

CPE15 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

- Official website: <https://www.lysoratech.com/support>
- Community: <https://community.lysoratech.com>
- Technical support email: support@lysoratech.com

Conventions

1. Symbols

The symbols that may be found in this document are described as follows:

Danger

An alert that calls attention to critical guidelines which, if not understood or followed, can result in personal injury.

Warning

An alert that calls attention to important information which, if not understood or followed, can result in data loss or equipment damage.

Caution

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

Note

An alert that indicates additional or supplementary information.

 Specification

An alert that indicates a description of product or version support.

2. Notes

This document provides installation steps, troubleshooting, technical specifications, and usage guidelines about 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.

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1 Product Introduction

1.1 Overview

The CPE15 (HVIN: L2526) wireless bridge is designed for transmitting surveillance video data or wireless data remotely in scenarios such as tower cranes, factory buildings, campuses, construction sites, and forest fire prevention. It utilizes the IEEE 802.11ac standard for efficient and reliable communication. Operating in the 5 GHz band and supporting 2×2 MIMO technology, this product delivers a maximum wireless rate of 866 Mbps at 5 GHz for bridging, ensuring more than sufficient bandwidth for delivering point to point (PTP) and point to multi-point (PTMP) services. Moreover, the CPE15 wireless bridge also supports the IEEE 802.11n standard. It offers a maximum data rate of 300 Mbps at 2.4 GHz, empowering efficient remote device management.

1.2 Appearance

1.2.1 Appearance

Figure 1-1 Appearance of the CPE15 Wireless Bridge



Note

The label is located on the side of the bridge.

1.2.2 Ports and Buttons

Figure 1-2 Ports, Buttons and LEDs of the CPE15 Wireless Bridge

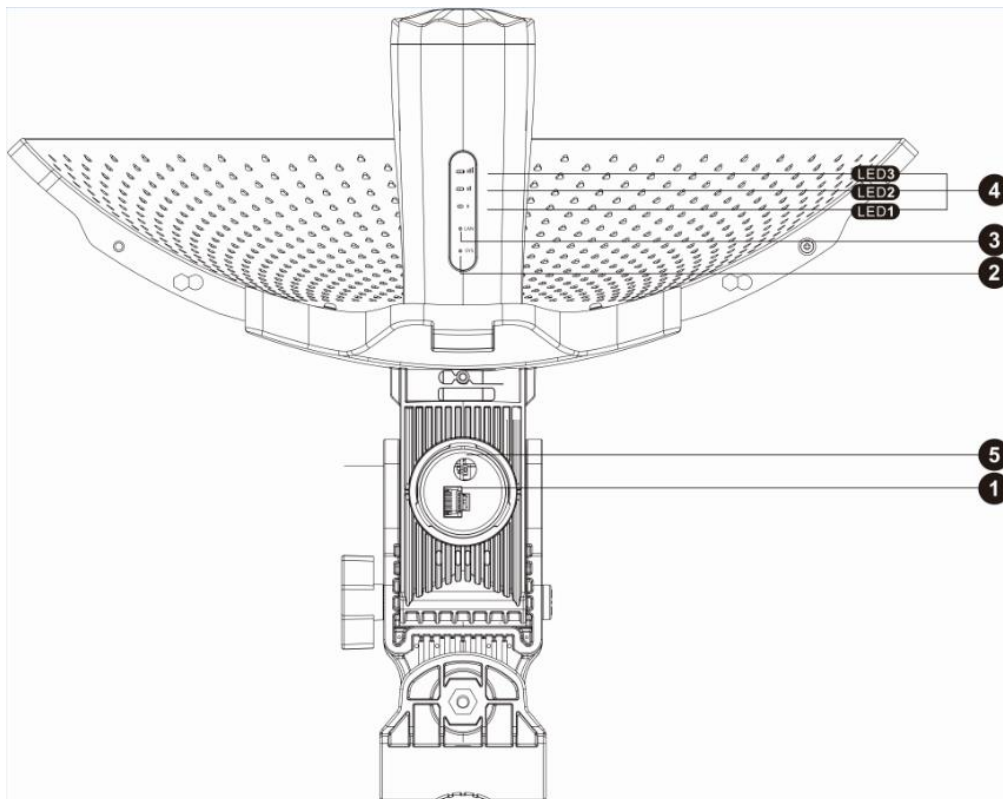


Table 1-1 Ports

Mark	Item	Description
1	Ethernet port	10/100/1000BASE-T port, supporting 24 V Passive PoE input
2	System status LED	For details about system status LEDs, see 1.2.3 LED .
3	Ethernet port LED	For details about Ethernet port LEDs, see 1.2.3 LED .
4	Signal status LEDs	For details about signal status LEDs, see 1.2.3 LED .
5	WPS/Reset button	Press and hold for less than 2 seconds: The device establishes a mesh connection with other devices in 30 seconds.

Mark	Item	Description
		● Press and hold for more than 10 seconds: Restore the device to factory settings.

Warning

Do not use other models of PoE adapters or switches for power supply as it may lead to irreparable damage to the device.

1.2.3 LED

Table 1-2 LEDs

Item	Description
System status LED	Off: The device is NOT receiving power.
	Solid on: The device is operating normally.
	Slow blinking: The device is operating, but an alarm or a power failure occurs.
	Fast blinking (8 to 10 times/second): The device is starting up.
	Fast blinking (2 times/second): The device is initializing.
	Fast blinking (2 times/second): The device is upgrading.
Ethernet port LED	Off: No port link is established.
	Solid on: A valid link is established, but the port is not receiving or sending data.
	Fast blinking: A valid link is established, and the port is receiving or sending data.
Signal status LEDs	Off: The device is not bridged.
	LED 1 on/blinking: The device is bridged.

Item	Description
	LED 1 on: The RSSI is above -75 dBm.
	LED 1 on, LED 2 blinking: The RSSI is above -73 dBm.
	LEDs 1 and 2 on: The RSSI is above -71 dBm.
	LEDs 1 and 2 on, LED 3 blinking: The RSSI is above -68 dBm.
	LEDs 1, 2, and 3 on: The RSSI is above -64 dBm.
	LEDs 1, 2, and 3 blinking: The mesh pairing is in progress.

1.3 Technical Specifications

Table 1-3 Specifications

System Specifications	Flash memory	16 MB
	RAM	128 MB DDR3
Wi-Fi Radio	Radio design	Dual-radio 3 spatial streams ● Radio 1: 2.4 GHz, 1 spatial stream: 1 x 1, SISO ● Radio 2: 5 GHz, 2 spatial streams: 2 x 2, MIMO
	2.4 GHz channel width	Auto/20/40 MHz
	5 GHz channel width	Auto/20/40/80 MHz
	Wi-Fi standard	Wi-Fi 5 (IEEE 802.11ac) standard, compatible with IEEE 802.11a/b/g/n standards
	Receive sensitivity	802.11b: -91 dBm (1 Mbps), -88 dBm (5 Mbps), -85 dBm (11 Mbps)

		802.11a/g: -89 dBm (6 Mbps), -80 dBm (24 Mbps), -76 dBm (36 Mbps), -71 dBm (54 Mbps) 802.11n: -83 dBm@MCS0, -65 dBm@MCS7, -83 dBm@MCS8, -65 dBm@MCS15 802.11ac HT20: -83 dBm (MCS0), -57 dBm (MCS9) 802.11ac HT40: -79 dBm (MCS0), -54 dBm (MCS9) 802.11ac HT80: -76 dBm (MCS0), -51 dBm (MCS9)
	Modulation	802.11b: BPSK, QPSK, CCK 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
	2.4 GHz Wi-Fi	Wi-Fi 4 (IEEE 802.11b/g/n)
	5 GHz Wi-Fi	Wi-Fi 5 (IEEE 802.11ac)
	Transmission rate	Maximum wireless data rate: 1017 Mbps ● Radio 1: 2.4 GHz, 150 Mbps ● Radio 2: 5 GHz, 867 Mbps
	Operating band	IEEE 802.11b/g/n, 2.400 GHz to 2.483 GHz IEEE 802.11a/n/ac, 5.150 GHz to 5.350 GHz IEEE 802.11a/n/ac, 5.470 GHz to 5.725 GHz IEEE 802.11a/n/ac, 5.725 GHz to 5.850 GHz Note: Available bands vary with countries and regions. To use the preceding frequency bands, ensure that your country or region supports these frequency bands. For details, see Channels for Countries & Regions (official website link to be added).
	Maximum transmit power	2.4 GHz: 20 dBm (single-stream power: 20 dBm) 5 GHz: 29 dBm (single-stream power: 26 dBm)

		Note: The transmit power varies according to regulations in different countries and regions.
	Highest QAM order	256
Antenna	Antenna horizontal orientation	9°
	Antenna vertical orientation	9°
	Antenna	2.4 GHz: 1 x 1 Built-in omnidirectional antenna 5 GHz: 2 x 2 External directional antenna with built-in feed source, horizontal: 9°, vertical: 9°
	Antenna gain (2.4 GHz)	2.53 dBi
	Antenna gain (5 GHz)	● Ant1: 19.26 dBi ● Ant2: 18.66 dBi
WLAN	Maximum bridge distance	15 km (9.32 miles)
Port Specifications	Number of fixed LAN ports	3
	Number of 10/100/1000BASE-T ports	3
	Reset button	1
	LEDs	1 x system status LED 3 x Ethernet port LED 3 x signal status LEDs
	Power supply	Passive PoE adapter

Power Supply and Consumption	Power input	Passive PoE adapter: ● Rated input voltage: 100 V AC to 240 V AC, 50 Hz to 60 Hz ● Rated input current: 0.5 A Max ● Rated output voltage: 24 V DC ● Maximum output current: 0.6 A
	Number of PoE In ports	1
	Maximum power consumption	12 W
Dimensions and Weight	Product dimensions (W x D x H)	368.5 mm x 368.5 mm x 271 mm (14.51 in. x 14.51 in. x 10.67 in.) (excluding mounting bracket)
	Color	Elegant white
	Weight	0.20 kg (0.44 lbs) (without packaging materials)
	Package dimensions (W x D x H)	404 mm x 256 mm x 147 mm (15.91 in. x 10.08 in. x 5.79 in.)
	Shipping weight	2.56 kg (5.65 lbs)
Environment and Reliability	Surge protection	Service port: ± 6 kV for common mode Power connector: ± 4 kV for common mode and ± 2 kV differential mode
	Cooling	Natural cooling
	Altitude	Operating altitude: -500 m to +5,000 m (-1,640.42 ft. to +16,404.20 ft.) Storage altitude: -500 m to +5,000 m (-1,640.42 ft. to +16,404.20 ft.)
	IP rating	IP65
	Operating temperature	- 40°C to +70°C (-40°F to +158°F)

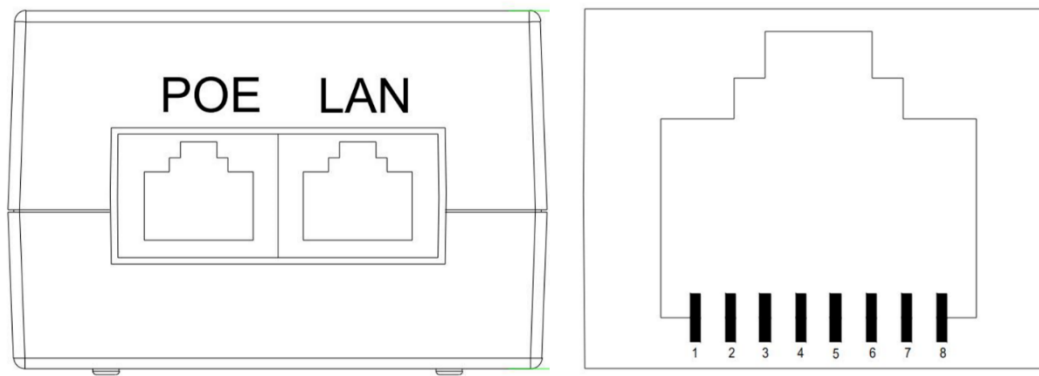
	Storage temperature	- 40°C to +85°C (-40°F to 185°F)
	Operating humidity	5% RH to 95% RH (non-condensing)
	Storage humidity	5% RH to 95% RH (non-condensing)
	MTBF	400,000 hours (about 45 years)
	ESD protection	Standard test: contact discharge=24 kV, air discharge=24 kV, Class B
	Mounting options	Pole
Certification and Regulatory Compliance	EMC	FCC 47 CFR Part 2 Subpart J FCC 47 CFR Part 15 Subpart E IC RSS-247 Issue 4 FCC 47 CFR Part 15 Subpart B ICES-003 Issue 7
	Safety compliance	UL 62368-1:2019
	Certification	FCC, IC, cTUVus

Warning

- Operation of this equipment in a residential environment could cause radio interference.
- This device does not support the 6G frequency band (5925 MHz-7125 MHz).

1.4 Power Supply Technical Specifications

The CPE15 wireless bridge supports 24 V passive PoE input, and is shipped with a 24 V/0.6 A passive PoE adapter. Technical specifications of the power adapter:



RJ45 LAN port: Connects to cameras, switches, PCs and other devices.

Pins 1, 2, 3, 4, 5, 6, 7 and 8 are for data transmission.

RJ45 PoE port: Connects to the CPE15 wireless bridge.

Pins 1, 2, 3, 4, 5, 6, 7 and 8 are for data transmission. Pins 4 and 5 are for power supply, and pins 7 and 8 are for grounding.

! Warning

Do not use other models of PoE adapters or switches for supplying power to the network video recorder (NVR) and IP camera (IPC) as it may lead to irreparable damage to these devices.

2 Preparing for Installation

2.1 Package Contents

Table 2-1 Package Contents

No.	Item	Quantity
1	Device	1
2	Power adapter	1 Note: 24 V passive PoE adapter
3	Power cord	1 x 1 m (3.28 ft.)
4	Parabolic dish antenna	2
5	Cable gland	1
6	Mounting bracket	1 x Pole mounting plate 1 x Mounting bracket 1 x Antenna base
7	Hose clamp	2
8	User Manual	1
9	Warranty Card	1
10	Screw	10 x Phillips pan head screws 2 x hex head machine screws M5 x 65 mm 1 x M5 nut

Note

The package contents above are intended to provide a general overview, and are subject to the terms of the order contract. Please check your goods carefully against the

package contents or order contract. If you have any questions, please contact the distributor.

2.2 Safety Precautions

Note

- To prevent device damage and physical injury, please read carefully the safety precautions described in this chapter.
 - The following safety precautions do not cover all possible dangers.
-

2.2.1 General Safety Precautions

- Do not expose the device to high temperature, dusts, or harmful gases. Do not install the device in an inflammable or explosive environment. Keep the device away from EMI sources such as large radar stations, radio stations, and substations. Do not subject the device to unstable voltage, vibration, and noises.
- The installation site should be far away from the sea. Keep the device at least 500 meters (1640 ft.) 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 must be selected according to network planning and features of the device, and considerations such as climate, hydrology, geology, earthquake, electric power, and transportation.

Caution

Please follow the correct procedures described in this guide to install and remove the device.

2.2.2 Handling Safety

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

2.2.3 Electrical Safety

! Warning

- Improper or incorrect electrical 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 electrical operations. Only personnel with relevant qualifications can perform such operations.
 - Check whether there are potential risks in the work area. For example, check whether the power supply is grounded, whether the grounding is reliable, and whether the ground is wet.
 - Find out the location of the emergency power supply switch in the room before installation. First cut off the power supply in case of an accident.
 - Be sure to make a careful check before you shut down the power supply.
 - Do not place the device in a damp/wet location. Do not let any liquid enter the device.
 - Keep the device far away from the grounding or lightning protection devices of the power device.
 - Keep the device away from high-power radio stations, radar stations, and high-frequency high-current devices.

2.3 Installation Environment Requirements

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

2.3.1 Environment

- Install the device in a well-ventilated environment. If it is installed in a closed room, make sure there is a good cooling system.
- Make sure the site is sturdy enough to support the device and its accessories.
- Make sure the site has enough space for installing the device and leave sufficient space

around the device for ventilation.

- Install the device at a height of 1.8 meters above the ground.

1.1.1 Surge Protection

- When the connection cable between the main grounding conductor and local equipotential earthing terminal board (LEB) on each floor is shorter than 2 meters, use a stranded copper wire with a sectional area not less than 1.318 mm² (16 AWG) for the connection cable.
- Use a shielded network cable if possible, ensure that devices connected to both ends of the shielded network cable are reliably grounded, and make sure that the sheath of the shielded network cable is also grounded if possible. If no shielded network cable is available, wire the network cable through a steel pipe and bury the steel pipe for lead-in, and properly ground both ends of the steel pipe.
- No additional lightning protector is required as a high-profile lightning protector is built in the device and the antenna port and power port support 4kV lightning protection. If a lightning protector of a higher profile is available, configure the lightning protector optionally. Before the configuration, connect the lightning protector to the ground cable.
- The product and power supply equipment can only be installed and used in the same building.

2.3.2 Ventilation

This device adopts natural ventilation. Therefore, a sufficient clearance must be maintained around the device for cooling.

2.3.3 Temperature and Humidity

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

- In an environment with high humidity, the insulating material may have bad insulation or even leak electricity and sometimes the materials may suffer from mechanical performance change and metallic parts may get rusted.
- In an environment with low humidity, the insulating strip may dry and shrink, and static

electricity is prone to occur and damage the internal circuits of the device.

- In an environment with high temperature, the device is subjected to even greater harm, as its performance may degrade significantly and its service life may be shortened in the case of long-term exposure that expedites the aging process.

Table 2-2 Temperature and Humidity Requirements

Operating Temperature	Operating Humidity
- 40°C to +70°C (-40°F to +158°F)	5% RH to 95% RH (non-condensing)

2.3.4 Anti-Interference

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

2.4 Tools

Table 2-3 Tools

Common Tools	Phillips screwdriver, hex screwdriver, power cords, Ethernet cables, cage nuts, diagonal plier, spirit level, and marker
Special Tools	Anti-ESD gloves, wire stripper, crimping plier, RJ45 crimping plier, wire cutter, and waterproof adhesive tape
Meters	Multimeter
Relevant Devices	PC, display, and keyboard

Note

The CPE15 wireless bridge is not shipped with a tool kit. You need to prepare a tool kit by yourself.

2.5 Checking Before Installation

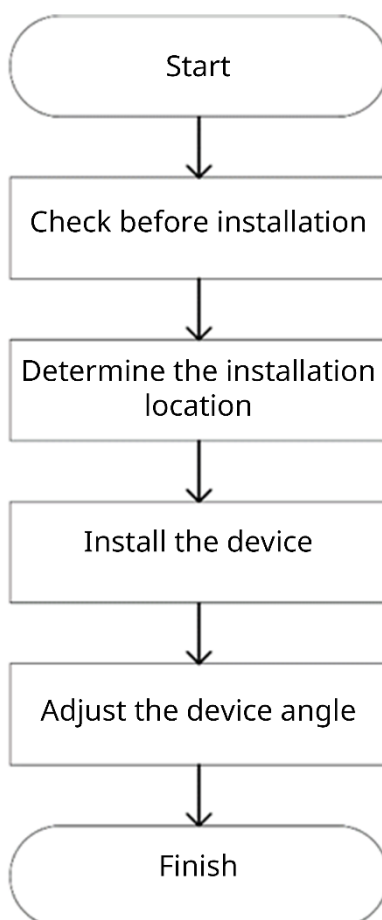
After unpacking the product, carefully inspect each item in accordance with the provided package contents. If any inconsistencies are found, please contact our local distributor.

3 Installation

⚠ Caution

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

3.1 Installation Procedure



3.2 Before You Begin

Carefully plan and arrange the installation location, networking mode, power supply, and cabling of the device before installation. Confirm the following points before installation:

- The installation site provides sufficient space for heat dissipation.
- The installation site meets the temperature and humidity requirements of the device.
- The power supply and required current are available in the installation site.
- The selected power supply modules meet the system power requirement.
- The network cables have been deployed in the installation site.
- The installation site meets all requirements described in this guide.
- The device meets the customers' requirements.

3.3 Safety Precautions During Installation

You are advised to mount this wireless bridge on a pole with a diameter ranging from 35 mm (1.38 in.) to 89 mm (3.50 in.). If the pole falls outside this range, please prepare alternative clamps with a wall thickness of at least 2.5 mm (0.01 in.).

Before installation, ensure that the installation location meets the requirements in [2.3.1 Environment](#), and pay attention to the following:

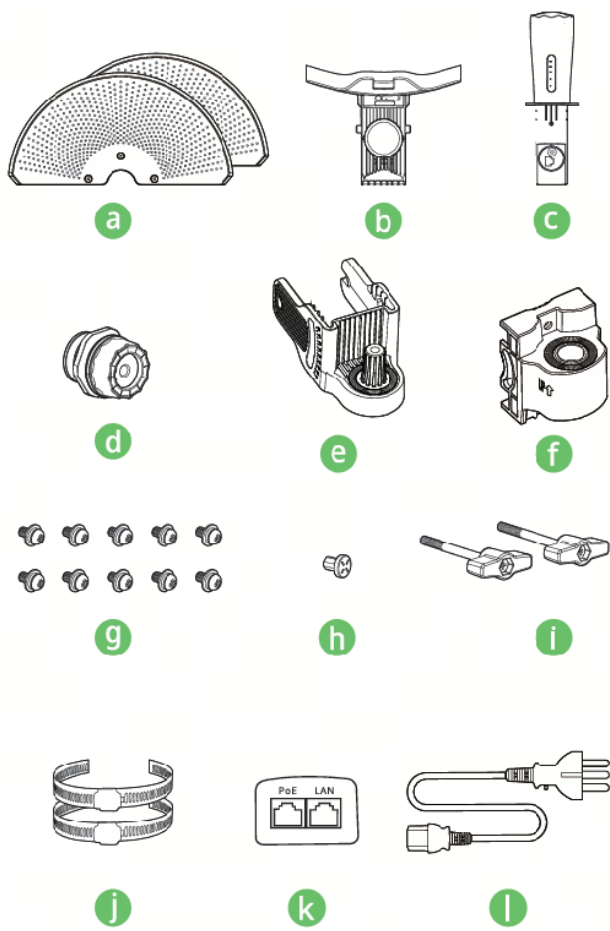
- Use the provided power adapter (24 V passive PoE adapter. Pins 4 and 5 use the positive voltage and pins 7 and 8 use the negative voltage.), or an alternative power adapter with identical specifications to supply power to this device. Do not use power adapters with different specifications.
- The supplied passive PoE adapter supports Ethernet cables for power supply for up to 100 meters (328 ft.). Prior to connecting the Ethernet cable, ensure that the power module switch is in the off position.
- Ensure the Ethernet cables and power cords are securely connected.

3.4 Installing the Wireless Bridge

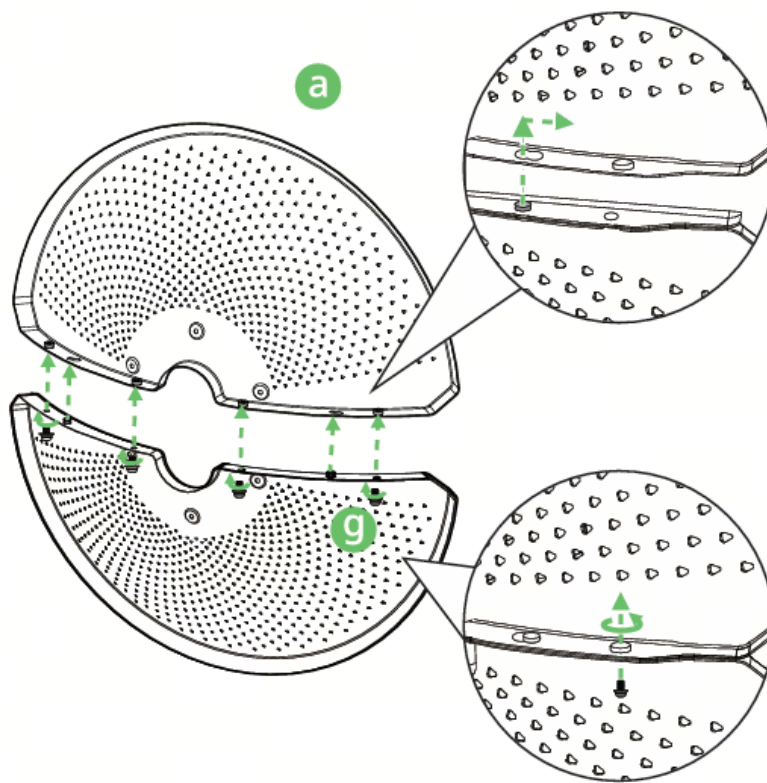
Caution

- Install the device in a manner that maximizes the coverage area of the antenna.
 - The schematic diagram provided is for reference purposes only. The actual product should be installed based on its physical specifications and design.
-

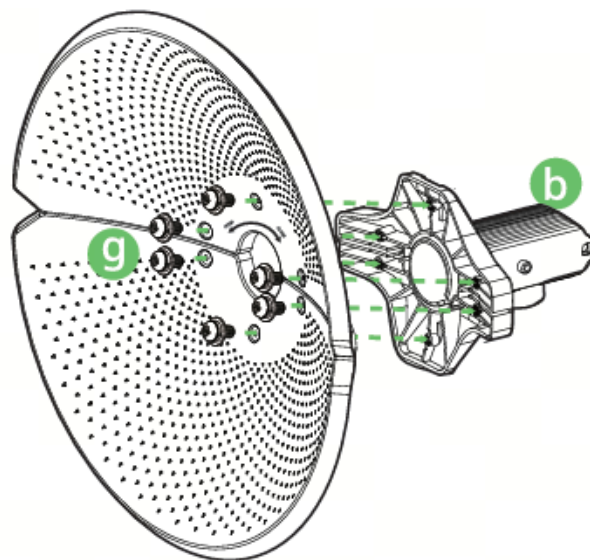
The following accessories are required for installation.



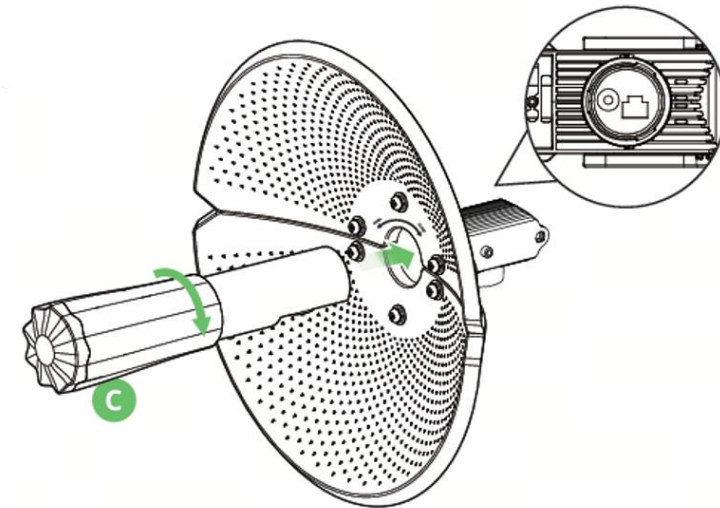
(1) Connect the two parabolic dish antennas using screws.



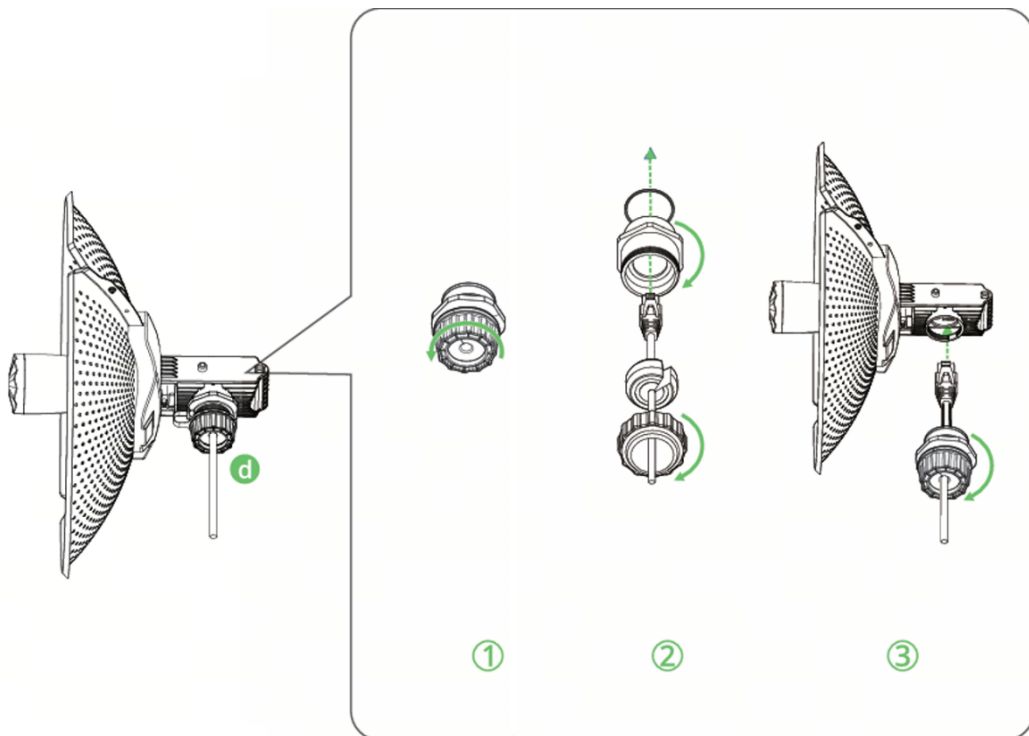
- (2) Attach the supporting piece to the back of the assembled parabolic dish antennas using six screws.



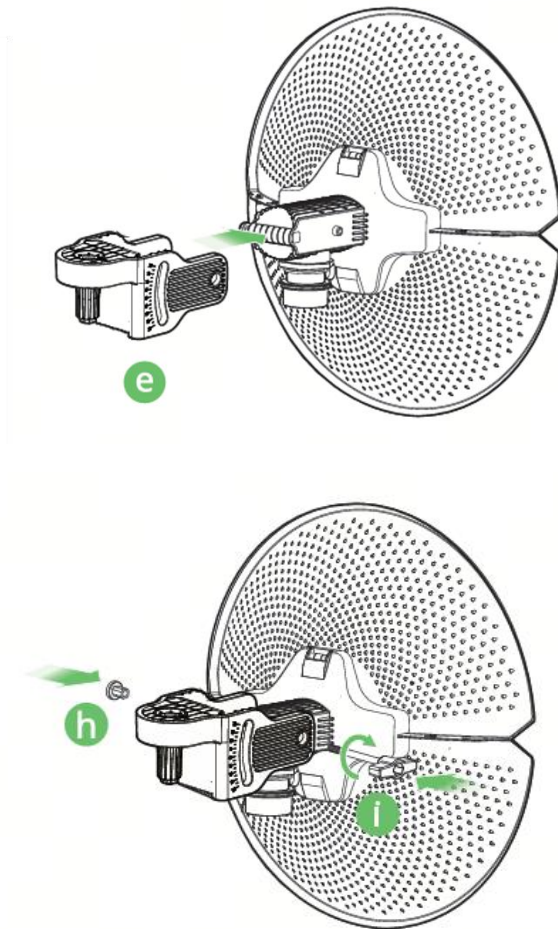
- (3) Attach the wireless bridge to the front of the assembled parabolic dish antennas.



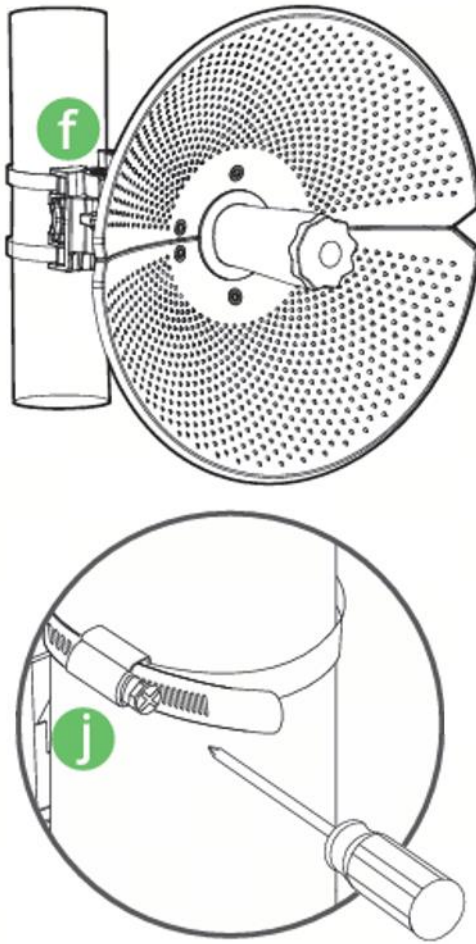
(4) Properly connect the Ethernet cable, and then install the cable gland.



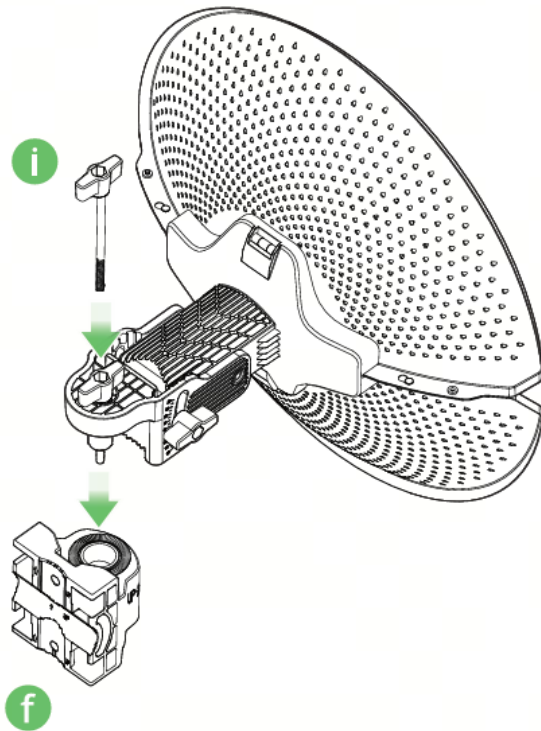
(5) Attach the antenna mounting bracket to the supporting piece using the long screw and the nut.



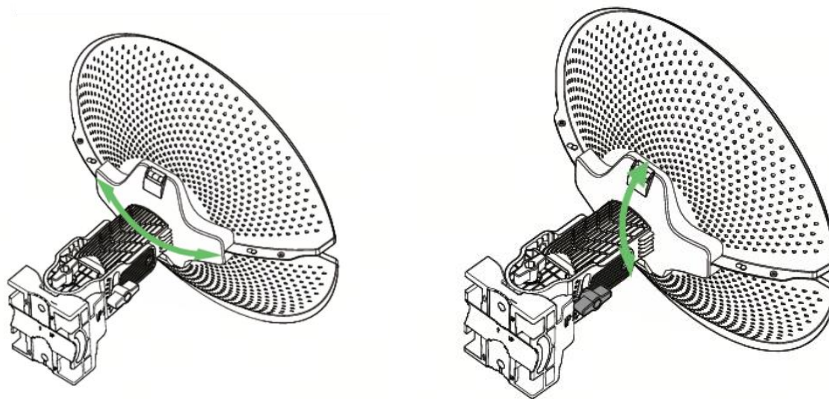
(6) Mount the pole mounting bracket to the pole, and tighten the clamps.



- (7) Mount the assembled wireless bridge to the pole mounting bracket and tighten the long screw.



(8) After installation, align the bridge orientation.

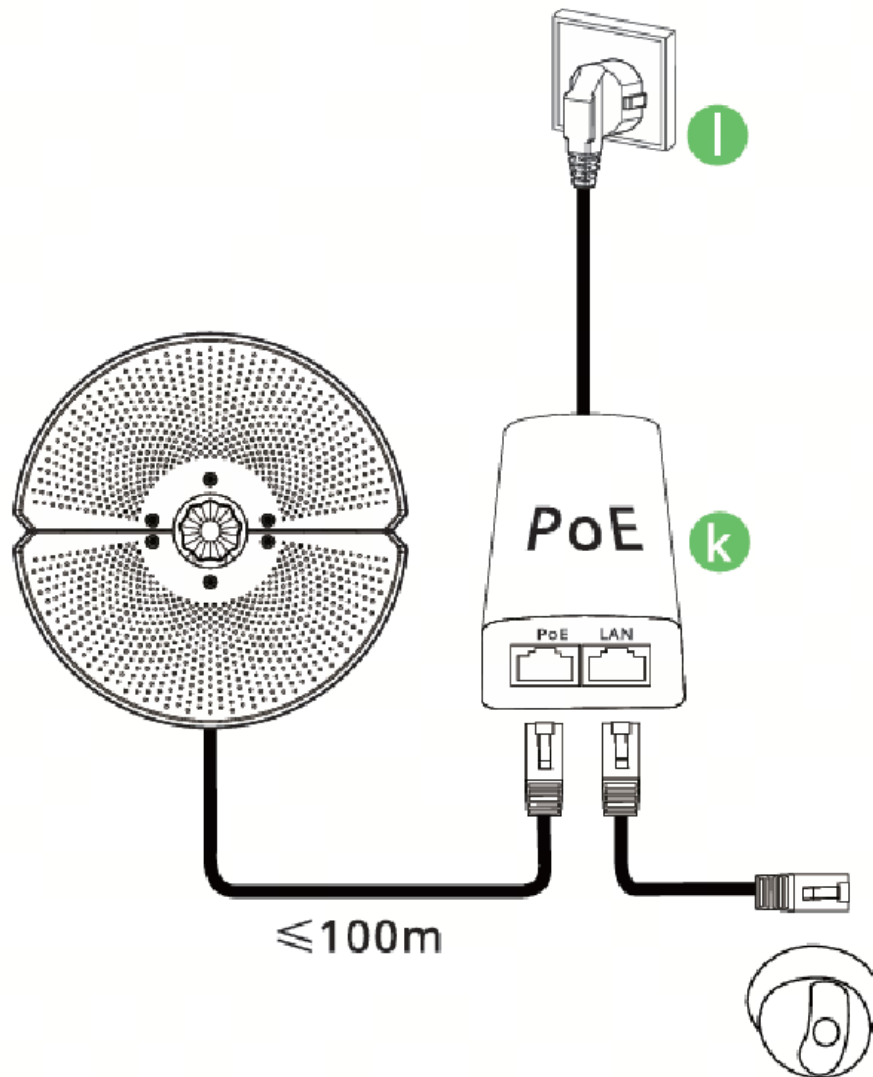


3.5 Connecting Cables

- (1) Use or make an Ethernet cable based on the distance between the wireless bridge and the power source. The device supports PoE power supply over CAT5e or better cables with a cable length up to 100 meters (328 ft.).
- (2) Connect the PoE port of the passive PoE adapter to the Ethernet port of the wireless bridge using an Ethernet cable. Connect the LAN port of the passive PoE adapter to the

server or camera using another Ethernet cable. Connect the passive PoE adapter to a 220 V power source for power supply.

Figure 3-1 Cable Connection



Warning

- After the Ethernet cable is securely connected to the device, cover the device with a waterproof cover to shield it from potential water and dust damage.
- Do not use other models of PoE adapters or switches for power supply as it may lead to irreparable damage to the device.

3.6 Verifying the Installation

(1) Check the device

- Verify that the external power supply matches the device.
- Verify that the device is firmly and reliably secured.

(2) Check the power supply

- Verify that the power cord is properly connected and meet safety requirements.
- Turn on the power supply to supply power to the device. Verify that the device works properly.

4 Debugging

4.1 Setting Up the Configuration Environment

Before setting up the configuration environment using a 24 V/0.6 A passive PoE adapter, verify that the power cord is properly connected and that the configuration environment meets safety requirements.

4.2 Checking Environment Before/After Power-on

(1) Before power-on, check the following:

- Verify that the power supply is properly connected.
- Verify that the input voltage matches the specification.

(2) After power-on, check the following (Recommended):

- Verify that the LED status is normal.

4.3 Configuring the Wireless Bridge

- **Method 1: Via the Lysora app**

(1) Scan the QR code on this page or on the device to download the Lysora App.

(2) Launch the Lysora App, click **Add a project**, and follow the instructions to complete setup.



- **Method 2: Via a web browser**

- (1) Connect the LAN port of the bridge to a PC using an Ethernet cable for wired connection, or connect your smartphone or PC to the device's SSID (default SSID: **@Lysora-bxxxx**) for wireless connection.
- (2) Enter **10.100.111.254** in a browser to access the device's web interface.
- (3) Enter the device password (default password: admin) and click **Login** to log in to web interface for configuration.

 Note

You can enter the initial password "admin" to log in. To ensure device security, change the password after login, and update the password regularly.

5 Monitoring and Maintenance

5.1 Monitoring

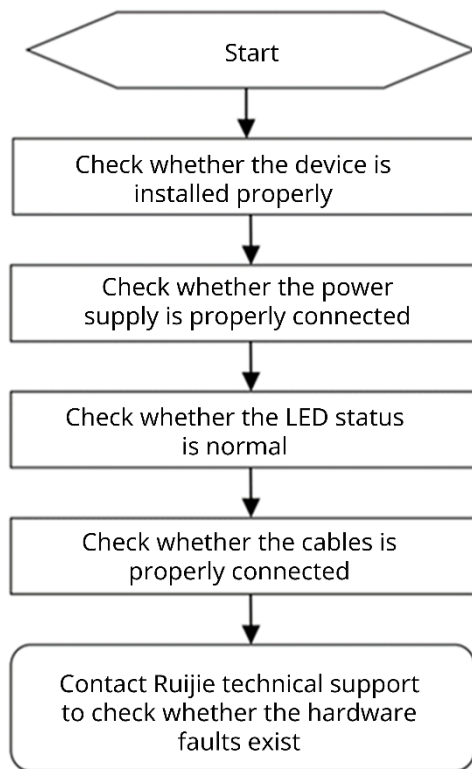
You can observe the LED status to monitor the device in operation.

5.2 Hardware Maintenance

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

6 Common Troubleshooting

6.1 Troubleshooting Flowchart



7 Appendix

7.1 Connectors and Media

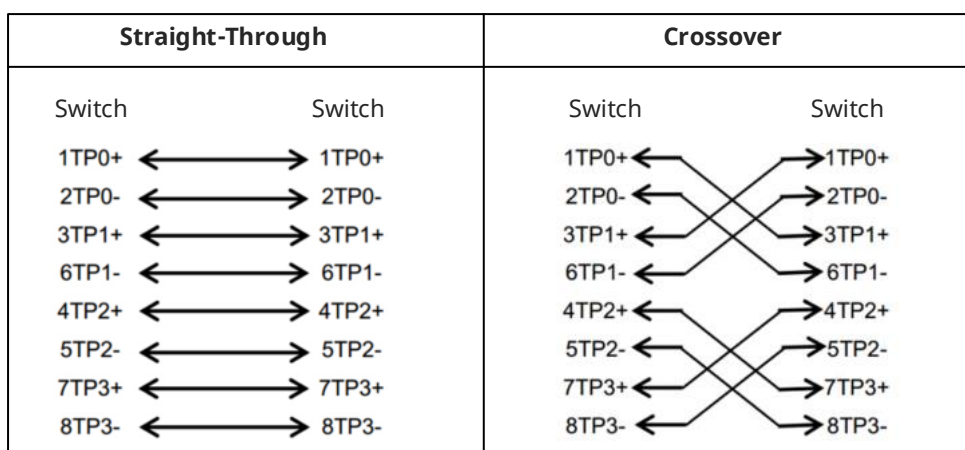
1000BASE-T/100BASE-TX/10BASE-T Port

The 1000BASE-T/100BASE-TX/10BASE-T port 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 Category 5e 100-ohm UTP or STP (recommended) with a maximum distance of 100 meters (328 feet).

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

Figure 7-1 1000BASE-T Twisted Pair Connections



100BASE-TX/10BASE-T can be interconnected using cables of the preceding specifications. For 10 Mbps, the 100BASE-TX/10BASE-T port can be connected using 100-ohm Category 3, Category 4, and Category 5 cables; for 100 Mbps, the 100BASE-TX/10BASE-T port can be connected using 100-ohm Category 5 cables with a maximum connection distance of 100 meters. The following table shows 100BASE-TX/10BASE-T pin assignments.

Table 7-1 100BASE-TX/10BASE-T Pin Assignments

Pin	Socket	Plug
1	Input Receive Data+	Output Transmit Data+

Pin	Socket	Plug
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 figure shows feasible connections of the straight-through and crossover twisted pair cables for a 100BASE-TX/10BASE-T port.

Figure 7-2 100BASE-TX/10BASE-T Twisted Pair Connections

