

# Sundray AP-S400 Wireless Access Point

## Product Overview

SUNDRAY AP-S400 is a new-generation indoor intelligent dual-frequency wireless access point developed by SUNDRAY. AP-S400 is embedded with an intelligent 2\*2 MIMO matrix antenna. It supports dual frequencies of 802.11a/n and 802.11b/g/n and the maximum transmission rate can reach up to 600 Mbps. A higher wireless access rate and wider wireless coverage are provided. The maximum transmission rate of 600 Mbps can easily meet the bearer requirements of all types of wireless services such as video and voice multimedia services. Intelligent RF, QoS and seamless roaming are also provided.

AP-S400 adopts the GE port for uplink and breaks the restriction of 100M uplink rate, ensuring high-speed wireless transmission. Both local power supply and PoE remote power supply are supported. The power supply mode can be flexibly selected based on the actual environment. In cooperation with the SUNDRAY NAC series controllers, AP-S400 brings unrivaled quick and secure access experience to users.

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



## Product Features

### Top-speed wireless network access

#### ➤ Dual-frequency high-speed access

SUNDRAY AP-S400 series products comply with the 802.11a/b/g/n standard and are embedded with an intelligent antenna matrix. Both of the 2.4 GHz RF and 5 GHz RF provide a transmission rate high up to 300 Mbps and the system transmission rate can reach 600 Mbps, thereby providing high-performance wireless access services in terms of coverage scope, access density and operation stability.

#### ➤ GE uplink

A 10/100/1000Base-T Ethernet port is used as the uplink port and a GE port is used for uplink, breaking the restriction of traditional 100M transmission rate. The wired port is no longer the bottleneck of the wireless access rate.

➤ **QoS guarantee**

SUNDRAY AP-S400 supports different QoS levels. It supports air interface resource management based on applications, SSIDs or STAs to ensure that air interfaces are appropriately allocated and that the data of important SSIDs and applications is transmitted in preference. Transmission priorities can be defined for different service data through 802.11e/WMM. This ensures differentiated QoS levels.

➤ **Seamless roaming for L2 and L3**

SUNDRAY AP-S400 works with SUNDRAY wireless controller to implement seamless roaming for L2 and L3. When a wireless user roams, the IP address and authentication status remain unchanged. The terminal viscosity prevention function is provided to intelligently guide an STA to the optimal AP, increasing the roaming speed.

➤ **Terminal dragging prevention to ensure high-speed network access for all users on the entire network**

Terminal dragging prevention involves enabling terminals with different negotiated rates to occupy the identical wireless channel time by using the time fairness algorithm. This avoids problems of low wireless access speed, high delay and low network performance caused by low access rates of some terminals.

➤ **Intelligent load balancing**

In the case of high-density wireless users, SUNDRAY AP-S400 works with SUNDRAY wireless controller to implement intelligent load balancing based on the user quantity, traffic, and frequency band for the purpose of improving the bandwidth usage, thereby ensuring high wireless access speed for users. Frequency band-based load balancing enables 2.4/5 GHz dual-frequency terminals to access the 5 GHz frequency band in preference.

➤ **Intelligent RF to reduce wireless interference in an all-round way**

The work channel and transmit power of the wireless access point are adjusted automatically and interference from the surrounding environment is detected in real time to reduce radio interference in an all-round way and to improve the overall service quality of the wireless network.

## **All-round security protection**

➤ **Multiple easy-to-use and secure authentication modes**

Multiple flexible, easy-to-use and secure user authentication modes are available. 802.1x, portal, SMS, WeChat, and QR code authentication modes are provided with the support of SUNDRAY wireless controller to meet network deployment requirements in environments including enterprises, schools, shopping malls, hotels, and financial organizations.

➤ **All-round wireless security protection**

With the support of SUNDRAY wireless controller, AP-S400 provides a wide range of wireless security protection functions including WIDS/WIPS, illegitimate AP detection and workaround, ARP spoofing prevention, and DOS attack prevention, constructing a truly secure and reliable wireless network for users.

➤ **Timed turning off of RF for network security and environment protection**

RF can be turned off and on based on time periods. The wireless network can be automatically turned off at nights and weekends to prevent malicious users from intruding the network and to reduce energy consumption of the equipment.

## **Flexible network deployment**

➤ **Gateway function to implement remote deployment across the public network**

SUNDRAY AP-S400 supports the NAT gateway function and provides the functionality of the DHCP server and DNS proxy. When remotely deploying the wireless network for a branch or outlet, the PPPoE dial-up function provided by AP-S400 can be used to directly access the Internet, lowering the network construction

costs.

➤ **WDS wireless relay/bridge**

AP-S400 supports WDS and wireless relays/bridges in point-to-point or point-to-multipoint mode to resolve deployment problems like deployment inconvenience. The WDS function is used to relay and amplify signals for the purpose of extending the wireless coverage scope. The Ethernet port of a wireless relay AP can be connected to a wired switch to extend the wireless coverage scope and wired LAN.

➤ **Local forwarding**

With the local forwarding technology, AP-S400 can directly forward data that features high real-time transmission requirements, delay sensitivity, and large amount over the wired network without passing the wireless controller. This alleviates the traffic load of the wireless controller significantly and breaks the traffic restrictions of the wireless controller.

➤ **Virtual AP technology**

A maximum of 32 ESSIDs can be provided by using the virtual AP technology. Different SSIDs use different authentication modes and have different network access permission. The SSIDs are isolated from each other. L2 isolation can be implemented for terminals that use the same SSID on a subnet or VLAN to ensure user data security.

➤ **Chinese SSID**

Chinese SSIDs are supported. An SSID with a maximum of 32 characters can be specified. An SSID can also contain both Chinese and English characters. Individualized SSIDs are available for shopping malls or enterprises to improve discrimination.

## Technical Specifications

### Hardware specifications

| Product Specifications of SUNDRAY AP-S400                 |  |
|---|--|
| Hardware specifications                                   |  |
| Item  | Description  |
| Model   | AP-S400  |
| Weight  | 0.35kg   |
| Dimensions (excluding antenna interfaces and accessories) | 196 x 196 x 45 mm                                    |
| Ethernet port   | 1*10/100/1000 Mbps                                   |
| Console port  | 1 RJ45 port  |
| PoE   | 802.3af/802.3at power supply supported               |
| Local power supply  | 12 V/1.5 A   |
| Transmit power  | ≤ 20 dBm   |
| Power adjustment granularity                              | 1 dBm  |
| Power range   | 1 dBm to the value specified by national regulations |
| Power consumption   | < 13 W   |

|                                |                                     |
|--------------------------------|-------------------------------------|
| Antenna                        | Embedded intelligent antenna matrix |
| Reset/restore factory settings | Supported                           |
| Status indicator               | 1 status indicator                  |
| Operating/storage temperature  | -10°C to +55°C or -40°C to +70°C    |
| Operating/storage humidity     | 5%-95% (non-condensing)             |
| Protection level               | IP 41                               |
| MTBF                           | > 250000 H                          |

## Software specifications

| Software specifications |  |  |
|-------------------------|--|--|
| Item                    |  | Description  |
| Model                   |  | AP-S400  |
| RF                      | MIMO   | 2*2:2  |
|                         | Maximum transmission speed of a single frequency | 2.4 GHz: 300 Mbps<br>5 GHz: 300 Mbps   |
|                         | Operating frequency band                         | 802.11b/g/n: 2.4 GHz to 2.483 GHz<br>802.11a/n: 5.725 GHz to 5.850 GHz   |
|                         | Modulation technology                            | OFDM: BPSK@6/9 Mbps, QPSK@12/18 Mbps, 16-QAM@24 Mbps, 64-QAM@48/54 Mbps<br>DSSS: DBPSK@1 Mbps, DQPSK@2 Mbps, CCK@5.5/11 Mbps<br>MIMO-OFDM: MCS 0-15            |
|                         | Channel rate                                     | 802.11b: 1, 2, 5.5, 11<br>802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54<br>802.11n: 6.5 to 300 (MCS0 to MCS15)<br>802.11n high throughput support: 20/40             |
|                         | Channel quantity                                 | 802.11a, 802.11n (compatible with 802.11a): 5 channels<br>802.11b, 802.11g, 802.11n (compatible with 802.11b/g mode): 13 channels                              |
|                         | Manual and automatic channel adjustment          | Supported  |
|                         | Automatic power adjustment                       | Supported  |
|                         | Manual power adjustment                          | The AP supports manual power adjustment with an adjustment granularity of 1 dBm. The power scope is from 1 dBm to the value specified by national regulations. |
|                         | Timed turning on or off of RF                    | RF can be turned on or off based on the specified time period.   |
|                         | Coverage black hole detection and compensation   | Supported  |
| WLAN function           | Maximum number of connected users                | 256 (maximum number of connected users of a single RF: 128)  |
|                         | Connected user quantity restriction              | Supported  |

| Software specifications |  |  |
|-------------------------|--|--|
|                         | Virtual AP   | 32   |
|                         | Chinese SSID   | Supported  |
|                         | SSID hiding  | Supported  |
|                         | Wireless relay/bridge  | Point-to-point and point-to-multipoint supported   |
|                         | User-, traffic-, and frequency band-based intelligent load balancing | Supported  |
|                         | Bandwidth restriction  | STA-, SSID-, or AP-based rate limiting is supported.   |
|                         | STA function   | Abnormal STA disconnection detection, STA aging detection, and STA statistic and status query are supported.   |
|                         | Link integrity detection   | Supported  |
| Security authentication | Authentication mode  | Pre-shared key authentication, portal authentication, 802.1x authentication, CA certificate authentication, WeChat authentication, SMS authentication, QR code authentication, temporary visitor authentication, and authentication exemption are supported.   |
|                         | Pre-shared key   | WPA-PSK, WPA2-PSK, WPA-PSK/WPA2-PSK hybrid authentication  |
|                         | Portal authentication  | Intelligent terminal type identification is supported. A page matching the terminal size is pushed to terminals. The page logo and displayed information can be customized. In addition, the verification, authentication interval, and reconnection authentication time thresholds can be set.  |
|                         | 802.1x authentication  | 802.1x one-key configuration and 802.1x perception-free authentication are supported. You only need to download the one-key automatic configuration tool at initial access and finish wireless network configuration quickly. This simplified network deployment significantly.  |
|                         | CA certificate authentication  | High-security certificate authentication can be implemented by using the CA certificate issuance center embedded into the controller, without the need to constructing a certificate server. Authentication by using a certificate imported from an external certificate server is also supported.   |
|                         | WeChat authentication  | After access the wireless network, a user can scan the QR code of the shopping mall or enterprise and follow the public account to access the Internet. The one-key follow function can be easily deployed without any code development. In WeChat authentication, a user can access the network by clicking a text message network access link or clicking the menu bar to view advertisements, or access the network via WeChat authorization. |
|                         | SMS authentication   | SMS authentication takes effect forever. That is, a user can directly access the network without authentication after being authenticated via SMS at initial access. This reduces the SMS costs and improves user experience.  |
|                         | QR code authentication   | After a visitor terminal accesses the wireless network, the terminal will automatically display a QR page. The approver scans the QR code of the visitor terminal via a cell phone and then the visitor can access the Internet. The visitor information is recorded in three dimensions:  |

| Software specifications |   |  |
|-------------------------|---|--|
|                         |   | approver, remarks, and MAC address of the visitor terminal. This ensures user traceability and network security.   |
|                         | Temporary visitor authentication          | A temporary user information management system is embedded. A temporary user can log in within the validity period and cannot after the validity period elapses. A secondary permission system for temporary account management is embedded and temporary accounts can be created and managed in this system. The QR code of a temporary visitor can be printed and the temporary visitor can scan the QR code to access the network. Temporary visitors can be grouped. |
|                         | Authentication exemption                  | Only a portal advertisement page is displayed. A user needs to click the login button to access the network without entering any account password or performing other authentication.  |
|                         | Data encryption                           | Data encryption via TKIP and AES (CCMP) is supported.  |
|                         | Blacklist and whitelist                   | Static whitelist and blacklist are supported.  |
|                         | User isolation                            | SSID-based isolation, automatic VLAN grouping, and user isolation of specified VLANs are supported.  |
|                         | WIPS                                      | Supported  |
|                         | Illegitimate AP detection and workaround  | Supported  |
|                         | ACL                                       | Account-, access location-, access terminal type- and SSID-based ACL policy assignment and management are supported.   |
|                         | Radius protocol                           | Supported  |
| Wireless optimization   | Application layer acceleration            | Acceleration can be performed for the application layer. The acceleration service application can help increase the transmission speed by 1.5 to 4 times.  |
|                         | E-schoolbag scenario optimization         | The transmission speed of multicast packets is increased, improving the effects of the E-schoolbag scenario in an all-round way.   |
|                         | Intelligent broadcast acceleration        | The transmission speed of broadcast packets is automatically increased based on the actual environment, thereby improving the transmission efficiency of broadcast packets.  |
|                         | Terminal dragging prevention              | This function aims to prevent the decrease of the entire network speed caused by low-speed terminals based on the time fairness algorithm.   |
|                         | Terminal viscosity prevention             | This function involves detecting STAs connected to APs and intelligently guiding the STAs to the optimal AP.   |
|                         | Prohibited access of low-speed terminals  | The speed of access terminals is limited. Weak-signal terminals with a speed lower than the specified value are prohibited from accessing the network. This improves the entire network speed.   |
|                         | High-density access scenario optimization | The response to broadcast probe requests is controlled for the purpose of optimizing high-density access scenarios.  |
|                         | ARP-unicast conversion                    | ARP broadcast packets are converted into unicast packets. This reduces the number of broadcast packets, thereby improving the transmission speed.  |

| Software specifications |  |   |
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|                         | Prohibited DHCP requests destined for wireless terminals | After this function is enabled, DHCP broadcast requests will be forwarded only to the wired network, instead of other wireless network. This improves the network throughput and performance of the wireless network. |
| Hotspot analysis        | AP-based access user quantity statistics                 | The number of connected users and change trends of each AP in the recent one day, one week, and one month can be measured.  |
|                         | AP-based network access traffic statistics               | The network access traffic and change trends of each AP in the recent one day, one week, and one month can be measured.   |
|                         | AP-based signal quality analysis                         | Statistic analysis for the signal usage, noise, retransmit rate, BER, and BER change trends of each AP is supported.  |
| AP deployment           | AC discovery mechanism                                   | L2 broadcast automatic discovery<br>L3 discovery based on configured static IP addresses<br>DHCP Option43 discovery<br>DNS domain name discovery  |
|                         | Cross-WAN and cross-NAT remote AP deployment             | Supported   |
|                         | webAgent   | Controller IP addresses can be dynamically discovered by using the webAgent technology. This avoids AP disconnection caused by unfixed controller IP addresses.   |
|                         | Tunnel encryption  | Supported   |
| L3 function             | NAT  | Supported   |
|                         | Network access mode                                      | PPPoE dial-up and static IP address   |
|                         | DHCP server  | Supported   |
|                         | DNS proxy  | Supported   |
| Relay bridge            | Relay mode   | Point-to-point and point-to-multipoint supported  |
|                         | Relay frequency band                                     | 2.4/5.8 GHz   |
|                         | Disable wireless network on relay frequency band         | Supported   |
|                         | Wireless backhaul service                                | Supported   |

## Order Information

| Model                         | Specifications  | Remarks   |
|-------------------------------|---|-----------|
| <b>SUNDRAY AP-S400 series</b> |   |           |
| AP-S400                       | AP-S400 intelligent antenna wireless access point supports 802.11a/b/g/n, dual frequencies of 2.4 GHz and 5 GHz, two streams, a maximum access rate of 600 Mbps, GE uplink port, PoE power supply, and local power supply (the PoE and local power adapter need to be independently purchased). | Essential |
| <b>Optional parts</b>         |   |           |
| AP power                      | External power adapter: 12 V/1.5 A  | Optional  |
| SI3200-08T-PWR-UN             | 8-port PoE switch that supports 802.3af/at  | Optional  |
| SI3200-24H-PWR                | 24-port PoE switch that supports 802.3af/at   | Optional  |



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