



上海智能网联汽车技术中心有限公司  
SHANGHAI INTELLIGENT AND CONNECTED VEHICLE R&D CENTER CO., LTD

# Sicv-Bluetooth positioning base station

## SICV-FAL0 2

### operating instruction

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- To the maximum extent permitted by law, the products described in this manual (including hardware, software, etc.) are provided "as is" and may be defective, faulty or faulty. We do not provide any express or implied warranty of any kind, nor do we indemnify against any special, incidental, fortuitous or indirect damages arising from the use of this manual or our products.
- Our company reserves the right to change the product design and specifications. Due to the development of technology, the

product design, function and technical indicators will be changed without further notice.

- The "Sicv" series of products (hereinafter referred to as "equipment") provided by our company are management auxiliary tools, which cannot replace the safety management system, measures and rescue plans for hazardous operations, nor can they replace the supervision system and measures in operation management.
- During the use of this product, please remind the operator not to reduce safety awareness due to the use of auxiliary tools, and check the equipment regularly. If there are any problems, please contact our company for repair or replacement in time. Contact information:info@icv-ip.com.

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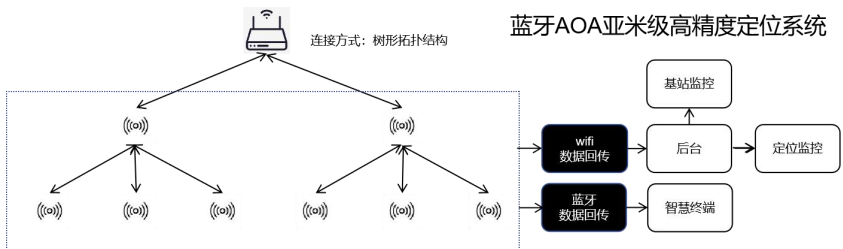
## 1. Overview

### 1.1 Product Introduction

The SICV-FALO 22.4GHz wireless LAN/Bluetooth device employs advanced AOA algorithms and standard Bluetooth Low Energy (BLE) technology. It features precise positioning, trajectory uploading, and status collection for indoor smartphones or vehicles. Additionally, it boasts high precision, high concurrency, low power consumption, high compatibility, and easy rapid deployment. This device can assist in achieving sub-meter level positioning for smartphones or vehicles, meeting the positioning requirements of engineering projects.

### 1.2 Typical applications

The typical deployment scenario and typical accuracy of this product are as follows:



### 1.3. Application scenarios

The application scenarios of this product are as follows:

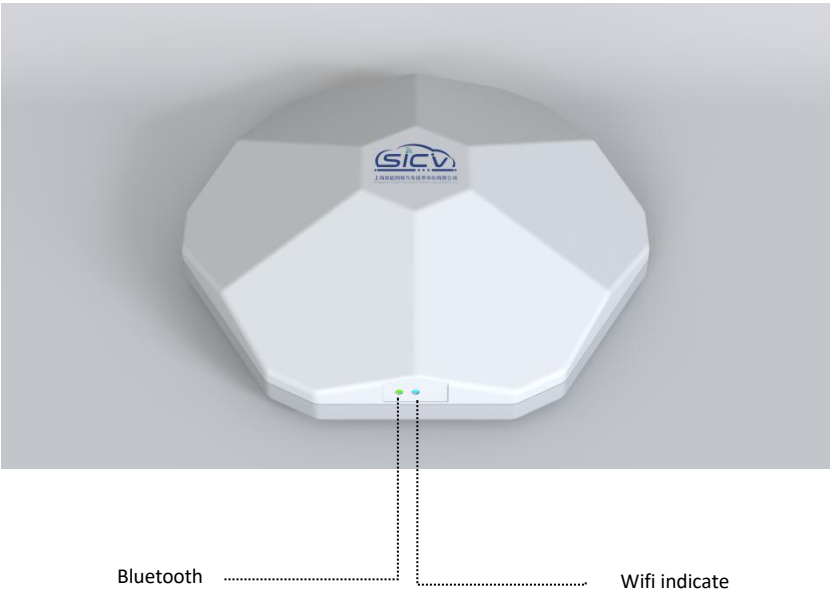
- G2 plus Smart parking garage: For parking garages and parking users, it has accurate indoor and outdoor integrated parking navigation, reverse car search and other functions, which help realize the coordinated development of vehicle end and field end, intelligent and refined parking services.
- L2+ assisted driving: It serves L2+ vehicles and parking users, supports the implementation of NOA assisted driving navigation function, and can well meet the needs of NOA and other single-vehicle intelligence and G2Plus parking lots. It can assist in improving the positioning ability of autonomous vehicles and the digital management ability of urban parking.

- Large supermarkets: It has the positioning function of large shopping malls, can provide navigation and guidance for consumers, and assist supermarket management departments to realize big data analysis of supermarkets and fine customer management.
- Exhibition Center: Provide a new exhibition experience through sub-meter positioning and navigation, and provide accurate location big data services.
- Smart scenic spots: Through mobile phone navigation to accurately locate scenic spots, and build a new mode of data value for smart cultural tourism positioning.
- Airport location service: can provide passenger location navigation, material location management, intelligent scheduling service.
- Warehousing logistics: It can provide intelligent warehousing, asset location visualization, one-click automatic inventory, illegal movement alarm services.
- Smart medical care: assist in realizing in-hospital navigation, patient care and other functions to ensure the safety of medical staff.

## **2. Panels and interfaces**

### **2.1. Base station front panel**

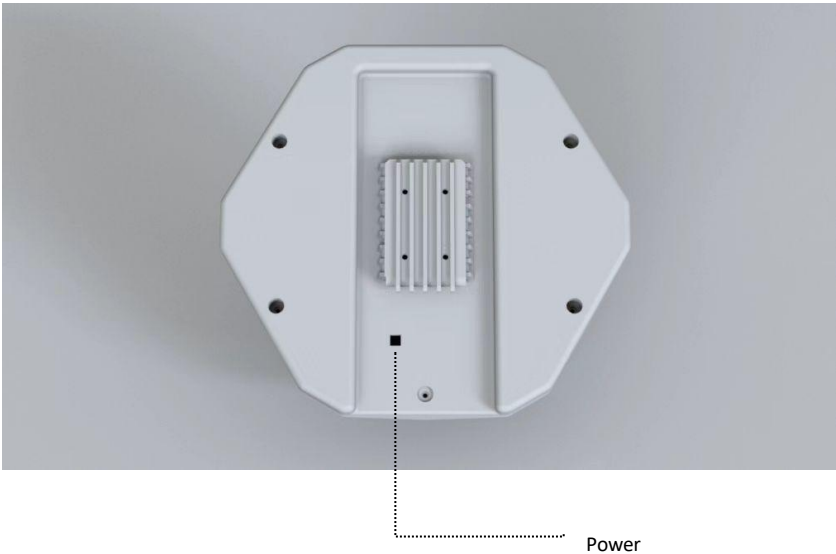
The schematic diagram and meaning of the front panel of the product are as follows:



number	meaning	Purpose description
1	Wifi indicate	The blue light is always off to indicate no communication or communication failure; the blue light is always on to indicate successful network configuration; the blue light is flashing to indicate access to the server
2	Bluetooth indicator	Green on and off means that the power is waiting for configuration; green long off means that the device is abnormal or power is cut off; green flashing (1Hz) means that the configuration is completed; green flashing (10Hz) means that the normal operation

2.2. Base station panel

The back panel of the Bluetooth AOA base station is used for installation and removal, as shown in the following figure:



number	meaning	Purpose description
1	Power interface	Power input interface

3. Base station installation and location testing

3.1 Base station installation

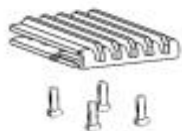
The base station installation steps are as follows:

- 1) Select the layout range and determine the reference point. Determine all the base station layout points, and determine the base station installation position



with the help of laser pointer.

2) Upon opening the box, check if the product number, name, quantity, and color match, and inspect for any damage or other quality issues on the products appearance. The maximum installation height for this product is 20m, typically using ceiling mounting. However, depending on the specific structural conditions of the buildings ceiling, suspension methods can also be used. Before installation, ensure that the connection structure can withstand a downward pull of at least 50 Newtons (N). Select the installation position and align with the corresponding mounting holes, ensuring all components are securely fastened. The installation method is shown in the following diagram:





Fix the base station mounting bracket to a specific position (according to the requirements of technical personnel) with expansion screws, and then fix the base station along the slot of the mounting bracket. Pay attention to correct operation during installation to avoid damaging the products. Note during installation:

- The base station mounting seat is fixed in a specific position (according to the requirements of technical personnel) with expansion screws, and then the base station is fixed along the sliding slot of the mounting seat. The assembly position is correctly fastened, and the whole product is solid and stable. The moving parts move smoothly, and the range of movement meets the requirements.
- The positioning base station collects and measures the direction of the tag signal, which has high requirements for the installation position and surrounding environment. Note that there is no electromagnetic

shielding/interference equipment (such as mobile phone shield/interferer, WiFi shield/interferer) around the installation position.

- The installation location of the base station should avoid objects that are prone to signal reflection, including large areas of metal and large screens.
- The positioning base station should be installed in the correct posture, facing down, and should not be installed vertically or tilted. The installed products should not be disassembled at will to avoid damaging the products and installation points.

## **4. Network connection**

### **4.1 Wireless network**

The base station and the server are connected via a router and wireless network.

### **4.2 Network configuration**

This product base station uses dynamic IP address to access the network, only supports DHCP function. The base station IP is automatically assigned, and the base station can automatically connect to the network after installation and configuration.

## **5. Product back-end management**

- 1) Positioning monitoring: It includes positioning map, tag management and base station monitoring functions. It can visualize the real-time trajectory of mobile objects (such as vehicles) in the scene and manage and record the status of base stations and their signal tags.
- 2) Alarm log: Maintain and manage base station alarm information.
- 3) System management: It includes user management and scene management functions, which can manage user account information and user data permission.

## 6. Precautions

- 1) The installation of this product should be carried out by professional service personnel and comply with local regulations. Install the product smoothly according to the installation instructions and arrows. Do not hang items on the base station to prevent it from falling down.
- 2) Do not use or store the base station near the source of fire or damp walls, and avoid direct sunlight and high temperature heat source. Please ensure that the base station is in a good ventilation condition and easy to dissipate heat, do not block any ventilation port of the product, and ensure its effective heat dissipation.
- 3) Use equipment that meets IEEE802) 3af standard to power the product. The product is designed for indoor use environment and should not be exposed to water or liquid spray to avoid short circuit causing fire or electric shock accident. Do not operate the base station product with wet hands to prevent electric shock.
- 4) Avoid placing the product in a humid, dusty, extremely hot, extremely cold, strong magnetic and corrosive environment. Do not place the product near other heat sources and electromagnetic sensitive equipment.
- 5) Do not strike or hit the base station strongly, and do not puncture or scratch the base station with hard objects. When cleaning this product, disconnect the power supply in advance and wipe it with clean and dry velvet cloth.
- 6) It is recommended to protect and transport the product with factory packaging. When moving the base station, each part should be protected with soft materials to prevent damage to the parts. Also, check that the moving parts are fixed to prevent the moving parts from accidentally touching the inclined parts and falling off to hurt people, and try to avoid repeated disassembly and assembly.
- 7) Regular maintenance of the product and the back-end control system to ensure its normal operation and accuracy.

- 8) Update system software and hardware regularly according to technology iteration and user requirements to provide better performance and functions.
- 9) If the equipment is working abnormally, please contact the manufacturer and do not disassemble or modify the equipment in any way. Please use the specified accessories and attachments.

## 7. Fault analysis

- 1) If there is a deviation in the wall seam and the installation is unstable, locate the uneven area and use cardboard to pad or adjust it.
- 2) If the indicator light does not illuminate, it indicates a broken circuit or damaged light; check the wiring or replace the light.
- 3) If the moving parts do not open smoothly, add lubricating oil to the guide rail, adjust the guide rail, and tighten the screws securing the guide rail. If the moving parts or assembly structure are loose, check whether the mounting screws are tightened.

## 8. Basic specifications

Product name: Sicv Bluetooth positioning base station

Product model: SICV-FAL0 2

Horizontal positioning error: no more than 0.3m

Vertical positioning error: distinguishable floors

Protocol standard: Bluetooth4.2 and above

Position update frequency: 10HZ

Positioning delay:  $\leq 500\text{ms}$

Band range: 2400MHz~2483.5MHz

Network interface: WIFI communication

Power supply mode: 12~24V DC power supply

Upgrade method: OTA

Installation method: ceiling, maximum installation height 20m

Size and weight: 306mm x 306mm x 90mm, 800g

Working temperature: -20℃~70℃

Working humidity: 10%~90% no condensation

## **9. After-sales service**

1) If you find any defects with our products or have any recommendations, please fill out the "Product Quality Feedback Card" and contact our authorized dealers promptly. You can also contact us directly; we will serve you wholeheartedly. 2) Our products come with a one-year free warranty under suitable conditions and proper usage. 3) After the warranty period, if damage occurs due to improper transportation, use, or maintenance, we offer paid services. 4) Our samples and special offers are not covered by the warranty. 5) Damage to products caused by irresistible factors (such as earthquakes, floods, fires, wars, etc.) is not within our responsibility.



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#### FCC Warning

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

#### Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.