Ruijie Reyee RG-EST330F-P Wireless Bridge

Installation 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://reyee.ruijie.com
- Technical Support Website: https://reyee.ruijie.com/en-global/support
- Case Portal: https://www.ruijienetworks.com/support/caseportal
- Community: https://community.ruijienetworks.com
- Technical Support Email: service_rj@ruijienetworks.com
- Online Robot/Live Chat: https://reyee.ruijie.com/en-global/rita

Conventions

1. Signs

This document also uses signs to indicate some important points during the operation. The meanings of these signs are as follows:

C aution

A alert that calls attention to safety instruction that if not understood or followed can result in personal 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.

Note

An alert that calls attention to essential information that if not understood or followed can result in function failure or performance degradation.

Instruction

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 installation steps, troubleshooting, technical specifications, and usage guidelines for cables and connectors. It is intended for users who want to understand the above and have extensive experience in network deployment and management, and assume that users are familiar with related terms and concepts.

Contents

1 Product Overview

1.1 Product Introduction

The RG-EST3 30F-P wireless bridge is a wireless bridge product that supports the 802.11ac protocol and was launched by Ruijie Ruiyi for services such as surveillance video backhaul or data remote transmission in scenarios such as elevators, tower cranes, factories, parks, and construction sites.

RG-EST3 3 0F-P supports working in the 5 GHz frequency band, supports two-stream 2x2 MIMO technology, and can provide a maximum bridge wireless rate of 867 Mbps, which can meet the bandwidth requirements of user services for data links. In addition, RG-EST3 3 0F-P supports 802.11n protocol, and the 2.4 GHz wireless signal provides a maximum access rate of 150 Mbps, which is convenient for remote management of devices. RG-EST3 3 0F-P supports 802.3af standard PoE external power supply, equipped with 2 PoE - Out ports, which can provide a total output power of up to 15.4 W.

1.2 Packing List

Table 1-1 Packing List

Serial number	name	quantity	unit
1	RG-EST330F-P Wireless Bridge	1	tower
2	24V/ 1.5A DC power adapter	1	indivual
3	Passive PoE Combiner	1	indivual
4	Quick Installation Guide (Graphical)	1	open
5	Warranty card	1	open
6	Cable Ties	2	strip
7	Screw accessories package (including 4 screws and 4 expansion tubes)	1	Bag
8	Positioning stickers	1	open

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The above is a general delivery situation. The actual delivery may be slightly different. Please refer to the order contract for everything. Please check your goods carefully according to the packing list or order contract. If you have any questions or errors, please contact the seller.

1.3 Product Appearance

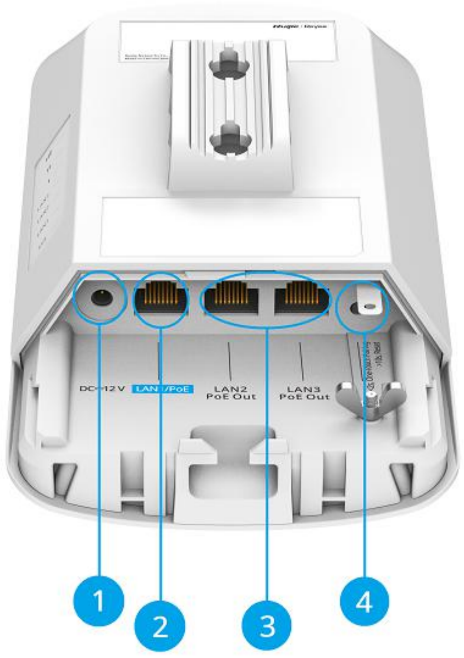
1.3.1 Equipment appearance

Figure 1-2 Device appearance renderings (front)

Figure 1-3 Device appearance renderings (rear side)

1.3.2 Panel Description

Figure 1-4 Interface Diagram



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The rating plate is located on the rear of the device.

Table 1-2 Interface Description

Logo	name	Functional Description
1	Power interface	Support 12~24V DC power adapter
2	LAN1/ PoE port	10/100Base-T auto-sensing Ethernet port Supports access to Category 5e (Cat5e) and above standard network cables Support 24V non-standard PoE power supply Support IEEE 802.3at standard PoE power supply
3	LAN2 / LAN3 POE Out interface	10/100Base-T auto-sensing Ethernet port Support external IEEE 802.3af standard PoE power supply
4	Reset/One-Touch Pairing button	Short press for less than 2 seconds : One-touch pairing (the signal indicator light will flash during pairing) Short press 2s < T < 10s : No operation Long press for more than 10 seconds : Reset the device to factory settings

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- After pressing the one-touch pairing button, whether the device is in BaseStation or CPE mode , it will switch to BaseStation .

- During one-touch pairing bridging, the signal indicator light on the recorder side flashes for 1 minute, and the signal indicators on the camera and recorder side flash until the bridging is completed.
- Only factory-configured devices that are not bridged support one-click pairing to set the bridge as the camera end.
- The one-click pairing function is enabled by default and can be disabled through the Web management system.
- One-touch pairing is disabled during interference scanning.
- The maximum power of LAN2 and LAN3 ports is 15.4W, and the total power supply does not exceed 15.4W. If the total power of the PoE powered devices exceeds 10W , it is recommended to use a Category 5e (Cat5e) or higher standard network cable within 30 meters to connect the bridge device and the PoE module to ensure the stability of the power supply .

Figure 1-5 Indicator light diagram

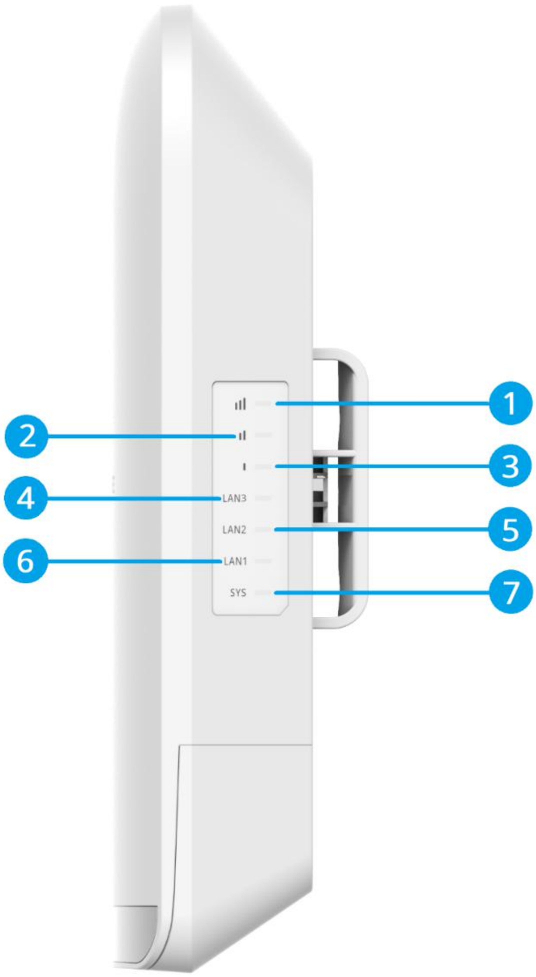

Table 1-3 Indicator Light Description

Logo	name	Functional Description
1, 2, 3	Signal indicator	All indicators are off: Not bridged Indicator light 3 is always on/flashing: The device is bridged and the bridge signal strength is less than -75 dBm Indicator light 3 is always on: The device is bridged and the bridge signal strength is greater than -75 dBm Indicator light 3 is always on and indicator light 2 is flashing: the device is bridged and the bridge signal strength is greater than -73 dBm Indicator lights 3 & 2 are always on: The device is bridged and the bridge signal strength is greater than -71 dBm Indicator lights 3 & 2 are always on & 1 is flashing: The device is bridged and the bridge signal strength is greater than -68 dBm Indicator lights 3, 2, and 1 are always on: The device is bridged and the bridge signal strength is greater than -64 dBm Indicator lights 3, 2, and 1 flash: One-touch pairing and bridging in progress
4, 5	Network port indicator	Off: The network port is not connected. Steady on: The network port is connected, but no data is being transmitted Flashing: The network port is connected and data is being transmitted
6	System indicator	Off: The device is not powered on. Steady on: The device is working normally Slow flashing: The device is running, but there is an alarm or power failure. Flashing quickly (8-10 times/second): The device is starting up. Flashing quickly (2 times/second): Device initialization or device upgrade

1.4 Product Specifications

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The weight is only the weight of a single host.

Table 1-4 Technical Specifications

Product Model	RG-EST330F-P
RF Design	● 2.4 GHz single-band single-stream ● 5 GHz single-band dual-stream
Working frequency band	● European Union & United Kingdom： 2400-2483.5 MHz, EIRP ≤ 20 dBm 5470-5725 MHz, EIRP ≤ 30 dBm ● Myanmar: 2400-2483.5 MHz, EIRP ≤ 23 dBm 5725-5825 MHz, EIRP ≤ 30 dBm ● Thailand: 2.4 GHz to 2.4835 GHz: 20 dBm 5.725 GHz to 5.825 GHz: 30 dBm ● Indonesia: 2400-2483.5 MHz, EIRP ≤ 27 dBm 5725-5825 MHz, EIRP ≤ 23 dBm ● Egypt: 2400-2483.5 MHz, EIRP ≤ 20 dBm 5150-5350 MHz, EIRP ≤ 23 dBm (Note: The operating frequency band varies according to different countries)

Product Model	RG-EST330F-P
Antenna Type	Built-in directional antenna (horizontal 30 °, vertical 30 °), gain 13 dBi
Number of spatial streams	● 2.4 GHz , single stream ● 5 GHz , 2x2 , MIMO
Transfer rate	● 2.4 GHz provides a maximum access rate of 150 Mbps ● 5 GHz provides up to 867 Mbps wireless bridge negotiation rate
Modulation Technology	● OFDM : BPSK@6/9 Mbps , QPSK@12/18 Mbps , 16-QAM@24 Mbps , 64-QAM@48/54 Mbps ● DSSS : DBPSK@1 Mbps , DQPSK@2 Mbps , CCK@5.5/11 Mbps ● OFDM : BPSK , QPSK , 16QAM , 64QAM
Receiving sensitivity	● 11b : -91 dBm (1 Mbps) , -88 dBm (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)
Maximum transmit power	● 2.4 GHz : ≤ 100 mW (20 dBm) (adjustable) ● 5 GHz : ≤ 400 mW (26 dBm) (single stream power)
Adjustable power granularity	1 dBm
Dimensions (L x W x H)	198.8 mm x 133 mm x 108 mm (height is the height of the host edge)
weight	0.37 kg
Business Port	3 10/100Base-T Ethernet ports, support 24V non-standard PoE power supply
Management Port	NA
Status indicator	1 system indicator, 3 network port indicators, 3 signal indicators
Power supply	● Support 24V non-standard PoE Ethernet power supply (standard Passive PoE combiner) ● Support IEEE 802.3at standard PoE Ethernet power supply ● Support 12V or 24V DC power adapter (standard 24V DC adapter)
Machine power	≤ 9 W
Bluetooth 5.0	Not supported
environment	Operating temperature: -30°C to 55°C
	Storage temperature: -40°C to 70°C
	Working humidity: 5 % to 95 % (no condensation)
	Storage humidity: 5 % to 95 % (no condensation)
Installation	Wall mount / pole mount

Product Model	RG-EST330F-P
Protection level	IP55
MTBF	>400000 H

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Operation of this equipment in a domestic environment may cause radio interference.

1.5 Power Specifications

RG-EST330F-P adopts 24 V ⎓ 1.5 A DC power supply, 24 V PoE non-standard power supply or IEEE802.3at standard PoE power supply . The product comes standard with 24 V / 1.5 A DC power adapter and Passive PoE combiner.

The DC power adapter connector specifications are as follows:

Table 1-5 Power adapter plug specifications

Inner diameter	Outer diameter	Insertion depth	polarity
1.35 mm	3.5 mm	10 mm	Positive inside and negative outside (reverse direction not supported)

warn

- Do not use other types of PoE adapters or PoE switches to power the recorder and camera ends of the bridge device at will, otherwise the equipment may be burned.
- PoE combiner indoors .
- the device is operating at full capacity , please keep the ambient temperature below 55 ° C.

2 Preparation before installation

2.1 Safety Tips

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- To avoid damage to people and equipment, please read the safety recommendations in this manual carefully before installation.
- The following safety recommendations cannot cover all possible hazardous situations.

2.1.1 General safety advice

- High temperature , dust, harmful gases, flammable, explosive, susceptible to electromagnetic interference (large radar stations, transmitting stations, substations) and unstable voltage, large vibration or strong noise environment are not conducive to the operation of the bridge equipment. The equipment should not be installed in such an environment .
- The installation site should be dry. It is not recommended to install it near the sea. The distance between the device and the sea is required to be greater than 500m. It is also recommended that the device should not face the direction of the sea breeze .
- It is strictly forbidden to install equipment in places prone to water accumulation, seepage, dripping, condensation, etc. When designing the project, the location that meets the environmental design requirements of the communication equipment project should be selected based on the communication network planning and the technical requirements of the communication equipment, taking into account factors such as climate, hydrology, geology, earthquakes, electricity, and transportation .

Notice

Please install and remove the device according to the correct installation method described in the Quick Installation Guide .

2.1.2 Moving safety

- After the equipment is installed, avoid frequent movement of the equipment.
- Turn off all power and unplug all power supplies and cables before moving or transporting.

2.1.3 Electrical safety

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- Irregular and incorrect electrical operations may cause accidents such as fire or electric shock, and cause serious or fatal damage to people and equipment.
- Avoid direct or indirect contact with high voltage or mains power through wet objects, otherwise it may cause fatal danger.

- When performing electrical operations, local laws and regulations must be followed, and relevant personnel must have the corresponding operating qualifications.
- Please carefully check whether there are potential hazards in the working area, such as the power supply is not grounded, the power supply grounding is unreliable , etc.

2.2 Installation environment requirements

To ensure the normal operation of the equipment and extend its service life, the installation site must meet the following requirements.

2.2.1 Installation Requirements

- Try to install it in an open environment. If installed in a closed environment, please make sure it has a good ventilation and heat dissipation system.
- Make sure the installation location is strong enough to support the weight of the RG- EST330F-P and its installation accessories.
- Make sure the size of the installation location is suitable for RG- EST330F-P installation, and leave a certain amount of space in the front, back, left and right to facilitate heat dissipation.

2.2.2 Lightning protection requirements

- the grounding collection line of each layer and the branch bus (LEB) of the equipment room: when the distance is short, multi-strand copper wire with a cross-sectional area of not less than $^{1.318}$ mm2 (16AWG) can be used.
- Shielded network cables should be used as much as possible, and the devices connected at both ends should be reliably grounded, and the shielding sheath of the network cable should also be grounded as much as possible. If the requirements for shielded network cables cannot be met, the network cable can be buried in a steel pipe and grounded at both ends of the steel pipe.
- RG- EST330F-P has a built-in high-specification lightning arrester with a 4 kV lightning protection

capability. Generally, there is no need to add a lightning arrester. If there is a higher-specification lightning protection level, a lightning arrester can be configured. During installation, the lightning arrester needs to be connected to a grounding cable.

2.2.3 Temperature / humidity requirements

To ensure normal operation and service life, the working environment needs to maintain a certain temperature and humidity. If the working environment does not meet the temperature and humidity requirements for a long time, it will cause damage to the equipment .

- In an environment with too high relative humidity, it is easy to cause poor insulation of insulating materials or even leakage. Sometimes it is also easy to cause changes in the mechanical properties of materials and corrosion of metal parts.
- In an environment with too low relative humidity, the insulating sheet will shrink and easily generate static electricity, which will harm the circuits on the equipment.
- If the temperature is too high, the harm will be greater, which will greatly reduce the reliability of the equipment. Long-term high temperature will also affect the lifespan and accelerate the aging process.

Table 2-1 Temperature and humidity requirements of the working environment

Working environment temperature requirements	Relative humidity requirements of working environment
-30 °C ~ 55°C	5 %~ 95 % (no condensation)

2.2.4 Anti-interference requirements

- Effective measures should be taken to prevent power grid interference in the power supply system.
- It is best not to share the working site of the network bridge with the grounding device of the power equipment and the lightning protection grounding device, and keep it as far away as possible.
- Keep away from wireless transmitters, radar transmitters, high-frequency and high- current equipment, microwave ovens and other high-power wireless devices.

2.3 Installation Tools

Table 2-2 Tool Table

Common tools	Marker pen, Phillips screwdriver, impact drill, hammer, hose clamp, related cables, network cable, diagonal pliers, strapping tape
Special tools	Anti-static gloves, wire strippers, wire crimping pliers, crystal head crimping pliers, wire punching knife, waterproof tape
meter	Multimeter , network cable tester

Related equipment	PC, monitor, keyboard

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RG- EST330F-P does not come with a tool kit , and the tools on the tool list need to be prepared by the user .

2.4 installation inspection

After unpacking the product, please check the goods to be inspected according to the packing list in the quick installation manual and inspect them piece by piece. If they are inconsistent with the actual situation, please contact the direct supplier or agent.

3 Installing the Device

Notice

Please confirm that the user has carefully read the contents of Chapter 2 and confirmed that the requirements stated in Chapter 2 have been met .

3.1 Confirmation before installation

Before installation, you need to carefully plan and arrange the installation location, networking method, power supply and wiring of the equipment. Please confirm the following points before installation:

- The installation location must provide sufficient space to meet the product's heat dissipation requirements.
- The installation location must meet the equipment's environmental requirements for temperature and humidity.
- The installation location must meet the power and current requirements of the equipment.
- The selected power supply must meet the system power requirements.
- The installation location must meet the equipment's requirements for network wiring.
- The installation location must meet the equipment's requirements for installation site selection.
- For equipment specially provided for specific users, please confirm whether the equipment meets the special requirements before installation.

3.2 Safety precautions during installation

During installation, please confirm that the installation location meets the principles mentioned in Section 2.2 and pay attention to the following points:

- Before connecting the power supply, you should use the adapter power supply that comes with the product (24V / 1.5A DC adapter) or a power supply of the same specification . Do not use a power adapter of other specifications.
- The included DC power adapter plus Passive PoE combiner supports power supply over a 100-meter Ethernet cable. Before using the Ethernet cable for power supply, make sure that the switch of the power module is in the off state.
- the network cable and power plug are in good contact after connection .

3.3 Installing the device

Notice

- Please give priority to installing the host in a way that the antenna radiation coverage area is larger.
- This installation instruction is a schematic diagram. The actual product shall prevail.

3.3.1 Cable tie installation

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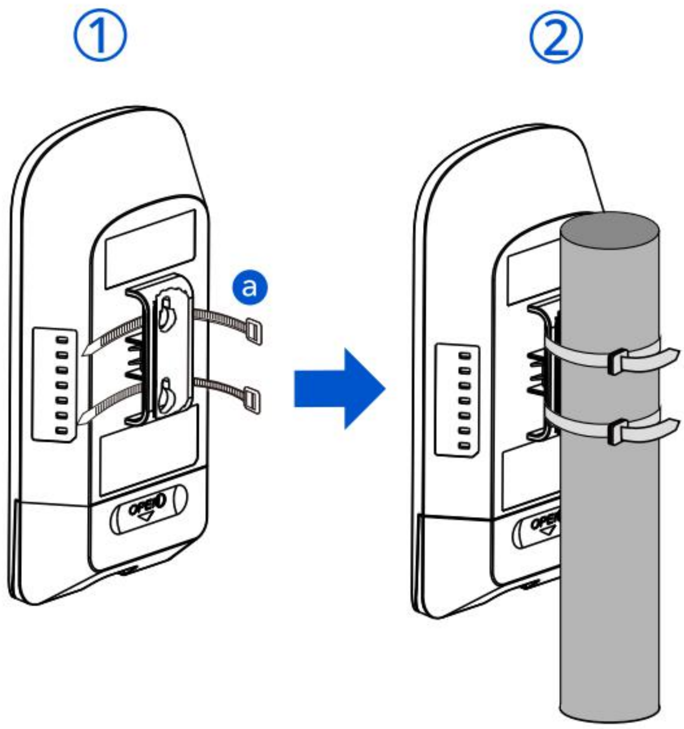
The recommended diameter range of the installed pole is 35 mm to 89 mm . If the pole is not within this range, the user needs to prepare other types of clamps with a wall thickness of not less than 2.5 mm .

(1) Thread the cable tie through the bracket on the back of the device.

(2) Tighten the cable tie to secure the device to the pole.

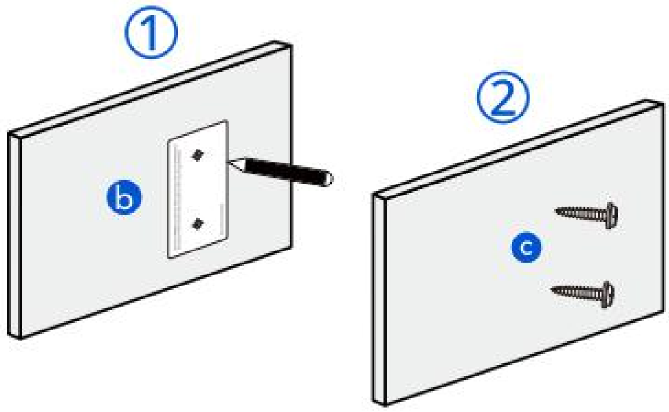
Figure 3-1 The equipment is installed on a vertical pole



3.3.2 Wall Mount

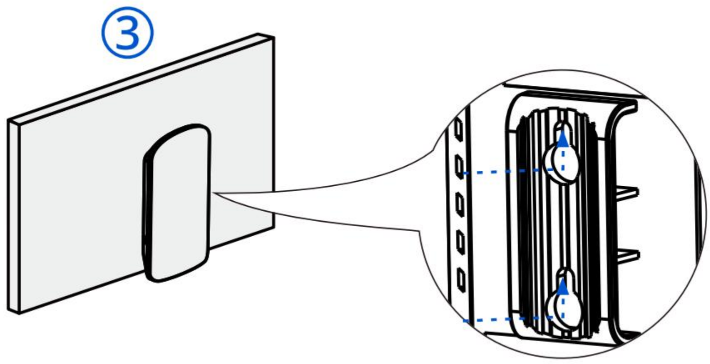
(1) Use the positioning sticker to select the screw hole position and drill a hole, then screw in a 4.2*19BA (SS) self-tapping screw.

Figure 3-2 Positioning punch fixing screw



(2) Align the mounting holes on the rear side of the device with the screws and hang the device.

Figure 3-3 Mount the device



3.4 Connect the cables

warn

- After the device is connected to the network cable, the network port cover needs to be installed to ensure waterproof and dustproof effects.
- Do not use other models of PoE adapters or switches to supply power at will, otherwise the device may be burned.

Please select or make a network cable of appropriate length according to the distance between the RG-EST330F -P bridge device and the power supply end (the device supports 100 - meter network cables of Cat5e and above standards for PoE power supply) .

There are two ways to connect the cable:

- using a Passive PoE combiner:

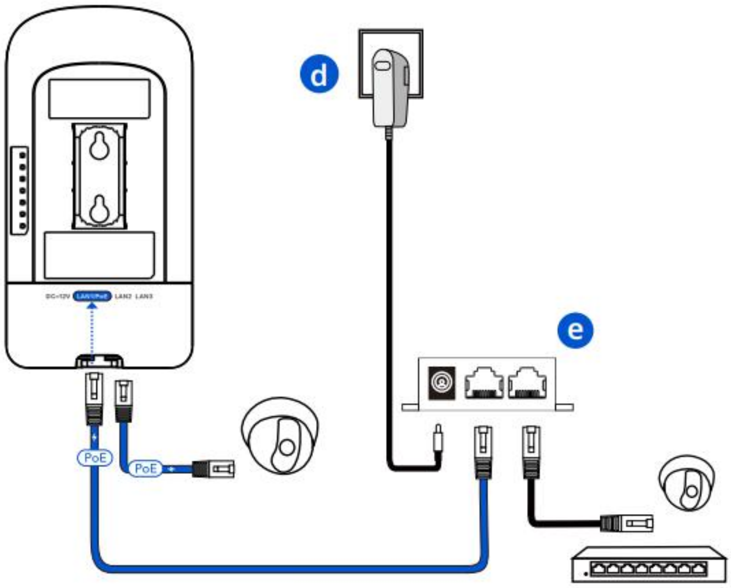
(1) Connect one end of the network cable to the PoE port of the Passive PoE combiner , and the other end to the LAN1 / PoE port of the bridge device.

(2) LAN port of the Passive PoE combiner is connected to the server or camera.

(3) The 24V/ 1.5A DC power adapter is connected to the DC power inlet of the PoE combiner for power supply.

(4) One end of the network cable is connected to the LAN2 and LAN3 ports , and the other end is connected to the camera.

Figure 3-4 using a Passive PoE combiner

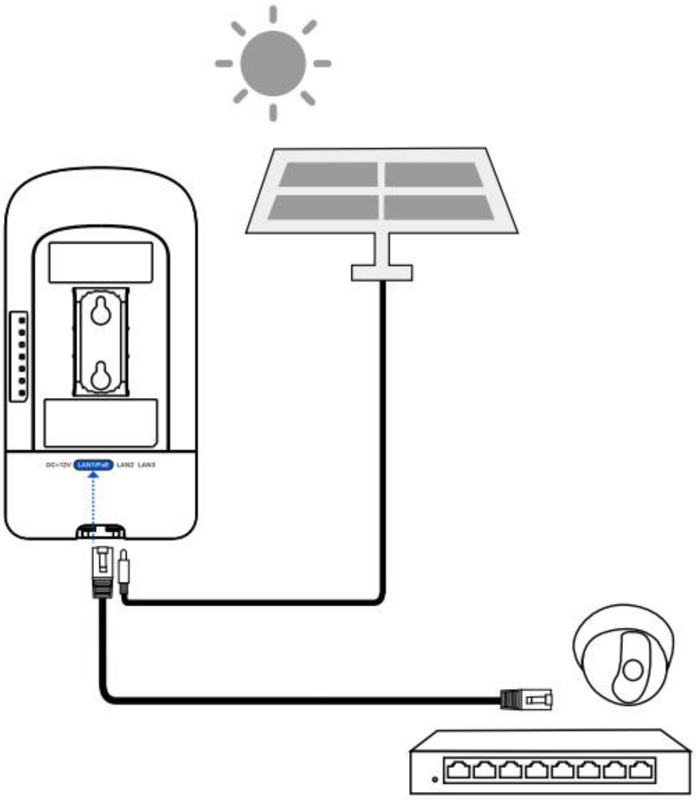


- Connecting cables using solar powered equipment

(1) Connect one end of the network cable to the LAN1/ PoE , LAN2 or LAN3 port of the bridge device, and the other end to the server or camera.

(2) The 12 V/ 1.5 A DC solar powered device is connected to the DC power inlet of the bridge device for power supply.

Figure 3-5 Bridge device directly connected to the cable

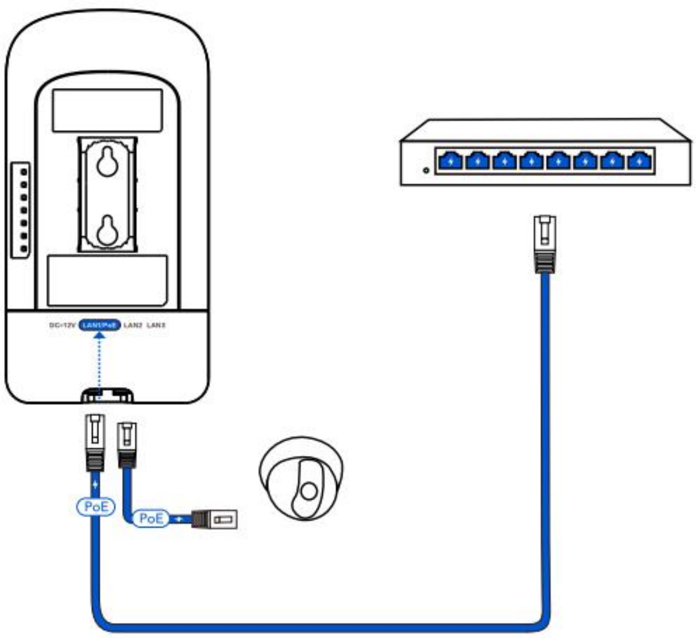


- using a PoE switch :

(1) Connect one end of the network cable to the PoE port of the PoE switch , and the other end to the LAN1 / PoE port of the bridge device.

(2) One end of the network cable is connected to the LAN2 and LAN3 ports , and the other end is connected to the camera.

Figure 3-6 Bridge device directly connected to the cable



3.5 Post-installation inspection

(1) Host Check

- Check whether the external power supply matches the device.
- Make sure the equipment is completely and securely secured and will not move or tip over.

(2) Power supply check

- Make sure the power cord is in good contact and meets safety requirements.
- Plug in the power supply to power the host and confirm that the bridge can work normally.

4 debug

4.1 Power on and start

(1) Check before power on

- Is the power connection correct?
- Whether the supply voltage is consistent with the bridge requirement.

(2) Check after power-on (recommended): Check whether the indicator light of the bridge is normal.

4.2 Login Configuration

- Method 1 : App scan code configuration

(1) Check that the power supply is connected correctly.

(2) Scan the QR code below or on your device to download Ruijie Reyee App and install it.

Figure 4-1 Ruijie Reyee App download QR code

(3) Log in to App Configuration.

- Method 2: Web login configuration

(1) Use an Ethernet cable to connect the device's Ethernet port to a computer or connect to the device's management SSID (the default is @ Ruijie-bxxxx).

(2) Use a browser to access 10.44.77.254 to enter the device Web management page.

(3) Enter the device password and click <Login> to enter the Web management system for configuration.

Notice

- No account is required for the first login. You need to enter the initial password admin. You can start configuration directly after logging in.
- To ensure the security of the device, please change your password in time after logging into the device and change your password regularly.

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5 Monitoring and maintenance

5.1 Monitoring Function

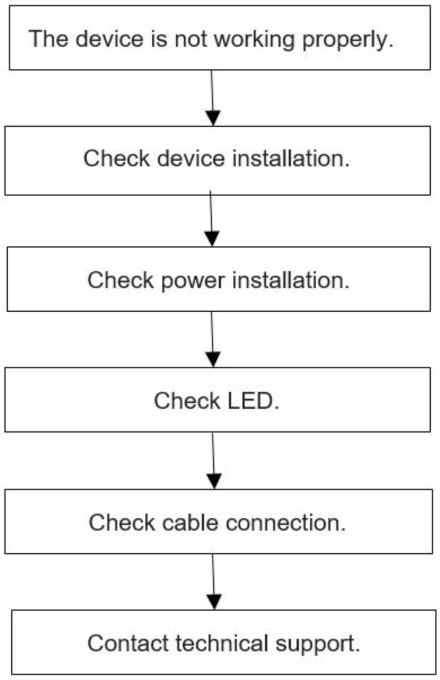
When the RG- EST330F-P is in operation, the user can monitor the operating status of the device by observing the indicator light.

5.2 Hardware Maintenance

In case of any failure, please contact Ruijie Networks Customer Service Department for technical support and Ruijie Networks technicians will handle the issue.

6 Troubleshooting during installation

6.1 General installation troubleshooting process



7 appendix

7.1 Appendix A Connector and connection media description

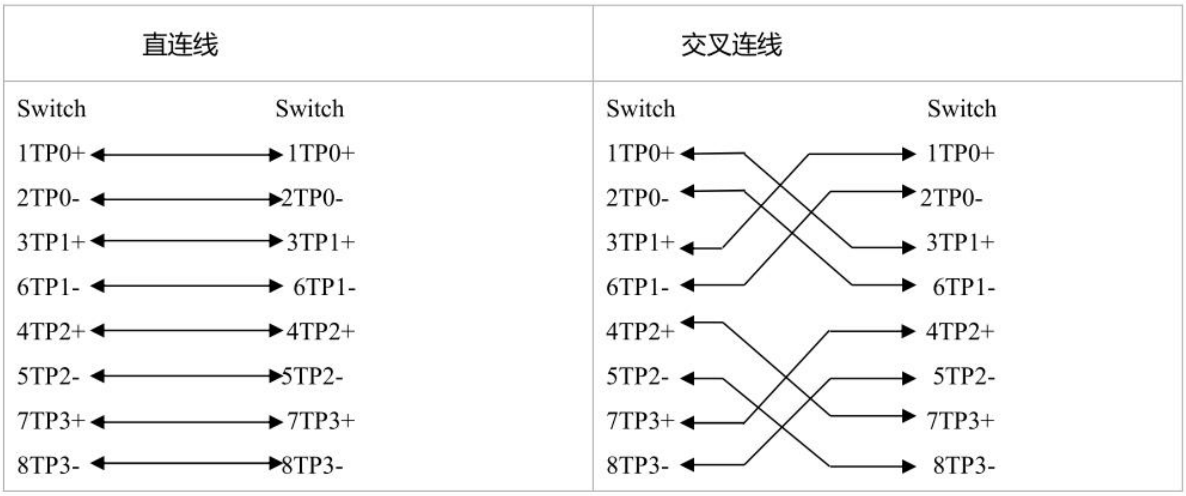
1000BASE-T/100BASE-TX/10BASE-T ports

1000BASE-T/100BASE-TX/10BASE-T are ports that support three self-adaptive rates and automatic MDI/MDIX Crossover at these three rates.

1000BASE-T complies with the IEEE 802.3ab standard. The connecting cable needs to be 100-ohm Category 5e unshielded twisted pair UTP or shielded twisted pair STP. Shielded twisted pair STP is recommended , and it supports a maximum connection distance of 100 meters.

The 1000BASE-T port uses 4 pairs of wires for data transmission, so all 4 pairs of wires need to be connected. The connection of the twisted pair used by the 1000BASE-T port is shown in the figure:

Figure 7-1 1000BASE-T four-pair twisted pair diagram



In addition to the cables with the above specifications, 100BASE-TX/10BASE-T can be connected to each other with 100-ohm Category 3 , 4 , and 5 cables for 10Mbps, and 100-ohm Category 5 cables for 100Mbps, and the longest connection distance can be supported is 100 meters. The following are the pin signal definitions for 100BASE-TX/10BASE-T :

Figure 7-2 100BASE-TX/10BASE-T Pin Signal Definition

Pin	插 座	插 头
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 are the possible straight-through twisted pair and crossover twisted pair connection methods for 100BASE-TX/10BASE-T:

Figure 7-3 100BASE-TX/10BASE-T twisted pair connection