



**Ruijie RG-AP130(W2) V2 Series Access Points**

**Hardware Installation and Reference Guide 1.00**

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## Preface

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

## Scope

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](mailto: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.

## Documentation Conventions


The symbols used in this document are described as below:

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 This symbol brings your attention to some helpful suggestions and references.

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 This symbol means that you must be extremely careful not to do some things that may damage the device or cause data loss.

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# 1 Product Overview

Ruijie RG-AP130(W2) V2 Wall AP is designed for wireless deployment in hotels, offices, residential buildings and settings alike.

The dual-radio, dual-band AP supports concurrent operation of 802.11a/n/ac and 802.11b/g/n, delivering data rates of up to 300Mbps in 802.11n and 866.5Mbps in 802.11ac. The Wall AP provides four 10/100/1000Base-T LAN ports and one 10/100/1000Base-T WAN port, delivering optimal wireless network coverage and cost protection with additional wired network interfaces and VoIP ports.

RG-AP130(W2) V2 supports security, radio frequency (RF) control, mobile access, Quality of Service (QoS) and seamless roaming. Teaming up with Ruijie RG-WS Wireless Controller Series, wireless data forwarding, high performance security and access control can be accomplished with ease.

## 1.1 Technical Specifications

Table 1-1 Technical Specifications of RG-AP130(W2) V2

Hardware Specifications	
<b>Radio</b>	2.4G: 2 x 2MIMO 5G: 2 x 2SU-/MU-MIMO
<b>Transmission Protocol</b>	2.4G : 802.11b/g/n 5G : 802.11a/n/ac
<b>Operating Bands</b>	802.11b/g/n: 2.4 GHz to 2.4835 GHz 802.11a/n/ac: 5G: 5.15 GHz to 5.35 GHz, 5.47 GHz to 5.725 GHz, 5.725 GHz to 5.850 GHz (Country-specific)
<b>Antenna</b>	Built-in low-radiation omnidirectional antenna (Base gain 3.5dBi)
<b>Spatial Streams</b>	2 streams
<b>Max Throughput</b>	802.11b/g/n: up to 300Mbps 802.11a/n/ac: up to 867Mbps Up to 1.167Gbps per AP
<b>Modulation</b>	OFDM: BPSK@6/9Mbps, QPSK @12/18Mbps, 16-QAM@24Mbps, 64-QAM@48/54Mbps DSSS: DBPSK@1Mbps, DQPSK@2Mbps, and CCK@5.5/11Mbps MIMO-OFDM: BPSK, QPSK, 16QAM , 64QAM and 256QAM
<b>Receive Sensitivity</b>	11b/g: -94dBm(1Mbps), -74dBm(54Mbps) 11a: -90dBm(6Mbps), -74dBm( 54Mbps) 11nHT20: -72dBm@MCS7, -68dBm@MCS15 11ac HT20: -90dBm( MCS0) , -65dBm( MCS8) 11ac HT40: -85dBm( MCS0) , -60dBm( MCS9) 11ac HT80: -82dBm( MCS0) , -58dBm( MCS9)
<b>Max Transmit Power</b>	≤100mw (20dBm, RF card transmit power only) (Depending on the country of use, laws and regulations.)
<b>Transmit Power Adjustment</b>	1 dBm

<b>Dimensions (W x D x H)</b>	116 mm x 86 mm x 39 mm (4.6 in x 3.4 in x 1.5 in)
<b>Weight</b>	0.24 kg
<b>Service Ports</b>	Front: Four 10/100/1000Base-T LAN ports Rear: One 10/100/1000Base-T WAN port
<b>Management Ports</b>	One Micro USB port for console management (hidden)
<b>LED Indicators</b>	Indicator for AP, Ethernet and wireless status
<b>Power Supply</b>	<ul style="list-style-type: none"> <li>● PoE: 802.3af/802.3at</li> <li>● DC: input voltage range: 12 V, rated current: 1 A</li> </ul>
<b>Power Consumption</b>	≤ 8W
<b>Temperature</b>	Operating: 0°C to 45°C (32°F to 113°F)
	Storage: -40°C to 70°C (-40°F to 158°F)
<b>Humidity</b>	Operating: 10% to 95% RH (non-condensing)
	Storage: 5% to 95% RH (non-condensing)
<b>Installation</b>	Ceiling/wall mount in a 86-type faceplate
<b>IP Rating</b>	IP41
<b>Safety Standards</b>	GB4943
	EN/IEC 60950-1
<b>EMC Standards</b>	IEC61373
	GB9254
	EN301489
	EN50121
	EN50155
<b>Vibration</b>	China Radio Transmission Equipment Type Approval Certificate
	EN300 328
	EN301 893
<b>Radio</b>	China Radio Transmission Equipment Type Approval Certificate
	EN300 328
	EN301 893
<b>MTBF</b>	> 250,000H

## 1.2 Product Image

The AP provides two built-in radio ports, one 10/100/1000Base-T Ethernet WAN port on the rear panel, and four 10/100/1000Base-T Ethernet LAN ports on the front panel.

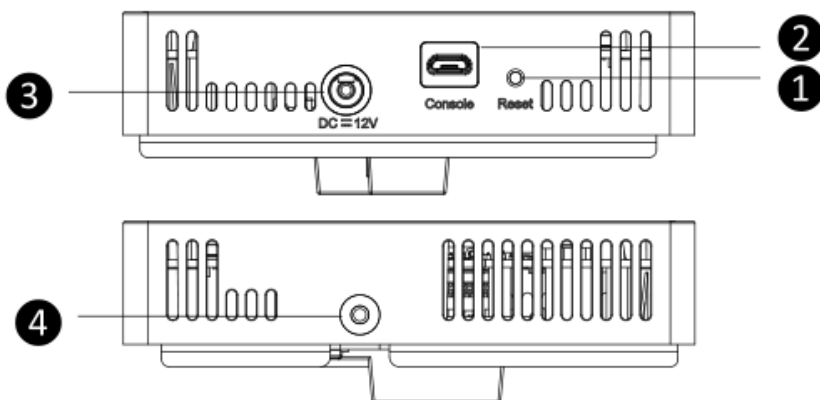
Figure 1-1 Image of RG-AP130(W2) V2



PoE/UpLink port, which is on the rear, is the 10/100/1000Base-T WAN port (PoE-capable).

Four 10/100/1000Base-T LAN ports are on the bottom.

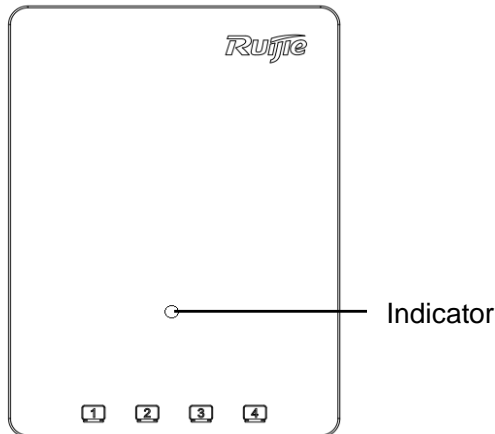
Figure 1-2 Side View of RG-AP130(W2) V2



Note	
1. Reset button	3. DC power adapter port
2. Micro USB management port (Console)	4. Screw hole

### 1.3 LED Indicators

Figure 1-3 Indicator on the AP



Fit AP Mode:

State	Frequency	Meaning
Off	N/A	The AP is powered off, or the AP is in Silent mode.
Fast blinking green before solid green	2.5Hz (fast blinking green)	Initialization is in progress. The AP is operational.
Fast blinking red	2.5Hz	Firmware upgrade in progress. Do not power off the AP.
Blinking orange	1Hz	AP is operational and Ethernet link is down.
Blinking green	1Hz	AP is operational and Ethernet link is up. CAPWAP error.
Slow blinking green	0.4Hz	AP is operational and CAPWAP connection is established. At least one client is associated.
Reset button	Pressed for less than 2s	Reboots the device.
	Pressed for more than 3s	Restores the default settings.

Fat AP Mode:

State	Frequency	Meaning
Off	N/A	The AP is powered off, or the AP is in Silent mode.
Fast blinking green before solid green	2.5Hz (fast blinking green)	Initialization is in progress. The AP is operational.
Blinking orange	1Hz	AP is operational and Ethernet link is down.
Blinking green	1Hz	AP is operational and Ethernet link is up.
Slow blinking green	0.4Hz	AP is operational.
Reset button	Pressed for less than 2s	Reboots the device.
	Pressed for more than 3s	Restores the default settings.

## 1.4 Power Sources

The AP supports PoE and DC power supply.

- PoE power supply

Input voltage range: 44-57V


Rated current: 0.25A

- DC power supply

Input voltage range: 12V

Rated current: 1A

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 When powered through PoE, the AP can be used with Ruijie's other products supporting 802.3af PoE.

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## 1.5 Cooling Solution

The AP adopts fanless design. Because it is installed in an 86-style faceplate on the wall, to guarantee airflow for proper ventilation, keep the device uncovered.



## 2 Preparing for Installation

### 2.1 Safety Suggestions

RG-AP130(W2) V2 must be used inside the room. 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.



The recommendations do not cover all possible hazardous situations.

### 2.2 Installation

- Do not expose the AP to high temperature, dusts, or harmful gases.
- Do not install the AP in an inflammable or explosive environment.
- Keep the AP away from EMI sources such as large radar stations, radio stations, and substations.
- Do not subject the AP to unstable voltage, vibration, and noises.
- Keep the installation site dry. Installing the device near sea is not recommended.
- Keep the AP at least 500 meters away from the seaside and do not face it toward the wind from the sea.
- The installation site should be free from water flooding, seepage, dripping, or condensation.
- The installation site shall be selected according to network planning and features of communications equipment, and considerations such as climate, hydrology, geology, earthquake, electric power, and transportation.

### 2.3 Temperature and Humidity

Required temperature and humidity are as follows:

- Operating temperature: 0°C to 45°C (32°F to 113°F)
- Operating humidity: 10% ~ 95% RH (non-condensing)

### 2.4 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

<b>Maximum diameter (μm)</b>	0.5	1	3	5
<b>Maximum concentration</b>	1.4×10 <sup>7</sup>	7×10 <sup>7</sup>	2.4×10 <sup>7</sup>	1.3×10 <sup>7</sup>

(Particles/m <sup>3</sup> )				
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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 SO<sub>2</sub>, H<sub>2</sub>S, NO<sub>2</sub> and Cl<sub>2</sub> in the equipment room.

Table 2-2

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


## 2.5 EMI Consideration

Various interference sources, from either outside or inside the equipment or application system, affect the system in the conductive ways such as capacitive coupling, inductive coupling, and electromagnetic radiation. There are two types of electromagnetic interferences: radiated interference and conducted interference, depending on the type of the propagation path. When the energy, often RF energy, from a component arrives at a sensitive component via the space, the energy is known as radiated interference. The interference source can be both a part of the interfered system and a completely electrically isolated unit. Conducted interference results from the electromagnetic wire or signal cable connection between the source and the sensitive component, along the cable the interference conducts from one unit to another. Conducted interference often affects the power supply of the equipment, but can be controlled by a filter. Radiated interference may affect any signal path in the equipment, and is difficult to shield.

- Effective measures should be taken for the power system to prevent the interference from the electric grid.
- The working ground of the routers 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.

## 2.6 Installation Tools

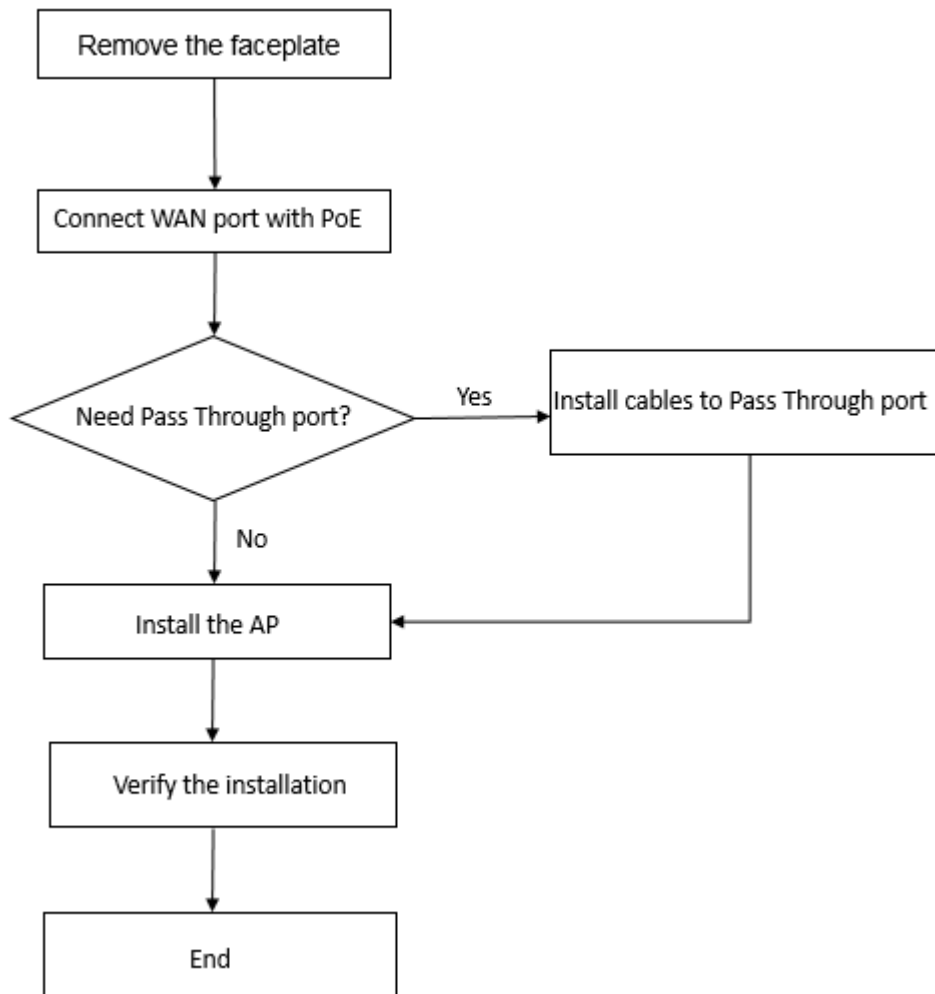
<b>Common Tools</b>	Phillips screwdriver, straight screwdriver, related copper and fiber cables, bolts, diagonal pliers, cable ties
<b>Special Tools</b>	Anti-static tools
<b>Meter</b>	Multimeter

 The listed tools, apart from bolts, are customer supplied.

## 3 Installing the Access Point

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

### 3.1 Installation Flowchart



### 3.2 Before You Begin

To ensure normal operation and a prolonged useful life of the equipment, observe the following safety precautions:

- 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.

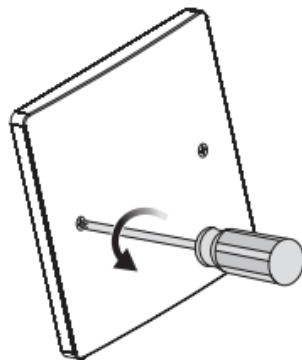
- Keep the device clean and dust-free.
- Disconnect the device before cleaning it.
- Do not wipe the device with a damp cloth.
- Do not wash the device with liquid.
- Do not open the enclosure when the AP is working.
- Fasten the device tightly.

### 3.3 Installing the Access Point

- ⚠ Disconnect the device before install or move it.
- ⚠ Make sure that the screws are of fine quality.
- ⚠ Be sure that the equipment is installed in a place where it is easy to be observed.

- 1) Loosen screws on the 86-type faceplate that is mounted on the wall. (Skip this step if the faceplate has not been mounted.)

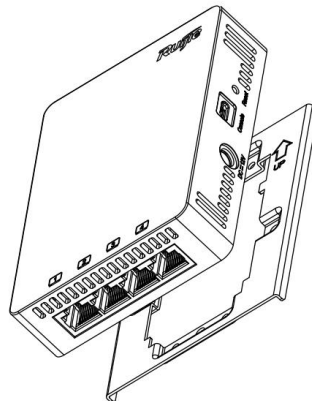
Figure 3-1 Loosen Screws on the Faceplate



- 2) Align screw holes on both sides of the mounting plate over those on the faceplate. And then tighten the two M4x25 screws with a screwdriver.

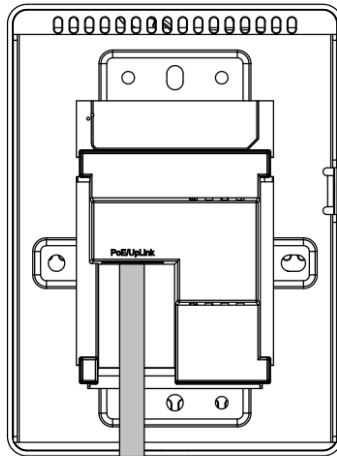
- i The arrow on the plate should point up.

Figure 3-2 Connect Cables to Ports



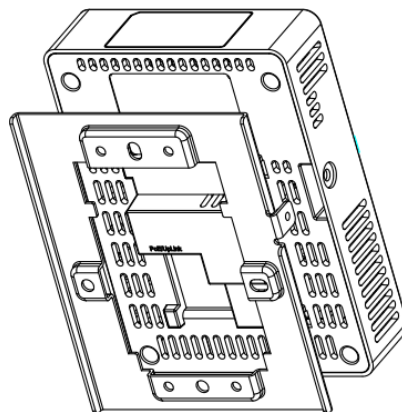
- 3) Connect the uplink cable to the UpLink port.

Figure 3-3 Tighten Screws with a Screwdriver



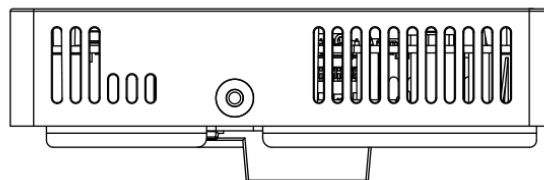
- 4) Slide down the AP into the plate

Figure 3-4 Mounting the AP into the Plate



- 5) Use an M3x4 screw to fasten the AP to the plate.

Figure 3-5 Securing the AP



## 4 System Debugging

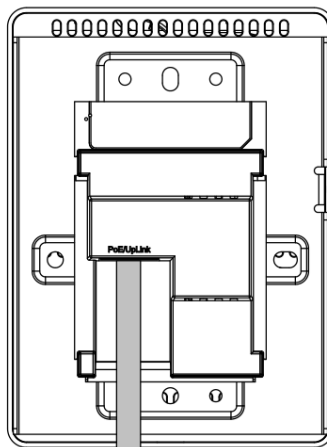
### 4.1 Setting up a Debugging Environment

Use PoE to power the AP.

#### PoE power supply

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

Figure 4-1 Connect the Ethernet Cable to the UpLNK Port



#### DC power adapter power supply

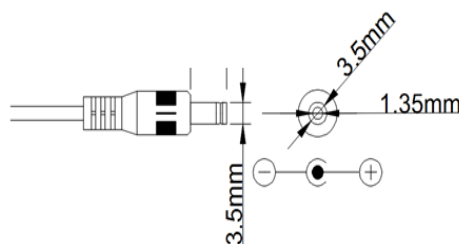
When applying DC power supply, plug one end of the Ethernet cable into the PoE/UpLink port and the other end into the power adapter port on the switch.

- Input voltage range: 12V
- Rated current: 1A

Table 4-1 Specifications of Connector

Internal Diameter	External Diameter	Depth	Polarity
1.35mm	3.5mm	6.4mm	Internal: positive      External: negative

Figure 4-2 Specifications of Connector



## 4.2 Powering Up the AP

### 4.2.1 Checking before power-up

- Verify that the input voltage matches the specification of the AP.

### 4.2.2 Checking after power-up

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

- The LED on a normally-working AP gets blinking green first. After 60s, the LED turns solid green.

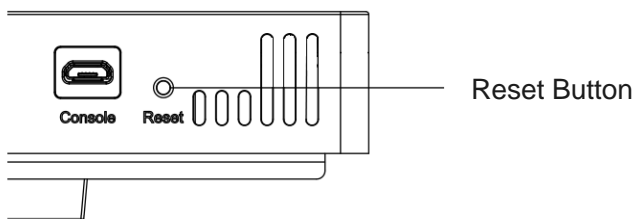
Figure 4-3 LED on the AP



### 4.2.3 Reset/Restore Default Settings

The reset button is hidden in a hole and used by technical support personnel. To avoid abnormal operation, do not use this button without consultation with technical support personnel.

Figure 4-4 Reset Button on the AP



### 4.2.4 System Reset

Insert an iron stick, 1mm or less in diameter, into the hole, and slightly press it. After hearing a click, keep the stick in the same position for 2s to reset the system.

### 4.2.5 Restore Default Settings

Insert an iron stick, 1mm or less in diameter, into the hole, and slightly press it. After hearing a click, keep the stick in the same position for 3s. The system reset is complete.

## 5 Monitoring and Maintenance

### 5.1 Monitoring

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

- Fast blinking green followed by solid green: The AP is being initialized and is operational.
- Blinking red: The AP is upgrading programs firmware. Do not power off the AP.
- Blinking orange: The AP is operational. The Ethernet link is down.
- Blinking green (1Hz): The AP is operational, and the Ethernet link is up. But the CAPWAP connection is faulty.
- Blinking green (0.4Hz): The AP is operational. The CAPWAP connection is OK. At least one client is associated with the AP.
- Blinking green (one flash every 4 seconds): The AP is operational. No clients are associated with the AP. The system is in the low consumption mode.

### 5.2 Remote Maintenance

- If the AP operates as a Fit AP, you can use AC to manage and maintain the AP.

### 5.3 Installation and Removal

Guide for installing and removing RG-AP130(W2) V2 is included in *Chapter 3.3 Installing the Access Point*.

Before removing the AP, please make sure:

1. it is powered off.
2. the lock is removed.



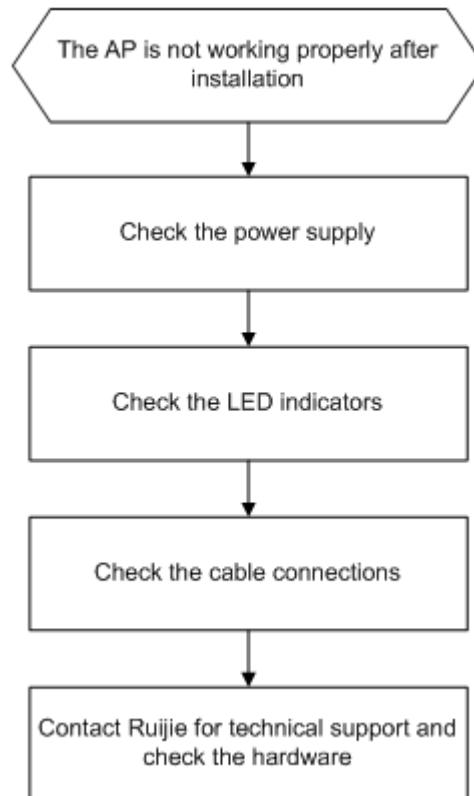
The surface of the cover plays a major role in dissipating heat, so its temperature is higher than environment temperature.

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## 6 Troubleshooting

### 6.1 Troubleshooting Flowchart



### 6.2 Troubleshooting

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

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

#### Orange LED blinks 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 find the AP

- 1) Follow the above-mentioned two steps.
- 2) Verify that the AP is configured correctly.
- 3) Adjust the transmit power.
- 4) Move the client device to adjust the distance between the client and the AP.

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 The installation instruction above is based on RG-AP130(W2) V2. The actual product prevails.

## Appendix A Connectors and Media

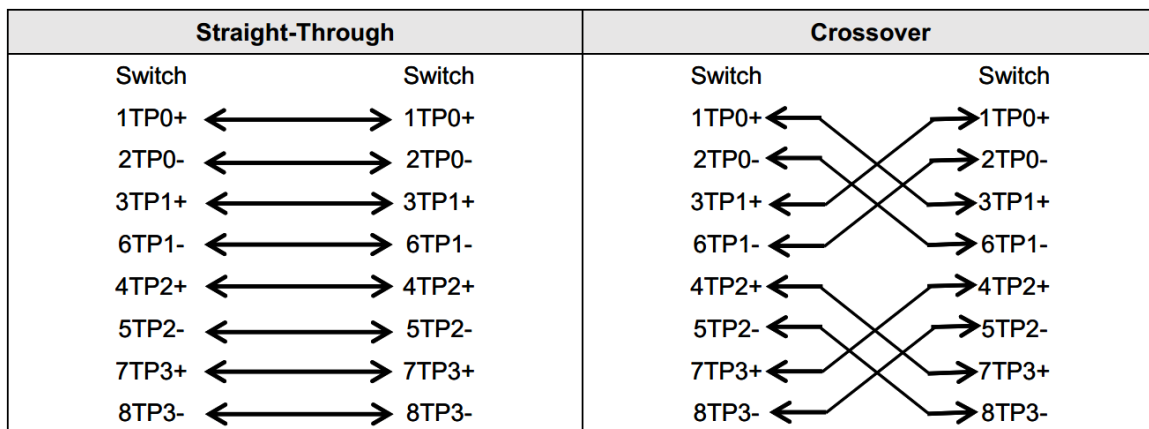
### 1000BASE-T/100BASE-TX/10BASE-T

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

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).

1000BASE-T requires all four pairs of wires be connected for data transmission, as shown in Figure A-1.

Figure A-1 1000BASE-T Connection



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. 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

