Ruijie RG-AP630(IDA2) Series Access Points

Hardware Installation and Reference Guide V1.6

Preface

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

Scope

It is intended for the users who have some experience in installing and maintaining network hardware. At the same time, it is assumed that the users are already familiar with the related terms and concepts.

Obtaining Technical Assistance

- Ruijie Networks Website: https://www.ruijienetworks.com/
- Technical Support Website: https://ruijienetworks.com/support
- Case Portal: https://caseportal.ruijienetworks.com
- Community: https://community.ruijienetworks.com
- Technical Support Email: service_rj@ruijienetworks.com
- Skype: service_rj@ruijienetworks.com

Related Documents

Documents	Description
Configuration Guide	Describes network protocols and related mechanisms that supported by the product, with configuration examples.
Command Reference	Describes the related configuration commands, including command modes, parameter descriptions, usage guides, and related examples.

Documentation Conventions

The symbols used in this document are described as below:

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

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

1   Product Overview

The RG-AP630(IDA2) is a wireless access point (AP) designed by Ruijie for next-generation high-speed wireless LANs. Adhering to the latest 802.11ac Wave2 standard, the AP delivers an access rate of up to 1733Mbps+800Mbps. It features security, radio frequency (RF) control, mobile access, Quality of Service (QoS), and seamless roaming. In addition, it can be managed by RG-WS series wireless access controllers (ACs) to implement wireless data forwarding, security, and access control.

The IP68 design adapts to inclement outdoor environments such as the cold and humidity. This substantially simplifies installation and maintenance. The RG-AP630(IDA2) offers flexible antenna switching and full coverage for various outdoor situations. Moreover, multi-hop and point-to-multi-points bridging enhances the deployment. The AP fed by IEEE 802.3at-compliant PoE accommodates various monitors and receives real-time monitoring information. It is perfectly suited for such sites as campuses, city blocks, and plazas.

1.1   Technical Specifications

Table 1-1 RG-AP630(IDA2) Technical Specifications

Model	RG-AP630(IDA2)
Dimensions (L×W×H)	276 mm × 246 mm × 90 mm (10.87 in. x 9.69 in. x 3.54 in.)
Maximum Transmit Rate	Internal antenna: 2.533Gbps(1733Mbps@5GHz ;800Mbps@2.4GHz) External antenna: 1.9Gbps(1300Mbps@5GHz ;600Mbps@2.4GHz)
Operating Frequency	802.11b/g/n: 2.4GHz to 2.483GHz 802.11a/n/ac: 5.150 GHz to 5.350GHz, 5.47GHz to 5.725GHz, 5.725 GHz to 5.850GHz (Country-Specific)
Maximum Transmit Power	27dBm
Antenna Type	Built-in directional antenna
Antenna Gain	2.4GHz: 10dBi 5GHz: 10dBi
Lobe Width	2.4G: E:30°: H:60° 5G: E:30°: H:60°
Interfaces	One 10/100/1000 Base-T uplink Ethernet port One SFP uplink port (combo) One 10/100/1000 Base-T downlink PoE port
Fat/Fit Mode Switching	Supported
LED	One system status LED Three WDS RSSI LEDs
PoE	IEEE 802.3at (PoE+)
Power Consumption	<25w
Temperature	Operating: -40°C to 65°C (-40°F to 149°F) Storage: -40°C to 85°C (-40°F to 185°F)

| Humidity	Operating: 0% to 100% (non-condensing)
	Storage: 0% to 100% (non-condensing)
IP Rating	IP68
Weight	<2.5 kg (5.51 lbs)
Safety Standards	GB4943, EN60601-1-2 (medical care), UL/CSA 60950-1, EN/IEC 60950-1, EN/IEC 60950-22
EMC Standards	GB9254-2008, EN301 489, EN55022, FCC Part15, RSS-210

Table 1-2 LEDs of RG-AP630(IDA2)

| LED	State	Meaning
System status	Blinking green	The system is booting.
	Solid green	Initialization in progress or proper operation.
	Blinking yellow	Initialization is complete, but no CAPWAP connection.
	Solid red	The LAN port is disconnected.
WDS RSSI (3 LEDs in total)	1 solid on	< -70dBm
	2 solid on	-70 to -50dBm
	3 solid on	> -50dBm

1.2 Product Appearance

The AP provides 1 ETH1/PoE IN port (RJ45), 1 ETH2 port (RJ45), 1 SFP combo port, 1 Console port, and 6 N-type antenna connectors.

Figure 1-1 Product Appearance of the RG-AP630(IDA2)
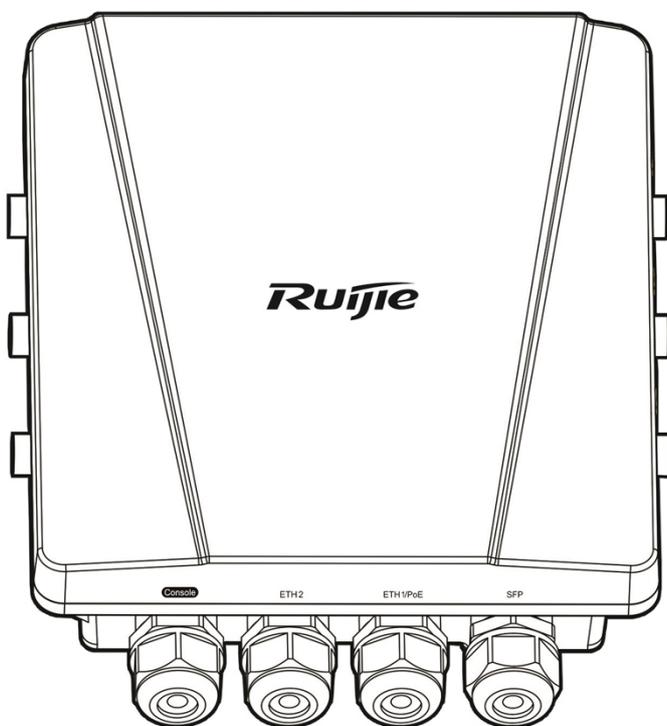
1.3　Front View

Figure 1-2 RG-AP630(IDA2) Front View
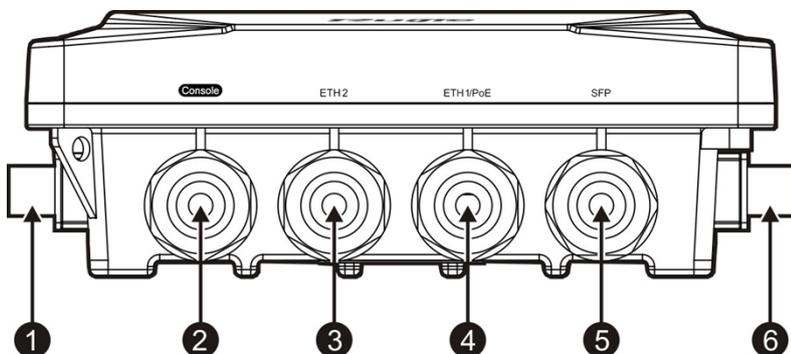
Note:	1. 2.4GHz&5GHz antenna connector 3.10/100/1000 Base-T auto-sensing Ethernet port 5. SFP combo port	2. Console port 4.10/100/1000 Base-T auto-sensing Ethernet/PoE IN port 6. 2.4GHz & 5GHz antenna connector

1.4　Power Supply

The AP supports 802.3at PoE+ power supply.

1.5　Package Contents

Table 1-3 RG-AP630(IDA2) Package Contents

No	Name	Quantity	Unit	Remarks
1	Host	1	Set	
2	Mounting plate	1	Piece	
3	Mounting bracket	1	Piece	
4	Tie rod	1	Piece	
5	M8x20 screw with spring and flat washers	4	Piece	
6	M8X40 screw with spring and flat washers	2	Piece	
7	Liquid-tight adapter	1	Piece	
8	Seal plug	3	Piece	Preinstalled
9	Protective cap for Type-N RF connector	6	Piece	Preinstalled
10	Grounding cable	1	Piece	
11	Hose clamp	2	Piece	
12	M8X60 anchor	4	Piece	
13	Product Warranty Manual	1	Copy	
14	RG-AP630(IDA2) Series Access Point Hardware Installation and Reference Guide	1	Copy	

| 15 | Ruijie Networks Wireless Device Management Software | 1 | Piece | Preinstalled |

2   Preparing for Installation

ℹ️   To prevent device damage and physical injury, please read carefully the safety recommendations described in this chapter.

ℹ️   Recommendations do not cover all possible hazardous situations.

2.1   Grounding and Lightning Protection

● Keep the grounding connection within 30 m, and use a 40mm x 4mm or 50mm x 5mm 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 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 AP630(IDA2) and the antenna port and power port support 6kV 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 naught (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.

● Ensure that the ground resistance is less than 5 ohms. In areas with high soil resistivity, reduce the soil resistivity via measures such as spreading resistivity reduction mixture around the grounding conductor.

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

Table 2-1 Required Temperature and Humidity for the RG-AP630(IDA2) Series

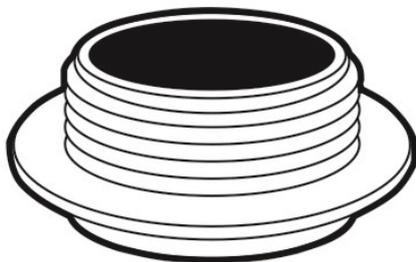|	
Operating Temperature	-40°C to 65°C (-40°F to 149°F)
Operating Humidity	0% to 100% (non-condensing)

2.2.2   Outdoor Installation

The AP can be installed outdoors and mounted on a wall or pole.
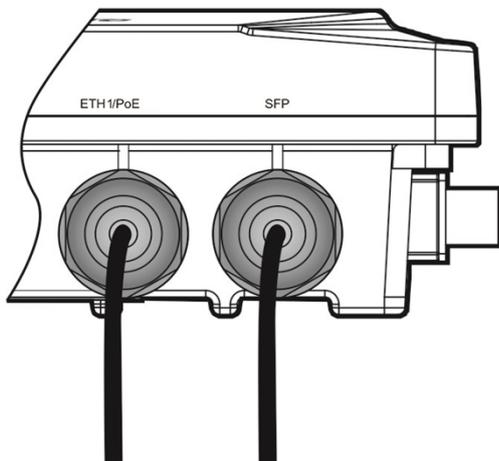
2.2.3   Waterproof

Use a seal plug to seal the unused ports.

Figure 2-1 Seal Plug

Use a watertight adapter to connect cables to the AP. For details, see Chapter 3 "Installing the Access Point".

Figure 2-2 Watertight Adapter

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 Fiber Connection

Before connecting fiber cables, make sure the model of the optical transceiver and fiber type match the optical port. The transmit port on the local device should be connected to the receive port on the peer device and vice versa.

2.4 Installation Tools

Table 2-2 Installation Tools

Tools	Marker, Phillips (crosshead) screwdriver, slotted screwdriver, drill, paper knife, crimping pliers, diagonal pliers, wire stripper, network cable tester, related power and fiber cables, wrench, hammer, cable ties, ESD tools, multimeter

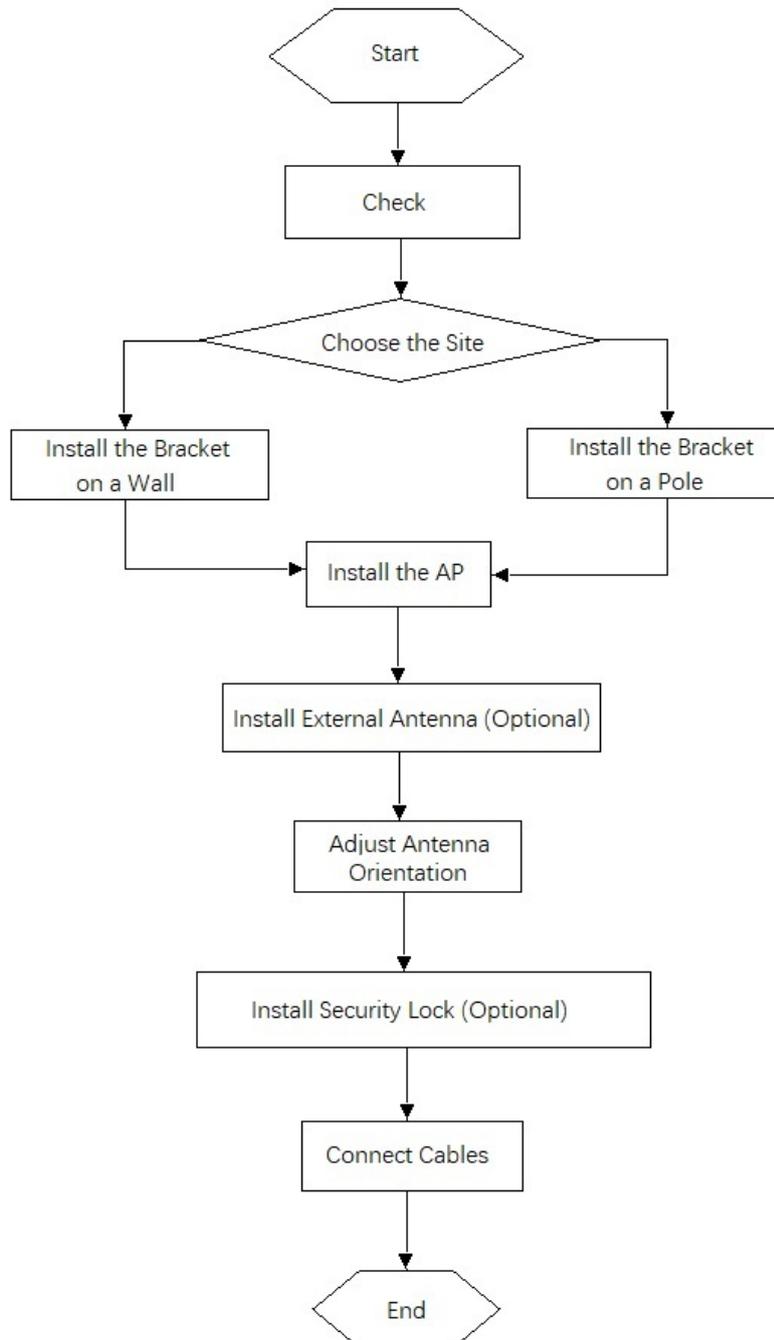ⓘ The tool kit and cables are customer supplied.

2.5 Checking before Installation

Please check your materials carefully against the package contents. If there are any errors, please contact your distributor.

3   Installing the Access Point

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

3.1   Installation Flowchart

```
                          ┌──────────────┐
                          │    Start     │
                          └──────┬───────┘
                                 │
                                 ▼
                          ┌──────────────┐
                          │    Check     │
                          └──────┬───────┘
                                 │
                                 ▼
                   ◇─────────────────────────◇
                   │     Choose the Site      │
                   ◇─────────────────────────◇
          │                                        │
          ▼                                        ▼
 ┌──────────────────┐                    ┌──────────────────┐
 │ Install the Bracket│                  │ Install the Bracket│
 │   on a Wall      │                    │   on a Pole      │
 └────────┬─────────┘                    └────────┬─────────┘
          │          ┌──────────────────┐          │
          └─────────▶│  Install the AP  │◀─────────┘
                     └────────┬─────────┘
                              │
                              ▼
              ┌──────────────────────────────┐
              │ Install External Antenna (Optional) │
              └──────────────┬───────────────┘
                             │
                             ▼
                   ┌──────────────────┐
                   │ Adjust Antenna   │
                   │  Orientation     │
                   └────────┬─────────┘
                            │
                            ▼
           ┌──────────────────────────────┐
           │ Install Security Lock (Optional) │
           └──────────────┬───────────────┘
                          │
                          ▼
                 ┌──────────────────┐
                 │  Connect Cables  │
                 └────────┬─────────┘
                          │
                          ▼
                 ┌──────────────────┐
                 │      End         │
                 └──────────────────┘
```

3.2   Before You Begin

Before you install the AP, verify that all the parts in the package contents are there and make sure that:

- 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   Precautions

The outdoor AP can be mounted on a wall and a pole (diameter: 75 mm to 120 mm). If the diameter of the pole is out of the range, the hose clamp is customer-supplied. In this case, we strongly recommend you to use a 304 stainless steel hose clamp with thickness of 2.5mm at least. Otherwise, the AP could fall down and cause injuries. The installation site can vary 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 AP.

- Before connecting the power supply, make sure the external power supply matches the power module inside the AP.

- Before connecting the power cord, make sure the power switch is in the OFF position.

- When connecting a wire to a binding post, make sure their colors are the same.

- Make sure the power supply is properly connected.

3.4   Installing the AP

Figure 3-1 Security Cable

1.   Remove the security cable from the mounting plate first. Then, attach the mounting plate to the bottom of the AP and fasten the plate with four M8x20 screws. Note that one screw is used to fix the metal shim of End A onto the plate before it is tightened. See Figure 3-2.

Figure 3-2 Fixing the Mounting Plate to the AP
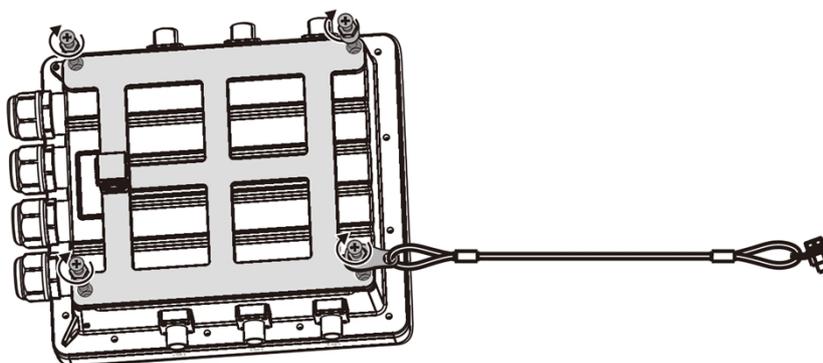
2. Attach the tie rod to the mounting plate and fasten the rod with the M8x40 screws after AP is well-positioned See Figure 3-3.

Figure 3-3 Fixing the Tie Rod on the Mounting Plate
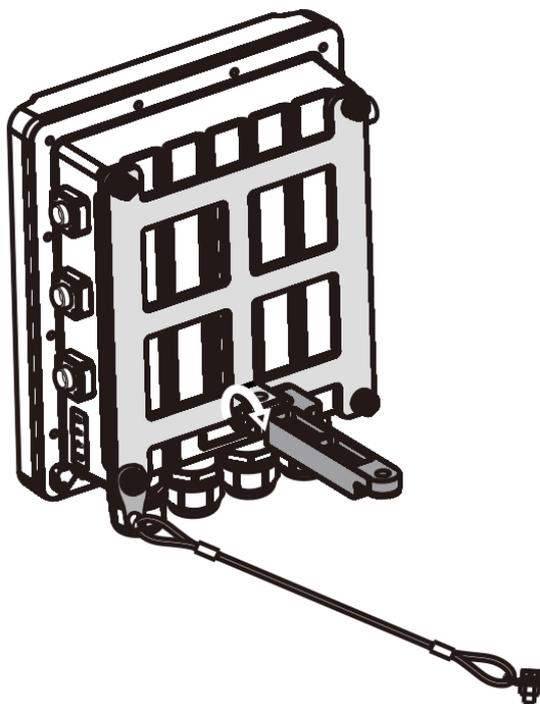

- Wall mount

3) Use the supplied cross-shaped bracket and M8 x 60 expansion anchors to implement the wall mount.

a. Attach the cross-shaped bracket to the wall and mark the screw hole locations. Drill four 8 mm diameter holes. Tap expansion anchors into the holes, and drive three screws through the mounting bracket into the anchors to fix the bracket. See Figure 3-4.

Figure 3-4 Installing the M8 Anchors
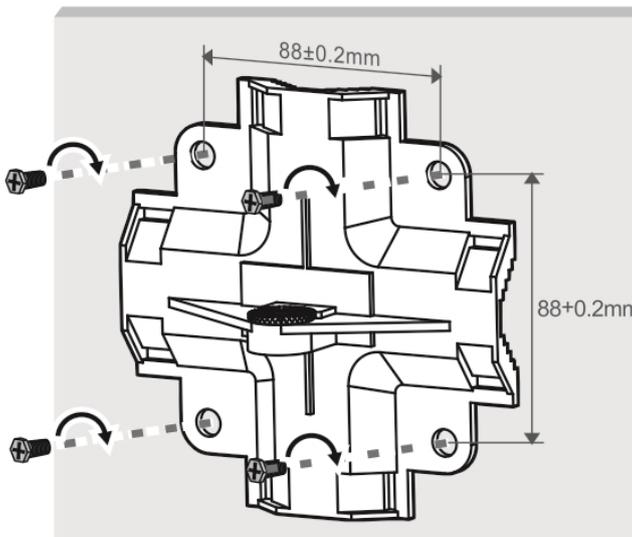
b. Hang the AP with the AP-side mounting bracket module to the cross-shaped bracket and tighten three M8×40 screws to secure the AP. Finally, drive the screw of Loop B into the fourth anchor. See Figure 3-5.

Figure 3-5 Wall Mount
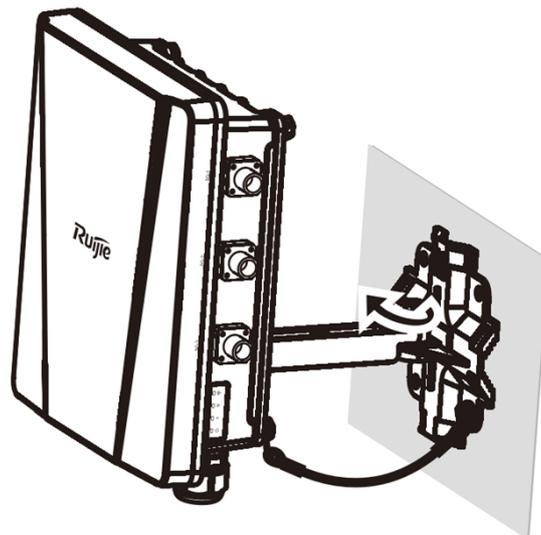
● Vertical pole mount

a. Attach the cross-shaped bracket to a vertical pole with a hose clamp and fasten the clamp with screws using the Phillips (crosshead) screwdriver.

Figure 3-6 Fixing the Bracket on a Vertical Pole
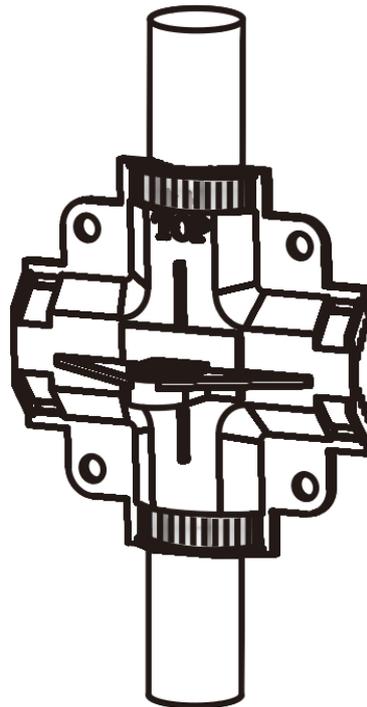
b. Attach the mounting plate to the mounting bracket through the rod with the M8x40 screws, adjust AP orientation, and tighten the screws on the rod with the Phillips screwdriver (or the wrench). Finally, connect Loop B of the security cable to the bracket by fastening the screw attached to Loop B. See Figure 3-7.

Figure 3-7 Installing the AP on a Vertical Pole
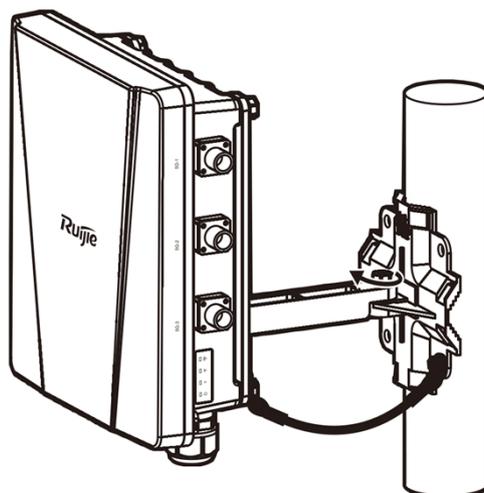
🔵 The procedure of horizontal pole mount is similar as that of a vertical mount.

⚠️ If the diameter of the pole is out of the range, the hose clamp is customer-supplied. In this case, we strongly recommend you to use a 304 stainless steel hose clamp with thickness of 2.5mm at least.

3.5 Adjusting Antenna Orientation

Both directional and omni-directional antennas are available for the RG-AP630(IDA2). The integrated antenna is in parallel with the upper shell. Adjust the position of the mounting plate to change antenna orientation.

RG-AP630(IDA2) Antenna Orientation

Figure 3-8 Anticlockwise Horizontal Rotation (-60°)
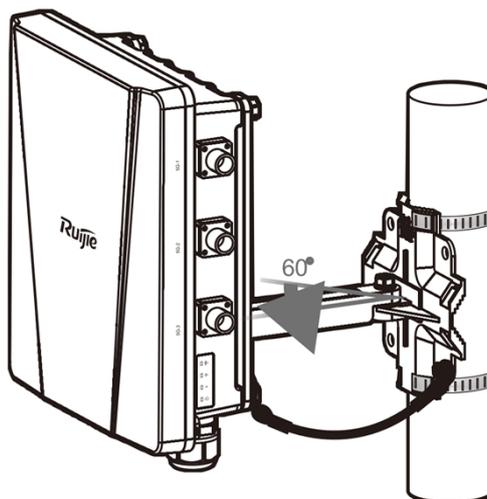
Figure 3-9 Clockwise Horizontal Rotation (+60°)
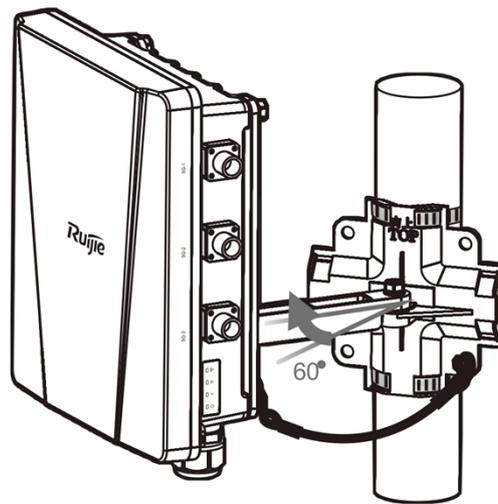
(-60°to +60°horizontal rotation available)

Figure 3-10 Vertical Rotation (0°)
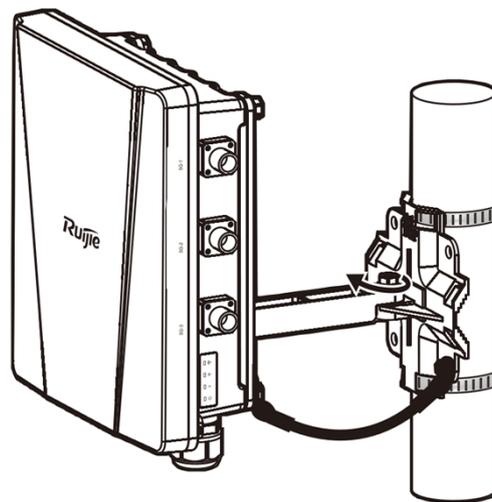
Figure 3-11 Clockwise Vertical Rotation (+60°)
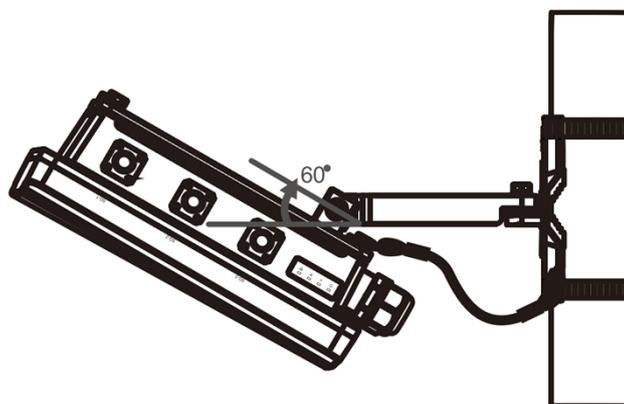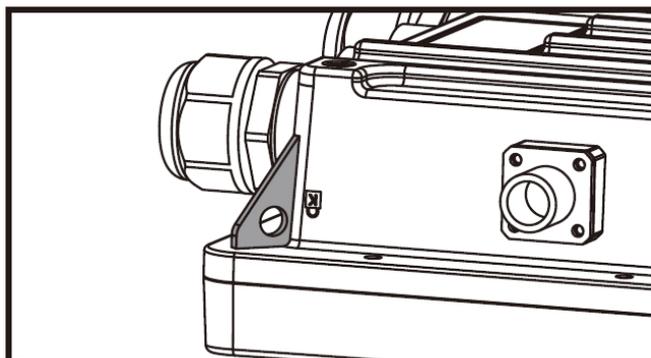

(0°to 90° vertical rotation available)

3.6 Installing a Security Lock (Optional)

ℹ️ The security lock is customer-supplied.

The lock loop on the AP is for your security needs. You can fasten the AP to a fixture as follows:

1) Fasten the cable of a security lock to a fixture;
2) Secure the lock plate into the lock loop.

Figure 3-12 Lock Loop

3.7 Connecting Cables

Connecting the grounding cable

The grounding cable is made on site. Connect the supplied grounding wire (yellow-green) to the AP grounding hole on one end and ground the wire on the other end through OT terminals. To avoid waste, adjust the cable length for actual demands.
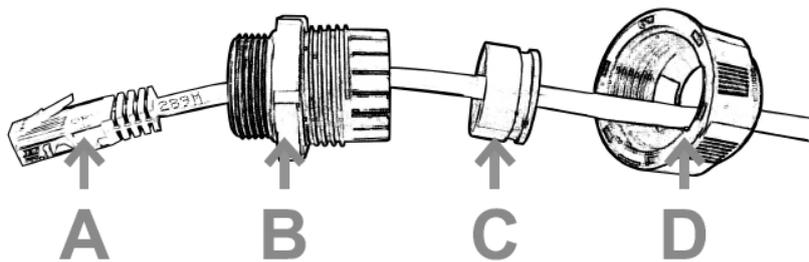
Figure 3-13 Grounding the AP
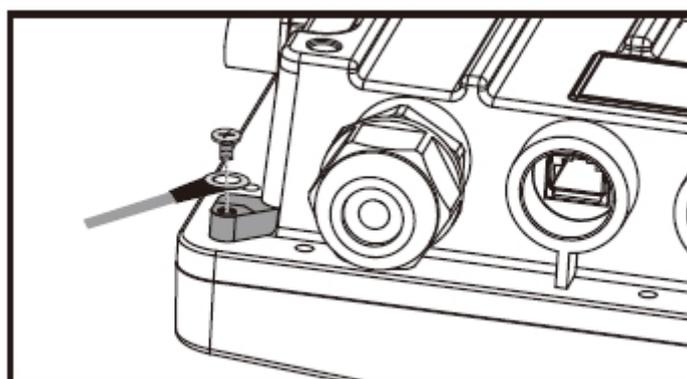
Connecting the network cable

ℹ️ Waterproofing material is customer-supplied.

1) Trim the network cable according to the distance between the AP and the power supply.
2) Thread the cable through liquid-tight adapter and add a plug to the end. See figure 3-14.

Figure 3-14 Threading the Network Cable

3) Wrap the cable between B and C upwards with two or three layers of liquid-tight material. See Figure 3-15.

Figure 3-15 Wrapping Liquid-tight Material around Cable
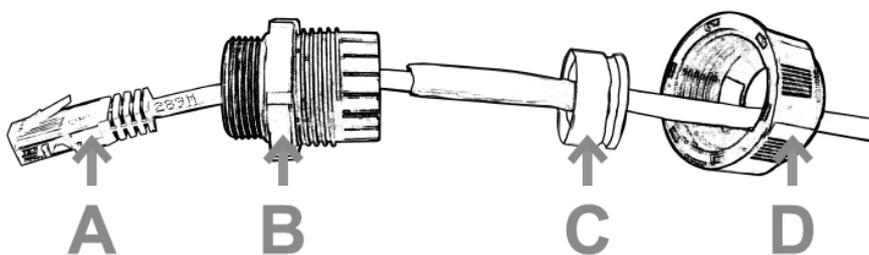
4) Insert the plug into the PoE IN port and tighten B, C and D in order.

⚠ Make sure the plug is correctly inserted. The plug can be damaged if the liquid-tight adapter is improperly tightened.

⚠ Before removing the network cable, dismantle the liquid-tight adapter first and then the plug.

Connecting the optical fiber (Optional)

ⓘ Waterproofing material is customer-supplied.

1) Choose an LC-LC optical fiber with the diameter of 2.7±0.2mm.
2) Thread the fiber through the liquid-tight adapter in the order as shown in Figure 3-16.

Figure 3-16 Threading the Fiber
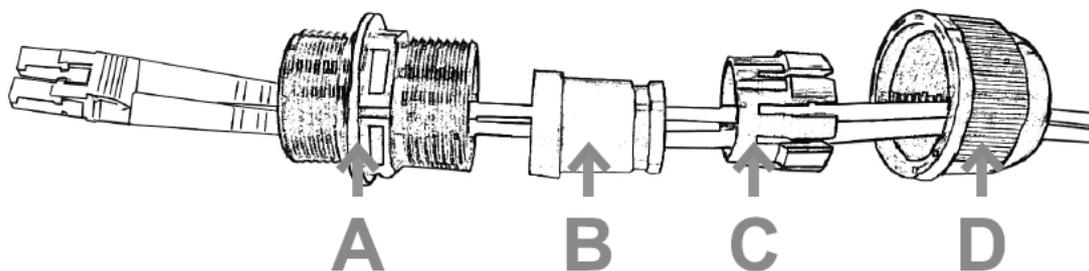
3) Insert the plug of the fiber into the SPF port.
4) Tighten A.
5) Combine B and C and put the combination into A.
6) Tighten D before applying waterproof glue to its joint with A.

⚠ Before removing the optical fiber, dismantle the liquid-tight adapter first and then the plug.

⚠️ If the diameter of LC-LC fiber is not 2.7±0.2mm, waterproofness of the adapter cannot be guaranteed.
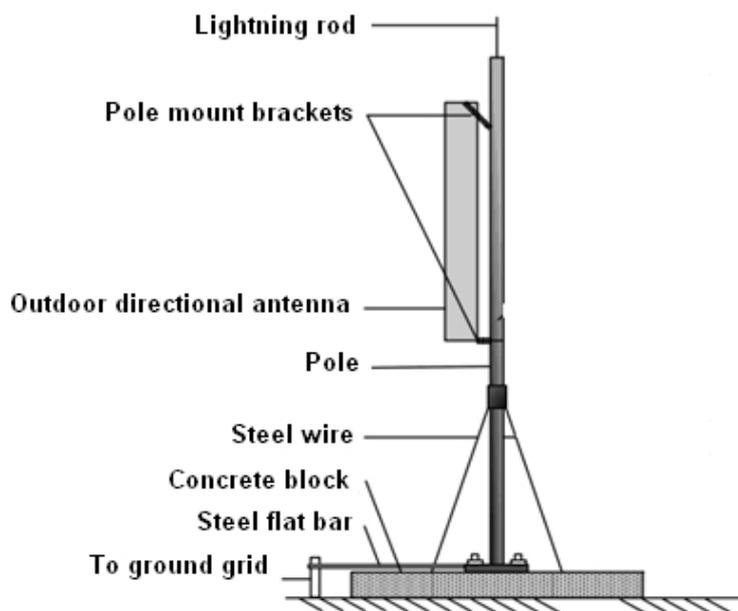
3.8 Installing Outdoor Antennas (Optional)

ℹ️ The integrated RG-AP630(IDA2) antenna meets most requirements. To obtain external antennas for special applications, go to http://www.ruijienetworks.com/.

Installing Outdoor Directional Antennas

● To protect your outdoor directional antennas from lightning strikes, install a lightning rod on top of the pole.

● When installing the pole on the roof, install the pole on a wall or concrete block. Make sure the pole is exactly vertical to ground.

● To ground the antenna pole, connect the pole to a ground grid with a 40mm x 4mm (1.57in. x 0.16in.) stainless steel.

● Install the outdoor directional antenna to the pole with the supplied brackets. See Figure 3-17.

Figure 3-17 Mounting the Outdoor Directional Antenna on the Pole

Installing Outdoor Omnidirectional Antennas

● Omnidirectional antennas must be kept at least one meter away from any metal. Do not weld the lightning rod onto the pole installed with an omni-directional antenna. Place the lightning rod in the middle of two omni-directional antennas. See Figure 3-18.

● When installing the antenna on the pole, make sure the top and bottom pole clamps are level to the ground and parallel to each other.

● Ensure that the height of the antenna can provide desired signal coverage.

● Ensure that the top of the antenna is within the 45° protection angle.

Figure 3-18 Mounting the Outdoor Omni-directional Antennas

Angle of protection   45°   45°   Lightning rod

Outdoor omni-
directional antenna
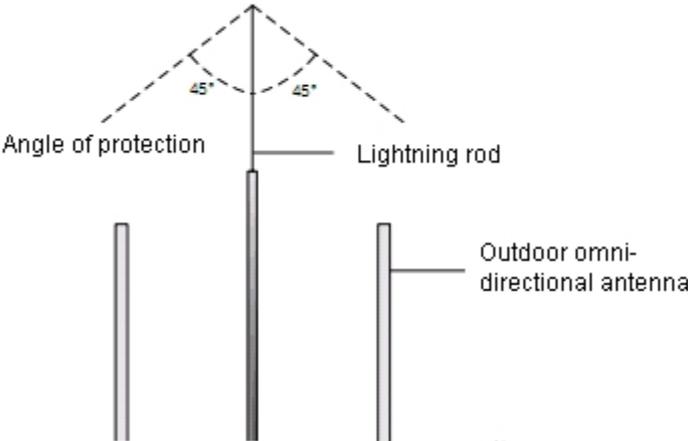
Appendix A: Connectors and Media

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

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

Compliant with IEEE 802.3ab, 1000BASE-T requires Category 5e 100-ohm UTP or STP (STP is recommended) with a maximum distance of 100 meters (328 feet).

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

Figure A-1 1000BASE-T Connection
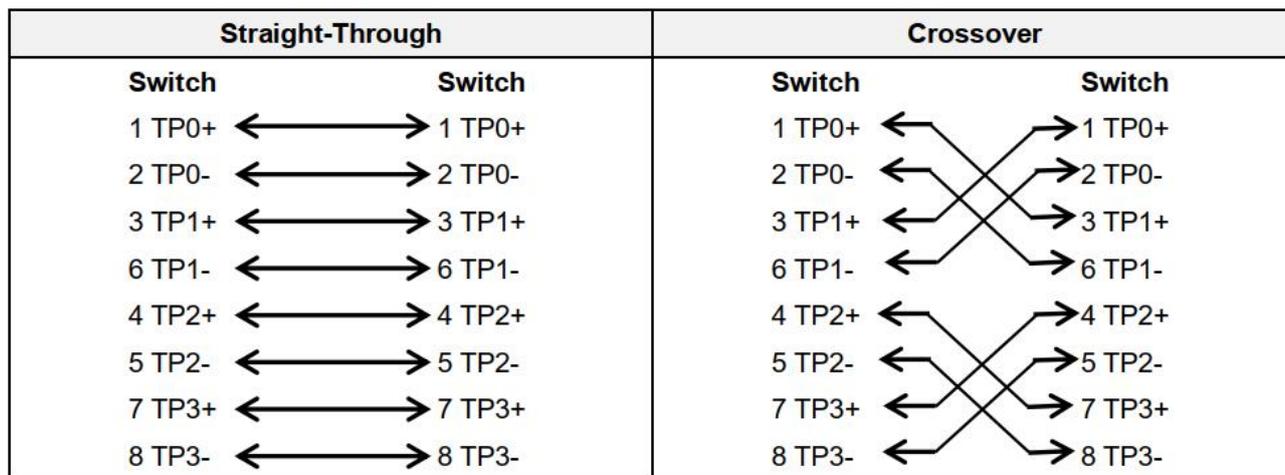
10BASE-T uses Category 3, 4, 5 100-ohm UTP/STP and 1000BASE-T uses Category 5 100-ohm UTP/STP for connections. Both support a maximum length of 100 meters. Table A-1 shows 100BASE-TX/10BASE-T pin assignments.

Table A-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

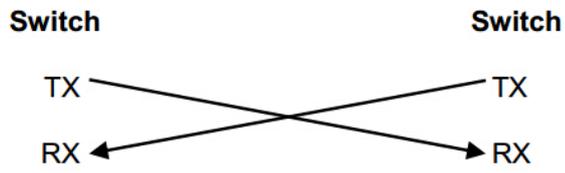Figure A-3 shows wiring of straight-through and crossover cables for 100BASE-TX/10BASE-T.

Figure A-3 100BASE-TX/10BASE-T Connection
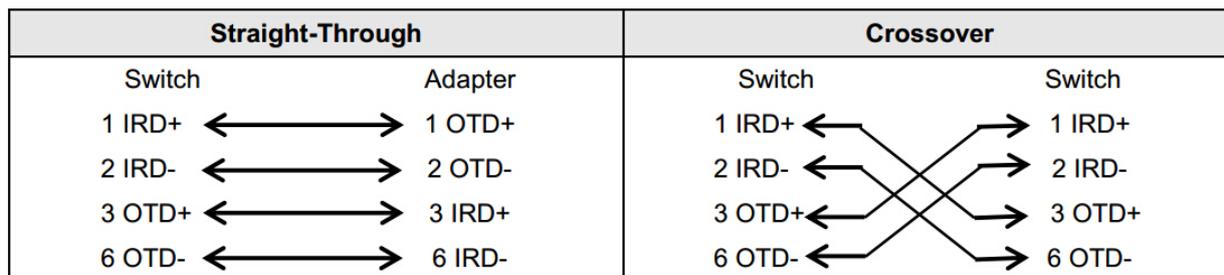
Fiber Connection

You can choose to use single mode or multimode fibers according to the transceiver module types. Figure A-4 shows connection of fiber cables.

Figure A-4 Fiber Connection

Appendix B: Mini-GBIC Module Specifications

Ruijie provides various Gigabit SFP transceivers (Mini-GBIC modules) for interfaces of wireless access controllers. You can select the most suitable SFP modules as needed. This appendix describes the models and specifications of some of the Gigabit SFP transceivers for your reference.

Mini-GBIC (SFP) Models and Specifications

Table B-1 Models and Specifications of SFP Modules

Mini-GBIC(SFP)	Wavelength (nm)	Fiber Type	Core Size (micron)	Modal Bandwidth (MHz/km)	Cable Distance	Max Transmit (dBm)	Max Receive (dBm)	Standards
FE-SFP-LX-MM 1310	1310	MMF[1]	62.5/ 125	—	2 km	-14	-14	IEEE802.3
FE-SFP-LH15-SM1310	1310	SMF[2]	9/ 125	—	15 km	-8	-8	
MINI-GBIC-SX-MM850	850	MMF[1]	62.5 62.5 50.0 50.0	160 200 400 500	220 m 275 m 500 m 550 m	-4	-17	
MINI-GBIC-LX-SM1310	1310	MMF[1] SMF[2]	62.5 50.0 50.0 9/10	500 400 500 —	550 m 550 m 550 m 10 km	-3	-20	
MINI-GBIC-LH40-SM1310	1310	SMF[2]	9/ 125	—	40 km	3	-3	
MINI-GBIC-ZX50-SM1550	1550	SMF[2]	—	—	50 km	0	-22	
MINI-GBIC-ZX80-SM1550					80 km	4.7	-22	
MINI-GBIC-ZX100-SM1550					100 km	5	-9	
Mini-GBIC-GT	—	Cat 5 UTP	—	—	100 m	—	—	

[1] MMF=Multimode fiber

[2] SMF=Single mode fiber

ⓘ When using shorter distances of single-mode fiber for optical SFP transceivers with cable distance greater than 40 km (including 40 km), you may need to insert an in-line optical attenuator in the link to avoid overloading the receiver.