

# 1 Product Overview

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Sundray wireless AP-S400 is a new-generation 802.11ac wireless access point of high performance, developed by Sundray. It is embedded with matrix smart antenna, supports dual-band of 802.11ac/a/n and 802.11b/g/n and provides a maximum transmission rate of 600 Mbps, with a higher wireless access rate and wider wireless coverage. The maximum transmission rate of 1 Gbps can easily meet requirements of all types of wireless services such as video and voice multimedia services. Additionally, intelligent RF, QoS and seamless roaming are provided.

AP-S400 adopts the Gigabit port for uplink, ensuring high-speed wireless transmission. Both local power supply and PoE are supported. You can choose any of the power supply methods based on the actual environment. By working with Sundray network access controller(NAC), AP-S400 makes access experience faster and more secure wireless.

Sundray AP-S400 series products are aesthetically designed and can be conveniently installed. It can be mounted on ceiling or wall, or placed on desk.

## 1.1 Product Appearance

There are one 10/100/1000Mbps Ethernet port supporting PoE, one console port, one 12V power supply port and one **Reset** pinhole.



Figure1-1 Front Panel

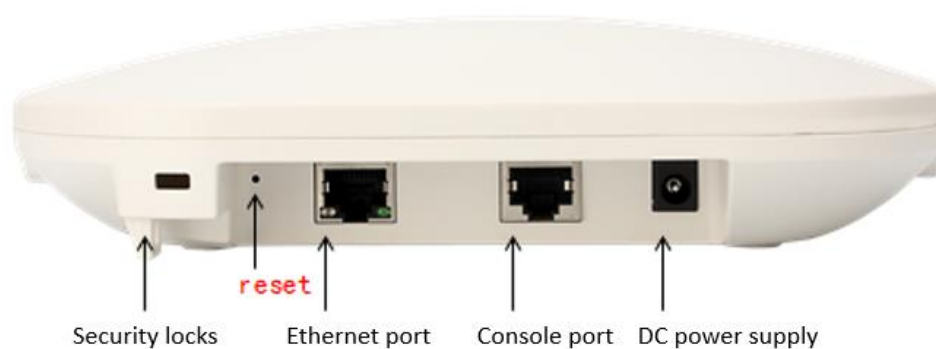


Figure1-2 Side Panel

Figure1-3 Dimension (in mm) View of Mounting Keyholes on Rear Panel

## 1.2 Specifications

Model	AP-S400
Hardware specifications	
Weight	0.4Kg
Dimensions (Exclusive of antenna interfaces and accessories)	196 x 196 x 45 mm
Ethernet Port	1*10/100/1000Mbps
PoE	802.3af/802.3at power supply supported
Power	12V/1.5A
Power consumption	< 13W
Antenna	Embedded matrix smart antenna
Reset/Restore factory settings	Supported
Status indicator	1*status
Protection level	IP 41

MTBF	> 250000H
<b>RF specifications</b>	
Tx Power	≤ 20dBm
Tx Power Range	1dBm~the maximum allowed by local regulations
Maximum transmission speed(single frequency)	2.4 G:300 Mbps 5 G:300 Mbps
Operating frequency band	802.11ac/n/a: 5.725GHz-5.850GHz, 5.15~5.35GHz (China) 802.11B/g/n: 2.4GHz-2.483GHz (China)

## 2 Preparing for Installation

### 2.1 Safety Precautions

AP-S400 series products should be installed in an indoor environment. To ensure that AP is operational and extend its lifetime, it must be installed in a qualified environment.



Caution: To avoid damage to access point and bodily injury, please read and follow the safety precautions before installation of the AP-S400 series products. Please install the AP-S400 series products under the instructions of technical support representative.

#### 2.1.1 Installation Site Selection

- ✓ Keep the AP away from places that are susceptible to high temperature, harmful gases, inflammable, explosive, electromagnetic interference (from radar station, transmitter station or substation), unstable voltage, violent shake, or loud noise, or places that are near source of pollutions.
- ✓ The installation site should be dry, without any water leakage, dripping or dew.
- ✓ In engineering design, the site should be selected according to telecommunication network plan and technical requirements for telecommunication devices and the following factors should be taken into account: hydrology, geology, occurrence odds of earthquake, electric power and transportation, etc.

#### 2.1.2 Temperature and Humidity Requirements

The requirements for temperature and humidity are listed as follows:

Item	Description
Operating temperature	-10°C~45°C
Storage temperature	-40°C~70°C
Operating humidity	5%~95%(non-condensing)

Storage humidity	5%~95%(non-condensing)
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## 2.2 Installation Tools

Several tools are required for installation of the AP-S400 series products. The following tools should be provided by customers. (Sundray does not provide the following tools)

Type of Tools	Tools
Universal tool	Straight screwdriver,Phillips screwdriver, sleeves, cutting plier, steel measuring tape,marker pen, percussion drill
Special tool	Cable stripper,crimping plier, electrical tape, network cable tester.
Additional tool	PC for troubleshooting

## 2.3 Preparing Materials for Installation

The mounting bracket AP-MountKit-T1 is shipped with the AP-S400 series product. The AP-MountKit-T1 bracket can be used for mounting access point on a ceiling or a wall. The kit of the bracket includes plastic expansion screw pipes, expansion screws. Other involved materials need to be provided by customers.



Figure2-1 Kit of AP-MountKit-T1 Bracket

To mount AP-S400 on a ceiling or a wall, the following are required:

Name	Description
Bracket for wall or ceiling mounting	Used to mount and fix access point on a ceiling or a wall
Screw	Screws, plastic expansion pipes, expansion screws

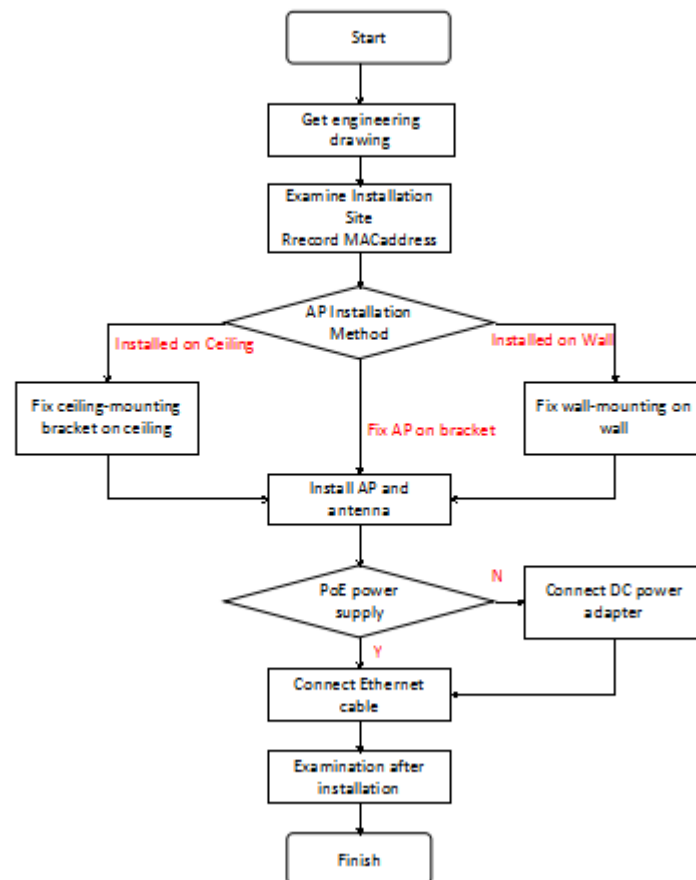
## Customer-prepared materials:

Name	Description
Network cable	Depends on the actual scenario
Registered jack	Depends on the actual scenario

## 3 Installation Guideline

### 3.1 Installation Procedure

AP-S400 series products must be installed in an indoor environment. It can be mounted on ceiling or wall, or placed on desk.



#### Precautions:

- ✓ You need to get the corresponding engineering drawing before beginning installation.
- ✓ AP-S400 series product should be installed at the specified site according to the engineering drawing.
- ✓ Before installation, you need to check whether the installation site is suitable. If it is not suitable, you can change the installation site but the distance between the new and the specified sites on the engineering drawing cannot be greater than 0.5 meter.

- ✓ Record the MAC address and installation site of the access point (MAC address is on the rear panel of the AP), for example, MAC: 10-0D-0E-20-20-CD-E1, location: Outside the hotel Room 8302.

### 3.2 Examining Installation Site

- ✓ The less obstructions between the access point and wireless devices, the better.
- ✓ Access point should be installed away from electronic devices or equipment like microwave oven, which will generate RF noise.
- ✓ The installation site should be out of residents' sight, avoiding causing inconvenience to their daily work and life.
- ✓ The installation site should be dry, without any water leakage, dripping or dew so as to prevent water penetration in cables and devices.

#### Notes:

To ensure access point operational and extend its lifetime, please follow the following precautions:

- ✓ Access point should be installed in an indoor and well-ventilated environment.
- ✓ Access point should not be installed in an environment of high temperature.
- ✓ Access point should be installed far away from high-voltage cables.
- ✓ Access point should be installed in an environment away from strong thunderstorm and electric field.
- ✓ The surface of access point should be kept clean.
- ✓ Access point should be fixed firmly.

### 3.3 Installing Access Point

The dimensions of AP-MountKit-T1 bracket and the corresponding screws are shown as below:



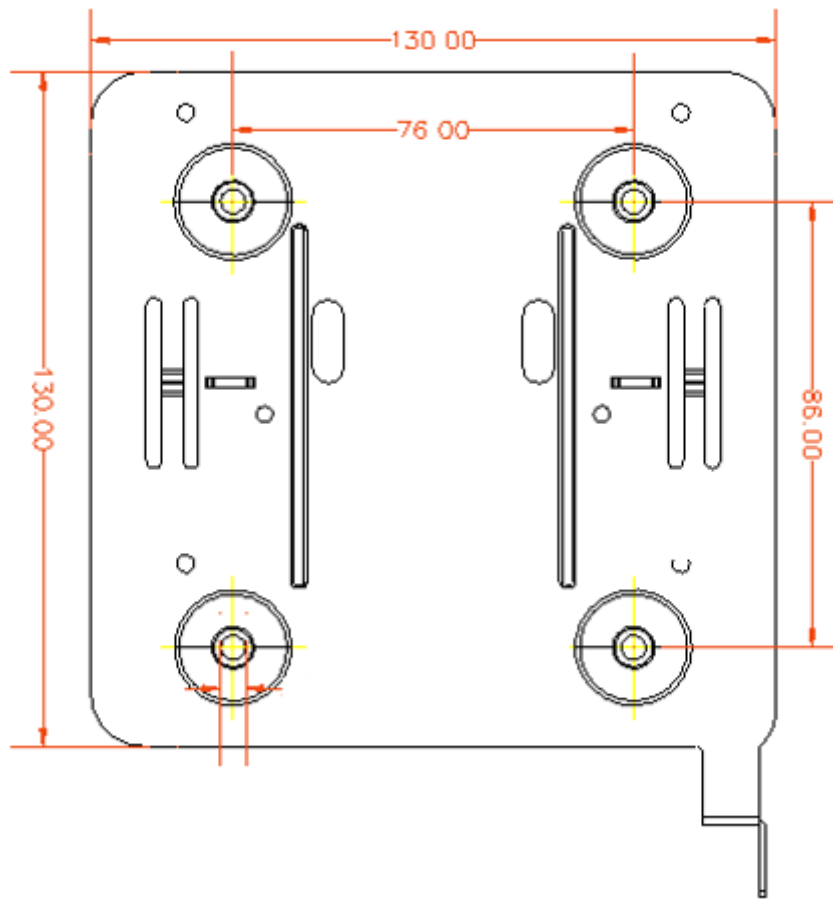


Figure3-1 Dimension (in mm) View of AP-MountKit-T1 Bracket

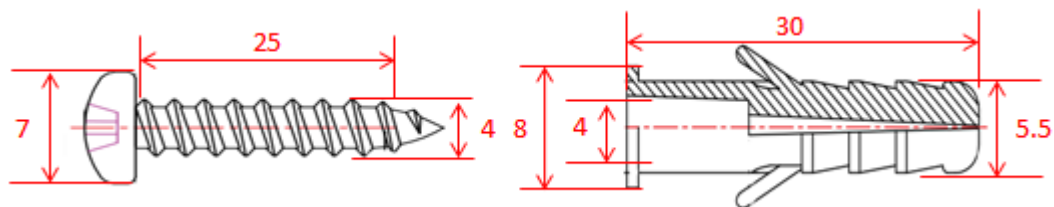


Figure3-2 Screw Dimension(in mm) View for AP-MountKit-T1 Bracket Installed on the Wall

### 3.3.1 Mounting Access Point on a Wall

To mount AP-S400 series products on a wall, you need a wall-mounting bracket, expansion screw pipes and screws.

Step 1: Drill four holes with 5.0mm diameter on the wall where the access point is installed. The position relationship among those holes should be consistent with that of the installation holes on the bracket. The four holes form a rectangle(76×86mm), as shown below:

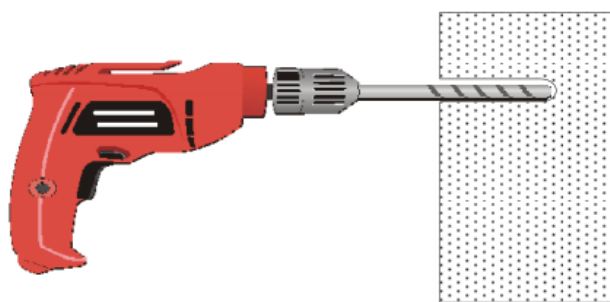
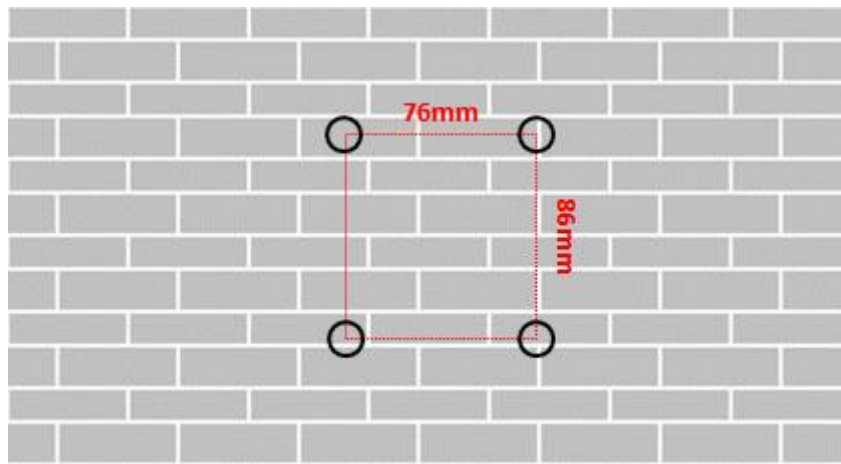


Figure3-3 Drill Holes on the Wall

Step 2: Insert the expansion screw pipes into the holes and hit the pipes with a hammer, as shown below:

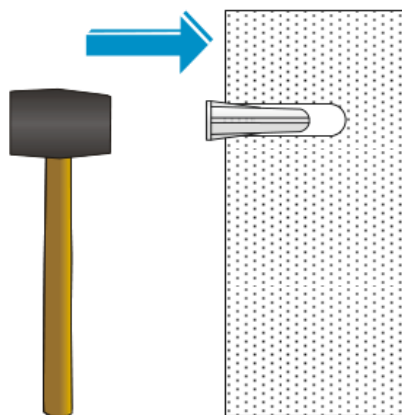


Figure3-4 Fasten Expansion Screw Pipe

Step 3: Position the mounting holes of the bracket over the pilot holes. Insert screws into the pilot holes through the mounting holes and tighten the screws with a Phillips screwdriver, as shown below:

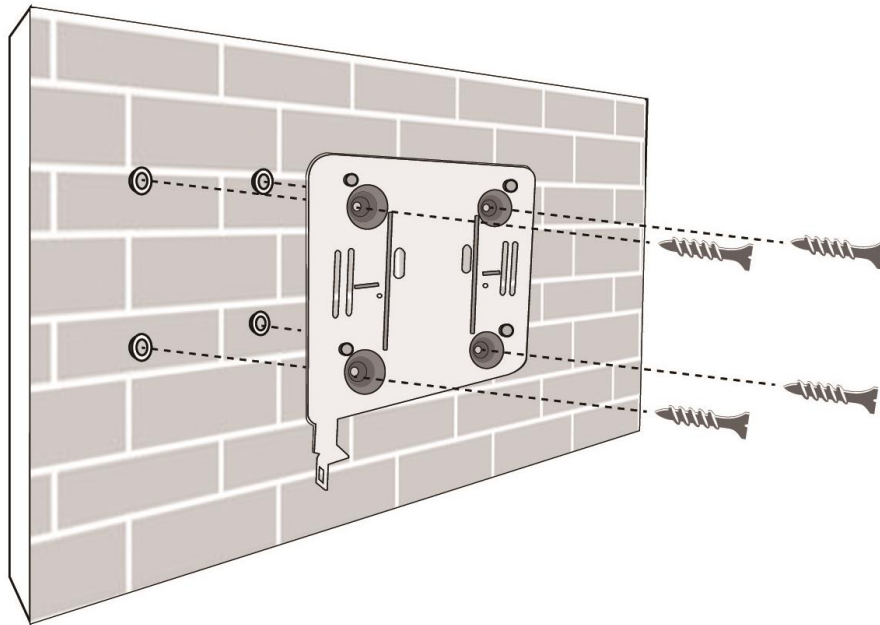


Figure3-5 Installation of the Wall-Mounting Bracket

Step 4: Connect the access point to a switch using Ethernet cable(if the AP is powered through power supply port, the power supply port should be connected before this step).

Step 5: Align the mounting holes on the rear panel of access point with that on the mounting plate, as shown in ①. Press the access point downwards, as shown in ②, until the access point is fastened.

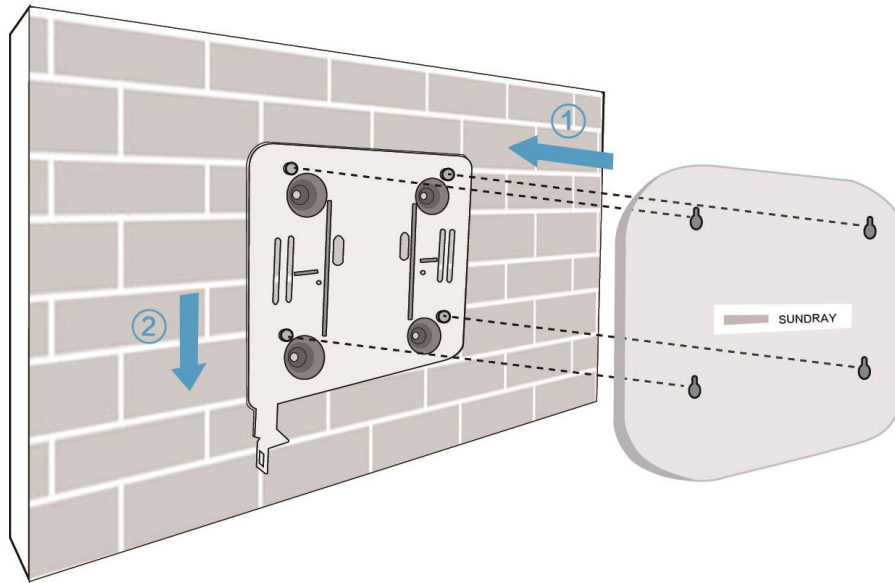


Figure3-6 AP Installed on the Wall- Mounting Bracket

### 3.3.2 Mounting Access Point on a Ceiling

To install an access point on a ceiling, the bracket for ceiling mounting and screws are required.

Step 1: Drill four holes with 5.0mm diameter on the ceiling wall where the access point is installed. The position relationship among those holes should be consistent with that of the holes on the bracket. The four holes form a rectangle(76×86mm), as shown below:

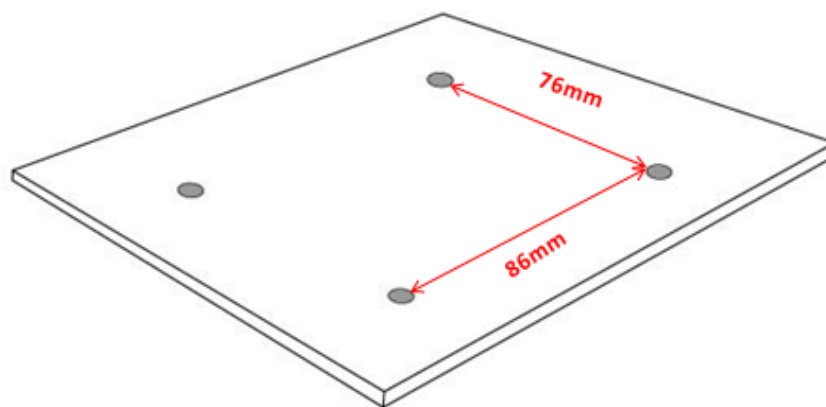


Figure3-7 Drill Holes on the Ceiling

Step 2: Position the mounting holes of the bracket over the pilot holes on the ceiling. Insert bolts into the pilot holes through the mounting holes and tighten the bolts with nuts, as shown below:

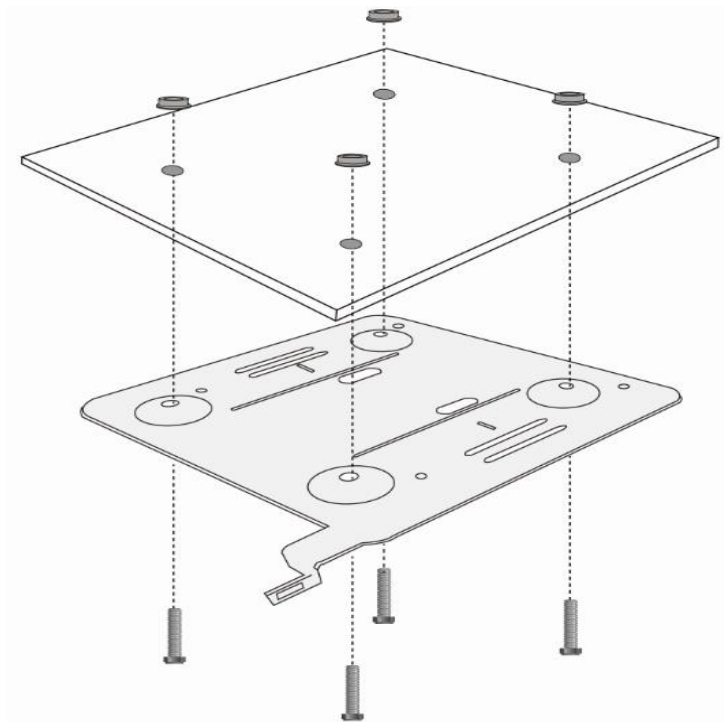


Figure3-8 Installation of the Ceiling-Mounting Bracket

Step 3: Connect the access point to a switch using Ethernet cable(if the AP is powered through power supply port, the power supply port should be connected before this step)

Step 4: Refer to Step 5 in the **Mounting Access Point on a Wall** section to install access point.

### 3.3.3 Placing Access Point on a Desk

Access point should not be placed on metal surface but on a flat and far-reaching surface where there is no obstruction so as to receive a better wireless signal.

## 3.4 Powering Access Point & Checking Status

S400 wireless access points support 802.3af/802.3at PoE and 12V/1.5A power supply. You can choose a power supply method according to the actual environment.

If the access point can operate properly, the status indicator (in blue) on the front panel will stay on in 30 seconds after the access point is powered. If the network connection is abnormal, refer to the table below:

Status indicator flickering-Causes

Rule of Flickering	Causes
1,0,1,0,1,0	Fails to obtain IP address.Vlanif1 IP address: 0.0.0.0
2,0,2,0,2,0	Gateway is unreachable due to changes to gateway address.
3,0,3,0,3,0	Controller is unreachable.
1,0,2,0,1,0	The hardware model is not supported by controller.
2,0,1,0,2,0	Fails to discover controller or access point is not approved by the discovered controller
1,0,2,0,3,0	Fails to establish control tunnel.
1,0,1,0,3,0	Fails to establish data tunnel.

1,0,2,0,1,0 indicates the status indicator flickers once every other second, but flickers twice in the 3rd second.

### 3.5 Connecting Access Point to Network

To connect access point to the network, connect the uplink Ethernet port on access point to a switch using an Ethernet cable.

#### How to place and bind network cables:

- ✓ Use Cat 5 network cable. When the length of power cable connected to PoE port exceeds 80 meters, Cat 6 network cable is recommended but the length of network cable should not exceed 100 meters. The two ends of the network cable should use standard RJ-45 connector.
- ✓ After the network cable is plugged into the Ethernet port on access point, fix the network cable to ensure reliable and stable connection.
- ✓ Specifications, route, cross-section area and location of network cable layout should be designed in advance. Cables should be placed neatly without any damage to its surface.
- ✓ Network cables should be bent with the bend radius greater than 60mm. Avoid damage to wire's insulation layer. Network cables should be placed properly for easy maintenance and extension.
- ✓ After cabling, network cables must be bound without intersections, and each cable should be kept straight, the distance among cables should be appropriate.

- ✓ Network cables should be bound according to cable category.
- ✓ Cables should be bound neatly. When bending bundled cables, you should consider a relatively large bend radius to avoid damage to the inner core of cables.

**Official Site:** <http://www.sundray.com>

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