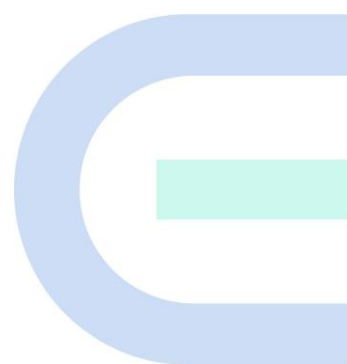


Ruijie Reyee RG-EG105GW(T) Router

Hardware Installation and Reference Guide



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Preface

Intended Audience

This document is intended for:

- Network engineers
- Technical support and servicing engineers
- Network administrators

Technical Support

- The official website of Ruijie Reyee: <https://www.ruijienetworks.com/products/reyee>
- Technical Support Website: <https://www.ruijienetworks.com/support>
- Case Portal: <https://caseportal.ruijienetworks.com>
- Community: <https://community.ruijienetworks.com>
- Technical Support Email: service_rj@ruijienetworks.com

Conventions

1. Signs

The signs used in this document are described as below:

Danger

An alert that calls attention to safety operation instructions that if not understood or followed when operating the device can result in physical 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. 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

The RG-EG105GW(T) is an AC1300M Wi-Fi5 router developed by Ruijie Networks for enterprises. The device can be used as an AP. The software system of RG-EG105GW(T) supports enterprise-class application control and access authentication. The device also supports the expansion of four wired RJ45 interfaces and allows the access of wireless clients.

RG-EG105GW(T) adopts a flexible design that can be mounted on a workbench or wall to effectively save the space. The router is applicable to offices, cafes, restaurants and stores.

1.1 Package Contents

Table 1-1 Package Contents

Item	Quantity
RG-EG105GW(T) Router	1
User Manual	1
Power Adapter	1
Warranty Card	1
Mounting Bracket (With 4 Foot Pads)	1
CA3 x 24 mm Bolt	2
Expansion Anchor	2



Note

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

1.2 Product Appearance

1.2.1 RG-EG105GW(T)

Figure 1-1 Appearance of a RG-EG105GW(T) Router

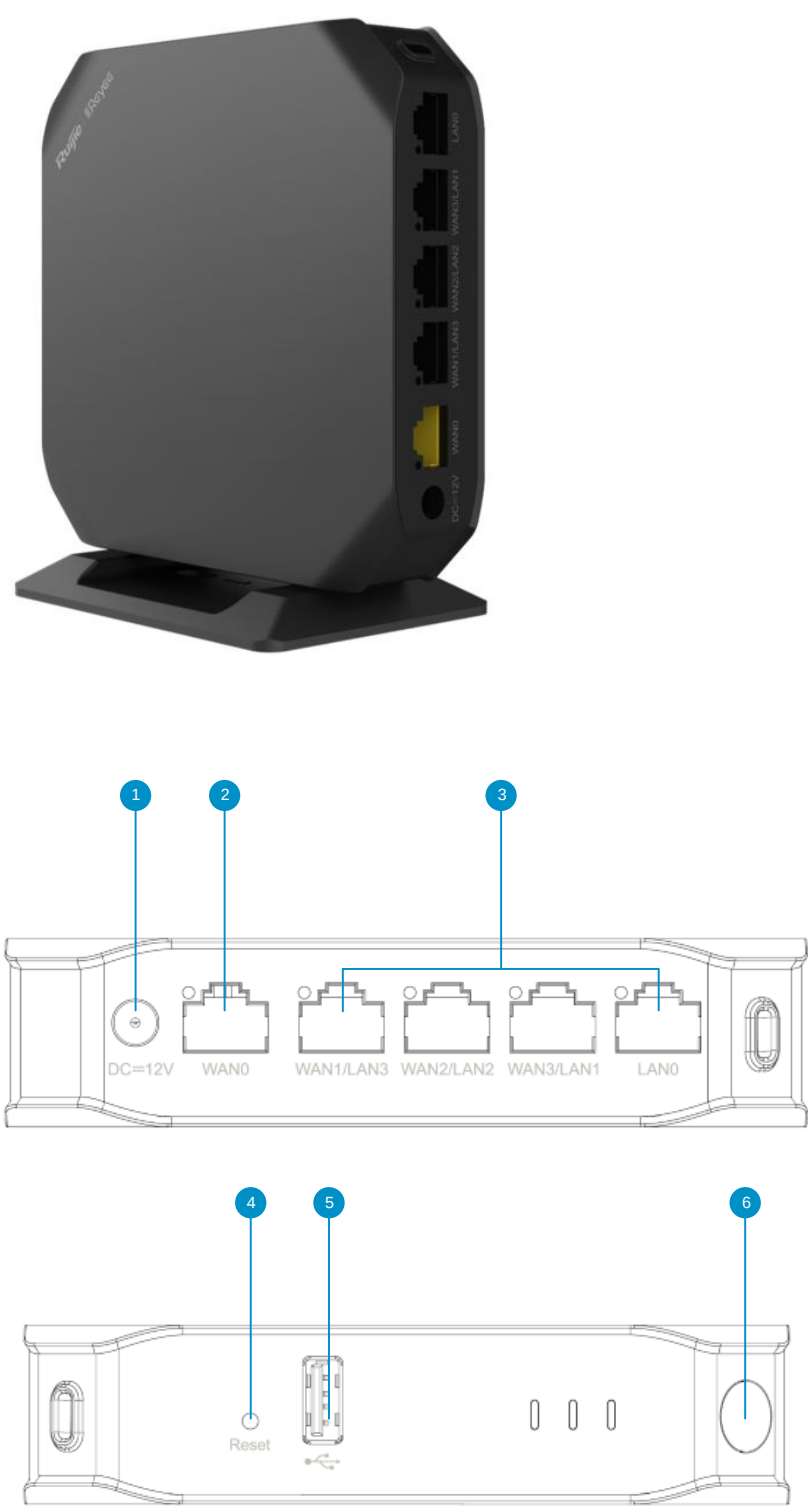


Table 1-2 Panel Specifications

No.	Description
1	DC=12V: Power plug
2	WAN0: Configure the WAN0 port to establish an Internet connection.
3	LAN0-LAN3: Connect the LAN0-LAN3 ports to the switch, the access point or other network devices with an Ethernet cable. Note: If the LAN port is connected to the AP directly, a power supply module needs to be installed on the AP.
4	Reset Button: Press the Reset button for less than 2 seconds to restart the device. Press the Reset button for over 5 seconds to restore the router to factory settings. (Release the button when the system status LED blinks).
5	USB2.0 Port
6	Mesh Button: Press the Mesh button for less than 2 seconds to perform Mesh pairing.

1.2.2 LED

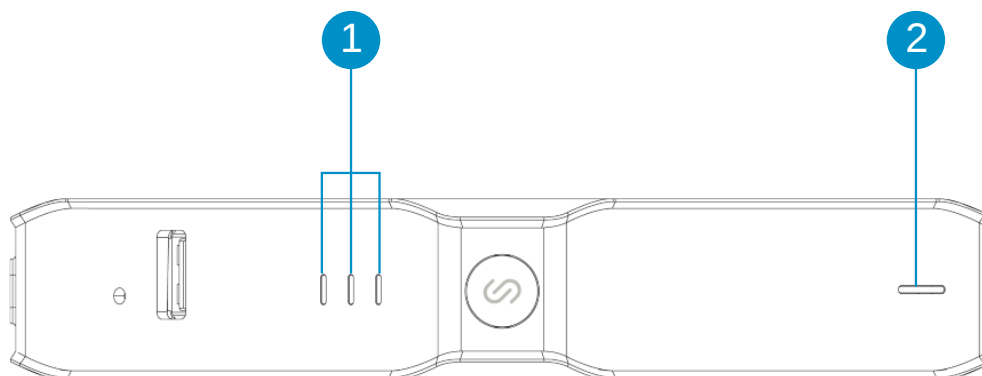


Table 1-3 LED Specifications

No.	LED	Status	Description
1	MESH LED (White)	Off	1. Mesh pairing is not implemented. 2. Wireless relay is not set up.
		Flashing alternately	Mesh pairing is in progress.
		Three bars on	1. The Mesh signal strength is high. 2. The wireless relay signal strength is high.
		Two bars on	1. The Mesh signal strength is medium. 2. The wireless relay signal strength is medium.
		One bar on	1. The Mesh signal strength is low. 2. The wireless relay signal strength is low.
2	SYS LED (Blue)	Flashing	- Fast flashing (at 8 Hz): The router is starting up. - Slow flashing (at 0.5 Hz): The network is unreachable. - One long flash followed by three short flashes (at 0.8 Hz): The router is faulty. - Flashing twice in succession (at 0.8 Hz): - The router is restoring factory settings. - The router is upgrading the software. Note: Do not power off the router in this case.
		Solid on	The router is functioning properly.
		Off	The router is not powered on.

1.2.3 Power Supply

The RG-EG105GW(T) router adopts the power adapter (12 V/1.5 A) delivered with the device.

1.3 Technical Specifications

Table 1-4 Technical Specifications

RF Design	Dual-stream and dual-radio
Transport Protocols	Compliant with 802.11ac wave2/wave1 and 802.11a/b/g/n simultaneously.

Operating Bands	802.11b/g/n: 2.4 GHz to 2.4835 GHz 802.11a/n/ac: 5 GHz: 5.150 GHz to 5.350 GHz, 5.47 GHz to 5.725 GHz, 5.725 GHz to 5.850 GHz Note: The operating band varies in different countries.
Antenna Type	Built-in omnidirectional antenna
Spatial Streams	2.4 GHz: 2 x 2 MIMO 5 GHz: 2 x 2 MIMO
Transmission Rate	Radio 1: 2.4 GHz, 400 Mbps Radio 2: 5 GHz, 867 Mbps Maximum access rate per device: 1267 Mbps
Modulation	OFDM: BPSK@6/9 Mbps, QPSK@12/18 Mbps, 16QAM@24/36 Mbps, 64QAM@48/54 Mbps DSSS: DBPSK@1 Mbps, DQPSK@2 Mbps, and CCK@5.5/11 Mbps MIMO-OFDM: BPSK, QPSK, 16QAM, 64QAM, 256QAM
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: VHT20: -83 dBm (MCS0), -57 dBm (MCS9) 11ac: VHT40: -79 dBm (MCS0), -57 dBm (MCS9) 11ac: VHT80: -76 dBm (MCS0), -51 dBm (MCS9)
Maximum Transmit Power	2.4 GHz: ≤ 26 dBm (Adjustable) 5 GHz: ≤ 25 dBm (Adjustable) Note: The actual transmit power may vary in different countries and regions according to the rules and regulations.
Adjustable Power	1 dBm
Dimensions (W × D × H)	120 mm × 120 mm × 28 mm (4.72 in. × 4.72 in. × 1.10 in., without the brackets)
Weight	0.25 kg (0.55 lbs, without the brackets) Note: The value indicates the weight of the router only.
Service Ports	One 10/100/1000Base-T WAN port, one 10/100/1000Base-T LAN port and three 10/100/1000Base-T WAN/LAN switchable ports
LEDs	One blue system status LED and one white MESH LED (with three bars, indicating the MESH signal strength.)
Power Supply	Adopt local power supply, DC adapter (12 V/1.5 A)

Power Consumption	≤ 15 W
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% (non-condensing)
	Storage humidity: 5% to 95% (non-condensing)
Mounting	Wall mounting, tabletop or workbench mounting
Certification	CE, RoHS
MTBF	> 400,000 hours

1.4 Cooling

The RG-EG105GW(T) router adopts fanless design.

 Note

Reserve sufficient space around the device for air circulation.

2 Preparing for Installation

2.1 Safety Precautions

 Note

- To avoid personal injury and device damage, carefully read the safety precautions before you install the device.
 - The following safety precautions may not cover all possible dangers.
-

2.2 General Safety Precautions

- Do not expose the device to high temperature, dusts, or harmful gases. Do not install the device in an inflammable or explosive environment. Keep the device away from EMI sources such as large radar stations, radio stations, and substations. Do not subject the router to unstable voltage, vibration, and noises.
 - The installation site should remain dry. Keep the device at least 500 m (0.31 mile) 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 subject to the features of network planning and communication equipment, taking into consideration the climate, hydrology, geology, earthquake, electrical power, and transportation.
-

 Note

Please follow the procedures described in the user manual to install and remove the device.

2.3 Electric Safety

- Observe local regulations and specifications during electric operations. Only personnel with relevant qualifications can perform such operations.
 - Check whether there are potential risks in the work area. For example, check whether the power supply is grounded, whether the grounding is reliable, and whether the ground is wet.
 - Learn about the position of the indoor emergency power switch before installation. Cut off the power switch in case of accidents.
 - Make sure that the device is powered off when you cut off the power supply.
 - Do not place the device in a damp/wet location. Do not let any liquid enter the chassis.
 - Keep the device far away from grounding or lightning protection devices for power equipment.
 - Keep the device away from radio stations, radar stations, high-frequency high-current devices, and microwave ovens.
-

 Caution

- 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 with high voltage or mains power supply through wet objects may cause fatal dangers.
-

2.4 Installation Environment Requirements

The RG-EG105GW(T) router must be used indoors. To ensure normal operation and prolong the service life of the device, the installation site must meet the following requirements.

2.4.1 Installation Requirements

- Install the device into an open environment. If the device is installed into a closed environment, ensure that the cabinet has proper ventilation and heat dissipation.
- Make sure that the installation site is sturdy enough to bear the weight of the device and its accessories.
- You are advised to install the device on a standard workbench and maintain a proper clearance around the air vents for heat dissipation.

2.4.2 Ventilation Requirements

The RG-EG105GW(T) router adopts natural cooling. Reserve sufficient space around the device to ensure normal heat dissipation.

2.4.3 Temperature and Humidity Requirements

To ensure the normal operation and prolonged service life of the device, maintain an appropriate temperature and humidity in the equipment room. The equipment room with too high or too low temperature and humidity for a long period may damage the device.

- In an environment with high 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 device.
- Too high temperatures can accelerate the aging of insulation materials, greatly reducing the reliability of the device and severely affecting its service life.

Table 2-1 Temperature and Humidity Requirements

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

2.4.4 Cleanliness Requirements

Dust poses a major threat to the device. The indoor dust takes on a positive or negative static electric charge when falling on the device, causing poor contact of the metallic joint. Such electrostatic adhesion may occur more easily when the relative humidity is low, not only affecting the service life of the device, but also causing communication faults. The following table describes the requirements for the dust content and granularity in the equipment room.

Table 2-2 Requirements for Dust

Max Diameter of Dust Particle (μm)	0.5	1	3	5
Max Content (Particles/m ³)	1.4×10 ⁷	7×10 ⁵	2.4×10 ⁵	1.3×10 ⁵

Apart from dust, the salt, acid, and sulfide in the air in the server room must meet strict requirements. These harmful substances will accelerate metal corrosion and component aging. Therefore, the equipment room should be properly protected against the intrusion of harmful gases, such as sulfur dioxide, hydrogen sulfide, nitrogen dioxide, ammonia and chlorine gas. The following table lists limit values for harmful gases.

Table 2-3 Requirements for Gases

Gas	Average (mg/m ³)	Maximum (mg/m ³)
Sulfur dioxide (SO ₂)	0.2	1.5
Hydrogen sulfide (H ₂ S)	0.006	0.03
Nitrogen dioxide (NO ₂)	0.04	0.15
Ammonia (NH ₃)	0.05	0.15
Chlorine gas (Cl ₂)	0.01	0.3

2.4.5 EMI Requirements

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

2.5 Tools

Table 2-4 Tools

Common Tools	Phillips screwdrivers, power cords, Ethernet cables, fastening bolts, diagonal pliers, and binding straps
Special Tools	Antistatic gloves, wire stripper, crimping pliers, crystal connector crimping pliers, and wire cutter
Meter	Multimeter, and bit error rate tester (BERT)

Note

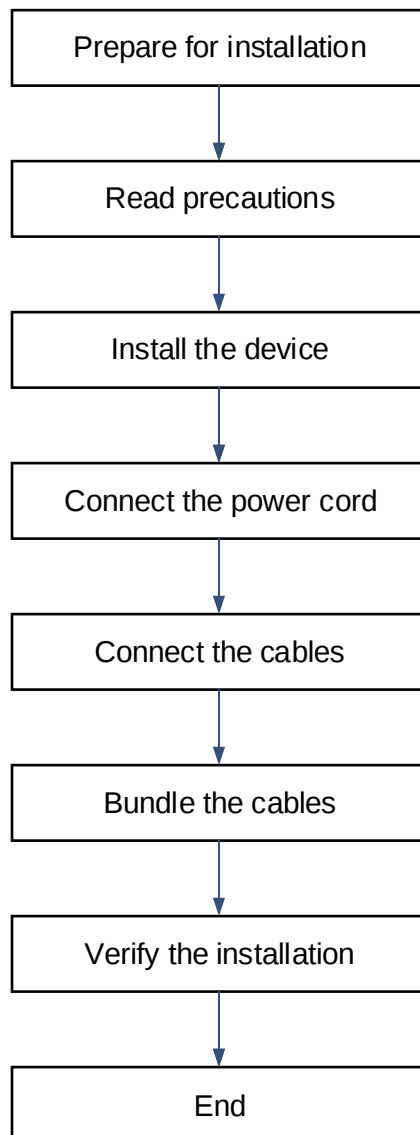
The router is delivered without a tool kit. The tool kit is customer-supplied.

3 Installing the Router

The RG-EG105GW(T) router must be installed indoors.

3.1 Installation Procedure

To avoid damage to the router, please follow the steps for installation.



3.2 Before You Begin

Please confirm that you have read Chapter 2 carefully and that the requirements described in Chapter 2 are all met.

3.2.1 Pre-installation Checklist

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

- The installation site provides sufficient space for heat dissipation.
- The installation site meets the temperature and humidity requirements of the device.
- 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 device.
- The installation site meets the site requirements of the device.
- The custom device meets the requirements of the user.

3.2.2 Precautions

To ensure the normal operation and prolonged service life of the device, please observe the following precautions:

- Do not power on 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.
- Install the device indoors.
- Do not expose the device in a thunderstorm or strong electric field.
- Keep the device clean and dust-free.
- Cut off the power switch before cleaning the device.
- Do not wipe the device with a damp cloth.
- Do not wash the device with liquid.
- Do not open the enclosure when the device is working.
- Fasten the device tightly.

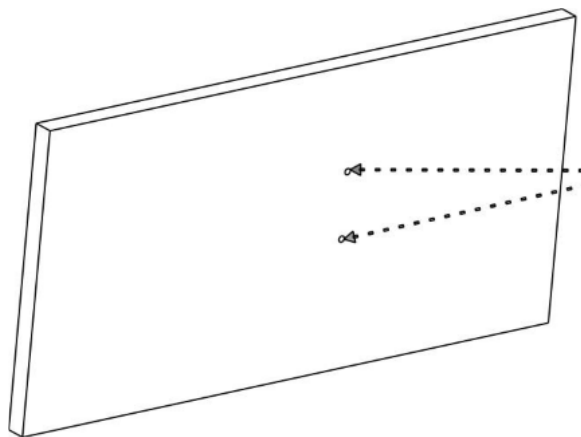
3.3 Installing the Router

Note

- You are advised to install the device where you can get the optimal coverage. Keep the front panel of the device facing the coverage area.
 - The installation guide is for reference only. The actual product shall prevail.
 - Make sure that the power socket is available around the device subject to the power cord length of the adapter.
-

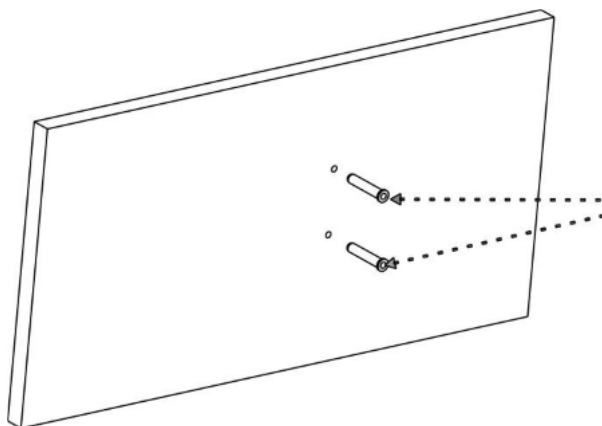
3.3.1 Installing the Router on a Wall

- (1) Drill two holes on the wall. The holes should be level with each other and their centers should be 30 mm (1.18 in.) to 38 mm (1.50 in.) apart.



Drill two holes on the wall with the center-to-center distance of 30 mm (1.18 in.) to 38 mm (1.50 in.).

- (2) Tap the two expansion anchors into the holes and make the outer edge of the anchors flush with the wall.

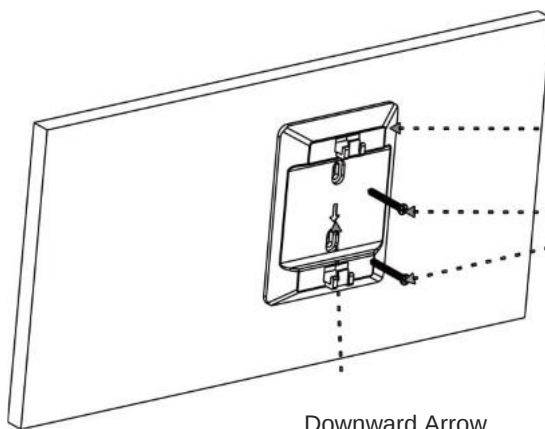


Tap the expansion anchors into the holes.

- (3) Attach the mounting bracket to the wall with its two holes aligned to the expansion anchors. Drive two screws into the expansion anchors to secure the bracket on the wall.

Note

Ensure that the arrow symbol on the bracket should point downwards (↓) when installing the bracket.

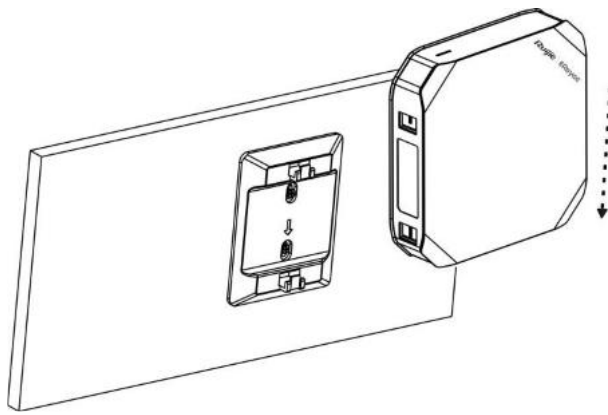


Attach the mounting bracket to the wall with its two holes aligned to the expansion anchors.

Drive two screws into the anchors to secure the bracket on the wall.

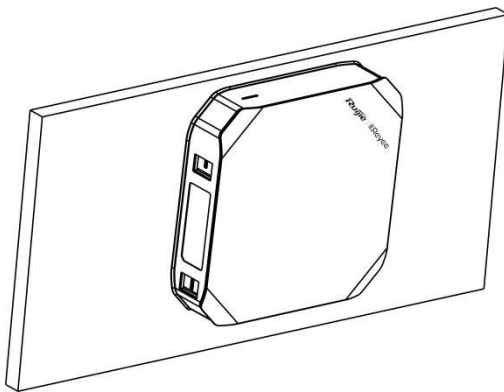
Downward Arrow

- (4) Gently slide the router onto the mounting bracket until it clicks into place.



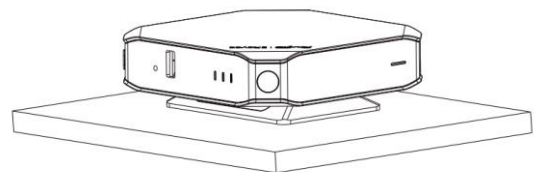
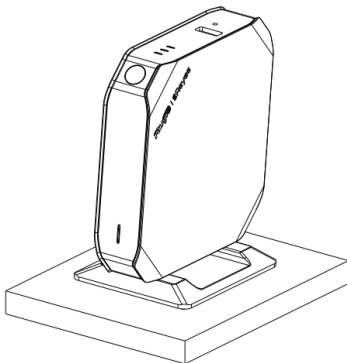
Gently slide the router onto the mounting bracket until it clicks into place.

(5) Secure the router on the mounting bracket.



3.3.2 Installing the Router on a Workbench

The router can be also installed on a workbench vertically and horizontally, as shown in the following figures.



Note

- Connect the Ethernet cables to the router after installation.
 - Slide the router onto the mounting bracket in the orientation of the arrow on the bracket until it clicks into place. Do not forcibly slide the router onto the mounting bracket.
 - Verify that the router is properly secured on the bracket after installation.
-

3.4 Connecting the Power Cord

The delivered power adapter adopts the AC power supply: 100 V AC to 240 V AC, 50/60 Hz. Ensure that the power supply meets the requirements.

Please connect the power cord based on the following steps:

- (1) Connect the delivered DC adapter connector to the DC input plug on the router.
- (2) Connect the other end of the DC adapter to the AC power socket.

 Caution

- Learn about the position of the power switch before installation. Cut off the power switch in case of accidents.
 - Verify that the external power supply is cut off before the router is powered on.
-

3.5 Connecting the Ethernet Cables

For cable pairs, please refer to Appendix A.

- WAN port: Connect the WAN port to the Internet with an Ethernet cable.
- LAN port:
 - Connect the AP to the LAN port on the router with an Ethernet cable. After power-on, the router will broadcast the SSID @Ruijie-XXXXX.
 - Connect the PC to the LAN port of the router with an Ethernet cable. Enable **Automatic (DHCP)** on the PC to obtain an IP address automatically.

 Caution

Avoid a small bend radius at the connector.

3.6 Bundling the Cables

Pay attention to the following precautions when bundling the cables:

- The power cords and other Ethernet cables should be bundled in a visually pleasing way.
- When you bundle twisted pairs, make sure that the twisted pairs at the connectors have natural bends or bends of large radius.
- Do not bundle twisted pairs too tightly, as this may press hard the cables and affect their service life and transmission performance

3.7 Checking after Installation

3.7.1 Checking Cable Connection

- Verify that the UTP/STP cable matches with the interface type.
- Verify that cables are properly bundled.

3.7.2 Checking Power Supply

Verify that the power cord is properly connected and compliant with safety requirements.

4 Configuring the Router

4.1 Powering on the Router

4.1.1 Checklist before Power-on

Before power-on, check the following items:

- Check whether the power cord is properly connected.
- Check whether the power supply voltage meets the requirement.
- Check whether the Ethernet cable is properly connected, whether the client (like a PC) is started, and whether configuration parameters are configured.



Note

Learn about the position of the power switch before power-on. Cut off the power switch in case of accidents.

4.1.2 Powering on the Router

Turn on the power switch of the external power supply and then the device starts up.

4.1.3 Checklist after Power-on

After power-on, check the following items:

- Check whether the LEDs function properly.
For details, see [Section 1.3.2 LED](#).
- Check whether the Web management system of the device is available.

Please visit <http://192.168.110.1> by default to perform configuration on the Web management system.

4.2 Configuring the Router

To better use the router, please configure the device on the Web management system subject to specific needs. For details, see *Ruijie Reyee RG-EG-W Series Routers Web-based Configuration Guide, Release ReyeeOS 1.99*.

4.3 Setting up a Mesh Network

- (1) Connect the first router to the network and configure it as the primary device.
- (2) Place the second router 2 m (6.56 ft) away from the first router. Power on the second router.

The system status LED of the second router blinks for 2 to 3 minutes. When the system status LED is solid on, the second router is started up.

- (3) Press the MESH button on the first router to perform mesh pairing automatically.

The MESH LEDs on both routers are blinking for about 2 minutes. When the MESH LEDs stop blinking and turn solid white, mesh pairing succeeds.

- (4) Place the second router where you want to have Wi-Fi coverage and then power on the router.

Wait for 3 to 5 minutes until the MESH LED turns solid on. Mesh networking succeeds and you can access the Internet by connecting to the new Wi-Fi network.

**Note**

- Make sure that the new router is around the primary router and there are not too many obstacles between them.
 - If three or more routers are added for mesh networking, repeat with step 2 to 4. You can add eight devices in batch at one time.
-

5 Installation Troubleshooting

5.1 Power Troubleshooting

You can check whether the power supply is faulty by observing the LEDs on the router. For the LED status, see Chapter 1. If a fault occurs, check the following items:

- Check whether the power cord is connected properly.
- Check whether the power supply meets the requirements.

 Caution

Do not attempt hot swapping of the power cord. If the steps above did not solve your problem, contact your local distributor or technical support personnel.

5.2 System Troubleshooting

If the router is operational after power-on, you can visit the Web management system.

If you fails to log in to the Web management system, check the following items:

- Check whether the power supply works normally.
- Check whether the Ethernet cable is connected properly.
- Check whether **Automatic (DHCP)** is enabled on the PC.

6 Monitoring and Maintenance

6.1 Monitoring

When the router is running, you can monitor the device by observing the LED.

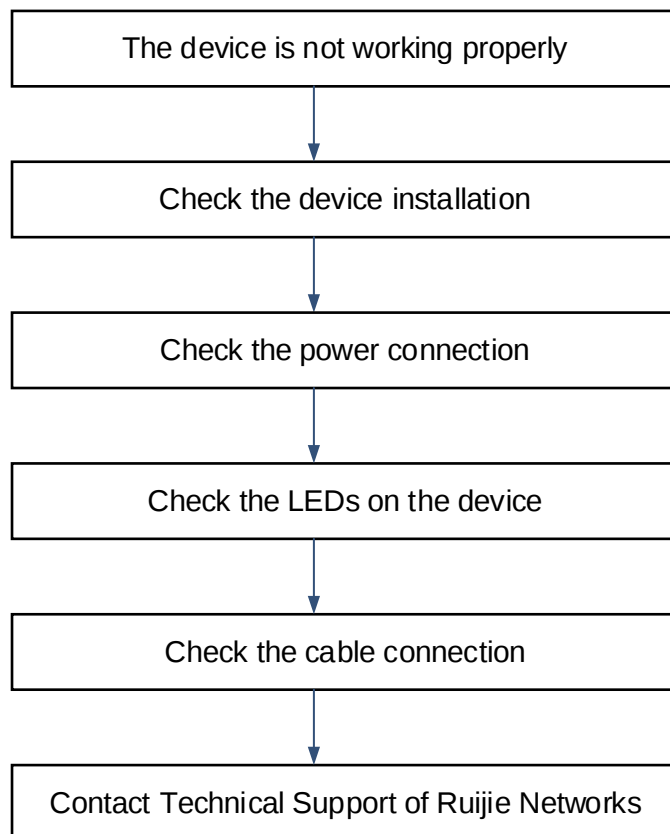
6.2 Hardware Maintenance

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

7 Common Troubleshooting

7.1 General Troubleshooting Procedures

If the router is not operational after power-on, follow the procedures for troubleshooting.



7.2 Common Faults

7.2.1 Fault 1: The LED is still off after the router is powered on.

- (1) Verify that the adapter has power input.
- (2) Verify that the adapter is functioning properly,

7.2.2 Fault 2: The Ethernet port does not work after the Ethernet cable is plugged in.

- (1) Verify that the peer device (switch, AP or other client) is working properly.
- (2) Verify that the Ethernet cable is capable of providing the required data rate and is properly connected.

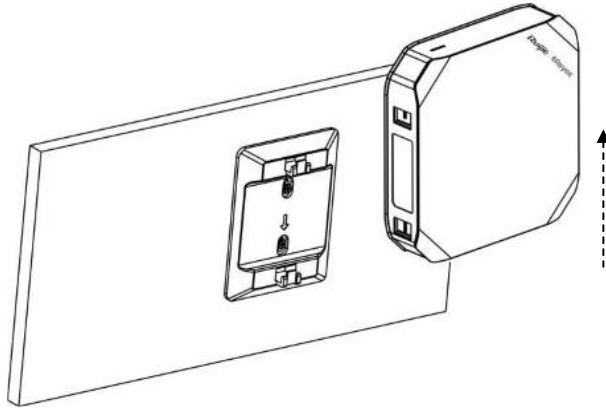
7.2.3 Fault 3: The client cannot find the router.

- (1) Verify that the device is properly powered.
- (2) Verify that the Ethernet port is correctly connected.

- (3) Verify that the router is correctly configured.
- (4) Move the client endpoint to adjust the distance between the client and the router.

7.2.4 Fault 4: The router cannot be removed.

Hold the router with your hands and push it upward and away from the bracket in the opposite orientation of the arrow on the bracket.



8 Appendix A Connectors and Media

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

The 1000BASE-T/100BASE-TX/10BASE-T is a 10/100/1000 Mbps self-adaptive port that supports 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 feet).

The 1000BASE-T port requires all four pairs of wires be connected for data transmission.

Table 8-1 1000BASE-T Connection

Straight-Through		Crossover	
Switch	Switch	Switch	Switch
1TP0+ ←	→ 1TP0+	1TP0+ ←	→ 1TP0+
2TP0- ←	→ 2TP0-	2TP0- ←	→ 2TP0-
3TP1+ ←	→ 3TP1+	3TP1+ ←	→ 3TP1+
6TP1- ←	→ 6TP1-	6TP1- ←	→ 6TP1-
4TP2+ ←	→ 4TP2+	4TP2+ ←	→ 4TP2+
5TP2- ←	→ 5TP2-	5TP2- ←	→ 5TP2-
7TP3+ ←	→ 7TP3+	7TP3+ ←	→ 7TP3+
8TP3- ←	→ 8TP3-	8TP3- ←	→ 8TP3-

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 (328 feet). The following table shows 100BASE-TX/10BASE-T pin assignments.

Table 8-2 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 table shows the wiring of straight-through and crossover cables for 100BASE-TX/10BASE-T.

Table 8-3 100BASE-TX/10BASE-T Twisted Pair Connection

Straight-Through		Crossover	
Switch	Adapter	Switch	Switch
1 IRD+	1 OTD+	1 IRD+	1 IRD+
2 IRD-	2 OTD-	2 IRD-	2 IRD-
3 OTD+	3 IRD+	3 OTD+	3 OTD+
6 OTD-	6 IRD-	6 OTD-	6 OTD-