



Outdoor Geomagnetic Parking Guidance System LoRa-WAN Construction Instruction Manual



seguripass

ESTACIONAMIENTOS INTELIGENTES

Contents

1.	Check construction drawings and site environment.....	4
1.1	Drawings inspection	4
2.	System wiring.....	5
2.1	System wiring.....	5
2.2	Controller wiring diagram	6
3.	Detector installation	7
3.1	Schematic diagram of geomagnetic detector parking space installation ...	7
3.2	Installation method of geomagnetic detector	7
3.3	Equipment installation steps.....	8
4.	Installation of wireless gateway.....	10
4.1	Outdoor gateway installation method	10
4.2	Indoor rail installation method	10
4.3	Indoor wall installation method	11
5.	Outdoor guide screen installation.....	12
5.1	Installation diagram	12
6.	Outdoor guidance screen installation	13
6.1	Installation diagram	13
7.	Configuration of geomagnetic detector channel address.....	13
7.1	Install and debug App on mobile phone	13
7.2	Search for geomagnetic Bluetooth	14
7.3	Read the geomagnetic sensor parameters	14
7.4	Set the detector background	15
7.5	Other functions	16
8.	Equipment location records	17

9.	Gateway IP view	17
9.1	Static IP mode	17
9.2	Wi-Fi hot spot mode	17
9.3	Connect to hot spots	17
9.4	Check the IP	18
10.	Log in to the WEB configuration interface	18
10.1	Gateway status	19
10.2	Static IP Settings	19
10.3	LoRa server interface (push data to the specified platform)	20
10.3.1	Gateway login status	20
10.3.2	Target server push Settings	21
11.	Add software platform	22
11.1	login successfully.....	22
11.2	Add a gateway.....	23
11.3	Add Lorawan sensor.....	24
11.3.1	Click the organization item to enter the sub-item.....	24
11.3.2	Create sub-projects.....	25
11.3.3	Add sensor appkey	26
11.3.4	Sensor testing.....	27

Objective:

To guide the product department, regional technical support, engineering construction personnel to standard construction, equipment installation in line with the requirements of specifications, to ensure construction quality, and make construction easier.

1. Check construction drawings and site environment

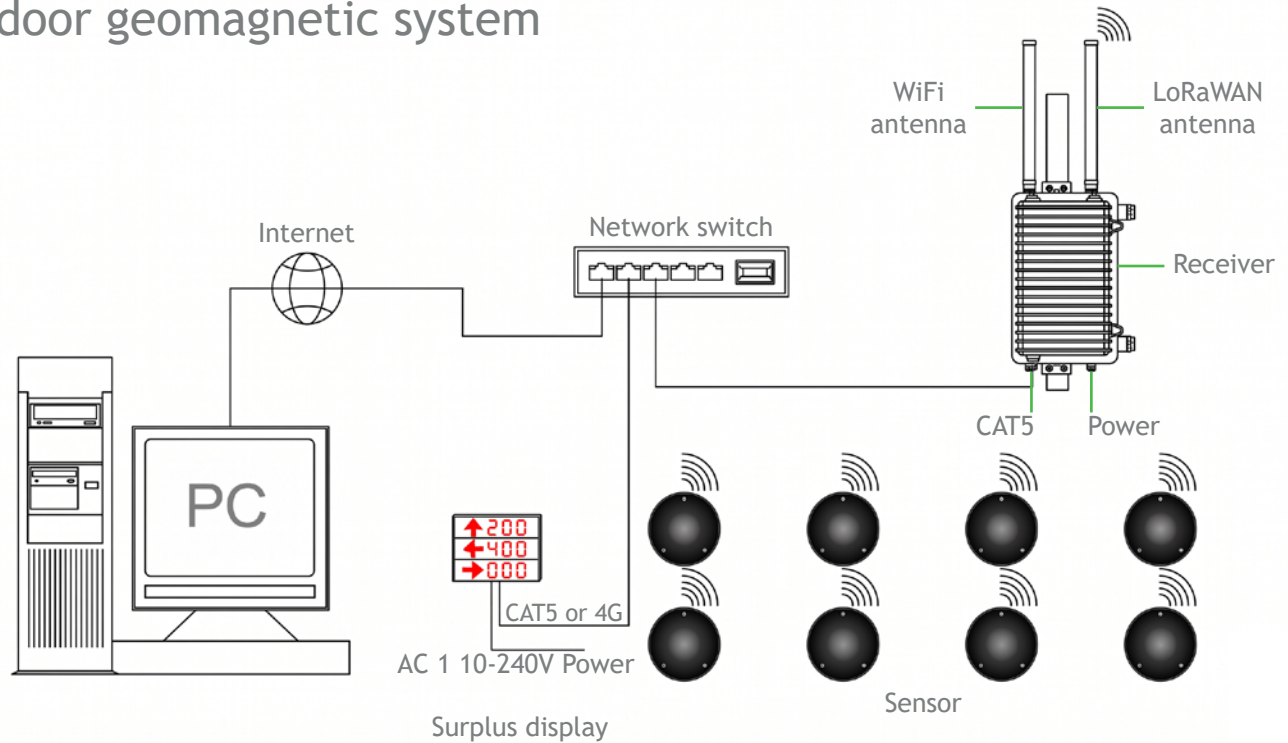
1.1 Drawings inspection

Before construction, first check if the construction drawings match the actual site conditions. If they fully comply, proceed directly to the second step. If not, make minor adjustments to the drawings. Before making any changes, confirm with relevant technical personnel whether it is feasible. After making adjustments, send the complete set of drawings to the relevant technical personnel again for confirmation of feasibility. Once confirmed as feasible, proceed to the second step. After confirming the drawings, two copies of the drawings will be printed. The drawings should indicate the installation position of the controller and the parking space in the parking lot should be clearly visible. One copy of the drawings will be used for construction and the other copy will be used for the parameter configuration of the equipment later.

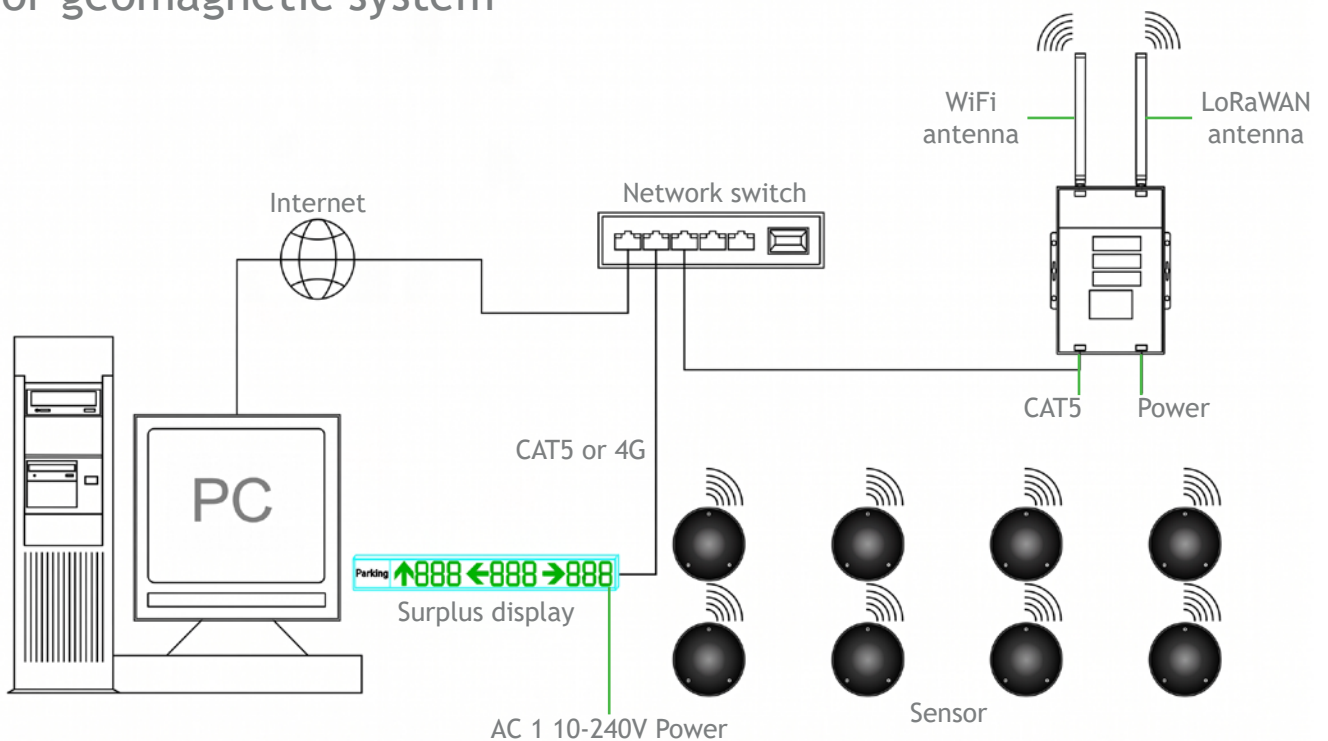
2. System wiring

2.1 System wiring

Outdoor geomagnetic system



Indoor geomagnetic system



2.2 Controller wiring diagram

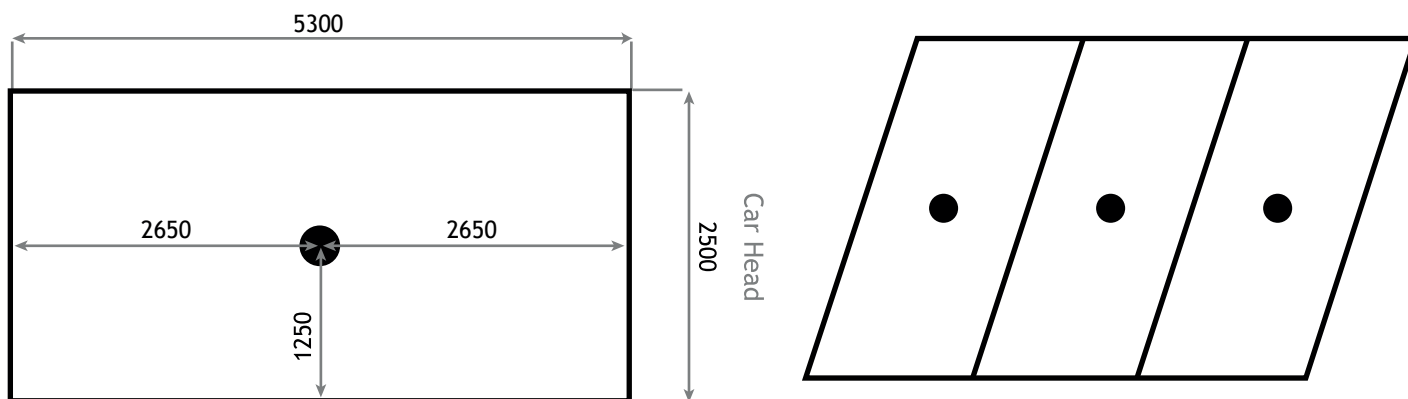
Name	Explain
LoRa antenna interface	SMA external screw internal hole
LTE antenna interface	SMA external screw and internal hole
Wi-Fi antenna interface	SMA external screw and internal hole
SIM card slot	Full network Mini SIM card
TF card slot	Used for firmware upgrade
DC power input	9~36 V DC input, DC5.5/2.5
Power input	9~36 V DC input
Type-C USB	Reserved by the manufacturer
Ethernet/PoE	10/100M Ethernet, PoE powered



3. Detector installation

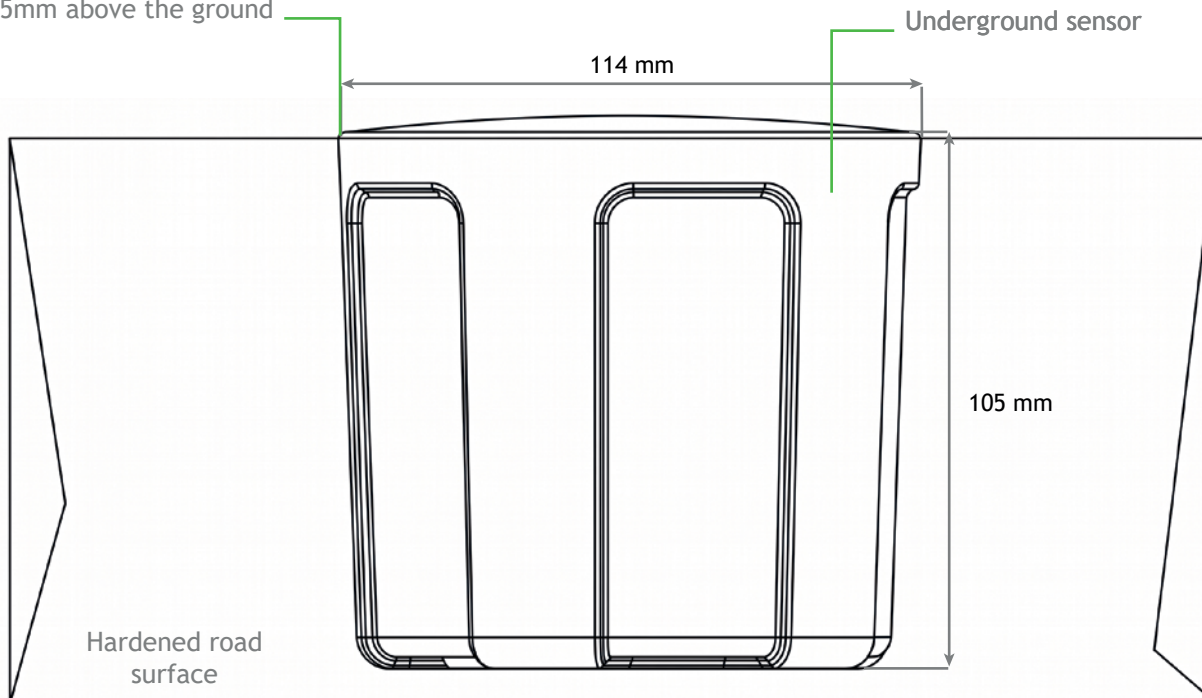
3.1 Schematic diagram of geomagnetic detector parking space installation

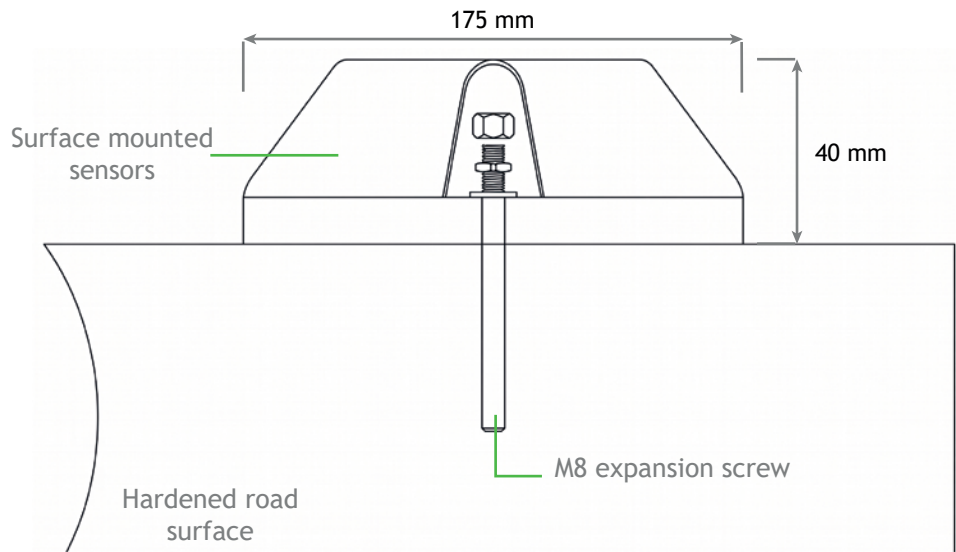
Detector installation location: For non-standard and standard parking Spaces, the geomagnetic detector is installed in the middle of the parking space; as shown in the following figure:



3.2 Installation method of geomagnetic detector

The geomagnetic detector is 5mm above the ground





3.3 Equipment installation steps

Step 1: Determine the coordinates of the hole according to the size of the parking space (standard parking space and non-standard parking space, see 3.1 above for details).



1. Measure the installation position of the geomagnetic field



2. Determine the hole position

Step 2: Use a drilling machine (core drilling machine) to drill holes at the marked positions. Requirement: diameter 125 mm, depth 110 mm.



Step 3: Pour an appropriate amount of cement mortar into the drilled hole, ensuring the bottom and inner sides are evenly coated, then place the geomagnetic sensor into the hole for trial installation until the sensor is flush with the ground surface, while trying to form a standard cylindrical shape as much as possible.

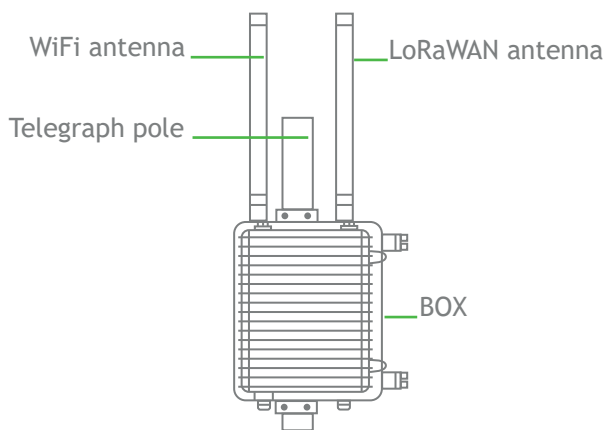


Step 4: Place the geomagnetic sensor into the hole as a whole and compact it firmly. The sensor should be installed slightly higher than the road surface, about 3-5 mm above. Pay attention to:

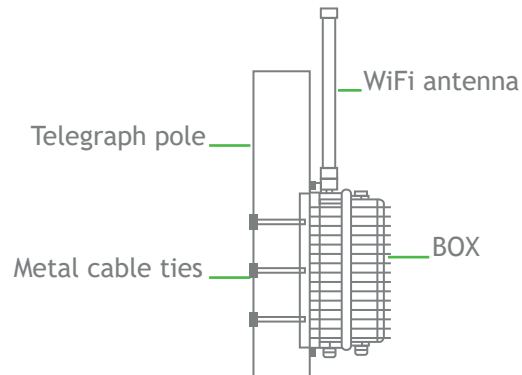
1. When installing the geomagnetic detector, do not use too much cement. Avoid cement contamination and keep the geomagnetic surface clean.
2. If the parking space is not on the concrete ground, a pit of more than 30*30*15cm should be dug and concrete, cement or river sand should be poured. The magnetic parking space detector should be installed in the middle to prevent the road from collapsing or the detector from being damaged by the car rolling over.

4. Installation of wireless gateway

4.1 Outdoor gateway installation method

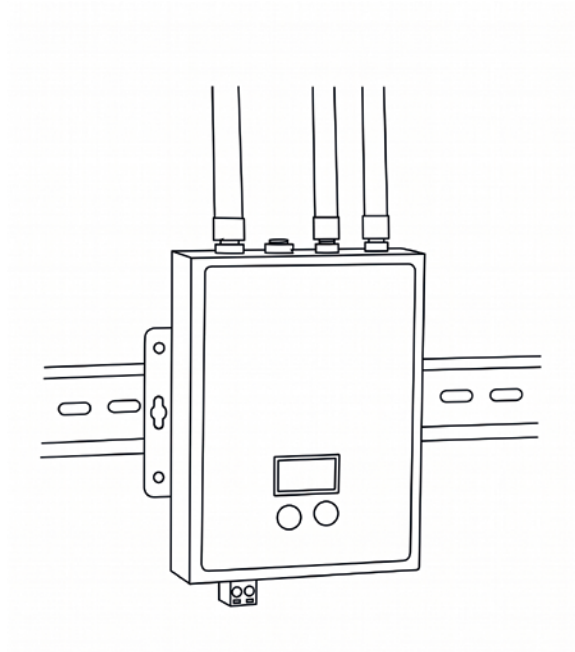
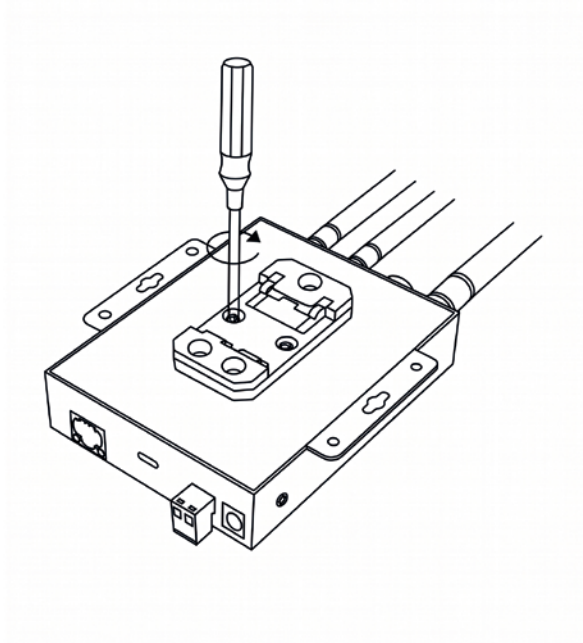


1. Install the 2 antennas

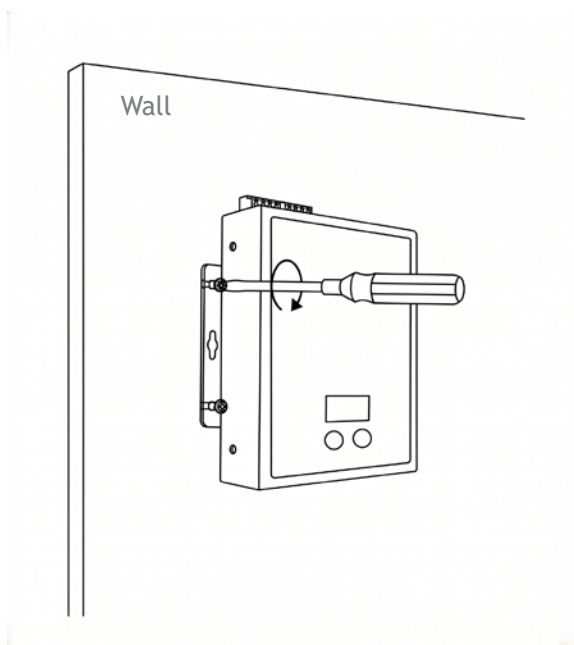


2. Use a metal cable tie to secure the box assembly to the pole

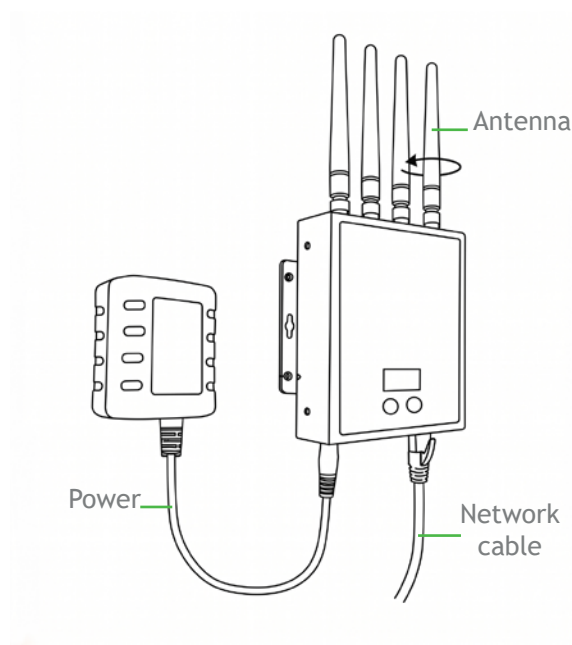
4.2 Indoor rail installation method



4.3 Indoor wall installation method



1. Wall installation



2. Connect the power supply, network cable and antenna

Step 1: Fix the position of the pole bracket, fix the bracket and tighten the screw.

Step 2: Secure the gateway to the bracket and secure it with matching screws.

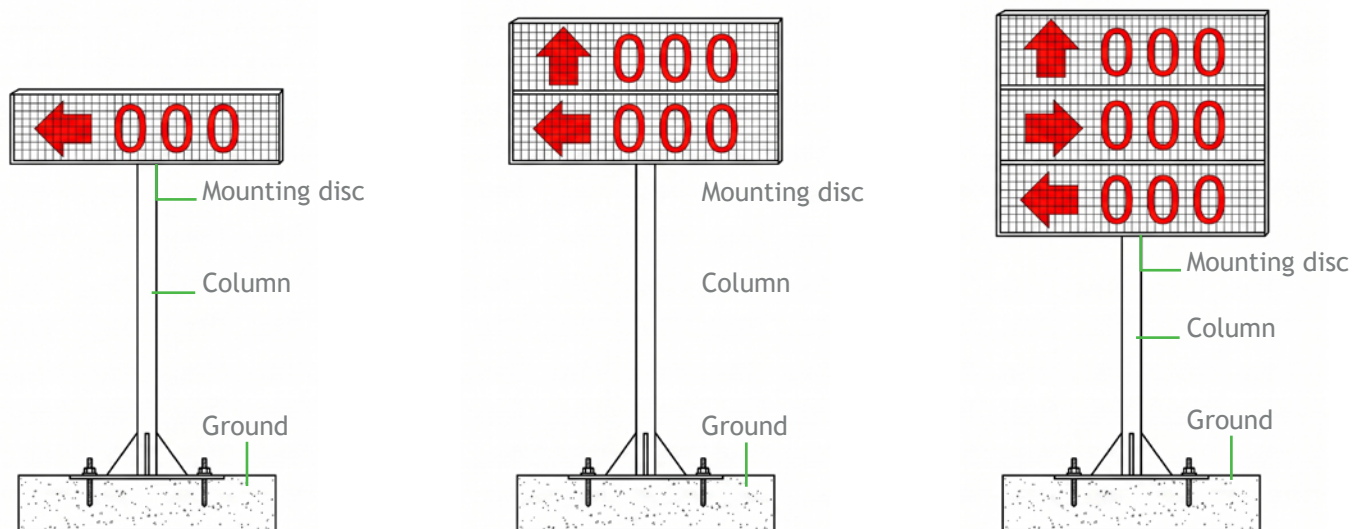
Step 3: Install the antenna bracket clamp, fix the screws according to the hole position, and then proceed to step 4 for antenna installation.

Step 4: Connect the antenna feed port with the gateway feed port, and place the antenna directly on the fixed position. (The antenna with its own suction cup can be directly adsorbed)

Step 5: Fix other connecting wires (power supply, CAT5, etc.) and other harnesses to avoid falling off during use

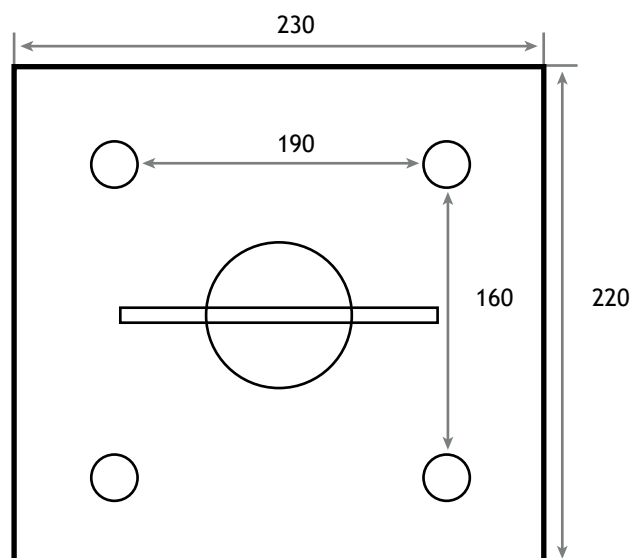
5. Outdoor guide screen installation

5.1 Installation diagram



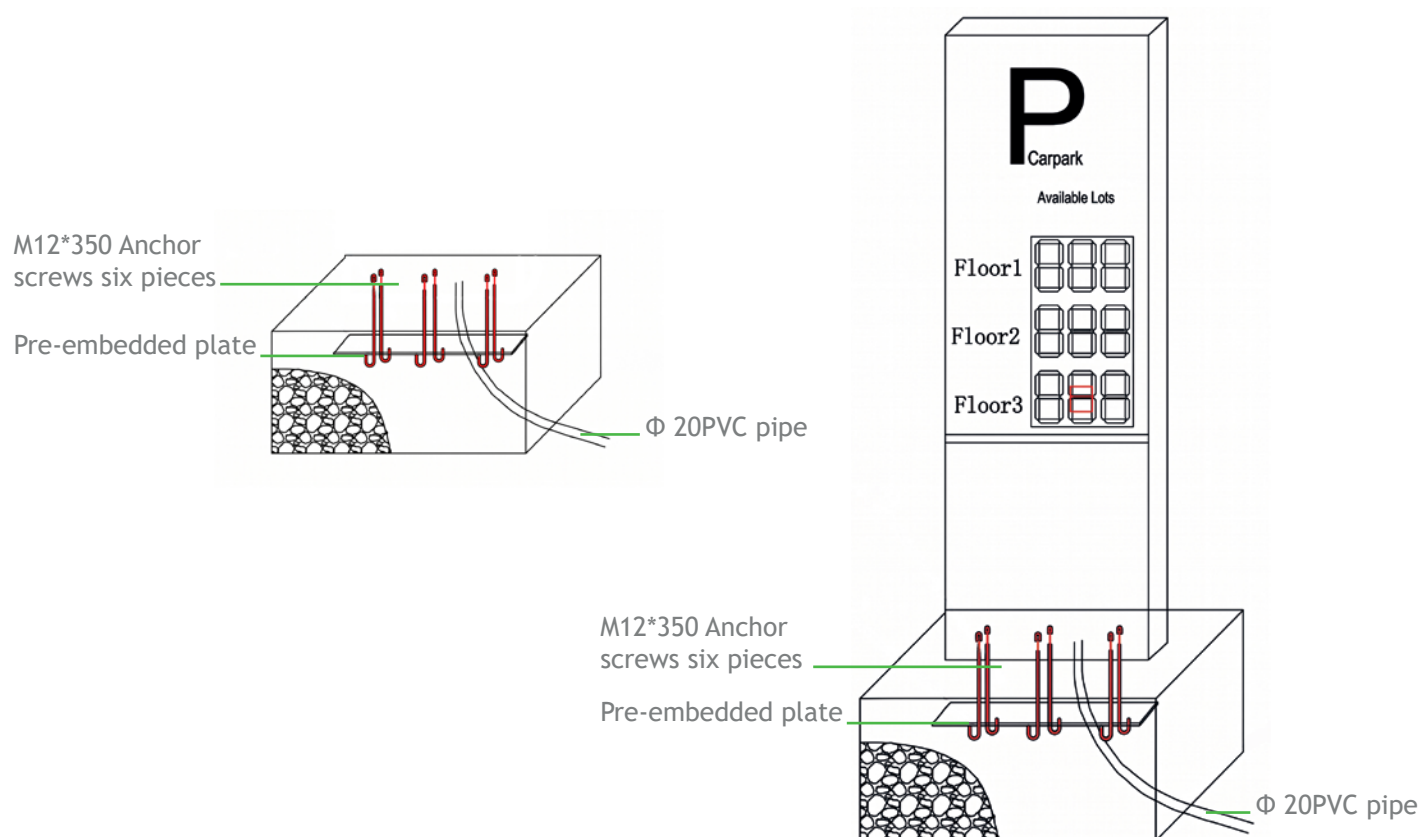
Outdoor guide screen assembly drawing

1. For the column foundation, a 500*500*500mm cement pier will be made to guide the installation position of the screen, and a 20mm P VC pipe will be embedded as a power and communication conduit.
2. After the natural solidification, after determining the fixing position of the guide screen screw, fix it with M10*16 expansion screw; tighten the screw.



6. Outdoor guidance screen installation

6.1 Installation diagram



1. The embedded plate and anchor screw are embedded in the 1000 (length)*500 (width)*1000 (height) mm concrete pier (the top of the concrete pier is level with the ground).
2. Note: The PVC pipe with a diameter of 20mm embedded in the pre-buried wire shall be used as the power line RVV3*1.5 and network cable (or RVSP2*1.0mm² twisted pair) to ensure that the inside of the PVC pipe is unobstructed.
3. After the cement pier is naturally consolidated, tighten the anchor screws and fix the large screen.

7. Configuration of geomagnetic detector channel address

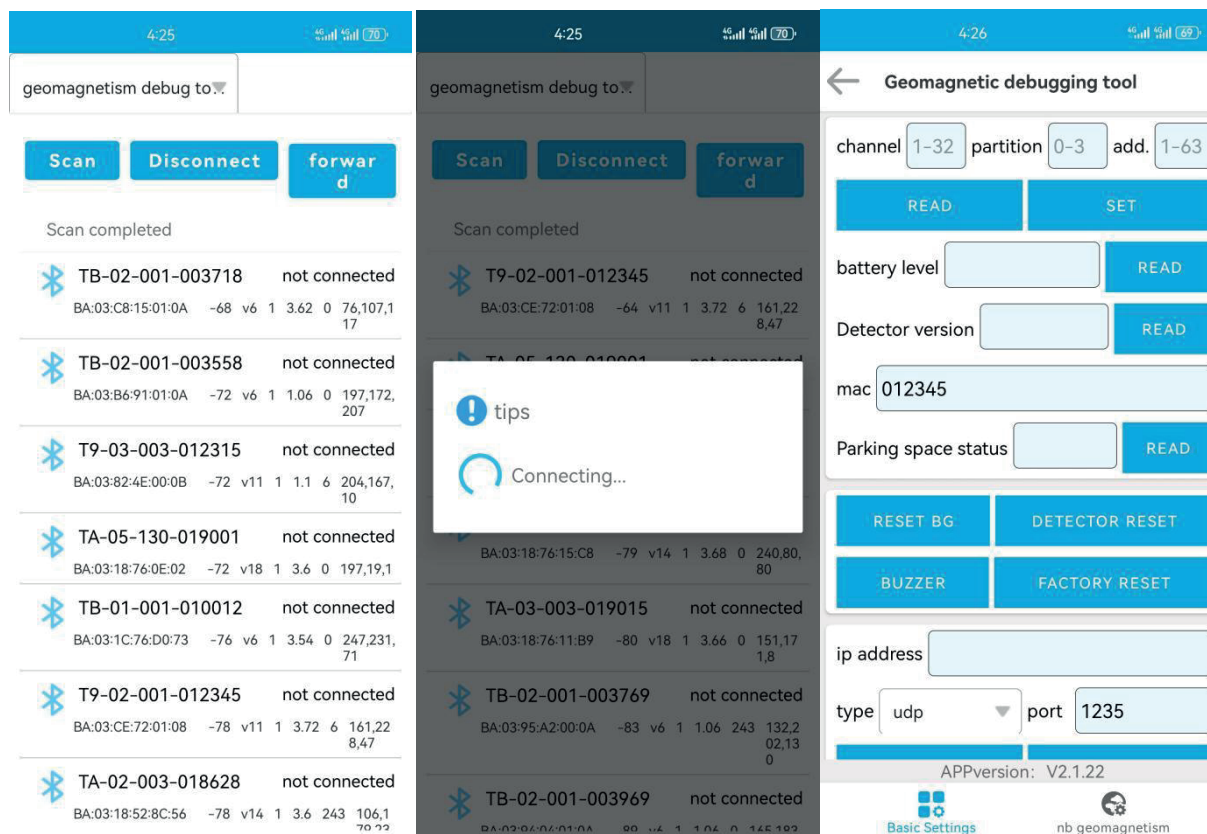
The geomagnetic parking space detector is configured through Bluetooth to realize wireless debugging. When configuring the parameters of the geomagnetic detector, the geomagnetic detector will be connected to the APP for configuration operation (currently the APP only supports Android system). The configuration steps are as follows:

7.1 Install and debug App on mobile phone

Before debugging, contact the technical personnel of the manufacturer to ask for debugging software, install APP, and enter the next step after successful installation.

7.2 Search for geomagnetic Bluetooth

Open the debugging APP--click scan Bluetooth--connect the geomagnetic Bluetooth that needs to be connected--enter the configuration interface, as shown in the following figure:



7.3 Read the geomagnetic sensor parameters

The parameters of the geomagnetic detector have been written into Mac, deveui, appeui, appkey, etc. at the factory. The parameters of each geomagnetic detector should be read and recorded on the corresponding parking space on the drawing after actual on-site debugging, which can refer to the Equipment Position Record.

The steps for reading the geomagnetic detector are as follows:

14:14

← 地磁调试工具

电池电量 读取

探测器版本 读取

mac

车位状态 读取

lora fre 读取 设置

重置背景 探测器复位

校准器 恢复出厂模式

lorawan

频段 读取 设置

deveui

appeui

appkey

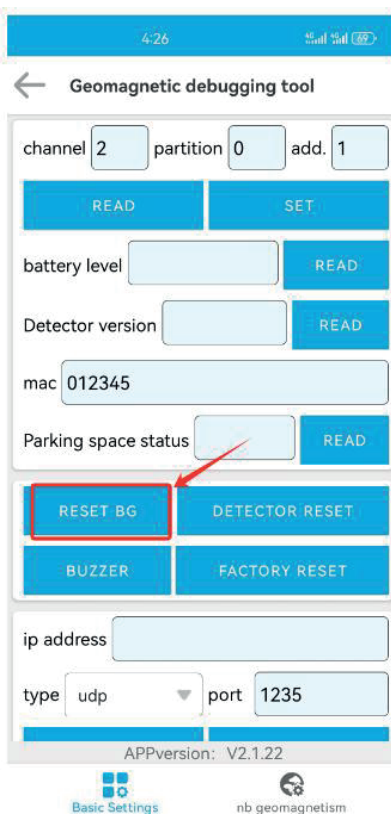
读取

APP版本: V2.1.26

基础设置

7.4 Set the detector background

After the channel address is set, the background of the detector needs to be calibrated. In the bluetooth connection state of the detector, click the "Reset Background" button of the detector to enter the background reset mode and configure the current status as no car. After clicking the reset background, wait for about 1 minute to complete the calibration.



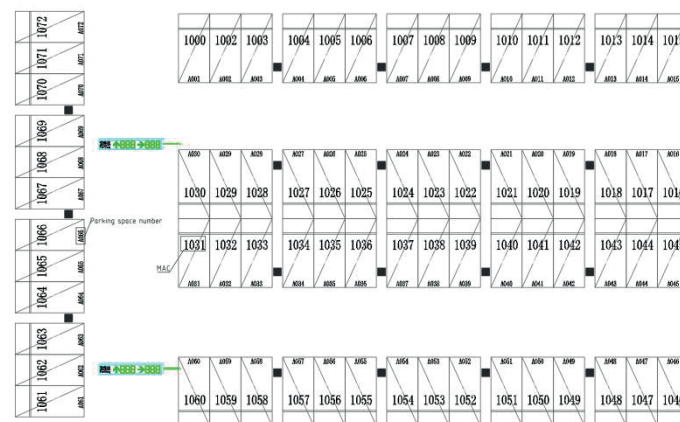
Note: During the calibration process, there should be no object or person in the current parking space, otherwise it will affect the calibration of the detector. After clicking reset background, wait for about 1 minute to complete the calibration.

7.5 Other functions

1. Click "Read" in the parking space status bar to obtain the current parking space status "with car/no car".
2. Find the detector, use the buzzer to find the installation position of the nearby detector.

8. Equipment location records

Record sensor tag information and serial number on the drawing so that the debugging personnel can perform later software debugging and equipment addition (as shown in the figure)



9. Gateway IP view

9.1 Static IP mode

If the gateway is configured to use a static IP address, use the previously configured IP address. Note that the network configuration parameters of the gateway and the current network environment configuration are consistent, otherwise it cannot be used.

9.2 Wi-Fi hot spot mode

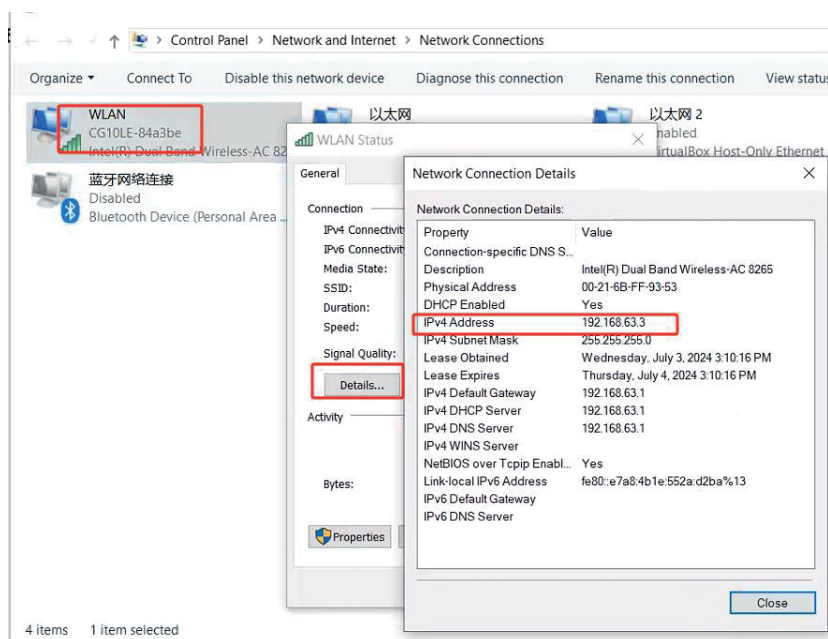
Version V1.0.2 enables built-in Wi-Fi, which works as an hotspot (AP). You can log in to the gateway WEB interface to configure and other operations by connecting to the gateway Wi-Fi hotspot.

9.3 Connect to hot spots

Scan the gateways Wi-Fi network name through the Wi-Fi hotspots on your PC and phone, and connect. If there is an error! The source of the reference is not found. The default Wi-Fi network name is CG10LE-xxxxxx, where "xxxxxx" represents the last six digits of the gateway ID, and the password is 66666666. For security, it is recommended to modify the default network name and password after logging in).

9.4 Check the IP

Taking the window 10 operating system as an example, after connecting to the Wi-Fi, find the wireless network connection (such as WLAN) under "Control Panel-> Network and Internet-> Network Connections," as shown in the figure. Right-click on "WLAN," then select "Status" from the pop-up menu. In the status dialog box, click "Details," which will bring up a detailed network connection information box. Locate the "IPv4 Default Gateway" field, which is the IP address of the gateway hotspot, typically set to "192.168.63.1" by default.



10. Log in to the WEB configuration interface

Note: Please configure the gateway using a compatible browser. Non-compatible browsers (such as Edge, IE, and other IE kernel browsers) may have unknown problems. Subsequent upgrade versions will improve browser compatibility.



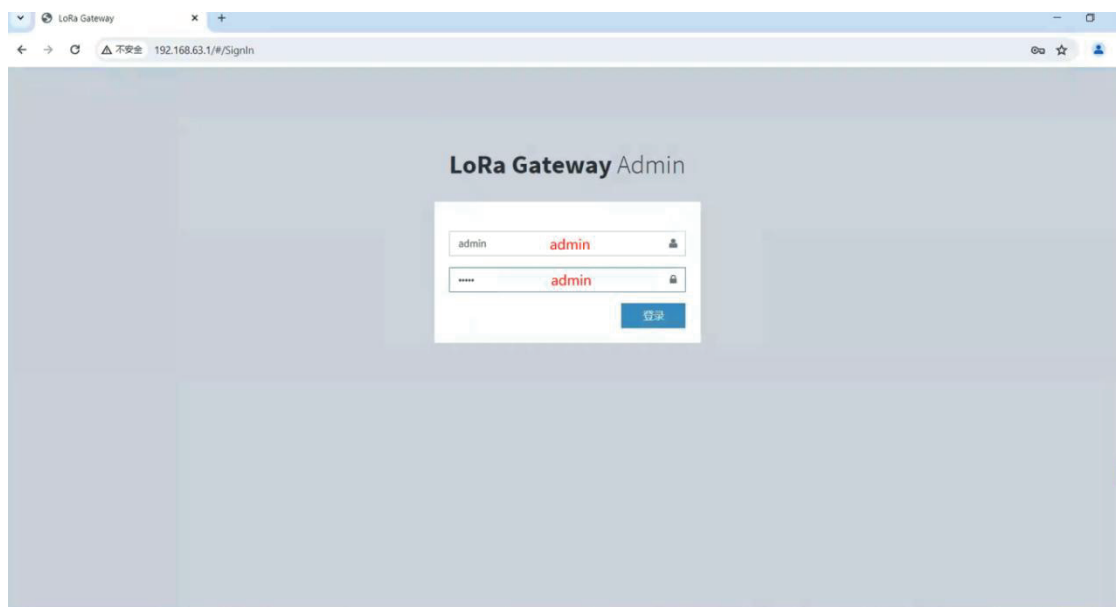
Enter the gateway IP address in the browser address input bar, and the login interface will appear after pressing Enter, as shown in the figure. Enter the user name and password in the login interface, V1.0.2 and later versions are "admin", click "Login" to enter the configuration interface.

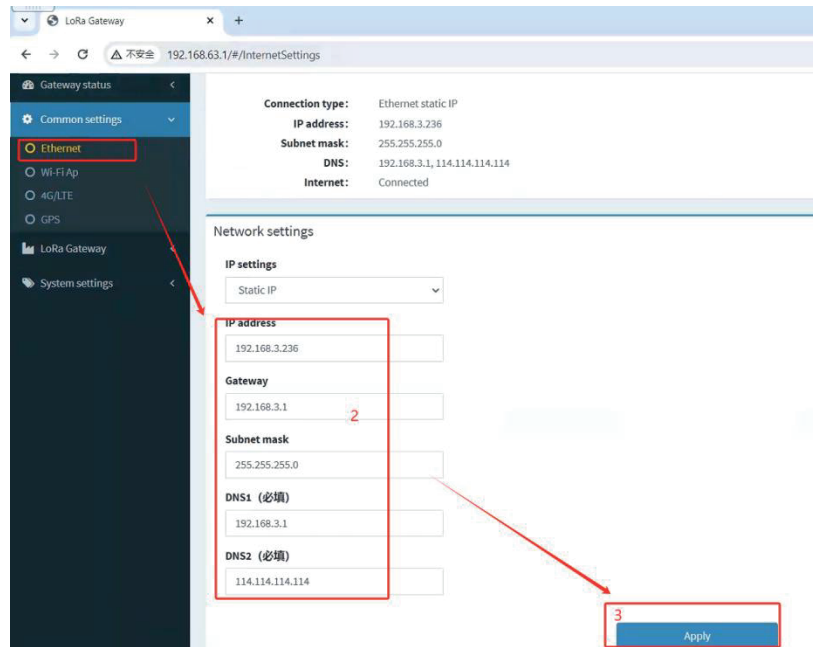
10.1 Gateway status

The refresh of gateway status sometimes takes a long time, usually 1 to 10 seconds, and may take more than 10 seconds if the network is not smooth. If it does not appear immediately or only partially after clicking, please wait patiently. Other interfaces (Internet Settings, LoRa server interface, etc.) also have corresponding status refresh, so there may be some refresh delay

10.2 Static IP Settings

If the gateway needs to use static IP address to access the Internet, select "Static IP" for the Internet access mode. The input boxes for IP address, gateway and subnet mask will appear. Enter the correct configuration parameters and click the "Apply" button. Note that if you need to log in the gateway again after the configuration is completed, you need to use a new IP address.

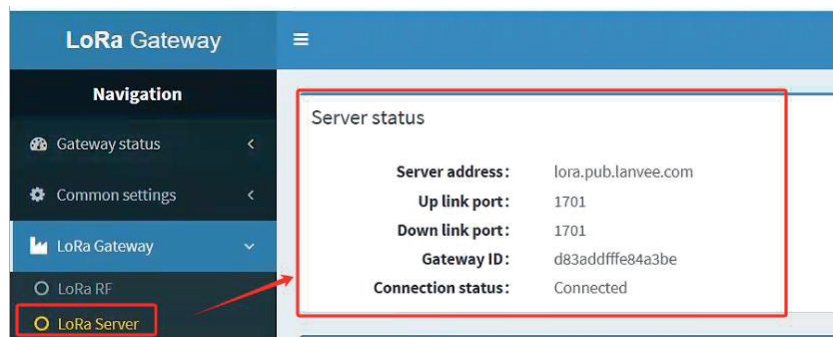




10.3 LoRa server interface (push data to the specified platform)

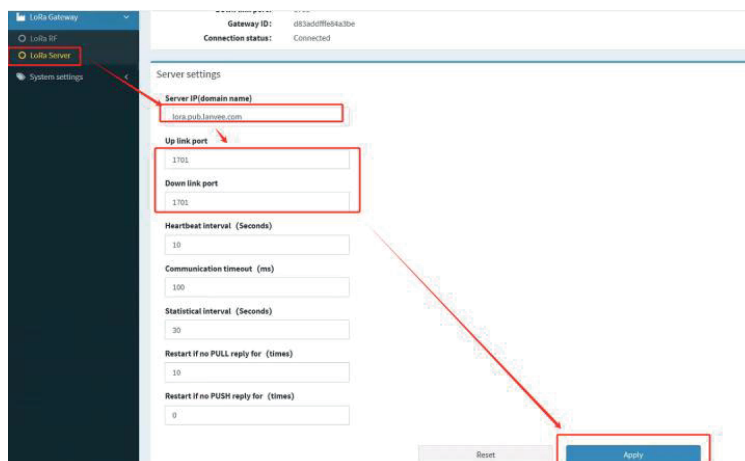
10.3.1 Gateway login status

The LoRa server login status displays information such as the server address set by the current gateway, the upstream and downstream ports of the server, the gateway ID, and the server connection status, as shown in the figure



10.3.2 Target server push Settings

The current server Settings include parameters such as server IP address, port, heartbeat and timeout. For example, the push address and port of the self-prepared platform are modified according to the actual situation, as shown in the figure



The parameter meanings are shown in the table below by default. The default parameters are provided by the gateway manufacturer as free test server parameters. If you purchase a private server, please set the parameters according to the private server as shown in the table below.

Parameter	Windows default	Explain
Server IP/domain name	lora.pub.lanvee.com	The IP address or domain name of the LoRa server
Upboard port	1700	Uplink communication port of the LoRa server
Downlink port	1700	Downlink communication port of the LoRa server
Heartbeat interval	10 Seconds	This parameter is the interval in which the gateway sends a heartbeat packet to the server to keep it disconnected. It needs to be set according to the network situation. Being too short will increase the network bandwidth and traffic usage (4G and other wireless may be more sensitive), and being too long will lead operators to disconnect data channels
Communication timeout	100 milliseconds	The timeout time of communication with the server generally depends on the network smoothness and the maximum delay time

11. Add software platform

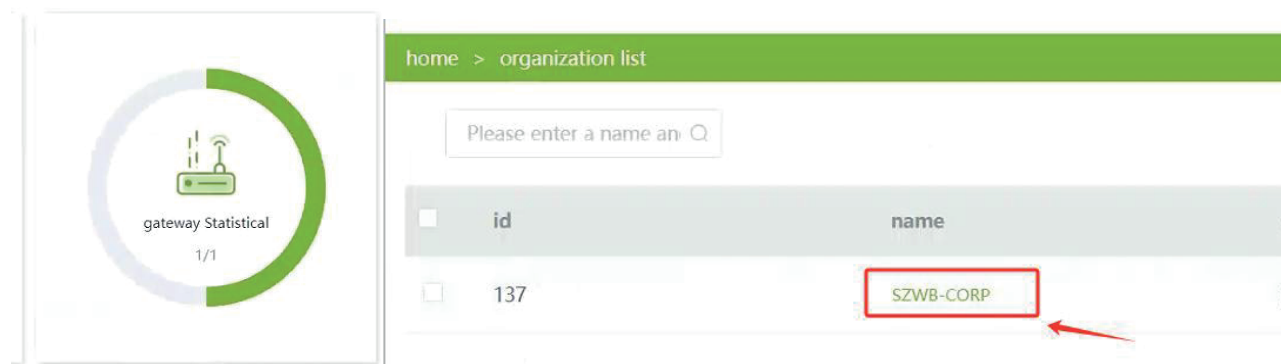
Take the test platform as an example: Web login <https://lora.pub.lanvee.com:8080> Account: xxxx Password: xxxx (the actual platform is subject to the platform!)

The above methods are only for reference to a platform deployment example. The steps of the own platform method may be different, but the required equipment information is basically the same and needs to be configured according to different platforms!



11.1 login successfully

Gateway addition, click gateway statistics on the main page to enter the background:



11.2 Add a gateway

Select Gateway option, Add gateway:

home > organization list > SZWB-CORP(137) > organization gateway list

application Multicast-groups **1 gateway** user Configuration changes Application Template device Template

2 + Add Delete import download Please enter a name and: Q

	name	organization	MAC	description	NS
☐	test01	SZWB-CORP	4022d8fffe5e0e13	1	EU868

Fill in the gateway information: EUI is built in the gateway, and relevant labels are attached on the side. NS:EU868 (subject to actual use)

home > gateway list > gateway create

organisation SZWB-CORP

Gateway Name admin8532

gateway EUI d83addfffe84a3be

description 8532

NS EU868

Channel Configuration Please select gateway Profile

☐ Enable an adjacent gateway to be discovered
Now if it is enabled (and the application server enables adjacent gateway discovery), gateway:

Gateway elevation 0

Map: Merchants Mansion, Huaqiang South

back submit

Gateway added, as shown in the following figure:

+ Add Delete ± import ± download Please enter a name an:							
☐	name	organization	MAC	description	NS	Gateway Profile	Gateway activity
☐	admin8532	SZWB-CORP	d83addfffe84a3be	8532	EU868	--	not Active Info
☐	test01	SZWB-CORP	4022d8fffe5e0e13	1	EU868	--	1.05days ago

After refreshing, you can see that the gateway is online

home > organization list > SZWB-CORP(137) > organization gateway list							
applicationMulticast-groupsgatewayuserConfiguration changesApplication Templatedevice Template							
+ Add Delete ± import ± download Please enter a name an:							
total: 2							
☐	name	organization	MAC	description	NS	Gateway Profile	Gateway activity
☐	admin8532	SZWB-CORP	d83addfffe84a3be	8532	EU868	--	3seconds ago
☐	test01	SZWB-CORP	4022d8fffe5e0e13	1	EU868	--	1.05days ago
Total 2 20/page < 1 > Go to 1							

11.3 Add Lorawan sensor

11.3.1 Click the organization item to enter the sub-item

+ Add Delete ± import ± download Please enter a name an:							
total: 2							
☐	name	organization	MAC	description	NS	Gateway Profile	Gateway activity
☐	admin8532	SZWB-CORP	d83addfffe84a3be	8532	EU868	--	1seconds ago
☐	test01	SZWB-CORP	4022d8fffe5e0e13	1	EU868	--	1.05days ago

11.3.2 Create sub-projects

home > organization list > SZWB-CORP(137) > application list

application Multicast-groups gateway user Configuration changes Application Template device Template

+ Add Delete Please enter a name an Q total: 2

id	name	description	Application Template	device Number
497	fac_20240506_260pcs	260个地表地磁	EU868	258
492	sz01	停车	EU868	5

home > organization list > SZWB-CORP(137) > application list > application create

name 8532 Names can only contain characters, Numbers, shou underscores

description 123 Any Character

Application Template EU868 + Add

Data codec Select the parser Once the data codec is defined, the LoRa applicati and decode the binary data of the device

back submit

Project added successfully, add lorawan sensor, EUI: EUI code of the sensor before leaving the factory, 1038C: MAC of the sensor, project ID: sub-project code number

+ Add Delete Please enter a name an Q t

id	name	description	Application Template	device Number
504	8532	123	EU868	0
497	fac_20240506_260pcs	260个地表地磁	EU868	258
492	sz01	停车	EU868	5

device

Application configuration

Application interface

+ Add

Delete

import

export

download

Please enter a name and

total: 0

name	description	device EUI	device Template	link margin	battery	signal quality	online status
------	-------------	------------	-----------------	-------------	---------	----------------	---------------

home > organization list > SZWB-CORP(137) > application list > device list > device create

name

1001

Names can only contain characters, No underscores

description

1038C

Any Character

device EUI

00210101ff00004a

16 hexadecimal characters

device Template

EU868-class A

+ Add

project ID

504

integer

skipFCntCheck

☐ disabled skipFCntCheck

back

submit

Sensor added successfully:

+ Add

Delete

import

export

download

Please enter a name and

total:

	name	description	device EUI	device Template	link margin	battery	signal quality	online status
	1001	1038	00210101ff00004a	EU868-class A	N/A	N/A	N/A	N/A

11.3.3 Add sensor appkey

Each sensor appkey is different and must be added individually

+ Add

Delete

Import

Export

Download

Please enter a name and

total: 2

	name	description	device EUI	device Template	link margin	battery	signal quality	online status
☐	1001	1038	00210101ff00004a	EU868-class A	N/A	N/A	N/A	N/A
☐	1098	1098	00210101ff000008	EU868-class A	N/A	N/A	N/A	N/A

Total 2
20/page
1
Go to 1

home > organization list > SZWB-CORP(137) > application list > device list > device edit

1001

description: 1038

online status: Invalid date

battery: N/A

link margin: N/A

signal quality: N/A

device EUI: 00210101ff00004a

device Template: EU868-class A

activation: OTAA

CLASS: A

Downlink-gateway: unbound

project ID: 504

skipFCntCheck:

☐ disabled skipFCntCheck

Device debugging

activation information

1 Device key (OTAA)

Application of key

960f77f188c4402ab7f21ad57211b61d

2

submit

back

11.3.4 Sensor testing

The mobile phone connects to the APP, resets the background of the sensor to make the sensor in a "no car" state, and then uses a metal object to approach or cover the surface of the sensor. The APP reads that the current parking space status is "car" and checks whether the sensor has uploaded data on the platform.

The sensor status has been uploaded normally, and the device and platform have been debugged

home > organization list > SZWB-CORP(137) > application list > device list

device

Application configuration

Application interface

+ Add

Delete

Import

Export

Download

Please enter a name and

total: 2

	name	description	device EUI	device Template	link margin	battery	signal quality	online status
☐	1001	1038	00210101ff00004a	EU868-class A	N/A	N/A	N/A	a few seconds ago
☐	1098	1098	00210101ff000008	EU868-class A	N/A	N/A	N/A	N/A

Total 2
20/page
1
Go to 1

The above methods are only for reference to one platform deployment example. The steps of the own platform method may be different, but the required equipment information is basically the same, which needs to be configured according to different platforms and internal configurations!