3.1.12 AP263

Overview

Table 3-56 Basic information about the AP263

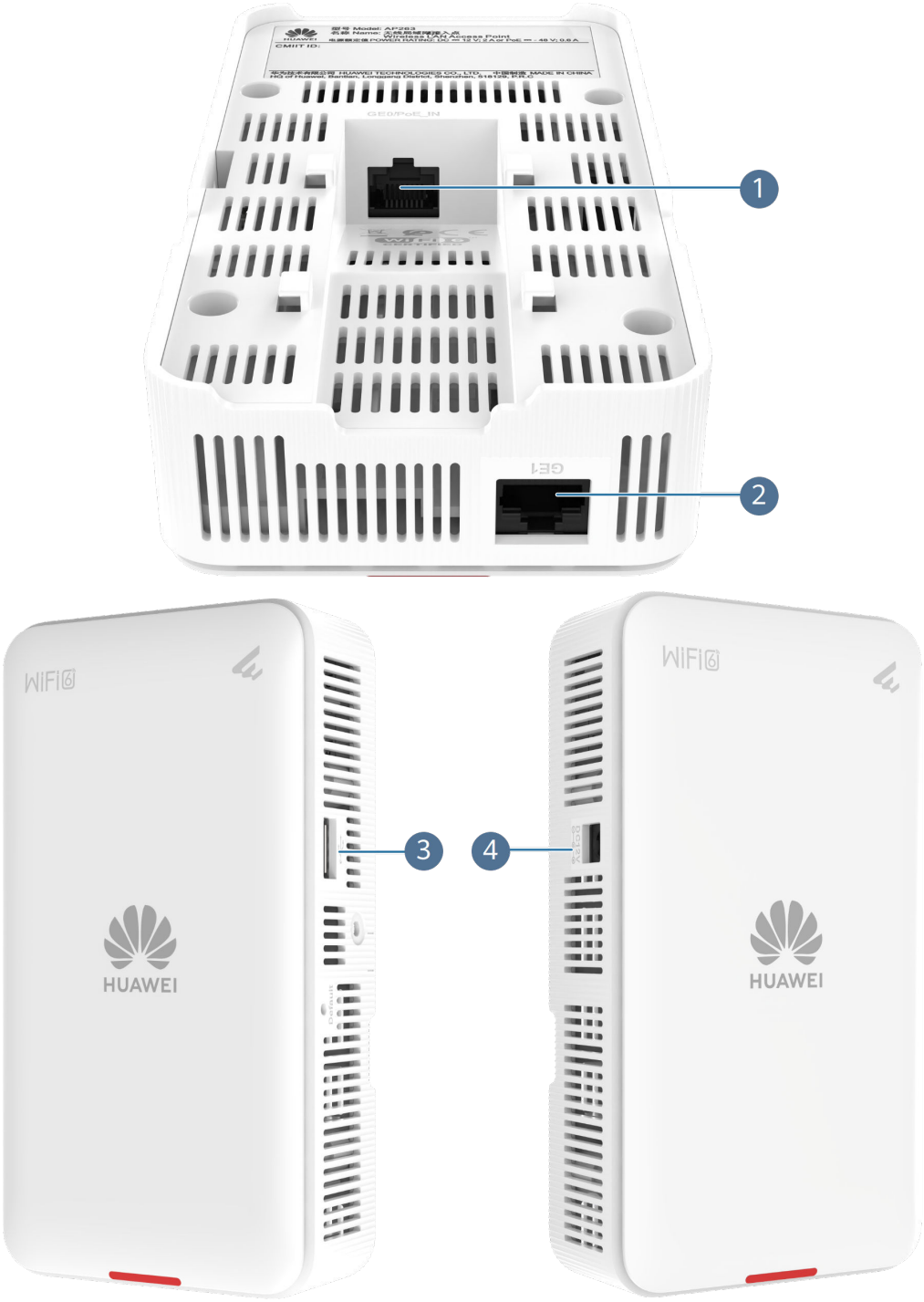
Item	Details
Description	AP263(11ax indoor,2+2 dual bands,smart antenna,USB,BLE)
Part Number	50084981
Model	AP263
First supported version	V200R021C01

Appearance

Figure 3-34 Appearance of the AP263

Ports

Figure 3-35 Ports on the AP263



1	GE0/PoE_IN	2	GE1

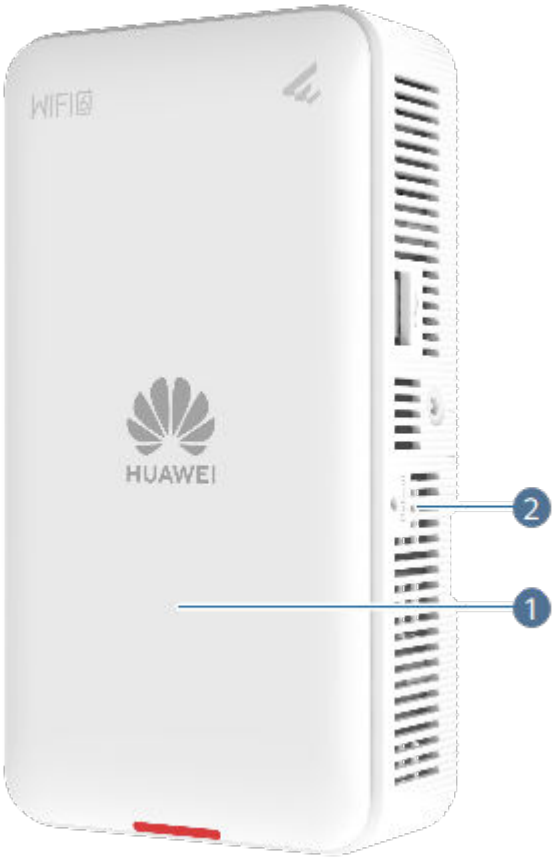
3	USB	4	DC 12V

Table 3-57 Ports on the AP263

Port	Connector Type	Description	Available Components
GE0/PoE_IN	RJ45	10/100/1000M auto-sensing Ethernet electrical port that connects to the wired Ethernet and supports PoE input.	Network cable
GE1	RJ45	Ethernet electrical port that supports 10/100/1000M auto-sensing and connects to the wired Ethernet	Network cable
DC 12V	DC connector	Connects to a 12 V power adapter.	12 V DC power adapter
USB	USB 2.0 Type A	Connects to an IoT terminal to implement IoT applications.	IoT module

Indicators and Buttons

Figure 3-36 Indicators and buttons on the AP263



The indicator is located inside the panel, which turns on after the AP is powered on.

1	Indicator	2	Default

Table 3-58 Indicators on the AP263

Silkscreen	Name	Color	Status	Description
-	System indicator	Green	Steady on	Default status after power-on. The AP is just powered on and the software is not started yet.
		Green	Steady on after blinking once	Software startup status. After the system is reset and starts uploading the software, the indicator blinks white once. Until the software is uploaded and started, the indicator remains steady white.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.

Silkscreen	Name	Color	Status	Description
		Green	Blinking once every 0.25s (4 Hz)	Alarm. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online if it works in Fit AP or cloud-based management mode. The indicator remains in this state before the AP successfully goes online. • The AP works in Fit AP or cloud-based management mode and fails to go online.

Silkscreen	Name	Color	Status	Description
		Red	Steady on	Fault. A fault that affects services has occurred, such as a DRAM detection failure or system software loading failure. The fault cannot be automatically rectified and must be rectified manually.

Table 3-59 Buttons on the AP263

Silkscreen	Name	Description
Default	Reset button	• For versions earlier than V200R021C11, hold down the button for more than 3 seconds to restore the factory settings and restart the device. • For V200R021C11 and later versions, if you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 3-60 Technical specifications of the AP263

Item	Specification
Installation Type	• Desk • Wall • Ceiling • Junction Box
Dimensions without packaging (H x W x D) [mm(in.)]	160 mm x 86 mm x 38 mm (6.30 in. x 3.39 in. x 1.50 in.)
Dimensions with packaging (H x W x D) [mm(in.)]	75 mm x 205 mm x 115 mm (2.95 in. x 8.07 in. x 4.53 in.)
Weight without packaging [kg(lb)]	0.320 kg (0.705 lb)
Weight with packaging [kg(lb)]	0.542 kg (1.195 lb)
Storage	NAND Flash 256 MB
Console port	BLE console
Maximum power consumption [W]	12 W
Maximum heat dissipation [BTU/hour]	41 BTU/hour
Power supply mode	• DC adapter • PoE
Rated input voltage [V]	12 V
Input voltage range [V]	12±10% PoE: 802.3at/af
Service port surge protection	PoE port: Differential mode (48 V-RTN): 0.5 kV (1.2/50 us, 42 ohms), criterion B Common mode (8 wires to ground): 6 kV (1.2/50 us, 42 ohms), criterion B
Maximum number of physical ports on the entire device	GE (RJ45) x 2, 10M/100M/1000M auto-sensing
Long-term operating temperature [°C(°F)]	0°C to 40°C (32°F to 104°F) (If the altitude is in the range of 1800 m to 5000 m, the temperature decreases by 1°C or 1.8°F every time the altitude increases by 300 m.)
Storage temperature [°C(°F)]	–40°C to +70°C (–40°F to +158°F)

Item	Specification
Long-term operating relative humidity [RH]	5% RH to 95% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ground	floating ground
USB	USB 2.0 (supporting 5 W power supply)
BLE	BLE5.0
Radio number	2
Operating frequency band	• 2.4GHz • 5GHz
MIMO spatial streams	Radio 0 (2.4 GHz): 2x2 Radio 1 (5 GHz): 2x2
Wi-Fi standard	2.4G: 802.11b/g/n/ax 5G: 802.11a/n/ac/ac Wave 2/ax
Radio interface	Built-in smart antennas
Antenna gain	2.4G: 2 dBi/chain (peak value) 1 dBi (combined gain) 5G: 3 dBi/chain (peak value) 1 dBi (combined gain) BLE: 4 dBi
Maximum transmit power	2.4G: 20 dBm/chain 23 dBm (combined power) 5G: 20 dBm/chain 23 dBm (combined power) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 20 dBm/chain 5G: -10 dBm to 20 dBm/chain
MTBF [year]	69.7 year
MTTR [hour]	0.5 hour

Item	Specification
Frequency stability [ppm]	+/-20
802.3at power supply description	No function is limited.
802.3af power supply description	The USB function is unavailable.
DC power supply description	No function is limited.

3.2 Installing a Common Wall Plate AP

3.2.1 Preparing for Installation

3.2.1.1 Safety Precautions

- Take proper measures to prevent injuries and device damage.
- Place the device in a dry and flat position away from any liquid and prevent the device from slipping.
- Keep the device clean.
- Do not put the device and tools in the aisles.

CAUTION

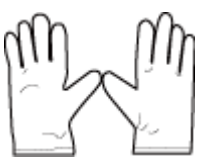
Only the qualified personnel are permitted to install and remove the device and its accessories. Before installation and operation, read the safety precautions carefully.

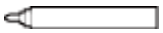
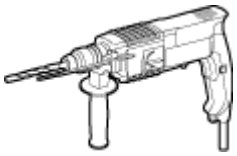
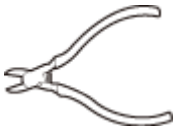
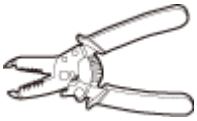
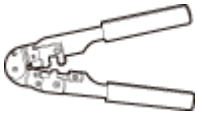
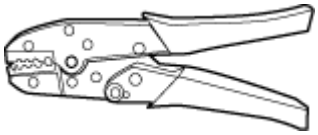
3.2.1.2 Preparing Installation Tools and Accessories

Tool Preparation

Table 3-61 lists the tools that may be used during installation.

Table 3-61 Installation tools

Screwdriver 	Protective gloves 	Electrostatic discharge (ESD) gloves 

Slip-proof gloves 	Marker 	Hammer drill 
Claw hammer 	Torque screwdriver 	Diagonal pliers 
Wire stripper 	RJ45 crimping tool 	Crimping tool 
Network cable tester 	Multimeter 	Ladder 
Safety helmet 	Safety belt 	Anti-skid shoes 

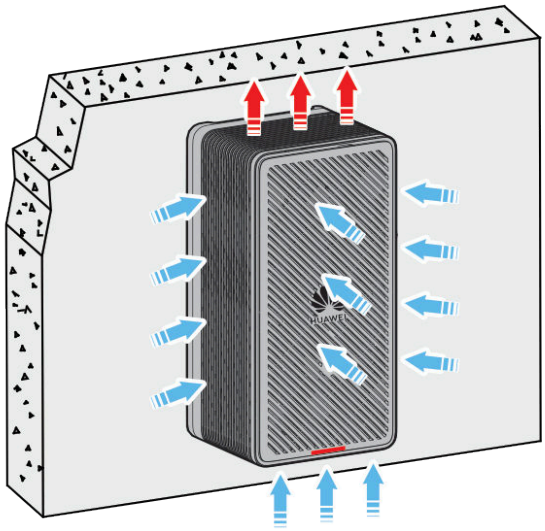
NOTE

You are advised to use a torque screwdriver instead of a Phillips screwdriver.

3.2.1.3 Determining the Installation Position

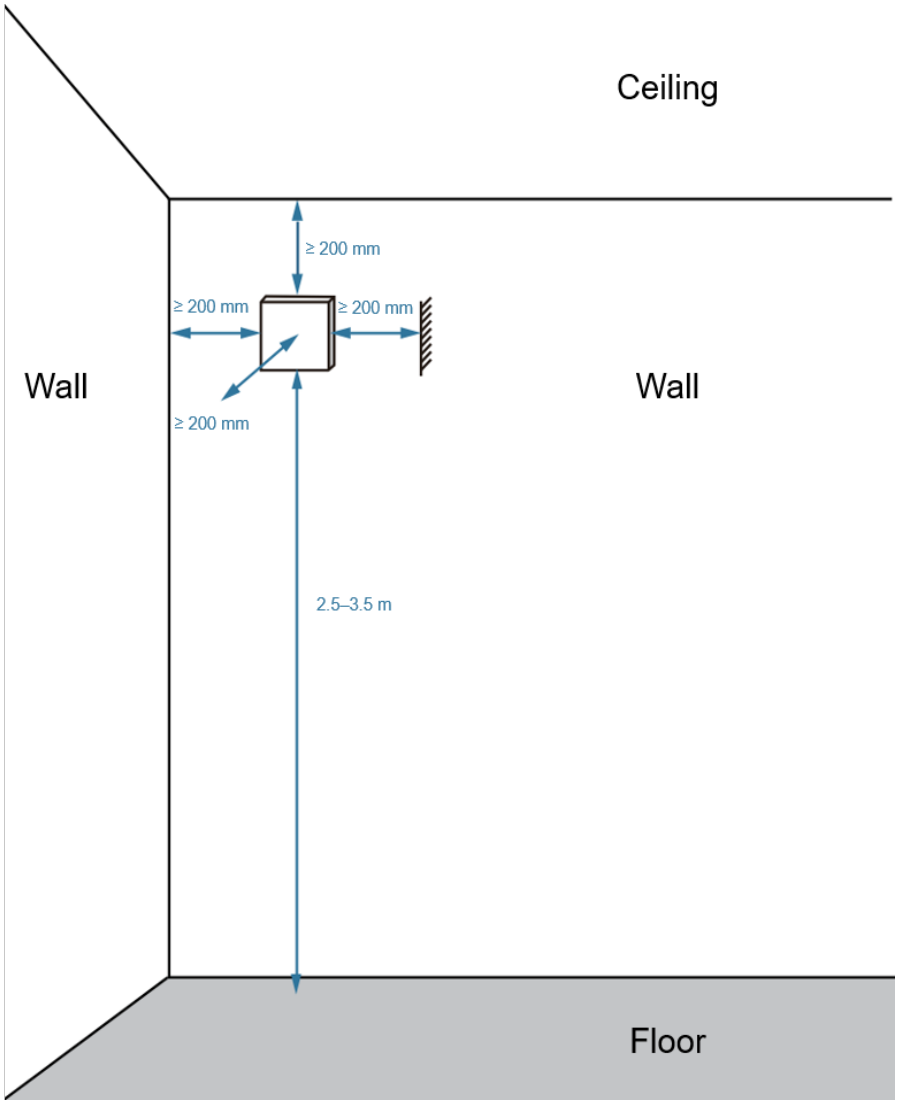
WARNING

The following figure shows the heat dissipation mechanism of an AP. Cold air enters the AP shell from the bottom and sides of the AP, and hot air is dissipated from the top of the AP through the chimney effect. Do not install the AirEngine 5760-22W and AirEngine 5762-16W on the ceiling. At least 200 mm clearance must be reserved around the device (including the front, two sides, top, and bottom of the device) to ensure heat dissipation.



Reserve at least 200 mm clearance around an AP. In junction box mounting scenarios, ensure that the AP is at least 200 mm high from the floor. In other mounting scenarios, it is recommended that an AP be mounted 2.5 m to 3.5 m from off the floor. **Figure 3-37** shows space requirements. In wall or junction box mounting scenarios, 200 mm or a larger space is recommended between the AP and ceiling to achieve better heat dissipation.

Figure 3-37 Mounting an AP



- Do not install the AP in an environment with high temperature, direct sunlight, dust, poisonous gases, flammable or explosive objects, electromagnetic interference (from a radar station, radio station, or substation), unstable voltage, violent shakes, or strong noise.
- The device cannot be installed in Class D environments (within 500 m away from the seaside or salt lakes).
- Install the AP at a site that is free from leaking or dripping water, heavy dew, and humidity, and take protective measures to prevent water from flowing into the device along the cable.
- Do not place the shell, mounting bracket, screws, Ethernet cables, or power cables in contact with high-voltage conductors to avoid damage to the device or even injury to the human body.
- Keep the AP far away from electronic devices that may cause radio interference, such as microwave ovens, APs, and antennas.
- During the engineering design, consider climate, hydrology, geography, earthquake, electric power, and transportation conditions according to the

technical requirements for communications network planning and communication devices.

Table 3-62 General requirements for the antenna anti-interference deployment distance

Scenario	Deployment Distance Requirement
Indoor installation	• There should be at least a 7 m distance between antennas. • The antennas should be placed at least 5 m from antennas of the carrier. • The antennas should be placed far away from electronic devices that may produce interference, such as microwave ovens.

NOTE

Wall plate APs use built-in antennas. The distance requirements for the antennas determine the deployment distance requirements for the device.

3.2.1.4 Unpacking the Equipment

Before unpacking the carton, ensure that the packing carton is intact and not damaged or soaked. Stop unpacking if the equipment is rusted or soggy. Then, investigate causes and contact the supplier.

Usually, the packing list contains the following items:

- AP
- Mounting bracket
- Quick Start Guide
- SN/MAC label

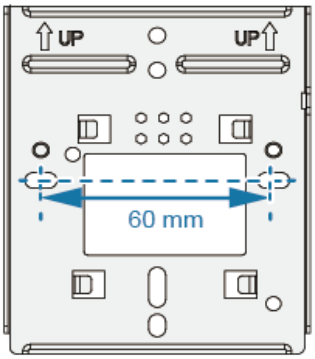
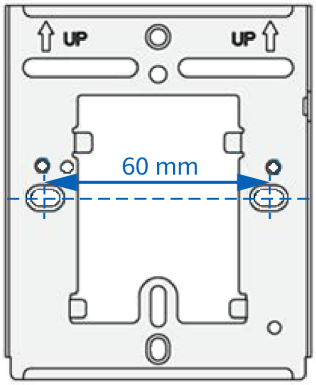
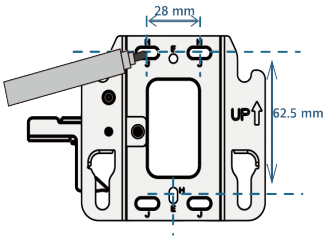
NOTE

- Specific items are subject to the actual delivery.
- Use the standard mounting bracket delivered with the AP to prevent impact on device performance. For special requirements, contact technical support.
- To use a PoE or DC power adapter, purchase one that complies with related safety standards or is CCC certified. For specific adapter models, see **10 Power Modules**.
- The port availability may vary according to the power supply standard. For details, query the specifications based on the device model using **Info-Finder**.

3.2.2 Understanding Mounting Brackets and Installation Scenarios

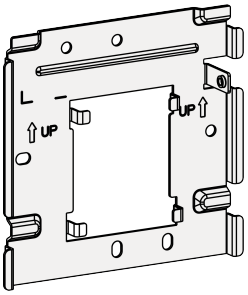
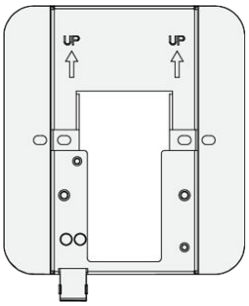
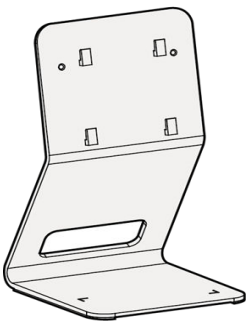
For all models of common wall plate APs, the following types of standard mounting brackets are delivered with the APs.

Table 3-63 Standard mounting brackets

Mounting Bracket Appearance	Name	Matching AP Model
	Standard mounting bracket 1	AirEngine 5760-22W AirEngine 5761-11W AirEngine 5761-12W AirEngine 5761S-11W AirEngine 5762-13W AirEngine 5762-15HW AirEngine 5762-17W AirEngine 5762S-13W AirEngine 5562-17W AP263
	Standard mounting bracket 2	AirEngine 5761-10W AirEngine 5761S-10W
	Standard mounting bracket 3	AirEngine 5762-16W

The following table lists optional mounting brackets.

Table 3-64 Optional mounting brackets

Mounting Bracket Appearance	Part Number	Matching AP Model
	21243492-001	AirEngine 5760-22W
	21242920-001	AirEngine 5761-12W AirEngine 5761-11W AirEngine 5761S-11W AirEngine 5761-10W AirEngine 5761S-10W AirEngine 5762-13W AirEngine 5762S-13W AirEngine 5762-15HW AirEngine 5762-17W AirEngine 5562-17W AP263
	21243493	AirEngine 5762-13W AirEngine 5762S-13W

The following table lists the installation scenarios supported by each AP model. For details about installation methods, see the corresponding installation guide.

Table 3-65 Installation scenarios

AP Model	Wall Mounting	Junction Box (86 mm)	Junction Box (118 mm)	1 Gang Junction Box (120 mm)	2 Gang Junction Box (120 mm)	Indoor Ceiling	Desktop
-	Standard mounting bracket	Standard mounting bracket	Mounting bracket (21243492-001) for junction box (118 mm)	Standard mounting bracket	Mounting bracket (21243492-001) for junction box (118 mm)	Ceiling-mounting bracket (21242920-001)	Desktop mounting bracket (21243493)
AirEngine 5760-22W	Supported	Supported	Supported	Supported	Supported	Not supported	Not supported
AirEngine 5761-10W	Supported	Supported	Not supported	Not supported	Not supported	Supported	Not supported
AirEngine 5761-11W	Supported	Supported	Not supported	Supported	Not supported	Supported	Not supported
AirEngine 5761-12W	Supported	Supported	Not supported	Supported	Not supported	Supported	Not supported
AirEngine 5761S-10W	Supported	Supported	Not supported	Not supported	Not supported	Supported	Not supported
AirEngine 5761S-11W	Supported	Supported	Not supported	Supported	Not supported	Supported	Not supported
AirEngine 5762-13W	Supported	Supported	Not supported	Not supported	Not supported	Supported	Supported

AP Model	Wall Mounting	Junction Box (86 mm)	Junction Box (118 mm)	1 Gang Junction Box (120 mm)	2 Gang Junction Box (120 mm)	Indoor Ceiling	Desktop
AirEngine 5762-15HW	Supported	Supported	Not supported	Not supported	Not supported	Supported	Not supported
AirEngine 5762S-13W	Supported	Supported	Not supported	Not supported	Not supported	Supported	Supported
AP263	Supported	Supported	Not supported	Not supported	Not supported	Supported	Not supported
AirEngine 5762-16W	Supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
AirEngine 5762-17W	Supported	Supported	Not supported	Supported	Not supported	Supported	Not supported
AirEngine 5562-17W	Supported	Supported	Not supported	Supported	Not supported	Supported	Not supported

Related Videos

You can visit the following link to learn about various AP installation methods in typical installation scenarios:

https://info.support.huawei.com/network/ptmngsys/Web/OnlineCourse_WLAN/en/mooc/wdm/index_en_2.html

3.2.3 Installing an AP

This section describes how to install a common wall plate AP.

3.2.3.1 Wall Mounting

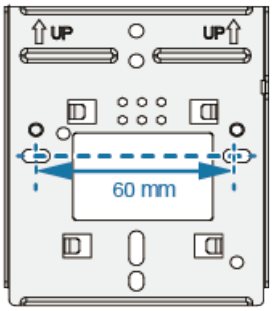
NOTE

A wall for installing the device needs to meet the following requirements:

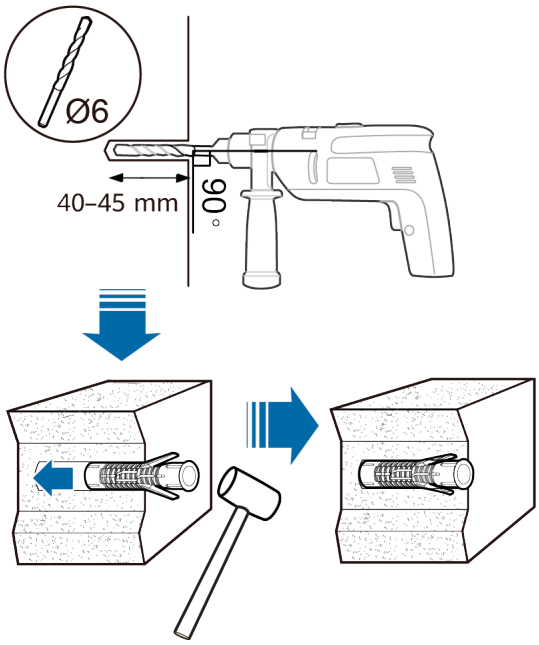
- The wall can bear the weight of four times the total weight of the device and mounting bracket without damage. When the total weight of the device and mounting bracket is less than 1.25 kg, the load-bearing capability of the wall must be greater than or equal to 5 kg.
- When the tightening torque of a screw reaches 3.5 N·m, the screw still properly works, without crack or damage on the wall.

When fixing the mounting bracket, ensure that the arrows of UP point upwards.

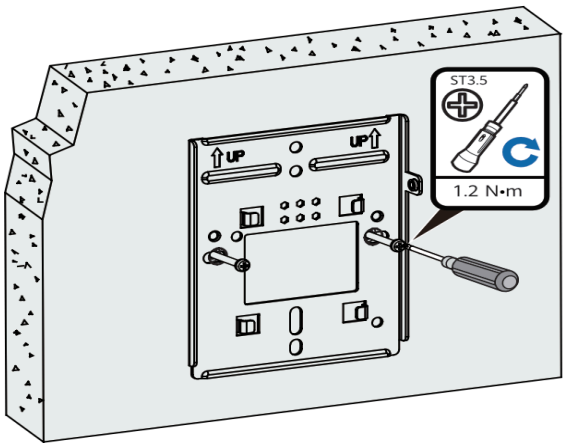
1. Attach the mounting bracket against the wall and adjust its position properly. Mark positions of the mounting holes with a marker, as shown in the following figure. (The two types of standard mounting brackets are installed in the same way. This section uses one of them as an example.)



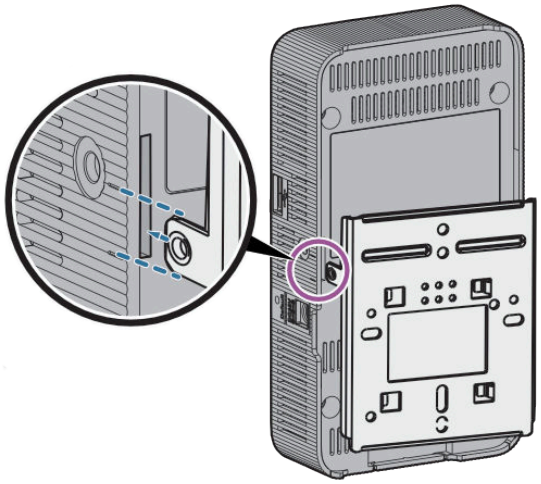
2. Use a 6 mm drill bit to drill 40 mm to 45 mm deep holes in the drilling positions. Hammer the expansion tubes into the holes until the expansion tubes are completely embedded into the wall.



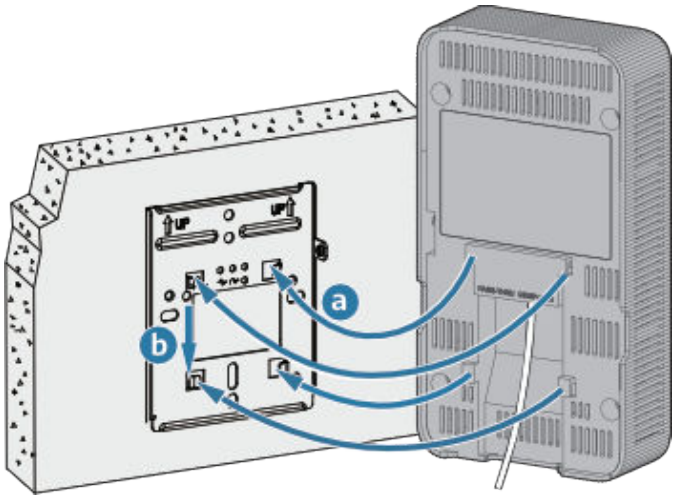
3. Fix the mounting bracket to the wall, and use the Phillips screwdriver to fasten two expansion screws into the expansion tubes to secure the mounting bracket to the wall.



4. Connect cables.
5. There is a slot on a side of the device. You can align the protruding arm of the mounting bracket with the slot in the concave direction on the side of the device.

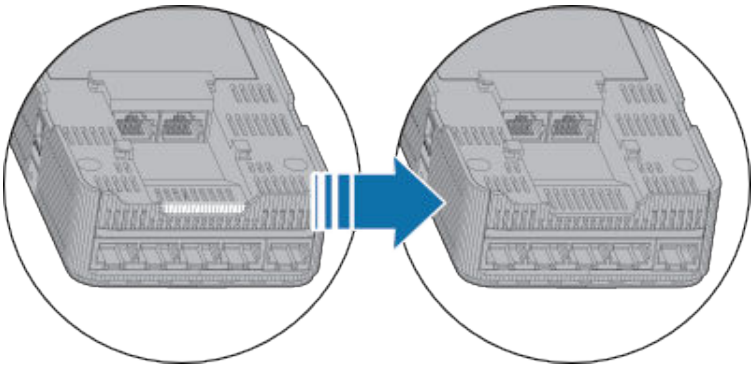


6. Align the four grooves on the bottom cover of the device with the upper ends of the clips on the mounting bracket. Slide the device downward to hang it on the mounting bracket.

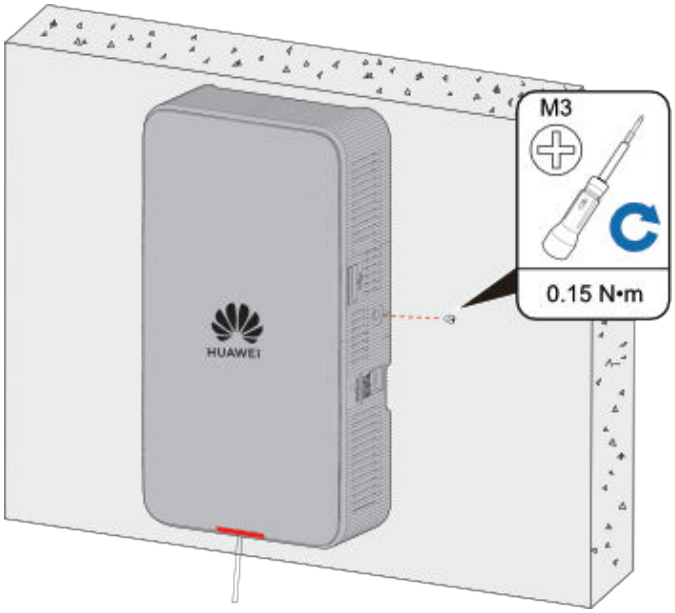


NOTE

If a white plastic tab exists on the bottom part of the AP's rear side, break it off to facilitate cabling.



7. Tighten an M3x4 crosshead screw into the device to prevent the device from dropping. If the anti-theft function is required, tighten an M3x4 torx screw (instead of an M3x4 crosshead screw) into the device using a T9 torx security screwdriver. The tightening torques of the two screw types are both 0.15 N·m.



NOTE

The T9 torx security screwdriver is prepared by the customer.

3.2.3.2 Wall Mounting (AirEngine 5762-16W)

NOTE

When AirEngine 5762-16W APs are used to provide wireless coverage in a tube-shaped building scenario:

- If there is no bathroom at the door of a room, it is recommended that one AP be deployed to cover three adjacent rooms. The corridor is covered by the side lobe of the AP and therefore requires no additional AP.
- If there is a bathroom at the door of a room, the recommended plan is to use one AP to cover two adjacent rooms and deploy APs with omnidirectional antennas in the corridor at spacing of 25 m.

There are other network construction requirements and network planning constraints in this scenario. For details, see **Scenario-based WLAN Planning Design for Education**.

A wall for installing the device needs to meet the following requirements:

- The wall can bear the weight of four times the total weight of the device and mounting bracket without damage. When the total weight of the device and mounting bracket is less than 1.25 kg, the load-bearing capability of the wall must be greater than or equal to 5 kg.
- When the tightening torque of a screw reaches 3.5 N·m, the screw still properly works, without crack or damage on the wall.

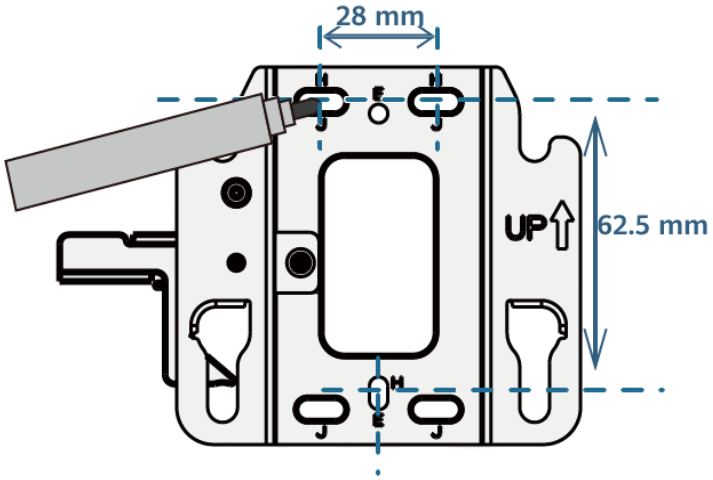
Wall mounting screws

Screw	Quantity	Description
ST3.5 expansion screw + expansion tube	3	Secure the mounting bracket to the wall.

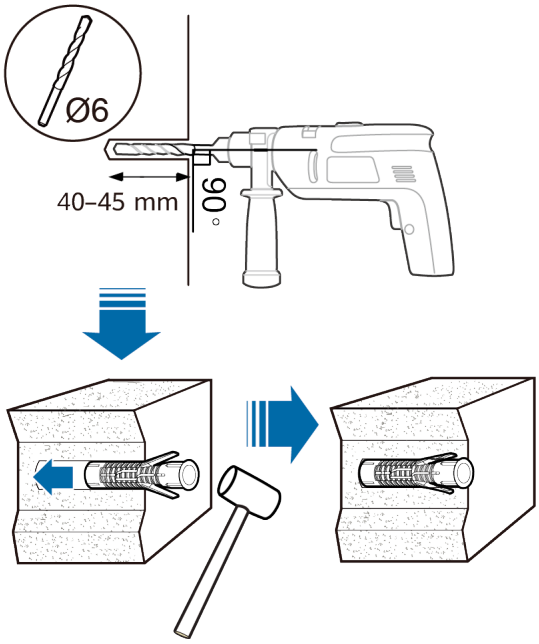
Mounting brackets and expansion screws are required to install the AP on a wall. The procedures are as follows:

When fixing the mounting bracket, ensure that the arrows of UP point upwards.

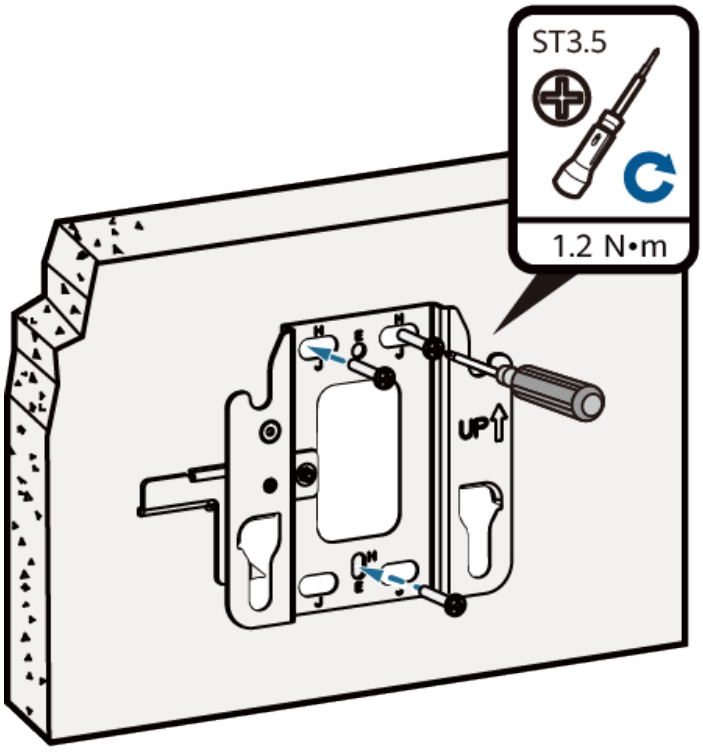
1. Attach the mounting bracket against the wall and adjust its position properly. Mark positions of the mounting holes (group H) with a marker, as shown in the following figure.



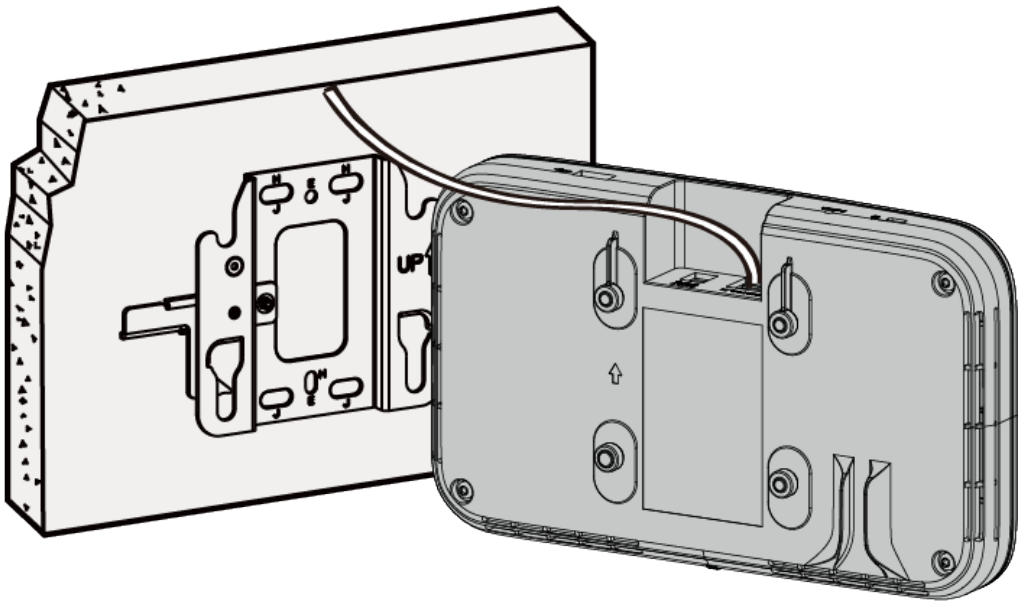
2. Use a 6 mm drill bit to drill 40 mm to 45 mm deep holes in the drilling positions. Hammer the expansion tubes into the holes until the expansion tubes are completely embedded into the wall.



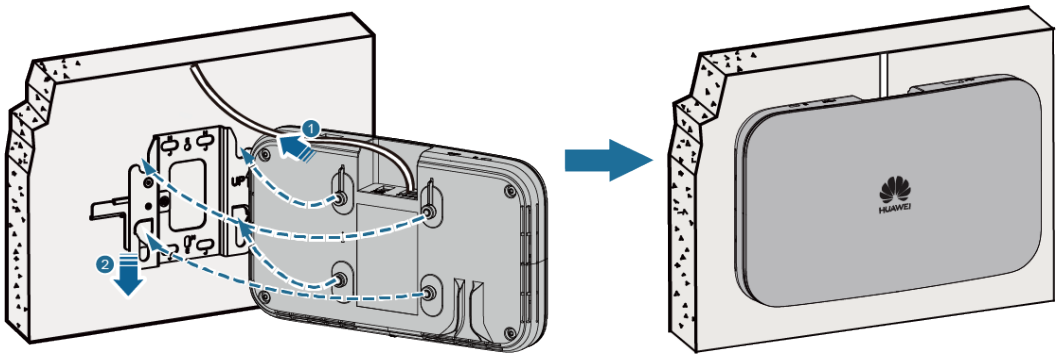
3. Fix the mounting bracket to the wall and use the Phillips screwdriver to fasten three expansion screws into the expansion tubes.



4. Connect and properly sort cables.



5. Align the four rubber feet at the rear of the AP with the installation holes on the mounting bracket, and fasten the device as shown in the figure. When you hear a click, the AP is secured to the lock position.



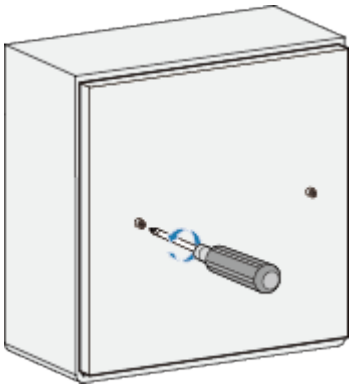
NOTE

After the device is installed, ensure that the ejector lever springs back in place. Ensure that the installation space meets the specified requirements to facilitate future maintenance.

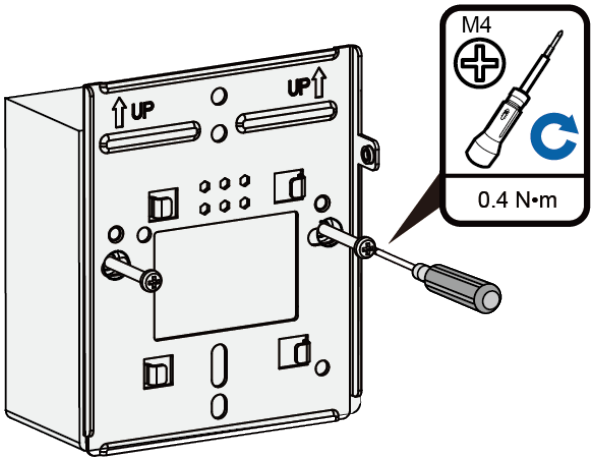
3.2.3.3 Junction Box (86 mm) Mounting

In this mounting mode, a junction box for installing the device must be able to bear the weight four times the total weight of the device and mounting bracket without damage. When the total weight of the device and mounting bracket is less than 1.25 kg, the load-bearing capability of the junction box must be greater than or equal to 5 kg.

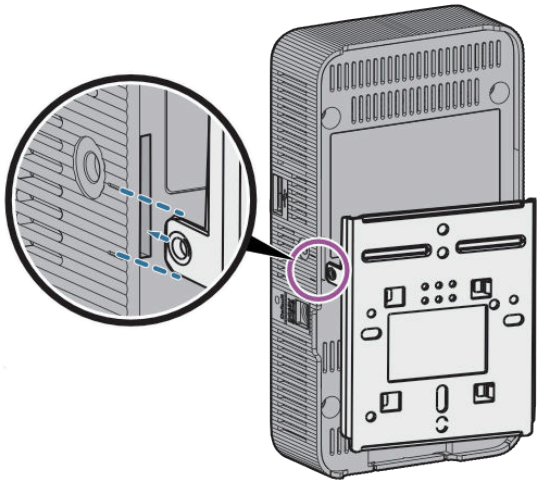
1. Using a screwdriver, remove the panel of the junction box (86 mm) from the wall (skip this step if no panel is installed).



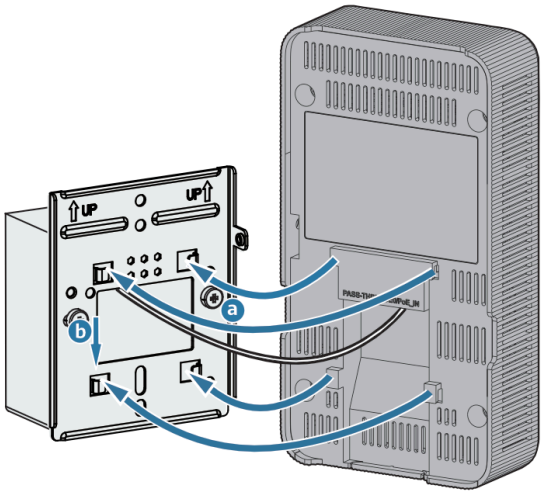
2. Secure the mounting bracket to the junction box using two M4x25 screws.



3. Connect cables.
4. There is a slot on a side of the device. You can align the protruding arm of the mounting bracket with the slot in the concave direction on the side of the device.



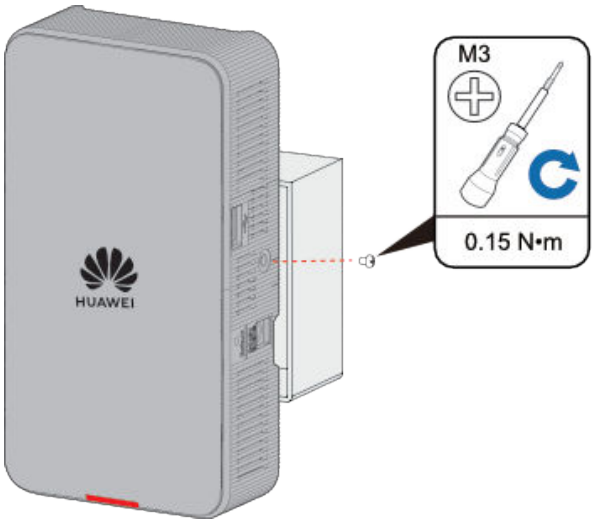
5. Align the four grooves on the bottom cover of the device with the upper ends of the clips on the mounting bracket. Slide the device downward to hang it on the mounting bracket.



NOTE

When securing an M4 screw into a junction box, do not distort the mounting bracket. If longer screws are required onsite, the customer needs to prepare them by themselves.

6. Tighten an M3x4 crosshead screw into the device to prevent the device from dropping. If the anti-theft function is required, tighten an M3x4 torx screw (instead of an M3x4 crosshead screw) into the device using a T9 torx security screwdriver. The tightening torques of the two screw types are both 0.15 N·m.



NOTE

The T9 torx security screwdriver is prepared by the customer.

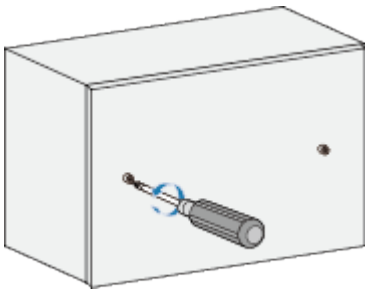
3.2.3.4 Junction Box (118 mm) Mounting

This section describes how to install a common wall plate AP on the junction box (118 mm).

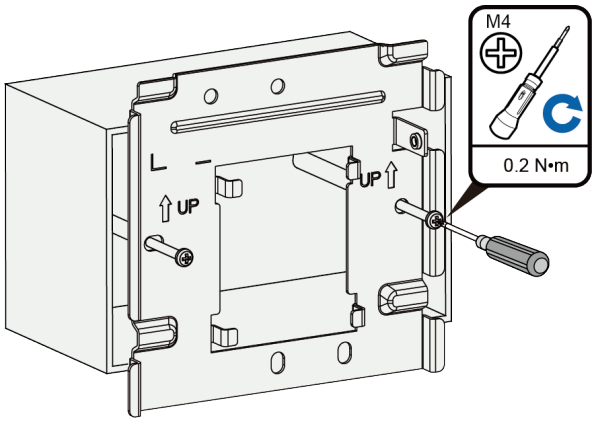
In this mounting mode, a junction box for installing the device must be able to bear the weight four times the total weight of the device and mounting bracket without damage. When the total weight of the device and mounting bracket is

less than 1.25 kg, the load-bearing capability of the junction box must be greater than or equal to 5 kg.

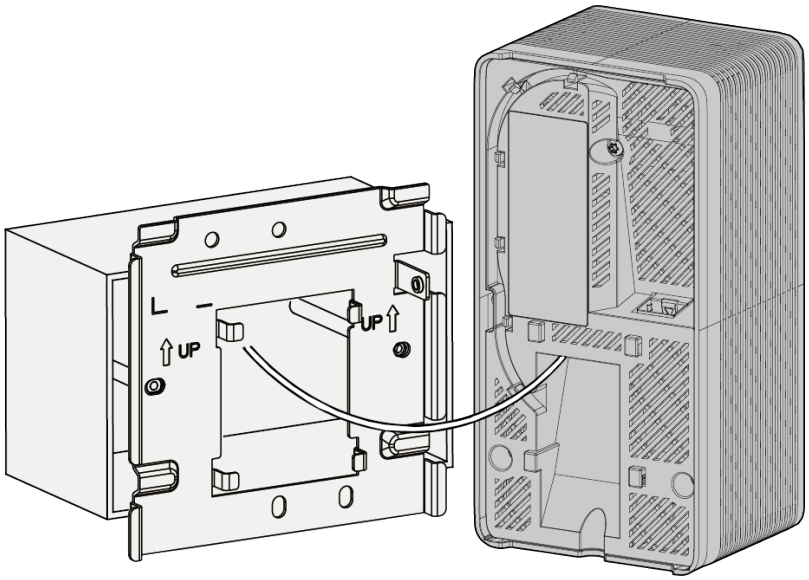
1. Using a screwdriver, remove the panel of the junction box (118 mm) from the wall (skip this step if no panel is installed).



2. Secure the mounting bracket (118 mm) to the junction box using two M4x25 screws.



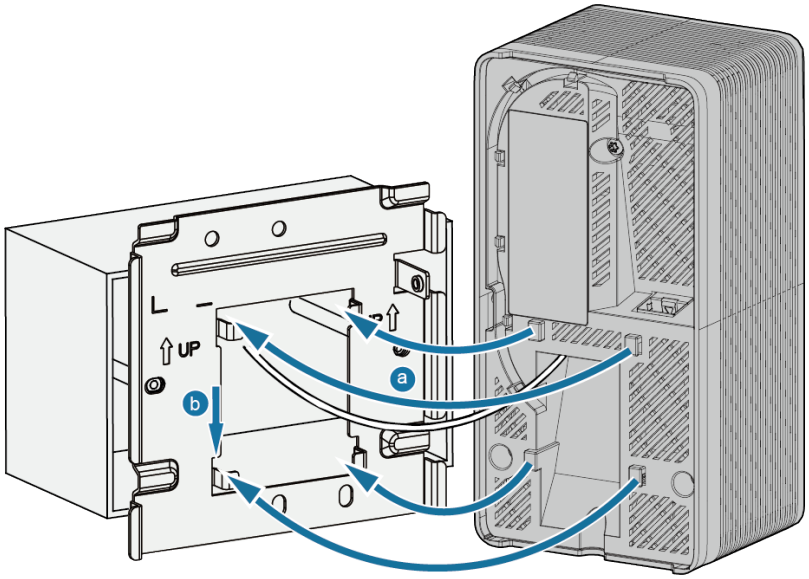
3. Connect cables.



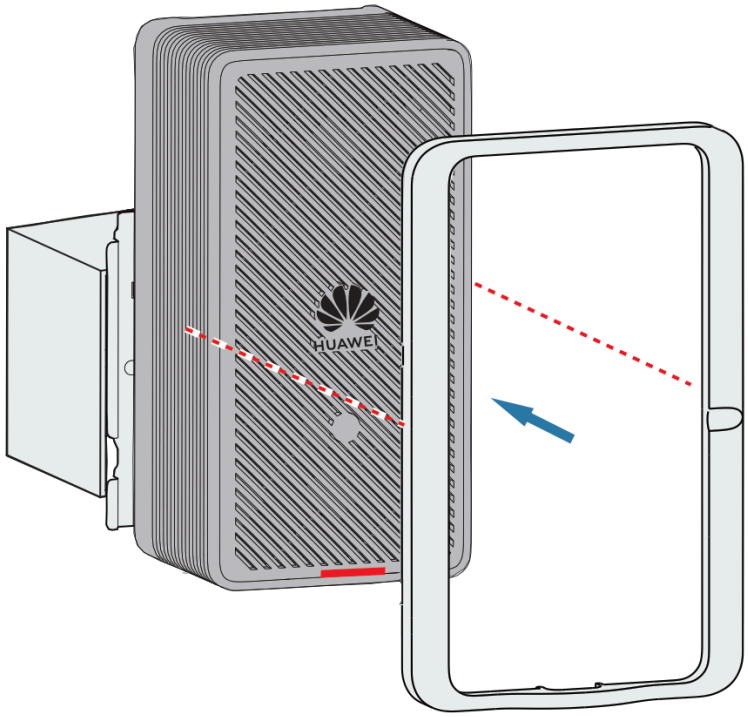
NOTE

- When securing an M4 screw into a junction box, do not distort the mounting bracket. If longer screws are required onsite, the customer needs to prepare them by themselves.
- There is a slot on a side of the device. You can align the protruding arm of the mounting bracket with the slot in the concave direction on the side of the device to ensure that the mounting bracket is in close contact with the device and then slide the device.

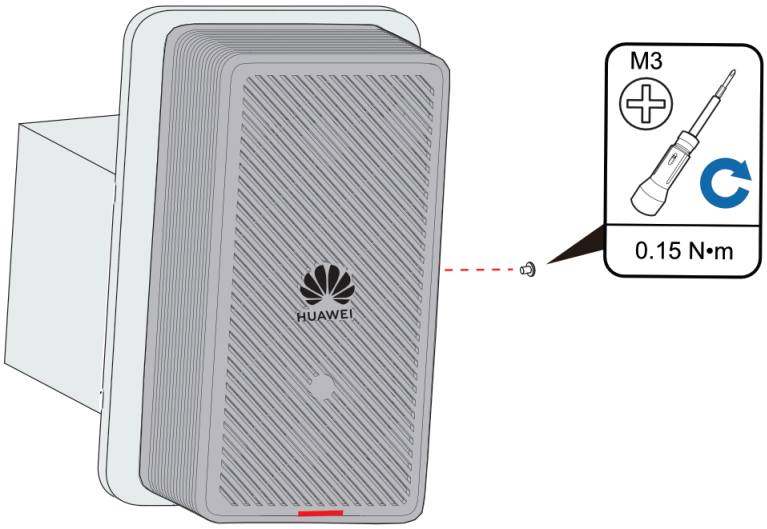
4. Align the four grooves on the bottom cover of the device with the upper ends of the clips on the mounting bracket. Slide the device downward to hang it on the mounting bracket.



5. Align and mount a decoration frame to the bottom of the AP.



6. Tighten an M3x4 crosshead screw into the device to prevent the device from dropping. If the anti-theft function is required, tighten an M3x4 torx screw (instead of an M3x4 crosshead screw) into the device using a T9 torx security screwdriver. The tightening torques of the two screw types are both 0.15 N·m.



NOTE

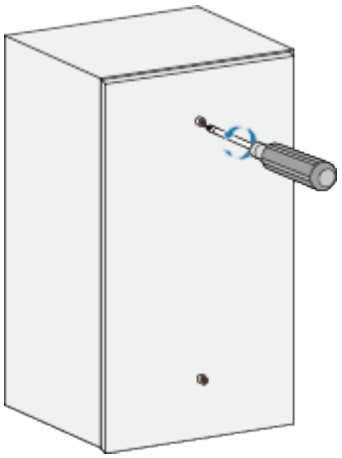
- The mounting bracket (118 mm) with the part number of 21243492-001 is separately purchased.
- The T9 torx security screwdriver is prepared by the customer.

3.2.3.5 1 Gang Junction Box (120 mm) Mounting

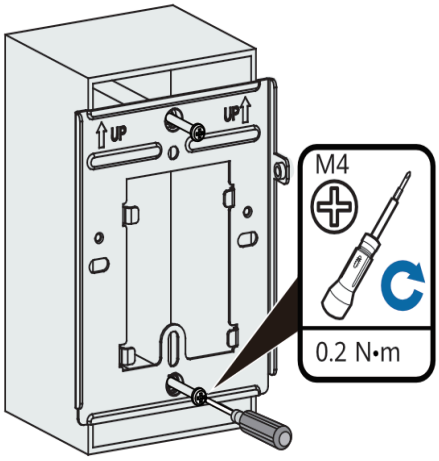
In this mounting mode, a junction box for installing the device must be able to bear the weight four times the total weight of the device and mounting bracket without damage. When the total weight of the device and mounting bracket is less than 1.25 kg, the load-bearing capability of the junction box must be greater than or equal to 5 kg.

Installing a Device on a 1 Gang Junction Box

1. Using a screwdriver, remove the panel of the junction box (120 mm) from the wall (skip this step if no panel is installed).



2. Secure the mounting bracket (86 mm) to the junction box using two M4x25 screws.



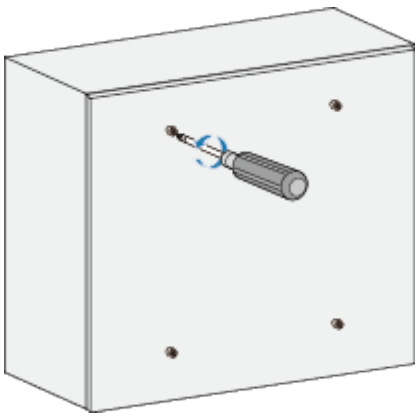
3. Install the cables, device, and anti-theft screws. For details, see steps 3, 4, and 5 in **Junction Box (86 mm) Mounting**.

3.2.3.6 2 Gang Junction Box (120 mm) Mounting

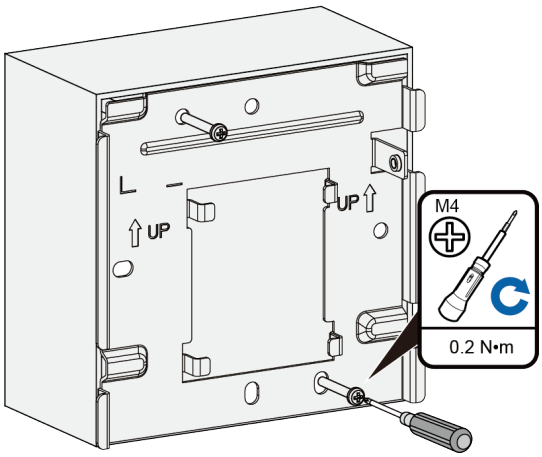
In this mounting mode, a junction box for installing the device must be able to bear the weight four times the total weight of the device and mounting bracket without damage. When the total weight of the device and mounting bracket is less than 1.25 kg, the load-bearing capability of the junction box must be greater than or equal to 5 kg.

Installing a Device on a 2 Gang Junction Box

1. Using a screwdriver, remove the panel of the junction box (120 mm) from the wall (skip this step if no panel is installed).



2. Secure the mounting bracket (118 mm) to the junction box using two M4x25 screws.



3. Install the cables, device, decoration frame, and anti-theft screws. For details, see steps 3, 4, 5, and 6 in **Junction Box (118 mm) Mounting**.

NOTE

The mounting bracket (118 mm) with the part number of 21243492-001 is separately purchased.

3.2.3.7 Ceiling Mounting

CAUTION

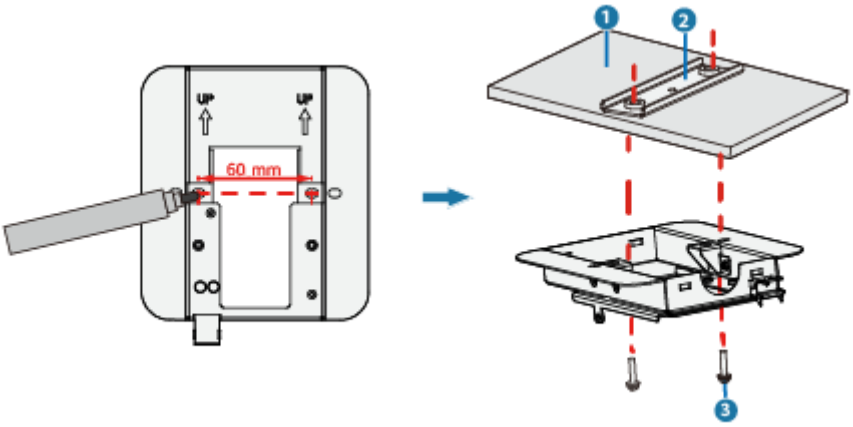
As for indoor ceiling mounting, ceiling-mounting brackets (with screws) must be used together with the standard mounting brackets. The customer needs to purchase the optional mounting bracket (part number: 21242920-001) by themselves.

NOTE

- Ceiling mounting is not recommended for the wall plate AP.
- The ceiling can bear the weight of four times the total weight of the device and mounting bracket without damage. When the total weight of the device and mounting bracket is less than 1.25 kg, the load-bearing capability of the ceiling must be greater than or equal to 5 kg.

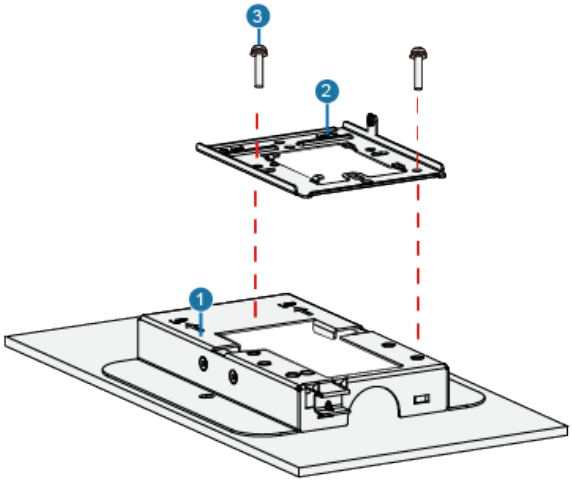
1. Remove a ceiling tile and mark positions of mounting holes based on the distance between two installation holes on the ceiling-mounting bracket. Use a hammer drill to drill two holes (Φ5 mm) with a depth of the ceiling tile thickness on the ceiling tile. Secure the ceiling-mounting bracket and sliding plate on the ceiling tile with M4x20 screws. The tightening torque is 1.18 N·m.

   The screws provided for ceiling-mounting of APs are 20 mm long and can be used to fix an AP on a ceiling no thicker than 10 mm. To install APs on thicker ceilings, you need to purchase longer screws.



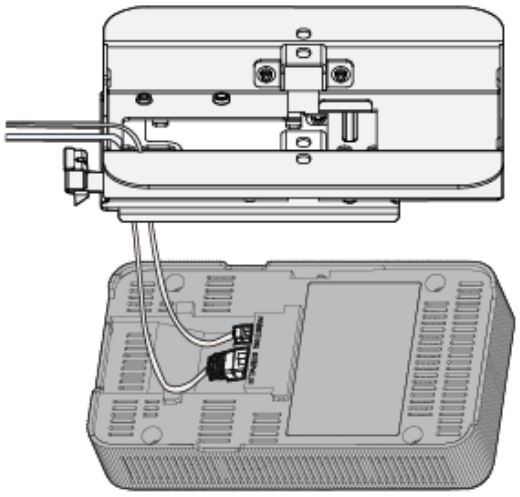
1. Ceiling tile	2. Sliding plate	3. M4x20 screw

2. Use M3x6 screws to secure the AP mounting bracket to the other side of the ceiling-mounting bracket. The tightening torque is 0.54 N·m.

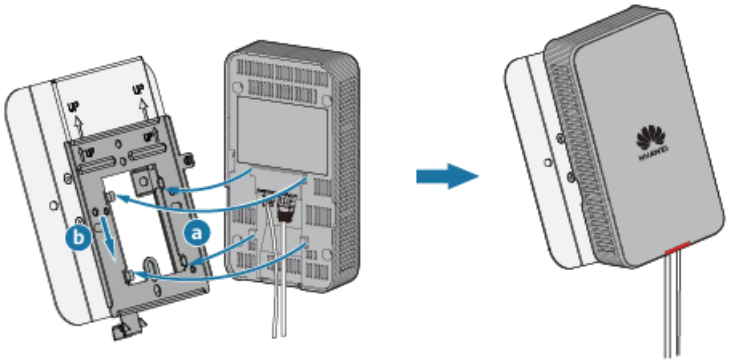


1. Ceiling-mounting bracket	2. Mounting bracket	3. M3x6 screw

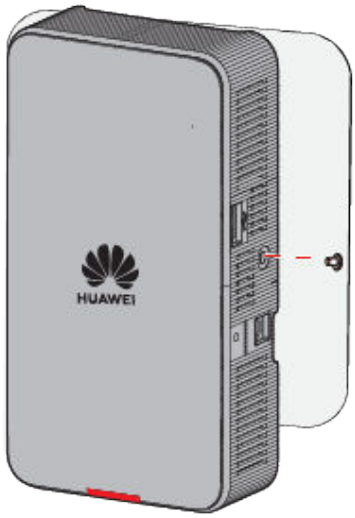
3. Route the cables through the reserved installation hole to connect to the device.



4. Align the grooves on the bottom cover of the device with the upper ends of the clips on the mounting bracket. When the device reaches the right place, the spring clip on the mounting bracket automatically falls back to secure the device.



5. Tighten an M3x4 crosshead screw into the device to prevent the device from dropping. If the anti-theft function is required, tighten an M3x4 torx screw (instead of an M3x4 crosshead screw) into the device using a T9 torx security screwdriver. The tightening torques of the two screw types are both 0.15 N·m.



NOTE

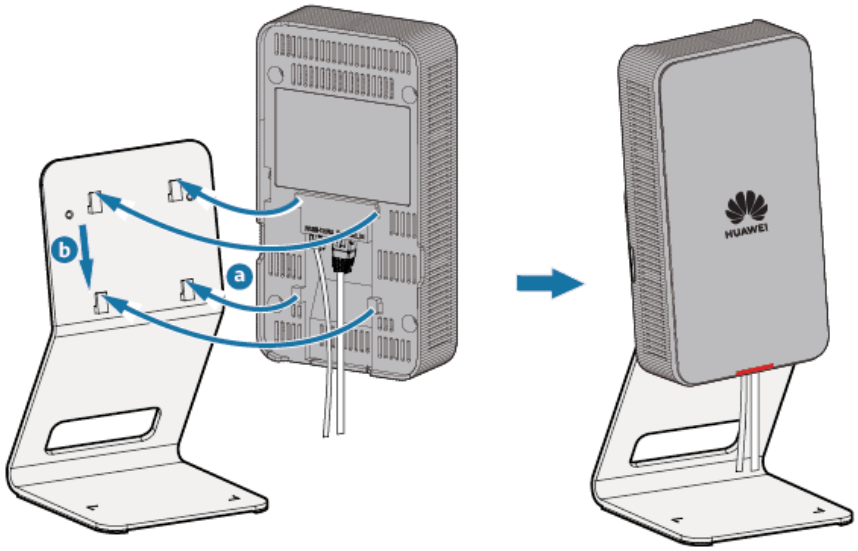
- Ensure that the AP is properly installed on the mounting bracket. Ensure that the installation space meets the specified requirements to facilitate future maintenance.
- The T9 torx security screwdriver is prepared by the customer.
- To achieve better heat dissipation, it is recommended that more space be reserved between the top of the AP and the ceiling.

3.2.3.8 Desktop Mounting

CAUTION

- In the desktop installation mode, a desktop installation support must be used. The customer needs to purchase the optional mounting bracket (part number: 21243493) by themselves.
- At least 200 mm clearance must be reserved around the device (including the front, two sides, top, and bottom of the device) to ensure heat dissipation. Do not place the running AP flat on a desk. In addition, do not place it in an enclosed space with the dimensions of less than 1300 mm x 1000 mm x 1000 mm (H x W x D), such as a power distribution cabinet, weak-current box, or drawer.

1. Connect cables.
2. Align the grooves on the bottom cover of the device with the upper ends of the clips on the desktop stand. Slide the device downward to fix it on the desktop stand.



3.2.4 Connecting Cables

Table 3-66 shows cable connections for a common wall plate AP.

Figure 3-38 Appearance

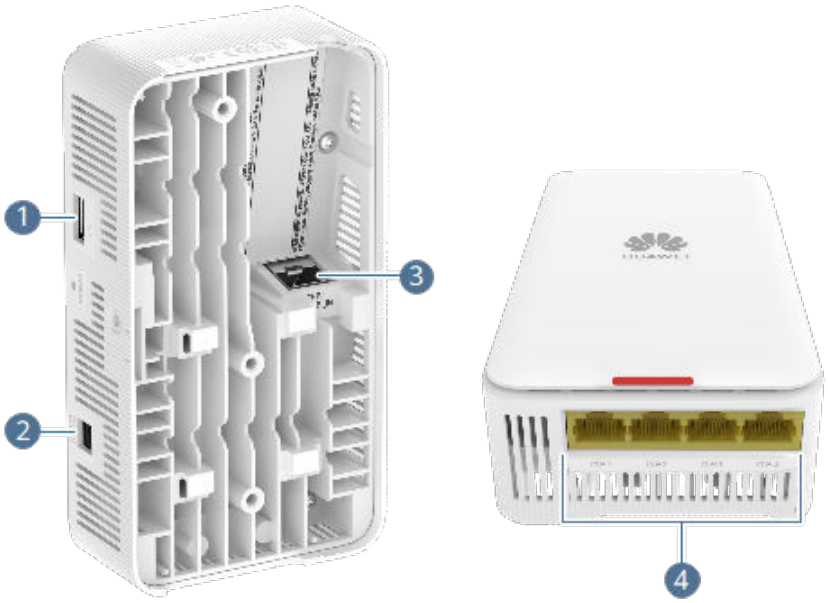


Table 3-66 Cable connections

No.	Cable or Device	Description
1	USB cable	Connects to a matching IoT terminal to implement IoT applications.
2	DC power adapter	When the device uses the DC power supply, use a power adapter for power supply; otherwise, the device may be damaged.
3	hybrid cable	Install a hybrid module on the SFP/PoE_IN port and connect it to the corresponding port of the peer device using a hybrid fiber.
4	Ethernet cable	• For the supported Ethernet cable types and length requirements, see **Table 3-67**. • If the AP needs to connect to the Ethernet, ensure that the Ethernet cable is working properly. If the Ethernet cable is not working properly, for example, RJ45 connectors are short-circuited, the AP may fail to be powered on or fail to work properly. Before connecting an Ethernet cable to the AP, use the cable test tool to check whether the cable is qualified. If not, replace it.

When installing a cable, you must make a drip loop to prevent water from flowing into devices along the cable. For details, see **13.9 Guide to Making Drip Loops**.

Pay attention to the following points when bundling the cables:

- Different types of cables must be separately routed with the minimum spacing of 30 mm and cannot be entangled or crossed. Cables should be parallel or separated using dedicated separators.
- The cables must be bound tightly and neatly, and the cable sheaths must not be damaged.
- Cable ties are bound neatly facing the same direction, and those at the same horizontal line must be in a straight line. Cable tie tails should be cut smoothly and evenly.
- Labels or nameplates must be attached to the cables after they are installed.

3.2.4.1 Connecting Ethernet Cables

Table 3-67 Ethernet cable types supported by Ethernet interfaces and maximum transmission distances

Interface Rate	Ethernet Cable Type	Maximum Transmission Distance
GE	CAT5E or higher	100 m
2.5GE	CAT5E or higher unshielded twisted pair (UTP)	100 m
	CAT5E or higher shielded twisted pair (STP)	100 m
5GE	CAT5E UTP	• 100 m (Only the first 30 m of cables is bundled in 6-a-1 mode.) • 55 m (All cables are bundled.) Not recommended due to high risks
	CAT5E STP	100 m
	CAT6 or higher	100 m Connecting UTP network cables to 5GE interfaces poses high risks and is not recommended.
10GE	CAT6A F/UTP	100 m
	CAT6A STP	100 m
	CAT7	100 m

NOTE

- 6-a-1 stands for the six-around-one cable bundle mode, with one cable in the center and six cables bundled evenly around it.
- Connecting UTP network cables to 5GE interfaces poses high risks and is not recommended. The causes are as follows:
  - 802.3bz requires that the ALSNR value for alien crosstalk between network cables be greater than 0, but the standards for CAT5E and CAT6 unshielded twisted pairs do not specify the required ALSNR value. Therefore, such cables may not meet the crosstalk requirement in 802.3bz, causing severe problems such as continuous packet loss.
  - According the cabling specification TIA TSB-5021, using CAT5E and CAT6 cables for 5G poses medium and high risks.
  - Currently, no clear onsite testing or evaluation method is available for checking whether ALSNR of cables conforms to 802.3bz.
- If a network cable does not meet the preceding requirements, replace it with a compliant one or reduce the interface speed.
  - For a switch that supports rate decrease auto-negotiation, it is recommended that this function be enabled. The **set ethernet speed down-grade** command is used to enable rate decrease auto-negotiation on Huawei switches.
  - For a switch that does not support rate decrease auto-negotiation, it is recommended that a fixed port rate be configured based on the network cable type.

3.2.4.2 Connecting Optical Fibers

NOTICE

- Before the installation, take ESD protection measures, for example, wear ESD gloves or an ESD wrist strap.
- When installing an optical module, do not touch the edge connector of the optical module without wearing gloves.
- Do not insert the optical module with optical fibers directly into the optical interface. You need to install the optical module first and then the optical fibers.
- Cover idle optical interfaces with dust plugs.

Tools and Accessories

ESD wrist strap or ESD gloves

Procedure

1. Wear an ESD wrist strap. Ensure that the ESD wrist strap is grounded and in a close contact with your wrist.
2. Take out an optical module from the ESD bag and verify that the optical module is the model you need.
3. Remove the dust plug from an optical port.

NOTE

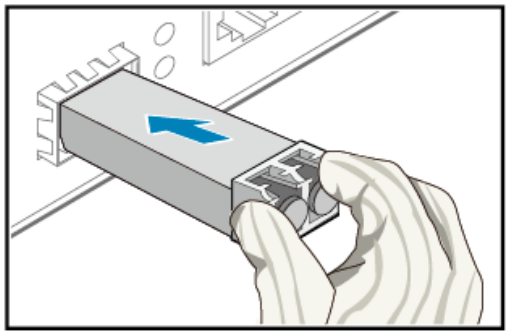
- Install dust plugs on optical modules not connected to optical fibers.
- Keep the dust plugs properly for future use.

4. Insert the optical module into the optical interface smoothly until you hear a crack sound.

NOTICE

If an optical module cannot be completely inserted into an optical interface, do not push it with force. Turn the optical module over and try again.

Figure 3-39 Installing an optical module



5. Check that the optical module is installed correctly.

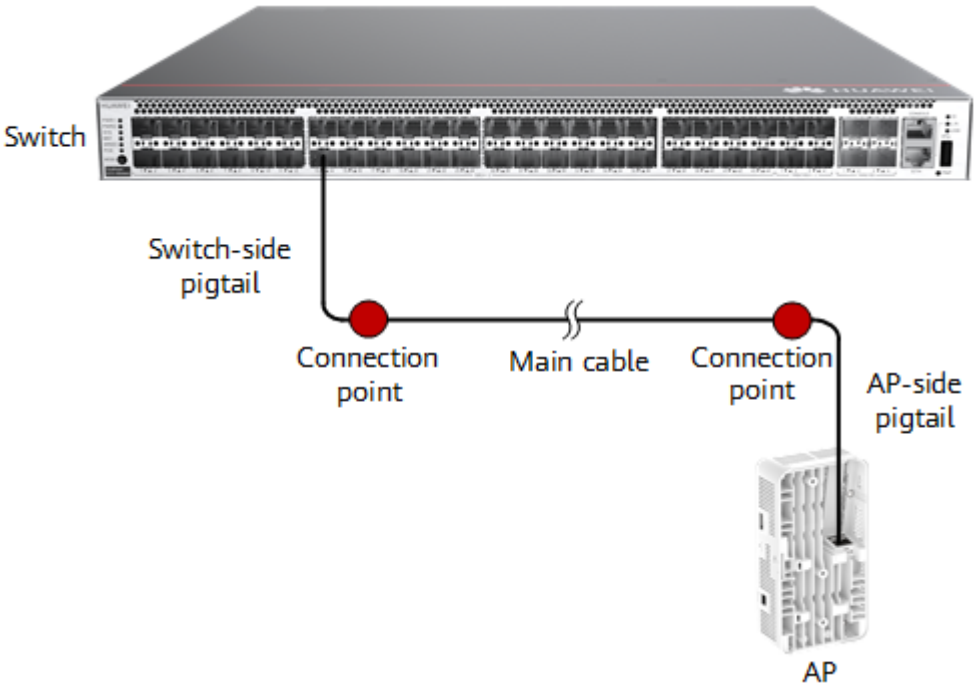
   Keep the release handle closed and try pulling the optical module by pressing the optical module with your forefinger and thumb to see if the optical module can be removed.

   – If not, the optical module is installed correctly.
   – If so, the optical module is installed incorrectly and must be reinstalled.

3.2.4.3 Connecting Hybrid Cables

A hybrid cable is composed of optical fibers and copper cores. It is mainly used to connect a switch to an AP so that the switch can provide PoE power and transmit data for the AP. During construction, onsite cable connection is required. The following figure shows the connection points.

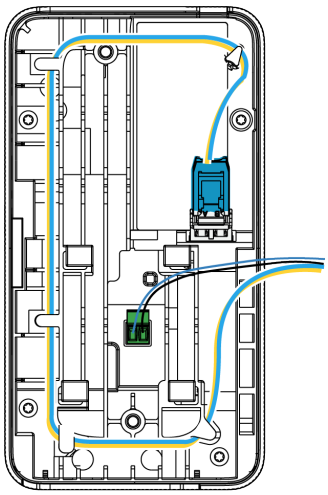
Figure 3-40 Connections of a hybrid cable



For details about the requirements for routing a hybrid cable, see **13.2.5.1 Requirements for Routing the Main Cable**. The hybrid cable can be deployed using the optical-electrical separation solution or optical-electrical integration solution.

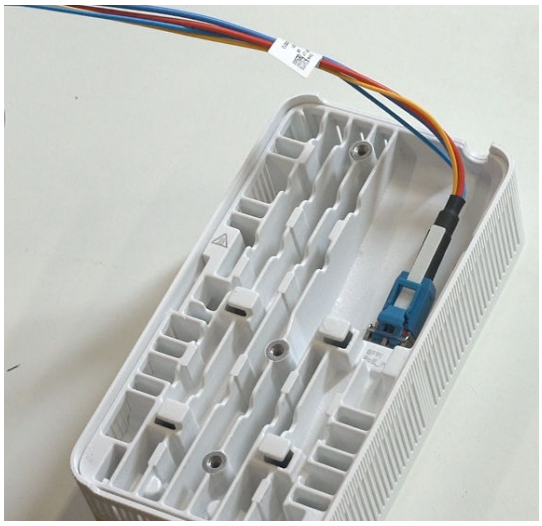
- **Optical-electrical separation solution**

  Separate the optical fiber and power cable in a hybrid cable, and insert them into the corresponding optical module and phoenix connector, respectively.



- **Optical-electrical integration solution**

  Insert a hybrid cable into a hybrid module.



3.2.4.3.1 Connecting and Coiling a Hybrid Cable (Optical-Electrical Separation Solution)

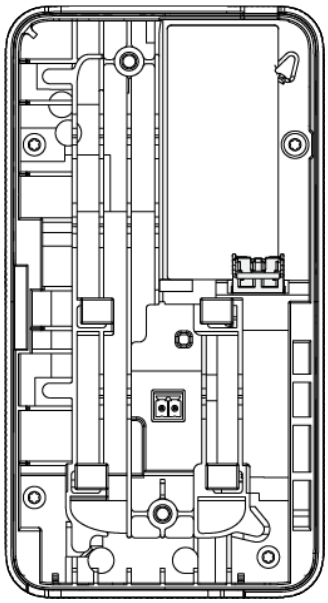
Context

This solution applies to the AirEngine 5762-15HW (part number: 50086101-001). Before connection, assemble a hybrid cable by referring to **13.2.5.2.1 Fusion Splicing**.

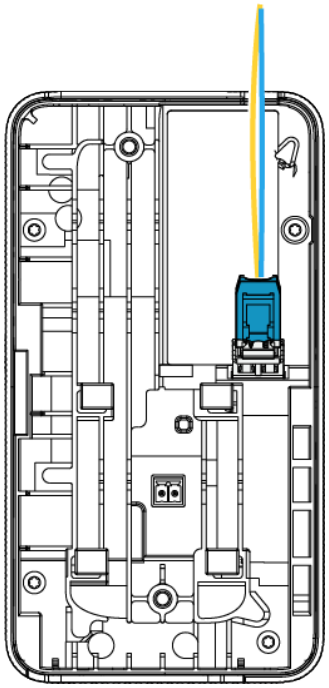
Procedure

Step 1 Secure the AP mounting bracket.

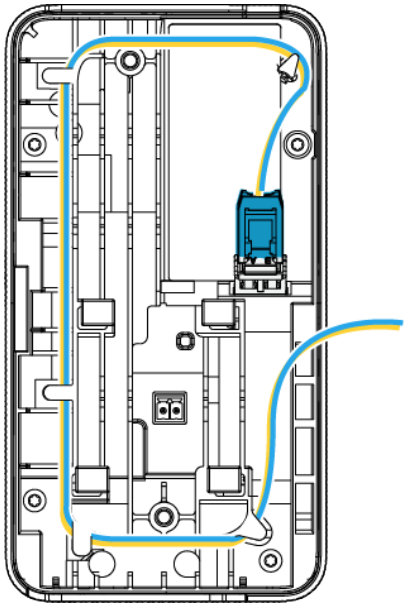
Step 2 Install an optical module on the AP.



Step 3 Insert the pigtail into the optical module.



Step 4 Coil the optical fiber counterclockwise to a proper length according to the arrow on the bottom shell.



CAUTION

When coiling an optical fiber, ensure that the fiber is fastened to each cable tie without missing in sequence.

Step 5 Insert the phoenix connector of the power cable into the PoE_IN power inlet on the bottom shell.

Figure 3-41 Junction box (86 mm) mounting scenario

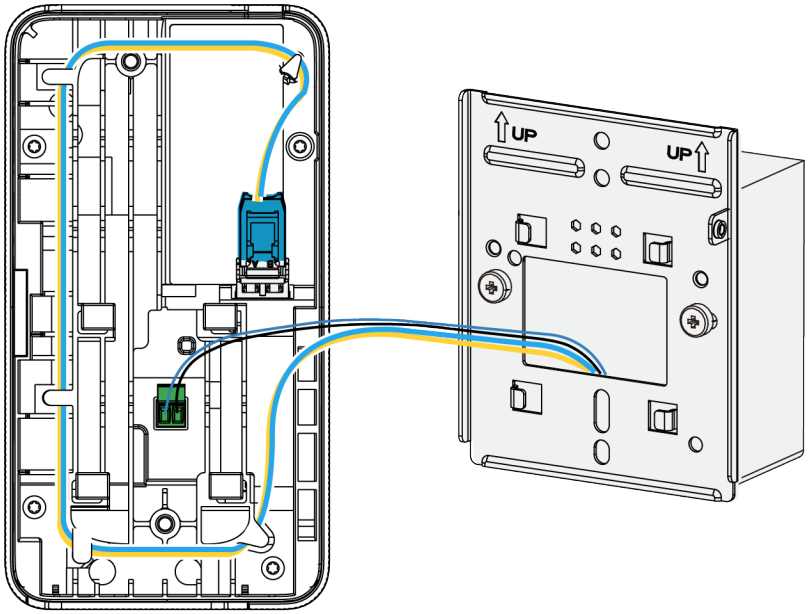
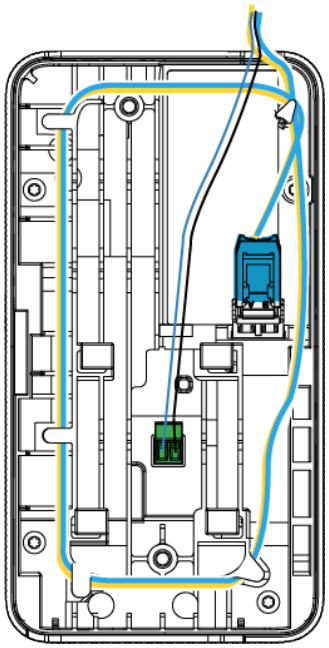
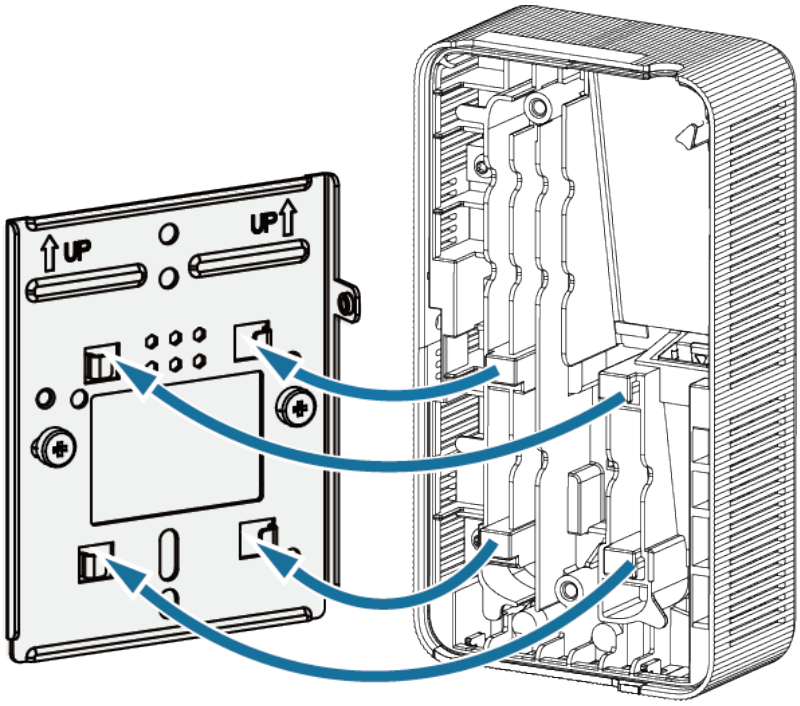


Figure 3-42 Wall or ceiling mounting scenario



Step 6 Secure the AP to the mounting bracket and tighten the screw on the side.



----End

3.2.4.3.2 Connecting and Coiling a Hybrid Cable (Optical-Electrical Integration Solution)

Context

This solution applies to the AirEngine 6761-21, AirEngine 6761-21E, AirEngine 6761S-21 and AirEngine 5762-15HW. Before connection, assemble a hybrid cable by referring to **13.2.5.3.1 Fiber Splicing**.

CAUTION

For wall plate APs, estimate the coiled fiber length based on the installation height and determine the fiber management tray to be used.

- If the coiled fiber length is shorter than 1.2 m, use a panel fiber management tray (part number: 21206670).
- If the coiled fiber length is in the range of 1.2 m to 6 m, use a settled fiber management tray (part number: 21206671). For details about how to coil fibers, see **13.2.5.3.2 Fiber Coiling (In a Settled Fiber Management Tray)**.

Procedure

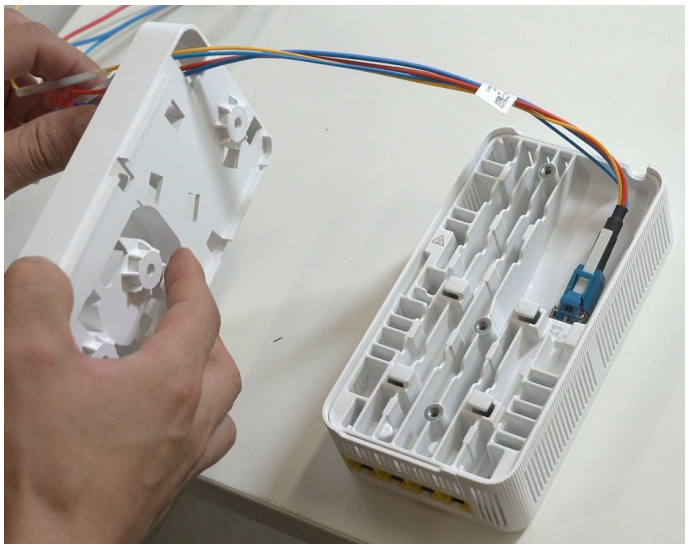
Step 1 Secure the AP mounting bracket.

Step 2 Install a hybrid module on the AP.

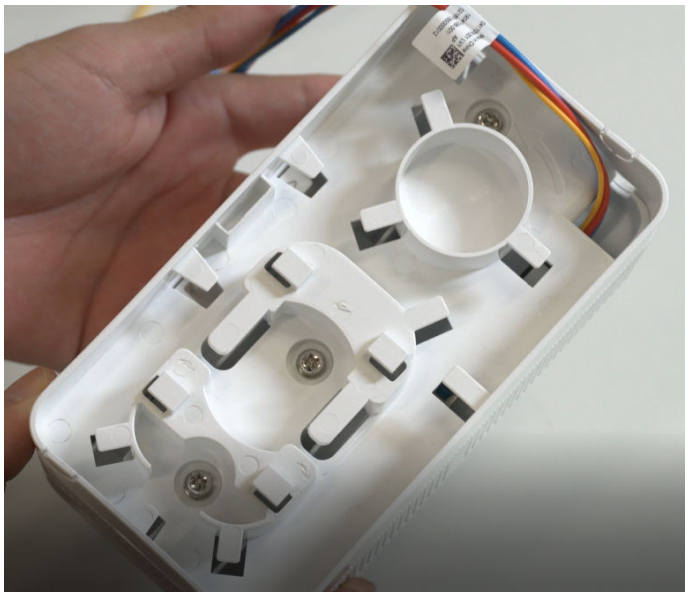
Figure 3-43 shows the appearance of a hybrid module.

Figure 3-43 Hybrid module

Step 3 Route the pigtail of the hybrid cable through the hole in the upper right corner of the fiber management tray, and connect the pigtail to the AP through the hybrid module.

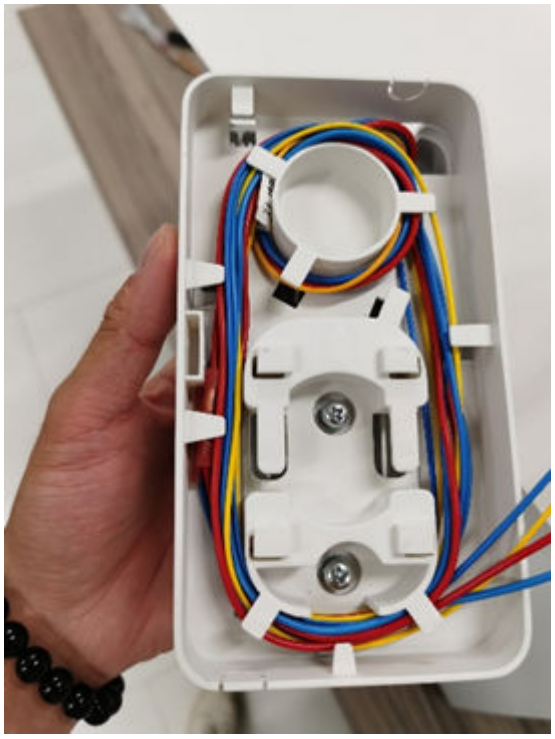


Step 4 Use three M4x12 screws to secure the fiber management tray to the rear of the AP.



Step 5 Coil the fiber according to the direction shown on the fiber management tray.

You are advised to coil the fiber in large circles. The heat shrink tubing at the splicing point cannot be bent. If it is located at the fiber spool, coil the fiber in a small circle first.



Junction box mounting scenario: If the remaining length of the cable is not enough for a large circle, coil the cable in a small circle and fasten the fiber to the cable tie in the middle of the fiber management tray.

Wall or ceiling mounting scenario: Remove the round baffle plate in the upper right corner of the fiber management tray to route the cable.

Step 6 Secure the AP to the mounting bracket by using the two grooves on the side and the guide rail on the rear of the fiber management tray, and tighten the screws on the side.

----End

3.2.5 Verifying the Installation

Table 3-68 shows the items to be checked after installation is complete. For more details, see **13.8 Installation Checklist** in the appendix.

Table 3-68 Post-installation checklist

No.	Check Item
1	The device is installed by strictly following the design draft. The installation position meets space requirements, with maintenance space reserved.
2	The device is securely installed.
3	The power cables are intact and not spliced.
4	Terminals of the power cables are welded or cramped firmly.
5	All power cables are not short-circuited or reversely connected and must be intact with no damage.
6	Power cables are separately bound from other cables.
7	Connectors of signal cables are complete, intact, and tightly connected. The signal cables are not damaged or broken.
8	The labels are correct, legible, and complete.

After an AP is powered on, observe indicators on the AP to determine the system running status. For details, see the indicator description.

NOTE

Do not frequently power on and off the device.

