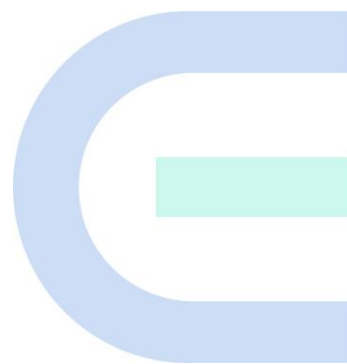# Ruijie Reyee RG-RAP1261 Access Point

Installation Guide

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This manual is designed merely as a user guide. Ruijie Networks has tried its best to ensure the accuracy and reliability of the content when compiling this manual, but it does not guarantee that the content of the manual is completely free of errors or omissions, and all the information in this manual does not constitute any explicit or implicit warranties.

Preface

Audience

This document is intended for:

- Network engineers

- Technical support and servicing engineers

- Network administrators

Technical Support

- Official website of Ruijie Reyee: https://reyee.ruijie.com

- Technical Support Website: https://reyee.ruijie.com/en-global/support

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

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

- Technical Support Email: service_rj@ruijienetworks.com

- Online Robot/Live Chat: https://reyee.ruijie.com/en-global/rita

Conventions

1. GUI Symbols

Interface symbol	Description	Example
Boldface	1. Button names 2. Window names, tab name, field name and menu items 3. Link	1. Click **OK**. 2. Select **Config Wizard**. 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.

Contents

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 can work in both 2.4 GHz and 5 GHz frequency bands and supports dual-stream MU-MIMO. The access point delivers a combined data rate of 2.976 Gbps, with up to 574 Mbps in the 2.4 GHz band and 2402 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

Item	Quantity
RG-RAP1261 Access Point	1
Cover (preinstalled on the access point)	1
M4 x 20 mm Philips Screw	2
User Manual	1
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. ● 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

Radio Design	Dual-radio, two spatial streams
Standard & Protocol	IEEE 802.11ax, IEEE 802.11ac wave2/wave1 and IEEE 802.11a/b/g/n
Operating Frequencies	802.11b/g/n/ax: 2.4 GHz to 2.4835 GHz 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
Antenna	Built-in omnidirectional antennas (2.4 GHz: 1.6 dBi; 5 GHz: 4.13 dBi) ⓘ **Note** The peak gain mentioned above refers to the gain of a single antenna.

Spatial Streams	2.4 GHz: two spatial streams, 2x2 MU-MIMO 5 GHz: two spatial streams, 2x2 MU-MIMO
Max. Data Rate	2.4 GHz: 574 Mbps 5 GHz: 2402 Mbps Combined: 2.976 Gbps
Modulation	OFDM: BPSK@6/9 Mbps, QPSK@12/18 Mbps, 16QAM@24 Mbps, and 64QAM@48/54 Mbps DSSS: DBPSK@1 Mbps, DQPSK@2 Mbps, and CCK@5.5/11 Mbps MIMO-OFDM: BPSK, QPSK, 16QAM, 64QAM, 256QAM, and 1024QAM OFDMA
Receiver Sensitivity	11b: –91 dBm (1 Mbps), –90 dBm (5.5 Mbps), –87 dBm (11 Mbps) 11a/g: –89 dBm (6 Mbps), –82 dBm (24 Mbps), –78 dBm (36 Mbps), –72 dBm (54 Mbps) 11n: –85 dBm (MCS0), –67 dBm (MCS7), –62 dBm (MCS8) 11ac: 20 MHz: –85 dBm (MCS0), –62 dBm (MCS8) 11ac: 40 MHz: –82 dBm (MCS0), –59 dBm (MCS8) 11ac: 80 MHz: –79 dBm (MCS0), –53 dBm (MCS9) 11ac: 160 MHz: –76 dBm (MCS0), –50 dBm (MCS9) 11ax: 20 MHz: –85 dBm (MCS0), –62 dBm (MCS8), –58 dBm (MCS11) 11ax: 40 MHz: –82 dBm (MCS0), –59 dBm (MCS8), –54 dBm (MCS11) 11ax: 80 MHz: –79 dBm (MCS0), –53 dBm (MCS9), –52 dBm (MCS11) 11ax: 160 MHz: –76 dBm (MCS0), –49 dBm (MCS11)
Max. Transmit Power	2.4 GHz ≤ 20 dBm 5 GHz ≤ 30 dBm ⓘ **Note** The transmitted power may vary based on local laws and regulations.
Power Adjustment	Configurable in increments of 1 dBm
Dimensions (W x D x H)	86 mm x 86 mm x 42.4 mm (3.39 in. x 3.39 in. x 1.67 in.)
Weight	0.16 kg (0.35 lbs.)
Service Port	Front panel: One 10/100/1000Base-T Ethernet downlink port Rear Panel: One 10/100/1000Base-T Ethernet uplink port, supporting PoE input
Management Port	N/A

Status LED	One system status LED
Power Supply	Standard PoE power supply, IEEE 802.3af/at-compliant
Max. Power Consumption	10.2 W
Bluetooth 5.0	Not supported
Environment	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% to 95% RH (non-condensing)
	Storage humidity: 5% to 95% RH (non-condensing)
Installation Method	In-wall mounting (installed in an 86-mm junction box)
Certification	CE
MTBF	> 400,000 hours

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/m³)	1.4×10^7	7×10^5	2.4×10^5	1.3×10^5

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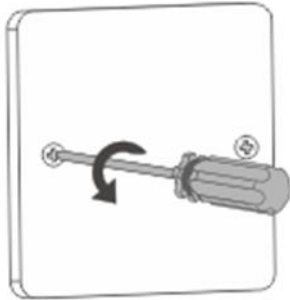
(2) Connect an Ethernet cable to the WAN/PoE port on the rear of the access point.

Figure 3-2   Connecting an Ethernet Cable to the WAN/PoE Port
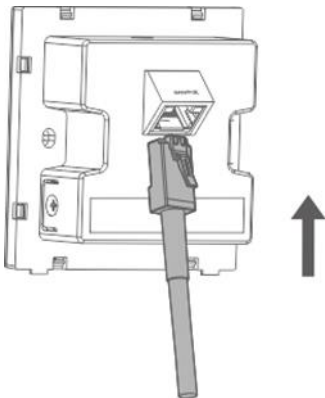
(3) Remove the cover from the access point. Install the access point in the 86-mm junction box, and secure the access point properly using the provided screws.

Figure 3-3   Installing the Access Point in the 86-mm Junction Box
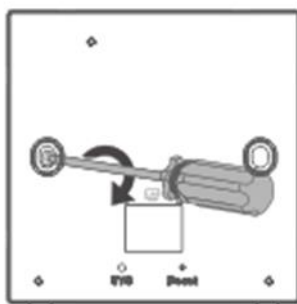
(4) Install the cover on the access point.

Figure 3-4   Installing the Cover on the Access Point
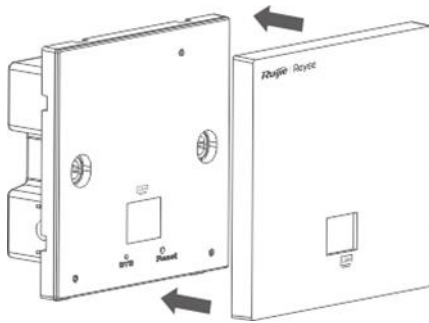
3.4 Bundling Cables

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
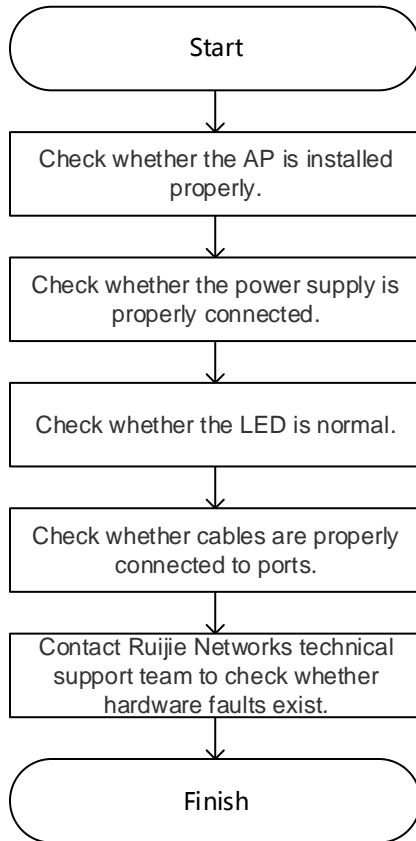
5.1 Monitoring

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

```
                    ┌──────────────────────┐
                    │        Start         │
                    └──────────────────────┘
                               │
                    ┌──────────────────────┐
                    │ Check whether the AP is installed │
                    │       properly.      │
                    └──────────────────────┘
                               │
                    ┌──────────────────────┐
                    │ Check whether the power supply is │
                    │   properly connected.│
                    └──────────────────────┘
                               │
                    ┌──────────────────────┐
                    │ Check whether the LED is normal. │
                    └──────────────────────┘
                               │
                    ┌──────────────────────┐
                    │ Check whether cables are properly │
                    │  connected to ports. │
                    └──────────────────────┘
                               │
                    ┌──────────────────────┐
                    │ Contact Ruijie Networks technical │
                    │  support team to check whether │
                    │  hardware faults exist. │
                    └──────────────────────┘
                               │
                    ┌──────────────────────┐
                    │        Finish        │
                    └──────────────────────┘
```

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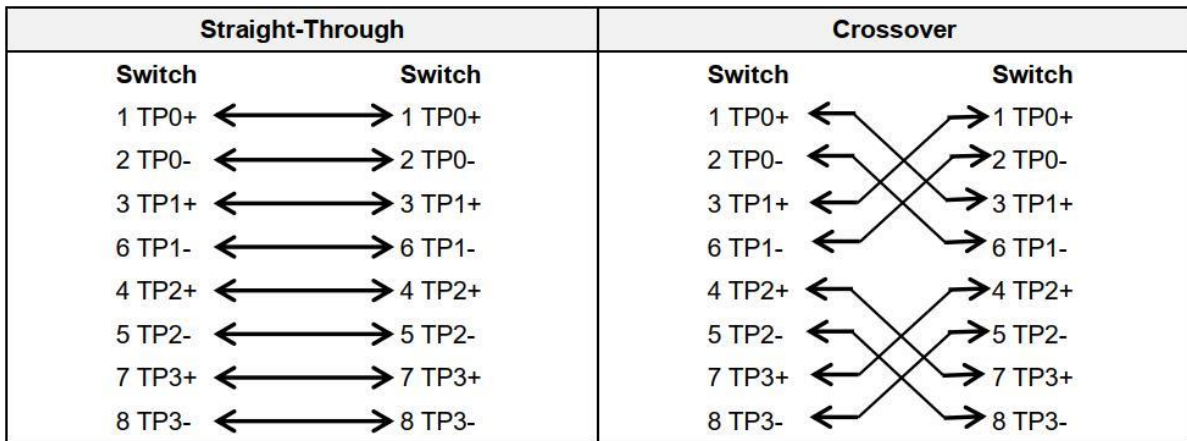
100BASE-TX/10BASE-T port can also be connected by cables of the preceding specifications. Besides, the 10BASE-T port can be connected by 100-ohm Category 3, Category 4, and Category 5 cables with a maximum distance of 100 meters (328.08 feet). 100BASE-TX port can be connected by 100-ohm Category 5 cables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

Straight-Through	Crossover
Switch Switch 1 IRD+ ←——————→ 1 OTD+ 2 IRD- ←——————→ 2 OTD- 3 OTD+ ←——————→ 3 IRD+ 6 OTD- ←——————→ 6 IRD-	Switch Switch 1 IRD+ ← → 1 IRD+ 2 IRD- ← → 2 IRD- 3 OTD+ ← → 3 OTD+ 6 OTD- ← → 6 OTD+