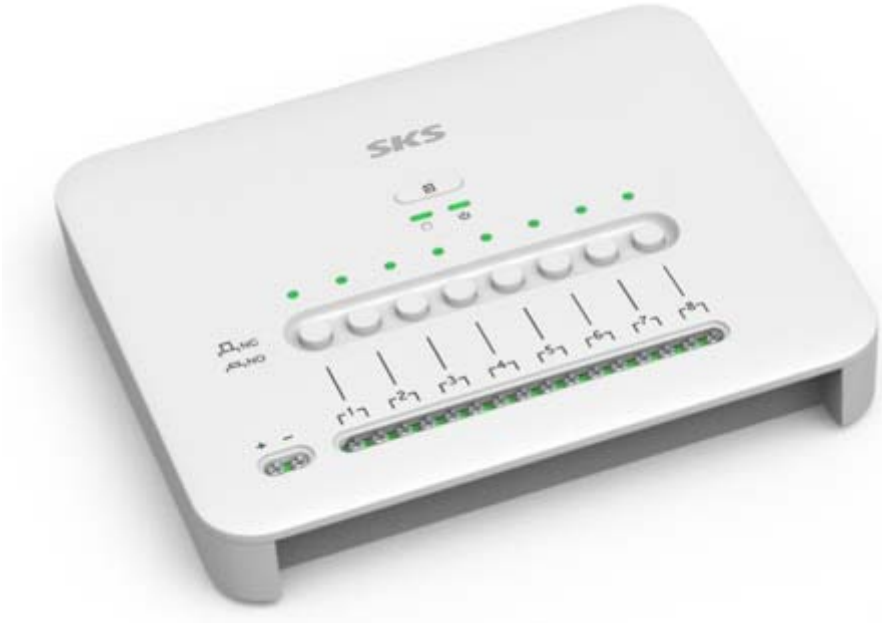
User Manual

Brand: SKS

Item: Wireless Digital Input Device

Model: SWDI-10-1



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1. Product Introduction

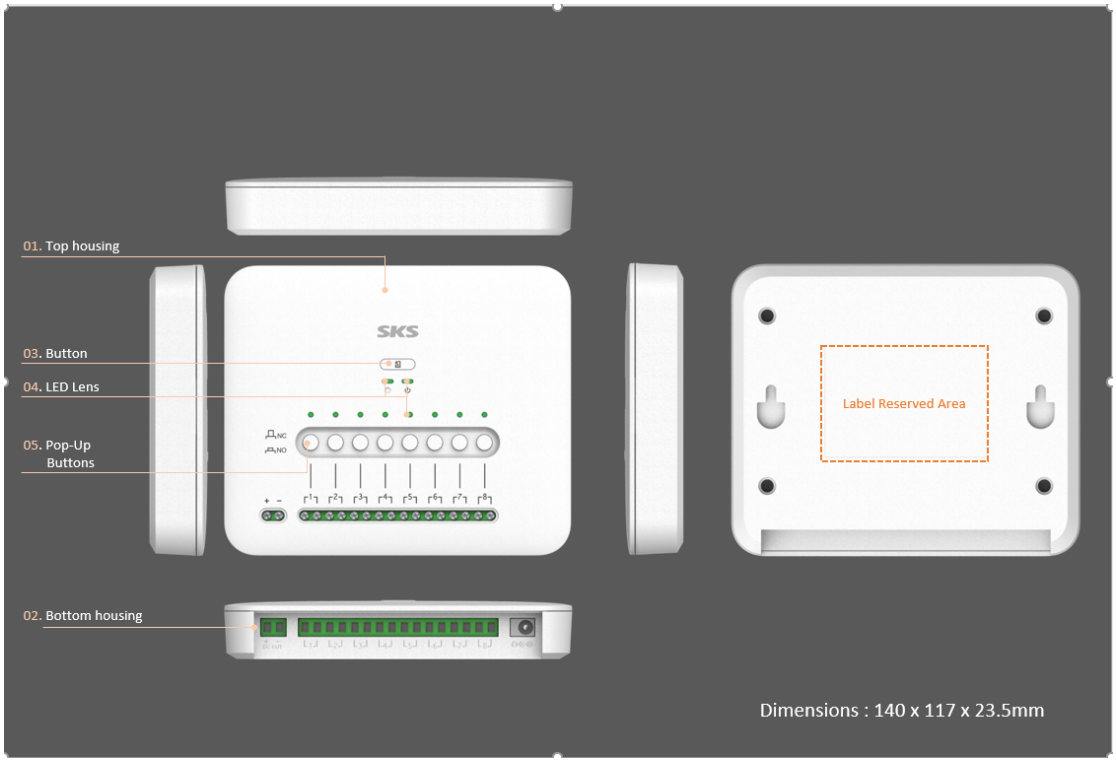
1.1 Product Overview

This product includes a 14V 1.5A DC power output interface, 8 dry contact input detection ports, 8 normally open/normally closed toggle switches, 8 sets of red-green dual-color interface status indicator lights, a turquoise power indicator light, and a turquoise network status indicator light. It uses the LoRaWAN protocol for communication and is powered by a 24V 1.5A power adapter.

1.2 Product Features and Specification

- RF Frequency: AS923-1, US915
- Communication Distance: >2KM (open area)
- Operation Voltage: 24V +/-5% DC
- Operation Current: 1.5A
- Operating Temperature: -10°C to +55°C
- Storage Temperature: -30°C to +60°C
- Relative Humidity: ≤90%
- Product Dimensions: 140 x 117 x 23.5mm
- Product Weight: 180g (The power adapter is not included)
- Protocol Support: LoRaWAN V1.0.3 Class C
- Power Supply: Power Adapter Specifications， AC Input 100~240Vac 50/60Hz, DC Output 24VDC 1.5A
- Interfaces: One power input interface, one set of power output interfaces, eight dry contact input detection interfaces, eight normally open/normally closed toggle buttons, one network configuration button, eight sets of red-green dual-color interface status indicator lights, one turquoise power indicator light and one turquoise network status indicator light.
- Voltage Output**:** Continuously outputs 14V DC ±0.3V with a maximum current of 1.5A.

1.3 Product Overview



1.4 Packing List

Item	Quantity
Wireless Digital Input Device	1
DC Power Adapter	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

2.3.1 Power Indicator Light

Once the device is connected to a power source, the power indicator light illuminates in turquoise.

2.3.2 Network Configuration Button and Network Status Indicator Light

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.

2.3.3 Normally Open/Normally Closed Toggle Switches and Detection Status Indicator Lights

- The 8 sets of toggle switches and detection status indicator lights correspond to the 8 groups of dry contact input interfaces respectively.
- When the button is pressed, the interface switches to the normally open (NO) mode; when the button is released, the interface switches to the normally closed (NC) mode.
- The detection status indicator light for the corresponding interface will illuminate in

turquoise when the interface is in a normal state, and will light up in red when an abnormality is detected in the interface.

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

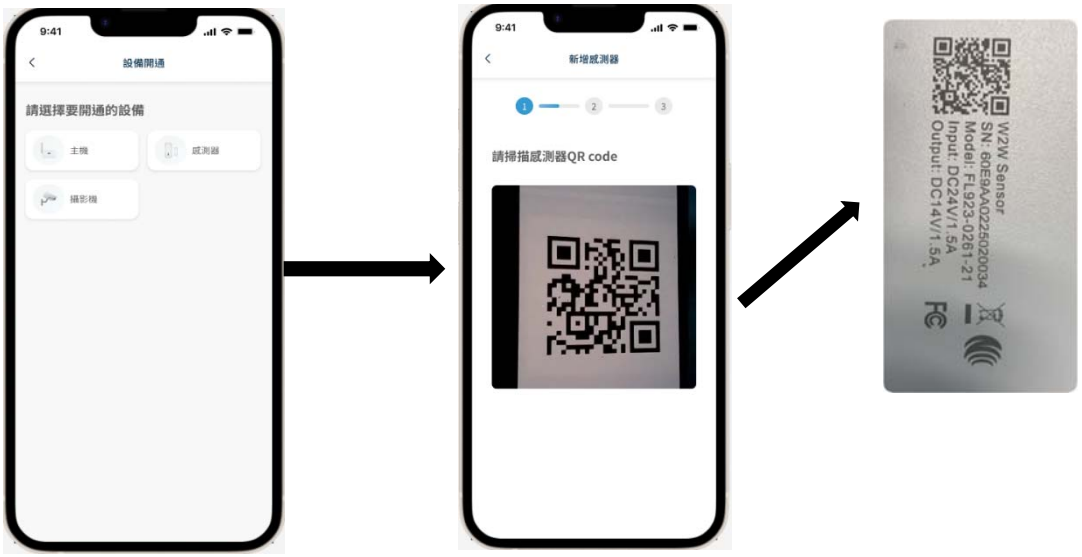
3.1 Startup Process

3.1.1 Power Check

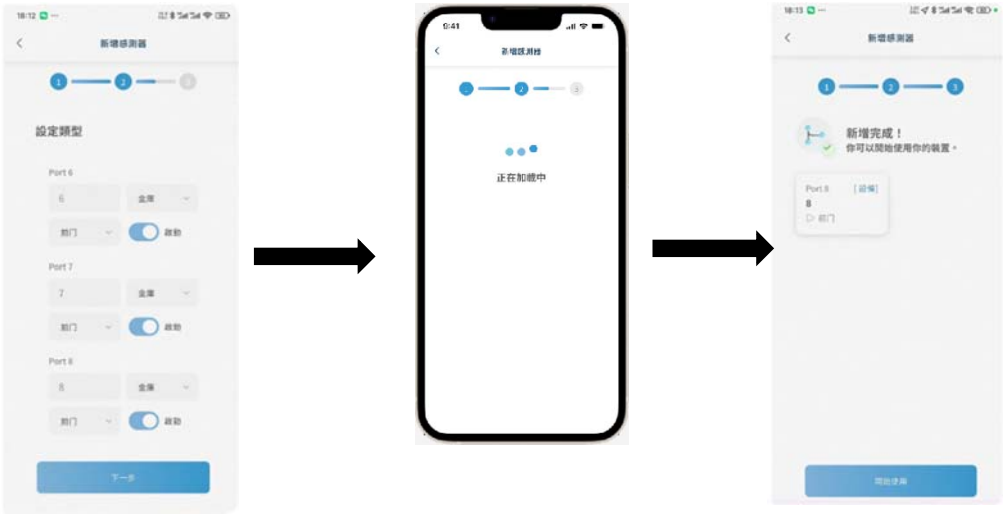
- Ensure the battery is correctly installed.

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.

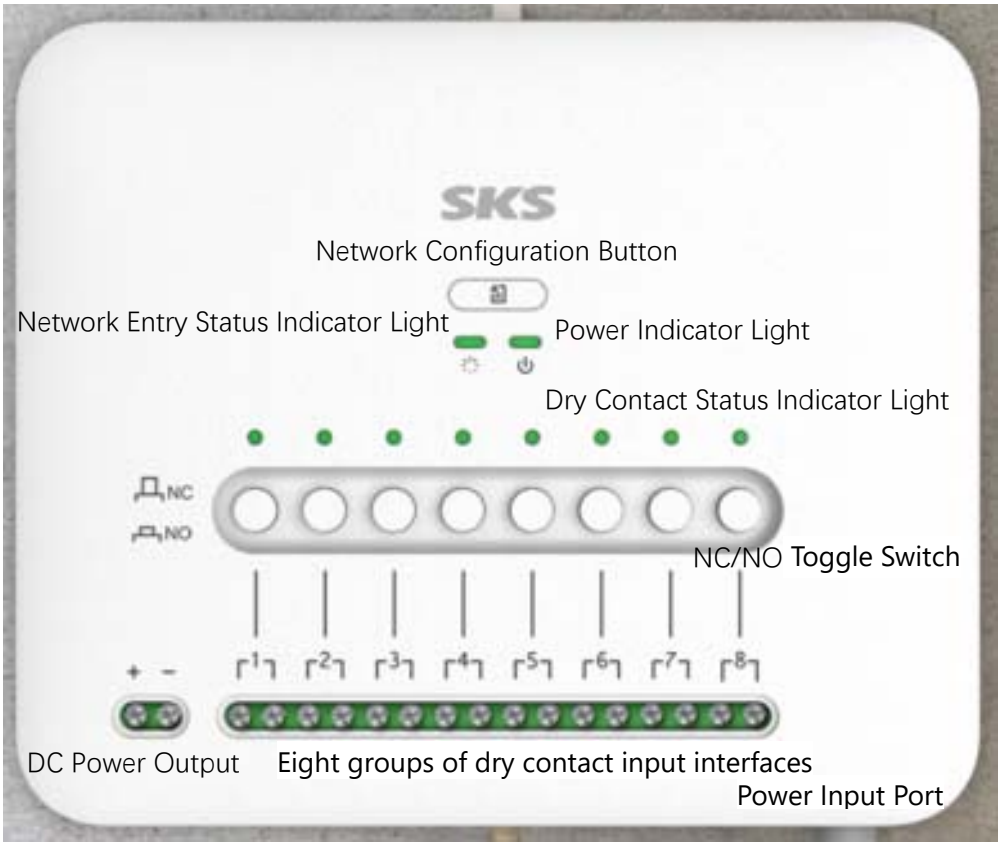


- Once the device is added, wait approximately 1 minute before use. (After a successful connection, the heartbeat packet will be sent every 5 seconds for a total of 10 times.)

3.2 Operating Process

- When the wired/wireless converter detects that the dry contact input signal does not match the setting, it will initiate an alarm report. At the same time, the network entry status indicator light (LED) will stay on for 400 milliseconds, and the dry contact status indicator light will change from turquoise to red.
- 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.

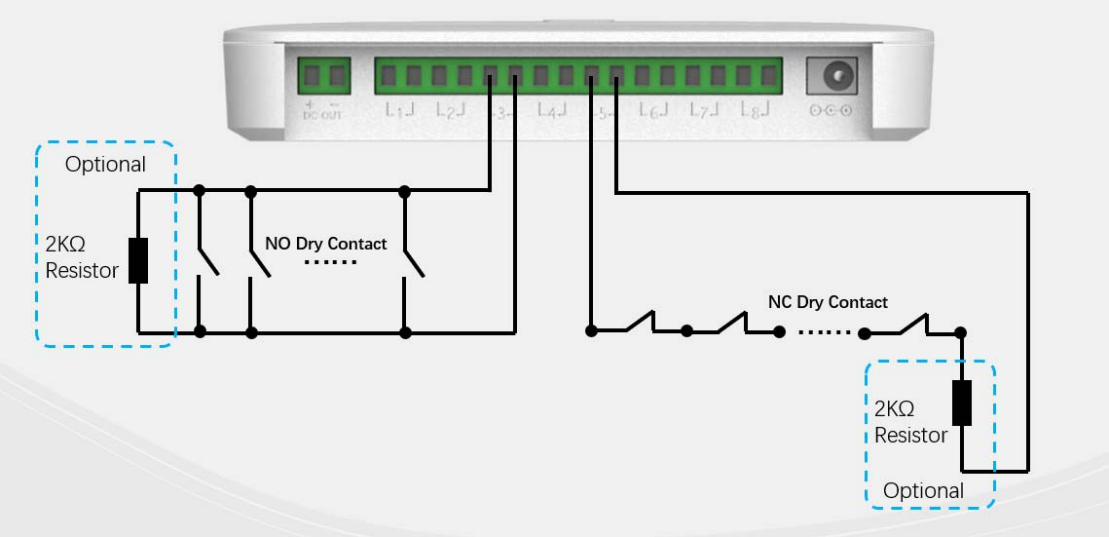
3.3 Button and LED



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



4.1 Dry Contact Input Wiring Instructions：

The diagram above illustrates two dry contact wiring methods.

- As shown in the left diagram above, in normally open (NO) mode, each NO dry contact device is allowed to be connected in parallel to the converter. A 2K ±500Ω resistor can be optionally connected in parallel at the terminal to prevent abnormal open circuits in the wiring from causing undetected triggering at the rear end.
- As shown in the right diagram above, in normally closed (NC) mode, each NC dry contact device is allowed to be connected in series to the converter. A 2K ±500Ω resistor can be optionally connected in series.
- The normal and abnormal conditions for the two scenarios are as follows:

Normally Open (NO) Mode						
	Normal	Report	NO Triggering	Report	cut off	Report
insert a resistance of 2KΩ	1.5V	0	0V	1	3V	2
There is no connection of a 2KΩ	3V	0	0V	1	-	-
Normally Closed Mode						
	Normal	Report	NO Triggering	Report	cut off	Report
insert a resistance of 2KΩ	1.5V	0	3V	1	0V	2
There is no connection of a 2KΩ	0V	0	3V	1	-	-

Report the Materials	LED	Status
0	turquoise green	Normal
1	red	trigger
2	red	The wire is cut off

4.2 Wiring Instructions for DC OUT：

Connect the wires according to the positive and negative polarities indicated on the housing. It can provide a DC power output of 14V with a maximum current of 1.5A. The voltage will be affected by the length and diameter of the wires. The measured voltage at the interface is 14V ± 0.3V.

5. Installation Precautions

- Installation location and method: Please choose wall - mounted or counter - top installation. Keep the device dry and avoid direct sunlight.
- Please set NC/NO correctly.
- Do not reverse - connect or short - circuit the power output wiring. The power cord should not be too thin.
- The circuit should not be too long. An overly long circuit may cause the equipment to make incorrect judgments.
- If there are buildings (such as walls, etc.) between the product and the gateway, the wireless communication distance will be shortened.

6. Troubleshooting

- If an abnormal situation occurs, please first confirm whether the power supply is normal.
- 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.

- Disconnect all load connections. After powering off, power on again to confirm whether the anomaly has been resolved.
- 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.