

PRODUCT SPECIFICATION

Brand: SKS

Item : Wireless Card Reader

Model: SCR-10-1

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1. Product Introduction

1.1 Product Overview

This product includes one network configuration button, a reset switch, an LED light strip, and a 1.6-inch LCD screen. It utilizes the LoRaWAN protocol for command transmission and is powered by two 18650 batteries.

1.2 Product Features & Specifications

- **RF Frequency:** AS923-2
- **Communication Range:** ≥2KM (open area)
- **Operating Voltage:** 5V DC
- **Operating Current:** <400mA
- **PCB Process:** Gold plating, double-sided board
- **Antenna Type:** Spring antenna
- **RoHS Compliance:** Yes
- **Operating Temperature:** -10~+55°C
- **Storage Temperature:** -20~+70°C
- **Relative Humidity:** ≤90%
- **Card Reading Distance:** 5mm
- **Product Dimensions:** 69 × 101 × 32 mm
- **Product Weight:** 250g (including battery)
- **Protocol Support:** LoRaWAN V1.0.3 Class A & C
- **Power Supply:** Two 18650 batteries / 5V 3A power adapter
- **Interface:** One reset switch, one tamper switch, one WPS button, LED light strip, 1.6-inch LCD screen, speaker
- **Waterproof Rating:** IP66
- **Battery Life (Fully Charged):** 1.5 years of normal operation

1.3 Data Transmission Protocol

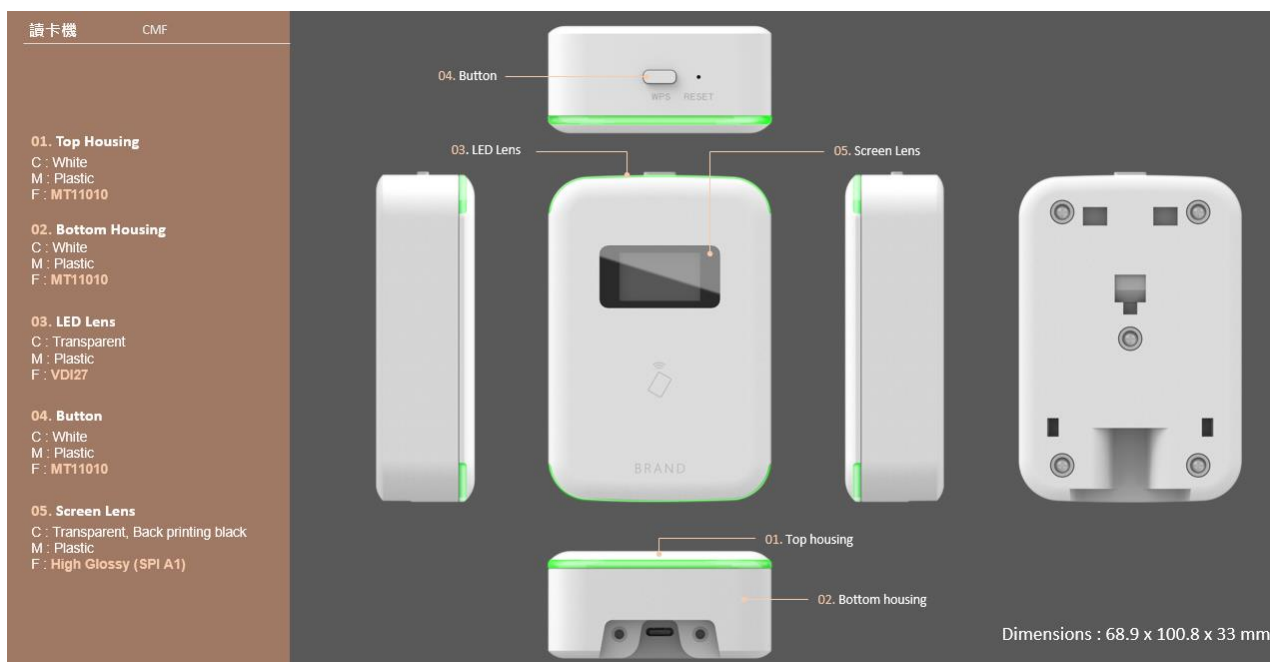
Business Data

	Field	Sensor Type	Software Version	Heartbeat Interval
Byte Count	1	1	2	7
	bit[5-0]			
Value Range	0x01~0xff 0x01 : Card Reader 0x02 : Wired-to-Wireless Converter 0x03 : Smoke Detector 0x04 : Door Sensor 0x05 : SOS 0x06 : PIR 0x07~0x3e : Reserved	0x01~0xFF	0x001E~0xFFFF	First 4 Bytes: 0x00 00 00 00 Represents Button Data ; 0x 00 00 00 00 00 00 01// Tamper switch released 0x 00 00 00 00 00 01 00// Short press (0-2 seconds) 0x 00 00 00 00 00 02 00// Pressed for 2-10 seconds 0x 00 00 00 00 00 03 00// Held for more than 10 seconds, triggers factory reset 0x00 00 00 00 00 0400-0x0464// Packet loss rate from 0% to 100% (0% indicates no packet loss) 0x 00 00 00 00 01 00 00// WPS short press (0-2 seconds) 0x 00 00 00 00 02 00 00// WPS long press (more than 10 seconds) to enter security mode ; 7-Byte Card Number Reported ;

Downlink Data Format

	Field	Sensor Type
Byte Count	1	10Byte
Value Range	0x01	0x 00 00 00 00 00 00 00 00 00 01// Activate Security Mode 0x 00 00 00 00 00 00 00 00 00 01// Deactivate Security Mode 0x 00 00 00 00 00 00 00 00 00 03// Activation Failed 0x 00 00 00 00 00 00 00 02 00 00// Represents Zone Number 0x 00 00 00 00 00 00 00 02 04 00// Represents Sensor (e.g., 04 = Door Sensor) 0x 00 00 00 00 00 00 01 00 00 00// Add Card 0x 00 00 00 00 00 00 02 00 00 00// Card Added Successfully 0x 00 00 00 00 00 00 03 00 00 00// Card Addition Failed

1.4 Product Overview



Item	Brand/Model/Specification
Battery	EVE/ICR18650/26V/2550mAh、3.6VDC
LCD	Shanghai Huaersheng Technology / LCM-T1D14HP-019 / 1.14 inch, 135(R.G.B)*240, display area: 14.86×24.91 mm, driver: ST7789P3
Speaker	OUNUO ACOUSTIC TECHNOLOGYCO/ON2209-4.2H-8Ω0.7W/φ22*09*4.2H 8Ω0.7W
Power Management IC	SOUTHCHIP / SC89601DQDLR / Input: 3.9~13.5V, I2C interface
Power Adapter	Dongguan Sunun Power/SA182V-050300U/5V3A
Reset/WPS Button	XKB/TS-1185EC-C-A-B-260gf/260gf 12V30Ma
Main Board Connector	JINGSHI ELECTRONIC TECHNOLOGY/0.5S-21-nPWB/50v0.5A
LED	EVERLIGHT/19-21SYGC/S530-XX/TR8/573nm
Boost Converter IC	Silergy / AN_SM7092 / Input: 0.85V, Output: 1.8~5.5V
Audio Power Amplifier	SHANGHAI AWINIC TECHNOLOGY/AW8010A
Buck Converter IC	Bill semi/BLPD8801/2.6V to 6V Input Voltage Range
Crystal Oscillator	JINGWEITE/CF4027M12020T1160054/27.120MHz
Battery Monitoring IC	CONSONANCE/CN301
NFC Chip	Fudan Microelectronics/FM17622-QNA-T-G/13.56MHz
FLASH	GigaDevice / GD25Q16CTIG / Interface: SPI, Storage Capacity: 16 Mbit, Frequency: 120 MHz
Lora wan Module	Dusun / HZZF-LW1-H / Frequency range: 860~928 MHz, Sensitivity: -138 dBm @ SF12 BW125K, Transmit Power: +2 to +22 dBm
NFC Antenna	Shanghai Jesoncom/6B003A-36
Crystal Oscillator	TDK/SF20WK32768B31T002/32.768KHZ 12.5PF ±10PPM
MCU	ST/STM32L431RCT6TR/Ultra-low-power Arm® Cortex®-M4 32-bit MCU+FPU, 100DMIPS, up to 256KB Flash, 64KB SRAM
SMD Inductor	Sunlord/WPN252012H4R7MT/4.7uH,252012 , +20%
Power Board Connector	JINGSHI ELECTRONIC TECHNOLOGY/0.5S-21-nPWB/50v0.5A

Power Board Connector	JINGSHI ELECTRONIC TECHNOLOGY/1.25T-1-nAB/150v1.0A
Type C	GLGNET/08643-00J059/DC5V8.02*11.66*5mm
Power Board Connector	XINFUER ELECTRONIC / 0.5-12-nPBX / 25 pin
Temperature Sensor	Foshan Qunhong Electronics / CWF56B-103F3435F-1006432-100 / R25=10K±1%, B25/85=3435K±1%
Battery Protection IC	Fortune/DW01+G
Overcurrent Protection	BrightKing/SMD1812B200TFT/
Tamper Switch	Xingkun Technology / TM-8764-1 / 30gf±10gf, 30V 0.1A

2. Software Functions

2.1 Device Connection

1. Users scan the QR code on the APP to add the device.
2. Once the sensor is powered on, it immediately starts sending heartbeat packets for 10 seconds, with the LED flashing at a **1Hz frequency**.

2.2 Standby Mode

1. The device reports a heartbeat packet every 30 minutes according to the "1.3 Data Transmission Protocol".
2. The heartbeat interval can be modified via the gateway.

2.3 Mode Switching

- When powered by an external power supply, the device switches to Class C mode.
- When powered by an internal battery, the device switches to Class A mode.

2.4 DEVEUI

Example: 60-E9-AA-05-24-10-00-01

FII MAC (3)	Device Type (1)	Production Date (2)	Serial Number (2)
60-E9-AA	05	24-10	0001

0x01 : Card Reader

0x04 : Door Sensor

0x07~0x3e : Reserved

0x02 : Wired-to-Wireless

0x05 : SOS

0x03 : Smoke Detector

0x06 : PIR

2.5 Tamper Switch

Factory Mode:

- If the tamper switch is released, the card reader enters **transportation mode**, disabling all button functions and switching to **low-power mode**.

User Mode:

- If the tamper switch is released, the card reader enters **alarm mode**, triggering a **buzzer alert** and sending an **LoRa alarm signal** to the gateway.

Normal Operation:

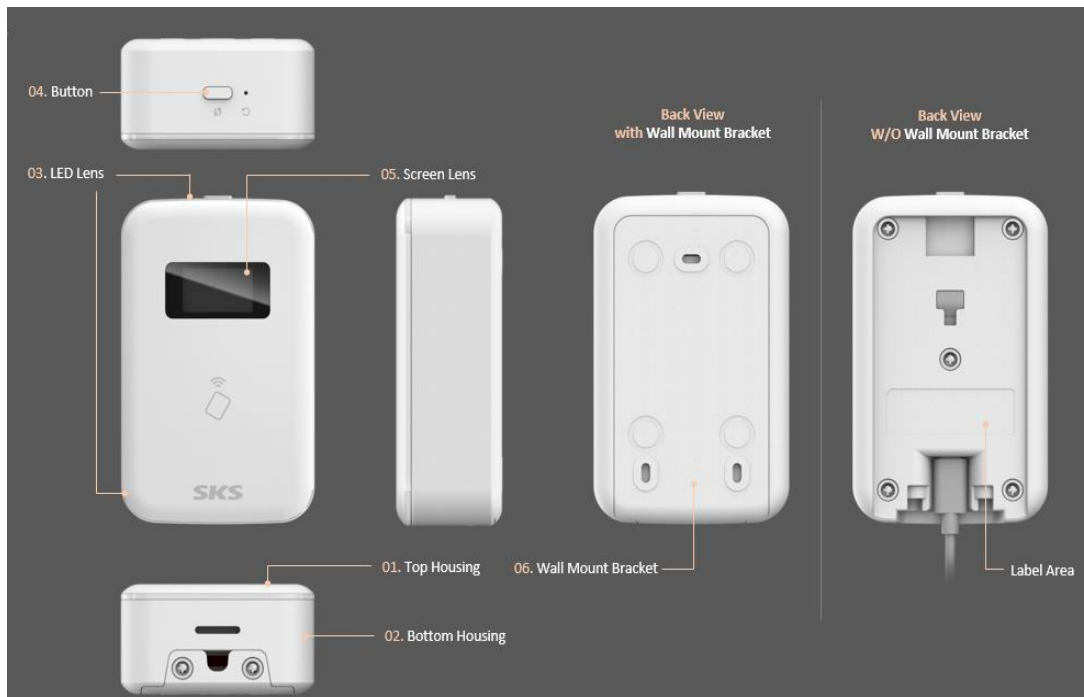
- When the tamper switch is pressed, the card reader functions normally.

2.6 LED

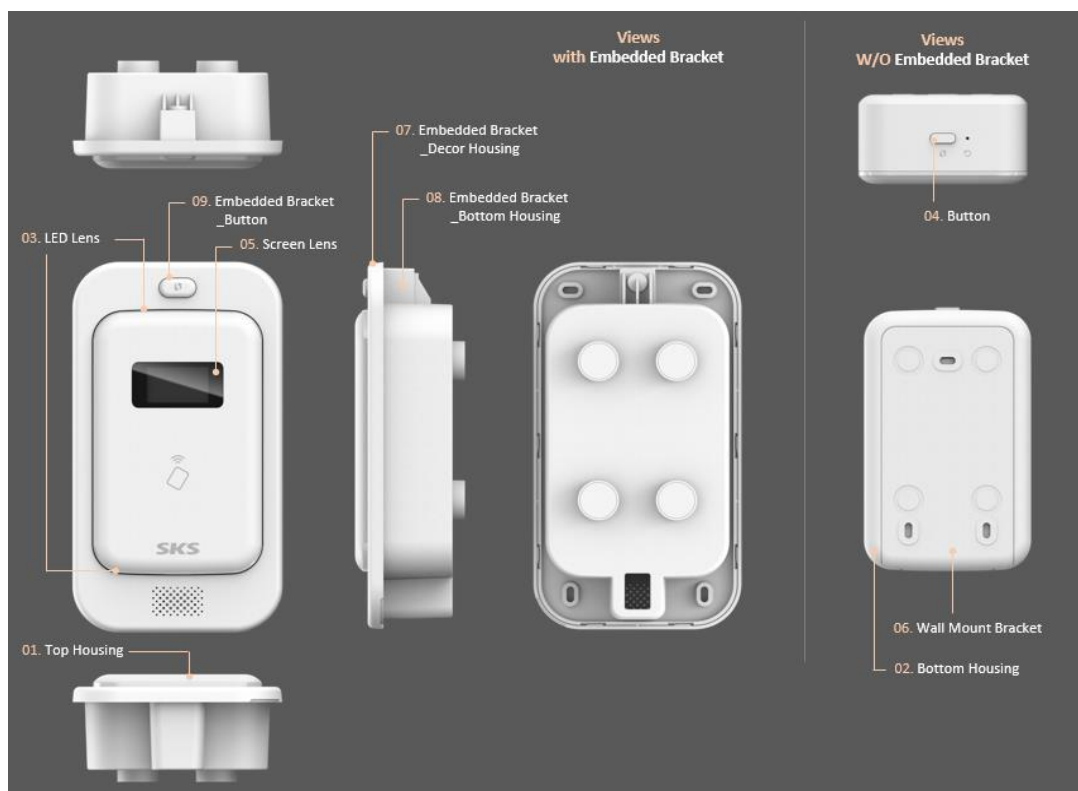
- **Startup:** The LED remains **on for 2 seconds**.
- **WPS Button Pressed:** The LED displays the current status. If the device is **online and functioning normally**, the LED stays **on for 2 seconds** and then turns off.

3. Appearance & Interface

Model A



Model B



4 User Manual

4.1 Startup Process

4.1.1 Power Check

- Ensure the **battery** is properly installed or the **power cable** is securely connected.

Upon powering on:

- **Display:** The startup screen will show the **SKS LOGO**.
- **Audio:** The device will play a voice prompt saying "Hello".

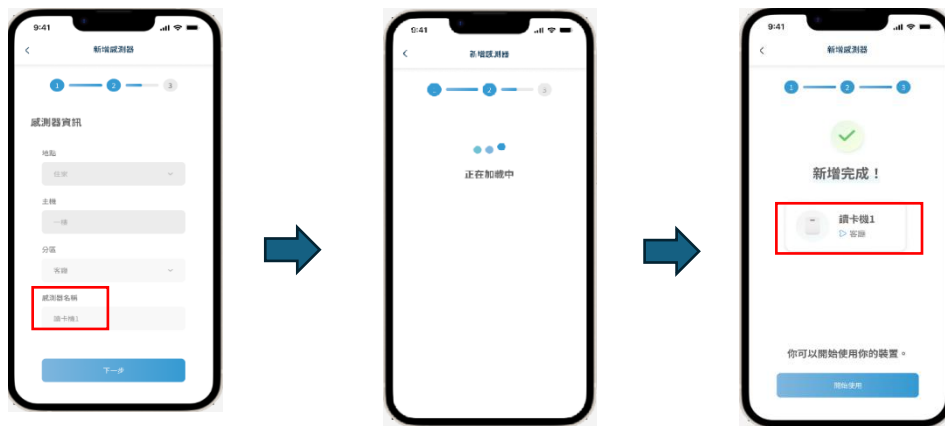


4.1.2 Device Binding

- Unused devices need to be bound first, which can be done through the following methods:
 - Scan the label on the back of the device using the mobile app.
 - Scan the QR code displayed on the device's screen using the mobile app.



- After scanning, you can enter the sensor information to complete the binding process. The mobile app will display the "Addition Completed" screen.



- After the addition is complete, wait for about 5 minutes before starting to use it. (Once connected, the heartbeat packet will be sent every 5 seconds for a total of 50 times.)
 - The device screen will display the screen



4.2 Standby Status

- Once the system has finished booting, it will enter the standby screen, which will show either a normal connection or an abnormal disconnection status.

4.2.1 Normal Connection

The screen displays: Connection method, signal status, power supply method, and time.

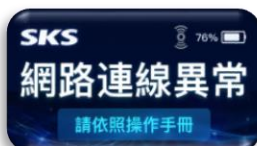
The screen remains always on:

- When battery-powered, the time display will last for 2 seconds.
- When connected to a long power supply, the display will remain on for 3 minutes.



4.2.2 Abnormal Disconnection

- The screen displays: Connection method, signal status, power supply method, and time.
- Voice prompt: "Hello, loop abnormality detected. Please check again or contact customer service."



4.3 Card Types

- When the user uses a magnetic key/door card to swipe the card reader, there are two possible scenarios: valid card and invalid card.

2.3.1 Valid Card::



2.3.2 Invalid Card



4.4 Security Status

- When the user swipes a valid card, the current security status will switch/update, and there are three possible scenarios:

2.4.1 Security Activated::

- Voice prompt: "Hello, the system has been successfully activated."
- The screen displays::



2.4.2 Security Deactivated:

- Voice prompt: "Hello, the system has been successfully deactivated."
- The screen displays::

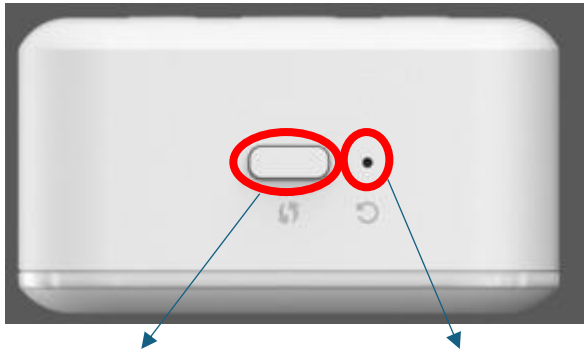


2.4.3 Security Activation Failed:

- Voice prompt: "Sorry, there is a connection issue with the card reader. Please use the app to operate."
- The screen displays:



4.5 Button Descriptions



WPS KEY

Reset KEY

WPS	0-2 seconds:	When connected to the network, the light will stay on for 2 seconds and then turn off, with no action on the screen. A button event will be sent to the gateway. When not connected to the network, it triggers the network connection.
	2-10 seconds:	When connected to the network, the light will stay on for 2 seconds and then turn off, with no action on the screen. A button event will be sent to the gateway. When not connected to the network, it triggers the network connection.
	Long press (10 seconds):	When connected to the network, the light will stay on for 2 seconds and then turn off, with no action on the screen. A button event will be sent to the gateway. When not connected to the network, it triggers the network connection.

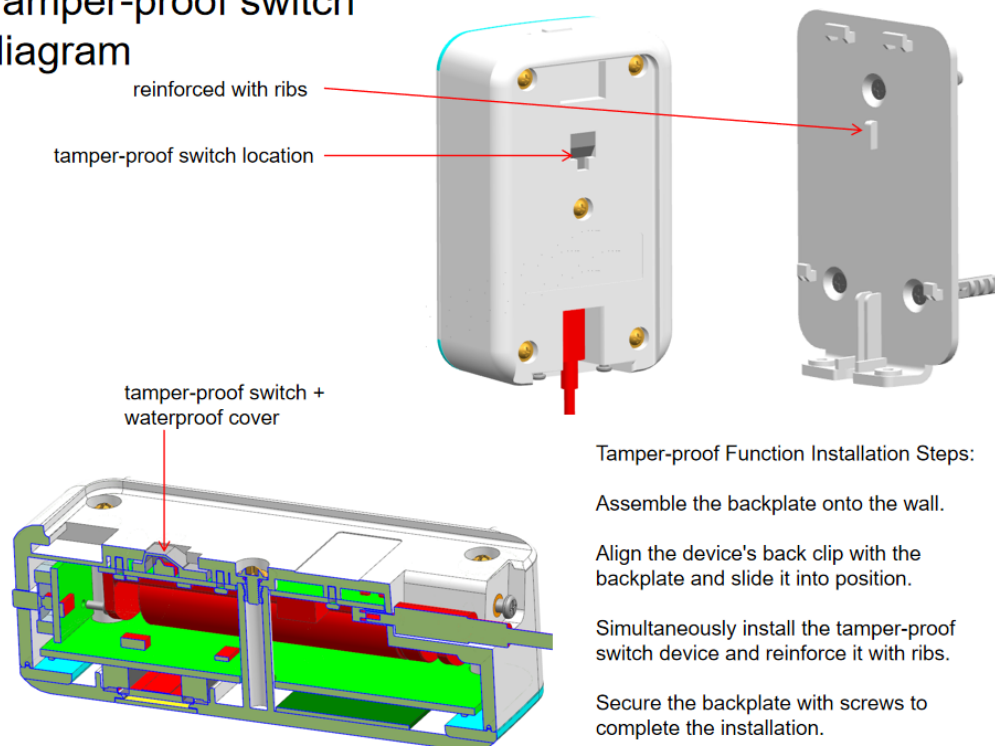
Reset	0-2 seconds:	Sends a message to the gateway, then restarts.
	2-10 seconds:	Sends a message to the gateway.
	Long press (10 seconds):	Sends a message to the gateway, then restores factory settings. 4o mini

5 Maintenance

5.1 Set Up

5.1.1 Tamper-proof switch

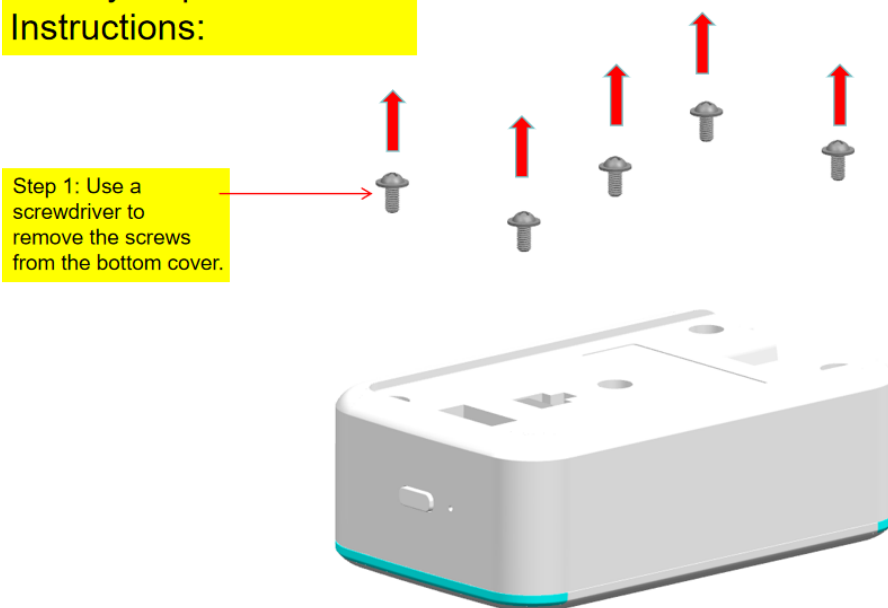
Tamper-proof switch diagram



5.1.2 Battery Replacement

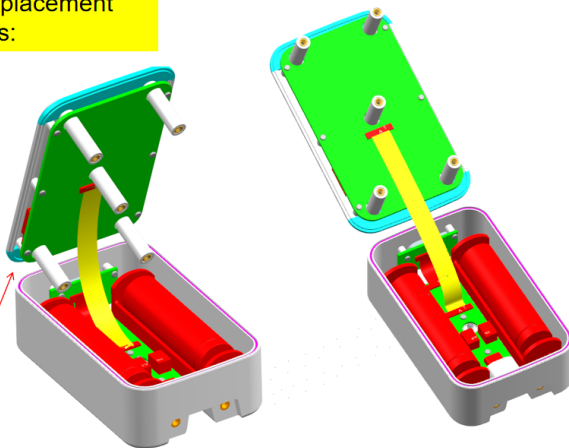
STEP1

Battery Replacement Instructions:



STEP 2

Battery Replacement Instructions:

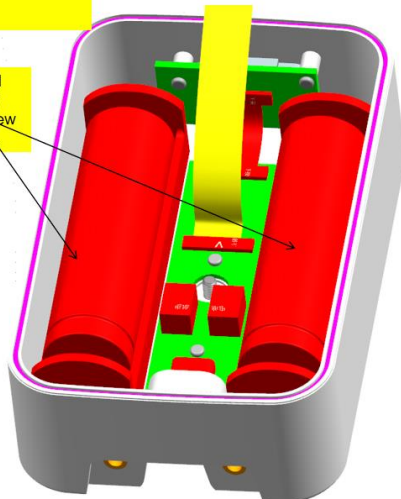


Step 2: Open the upper shell assembly.

STEP 3

Battery Replacement Instructions:

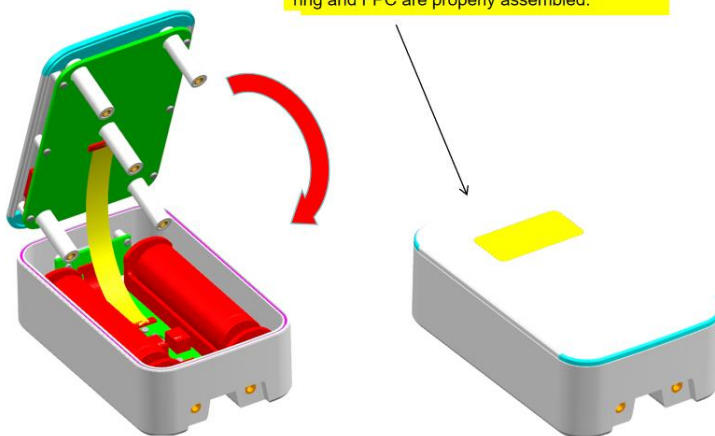
Step 3: Remove the old battery from the battery holder and install the new battery.



STEP 4

Battery Replacement Instructions:

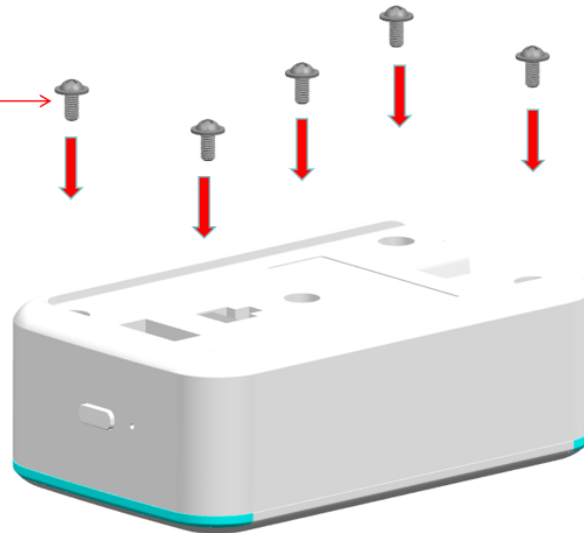
Step 4: Close the shell and check if the sealing ring and FPC are properly assembled.



STEP 5

Battery Replacement Instructions:

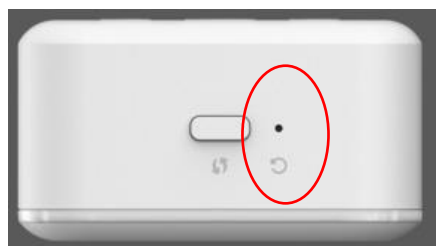
Step 5: Use a screwdriver to secure the screws. (Finish)



6 Troubleshooting

6.1 Reset

- The hole next to the button is the **Reset** button. When pressed for more than 10 seconds using a pin or similar tool, the product will complete the factory reset process. ;



6.2 Upgrade

For UART Firmware Upgrade

6.2.1 Product Connection :

TTL- USB	NFC
5V	USBC_VCC

GND	USBC_GND
RX	USBC_D+
TX	USBC_D-

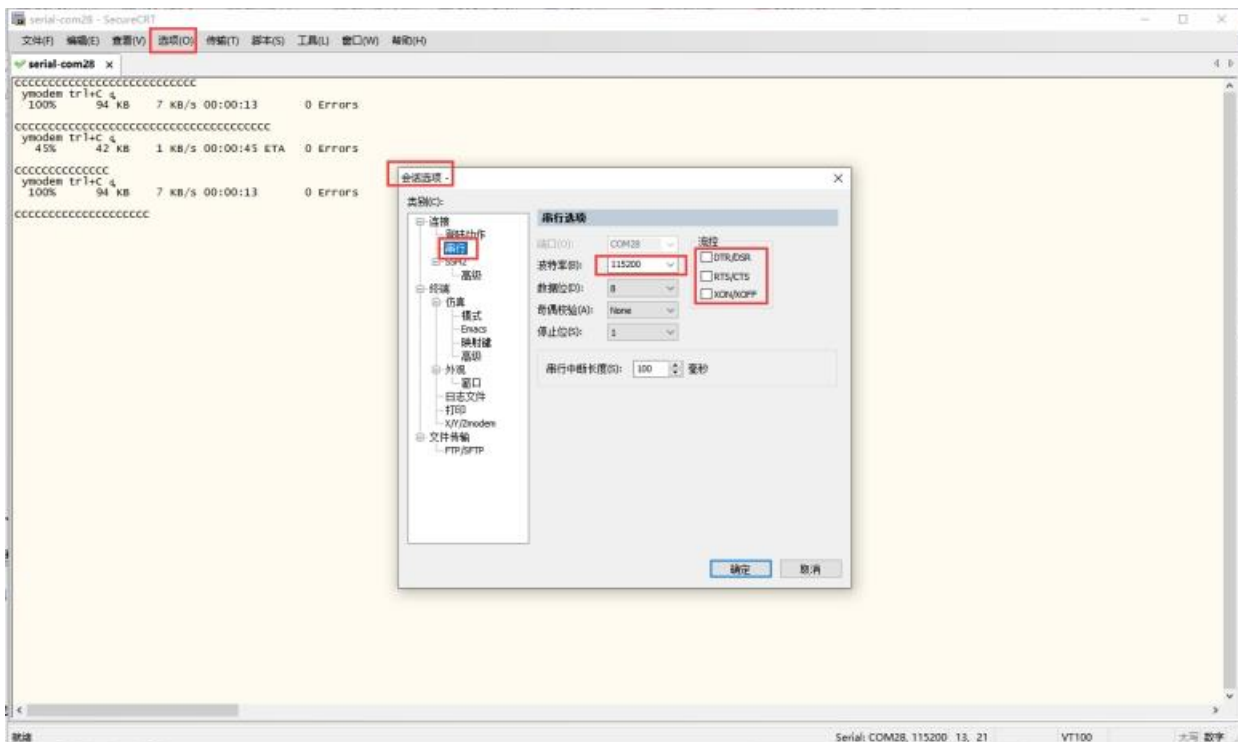
The product is connected to the USB-TTL serial tool via the USB-C interface.
The serial tool is then connected to the computer via a USB port.



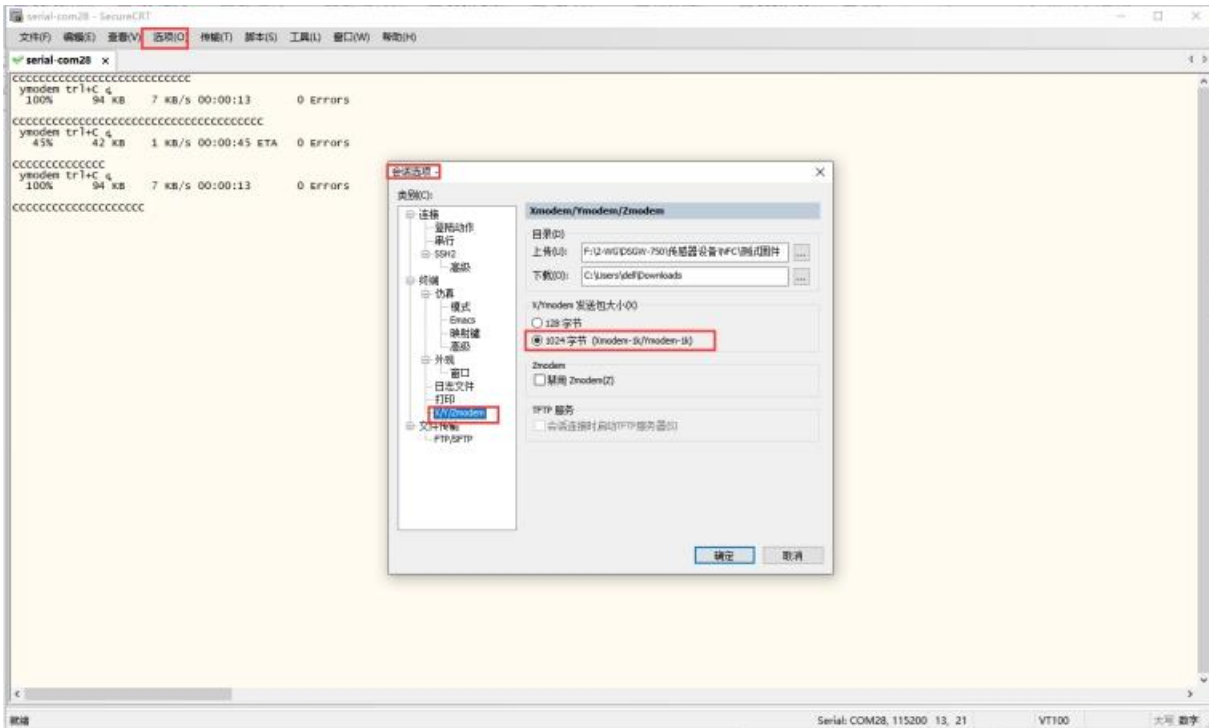
6.2.2 Product Upgrade:

1 Connect the Serial Tool:

- Ensure you are using the CRT tool for the upgrade.

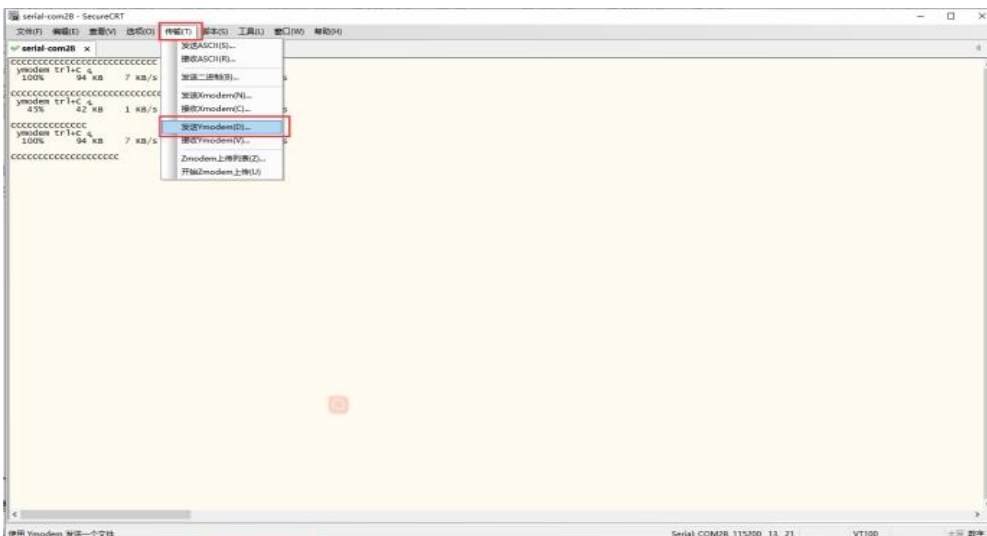


X/Y/Zmodem Configuration

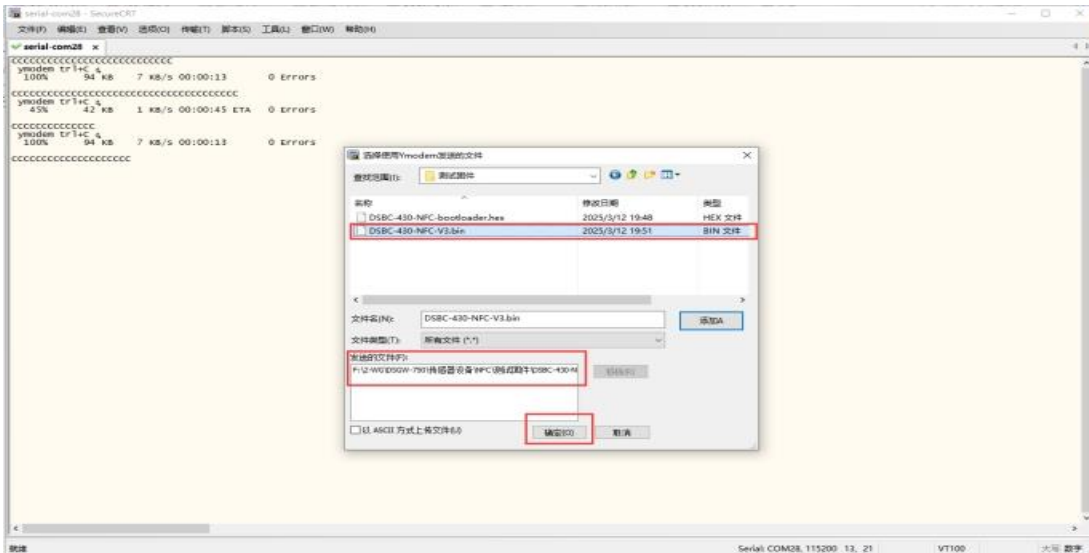


2 Press and hold the top button of the product without releasing it, then briefly press the top RST button to enter boot mode. Within 10 seconds, select the firmware and transfer it via Ymodem (D) (if 10 seconds have passed, you need to repeat the process; you can pre-select the firmware and confirm the flashing once the connection is established). For details, see the image below.

• Ymodem (D)



Once the firmware is selected, click "Confirm" (you can pre-select the firmware, and once the device enters boot mode, just click "Confirm" to start the flashing. You can release the button once the flashing process begins).



Boot Connection and Flashing Instructions:

- Boot Connection:

When the serial port receives "C" data, it indicates that the connection has been successfully established.

- Connection Process Before Flashing:

There is a 10-second connection process before flashing begins. You must click "Confirm" within these 10 seconds to proceed with the flashing.

- Flashing Completion:

After the flashing is completed, there will be another 10-second connection process. Once the "C" data stops, the device will reboot, and the firmware will be activated. The flashing process is now complete.

[illegible]

7 Safety Warnings

7.1. Power Safety

⚠ Warning: When using battery power, ensure the battery polarity is correct during installation (do not connect one positive and one negative terminal, which may cause a short circuit). (The product is equipped with a protection device.)

Environment and Usage Conditions

⚠ Notice: This device is suitable for use in temperatures ranging from -10°C to 50°C. Do not install in high-temperature, humid, or strong magnetic field environments.

⚠ Warning: Do not install the device near water sources or in areas that may be exposed to moisture to prevent damage or short circuits.

7.2. Installation & Operation Warnings

Installation Precautions

⚠ Warning: Ensure the card reader is installed on a stable surface, and avoid strong vibrations or impacts.

⚠ Notice: The device should be kept at a proper distance from metal objects to reduce signal interference.

Operation Instructions

⚠ Notice: Use compatible RFID cards or access control cards. Incompatible cards may cause identification errors.

⚠ Notice: When reading a card, ensure the card is placed close to the sensing area and stays there for 1-2 seconds to ensure successful reading.

7.3. Additional Notices

Maintenance & Care

⚠ Notice: Regularly clean the sensing area with a dry, soft cloth to maintain stable reading. Do not use alcohol or abrasive cleaning agents.

⚠ Warning: Do not attempt to disassemble or modify the device, as this may affect the warranty or device functionality.

7.4. Recycling & Environmental Protection

♻ This product contains electronic components. Please recycle according to local regulations and do not dispose of it with regular waste.

7.5. NCC

「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。」

7.6. FCC

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.

Name of the company	Foxconn Industrial Internet USA Inc.
Address of the company	8811 Campus Drive MountPleasant,WI 53406
phone number (US phone number) or a "contact us" web page	https://www.foxconnwiofficial.com/contact-us