



Ruijie RG-MAP852(V3) Access Point

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

- 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.ruijienetworks.com)

Conventions

1. Conversions

Convention	Description
Bold font	Commands, command options, and keywords are in bold font.
<i>Italic</i> font	Arguments for which you supply values are in <i>italic</i> font.
[]	Elements in square brackets are optional.
{ x y z }	Alternative keywords are grouped in braces and separated by vertical bars.
[x y z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.

<code>&<1-n></code>	The argument before the sign (&) can be input for consecutive 1- n times.
<code>//</code>	Double slashes at the beginning of a line of code indicate a comment line.

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

The manual offers configuration information (including model, port type and command line interface) for indicative purpose only. In case of any discrepancy or inconsistency between the manual and the actual version, the actual version prevails.

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1 Product Overview

1.1 About the RG-MAP852(V3) Access Point

The RG-MAP852(V3) is a next-generation high-speed access point (AP) designed for high-density scenarios, covering campus networks, dormitory networks, and medical care ward networks.

Compliant with the IEEE 802.11ax standard, the RG-MAP852(V3) works in both 2.4 GHz and 5 GHz frequency bands. The AP delivers a combined data rate of 2.976 Gbps, with up to 574 Mbps in the 2.4 GHz band and 2.402 Gbps in the 5 GHz band. This eliminates the performance bottleneck. The RG-MAP852(V3) provides four GE LAN ports and one GE WAN port, catering for requirements on high-performance wired access in scenarios including dormitories.

The RG-MAP852 (V3) provides wireless network security, RF control, mobile access, Quality of Service (QoS), seamless roaming and other key features. Working with Ruijie wireless access controllers (AC), the AP implements user data forwarding, security, and access control.

1.2 Product Appearance

The RG-MAP852 (V3) provides two RF connectors, five 10/100/1000Base-T Ethernet ports with auto-negotiation, and one micro USB console port, The AP can be powered by PoE.

Figure 1-1 Front View

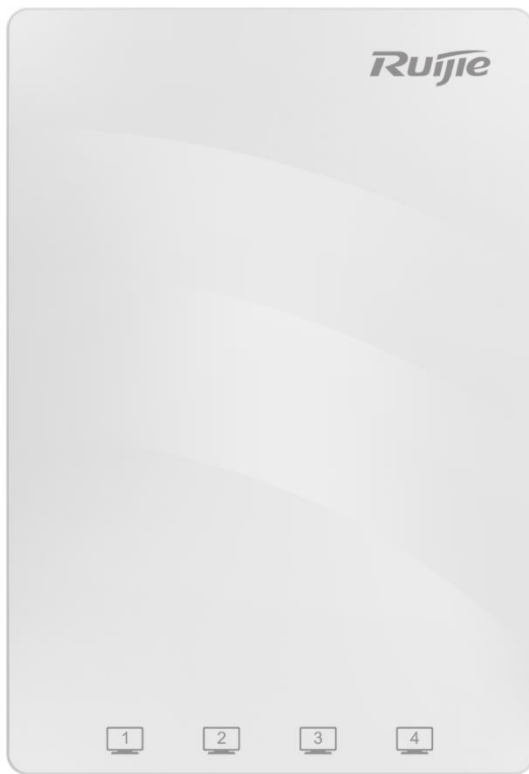


Figure 1-2 Side View



Figure 1-3 Bottom View

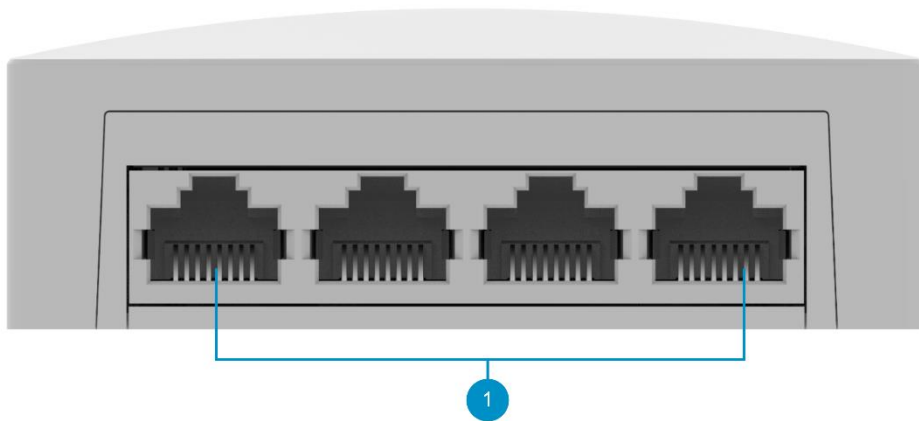


Figure 1-4 Left View

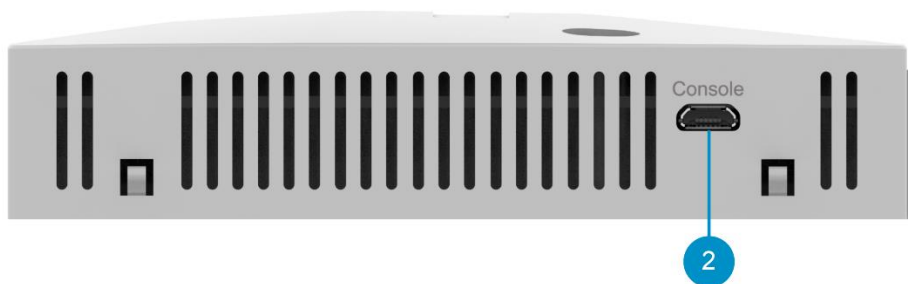


Figure 1-5 Rear View**Table 1-1 Port**

No.	Item	Description
1	LAN port	Downlink service port for data transmission
2	Console port	Connected to the serial port of a PC with an Ethernet cable for device management
3	WAN port	Uplink service port for data transmission, supporting IEEE 802.3af/at/bt-compliant PoE

1.3 Package Contents

Table 1-2 Package Contents

Item	Quantity
RG-MAP852(V3) access point	1
M4 × 40 mm Phillips pan head screw	2
Warranty card and hazardous substance table	1

1.4 Technical Specifications

1.4.1 Dimensions and Weight

Table 1-3 Dimensions and Weight

Dimensions and Weight	RG-MAP852(V3)
Dimensions (W x D x H)	86 mm×125 mm× 30 mm (3.39 in.× 4.92 in. × 1.18 in., excluding the mounting bracket)
Weight	≤ 0.3 kg (0.66 lbs.)
Installation	Ceiling mounting, wall mounting, or mounted in an 86 mm junction box
Color	White

1.4.2 Radio Specifications

Table 1-4 Radio Specifications

Radio Specifications	RG-MAP852(V3)
Radio design	Dual-radio, four spatial streams Radio 1: 2.4 GHz, 2 spatial streams: 2×2, MU-MIMO Radio 2: 5 GHz, 2 spatial streams: 2×2, MU-MIMO
Operating frequencies	Radio 1: 802.11b/g/n/ax, 2.400 GHz to 2.4835 GHz Radio 2: 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 Note: The operating frequency is country-specific.
Data rate	Radio1: 2.4 GHz, 574 Mbps Radio2: 5 GHz, 2.402 Gbps Combined: 2.4 GHz + 5 GHz, 2.976 Gbps
Antenna type	Built-in omnidirectional antennas
Antenna gain	2.4 GHz: 2 dBi 5 GHz: 2 dBi
Max. transmit power	20 dBm Note: The transmit power is limited by local regulatory requirements.
Power increment	1 dBm
Modulation	802.11b: BPSK, QPSK and CCK 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM and 256-QAM (proprietary extension) 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, and 256-QAM 802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, and 1024-QAM

Radio Specifications	RG-MAP852(V3)
Receive sensitivity	<p>11a: - 91 dBm (1 Mbps), - 90 dBm (5 Mbps), - 87 dBm (11 Mbps)</p> <p>11b/g: - 89 dBm (6 Mbps), - 82dBm (24 Mbps), - 78 dBm (36 Mbps), - 72 dBm (54 Mbps)</p> <p>11n: HT20: - 85 dBm@MCS0, - 67 dBm@MCS7</p> <p>11n: HT40: - 82 dBm@MCS0, - 64 dBm@MCS7</p> <p>11ac: VHT20: - 85 dBm (MCS0), - 62 dBm (MCS8)</p> <p>11ac: VHT40: - 82 dBm (MCS0), - 57 dBm (MCS9)</p> <p>11ac: VHT80: - 79 dBm (MCS0), - 53 dBm (MCS9)</p> <p>11ax: HE80: - 79 dBm (MCS0), - 53 dBm (MCS9), - 52 dBm (MCS11)</p> <p>11ax HE160: - 75 dBm (MCS0), - 47 dBm (MCS11)</p>

1.4.3 Port Specifications

Table 1-5 Port Specifications

Port Specifications	RG-MAP852(V3)
Fixed service port	<p>Uplink: One 10/100/1000Base-T Ethernet port with auto-negotiation, supporting IEEE 802.3af/at/bt-compliant PoE</p> <p>Downlink: Four 10/100/1000Base-T Ethernet ports with auto-negotiation</p>
Fixed management port	One micro USB console port
Status LED	One system status LED

1.4.4 Power Supply and Consumption

Figure 1-6 Power Supply and Consumption

Power Supply and Consumption	RG-MAP852(V3)
Input power supply	PoE/PoE+/PoE++ (IEEE 802.3af/at/bt-compliant), powered by an i-Share+ master AP
Max. power consumption	9 W

Caution

- If the AP adopts PoE power supply, the power sourcing equipment (PSE) must be at least 802.3af-capable.
- The AP adopts a fanless design. Maintain sufficient clearance around the AP for cooling.

1.4.5 Environment and Reliability

Table 1-6 Standard Compliance

Environment and Reliability	RG-MAP852(V3)
Temperature	Operating temperature: -10°C to +45°C (14°F to 113°F) Storage temperature: -40°C to +70°C (-40°F to +158°F) Note: At a height between 3000 m (9842.52 ft.) and 5000 m (16404.2 ft.), every time the altitude increases by 166 m (546 ft.), the maximum temperature decreases by 1°C (1.8°F).
Humidity	Operating humidity: 5% to 95% RH (non-condensing) Storage humidity: 5% to 95% RH (non-condensing)
Regulatory compliance	EN 55032, EN 55035, EN 61000-3-3, EN IEC 61000-3-2, EN 301

Environment and Reliability	RG-MAP852(V3)
	489-1, EN 301 489-3, EN 301 489-17, EN 300 328, EN 301 893, EN 300 440, FCC Part 15, EN IEC 62311, IEC 62368-1, and EN 62368-1

1.5 LED and Button

Table 1-7 LED Status

Status	Blinking Frequency	Description
Off	N/A	The AP is not powered on. The AP is powered on, but the LED is manually turned off.
Solid green	N/A	The software system of the AP is being initialized.
Solid red	N/A	The system is running properly, but the uplink service port is linked down.
Blinking red	On for 3s Off for 1s	In fit mode, the setup of a CAPWAP tunnel between the AP and AC timed out.
Flashing green	On for 0.2s Off for 0.2s	In fit or MACC mode, the software system of the AP is being updated.
Blinking green	On for 3s Off for 1s	The system is running properly.
Flashing red	On for 0.2s Off for 0.2s	In fit mode, the AP is being located.

Table 1-8 Reset Button

Button	Operation	Result
Reset hole	Press and hold the pin to the Reset hole for less than 2 seconds	Restart the AP
	Press and hold the pin to the Reset hole for more than 5 seconds	Restore the AP to factory settings

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.
-

2.1.1 General Safety Precautions

- Do not expose the AP to high temperature, dust, 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.
- The installation site should be free from water flooding, seepage, dripping, or condensation. The installation site should be selected according to network planning, communications equipment features, and considerations such as climate, hydrology, geology, earthquake, electrical power, and transportation.
- The installation site should be dry. Do not install the AP in a place near the sea. Keep the device at least 500 meters away from the ocean and do not face it towards the sea breeze.
- Do not place the device in walking areas.
- During installation and maintenance, do not wear loose clothes, ornaments, or any other things that may be hooked by the chassis.
- Keep tools and components away from walking areas.

2.1.2 Handling Safety

- Avoid moving the device frequently.
- Cut off all power supplies and unplug all power cords before moving or handling the device.

2.1.3 Electric Safety

Warning

- 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 via wet objects may cause fatal dangers.
-
- 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 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 AP far away from grounding or lightning protection devices for power equipment.
 - Keep the AP away from radio stations, radar stations, high-frequency high-current devices, and microwave ovens.

2.1.4 Storage Security

For proper working of the AP, the AP must be stored in an environment based on the storage temperature/humidity requirements in Technical Specifications.

Caution

If the AP is stored for more than 18 months, power on the AP and run it for consecutive 24 hours to activate the AP.

2.2 Installation Environment Requirements

Install the device indoors to ensure its normal operation and prolonged service life.

The installation site must meet the following requirements.

2.2.1 Bearing Requirements

Evaluate the weight of the device and its accessories (such as the power supply module), and ensure that the ground of the installation site meets the requirements.

2.2.2 Ventilation Requirements

Reserve sufficient space in front of the air vents to ensure normal heat dissipation. After various cables are connected, bundle the cables or place them in the cable management bracket to avoid blocking air inlets.

2.2.3 Space Requirements

Do not install the device against the wall. Instead, maintain a minimum clearance of 0.4 m around the device for heat dissipation and device maintenance. Keep the installation position at least 2 m away from antennas of a carrier's indoor base stations to avoid mutual interference.

2.2.4 Temperature/Humidity Requirements

To ensure the normal operation and prolonged service life of the device, maintain an appropriate temperature and humidity in the machine room.

The machine room with too high or too low temperature and humidity for a long period may damage the device.

- In an environment with high relative humidity, the insulating material may have poor insulation or even leak electricity.
- In an environment with low relative humidity, the insulating strip may dry and shrink, loosening screws.
- In a dry environment, the internal circuits are prone to static electricity.
- Too high temperatures can accelerate the aging of insulation materials, greatly reducing the reliability of the AP and severely affecting its service life.

Note

The ambient temperature and humidity of the device are measured at the point that is 1.5 m above the floor and 0.4 m before the device when there is no protective plate in front or at the back of the device.

2.2.5 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 machine room.

Table 2-1 Requirements for Dust

Dust	Unit	Maximum Quantity
Dust particles (diameter $\leq 0.5 \mu\text{m}$)	Particles/m ³	$\leq 1.4 \times 10^7$
Dust particles ($0.5 \mu\text{m} < \text{diameter} \leq 1 \mu\text{m}$)	Particles/m ³	$\leq 7 \times 10^5$
Dust particles ($1 \mu\text{m} < \text{diameter} \leq 3 \mu\text{m}$)	Particles/m ³	$\leq 2.4 \times 10^5$
Dust particles ($3 \mu\text{m} < \text{diameter} \leq 5 \mu\text{m}$)	Particles/m ³	$\leq 1.3 \times 10^5$

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

Table 2-2 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 gas (NH ₃)	0.05	0.15
Chlorine gas (Cl ₂)	0.01	0.3

Note

Average refers to the average value of harmful gases measured in one week. **Maximum** refers to the upper limit of harmful gases measured in one week, and the maximum value cannot last for more than 30 minutes every day.

2.2.6 Anti-interference Requirements

- Take interference prevention measures for the power supply system.
- Keep the AP away from the grounding equipment or lightning and grounding equipment of the power device as much as possible.
- Keep the AP far away from high-frequency current devices such as high-power radio transmitting stations and radar launchers.
- Take electromagnetic shielding measures when necessary.

2.3 Tools

Table 2-3 Tools

Common Tools	Phillips screwdriver, cables, cage nuts, diagonal pliers, and flathead screwdriver (for removing the decorative cover)
Special Tools	Wire stripper, crimping pliers, wire cutter, and ESD tools
Meter	Multimeter and bit error rate tester (BERT)

Note

The RG-MAP852(V3) is not shipped with a tool kit. The tool kit is customer-supplied.

3 Installing the Access Point

RG-MAP852 (V3) must be installed indoors.

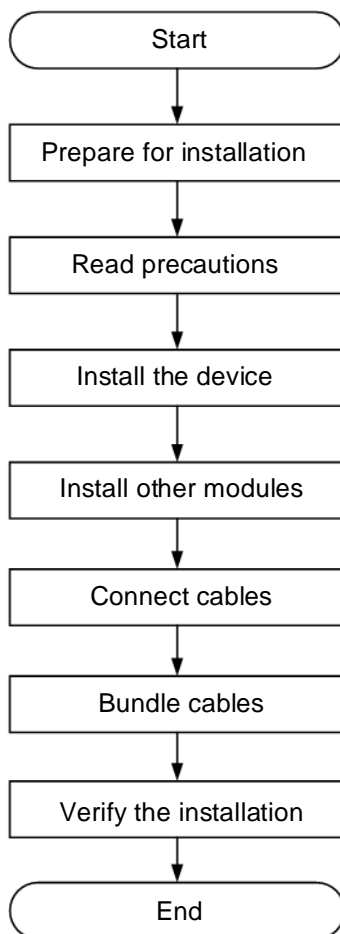
⚠ Caution

Before installing the device, make sure that you have carefully read the requirements described in Chapter 2.

3.1 Installation Flowchart

The installation steps are shown in the following figure.

Figure 3-1 Installation Flowchart



3.2 Before You Begin

Carefully plan and arrange the installation location, networking mode, power supply, and cabling before installing the device.

Confirm the following requirements before installation:

- The installation location provides sufficient space for heat dissipation.
- The installation location meets the temperature and humidity requirements of the device.
- The power supply and required current are available in the installation location.
- The Ethernet cables have been deployed in the installation location.
- The selected power supply meets the system power requirements.
- The position of the indoor emergency power switch is found before installation, so that the power switch can be cut off in case of accidents.

3.3 Precautions

To ensure the normal operation and prolonged service life of the AP, observe the following safety precautions:

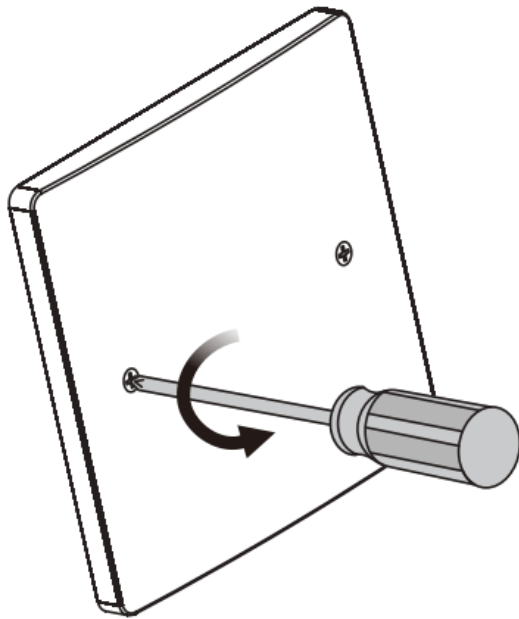
- Do not power on the device during installation.
- Place the device in a well-ventilated environment.
- Do not expose the device to high temperature.
- Keep the device away from high-voltage power cables.
- Install the device indoors.
- Do not expose the device to a thunderstorm or strong electric field.
- 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.
- Secure the device properly.

3.4 Installing the AP

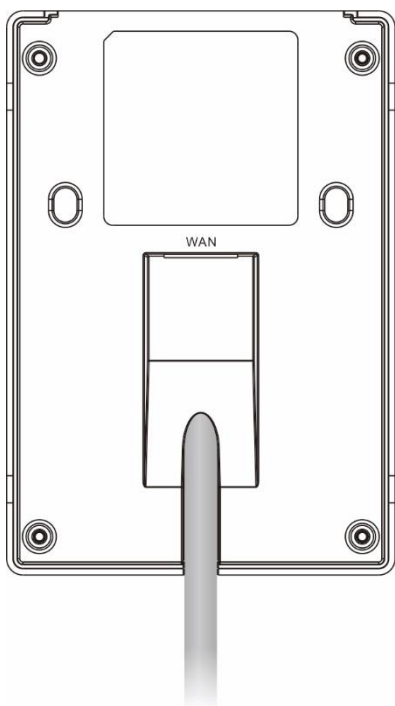
3.4.1 Installing the AP in an 86 mm Junction Box

- (1) Use a screwdriver to remove the panel of the 86 mm junction box on the wall. (If no panel is installed, skip this step.)

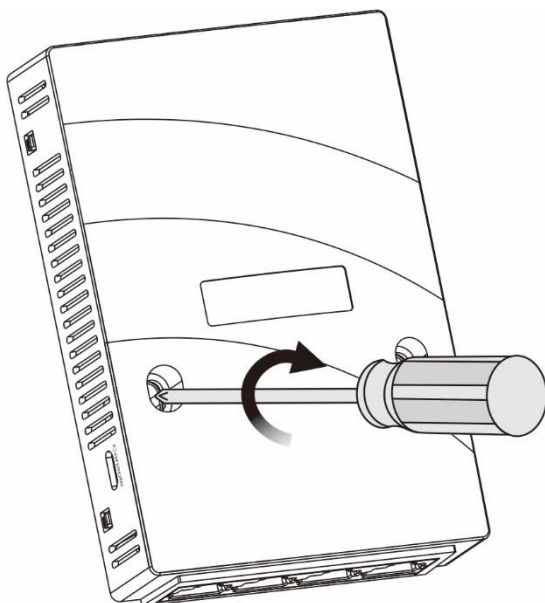
Figure 3-2 Removing the Panel of the 86 mm Junction Box



- (2) Connect the uplink data cable to the WAN port.

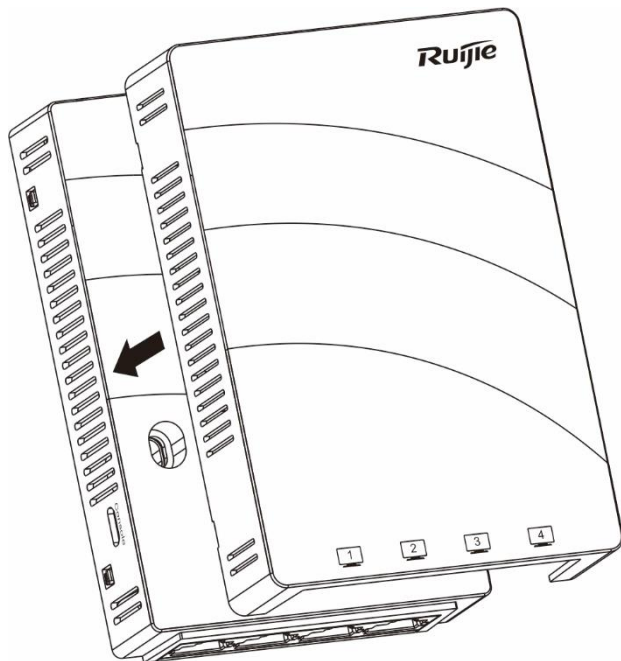
Figure 3-3 Connecting the Data Cable

- (3) Align the screw holes on the left and right sides of the AP with the screw holes on the 86 mm junction box with the arrow facing up. Tighten the screws using a screwdriver.

Figure 3-4 Securing the AP to the 86 mm Junction Box

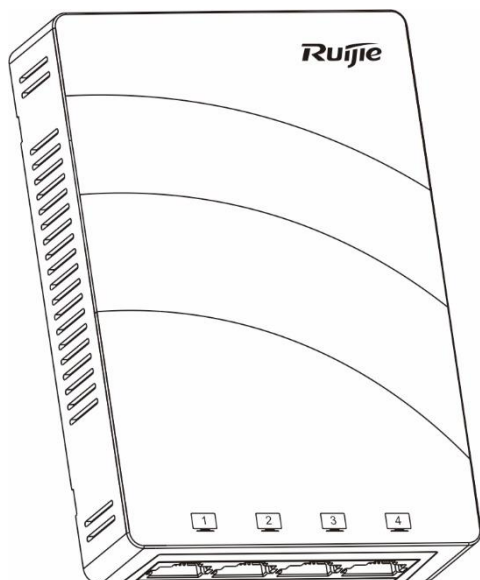
- (4) Align the LAN ports on the cover with the LAN ports on the AP, with the Ruijie logo facing up.

Figure 3-5 Aligning LAN ports on the Decorative Cover with LAN ports on the AP



- (5) Secure the cover to the AP properly.

Figure 3-6 Securing the Cover to the AP



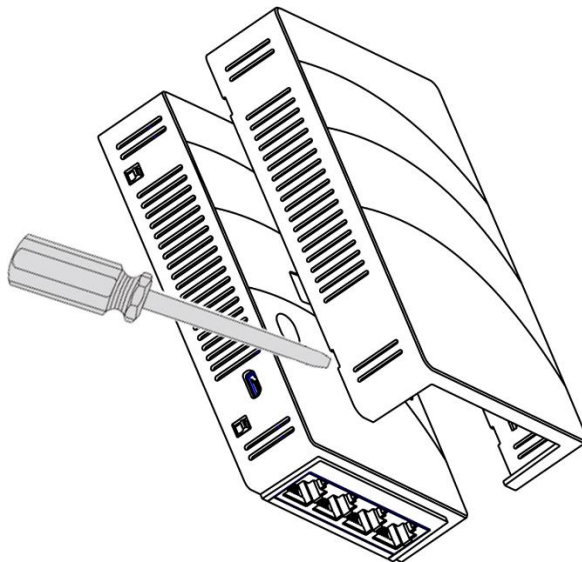
⚠ Note:

- When installing or moving the wireless AP, ensure that the power supply is cut off.
 - Ensure that the screws are tightened.
 - Ensure that the AP is installed at a site where the LED can be easily observed.
-

3.4.2 Removing the AP

- (1) Use a flathead screwdriver to remove the cover from the AP. Slightly pry up the cover at the openings at both sides of the AP.

Figure 3-7 Removing the Cover



- (2) Loosen the screws on the AP to remove the AP from the junction box.

3.5 Connecting Cables

Connect twisted pairs to the WAN/PoE port on the AP. See [7.1 Connectors and Media](#) for supported wiring of twisted pairs.

⚠ Caution

By default, the baud rate is set to **9600**, data bit to **8**, stop bit to **1**, with no parity check and no traffic control on the console port of the AP. The console port is used only when you want to configure the AP manually.

3.6 Bundling Cables

3.6.1 Precautions

- Bundle the power cords and other cables in a visually pleasing way.
- Bend twisted pairs naturally or to a large radius close to the connector.
- Do not over tighten twisted pair bundle as it may reduce the cable life and performance.

3.6.2 Bundling Steps

- Bundle the hanging part of the twisted pairs using cable ties and lead them to the LAN/PoE port end of the AP by convenience.
- Fasten the twisted pair cables to the cable trough of the mounting bracket.
- Extend the twisted pair cables under the device and route them in a straight line.

3.7 Checklist After Installation

3.7.1 Checking the AP

- Cut off the power switch before installing or moving the AP.
- Ensure that screws are securely fastened.
- Ensure that the AP is installed at a site where the LED can be easily observed.

3.7.2 Checking Cable Connection

- Make sure that the twisted pair cable matches the port type.
- Verify that cables are properly bundled.

3.7.3 Checking the Power Supply

- Verify that the power cord is properly connected and compliant with safety requirements.
- Verify that the access point is operational after power-on.

4 Verifying Operating Status

4.1 Establishing the Configuration Environment

The AP can be powered by an i-Share+ master AP.

When setting up the environment, pay attention to the following:

- Check whether the power cord is properly connected and compliant with safety requirements.
- Connect the AP that is powered properly to the AC with a twisted pair cable.
- When the AP is connected to a PC, check whether the PC and PoE switch are properly grounded.

4.2 Powering on the AP

4.2.1 Checklist Before Power-on

- Check whether the power cord is properly connected.
- Check whether the power supply voltage complies with the requirement of the AP.

4.2.2 Check After Power-on

After the device is powered on, you are advised to check the following to ensure the normal operation of the AP:

- Check whether any message is displayed on the configuration interface of the device.
- Check whether the LED works normally.

5 Monitoring and Maintenance

5.1 Monitoring

5.1.1 LED

When the AP is operating, monitor the system status by observing the LED.

5.1.2 CLI Commands

Run related commands on the CLI of the device to remotely monitor the device.

- Port configuration and status.
- System logs.

Note

- For details about the commands, see the corresponding configuration guide.
 - The AP supports remote maintenance.
-

5.2 Remote Maintenance

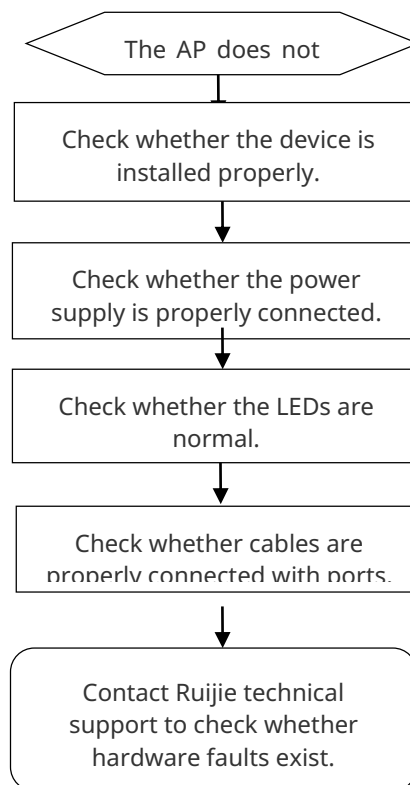
The RG-MAP852(V3) works only in fit mode and can be ungraded and maintained remotely through an AC.

5.3 Hardware Maintenance

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

6 Troubleshooting

6.1 Troubleshooting Flowchart



6.2 Common Faults

6.2.1 Ethernet Port Is Not Working After the Ethernet Cable Is Plugged In

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.

6.2.2 LED Is Off for a Long Time

Check whether the other end of the PoE cable supports 802.11af power supply, and check whether the Ethernet cable is connected properly.

6.2.3 LED Is Steady Red

The LED keeps steady red for a long time, indicating that the Ethernet port is not connected. Verify the Ethernet connection.

6.2.4 LED Is Steady Green

The device performs initialization after power-on. During this period, the LED keeps steady green and does not turn blue until the initialization is completed. Note: If the steady green persists for an hour, the device initialization fails and the device is faulty.

6.2.5 LED Blinks Green at an Interval of 0.2s for a Long Time

Sometimes the AP performs software upgrade after power-on. During this period, the LED keeps blinking green at an interval of 0.2s and enters the normal state of quick off after blinking green until the upgrade is completed. Note: Do not plug or unplug the power cord when the LED is blinking as software upgrade takes time. If the blinking persists for ten minutes, it indicates that the device fails to complete software upgrade and is faulty.

6.2.6 LED Blinks Red at an Interval of 1s for a Long Time

If the LED blinks red at an interval of 1s after the system starts, the AP probably has not established a proper CAPWAP connection with the AC. Verify that the AC is operational and configured properly.

6.2.7 No Wireless Signal Searched

- (1) Verify that the AP is properly powered.
- (2) Verify that the Ethernet port is correctly connected.
- (3) Verify that the AP is correctly configured.
- (4) Move the client closer to the AP.

7 Appendix

7.1 Connectors and Media

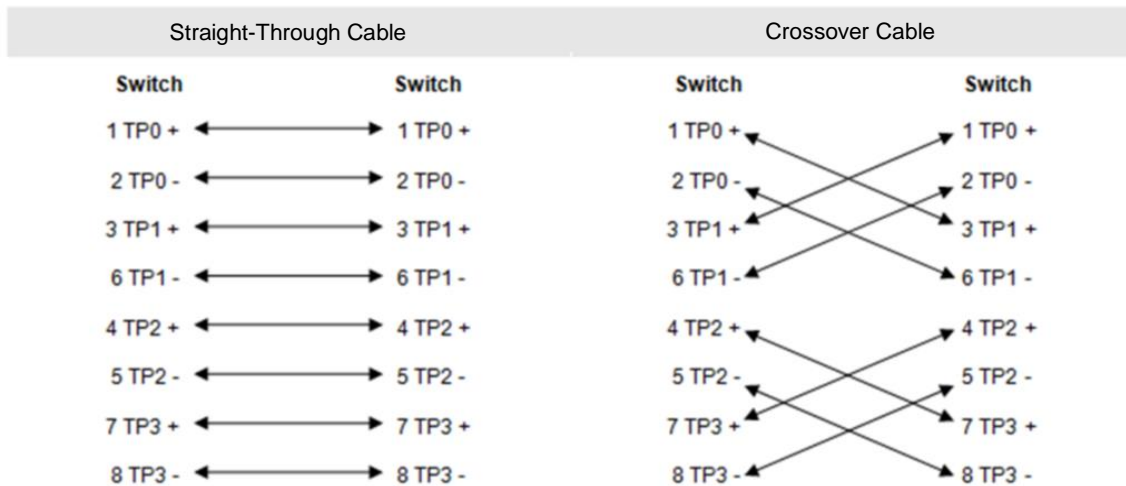
- 1000BASE-T/100BASE-TX/10BASE-T Ethernet port

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

Compliant with IEEE 802.3ab, the 1000BASE-T port requires 100-ohm Category 5/5e UTP or STP with a maximum distance of 100 meters.

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

Table 7-1 1000BASE-T Twisted Pair Connection



In addition to cables with the above-mentioned specifications, the 100BASE-TX/10BASE-T port can be connected using 100-ohm CAT-3, CAT-4, and CAT-5 cables at 10 Mbps data speed or using 100-ohm CAT-5 cables at 100 Mbps data speed with a maximum connection distance of 100 meters. The following table shows 100BASE-TX/10BASE-T pin assignments.

Table 7-2 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 wiring of straight-through and crossover cables for 100BASE-TX/10BASE-T.

Table 7-3 100BASE-TX/10BASE-T Twisted Pair Connection

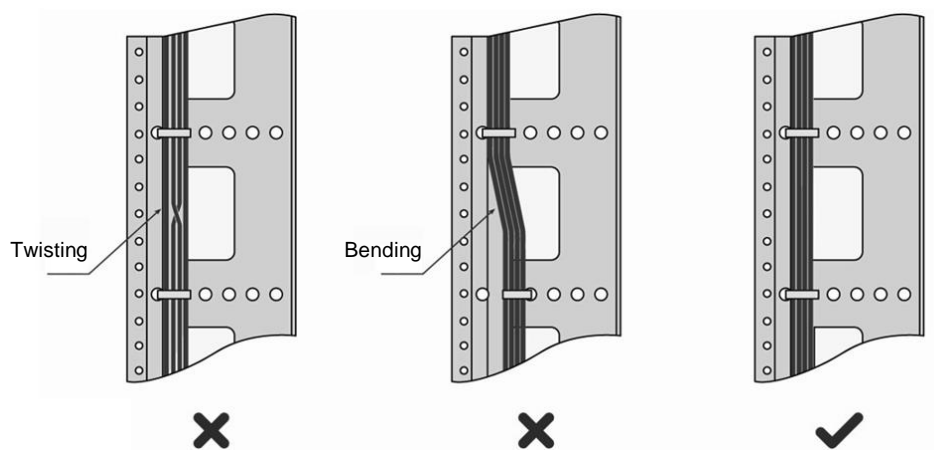


7.2 Cabling Recommendations

During installation, route cable bundles upward or downward along the sides of the rack depending on the actual situation in the machine room. All cable connectors should be placed at the bottom of the cabinet rather than be exposed outside of the cabinet. Power cords are routed beside the cabinet, and top cabling or bottom cabling is adopted according to the actual situation in the machine room, such as the positions of the DC power distribution box, AC socket, or lightning protection box.

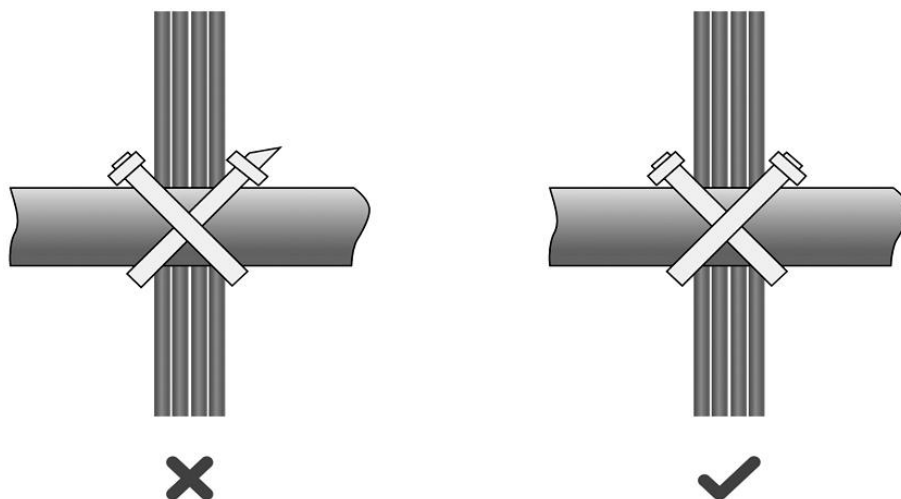
- Requirement for the Minimum Cable Bend Radius
 - The bend radius of a fixed power cord, Ethernet cable, or flat cable should be over five times greater than their respective diameters. The bend radius of these cables that are often bent or plugged should be over seven times greater than their respective diameters.
 - The bend radius of a fixed common coaxial cable should be over seven times greater than its diameter. The bend radius of the common coaxial cable that is often bent or plugged should be over 10 times greater than its 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 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 7-1](#).

Figure 7-1 Bundling Cables

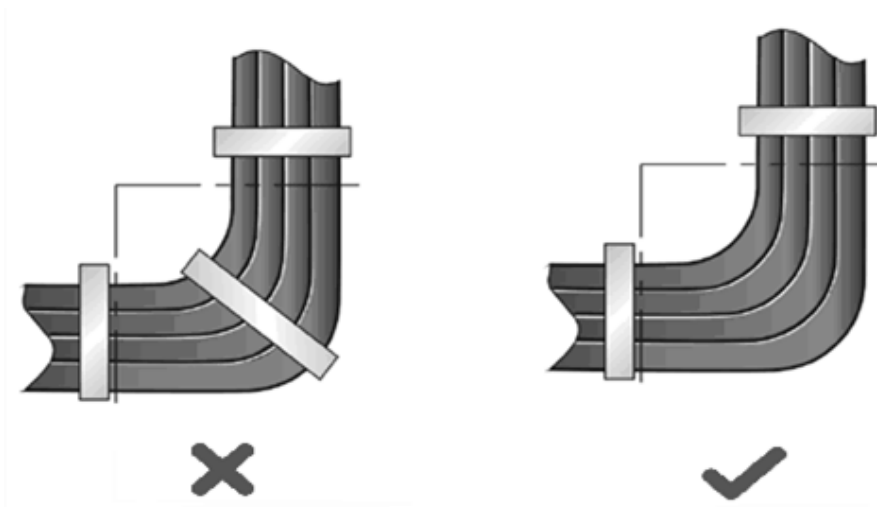


- Route and bundle power, signal, ground cables separately. When the cables are close to each other, cross them. Mixed bundling is not allowed. When they are close to each other, it is recommended that crossover cabling be adopted. In the case of parallel cabling, maintain a minimum distance of 30 mm between power cords and signal cables.
- The cable management brackets and cabling troughs inside and outside the cabinet should be smooth without sharp corners.
- The metal hole traversed by cables should have a smooth and fully rounding 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 7-2](#).

Figure 7-2 Cutting off Excess Cable Tie

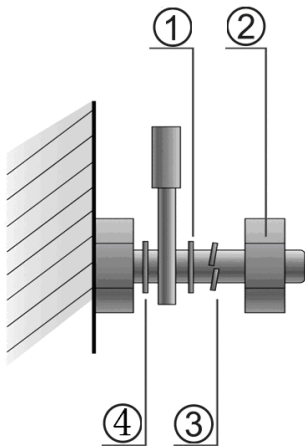


- When cables need to be bent, bind them first but do not tie cable ties within the bend. Otherwise, stress may be generated on the cables and causes the wires inside to break, as shown in [Figure 7-3](#).

Figure 7-3 Binding Cables

- Cables not to be assembled or remaining parts of cables should be folded and placed in a proper position of the cabinet or cable trough. The proper position refers to a position that does not affect device running or damage the switch or cable.
- 220 V and -48 V power cables must not be bundled on the guide rails of moving parts.
- The power cables connecting moving parts such as door grounding wires should be reserved with some access after being assembled to avoid suffering tension or stress. When a moving part reaches the installation position, the remaining cable part should not touch heat sources, sharp corners, or sharp edges. If heat sources cannot be avoided, high-temperature cables should be used.
- When screw threads are used to fasten a cable terminal, the bolt or screw must be tightly fastened, and measures should be taken to retain the terminal, as shown in [Figure 7-4](#).

Figure 7-4 Fastening Cable Lugs



Note:	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 terminal connection and cable.
- Do not use self-tapping screws to fasten terminals.
- 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 cables by using cable ties.

Cable Bundle Diameter	Distance Between Every Binding Point
10 mm (0.39 in.)	80 mm to 150 mm (3.15 in. to 5.90 in.)
10 mm to 30 mm (0.39 in. to 1.18 in.)	150 mm to 200 mm (5.90 in. to 7.87 in.)
30 mm (1.18 in.)	200 mm to 300 mm (7.87 in. to 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 when assembled.