



Ruijie RG-AP110-L Access Points

Hardware Installation and Reference Guide V1.0

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Preface

Thank you for using our products. This manual will guide you through the installation of the device.

This manual describes the functional and physical features and provides the device installation steps, hardware troubleshooting, module technical specifications, and specifications and usage guidelines for cables and connectors.

Audience

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.


Obtaining Technical Assistance


- Ruijie Networks Website: <https://www.ruijienetworks.com/>
- Technical Support Website: <https://ruijienetworks.com/support>
- Case Portal: <https://caseportal.ruijienetworks.com>
- Community: <https://community.ruijienetworks.com>
- Technical Support Email: service_rj@ruijienetworks.com
- Skype: [service_rj@ruijienetworks.com](https://www.skype.com/people/service_rj@ruijienetworks.com)

Related Documents

Documents	Description
Configuration Guide	Describes network protocols and related mechanisms that supported by the product, with configuration examples.
Command Reference	Describes the related configuration commands, including command modes, parameter descriptions, usage guides, and related examples.

Symbol Conventions

 Means reader take note. Notes contain helpful suggestions or references.

 Means reader be careful. In this situation, you might do something that could result in equipment damage or loss of data.


1 Product Overview

RG-AP110-L, which features a simple design and is easy to deploy, is designed for SMB scenarios. This 802.11n-based AP can be installed on an 86-type faceplate mounting box without damaging interior trim, which makes it an ideal choice for SMBs like hotels.

1.1 Technical Specifications

Table 1-1 Technical Specifications of RG-AP110-L

Hardware Specifications	
Hardware Version	V1.00
Operating Bands	802.11b/g/n: 2.4 GHz to 2.4835 GHz
Spatial Streams	2 streams, 2x2 MIMO
Max Throughput	Up to 300Mbps
Max Transmit Power	<100mw (20dBm, RF card transmit power only) (Depending on the country of use, laws and regulations.)
Dimensions (W x D x H)	86 mm x 86 mm x 31 mm
Weight	0.1 kg
Service Ports	One 10/100Base-T WAN port One 10/100Base-T LAN port
Reset Button	Support
LED Indicator	Support
Power Supply	Support 802.3af and 802.3at PoE power supply Not support local power supply
Antenna	Built-in omnidirectional antenna (Base gain 2 dBi)
Power Consumption	< 5W
IP Rating	IP41
Temperature	Operating: 0°C to 40°C (32°F to 104°F)
	Storage: -40°C to 70°C (-40°F to 158°F)
Humidity	Operating: 5% to 95% RH (non-condensing)
	Storage: 5% to 95% RH (non-condensing)
MTBF	>250,000H

 RG-AP101-L is a class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

1.2 Product Image

The AP provides two service ports: one 10/100Base-T LAN port on the front panel, and one 10/100Base-T WAN port on the rear panel.

Figure 1-1 Front View of RG-AP110-L



Figure 1-2 Rear View of RG-AP110-L



1.3 LED Indicator and Reset Button

Figure 1-3 Indicator and Reset Button on the AP



LED/Button	Frequency	Meaning
System (Blue)	Fast blinking (2.5Hz)	Initialization is in progress.
	Solid	AP is operational and CAPWAP connection is established. No STA is associated.
	Double blinking (1Hz)	Ethernet link is down.
	Single blinking (1Hz)	Ethernet link is up. No CAPWAP connection is established.
	Slow blinking (0.4Hz)	AP is operational and CAPWAP connection is established. At least one STA is associated.
Reset Button	Pressed for less than 1s	Restarts the device.
	Pressed for more than 5s	Restores all default settings.

2 Preparing for Installation

2.1 Safety Suggestions

To ensure normal operation and a prolonged useful life of the equipment, the installation site must meet the following requirements.

To prevent device damage and bodily injury, please read carefully the safety recommendations described in this chapter.

- Keep the device away from liquid.
- Keep the device away from any heat source.
- Wear antistatic wrist strap when installing the device.
- Do not wear loose clothes or accessories that may be hooked or caught by the device during installation and maintenance.
- Do not place the equipment in a walking area.
- UPS is recommended to prevent power failure and power interference.



The recommendations do not cover all possible hazardous situations.



Use Cat 5 or more advanced cables for connection.

2.2 Installation Site Requirements

2.2.1 Temperature and Humidity

Required operating temperature and humidity are as follows:

- Temperature: 0°C to 40°C (14°F to 104°F)
- Humidity: 5% to 95% (non-condensing)

2.2.2 Cleanness

Dust poses a serious threat to device operation. Dust that falls onto the surface of the device can be absorbed onto metal contact points by static electricity, resulting in poor contact. Electrostatic absorption of dust occurs more easily when the relative humidity is low, which may shorten the service life of the device and cause communication failures. Table 2-2 shows the maximum concentration and diameter of dust allowed in the equipment room.

Table 2-1

Maximum diameter (µm)	0.5	1	3	5
Maximum concentration (Particles/m ³)	1.4 x 10 ⁷	7 x 10 ⁵	2.4 x 10 ⁵	1.3 x 10 ⁵

Besides, the contents of salts, acids and sulfides in the air are also strictly limited for the equipment room. These substances can accelerate metal corrosion and the aging of some parts. Table 2-3 describes the limit of some hazardous gases such as SO₂, H₂S, NO₂ and Cl₂ in the equipment room.

Table 2-2

Gas	Average (mg/m ³)	Maximum (mg/m ³)
SO ₂	0.2	1.5
H ₂ S	0.006	0.03
NO ₂	0.04	0.15
NH ₃	0.05	0.15
Cl ₂	0.01	0.3

2.2.3 Static Discharge Damage Prevention

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

- Indoor dust prevention
- Proper humidity conditions

2.2.4 EMI Consideration

- Effective measures should be taken for the power system to prevent the interference from the electric grid.
- The working ground of the access point should be properly separated and kept as far as possible from the grounding device of the power equipment or the anti-lightning grounding device.
- Keep the equipment away from high-power radio transmitter, radar transmitting station, and high-frequency large-current device.
- Measures must be taken to isolate static electricity.

2.3 Installation Tools

Installation Tools	Phillips screwdriver, straight screwdriver, wire cutter, cable clamp, cables
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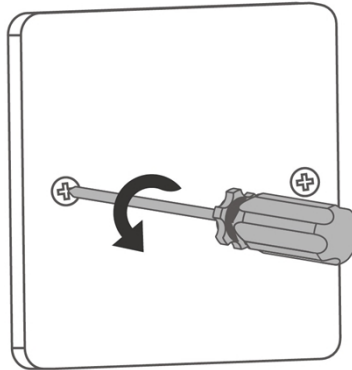
 The listed tools are customer supplied.

3 Installing the Access Point

! Make sure you have carefully read Chapter 2, and be sure that the requirements set forth in Chapter 2 have been met.

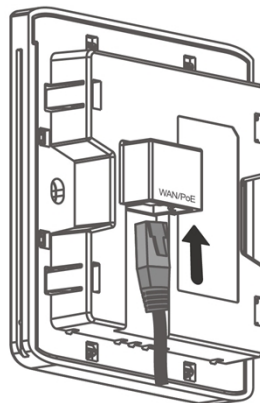
1. Remove the 86-type faceplate from the wall with a screwdriver.

Figure 3-1 Removing the 86-Type Faceplate



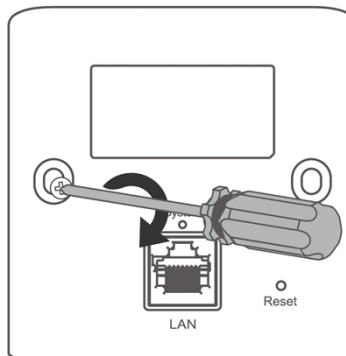
2. Connect the Ethernet cable to the WAN port.

Figure 3-2 Connecting the Cable



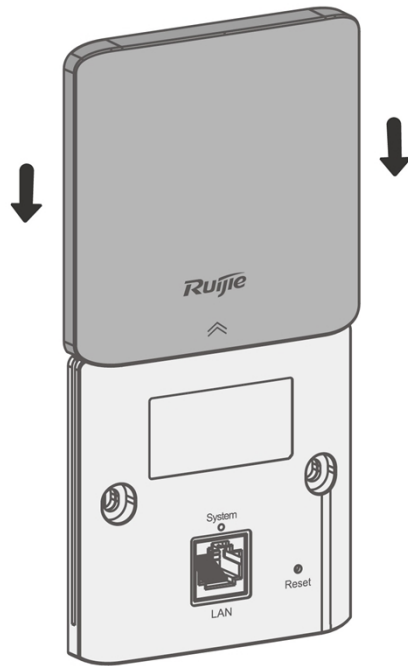
3. Align the screw holes on both sides of the device over those on the bottom plate.

Figure 3-3 Aligning the Screw Holes



4. Attach the faceplate cover onto the access point.

Figure 3-4 Attaching the Cover



4 System Debugging

4.1 Setting up a Debugging Environment

Use PoE to power the AP.

PoE power supply

To use a PoE device, make sure the peer end supports the IEEE 802.3af or 802.3at PoE standard. Then, connect the Ethernet cable to the WAN on the AP.

4.1.1 Powering Up the AP

4.1.1.1 Pre power-up check

- Ensure that the cable is properly connected.
- Verify that the input voltage matches the specifications of the AP.

4.1.1.2 Post power-up check

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

- The LED works properly.

5 Monitoring and Maintenance

5.1 Monitoring

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

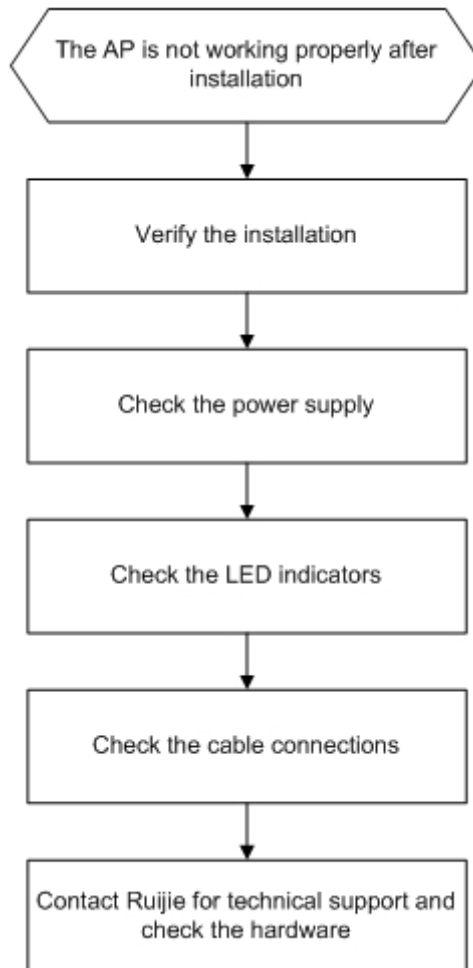
For details, refer to *Chapter 1.3 LED Indicator and Reset Button*.

5.2 Hardware Maintenance

When exceptions occur, contact Ruijie TAC for professional support.

6 Troubleshooting

6.1 Troubleshooting Flowchart



6.2 Troubleshooting

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

Verify that the power source is at least IEEE 802.11af compliant. And then verify that the cable is properly connected.

The WAN port does not work after the Ethernet cable is connected

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

Wireless client cannot locate the AP

- 1) Follow the two abovementioned steps.
- 2) Verify that the cable is properly connected to the WAN port.

- 3) Verify that the AP is configured correctly.
- 4) Move the client device to adjust the distance between the client and the AP.



The installation instruction above is based on RG-AP110-L. The actual product prevails.

Appendix A Connectors and Media

100BASE-TX/10BASE-T

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

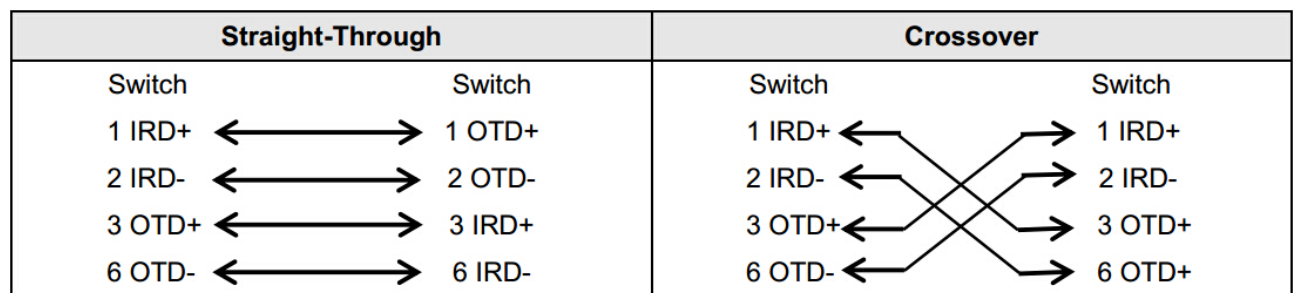
10BASE-T uses Category 3, 4, 5 100-ohm UTP/STP and 100BASE-T uses Category 5 100-ohm UTP/STP for connections. Both support a maximum length of 100 meters. Table A-1 shows 100BASE-TX/10BASE-T pin assignments.

Table A-1 100BASE-TX/10BASE-T Pin Assignments

Pin	Socket	Plug
1	Input Receive Data+	Output Transmit Data+
2	Input Receive Data-	Output Transmit Data-
3	Output Transmit Data+	Input Receive Data+
6	Output Transmit Data-	Input Receive Data-
4,5,7,8	Not Used	Not Used

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

Figure A-2 100BASE-TX/10BASE-T Connection



Appendix B Cabling Recommendations

During installation, route cable bundles upward or downward along the sides of the rack depending on the actual situation in the equipment room. All cable connectors should be placed at the bottom of the cabinet rather than be exposed outside of the cabinet. Power cords should be routed upward or downward beside the cabinet close to the location of the DC power distribution cabinet, AC power outlet, or lightning protection box.

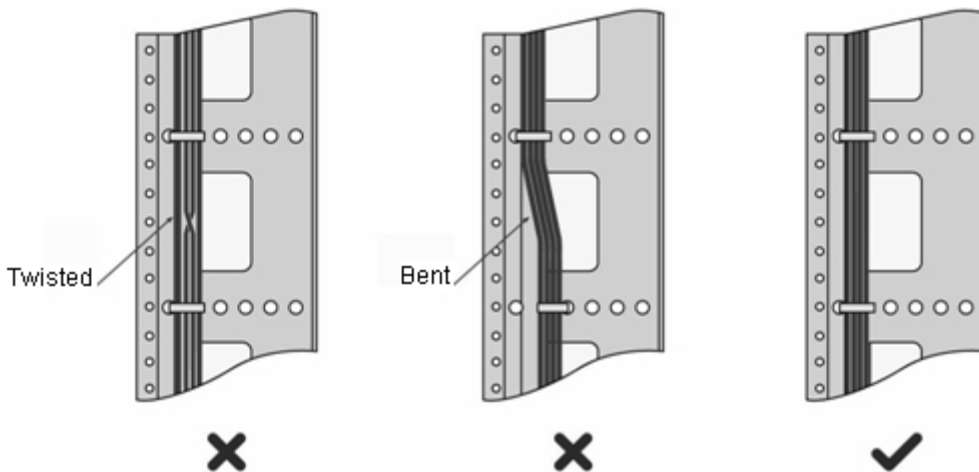
Required Minimum Cable Bend Radius

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

Precautions for Cable Bundling

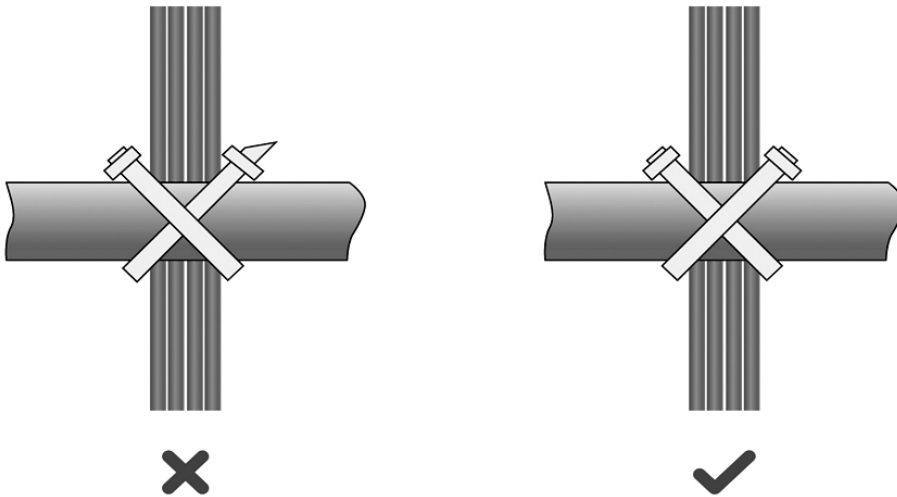
- Before bundling cables, correctly mark labels and stick the labels to cables where appropriate.
- Cables should be neatly and properly bundled, as shown in Figure B-1.

Figure B-1 Bundling Cables



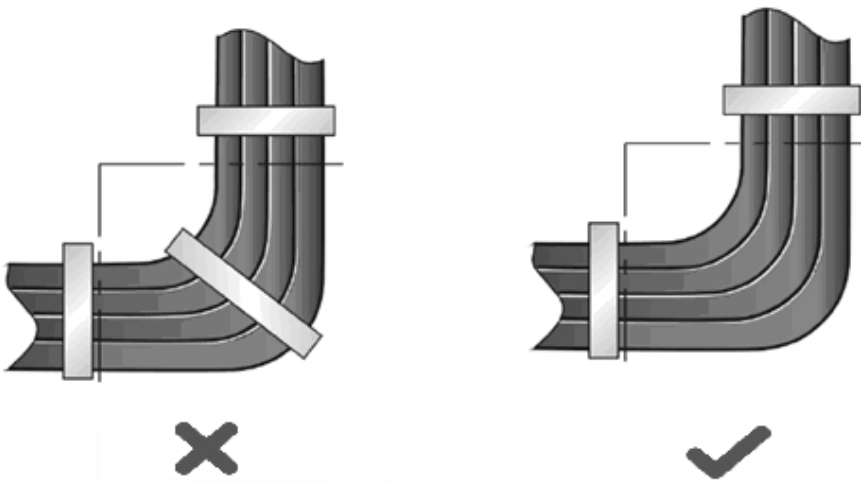
- Route and bundle power, signal, ground cables separately. When the cables are close to each other, cross them. When power cables run parallel to signal cables, the distance between them must be greater than 30 mm.
- All cable trays and their accessories shall be smooth and free from sharp edges.
- Holes in metal, through which cables pass shall have smooth, well-rounded surfaces or be protected with insulating bushings.
- Use proper cable ties to bind cables together. Do not tie two or more cable ties to bind cables.
- Cut off excess cable tie cleanly with no sharp edges after bundling cables, as shown in Figure B-2.

Figure B-2 Cutting off Excess Cable Tie



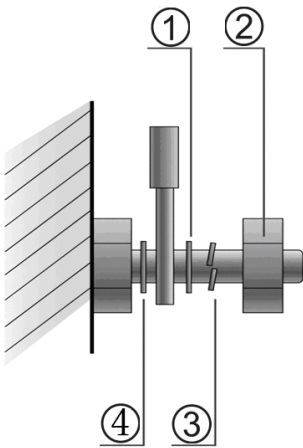
- If cables are to be bent, bind them first but do not tie cable ties within the bend to avoid stress on the cables, which may otherwise cause the wires inside to break, as shown in Figure B-3.

Figure B-3 Do Not Tie Cable Ties within the Bend



- Wrap up unnecessary or excess cables and bind them to the appropriate rack position, where device operation is not affected and no damages occur to the device and cables during debugging.
- Do not bind power cords to the rails for moving parts.
- Leave a certain length of the cable connecting moving parts, such as the ground wire of the cabinet door, to avoid stress on the cable; When moving parts are in place, ensure the excess cable length shall not contact heat sources, sharp corners or edges. If heat sources are unavoidable, use high-temperature cables instead.
- When using screws to fasten cable lugs, the bolts or nuts shall be tightened and prevented from loosening, as shown in Figure B-4.

Figure B-4 Fastening Cable Lugs



Note	1. Flat washer	3. Spring washer
	2. Nut	4. Flat washer

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

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

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