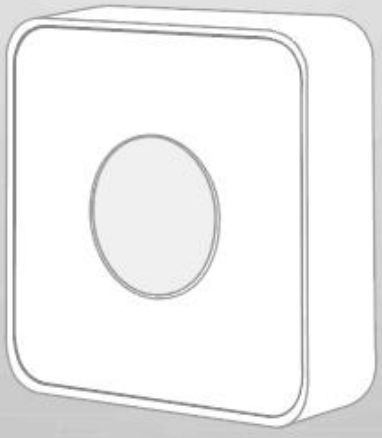
WINEXT
TECHNOLOGY

AN-301 SOS Button

User Manual



LoRa

www.winext.cn

END-TO-END LORAWAN NETWORK SOLUTION

Content

1. Description

1.1 Product Description

The AN-301 is a versatile one-button SOS wireless alarm device that operates on the LoRaWAN protocol, designed for quick response to emergencies like terrorist attacks, fires, explosions, or stampedes. With SOS button press, it sends an alarm signal to a monitoring platform, ensuring prompt attention from personnel. The device is equipped with a high-capacity battery, easy to install without extensive wiring, and boasts low power consumption with a broad transmission range, making it suitable for a wide range of environments including residential homes, commercial buildings, banks, hotels, schools, libraries, and exhibition halls.

1.2 Features

- Support LoRaWAN protocol
- One-button SOS alarm
- Built-in 4000mAh battery
- Support low power alerts
- It supports optional pull-rope and anti-tamper alarms

1.3 Specification

Item	Description
SOS button	SOS trigger alarm
Antenna	Built-in LoRa antenna
Tx rate	300bps–5.4Kbps
Frequency	CN470-510MHz EU863-870MHz US902-928MHz AS920-923MHz AS923-925MHz AU915-928MHz KR920-923MHz
Max Tx power	19dBm
Rx sensitivity	-141dBm (SF=12)
Working temperature	-10℃ ~ +50℃
Working humidity	10%-95%(no condensing)
Power supply	Li-SOCL2 battery

Item	Description
Battery volume	3.6V/4000mAh
Standby electric current	≤6uA
Rx current	≤16uA
Tx current	≤125mA
Dimension	86.9*86.9*26mm

2. Structure

2.1 Appearance and dimension

Figure: AN-301

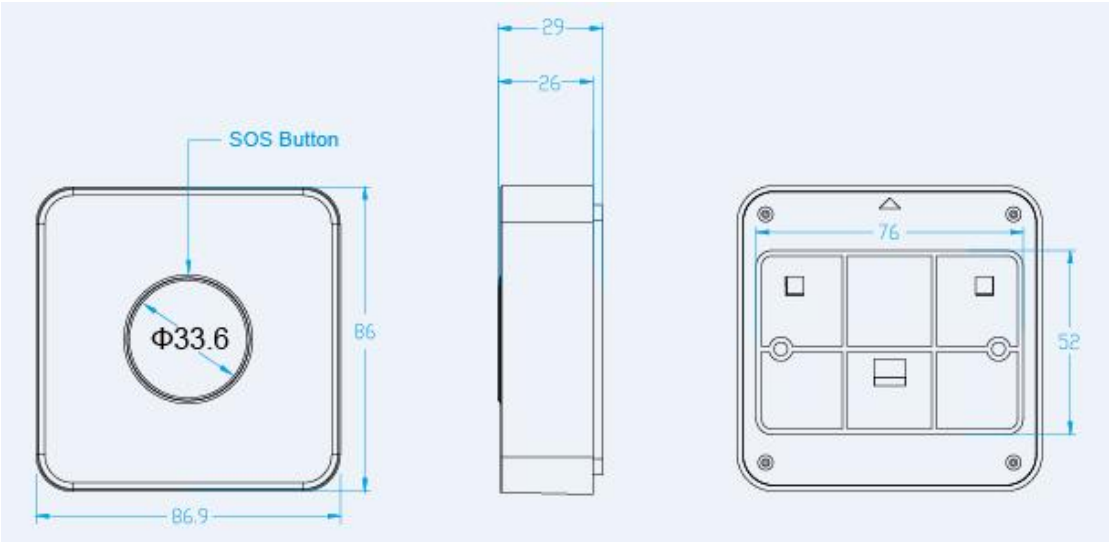


Figure: AN-301 Dimension(mm)

2.2 Software

AN-301 SOS Button software structure consists of AN-301 software, LoRa wireless serial port module and host configuration

tool. This structure works for alarm data and process data from the host configuration tools simultaneous. That makes it provide a functional system to clients.

Host configuration tool

Host has user-friendly graphic interface. It can configure parameters of AN-301 SOS Button, when it is connected via serial port module.

2.3 Packing List

Item	Qty(pc)	Remark
AN-301 SOS Button	1	/
Back Plate	1	/
Screw	4	2 long screw with plastic covers, 2 short screw with plastic covers
AN-301 SOS Button Manual	1	/

3 How to work

3.1 Performance

Alarm will be activated from sleep mode and send out alarm signal once pressed. The device can also check power status and temperature regularly by itself. When found it in abnormal condition, the device will send out the information to the platform.

3.2 Network connection

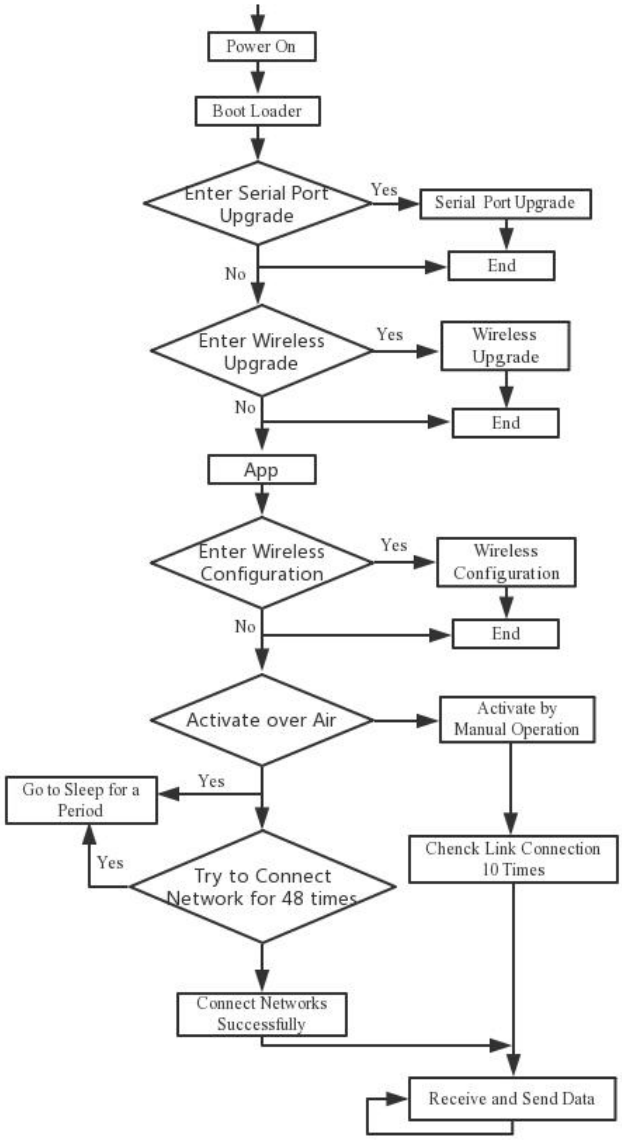


Figure: AN-301 SOS Button Workflow

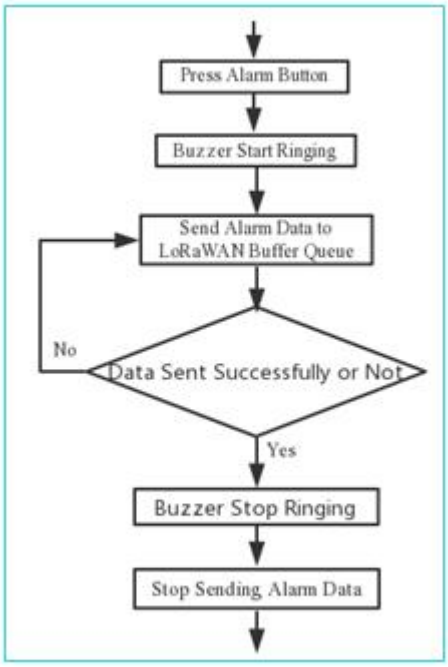


Figure: AN-301 SOS Button Alarm Sending

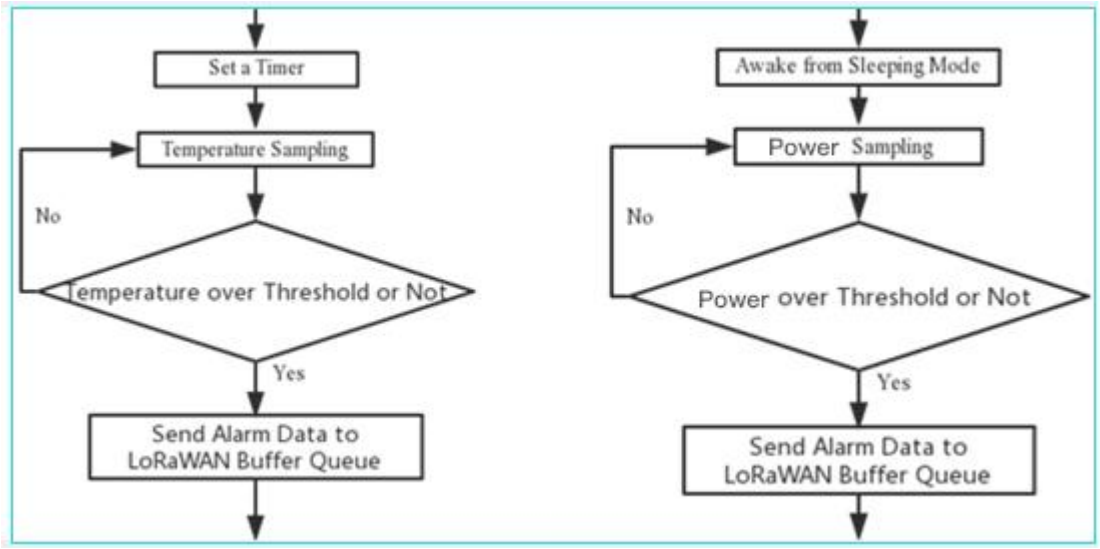


Figure: AN-301 SOS Button Timer Setting and Power Sampling

3.3 Alarm system

This alarm system contains of AN-301 SOS button, LoRa gateway, cloud platform and application platform.

AN-301 SOS button

In the normal ambient and alarm not be triggered, the alarm current state, such as power and ambient temperature, will be sent to the platform regularly. When the SOS button is pressed to trigger the alarm, alarm data will immediately be reported to the monitoring platform in time.

When the data transmission blocked due to network fault, AN-301 SOS Button will try to send alarm data to the monitoring

platform through its own algorithm until the network connection back to normal, making alarm data send to the monitoring platform. The network fault information will be sent together as well.

After the alarm data successfully sent, AN-301 SOS Button will report the alarm data again regularly until it receives the platform request to cancel the alarm.

LoRa gateway

The gateway receives data from AN-301 SOS button base on LoRa technology. It sends data to cloud platform via network with Ethernet or cellular network connection.

Cloud platform

The cloud platform receives the alarm data transmitted by the gateway and send it out to the back-end monitoring platform. Cloud platform also provides event record, data encryption and decryption, data packet error correction, data backup and storage services. Users can access the distributed cloud at anywhere. It provides API and BAAS platform data services, easy for users application development. Users can also configure local servers by themselves, to achieve data storage, opening data channels and SDK package services.

Application platform

The application management platform receives and displays the data from the cloud platform, including alarm, the current power and the ambient temperature. The system platform can analyze the data and make use of the data, such as we can handle equipment failure in advance based on the data.

3.4 Alarm system structure

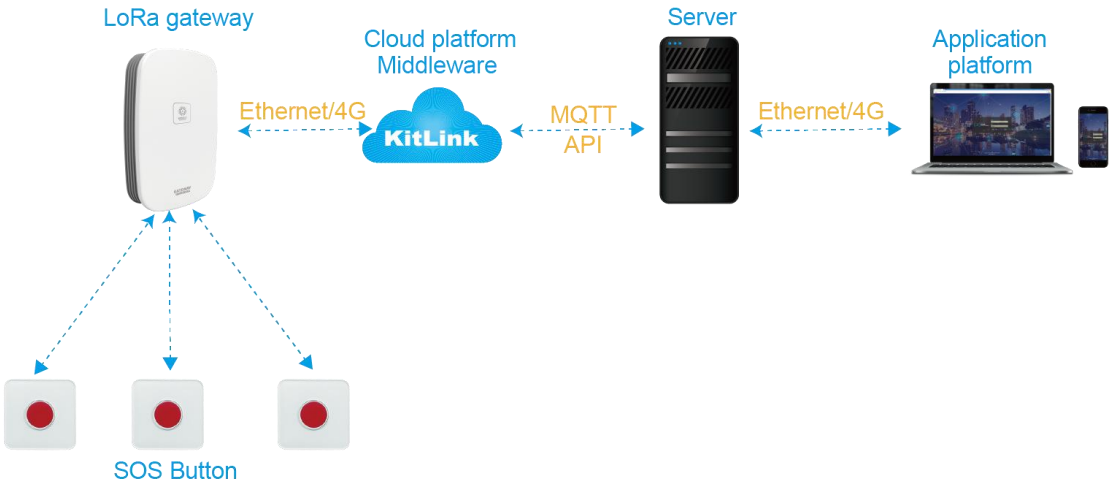


Figure: Alarm System Structure

3.5 Usage

- **Turn on**: Press and hold the **Turn on/off** button on the back of the device until it beeps three seconds and stops automatically. Release the button as it is turned on.
- **Join network**: After the device turned on, it will beep twice to indicate it joins the network.
- **SOS button**: Press the red SOS button to trigger an alarm.

- **Anti-dismantle button**: After the device installation finished, the anti-dismantle button is pushed against. When it detects the anti-dismantle button is released for three seconds, the alarm will be reported and the red light will flash. When it detects the tamper button is pushed against for three seconds, it will report anti-dismantle status resume.

- **Turn off**: Hold the **Turn on/off** button for three seconds until it sounds a long beep. Release the button, it will be shut down.

4. Installation

4.1 Safety precautions

Please read the precautions before installation:

- Turn on the device before installation.
- Installation can be done only by the professional construction personnel or authorized engineering representative.
- Please use the professional qualified installation tools to guarantee the safety of the construction personnel.
- Installation position must be far away from the fire source, strong electric field, magnetic field etc., otherwise it may cause product damage.
- Winext reserves the interpretation of installation.

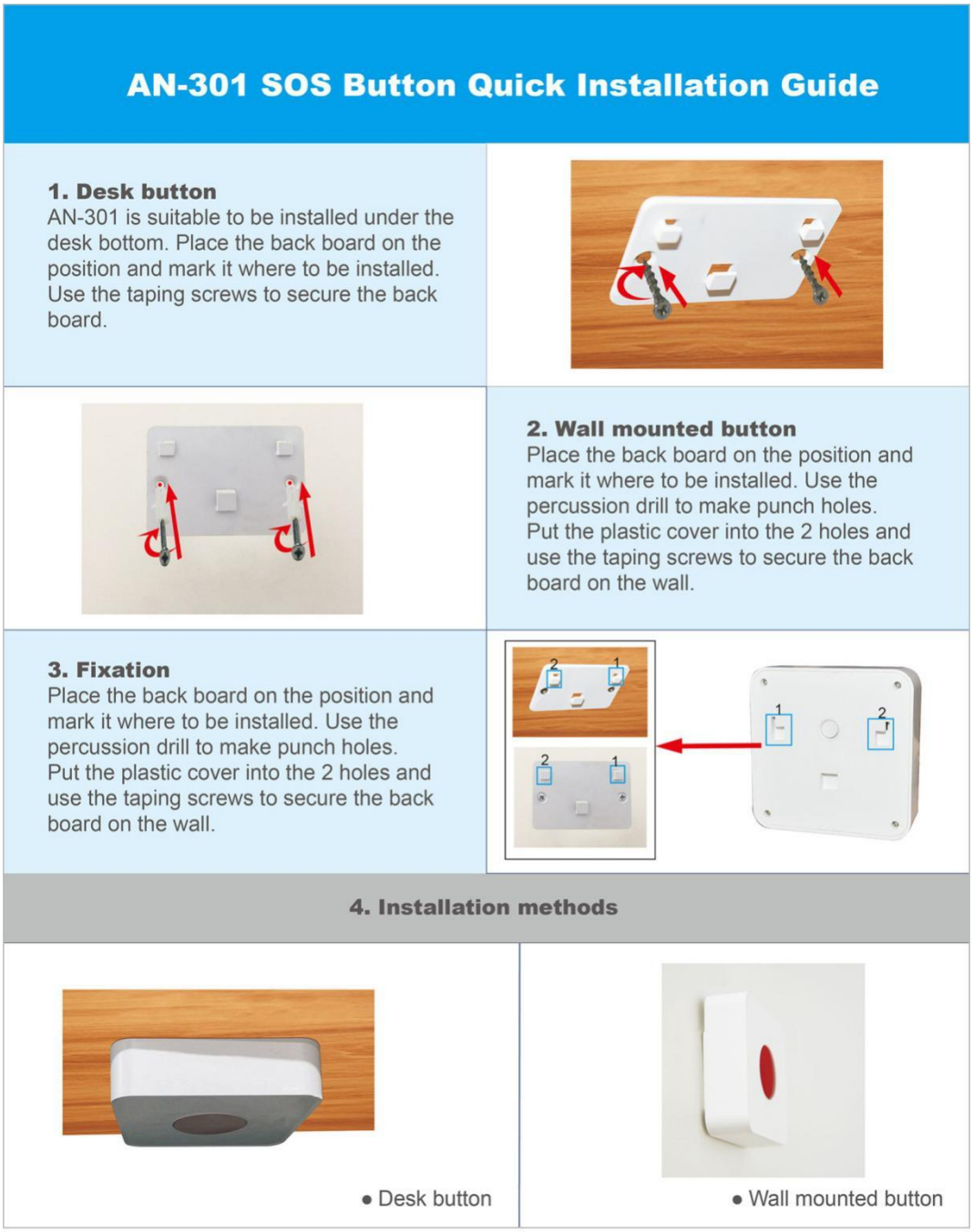
4.2 Installation tool

Please prepare proper tools for installation. Here are tools may be used for reference:

Figure: Installation Tools

4.3 Quick installation guide

AN-301 has 2 installation methods, desk installation and wall mounted installation.



Installation on the surface of metal or glass wall

You can use 3M tape to adhere on the surface where cannot punch holes and follow steps below:

- Use a dry towel to clean up on the surface to install.
- Make the 3M tape adhere to the device back board. Then make the device back board and the device back holder fit together well.
- Locate AN-301 SOS Button on a proper position where 3M tape to be attached. Press several times to make sure it gets fixed. Recommended installation height is at least 1.5m.

5. Configuration

5.1 Tool list

Item	Description
Laptop	AN-303 installation
Wireless Configuration Tool	Used to communicate with AN-301
Host Configuration Software	Configure AN-301 via host graphical interface
User manual and configuration doc.	For user manual and configuration doc., please contact our technical staff.

5.2 Set up

5.2.1 Wireless configuration tools

Prepare tools and doc below before installation.

Before configuration, prepare the following tools and docs.

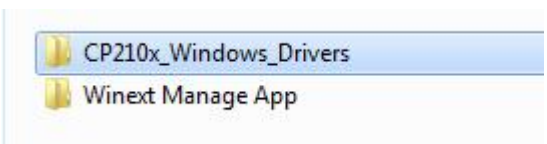
Figure: Configuration Tool

Note: please contact our technical staff for Web configuration tool docs (host configuration tool).

Note: please contact our technical staff, for AN-303 host configuration doc.

5.2.2 Install wireless configuration tool driver

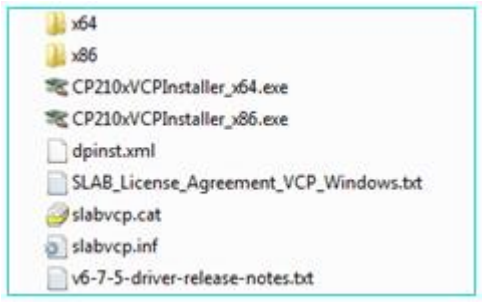
(1). Open the file and select the wireless configuration module driver program.



(2). Open the wireless configuration driver file. Select the driver program to install depending to the system type.

32-bit operating system selects “CP210xVCPInstaller_x86.exe”.

64-bit operating system selects "cp210xvcpinstaller_x64.exe".

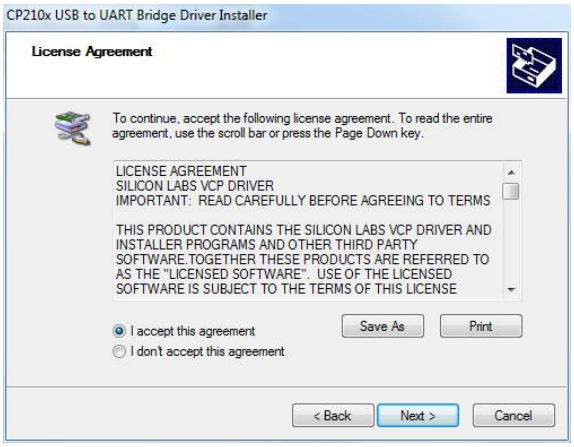


(3). Install Wireless LoRa module driver program.

Here takes an example to use the 64-bit operating system to install the wireless configuration module driver.

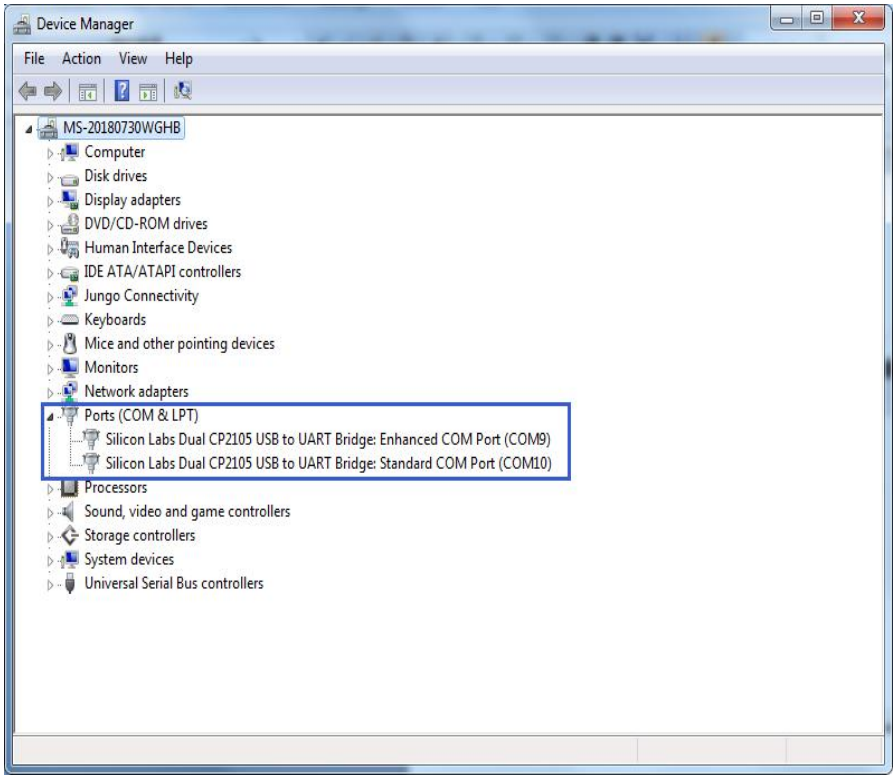
Click and select “**Next**” to the driver file "**cp210xvcpinstaller_x64.exe**".

Select “**Accept the License Agreement”**and click on “**Next**”.



Wait for a while and click on “**Finish**”.

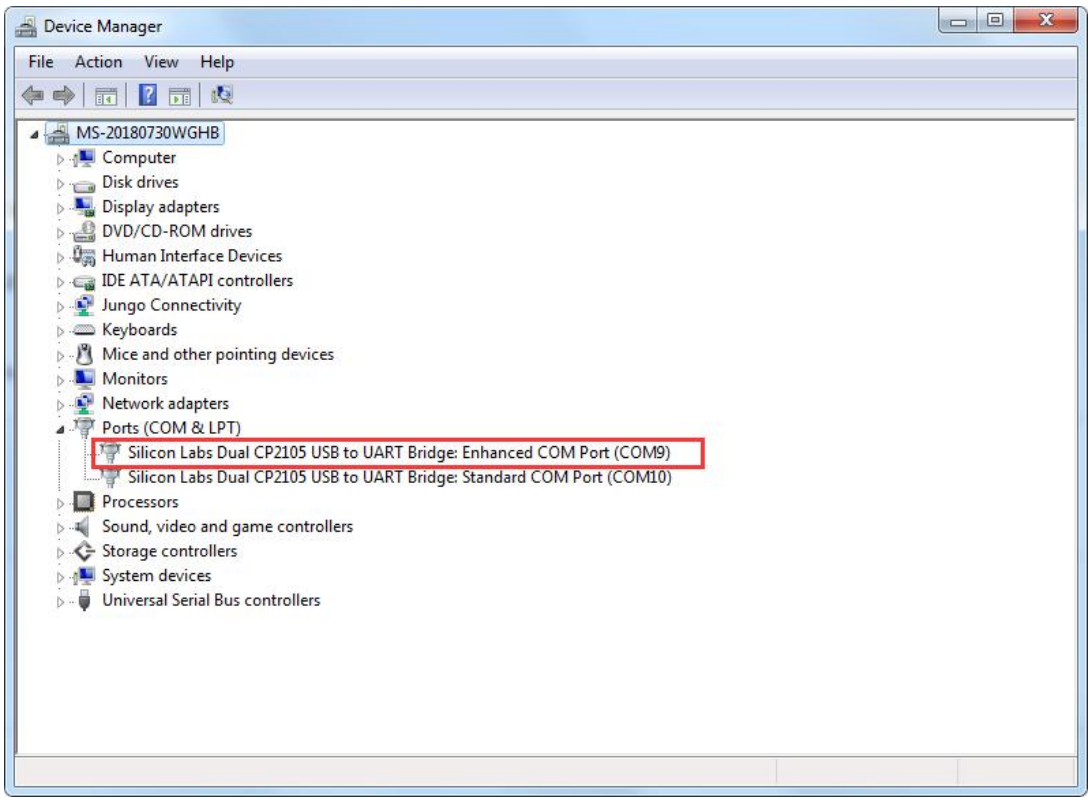
Check the driver program after installation done. Click on "**Computer**"-"**Attribute**"- "**Device manager**".



5.2.3 Parameter setting

(1). Insert the wireless configuration module into the laptop USB port. Start host configuration near the device installation location.

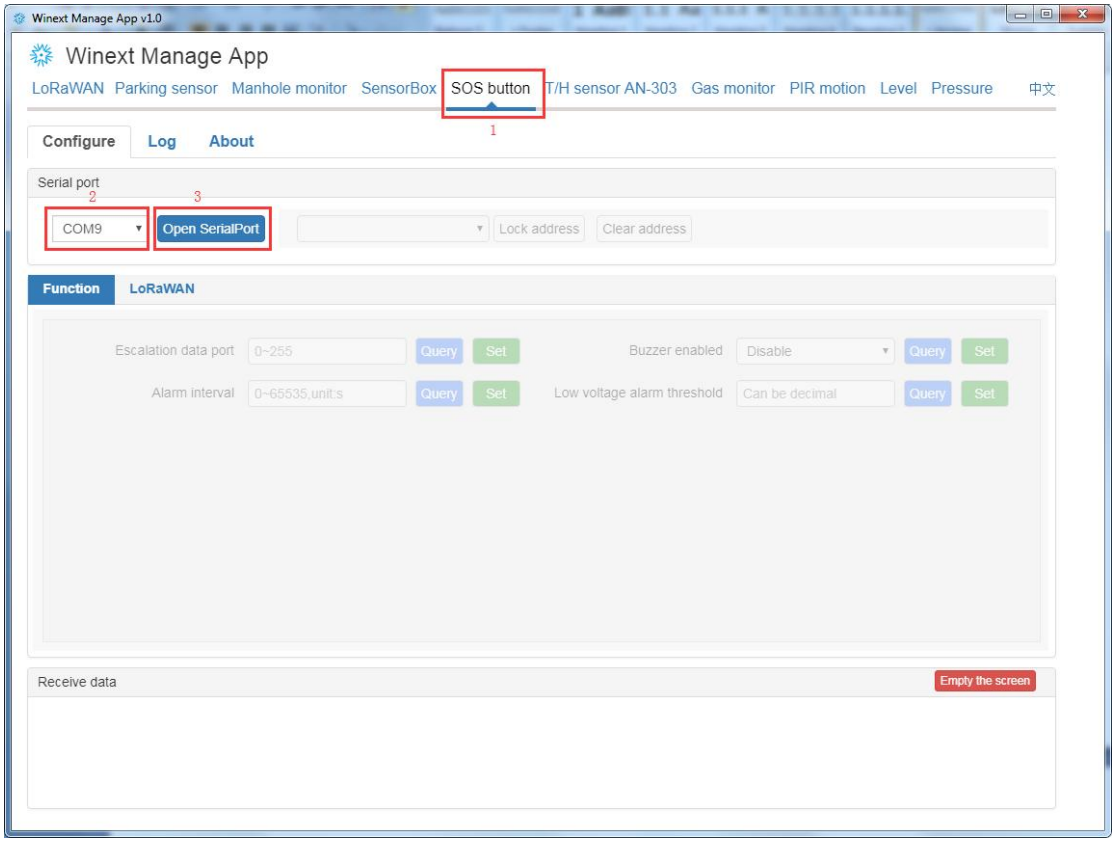
(2). Insert the wireless configuration tool to the USB port. Click on "**Computer"**-"**Attribute"**-"**Device manager**" and find the correct port.



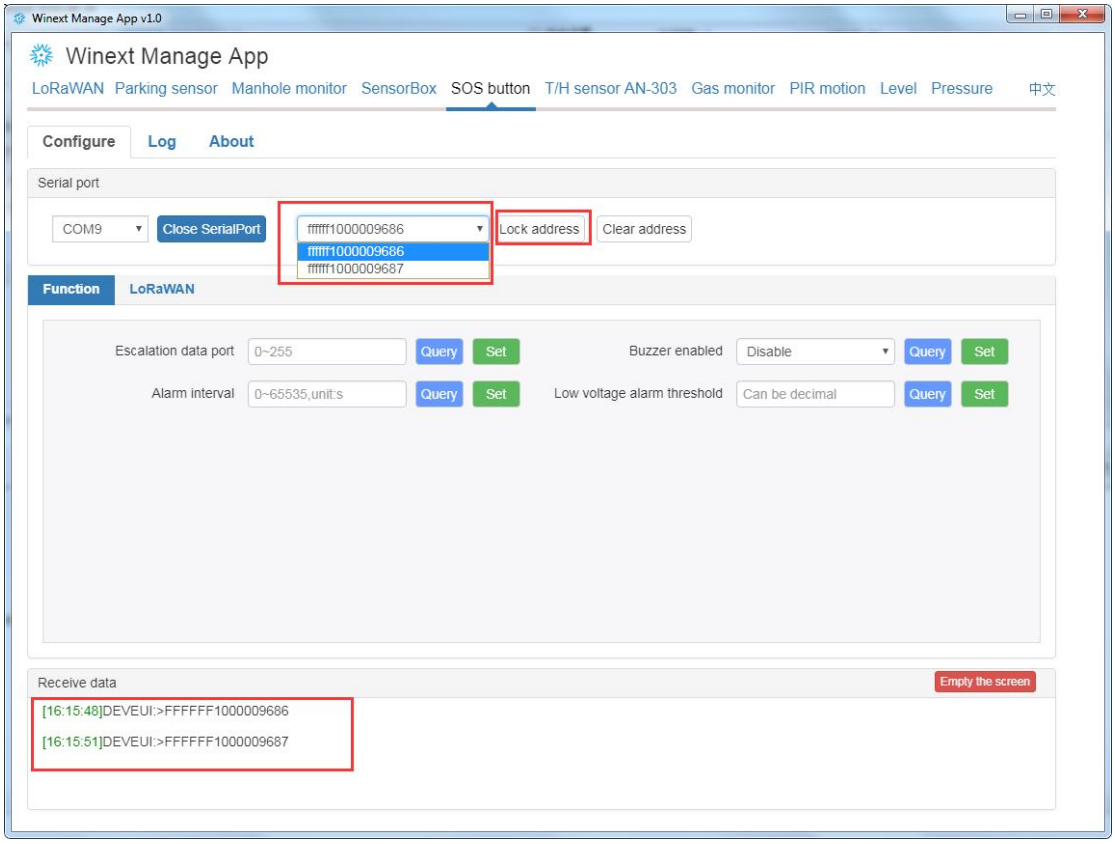
Note: there are two ports for wireless configuration module, only one of them is for setting.

(3). Open configuration software and click on "**SOS button**".

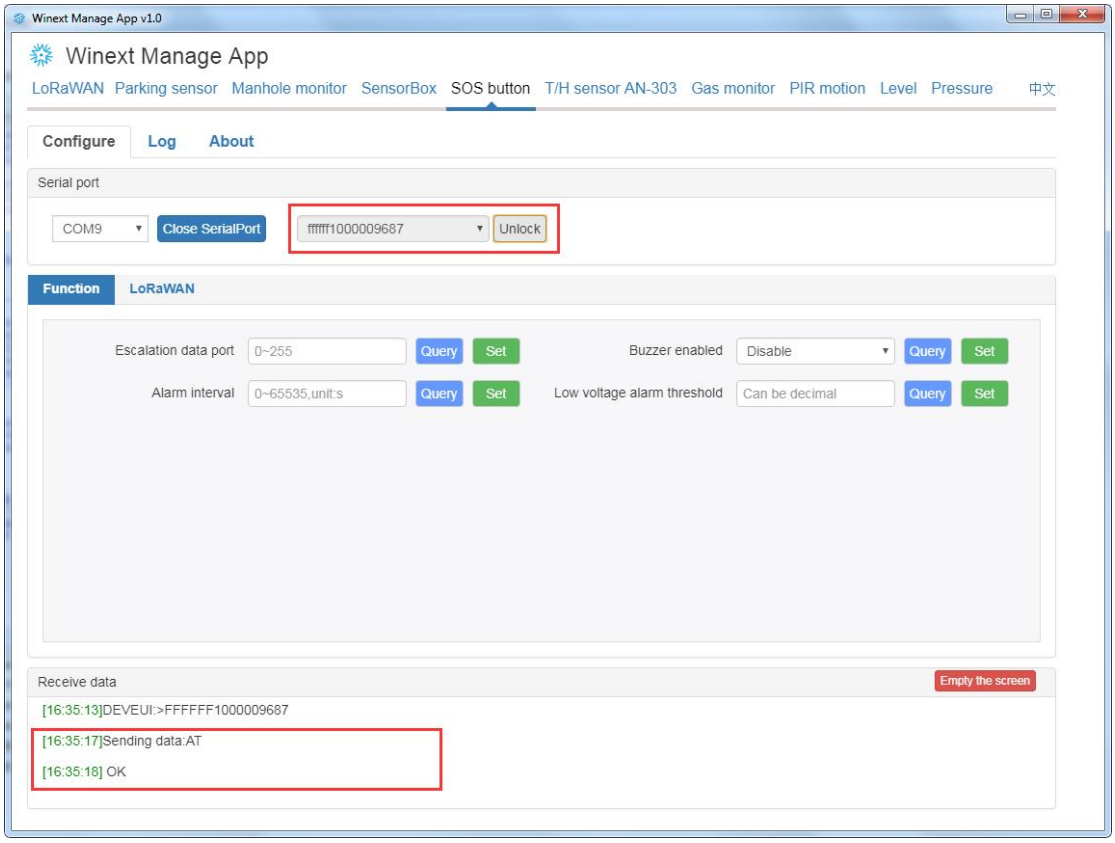
Select port and open it.



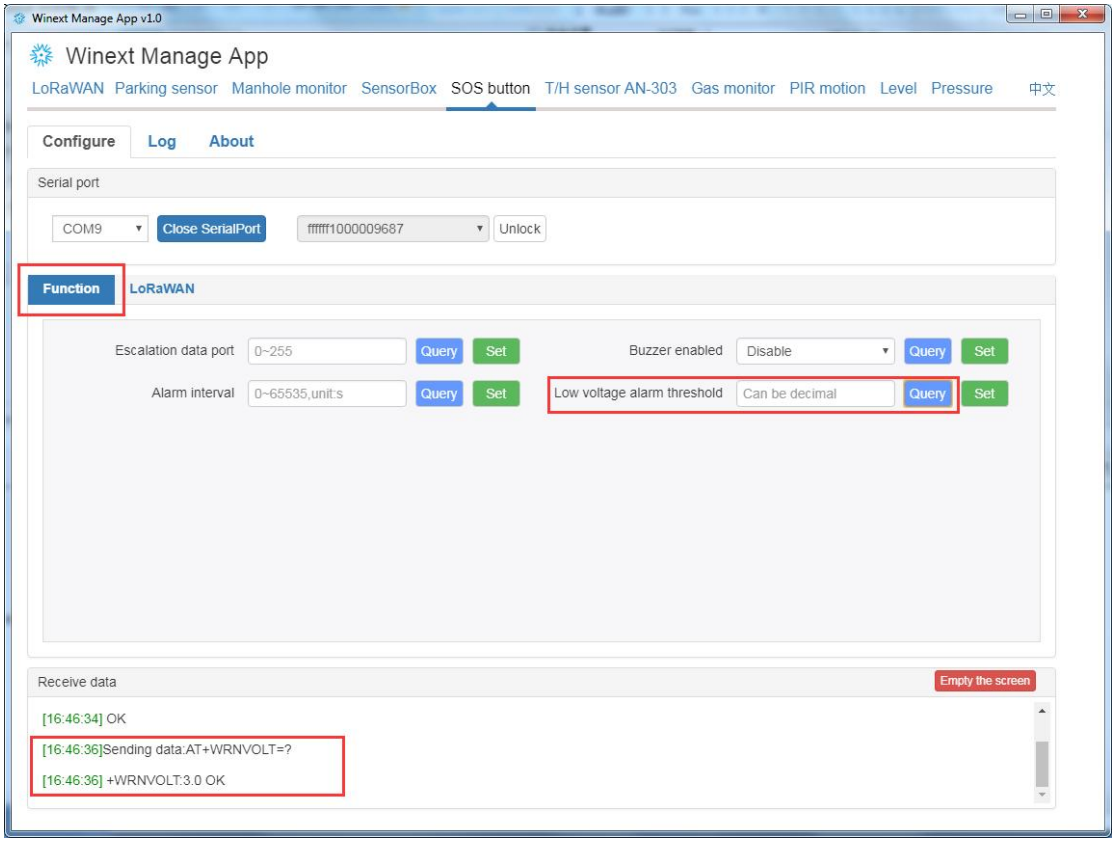
(4).Reboot device. Select the DevUI accordingly in the check box and click on "**Lock address**".



After the device locked successfully, it will show "**OK**" in the bottom message box.



After the device locked successfully, you can edit parameters for setting up and query. The parameters are for functions and LoRaWAN setting. For example, edit the low power threshold value as 3.0V, query the low power threshold value, it will show 3.0V in the bottom message box.



Note:

After the device reboot, the device is in wireless configuration mode. Please click on "**Lock address**" within 5 seconds. It will try to join the network in 5 sends later.

After the device locked successfully, and without operation in 15 seconds, the device will exit from wireless configuration to network connection.

5.3 Remote configuration

Description: the remote configuration is done by AT command issued at the platform. The port number is 220. The data format is hexadecimal with FF added in front. The corresponding AT command needs to be converted into hexadecimal data first. The hexadecimal data FF is added in front of the packet to send.

1. Convert the AT command into hexadecimal data step by step

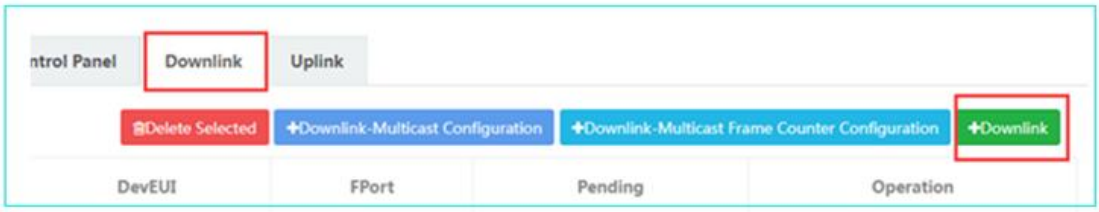
a. AT command AT+REBOOT to convert 16-byte data for 41 54 2B 52 45 42 4F 4F 54 0D 0A

b. The last part of the command, 0D 0A, can be omitted

c. Add FF in front of it

FF 41 54 2B 52 45 42 4F 4F 54 0D 0A or FF 41 54 2B 52 45 42 4F 4F 54

2. Enter the device management platform, click "**Downlink**", and fill in the data and port number



3. After entering in the data and port number, click "**Confirm**". Waiting for the node to report, the platform will send the data to the corresponding node.

6. Payload information

Fport: 44.

Item	Sensor type	Frame type	Alarm state	State of dismantling	Voltage
Default value	0x01	0x00/0x01	0x00/0x01	0x00/0x01	
Number of bytes	1Byte	1Byte	1Byte	1Byte	1Byte
For example	01	01	01	01	23
Description	SensorID: 0x01	Frame type, 0x00:heartbeat frame, 0x01:data frame	Alarm state, 0x00: without alarm, 0x01: with alarm, 0x02: delay reporting of the alarm	anti-dismantling state 0x00: not be dismantled, 0x01:be dismantled	Be divided by 10 for the real value, e.g.: 0x23 indicates 3.5V, normal.

For example, we get the raw data: 【AQEBASM=】

Here, as the raw data is base64 data, we should convert it to hexadecimal, that's:

01 01 01 01 23

There are 5 bytes, their meaning is as below:

The first byte is for the sensor type: 01

The second byte is for frame type(00: heartbeat frame; 01: data frame)

The third byte is for alarm state(00: without alarm; 01: with alarm; 02: delay reporting of the alarm)

The fourth byte is for state of dismantling(00: not be dismantled; 01: be dismantled)

The fifth byte is for voltage(the upper bit indicates voltage alarm: 0 means normal voltage; 1 means low voltage. The lower 7 bits means voltage value, the real voltage value should be divided by 10, e.g. 0x21 means 3.3V)

7 .Trouble-shooting

1. What to do if the device is broken or the power is run out?

A: Before the device leaving factory, it needs to pass strict test to assure its function works. If damage occurs in the process of use or installation, or the platform shows the low power alarm, a new device must be replaced.

2. How long does the battery of the device work?

A: AN-301 is equipped with 8000mAh Li-SOCL2 battery. Operation life is related to alarm report frequency. If it sends out report once per day, AN-301 can be used for more than 5 years.

3. If the gateway restarts or changes to another gateway, does the device need to re-join the network?

A: If the gateway is rebooted or changed into another gateway, as long as the frequency point used by the gateway is consistent with that used by AN-301 and the gateway communicates based on LoRaWAN protocol, during the use of AN-301, there is no need to re-join the network.

4. How to choose the frequency of AN-301 correctly?

A: The frequency point setting of the AN-301 should be consistent with that of the gateway, so that the data can be reported to the cloud platform.

5. When configuring AN-301, trigger the configuration command, but there is no return information. How to solve it?

A: Please check the following settings.

- Confirm that the serial port number, baud rate, data bit, stop bit and calibrate bit are correct.
- Check if the device is in wireless configuration mode.

6. When press AN-301 try to send the alert, how to ensure if the platform receives it?

A: When you press AN-301, the indicator LED turn red and flash once. The indicator LED will turn green for 200ms once the platform receives the alert message. E.g.: If the platform gets 3 messages, the indicator LED will turn green 3 times.

Shenzhen Winext Technology Co., Ltd.

Address: Room606, 6thFloor, BuildingB#, Oufeiguang Headquarters R&D Center,Fenghuang Street, Guangming District, Shenzhen China

Tel：(+86) 0755-23990916

Fax：(+86) 0755-23990906

Email: kenpan@winext.cn

Web: www.winext.cn

This is a product manual as an installation, operation and use file. Specifications subject to change are without notice. For more information, please call us or contact the sales staff.