | Number of 10/100/1000BASE-T ports | 2 |
| | 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+ |
| | PoE In standard | ● IEEE 802.3af (PoE)<br>● IEEE 802.3at (PoE+) |
| | Maximum power consumption | 10.2 W |
| **Dimensions and Weight** | Product dimensions (W x D x H) | 86 mm x 42.4 mm x 86 mm (3.39 in. x 1.67 in. x 3.39 in.) |

| | | |
|---|---|---|
| | Package dimensions (W x D x H) | 114 mm x 88 mm x 52 mm (4.49 in. x 3.46 in. x 2.05 in.) |
| | Color | White |
| | Weight | ≤ 0.16 kg (0.35 lbs.) (without packaging materials) |
| | Shipping weight | ≤ 0.19 kg (0.42 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 | Junction box |
| | Surge protection | Ethernet port: ±2 kV for common mode |
| | MTBF | 400,000 hours |
| **Certification and Regulatory Compliance** | RoHS | Yes |
| | Certification | CE, CB |

## 1.5 Power Specifications

The access point supports IEEE 802.3af/at PoE power supply. In the case of PoE power supply, the power sourcing equipment (PSE) must be at least 802.3af-capable to ensure normal operation of the access point.

## 1.6 Cooling Solution

The access point adopts a fanless design. Install the access point in an 86-mm junction box correctly for proper ventilation.

# 2 Preparing for Installation

## 2.1 Safety Precautions

The access point acts as a key transfer station in network connectivity to ensure normal operation of the subnet. When installing and using the access point, pay attention to the following precautions:

- Do not place the access point in a damp or wet location. Do not let any liquid enter the access point.
- Keep the access point away from heat sources.
- Wear an anti-static wrist strap during the installation and maintenance.
- Do not wear loose clothes, ornaments, or any other things that may be hooked by the access point during the installation and maintenance.
- Do not place the access point in walking area.
- You are advised to use UPS power supply to avoid power-off and power interference.

## 2.2 Installation Environment Requirements

The wall plate access point must be installed and used indoors. For normal operation and prolonged service life of the access point, the installation site must meet the following requirements.

### 2.2.1 Temperature/Humidity Requirements

To ensure the normal operation and prolonged service life of the access point, maintain an appropriate temperature and humidity. Working in an environment with too high or too low temperature and humidity for a long period may damage the access point.

- In an environment with high relative humidity, the insulating material may have poor insulation or even leak electricity. Sometimes it is also prone to changes in the mechanical properties and causes rusting of metal parts.
- In an environment with low relative humidity, static electricity is prone to occur and damage the internal circuits of the access point.
- A high temperature can accelerate the aging process of insulation materials, greatly reducing the reliability of the access point and severely affecting its service life.

**Table 2-1 Working Environment Requirements**

| Operating Temperature | Operating Humidity |
|---|---|
| 0°C to 40°C (32°F to 104°F) | 5% to 95% RH (non-condensing) |

### 2.2.2 Cleanliness Requirement

Dust poses a serious threat to device operation. Dust on the surface of the device can be absorbed onto metal contact points by static electricity, causing poor contact. Electrostatic absorption of dust occurs more easily when

the relative humidity is low, and might shorten the equipment service life and cause communication failures. The following table shows the maximum concentration and diameter of dust allowed in the equipment room.

| **Maximum Diameter (μm)** | 0.5 | 1 | 3 | 5 |
|---|---|---|---|---|
| **Maximum Concentration (Particles/$m^3$)** | $1.4 \times 10^7$ | $7 \times 10^5$ | $2.4 \times 10^5$ | $1.3 \times 10^5$ |

The amount of salt, acids and sulfides in the air are also strictly limited for the equipment room. These substances can accelerate metal corrosion and aging of some parts. The following table describes the limits of some hazardous gases such as sulfur dioxide, hydrogen sulfide, nitrogen dioxide, ammonia gas and chlorine gas in the equipment room.

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

### 2.2.3 Electrostatic Discharge Requirements

The wall plate access point has been designed to prevent damage from static electricity, but too much static electricity can still cause some damage to the circuit board. The static electricity on the communication network connected to the device mainly comes from:

- High-voltage power cables, lightning, and other electric fields in outdoor environments.
- Flooring and equipment structure in indoor environments.

To prevent damage from static electricity, pay attention to the following:

- Keep the indoor installation environment clean and free of dust.
- Maintain appropriate humidity conditions.

### 2.2.4 Installation Site Requirements

The access point is installed in a wall. Pay attention to the following:

- Keep the wall surface smooth and clean.
- Ensure that the Ethernet cable works normally.

### 2.2.5 Anti-interference Requirements

- Keep the access point as far away from the lightning prevention equipment and grounding equipment of the power device as possible.
- Keep the access point far away from radio stations, radar stations, high-frequency high-current devices, and

microwave ovens.

## 2.3 Tools

**Table 2-2 Tools**

| | |
|---|---|
| **Common Tools** | Phillips screwdriver, power cables, Ethernet cables, cage nuts, diagonal plier, and binding straps |
| **Special Tools** | Anti-static wrist strip, wire stripper, crimping plier, and wire cutter |
| **Meters** | Multimeter and bit error rate tester (BERT) |

**Note**

The RG-RAP1261 is delivered without a tool kit. The tool kit is customer-supplied.

# 3 Installing the Access Point

**Caution**

Before installing the access point, make sure you have carefully read the requirements in Chapter 2.

## 3.1 Before You Begin

Carefully plan and arrange the installation position, networking mode, power supply, and cabling before installation. Confirm the following requirements before installation:

- The installation site meets the temperature and humidity requirements of the access point.
- The power supply and required current are available in the installation site.
- The selected power supply meets the system power requirements.
- The installation site meets the cabling requirements of the access point.
- The installation site meets the site requirements of the access point.
- The customized access point meets the client-specific requirements.

## 3.2 Precautions

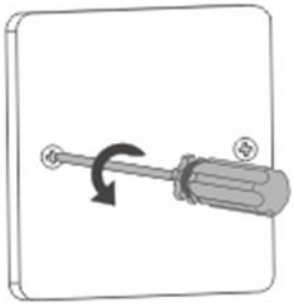
To ensure normal operation and prolonged service life of the access point, observe the following precautions:

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

## 3.3 Installing the Access Point

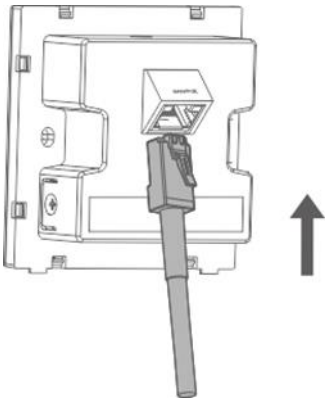
(1) Remove the panel of the 86-mm junction box from the wall.

**Figure 3-1 Removing the Panel of the 86-mm Junction Box**



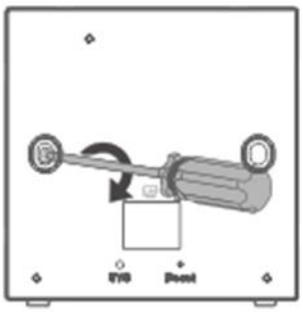
(2) Connect an Ethernet cable to the WAN/PoE port on the rear of the access point.

**Figure 3-2 Connecting an Ethernet Cable to the WAN/PoE Port**



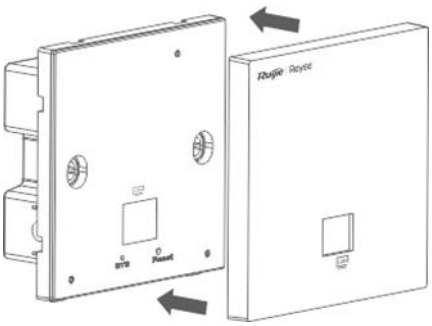
(3) Remove the cover from the access point. Install the access point in the 86-mm junction box, and secure the access point properly using the provided screws.

**Figure 3-3 Installing the Access Point in the 86-mm Junction Box**



(4) Install the decorative cover on the access point.

**Figure 3-4 Installing the Cover on the Access Point**



## 3.4 Bundling Cables

### 3.4.1 Precautions

- The cables should be bound in a visually pleasing way.
- When you bundle twisted pairs, make sure that the cables at the connectors have natural bends or bends of large radius.
- Do not over-tighten cable bundle as it may reduce the cable life and performance.

### 3.4.2 Steps

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

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

## 3.5 Checklist After Installation

- Verify that the access point is secured properly.
- Verify that the UTP/STP cable matches with the port type.
- Verify that cables are properly bundled.
- Verify that the PSE is at least 802.3af-capable.

# 4 Verifying Operating Status

## 4.1 Setting up Configuration Environment

If the access point adopts PoE power supply, verify that the power cable is properly connected and compliant with safety requirements.

## 4.2 Powering on the Access Point

### 4.2.1 Checklist Before Power-on

Verify that the PSE connected to the WAN/PoE port of the access point is at least 802.3af-capable.

### 4.2.2 Checklist After Power-on

- Verify the LED status.
- Verify that mobile phones or other terminals can discover the SSID after the access point is powered on. If multiple devices exist on the network, use SSID *@Ruijie-mXXXX*. If only one device exists on the network, use SSID *@Ruijie-sXXXX*.

## 4.3 Troubleshooting a Power Fault

Monitor the status of the access point and check whether a power fault occurs by observing the LED on the front panel. See Table 1-2 LED for details. If a power fault occurs, check the following items:

- Verify that the power supply is normal.
- Verify that the Ethernet cable is connected properly.

**Note**

- If the power supply is normal and the Ethernet cable is connected properly, but the access point still cannot be powered on, please contact the distributor or the technical support personnel.

# 5 Monitoring and Maintenance

## 5.1 Monitoring

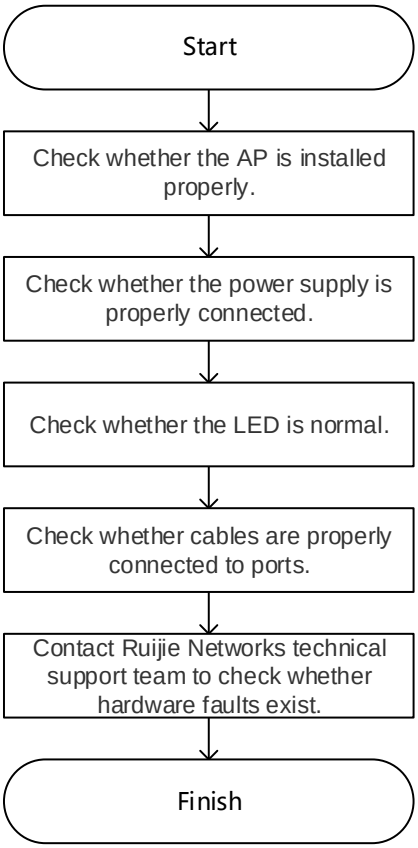
When RG-RAP1261 is operating, you can monitor its status by observing the LED.

## 5.2 Hardware Maintenance

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

# 6 Common Troubleshooting

## 6.1 General Troubleshooting Flowchart




## 6.2 Common Faults

- The status LED is still off after the access point is powered on.

  Verify that the PSE connected to the WAN/PoE port of the access point is at least 802.3af-capable. Check whether the Ethernet cable is connected properly and works normally.

- The Ethernet port does not work after the Ethernet cable is plugged in.

  Check whether the PSE connected to the WAN/PoE port of the access point is operating normally. Then verify that the Ethernet cable is capable of providing the required data rate and is properly connected.

- The client cannot find the access point.
  - Verify that the access point is properly powered.
  - Verify that the Ethernet port is correctly connected.
  - Verify that the access point is correctly configured.
  - Move the client closer to the access point.

# 7 Appendix

## 7.1 Connectors and Media

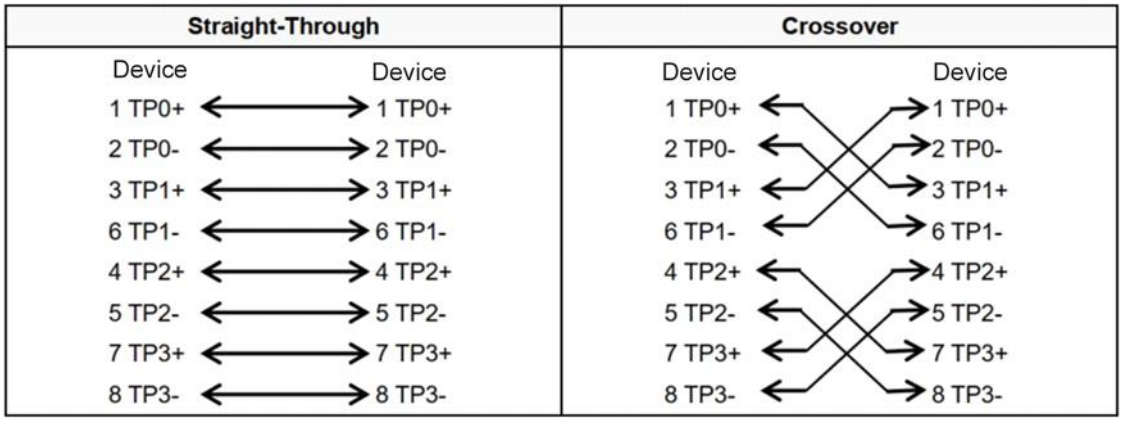
### 1000BASE-T/100BASE-TX/10BASE-T Port

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

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 (328.08 feet).

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

**Figure 7-1 Four Twisted Pairs Connection**




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

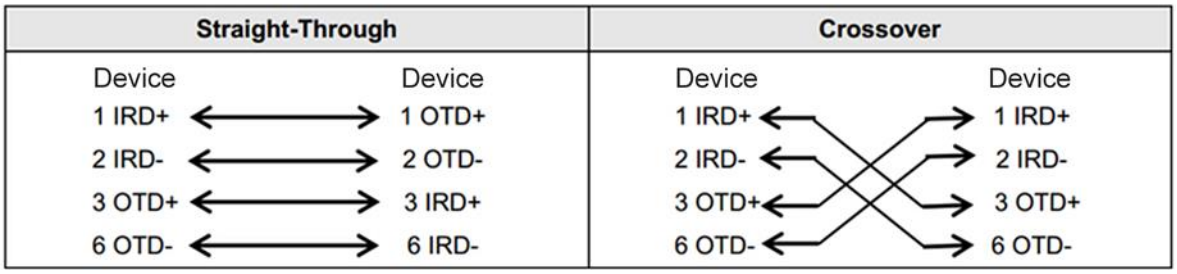
**Table 7-1 100BASE-TX/10BASE-T Pin Assignments**

| 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 |

The following figure shows feasible connections of the straight-through and crossover twisted pairs for a 100BASE-

TX/10BASE-T port.

**Figure 7-2 100BASE-TX/10BASE-T Connection**




## 7.2 Cabling Recommendations

When installing the device, route the cables through the cable management brackets. Top cabling or bottom cabling is adopted according to the actual situation in the equipment room. All adapted connectors should be placed at the bottom of the rack in an orderly manner instead of outside the rack that is easy to touch. Power cords are routed beside the rack. 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 the Minimum Cable Bending Radius

- The bend radius of a fixed power cord, Ethernet cable, or flat cable should be over five times greater than their respective external diameters. The bend radius of these cables that are often bent or plugged should be over seven times greater than their respective external diameters.
- The bend radius of a fixed common coaxial cable should be over seven times greater than its external diameter. The bend radius of these cables that are often bent or plugged should be over 10 times greater than their respective external diameters.
- The minimum bend radius of a high-speed cable, such as an SFP+ cable, should be over five times greater than its external diameter. The bend radius of these cables that are often bent or plugged should be over 10 times greater than their respective external diameters.

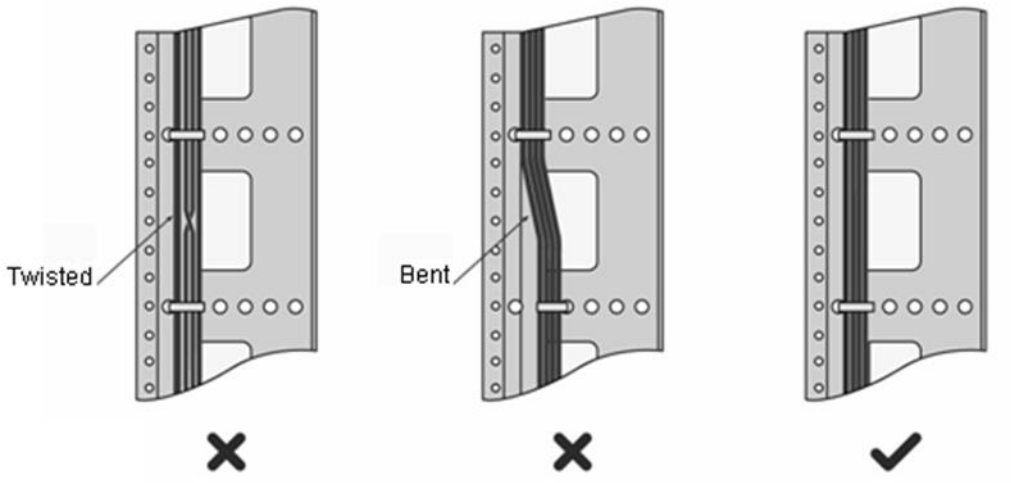
### Requirement for the Minimum Bend Radius of Optical Cables

- The diameter of the optical cable tray should be over 25 times greater than that of the optical cable.
- When an optical cable is moved, the bend radius of the optical cable should be over 20 times greater than the diameter of the optical cable.
- During cabling of an optical cable, its bend radius should be over 10 times greater than its diameter.

### Precautions for Cable Binding

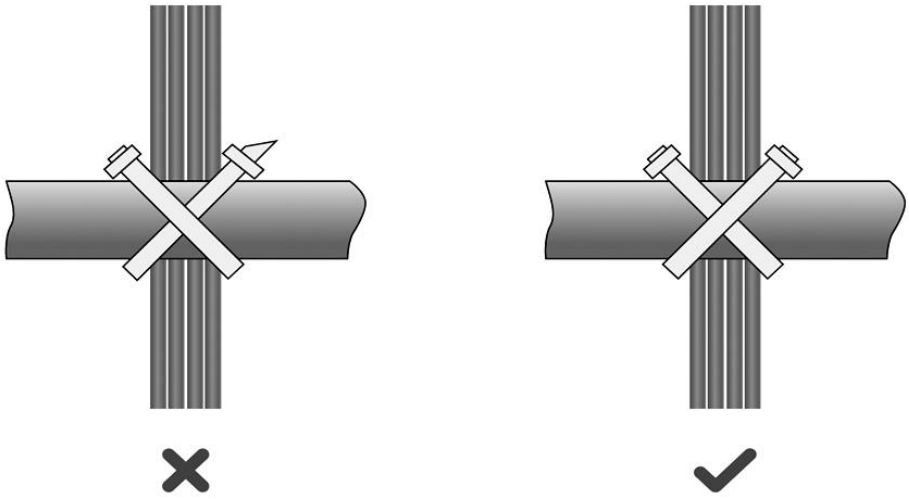
- Before cables are bundled, mark labels and stick the labels to cables wherever appropriate.
- Cables should be neatly and properly bundled in the rack without twisting or bending, as shown in Figure 7-3.

**Figure 7-3 Bundling Cables (1)**



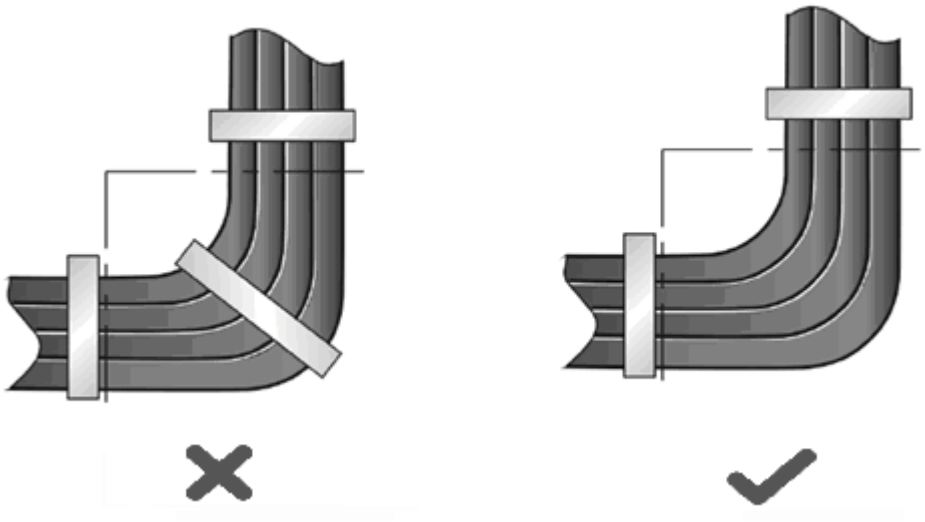

- Cables of different types (such as power cords, signal cables, and grounding wires) should be separated into cabling and bundling. Mixed bundling is disallowed. When they are close to each other, you are advised to adopt crossover cabling. In the case of parallel cabling, maintain a minimum distance of 30 mm (1.18 in.) between power cords and signal cables.
- The cable management brackets and cabling troughs inside and outside the rack should be smooth without sharp corners.
- The metal holes traversed by cables should have a smooth and fully rounded surface or an insulated lining.
- Use cable ties to bundle up cables properly. Please do not connect two or more cable ties to bundle up cables.
- After bundling up cables with cable ties, cut off the remaining part. The cut should be smooth and trim without sharp corners, as shown in Figure 7-4.

**Figure 7-4 Bundling Cables (2)**



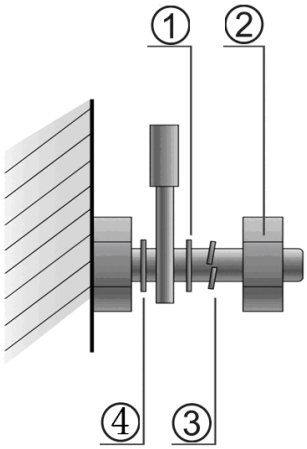
- When cables need to be bent, bundle them first but do not tie cables within the bend. Otherwise, stress may be generated on the cables and cause the wires inside to break, as shown in Figure 7-5.

**Figure 7-5 Bundling Cables (3)**



- Cables not to be assembled or the 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 the equipment running or damage the equipment or cables.
- Do not bind power cords to the guide rails of moving parts.
- The power cords connecting moving parts such as door grounding wires should be reserved with some excess after being assembled. This can avoid tension or stress on power cords. After the moving part is installed, the remaining cable part should not touch heat sources, sharp corners, or sharp edges. If heat sources must be touched, high-temperature cables should be used.
- When using screw threads to secure a cable lug, ensure that the bolt or screw is properly tightened and take measures to prevent it from loosening, as shown in Figure 7-6.

**Figure 7-6 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 the terminal connection and cable.
- Do not use tapping screws to secure cable lugs.
- 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.
- Bundle up cables by using cable tie according to Table 7-2.

**Table 7-2 Cable Bunch**

| Cable Bunch Diameter | Binding Space |
|---|---|
| 10 mm (0.39 in.) | 80–150 mm (3.15–5.91 in.) |
| 10–30 mm (0.39–1.18 in.) | 150–200 (5.91–7.87 in.) |
| 30 mm (1.18 in.) | 200–300 (7.87–11.81 in.) |

- Do not tie cables or bundles in a knot.
- For wiring terminal blocks (such as circuit breakers) with cord end terminals, the metal part of the cord end terminal should not be exposed outside the terminal block during assembly.