Ruijie Reyee RG-RAP6202(G) Access Point

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

- Ruijie Reyee website: https://reyee.ruijie.com
- Online support center: https://reyee.ruijie.com/en-global/support
- Case portal: https://www.ruijie.com/support/caseportal
- Community: https://community.ruijie.com
- Email support: service_rj@ruijie.com
- 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:

Caution

An 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.

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1 Product Overview

The RG-RAP6202(G) access point is an outdoor wireless access point designed by Ruijie Networks for high-speed wireless networks. RG-RAP6202(G) features wireless network security, radio frequency (RF) control, mobile access, Quality of Service (QoS) and seamless roaming.

The IP68 design adapts to inclement outdoor environments such as the cold and humidity, and can effectively avoid the influence of bad weather and environment. This greatly simplifies installation and maintenance. RG-RAP6202(G) supports PoE and can be applied in a wide variety of deployment scenarios, including outdoor space of hotels, orchard monitoring, warehouses.

1.1 Package Contents

Table 1-1 Package Contents

No.	Item	Quantity
1	RG-RAP6202(G) access point	1
2	Pole clamps	2
3	Mounting bracket	1
4	Expansion anchors (M8 x 60 mm)	4
5	Internal/External hex machine screws (M8 x 20 mm)	2
6	Cable glands (pre-installed)	2
7	Connecting rod (pre-installed)	1
8	Warranty Card	1
9	User Manual	1

Note

A normal delivery should contain the above mentioned items, which may differ from the actual delivery, depending on purchase contracts. Please check your goods carefully against the package contents list or purchase contract. If you have any questions or there are any errors, please contact your distributor.

1.2 Appearance

Figure 1-1 **Front View**



Figure 1-2 **Side View**



Figure 1-3 **Ports**

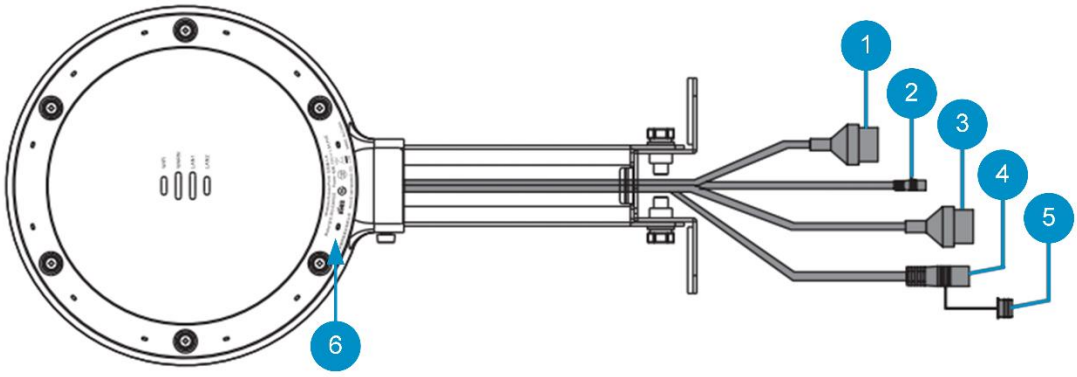


Table 1-2 Description

Sign	Button/Port	Function
1	Ethernet Port	10/100/1000Base-T adaptive Ethernet ports
2	Power port	DC power port, 12 V/1.5 A **Caution** If the power adapter is needed, please purchase it separately.
3	Ethernet port/PoE	10/100/1000Base-T adaptive Ethernet ports, supporting 802.3af/802.3at PoE power supply
4	Reset button	Press for shorter than 2 seconds: Restart the device. Press for 2 to 5 seconds: There is no reaction on the device. Press for longer than 5 seconds: Restore the factory settings.
5	Weatherproof Cap	Protect the access point interior from environmental elements including water, heat, cold, and dust.
6	Label	The label is located on the bottom of the device.

Figure 1-4 **Top View**

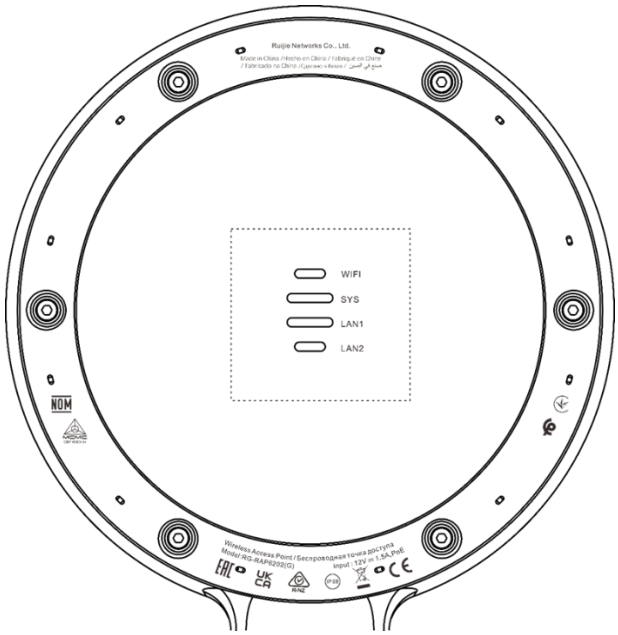


Table 1-3 Description

LED	Status	Meaning
Wi-Fi (Green)	Blinking	Data is transmitted by Wi-Fi.
	Solid on	Wi-Fi is enabled and no data is transmitted.
	Off	Wi-Fi is disabled.
SYS(Blue)	Fast blinking	The device is being initialized.
	Slow blinking (0.5 Hz):	The Internet is unreachable.
	Blinking twice	1. Restore the factory settings. 2. Upgrade the firmware and restore the image file. **Caution** In this case, please do not power off the device.
	A long blink and three short blinks	Other faults occur.
	Solid on	The device is working properly without alarm.
	Off	The device is powered off.
LAN 1(Green)	Blinking	The port is up and data is transmitted.
	Solid on	The port is up and no data is transmitted.
	Off	The port is down.

LED	Status	Meaning
LAN 2(Green)	Blinking	The port is up and data is transmitted.
	Solid on	The port is up and no data is transmitted.
	Off	The port is down.

1.3 Technical Specifications

Table 1-4 Technical Specifications of RG-RAP6202(G)

System Specifications	Flash memory	16 MB
	RAM	128 MB DDR3
Wi-Fi Radio	5 GHz Wi-Fi	Wi-Fi 4 (IEEE 802.11a/n) Wi-Fi 5 (IEEE 802.11ac)
	2.4 GHz Wi-Fi	Wi-Fi 4 (IEEE 802.11b/g/n)
	Operating band	IEEE 802.11b/g/n, 2.400 GHz to 2.4835 GHz IEEE 802.11a/n/ac, 5.150 GHz to 5.350 GHz, 5.470 GHz to 5.725 GHz, 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.
	Radio design	Dual-radio 4 spatial streams ● 2.4 GHz: 2 x 2, MIMO ● 5 GHz: 2 x 2, MIMO
	5 GHz channel width	Auto/20/40/80 MHz
	2.4 GHz channel width	Auto/20/40 MHz
	Maximum wireless data rate	1266 Mbps
	5 GHz wireless data rate	866 Mbps
	2.4 GHz wireless data rate	400 Mbps
	Maximum transmit power (5 GHz)	Combined power: 30 dBm (single-stream power: 27 dBm) Note: The transmit power varies according to regulations in different countries and regions.

	Maximum transmit power (2.4 GHz)	Combined power: 29 dBm (single-stream power: 26 dBm) Note: The transmit power varies according to regulations in different countries and regions.
	Maximum transmit power	Frequency bands and maximum Effective Isotropic Radiated Power (EIRP): Note: Country specific restrictions apply. ● European Union & United Kingdom: ○ 2400–2483.5 MHz, EIRP ≤ 20 dBm ○ 5470–5725 MHz, EIRP ≤ 30 dBm ● United States: ○ 2400–2483.5 MHz, max output power ≤ 30 dBm & EIRP ≤ 36 dBm ○ 5150–5250 MHz, max output power ≤ 30 dBm & EIRP ≤ 36 dBm ○ 5250–5350 MHz, max output power < 24 dBm & EIRP ≤ 30 dBm ○ 5470–5725 MHz, max output power < 24 dBm & EIRP ≤ 30 dBm ○ 5725–5850 MHz, max output power ≤ 30 dBm & EIRP ≤ 36 dBm ● Myanmar: ○ 2400–2483.5 MHz, EIRP ≤ 23 dBm ○ 5725–5825 MHz, EIRP ≤ 30 dBm ● Thailand: ○ 2400–2483.5 MHz, EIRP ≤ 20 dBm ○ 5470–5725 MHz, EIRP ≤ 30 dBm ○ 5725–5825 MHz, EIRP ≤ 30 dBm ● Indonesia: ○ 2400–2483.5 MHz, EIRP ≤ 36 dBm ○ 5725–5825 MHz, EIRP ≤ 36 dBm ● Egypt: ○ 2400–2483.5 MHz, EIRP ≤ 20 dBm ○ 5150–5350 MHz, EIRP ≤ 23 dBm
	Coverage range	5 GHz max: 400 m (1312.34 ft.) 2.4 GHz max: 150 m (492.13 ft.) 5 GHz recommended: 200 m (656.17 ft.) 2.4 GHz recommended: 50 m (164.04 ft.)

		Note: The data is obtained in an ideal environment without obstruction. The signal coverage radius depends on client performance and environmental interference.
	Modulation	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, and CCK @ 5.5/11 Mbps MIMO-OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
	Receive sensitivity	11b: –91 dBm (1 Mbps), –88 dBm (5.5 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) 11ac: 20 MHz: –83 dBm (MCS0), –57 dBm (MCS9) 11ac: 40 MHz: –79 dBm (MCS0), –57 dBm (MCS9) 11ac: 80 MHz: –76 dBm (MCS0), –51 dBm (MCS9)
Antenna	Antenna	2.4 GHz: 2 built-in omnidirectional antennas 5 GHz: 2 built-in omnidirectional antennas
	Antenna gain (5 GHz)	4.00 dBi
	Antenna gain (2.4 GHz)	3.00 dBi
Port Specifications	Number of 10/100/1000BASE-T ports	2
	Maximum rate of the LAN port	1000 Mbps
	Reset button	1
	LEDs	1 x system status LED 1 x Wi-Fi LED 2 x Ethernet port LEDs
	Power supply	● DC power adapter ● PoE/PoE+

Power Supply and Consumption		Note: If both the DC power adapter and PoE/PoE+ are available for power supply, the DC power adapter is preferred.
	Local power supply	Yes, one DC power connector (12 V, 1.5 A)
	Dimensions of the DC connector	Outer diameter: 5.5 mm (0.22 in.) Inner diameter: 2.1 mm (0.08 in.) Depth: 10 mm (0.39 in.)
	PoE In standard	IEEE 802.3af (PoE) IEEE 802.3at (PoE+)
	Maximum power consumption	12.95 W
Dimensions and Weight	Product dimensions (diameter x height)	Ø200 mm x 166 mm (Ø7.87 in. x 6.54 in.) (spherical device, excluding the mounting bracket)
	Package dimensions (W x D x H)	472 mm x 257 mm x 223 mm (18.58 in. x 10.12 in. x 8.78 in.)
	Color	White
	Weight	≤ 1 kg (2.20 lbs.) (without packaging materials)
	Shipping weight	≤ 2.73 kg (6.02 lbs.)
Environment and Reliability	Operating temperature	–30°C to +65°C (–22°F to +149°F)
	Storage temperature	–40°C to +85°C (–40°F to +185°F)
	Operating humidity	0% RH to 100% RH (non-condensing)
	Storage humidity	0% RH to 100% RH (non-condensing)
	Mounting options	Wall/Pole
	IP rating	IP68
	Surge protection	Ethernet port: ±4 kV for common mode
	MTBF	250,000 hours
Certification and Regulatory Compliance	RoHS	Yes
	Certification	CE, FCC, CB, ISED, cTUVus

2 Preparing for Installation

2.1 Safety Precautions

Note

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

Warning

Using this device may cause radio interference in living environment.

2.1.1 Grounding and Lightning Protection

- Keep the grounding connection within 30 m (98.43ft), and use a 40 mm x 4 mm (1.57 in. x 0.16 in.) or 50 mm x 5 mm (1.97 in. x 0.2 in.) ground bar of hot-dip zinc-coated flat steel sheet.
- When the connection cable between the main grounding conductor and local equipotential earthing terminal board (LEB) on each floor is short, use a stranded copper wire with a sectional area not less than 1.318 mm^2 (16 AWG) for the connection cable.
- Use a shielded network cable and make sure that the devices at the two ends of the cable, and the shielded sleeves are well grounded. Alternatively, run the network cable through the steel pipe and ground the pipe at both ends.
- No additional lightning protector is required as a high-profile lightning protector is built in the RG-RAP6202(G) and the antenna port and power port support 4 kV 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.
- Use a power cable with the PE end to ground the power supply (AC). Ensure that the PE end is properly grounded, with a ground resistance less than 5 ohms. Do not use a two-wire power cable with only the live (L) wire and neutral (N) wire. Do not connect the N wire to the protection ground cable of other communication devices, and ensure that the L wire and N wire are properly connected.
- The ground resistance should be less than 5 ohms. In an area with a higher soil resistivity, reduce the soil resistance by spreading ground resistance reducer powder to reduce the soil resistivity.

2.2 Preparing the Installation Site

- Do not expose the AP to high temperature, dust, or harmful gases.
- Do not install the AP in an area prone to fire or explosions.
- 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 AP at least 500 meters away from the ocean and do not face it towards the sea breeze.
- The installation site should be protected from water and 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, electric power, and transportation.

2.2.1 Temperature and humidity requirements

Temperature and Humidity Requirements:

Operating Temperature	Operating Humidity:
-30°C to 65°C (-22°F to 149°F)	0% to 100% RH (non-condensing)

2.2.2 Outdoor Installation

The AP can be installed outdoors and supports installation methods including wall mounting, vertical pole mounting and horizontal pole mounting.

2.2.3 Weatherproof

- Use a weatherproof cap to seal the unused ports.
- After using the reset button, please seal it with the weatherproof cap.
- The Ethernet cable needs to be threaded through the cable gland before connecting to the AP. For details, see Chapter 3 Installation.

2.2.4 EMI

All interference sources (from outside or inside of the device or application system) affect the device by capacitive coupling, inductive coupling, or electromagnetic waves.

Electromagnetic interference (EMI) occurs due to electromagnetic radiation or conduction, depending on the transmission path.

Radiation interference occurs when energy (usually radio frequency energy) is emitted from a device and propagated through space to disrupt other devices. The interference source can be part of disrupted system or a fully electrically isolated unit. Conduction interference occurs when interference is transferred from one unit to another through cables, which are usually electromagnetic wires or signal cables connected between the source and the device(s) experiencing interference. Conduction interference often affects the power supply of the device. It is eliminated by using filters. Radiation interference can influence the path of any signal from the device and is difficult to shield.

- Take effective measures against interference from the power grid.
- Keep the AP far away from the grounding or lightning protection devices for power equipment.
- Keep the AP away from high-power radio stations, radar stations, and high-frequency high-current devices.
- Take electrostatic shielding measures.

2.3 Installation Tools

Table 1-5 Installation Tools

Common Tools	Marker, Phillips (crosshead) screwdriver, slotted screwdriver, paper knife, diagonal pliers, wires, Ethernet cables, binding straps, wrench and hammer
Special Tools	Hammer drill, ESD tools, stripping pliers and crimping pliers
Meter	Multimeter, network cable tester
Relevant devices	PC, display, and keyboard

Note

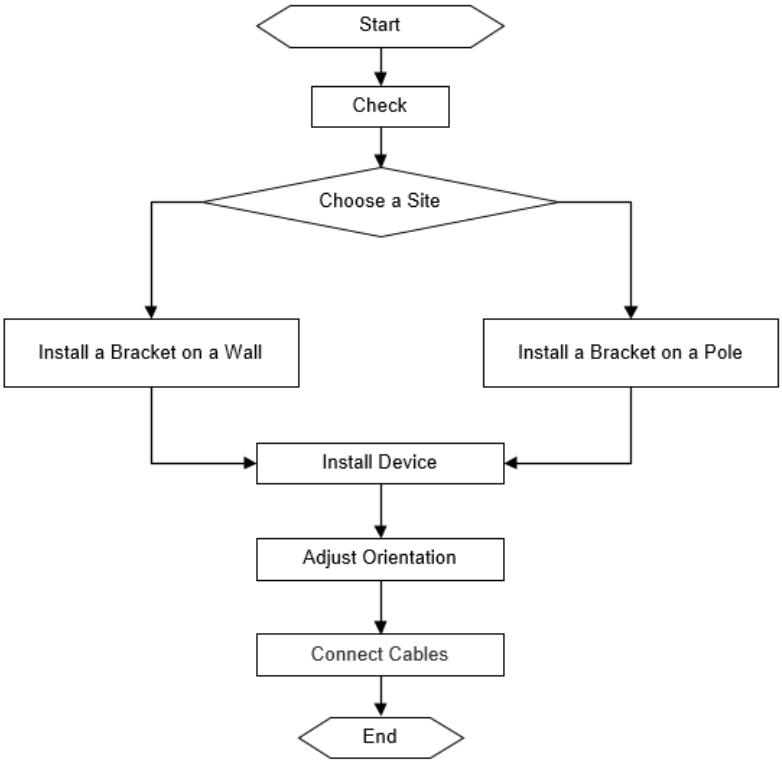
The tool kit and cables are customer-supplied.

3 Installation

Caution

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

3.1 Installation Flowchart



3.2 Before You Begin

- The installation site meets temperature and humidity requirements.
- The installation site is equipped with a proper power supply.
- Network cables are in place.

3.3 Choosing a Site

The outdoor AP can be mounted on a wall and a pole with a diameter ranging from 50 mm to 70 mm (1.97 in. to 2.76 in.). If the diameter of the pole is out of the range, the pole clamp is customer-supplied. In this case, it is recommended that you use a pole clamp with thickness of 2.5mm (0.1 in.) at least. The installation site varies due to on-the-spot surveys conducted by technical personnel.

Please make full preparations as described in Chapter 2 and observe the following precautions before installing the device.

- Before connecting the power supply, make sure the external power supply matches the power module of the AP.
- Before connecting the power cord, make sure the power module is turned off.
- When connecting the power cord to a binding post, make sure their colors are the same.
- Make sure the power supply is properly connected.

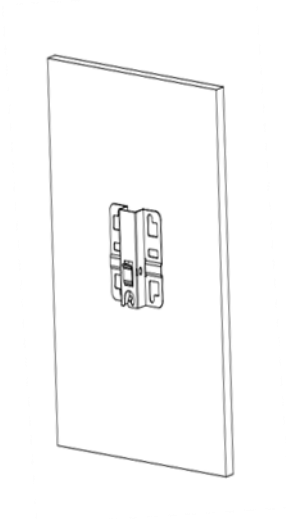
3.4 Installing the Device

3.4.1 Wall Mounting

(1) Use the mounting bracket and expansion anchors (M8 x 60 mm) to implement wall mounting.

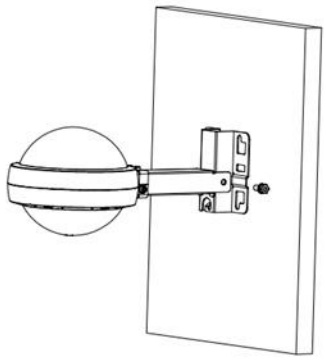
a Attach the mounting bracket to the wall and mark the locations of screw holes after adjusting the installation position.

Figure 1-1 Pre-install expansion anchors (M8 x 60 mm) on the wall



b Install the access point and the connecting rod to the mounting bracket on the wall, and tighten the internal/external hex machine screws (M8 x 20 mm) to complete installation.

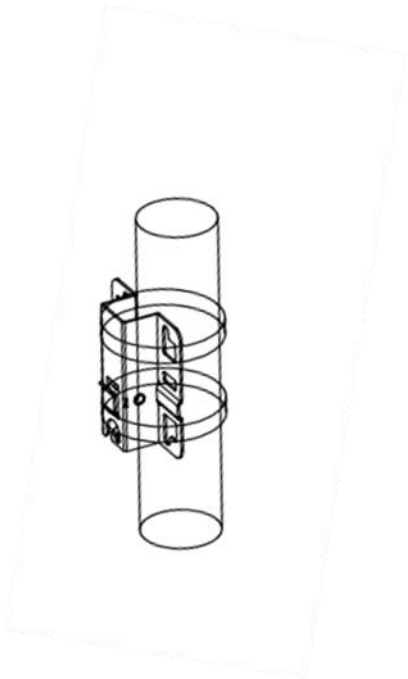
Figure 1-2 Wall Mounting



3.4.2 Vertical Pole Mounting

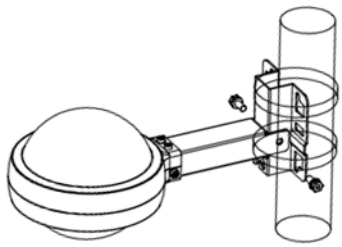
(1) Secure the mounting bracket to the vertical pole by threading two clamps through the mounting bracket, and fasten the clamps with screws. You are advised to use an electronic screwdriver.

Figure 1-1 Mounting the Plate on a Vertical Pole



(2) Install the access point and the connecting rod to the mounting bracket on the vertical pole, and tighten the internal/external hex machine screws (M8 x 20 mm) to complete installation.

Figure 1-2 Vertical Pole Mounting



3.4.3 Horizontal Pole Mounting

Note

The procedures of horizontal pole mounting are the same as those of vertical pole mounting.

Figure 1-3 Mounting the Plate on a Horizontal Pole

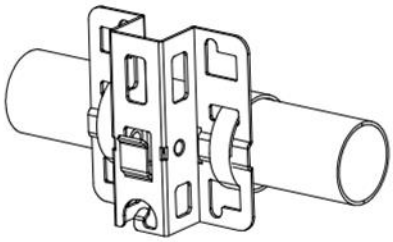
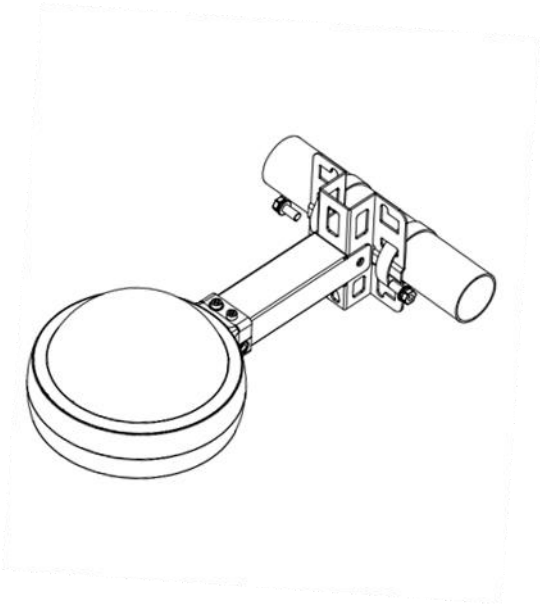


Figure 1-4 Horizontal Pole Mounting



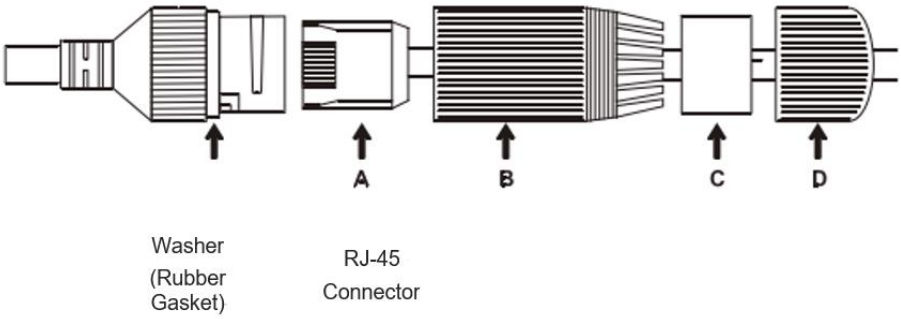
3.5 Connecting Ethernet Cables

Caution

The weatherproof materials are customer-supplied.

(1) Trim an Ethernet cable according to the distance between the access point and the power supply.

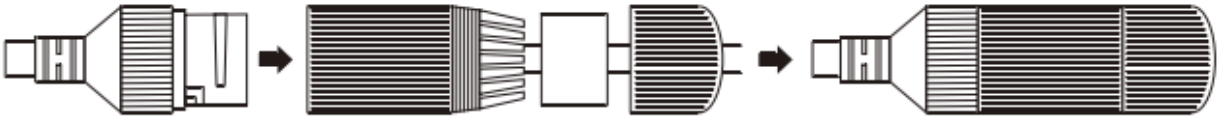
(2) Insert the unterminated end of the Ethernet cable through part D, C and B in sequence.



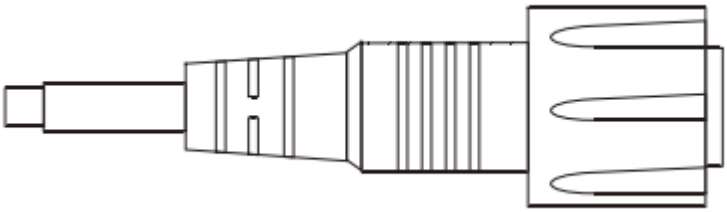
(3) Install an RJ45 connector on the unterminated end of the Ethernet cable using an Ethernet cable installation tool.

(4) Insert the RJ45 connector into the LAN, PoE or uplink port of the access point, and tighten part B, C and D in sequence.

(5) If you want to install the cable gland without an Ethernet cable threaded through it, insert the waterproof rubber rod into the washer (rubber gasket), and tighten part B, C and D in sequence.



(6) Make sure to seal the DC port and the reset button with clean weatherproof caps and insert them into the slot of connecting rod.



Caution

Please ensure that the RJ45 connector is properly inserted. Otherwise, you may damage the RJ45 connector when tightening the cable gland. Before removing the Ethernet cable, please remove the cable gland first and then the RJ45 connector.

Warning

The access point should not be installed in the place prone to water accumulation, seepage, dripping, and condensation.

You are advised to install the access point horizontally.

If any requirement above cannot be fulfilled, please use weatherproof duct tape or weatherproof plaster.

4 Appendix

4.1 Connectors and Media

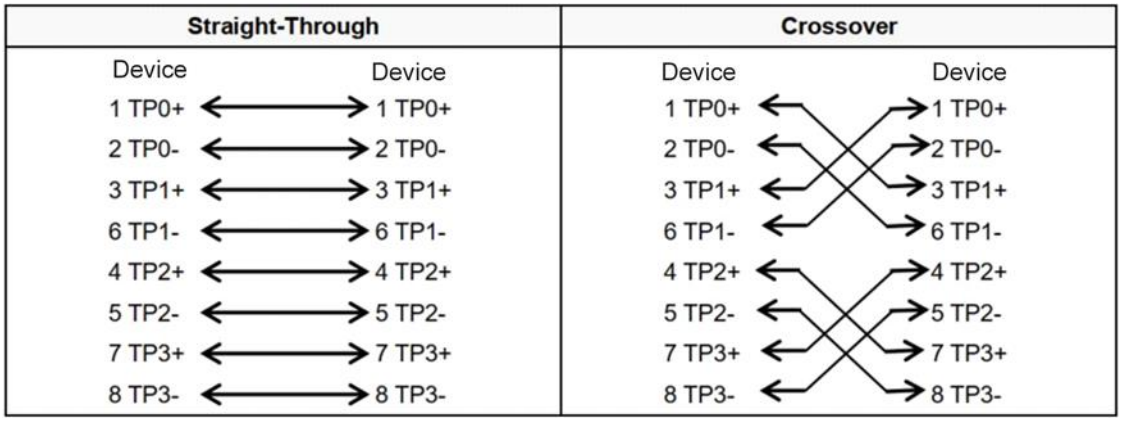
4.1.1 1000BASE-T/100BASE-TX/10BASE-T Port

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.

Figure 4-1 **1000BASE-T Connection**



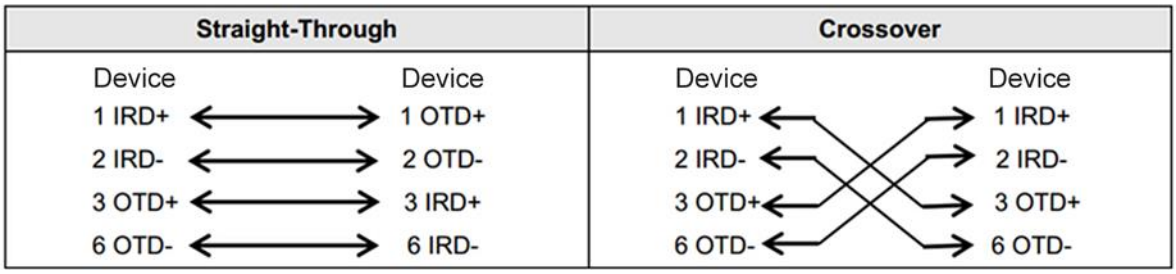
10BASE-T uses Category 3, 4, 5 100-ohm UTP/STP and 1000BASE-T uses Category 5 100-ohm UTP/STP for connections. Both support a maximum length of 100 meters. Figure 4-2 shows100BASE-TX/10BASE-T pin assignments.

Figure 4-2 **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

Figure 4-3 shows wiring of straight-through and crossover cables for 100BASE-TX/10BASE-T.

Figure 4-3 **100BASE-TX/10BASE-T Connection**



4.2 Cabling Recommendations

When installing the device, route the cables through the cable management brackets. Top cabling or bottom cabling is adopted according to the actual situation in the equipment room. All adapted connectors should be placed at the bottom of the rack in an orderly manner instead of outside the rack that is easy to touch. Power cords are routed beside the rack. Top cabling or bottom cabling is adopted according to the actual situation in the equipment room, such as the positions of the DC power distribution box, AC socket, or lightning protection box.

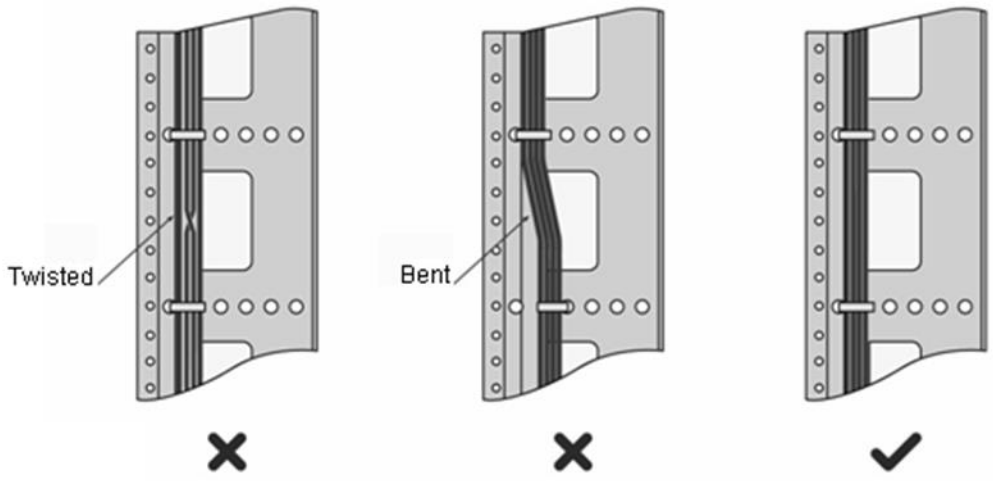
Requirements for the Minimum Bend Radius of Cables

- The bend radius of a fixed power cord, Ethernet cable, or flat cable should be over five times greater than their respective external diameters. The bend radius of these cables that are often bent or plugged should be over seven times greater than their respective external diameters.
- The bend radius of a fixed common coaxial cable should be over seven times greater than its external diameter. The bend radius of these cables that are often bent or plugged should be over 10 times greater than their respective external diameters.
- The minimum bend radius of a high-speed cable, such as an SFP+ cable, should be over five times greater than its external diameter. The bend radius of these cables that are often bent or plugged should be over 10 times greater than their respective external diameters.

Precautions for Cable Bundling

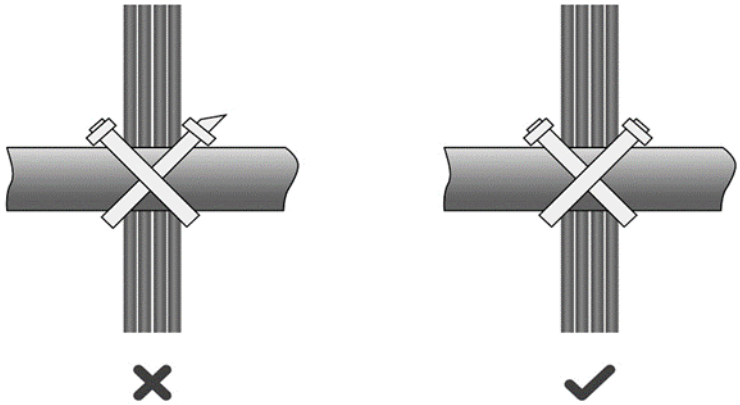
- Before cables are bundled, mark labels and stick the labels to cables wherever appropriate.
- Cables should be neatly and properly bundled in the rack without twisting or bending, as shown in Figure 4-4.

Figure 4-4 **Bundling up Cables (1)**



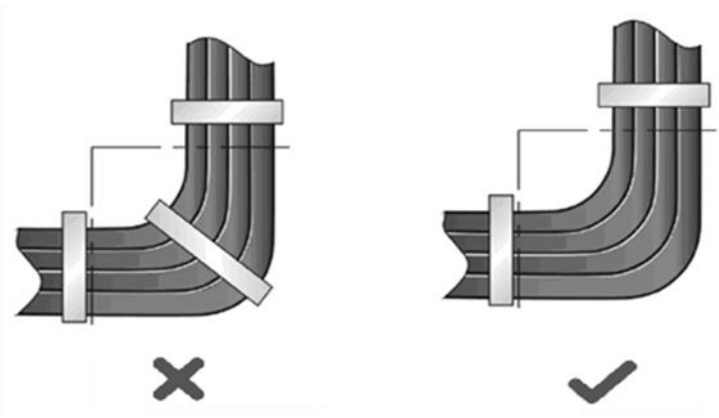
- Cables of different types (such as power cords, signal cables, and grounding wires) should be separated in cabling and bundling. Mixed bundling is disallowed. When they are close to each other, you are advised to adopt crossover cabling. In the case of parallel cabling, maintain a minimum distance of 30 mm (1.18 in.) between power cords and signal cables.
- The cable management brackets and cabling troughs inside and outside the rack should be smooth without sharp corners.
- The metal holes traversed by cables should have a smooth and fully rounded 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 4-5.

Figure 4-5 **Bundling up Cables (2)**



- When cables need to be bent, bundle them first but do not tie cables within the bend. Otherwise, stress may be generated on the cables and cause the wires inside to break, as shown in Figure 4-6.

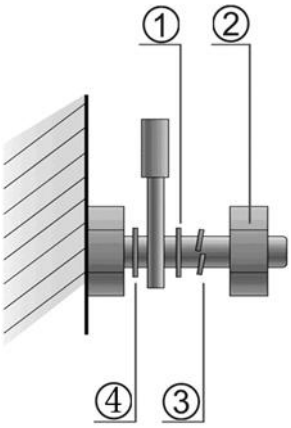
Figure 4-6 **Bundling up Cables (3)**



- Cables not to be assembled or the remaining parts of cables should be folded and placed in a proper position of the rack or cable trough. The proper position refers to a position that does not affect the equipment running or damage the equipment or cables.

- Do not bind power cords to the guide rails of moving parts.
- The power cords connecting moving parts such as door grounding cables should be reserved with some excess after being assembled. This can avoid tension or stress on power cords. After the moving part is installed, 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 using screw threads to secure a cable lug, ensure that the bolt or screw is properly tightened and take measures to prevent it from loosening, as shown in Figure 4-7.

Figure 4-7 **Fastening Cable Lugs**



Note:

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

- Hard power cords should be fastened in the terminal connection area to prevent stress on the terminal connection and cable.
- Do not use tapping screws to secure cable lugs.
- 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 up cables by using cable ties according to the following table.

Cable Bunch Diameter	Distance Between Every Binding Point
10 mm (0.39 in.)	80 mm to 150 mm (3.15 in. to 5.91 in.)
10 mm to 30 mm (0.39 in. to 1.18 in.)	150 mm to 200 mm (5.91 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 socket when assembled.