User Manual

Brand: SKS

Item: Wireless Motion Sensor

Model: SPIR-10-1

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1. Product Introduction

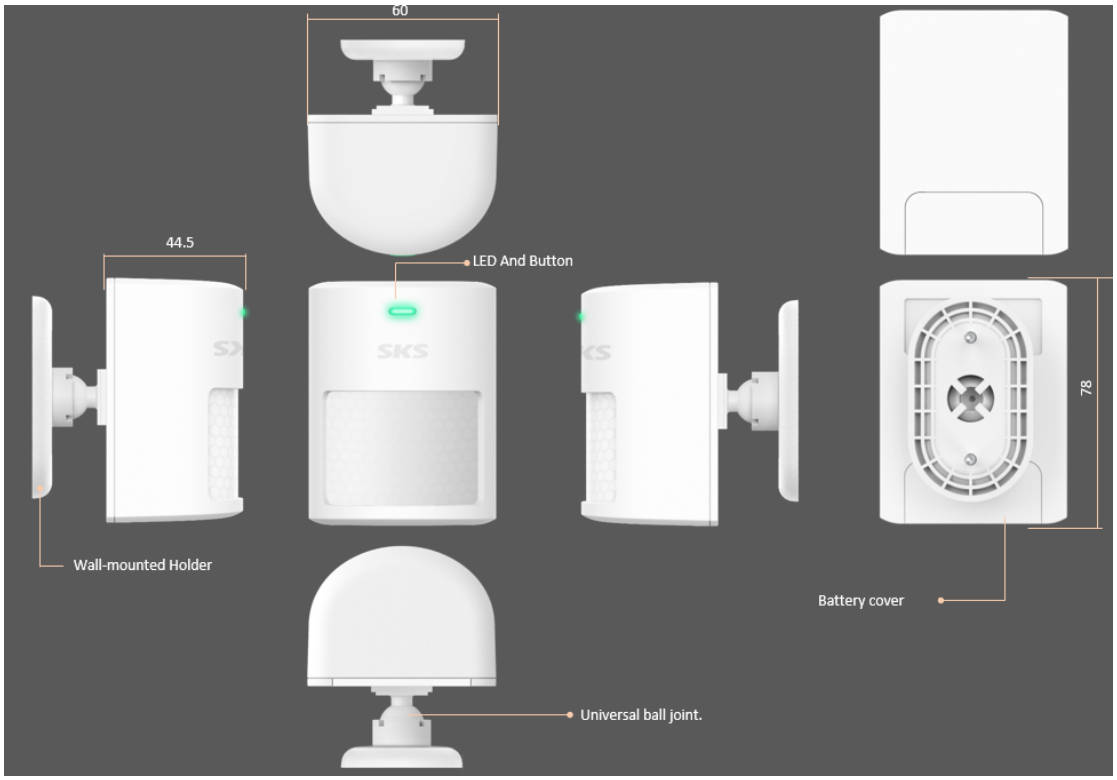
1.1 Product Overview

This product includes one passive infrared area and a viridian LED indicator. It utilizes the LoRaWAN protocol as the communication medium and is powered by a single 3V CR123A battery.

1.2 Product Features and Specifications

- RF Frequency: AS923-1, US915
- Communication Distance: >2KM (open area)
- Operation Voltage: 2.5V~3.3V DC
- Average Operating Current: <50μA
- Sleep Current: <20μA
- Operating Temperature: -10°C to +55°C
- Storage Temperature: -30°C to +60°C
- Relative Humidity: ≤90%
- Product Dimensions: 60 × 78 × 70 mm
- Product Weight: 90g (exclude battery)
- Protocol Support: LoRaWAN V1.0.3 Class A & C
- Power Supply: Single 3V CR123A battery
- Interface: 1 tamper-proof switch, 1 network configuration button, 1 viridian LED indicator, 1 passive infrared area
- Battery Life: 3 years under normal operation (sending 50 triggers per day and heartbeat once every 30 minutes)

1.3 Product Overview



1.1 Packing List

Item	Quantity
PIR Sensor	1
Wall-mounted Holder	1
Double - sided Adhesive Tape	1
Screw Accessory Kit	1

2. Software Functions

2.1 Connecting the Device (OTAA Mode)

1. The user scans the QR code on the device using the app to add the device.
2. After installing the battery, the sensor immediately starts sending a join request,

the LED blinks once every 5 seconds for 60 seconds. It stops blinking after a successful join.

2.2 Heartbeat

1. The device reports a heartbeat packet every 30 minutes
2. The heartbeat interval can be modified via the gateway.

2.3 LED Button Function

The button function is triggered upon release. The device detects the duration of the button press:

- **0-2 seconds:** Send the status information. Check the network status after 5 seconds. If the device is in the process of connecting to the network, the LED will blink once every 5 seconds for 60 seconds until the connection is successfully established, then it will stop blinking. If the device has connected to the network and the current message is successfully sent to the platform, the LED will stay on for 2 seconds and then turn off. If the message fails to be sent, the LED will blink at intervals of 100 milliseconds on and 1 second off, and then turn off after 60 seconds.
- **More than 10 seconds:** Factory reset after 10 seconds.

2.4 Time Synchronization

After the device successfully connects to the network, it will complete the time synchronization process within the first ten packets (excluding packet loss tests) during normal data transmission and reception.

2.5 Packet Loss Test

- When the product is first installed and operated, after the time synchronization, a packet loss test will be carried out. A total of 11 data packets will be sent, including 10 test packets and one result packet, with an interval of 6 seconds between each packet.

- This product also allows commands to be issued via the APP. Once the product receives the command, it will start the packet loss test. This function enables the configuration of the duration of the packet loss test and the interval time between test packets.
- In the normal working mode, the product will also count the number of lost packets. Under normal circumstances, the result of the lost packet count will be sent additionally once every 50 packets.

2.6 Event Cache

When the sending of a triggered event fails, it will be added to the event cache queue. The cached data will be sent when the network is in good condition. The maximum number of cached data entries is 10.

3. Operating Instructions

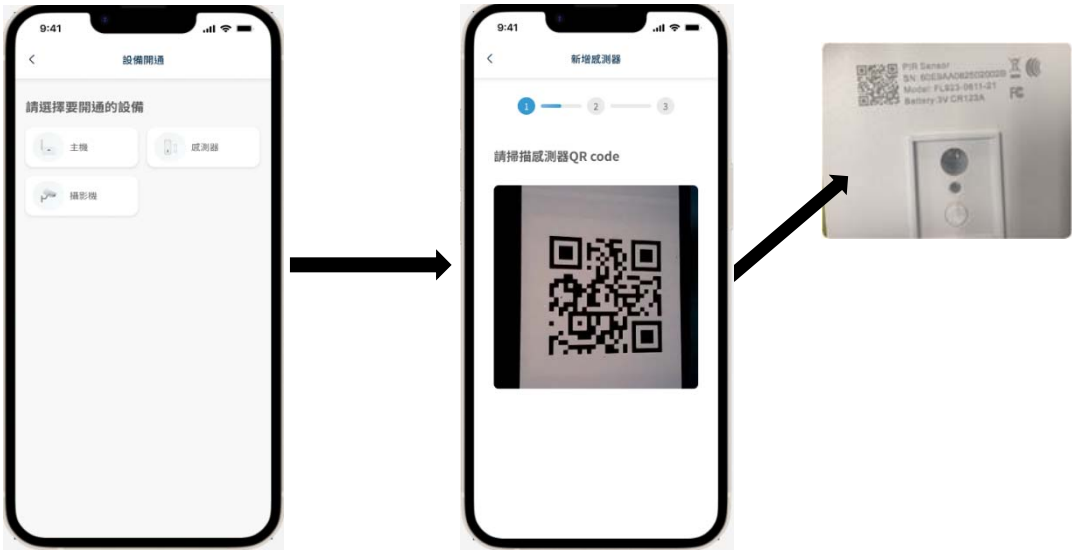
3.1 Startup Process

3.1.1 Power Check

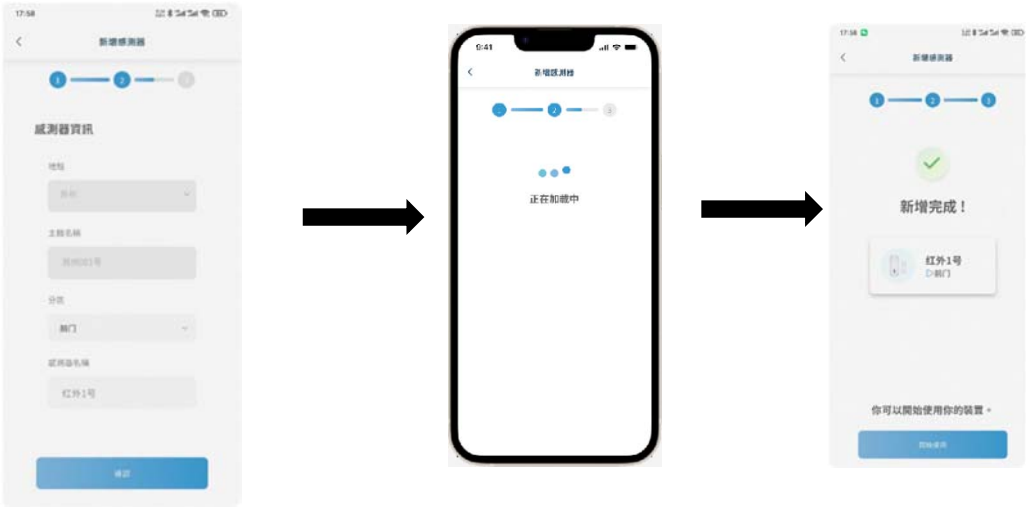
- Ensure the battery is correctly installed.

3.1.2 Device Binding

- A new device must be bound before use. This can be done by scanning the QR code on the label at the back of the device using a mobile phone.



- After scanning the QR code, enter the sensor information to complete the binding process. The mobile phone will display a "Device Added Successfully" screen.



- Once the device is added, wait approximately 1 minute before use. (After a successful connection, the heartbeat packet will be sent every 5 seconds for a total of 10 times.)

3.2 Operating Process

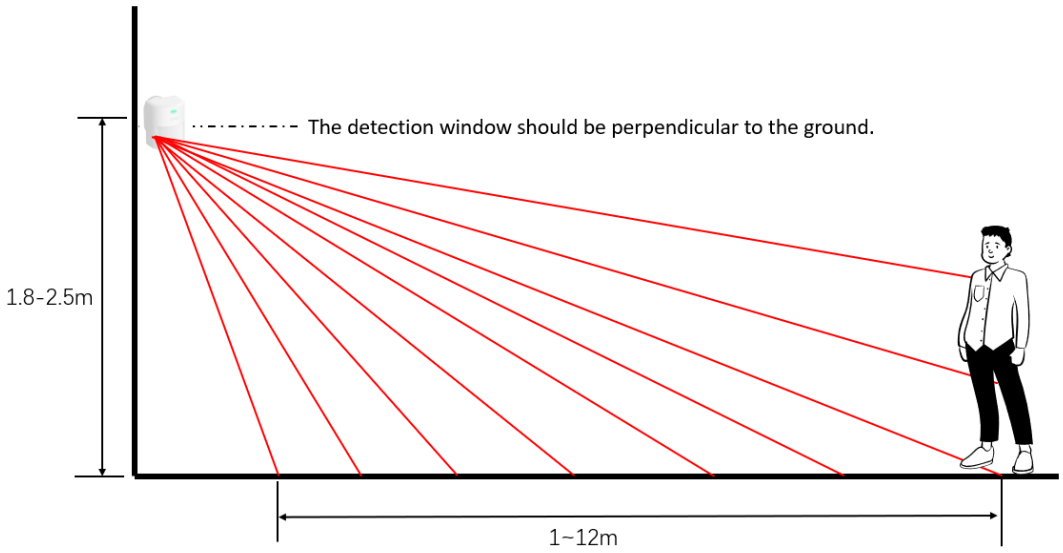
- When the infrared sensor detects the movement of a person, it will initiate an alarm report. At the same time, the LED light will stay on for 400 milliseconds.
- When the battery cover of the infrared sensor is removed, an alarm report will be initiated.
- The alarm information will be transmitted to the platform through the gateway, and relevant personnel at a remote location can also immediately receive the alarm reminder through the APP on their smartphones.
- Press the function button actively within 2 seconds, you can confirm the current network connection status of the sensor.
- Press and hold the button for more than 10 seconds, the sensor can be restored to its factory default state.

3.3 Button and LED

3.4 Upgrade

This product supports the standard LoRaWAN FUOTA (Firmware Over-the-Air) function. It generally takes about 10 minutes to complete the FUOTA upgrade.

4. Installation Instructions



Installation Illustration

- Installation location: Select the area that intruders are likely to cross for monitoring as much as possible. It is recommended that the installation position be 1.8-2.5 meters above the ground, with the optimal installation height being 2.3 meters. The installation angle should be perpendicular to the ground at 90 degrees to achieve the maximum detection coverage area. The detection coverage area to the left and right is a 90-degree fan-shaped area.
- Installation method: This product supports adhesive backing pasting and screw fixing.
- There should be no objects blocking within the product's detection range to avoid affecting the detection results.
- The installation location should be kept as far as possible from objects that cause temperature changes, such as air conditioners, electric fans, refrigerators, and ovens. Direct sunlight should be avoided.
- If there are buildings (such as walls, etc.) between the product and the gateway, the wireless communication distance will be shortened.

5. Troubleshooting

- If an abnormality occurs, please first confirm whether the battery is installed correctly and whether it has power.
- Remove and reinstall the battery. Ensure an interval of over 30 seconds between removal and reinstallation to fully drain the product's power.
- Press and hold the button for more than 10 seconds to restore the product to its factory settings and then reconnect it to the network.
- If the problem has not been fixed, please contact the dealer.

Warning：

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

For low-power radio frequency equipment that has obtained the inspection and verification certificate, companies, businesses, or users shall not, without approval, arbitrarily change the frequency, increase the power, or alter the characteristics and functions of the original design. The use of low-power radio frequency equipment shall not affect aviation safety or interfere with legal communications. In case of any interference being detected, the equipment shall be immediately stopped from use, and it can only be used again after the interference has been eliminated and resolved. The aforementioned legal communications refer to the radio communications carried out in accordance with the provisions of the Telecommunications Management Act. Low-power radio frequency equipment must tolerate the interference from legal communications or radio wave radiation electrical machinery and equipment used for industrial, scientific, and medical purposes.

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.

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.

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 & your body.