

Anbot-Y

Security Patrol Robot

User Manual

(Standard)



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1. Product use and scope of application

1.1. Product Introduction

ONEWAY Anbot-Y robot is an indoor and outdoor security patrol robot independently developed by ONEWAY Robotics. The entire system consists of the robot body (including charging pile) and the robot management system. Through the 4G network interconnection, it jointly realizes the core functions of indoor and outdoor patrol duty, video surveillance, intelligent identification, monitoring and early warning, remote disposal, broadcast notification , etc.

1.2. Product use environment

- ✧ This product is suitable for indoor and outdoor paving, and the vertical obstacle height is not higher than 40mm.
- ✧ The maximum uphill and downhill angle of the walking surface is 10 ° .
- ✧ The length of uphill and downhill sections in the operation section shall not exceed 20% of the total distance, and the continuous uphill and downhill distance shall not exceed 300 meters. Otherwise, the wheel hub motor may overheat and cause the robot patrol to be terminated.
- ✧ It is not possible to walk on stairs or steps. If the environment has relevant scenes, it is necessary to set up restricted areas in the background to prevent the robot from entering by mistake.
- ✧ Driving weather: sunny, cloudy, light rain. It is not supported in bad weather conditions such as rain, snow, hail, etc.

The specific use environment varies with different robot configurations. Please contact the manufacturer's relevant personnel to confirm the use environment and configuration method before use.

2. Safety precautions

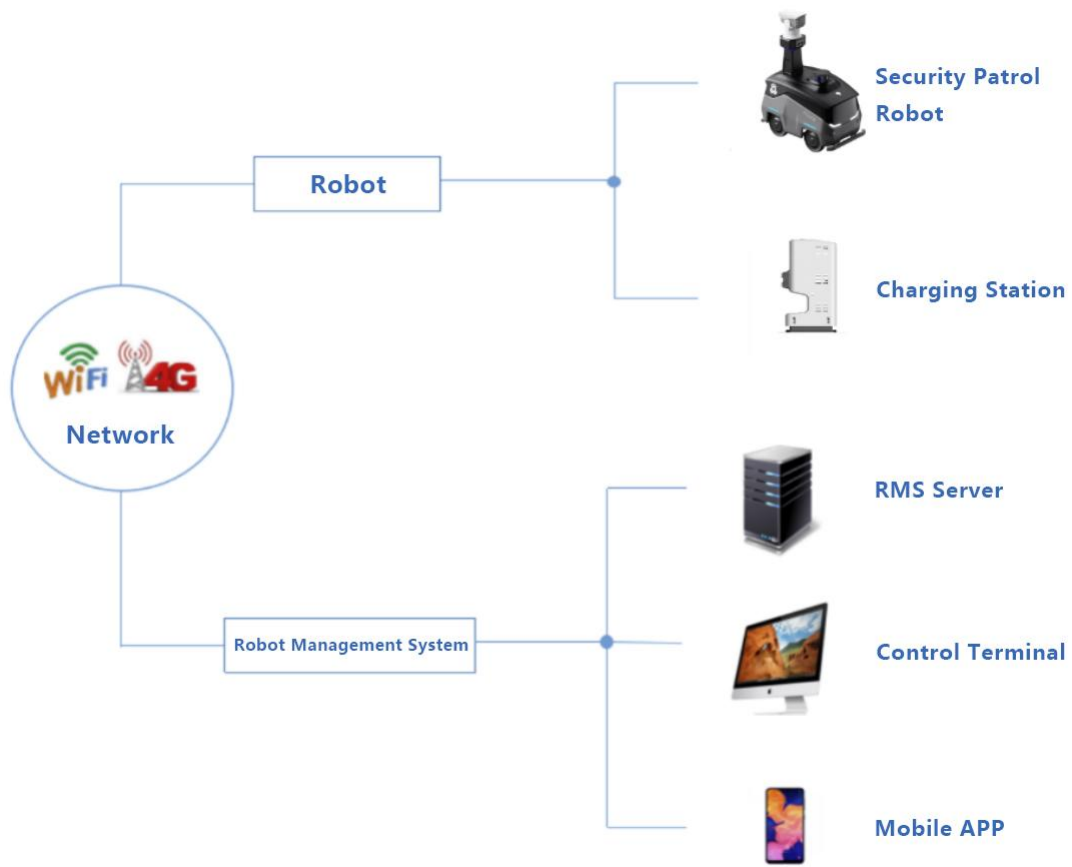
- ✧ Please read this product manual carefully to avoid product damage or even personal injury caused by improper operation;
- ✧ This product must be operated by professionals or trained personnel;
- ✧ This product and its charging pile should be kept away from flammable and explosive items to avoid damage to the machine or casualties;
- ✧ This product must be charged with the original charging equipment. If the charging equipment or battery fails, please contact the manufacturer in time;

- ✧ The charging cable should be pulled to avoid distortion or damage , which may cause charging failure.
- ✧ Charging piles should be placed away from high-radiation equipment such as UHV substations;
- ✧ The charging piles should be placed in a location that is shaded and rainproof;
- ✧ If the charging station is not used for a long time, the power plug should be unplugged from the socket;
- ✧ The robot is prohibited from walking in an unprotected suspended environment (unprotected terrace, edge of square steps, etc.). If special circumstances require, relevant restricted area settings or other protective measures must be taken and confirmed with the manufacturer's engineers;
- ✧ Before use, ensure that the laser radar, camera lens and other sensors equipped with the product are free of dust or obstructions to avoid functional failures caused by sensor misdetection;
- ✧ When setting the robot's navigation path, make sure there are no obstacles that the robot cannot detect (such as glass with high light transmittance, low steps, etc.) on the route to avoid collision or damage to the robot;
- ✧ When the product fails, please do not repair it by yourself. Please contact our after-sales team or call +86 731 89929571 directly for help.

3. Product composition

3.1. Robot system framework

The ONEWAY security robot system mainly consists of two parts: **the robot end and the robot management system** , which are interconnected through the 4G network. The robot end includes the robot body and the charging pile; the robot management system includes the RMS server, computer control terminal and mobile phone APP.



Robot system diagram

System function description table:

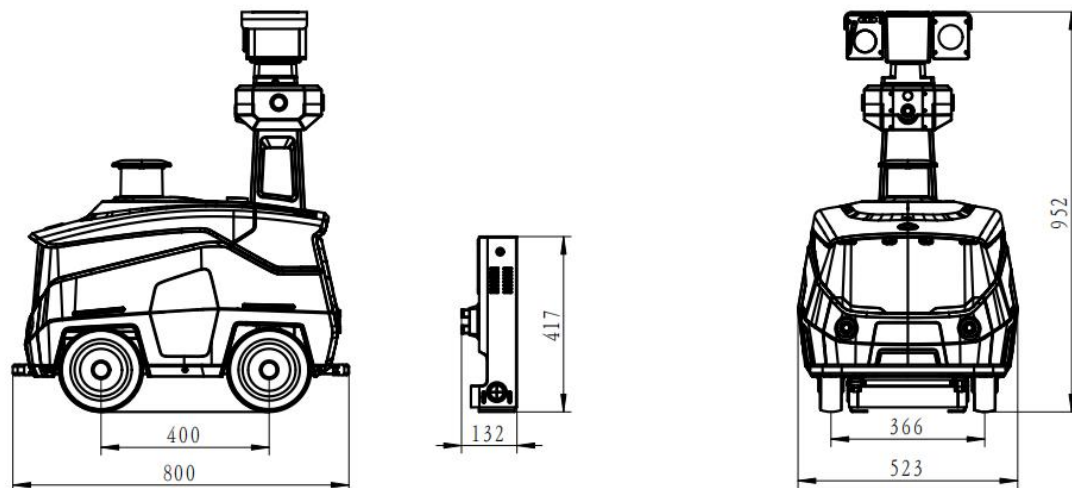
System composition	Subsystem	Functional Description
Robot side	Robot body	Realize the main functions of the robot, such as autonomous walking, autonomous charging, video monitoring, etc.
	Charging Station	For automatic and manual charging of robots
Robot management system	RMS server (cloud server or customer server)	1. The RMS server is the information processing platform of the robot system, with functions such as robot management, task scheduling, data storage, data analysis, and user rights management; 2. The RMS server can be deployed in a local area network or on the Internet cloud;

	Control Terminal	1. The control terminal interacts with the robot through the server and is the command input terminal of the robot, as well as the information display terminal of the robot; 2. Management personnel can use the terminal to set patrol tasks and broadcast tasks for the robot, remotely control the robot, and adjust the robot's parameter settings . They can also view real-time and historical monitoring videos, environmental information, alarm records , etc.
	Mobile APP	1、 View the robot's real-time patrol information and historical information 2、 View various patrol photos and alarm information of the robot 3、 Perform simple remote operations on the robot and assign it to a designated location to perform temporary tasks such as standing guard, patrolling, taking photos, broadcasting, and making calls.

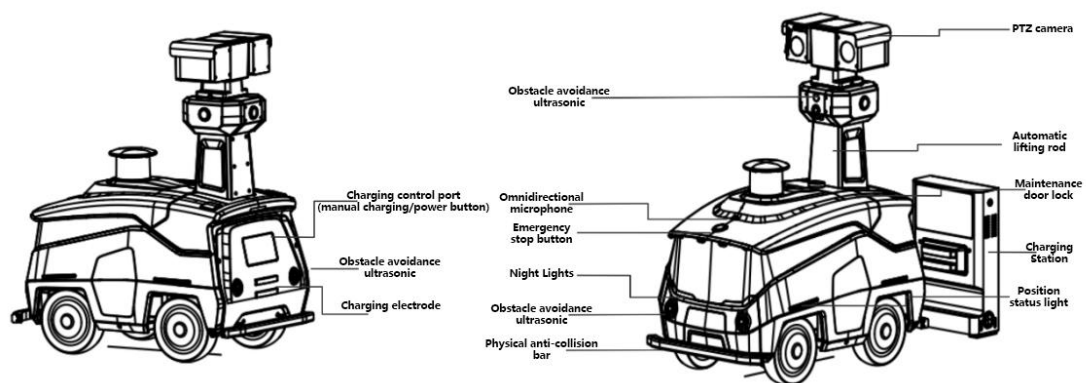
3.2. Equipment and accessories list

Serial number	name	Specification	Remark
1	Outdoor security patrol robot	Anbot-Y	Robot body
2	Charging Station	Y-80	Charging equipment
3	Remote Control	X4P	Supplied accessories
4	Triangle key	/	Supplied accessories
5	Electronic instruction manual	Paper instruction manual	Supplied accessories
6	Wearing parts list	Paper list	Supplied accessories

3.3. Product Diagram



Anbot-Y overall dimensions



Anbot-Y functional diagram

4. Product Configuration

4.1. Network Configuration

4G can be used on site, with the following specific requirements:

- ✧ 4G: Applicable both indoors and outdoors, requiring strong and stable signals;
- ✧ Server network bandwidth: minimum 15M
- ✧ For specific network configuration, please contact the operation and maintenance personnel for on-site configuration or complete it under the guidance of the operation and maintenance personnel.

4.2. Server image installation

The operation and maintenance personnel install the server system software.

4.3. Front-end control computer requirements and software installation

The front-end computer configuration requirements are shown in the following table:

project	Require
operating system	Windows 7 and above Compatible with Ubuntu versions
Browser	Firefox 52 or later Chrome 55 and above IE9 and below versions are not supported
Plugins	Latest flash plug-in
Computer Hardware	I3 or above CPU 4G or above memory

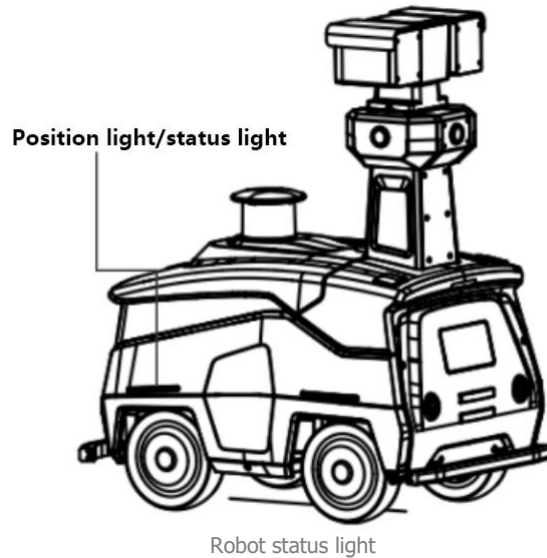
The installation is performed by the operation and maintenance personnel.

5. Instructions

This user manual involves the management backend operation part. Due to the rapid update of the backend version, it may not be the latest version. The specific operation shall be subject to the latest "RMS User Manual". Due to the rapid iteration and update of product versions, this manual will be updated regularly and will not serve as a product function or technical requirements acceptance document. It is only used as a guide for product operation instructions.

5.1. Product Status Light Description

Robot **sides** The status light can reflect the current status of the robot. The corresponding relationship between the robot status and the light strip display is as follows:

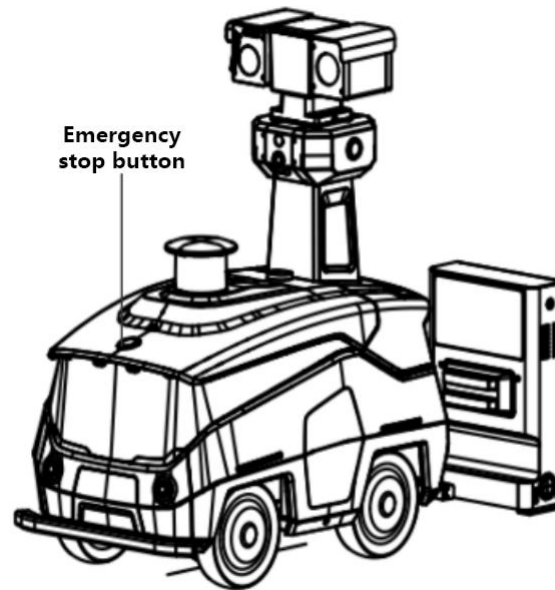


state	Light strip display
Startup Status	White
Idle state	Blue light flashes slowly
Interactive	Blue light breathing
Navigation state	Red and blue flash slowly alternately
Emergency stop	Red, green and blue flash alternately
Find the state of charge	Red and green flash slowly alternately
Docking charging pile	Red and green flash alternately
Charging state	Green light is always on
Positioning risks	Red breathing light
SOS Emergency	Red light flashing
Error state	Red light is on
Backstage remote control status	Blue and green flash slowly alternately
Handheld remote control	Blue and green flash alternately

5.2. Emergency stop switch instructions

The emergency stop switch can be used to enter/exit emergency stop when the robot is powered on. The emergency stop switch is located on **the upper front of**

the robot . The position is shown in the figure below. The emergency stop button indicator light is a red aperture.



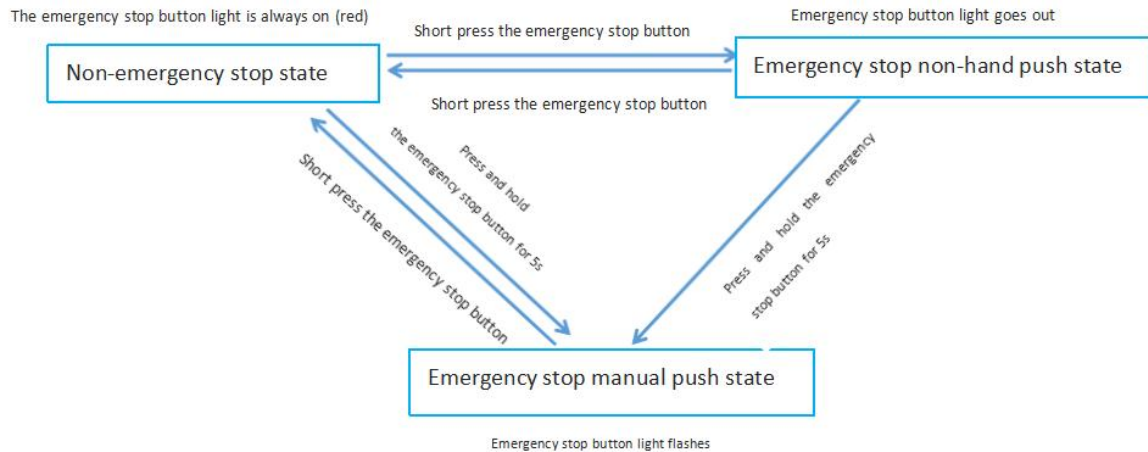
Emergency stop button diagram

In the emergency stop state, to prevent sliding, the robot rotates its four wheels into an X shape, and the robot cannot be pushed by hand at this time; but considering that customers need to push the robot in an emergency stop, a second emergency stop state - emergency stop hand push state is added, in which the wheels are straight. Therefore, the robot has three states after starting up: non-emergency stop state, emergency stop non-hand push state, and emergency stop hand push state.

- ✧ The corresponding relationship between the three states of the robot after it is turned on and the corresponding emergency stop button light display is as follows:

Emergency stop/non-emergency stop status	Emergency stop button light	Robot Status
Non-emergency stop	Lights on	Idle or running tasks
Emergency stop non-hand push state	Off	The robot's four wheels are tied into an X shape and cannot be pushed manually
Emergency stop push state	Flash	The robot's four wheels are straight and can be pushed manually

✧ Switching between three states:

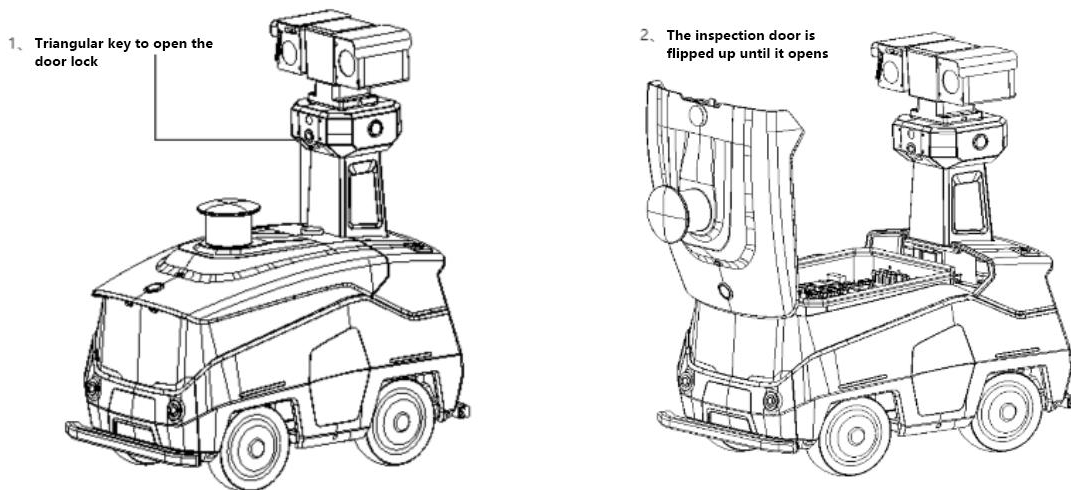


Emergency stop switch diagram

5.3. Maintenance door open/close

When it is necessary to inspect or maintain the internal equipment on the robot , use the triangular key to unscrew the inspection door lock, then lift and flip the door to open the inspection door .

Close the inspection door: When the inspection or maintenance is completed, close the inspection door and lock it .



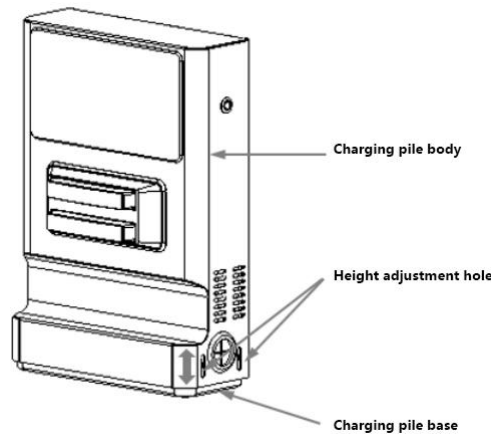
Hatch door switch indication

5.4. Charging pile height adjustment

base needs to be fixed to the installation position with expansion screws for firm fixation. During charging, the main body is connected and fixed to the base with 4 bolts on the side. There is an oblong hole at the fixing bolt position. By loosening the bolt, the height of the charging pile can be adjusted up and down to keep the height of

the charging pile pole piece consistent with that of the robot pole piece. The height adjustment range of the charging pile is ± 10 mm.

The front and rear pitch angles of the charging pile can be adjusted by adding or reducing adjustment gaskets at the anchor bolts, and the left and right height adjustment can be achieved by adjusting the bolt fixing height of the left and right height adjustment holes.



Schematic diagram of charging pile height adjustment

5.5. Robot map construction

Maps are the basis for robots to walk or perform tasks. After the robot is delivered, the manufacturer's operation and maintenance personnel will go to the site to build the first map.

Overview of mapping methods:

- Use the Jiantu tablet/mobile phone to enter the Jiantu APP;
- Set the appropriate resolution according to the scene;
- The robot is remotely controlled or pushed by hand to walk along the patrol area of the robot (while walking, the robot's lidar device will scan the surrounding environment and boundaries);
- Walk around the site and return to the starting position. After the map curve is closed, close the map, confirm the save and upload it to the server. After starting up, the robot will automatically load this map.

[Notes] The walking speed should be controlled at around 0.5m/s. Walking too fast may cause an increase in laser radar scanning noise, leading to map usage problems.

For detailed instructions on how to use the Map APP, see [the appendix](#).

5.6. Log in to the backend

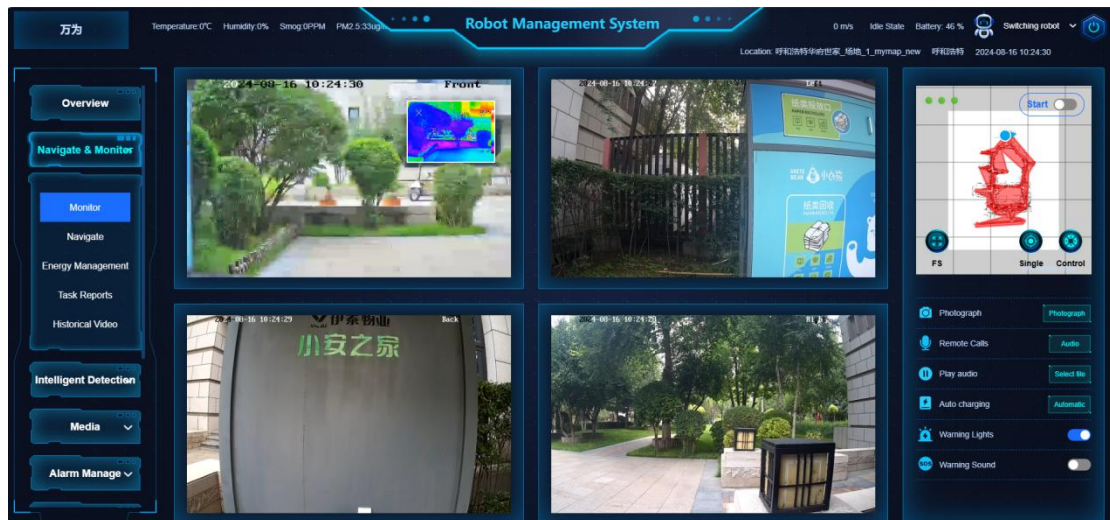
- ✧ If you use a cloud server, enter the server URL <https://www.anbotcloud.cn/>
- ✧ Enter your username and password

The image shows a futuristic, high-tech interface for a robot named SSR, Authority Admin. The interface is primarily blue and black with various icons and text. At the top left, there's a status bar showing 'Status: OFF' and 'Duration: 00:00:03'. Below this, there are three buttons: 'SSR', 'Monitor', and 'Robot'. The top right corner displays 'Server: Local Management' with five stars. The central part of the interface is a map of Asia, with a red dot in Beijing. Above the map, there are three labels: 'Cumulative kilometers', 'Task Execution Time', and 'Cumulative Execution Time'. Below the map, there are four buttons: 'Navigation', 'Monitoring', 'Video', and 'Charging'. The bottom left corner has a 'Navigation' section with a 'Path' graph. The bottom center has a 'Monitoring' section with four circular icons. The bottom right corner has a 'Video' section with a 'Path' graph. The interface is surrounded by various icons and text, giving it a high-tech, futuristic feel.

- ✧ the large-screen display page , click to enter the robot management interface.



✧ Enter the background function interface, the left interface is the function selection



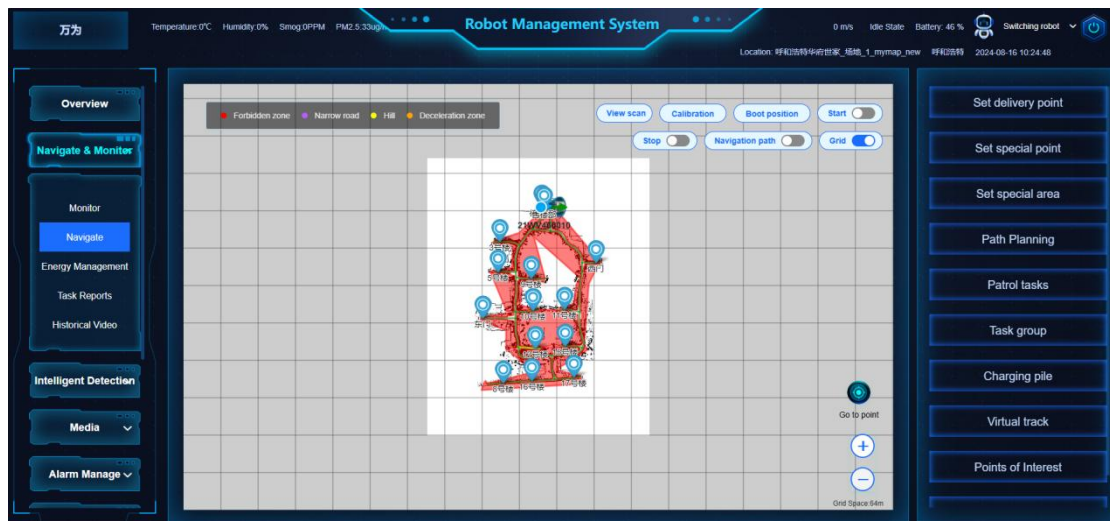
Backstage function management interface

- ✧ Click Switch Robot in the upper right corner -> Switch to the robot currently being used

When the site is equipped with more than one robot, you can click the upper right corner of the above picture to switch robots for management.

5.7. Set the power-on position, charging station, restricted area, virtual track, etc.

[Operation method] In the background function interface, click "Monitoring Navigation->Autonomous Navigation" in sequence to make relevant settings.



Monitoring navigation -> Autonomous navigation: Set the power-on position and position correction

- ✧ Power-on position: The default position of the robot each time it is powered on.

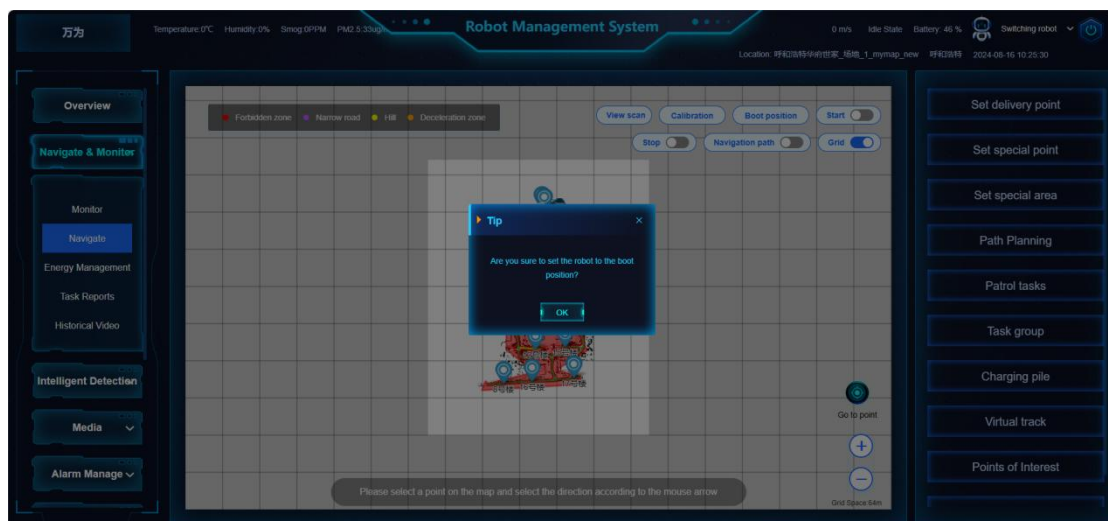
[Operation method] After clicking the robot's " power-on position " , left-click and hold the mouse on the map to select the target point and move the mouse to specify the direction when the robot is turned on .

[Note] The power-on position cannot be changed at will, and make sure to start the robot at this position each time, otherwise the robot may be in the wrong position after startup.

- ✧ Position correction: When the actual position of the robot does not match the position displayed on the map, position correction is required.

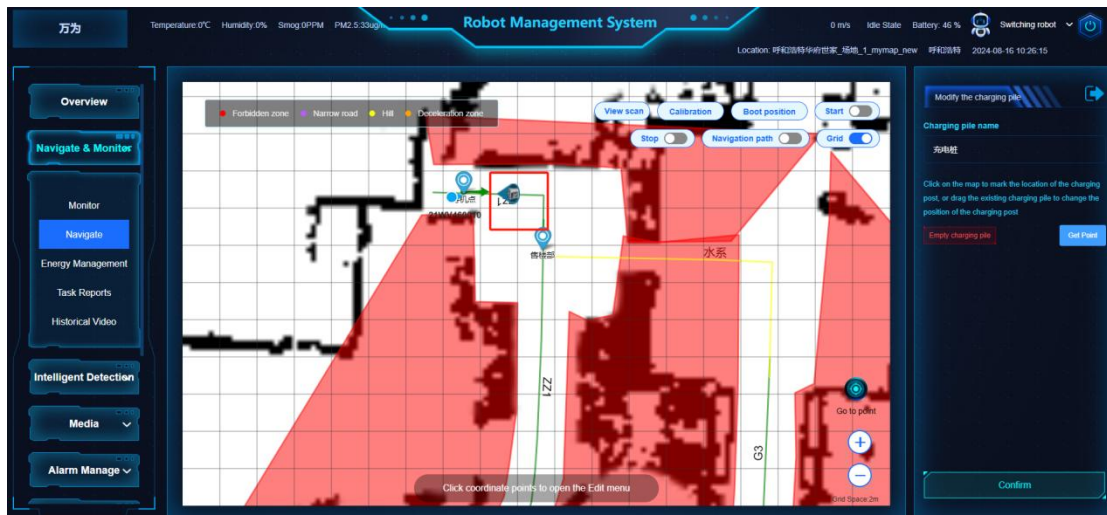
[Operation method] When the actual position of the robot is found to be inconsistent with the position displayed on the map, move the robot to a clear target reference for position correction, such as the front door or in front of a pillar, left-click and hold the mouse to select the target point and move the mouse to jump to the direction . (The blue circle + arrow symbol represents the robot's position and direction) .

[Note] Position correction will change the current positioning information of the robot, so please be careful when operating!

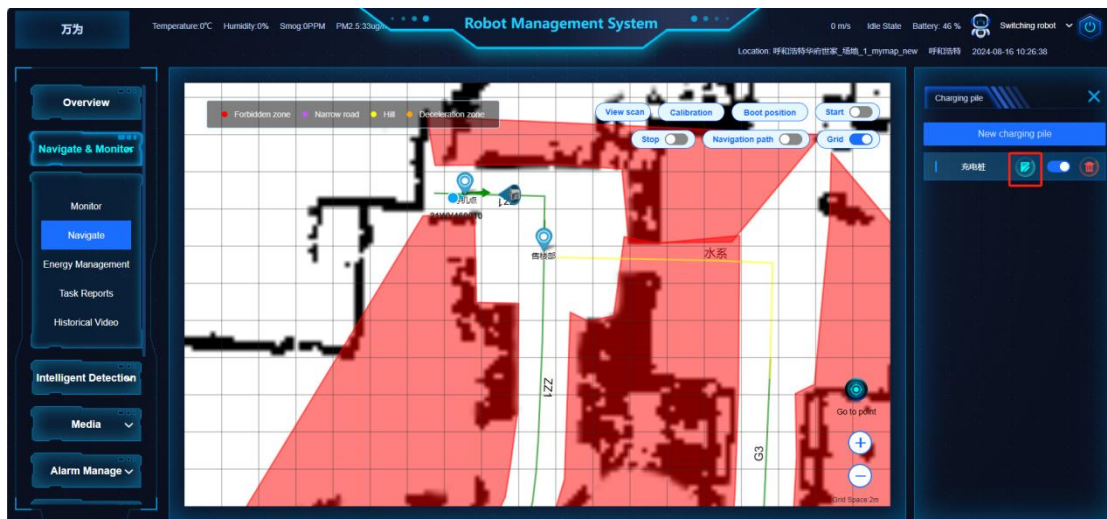


- ✧ Charging station location: The location where the robot initiates docking with the charging station. The robot will automatically charge to this location when the battery is low.

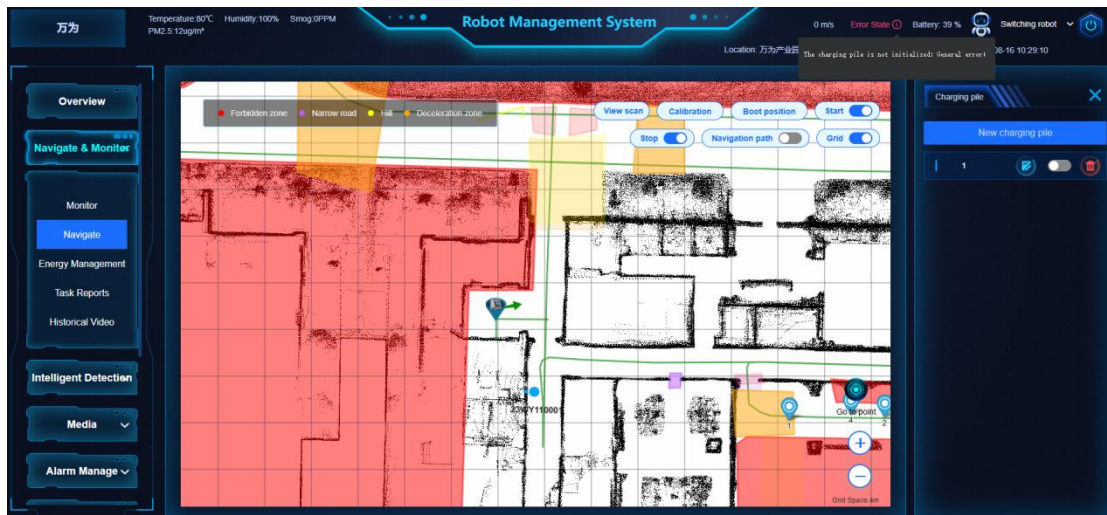
[Operation method] Create a new charging pile: Click Charging Pile -> Add Charging Pile -> Select the charging pile location on the map -> Enter the charging pile name -> Click Confirm . If the charging pile location is already set on the map, you can modify the charging pile location. Right-click on the map to delete the original charging pile location, and left-click to confirm the new charging pile location.



[Operation method] Modify the charging pile: Charging pile -> Modify charging pile -> Select the charging pile location on the map -> Click OK



[Operation method] Delete the charging pile: click the charging pile -> click Delete -> click OK; [Note] If there is no charging pile on the map , the robot will not be able to charge autonomously when the battery is low , the robot will enter an error state, and the charging pile is not initialized

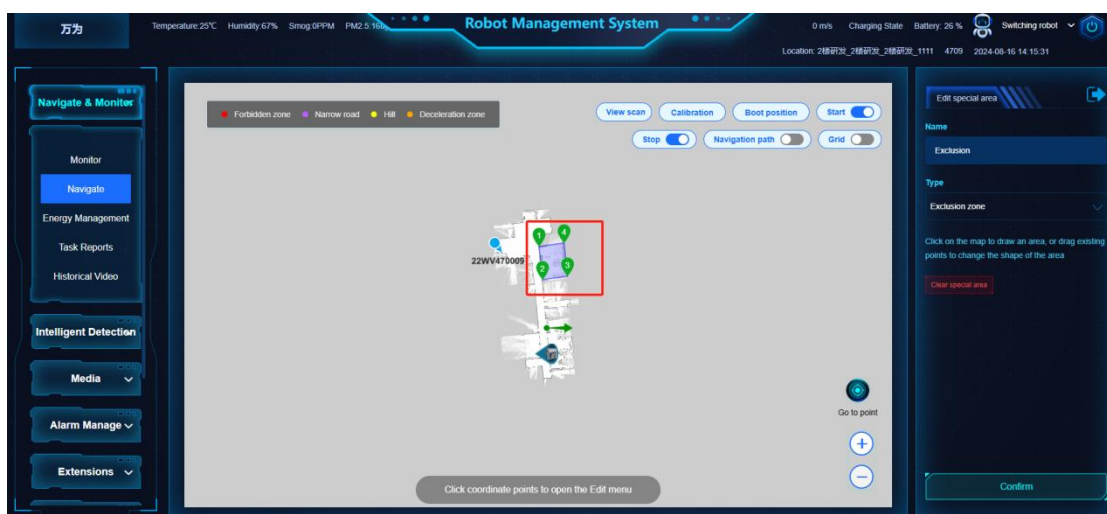


[Notes] After building the map, you must first create a new charging pile, otherwise the robot will report a "charging pile not initialized" error. The charging pile location should be 2-3 m in front of the actual location . Make sure that the location must be reachable, and the charging pile must be built on the map, otherwise the robot cannot be charged when it reaches low power, affecting the normal use of the robot .

- ✧ Restricted area: An area that the robot will not actively enter during patrol navigation.

[Operation method] Create a new restricted area: Click the restricted area -> click the new restricted area -> enter the restricted area name -> create a restricted area by forming a surface through points on the map (the restricted area is an area, so at least 3 points need to be set) .

[Note] Areas that robots are not allowed to enter, areas with obstacles that robots cannot identify, staircase areas and other dangerous areas must be set up as restricted areas. The actual area of the restricted area will be expanded outward by 0.1m on the currently displayed restricted area (adjustable)

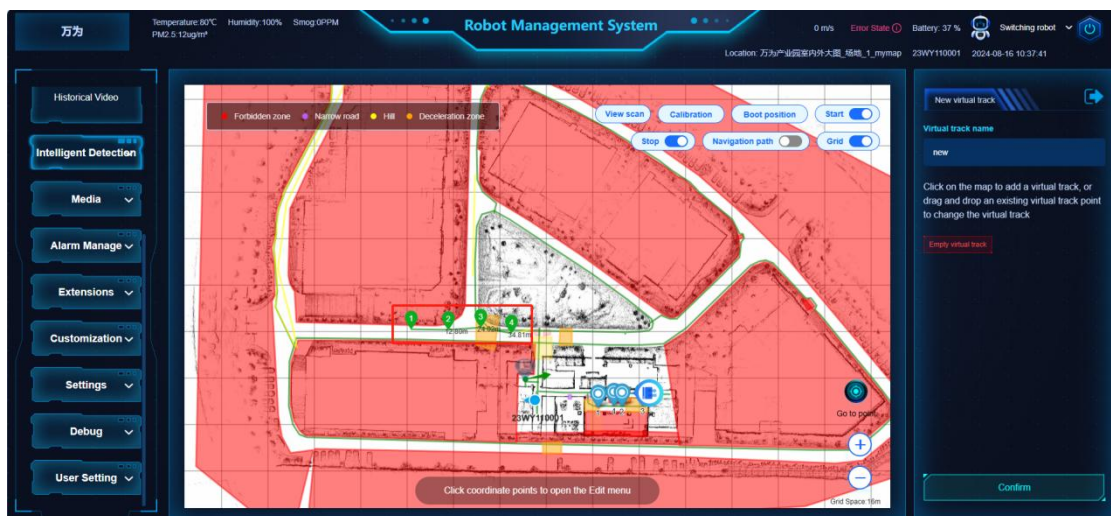


✧ Virtual track: Let the robot walk on a set fixed route

[Operation method]: Create a new virtual track , click Virtual Track -> Create a new virtual track -> Enter the name of the virtual track -> Confirm the points on the map to connect them into a line -> Confirm ;

【Notes】

1. The virtual track cannot pass through noisy areas or obstacle information , otherwise it will fail;
2. If you use the virtual track method to walk, you need to create the track first and then create a new path;
3. If there are multiple tracks, there must be intersections between the tracks and there is only one intersection between two tracks, otherwise the machine will not be able to move normally;
4. Tracks should be set up at all points where the machine may reach;
5. The track cannot be too close to obstacles and restricted areas, otherwise the machine will not be able to move normally;
6. It is recommended that the track be set by after-sales personnel or under their guidance;



Monitored navigation -> Autonomous navigation: Create a new virtual track

[Operation method]: Modify virtual track : (open virtual path/close virtual path); delete virtual path ;



5.8. Robot power on/off

5.8.1. Power on

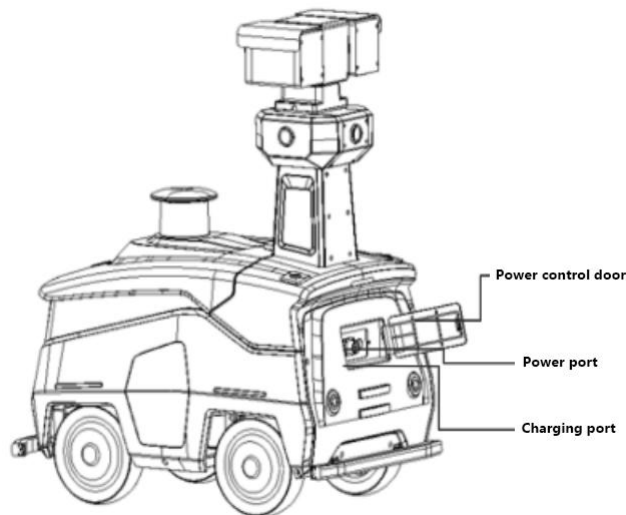
[Operation method] Press the left side of the charging port door on the back of the robot lightly, and the charging port door will automatically pop open. After opening the door, find the power switch button and press the button to turn on the robot. The robot starts and connects to the server. The light strip lights up white during the startup process. After the startup is successful, the light strip flashes red, green and blue alternately, and it is in the emergency stop state. After confirming that the position is correct, you can press the emergency stop button to exit the emergency stop state (the emergency stop button light is on), and the robot will enter the idle state .

[Note] The first startup does not need to be in the designated position. After the map is built, each startup must be in the startup position. If the robot is not in the designated startup position, it must be pushed to the startup position before startup.

5.8.2. Shutdown

[Operation method] Find the power switch button inside the charging port door and press the button to shut down. Then close the charging port door and lightly press the left side, and the door will automatically buckle .

[Note] After shutting down, the robot cannot be pushed directly . The robot's walking wheels need to be manually turned to a straight state before it can be pushed. For specific methods, see 6.1 .



Robot power on/off operation instructions

5.9. Remote control function

- ✧ Background remote control: The background remote control robot moves forward, backward, left and right.

[Operation method] Monitoring navigation-> Click on remote control to open the remote control window, you can remotely control the robot in non-emergency stop state and non-offline state; click START/STOP to switch the current robot state . **(All remote control functions in the background are reflected)**

[Note] The robot has a remote control assist function when moving forward, and will stop moving when an obstacle is detected. However, it does not have a remote control assist function when moving backward, and a collision may occur, so please operate with caution!



Backstage terminal PC remote control

- ✧ Mobile APP remote control: The mobile APP remote control robot moves forward, backward, left and right. During remote control walking, the robot has a remote control auxiliary function: it stops when encountering obstacles.

[Operation method] Enter the mobile phone APP-Anbao, enter autonomous navigation->real-time remote control. You can perform front, back, left, and right remote control operations.



Mobile APP remote control interface

- ✧ Handheld remote control

The handheld remote controller has the highest control authority. It can realize the walking control of the robot body and the rotation control of the gimbal. The functions of the remote control buttons are explained as shown in the figure below.



Remote control operation instructions

Note: Except for the operating handle and buttons marked in the figure, other buttons on the remote control have no input or output. Please do not operate them. The parameters of the remote control have been set at the factory. Please consult the

manufacturer for parameter adjustment. Please do not change the parameter configuration at will.

Powering on and off the remote control: Turn the power switch to " ON " , the remote control LED light will light up, and the remote control power will be turned on. Turn the power switch to " OFF " , the remote control LED light will go out, and the remote control power will be turned off.

Remote control of mobile robot: After the remote controller is powered on, push the "status switch button" forward to switch the robot to remote control mode. Then push the "straight line control button" forward or backward to control the robot to move forward or backward. The distance pushed by the throttle stick indicates the speed of the robot. Push the "rotation control button" left or right to control the robot to rotate left or right. When the "straight line control button" and "rotation control button" are operated at the same time, the robot can turn left or right while moving.

Very important: In a confined area or when the robot is starting from a stationary state, do not push the throttle pedal to the bottom to prevent the robot from starting too quickly and causing a collision.

5.10. Autonomous patrol function

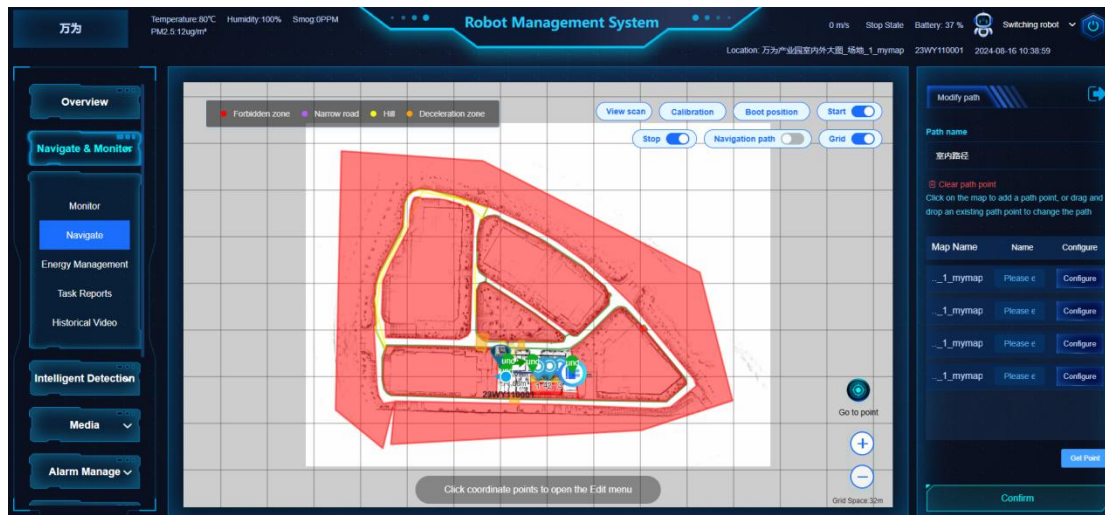
The robot can patrol according to the assigned navigation tasks, routes and time . It can realize autonomous positioning, autonomous obstacle avoidance and automatic recharging when the battery is low.

5.10.1. Robot patrol mission settings

5.10.1.1.Set up patrol missions

1. Path setting: Set the main points in the robot's movement direction to form a route.

[Operation method] Click Path -> Create New Path -> Connect the points on the map into a path -> Enter the path name -> Click Confirm. When the robot patrols along this path, it will patrol in a cycle from 1→2→3→4 in sequence.



Monitoring navigation -> autonomous navigation, you can set the path, navigation, and view the location

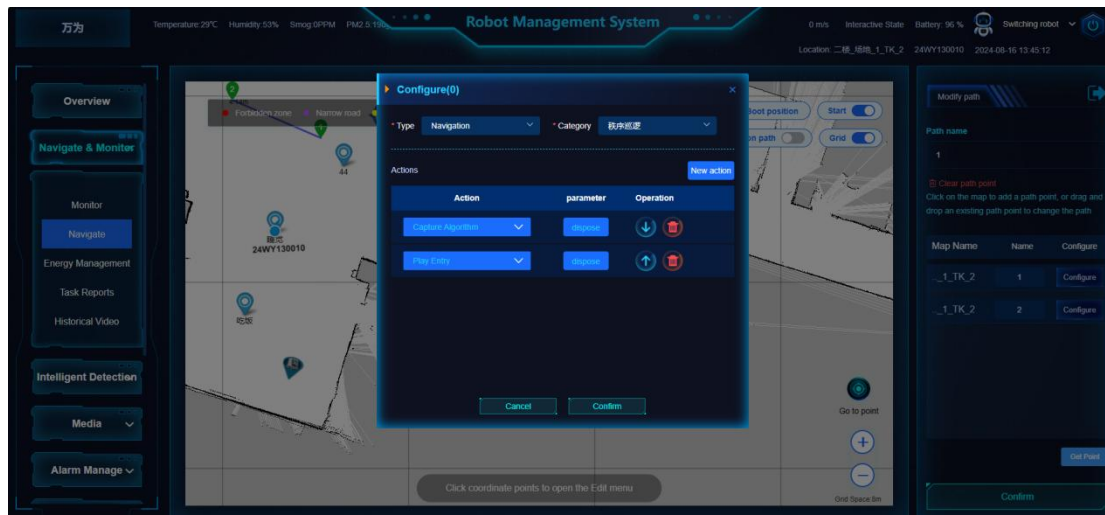
[Notes] Make sure that every point on the path is reachable. The white area on the map is the reachable area, and the gray area is the unreachable area. Do not set it too close to the wall or restricted area.

If there is a virtual track set up nearby, it will automatically match the nearby virtual track!

Point type : If it is set as a navigation point, it is a walking point for the robot ; if it is set as a function point, the robot only performs the function point action and does not walk to the function point .

Configure action : point-line function version, you can configure the action for each point in the path, and when the robot walks to the point, it will execute the configured action.

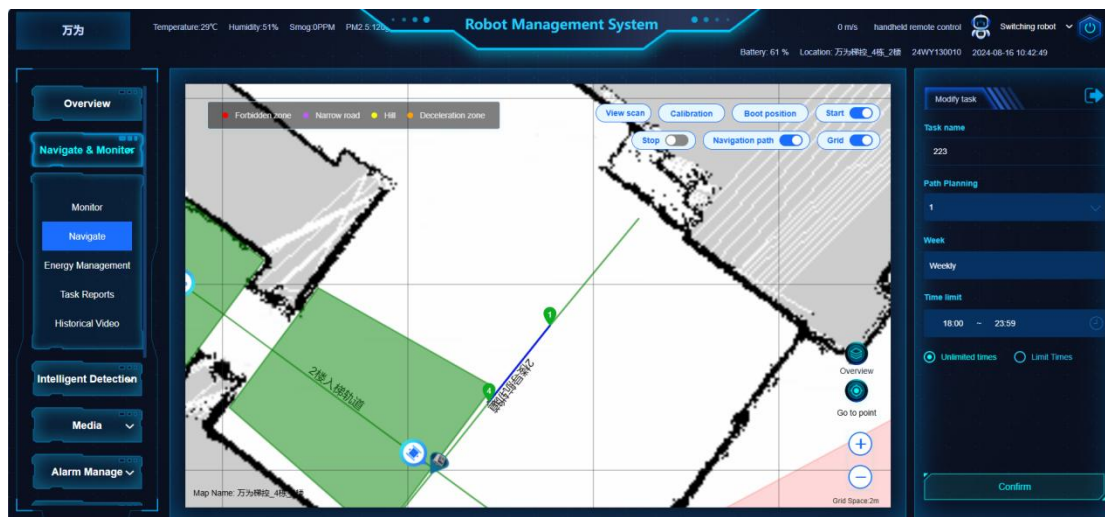
[Note] Multiple actions can be configured on one navigation point, and the robot will perform tasks in sequence.



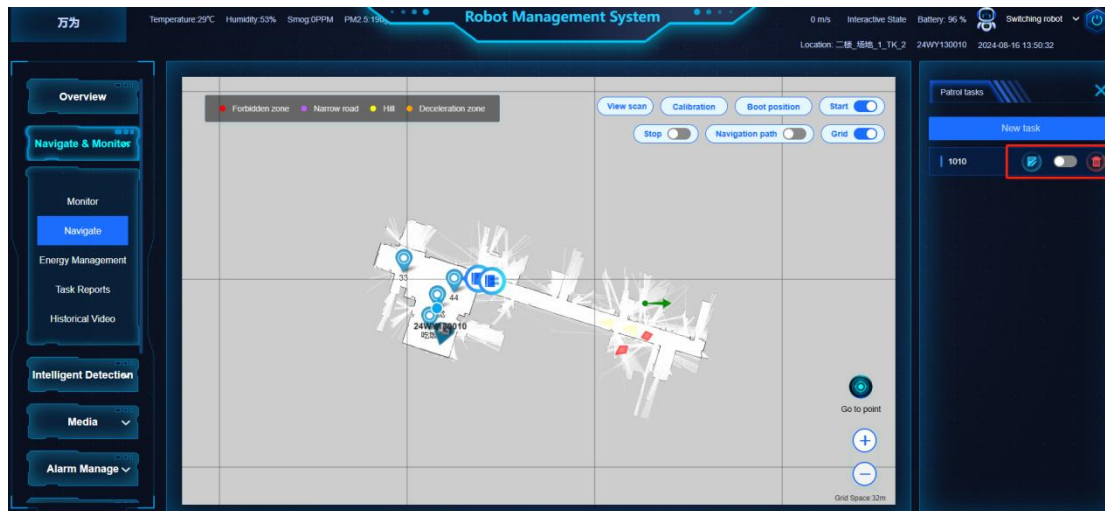
Modify and delete a path: Click the modify icon to modify the path, add, delete or drag points, etc.

2. Navigation settings: The combination of path and time is a navigation task. You can select an existing navigation task or create a new one.

Create a new navigation: [Operation method] Click Navigation -> Click New Navigation -> Enter the task name -> Select the corresponding path -> Select Weekly -> Select the start time and end time -> Click Finish .



Modify and delete navigation : [Operation method] Click Navigation->Modify button->to modify the path and task time; click Navigation-> Open/Close button->to open or close the corresponding navigation task ; click Navigation->Delete button->to delete the corresponding navigation task .



[Notes] The robot will self-check the power level before performing patrol tasks. If the power level is lower than 70% (adjustable), it will first navigate to the charging station and charge to 70% before performing patrol tasks.

5.10.1.2. View location: View the real-time location of the robot on the map

[Operation method] Monitor navigation -> Autonomous navigation. The solid dot on the map represents the current position of the robot.

[Note] When the position on the robot map is inconsistent with the actual position of the robot, position correction must be performed. For the method, refer to position correction in [5.8](#).

5.10.1.3. Single-point navigation setting: let the robot automatically walk to a specified location

[Operation method] Click " Monitoring Navigation->Real-time Remote Control" in sequence, on the small picture on the right (click full screen to enlarge the map): click a **single point** , select the point on the map where you want the robot to go, and click Confirm.

[Notes] The single-point destination must be a reachable point, otherwise the single-point navigation task cannot be completed. Single-point navigation is a single trigger and has a higher priority. If a single-point navigation task is issued during patrol status, the current patrol task will be stopped and the single-point navigation task will be executed first. After the execution is completed, the patrol task will continue.

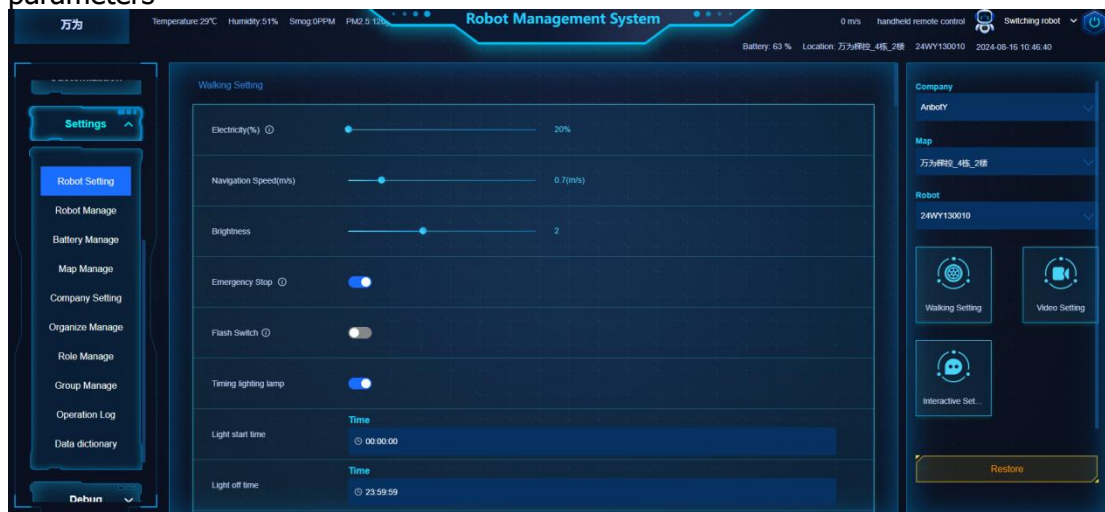


Monitoring navigation-real-time remote control: single-point navigation

5.10.2. Patrol and remote control parameter settings

Parameter settings in patrol and remote control functions

[Operation method] Click "Management Settings->Robot Parameters " in sequence , and click the walking subsystem on the right to set the following parameters



Management Settings->Robot Parameters: Walking Subsystem Parameters: Set patrol and remote control related parameters

- ✧ Navigation speed: adjust the robot's cruising speed
- ✧ Recharge capacity: The default setting is 20%. When the robot reaches this setting value, the robot will automatically find a charging station for charging.
- ✧ Remote control speed: adjust the speed of the robot during remote control
- ✧ Light strip brightness: adjust the brightness of the robot status light
- ✧ Light strip flashing speed: can be set fast or slow

- ✧ Hard emergency stop switch: If it is turned off, pressing the emergency stop button on the robot will be invalid.
- ✧ Siege alarm: When the robot cannot move due to the large number of people around it, it will report to the backend for reminder. You can set the time to adjust the alarm frequency.

[Note] The settings of ultrasonic switch, matching evaluation switch, collision mode, and autonomous correction mode involve the robot's walking strategy. Non-professionals, please do not modify them!

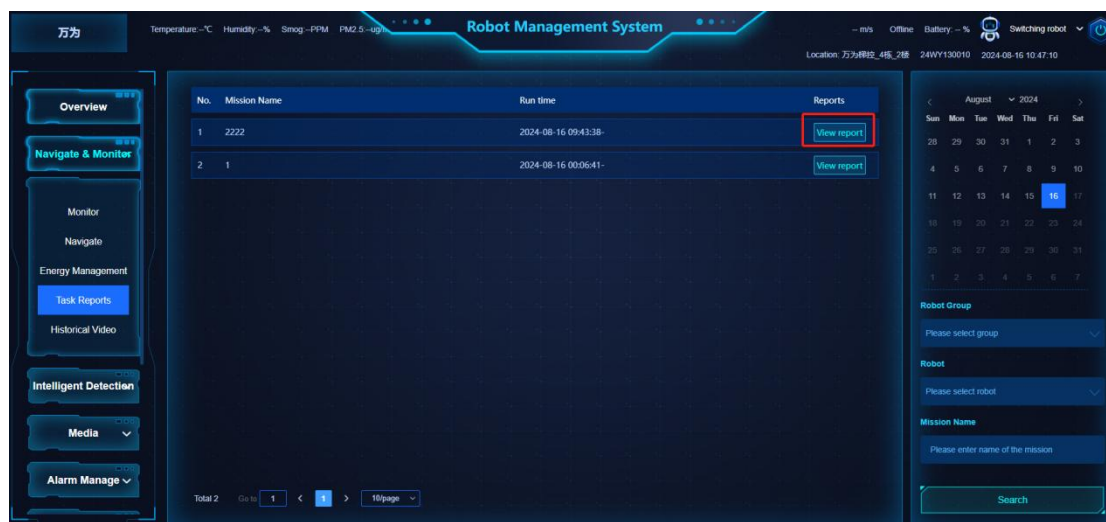
5.10.3. Task Management

robot navigation task, set the point-line function capture action or capture algorithm, and the task management page will generate the corresponding task report according to the navigation task time .

5.10.3.1.View Mission Report

The task report content includes the navigation task name, navigation time, machine number and the snapshot image or snapshot algorithm image of the corresponding task configuration.

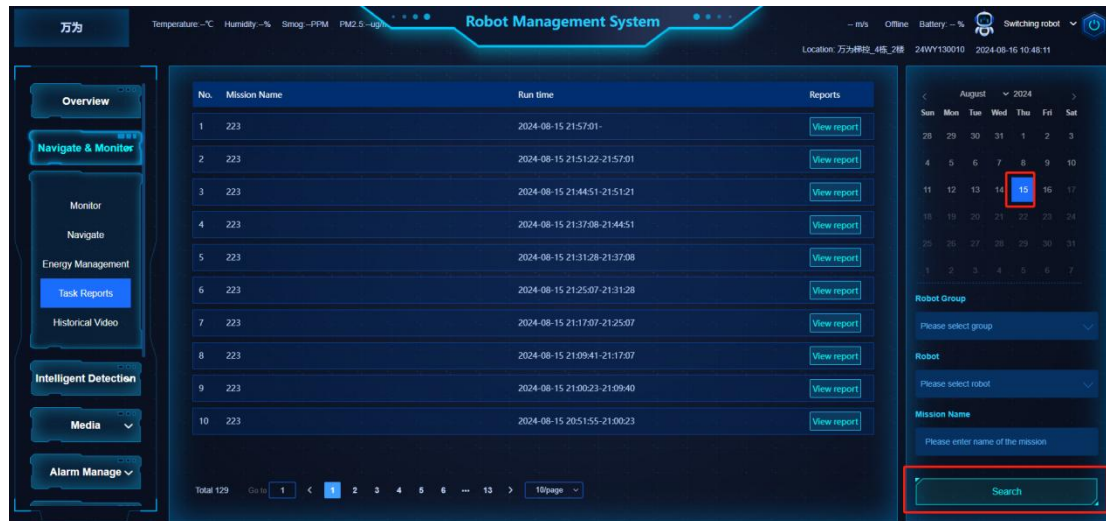
[Operation method] 1. Click "Monitoring Navigation->Autonomous Navigation->Path" in sequence, configure the capture action or capture algorithm on the path point, save it, and then select the path in the navigation task; 2. After the robot completes the task, click " Monitoring Navigation->Task Management " in sequence, click "View Report", and the report will be displayed on the page .



Monitoring Navigation- > Task Management : View Report

5.10.3.2. Query Report

[Operation method] Click " Monitoring Navigation->Task Management " in sequence, select the viewing date on the right and select the robot, click "View Report", and the page will display the report produced that day.



Monitoring Navigation- > Task Management : Query Report

5.11. Mobile monitoring function

The robot is equipped with a high -definition PTZ camera to achieve mobile panoramic monitoring and upload monitoring videos to the server in real time. Real-time or historical monitoring video queries can be viewed in the background.

5.11.1. Real-time surveillance video viewing

- ✧ The large screen display interface can switch to view the surveillance video of the robot camera
- ✧ You can also view surveillance video at the same time in "Monitoring Navigation->Real-time Remote Control"

[Operation method] Click "Monitoring Navigation->Real-time Remote Control" in sequence to watch the monitoring video. If equipped with a thermal imaging camera .

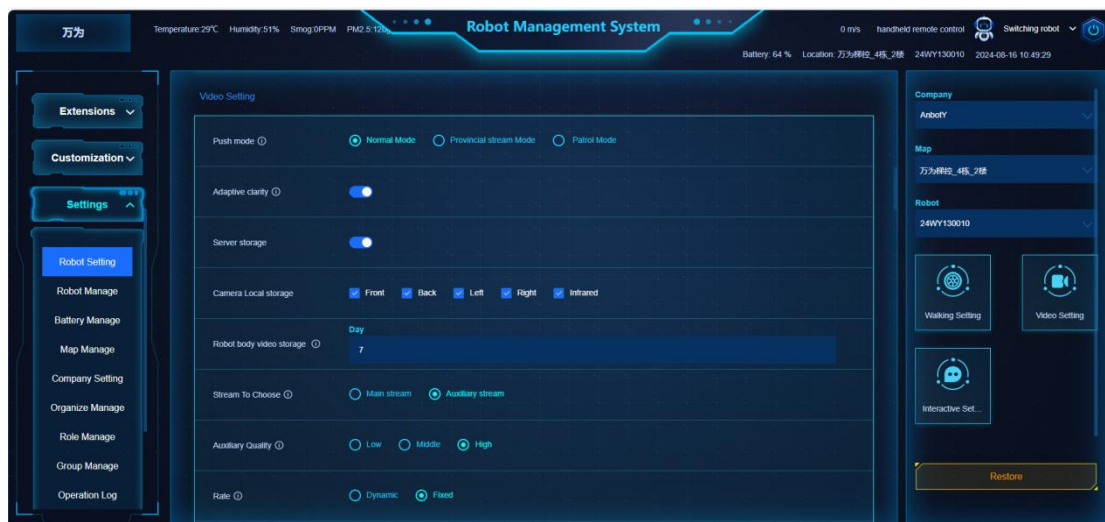


Monitoring navigation->Real-time remote control, view monitoring video

5.11.2. Surveillance video streaming settings

You can set the parameters related to surveillance video streaming.

[Operation method] Click "Management Settings->Robot Parameters" in sequence, and click Video Subsystem Parameters on the right.



Management Settings->Robot Parameters: Video subsystem parameters, set streaming

✧ Streaming mode:

- Normal mode: The robot will keep pushing the stream when it is online;
- 4G data-saving mode: The robot pushes video streams only when users are browsing videos;
- Patrol mode: Push the stream only when the robot is patrolling.

[Notes] When the network speed is poor/4G connection, it is recommended to select 4G data saving mode; if the data saving mode is

turned on, the server only stores the historical videos during the streaming time period.

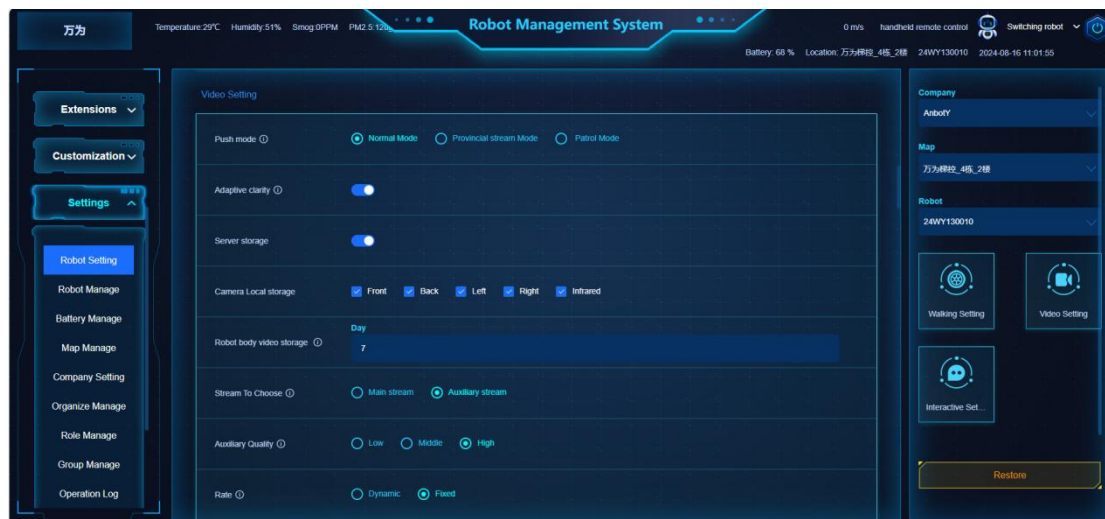
- ✧ Real-time stream selection: Set the real-time video stream. The main stream is clearer and consumes more resources than the auxiliary stream.
- ✧ Main stream quality, auxiliary stream quality: that is, definition selection, you can choose low, medium, high three types.

[Notes] It is recommended to select the stream-saving push mode, auxiliary stream, and low image quality when the network speed is poor.

5.11.3. Video storage settings

It is divided into server storage and local video storage, and storage related parameters can be set.

[Operation method] Management settings -> Robot parameters, select video subsystem parameters on the right



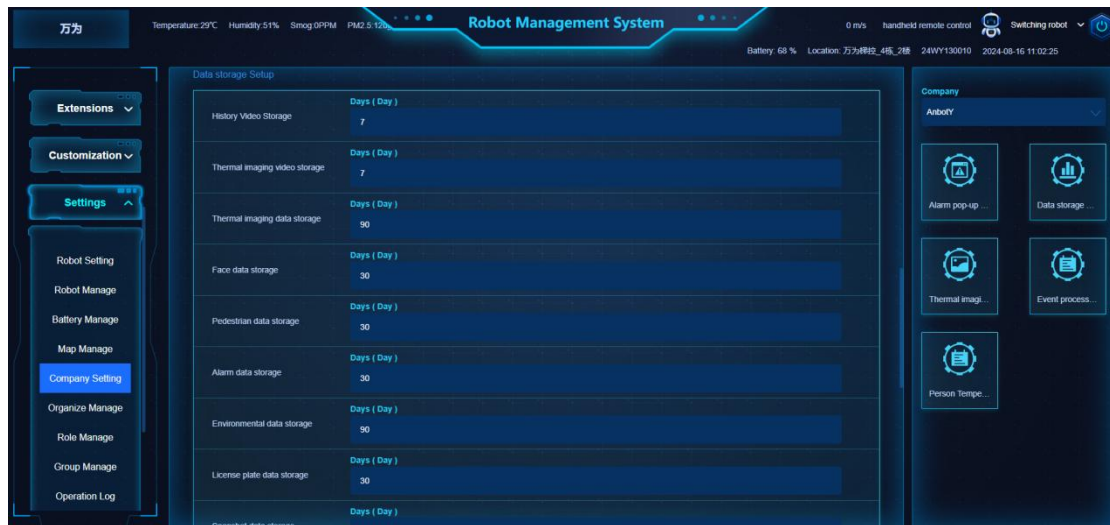
Management Settings->Robot Parameters: Video subsystem parameters, set storage mode

- ✧ Server storage: Save real-time video to the server to form historical video. The server storage switch can be turned on or off. If it is turned off, the surveillance video will not be saved; if it is turned on, the surveillance video of the set time period will be saved until the storage space is full, and the latest video will overwrite the earliest video.
- ✧ Main body video storage: Set the number of days for local video storage. The video is stored in the robot's local SD card.

[Note] Local storage is only possible when there is a storage device. The size of the stored video is determined by the capacity of the storage device.

- ✧ Server storage days: You can set the number of days that historical videos are stored on the server. It is recommended to set it to 7 days.

[Operation method] Click "Management Settings->Management Parameters" in sequence, and select Data Storage Settings on the right.



Management Settings->Management Parameters: Data Storage Settings

5.11.4. Historical video viewing and downloading

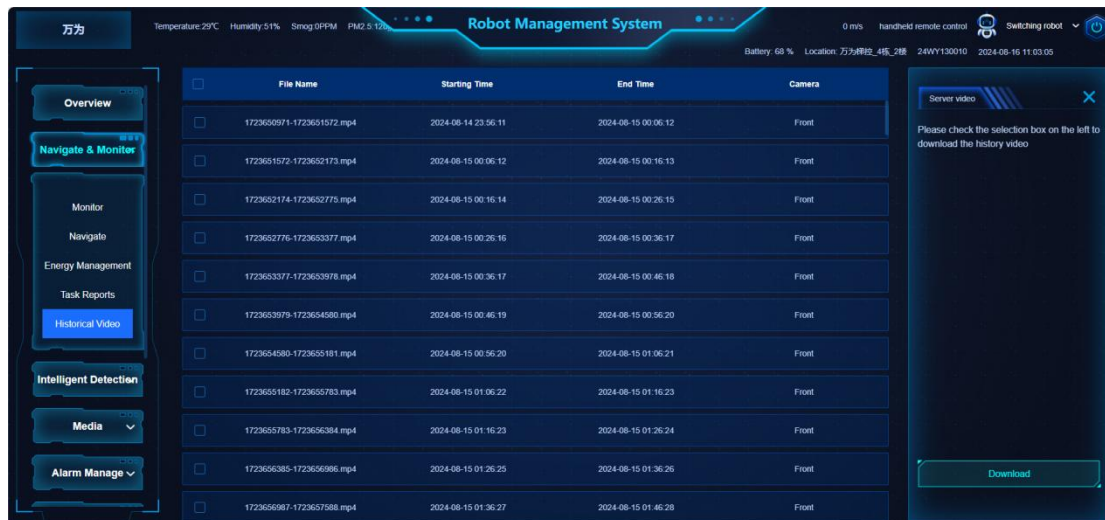
✧ Historical video viewing

[Operation method] Select Smart Monitoring in the function bar, then select Historical Video to enter the Historical Video interface. You can choose to download server videos, as shown in the figure below .



✧ Historical video downloads

[Operation method] Select the date -> select the time period -> select the camera to be downloaded -> server video -> check the video segment to be downloaded -> confirm .



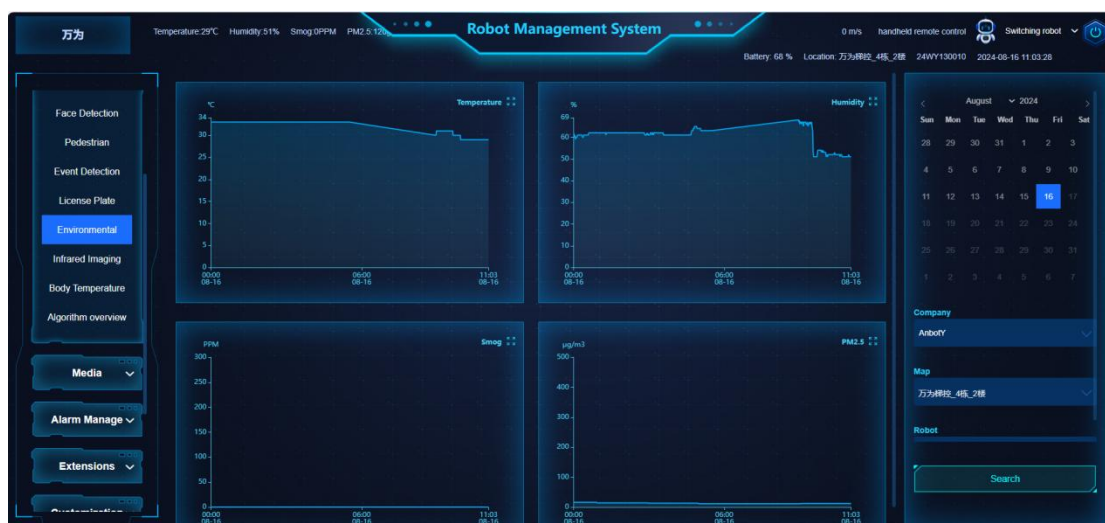
5.12. Environmental detection function

The temperature and humidity of the environment can be monitored in real time. The alarm threshold can be set in the background, and an alarm will be automatically triggered when the detected temperature, humidity, etc. exceed the set threshold.

5.12.1. Temperature and humidity

You can view environmental information such as temperature and humidity in real time or on a specified date.

[Operation method] Select Intelligent Monitoring in the function bar, then select Environmental Monitoring to enter **the environmental monitoring interface**.

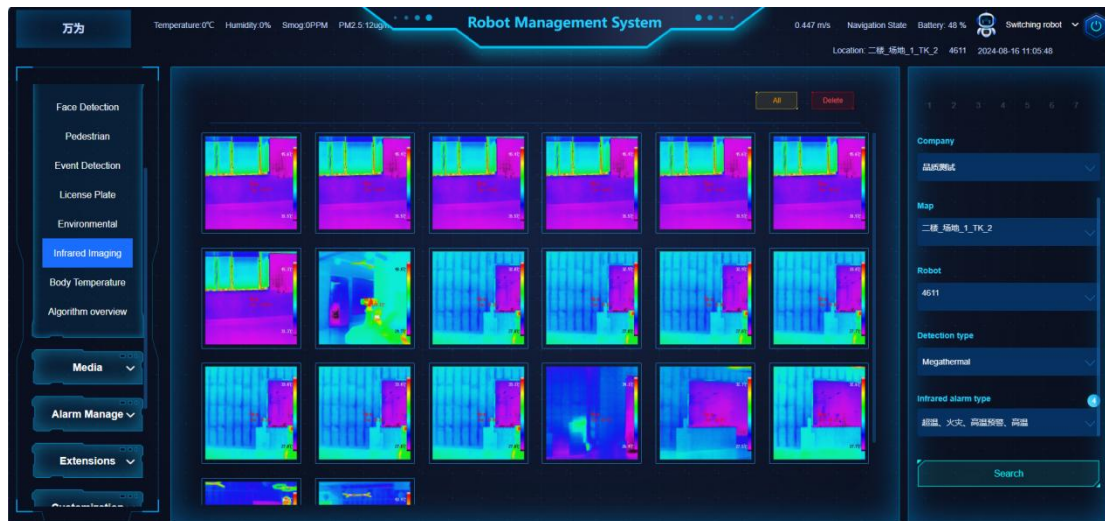


Smart detection->Environmental detection, view temperature, humidity, smoke concentration and PM2.5 curve

5.12.2. Thermal imaging detection (optional function) :

You can view thermal imaging warning photos of a specified date.

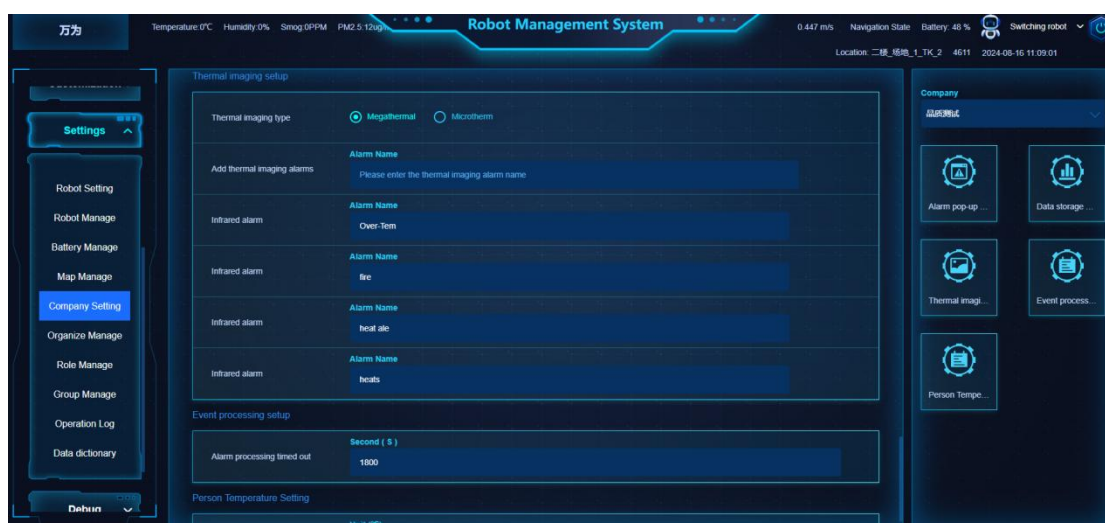
[Operation method] Select Smart Detection in the function bar, then select Thermal Imaging Detection, enter the Thermal Imaging Detection interface, and enter the area and time to query the thermal imaging detection information .



5.12.3. Set thermal imaging alarm items

After setting the thermal imaging alarm item, you can set the alarm threshold name and alarm threshold in the walking subsystem parameters.

[Operation method] Click " Management Settings-> Thermal Imaging Settings" in sequence , select the thermal imaging type and enter the alarm item name.

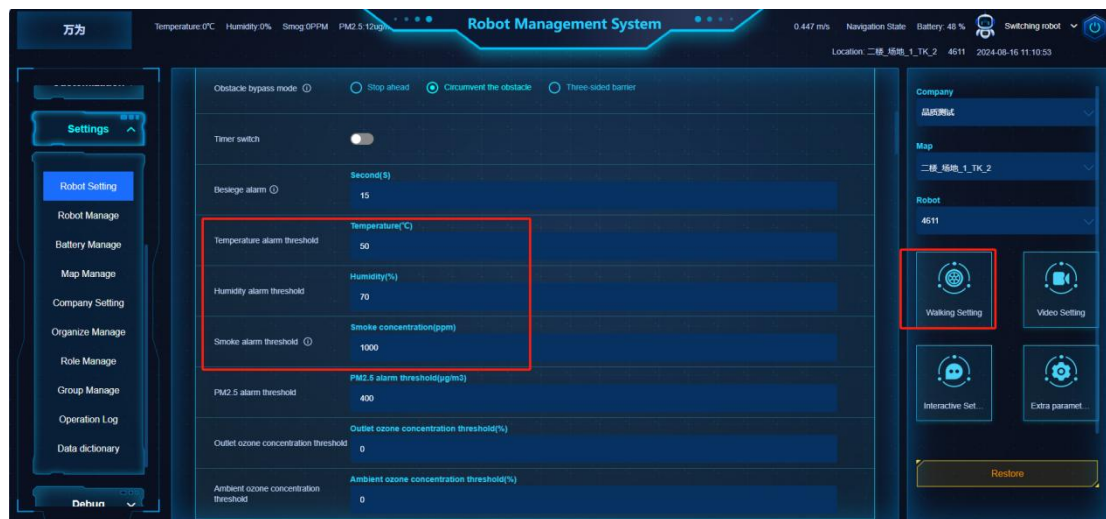


Management Settings-> Management Parameters: Thermal Imaging Settings

5.12.4. Setting alarm thresholds

Set the environmental alarm threshold. When this value is exceeded, the background will automatically alarm.

[Operation method] Click "Management Settings->Robot Parameters" in sequence, select the walking subsystem on the right, and set the temperature, humidity, and smoke concentration alarm thresholds.



Management Settings->Robot Parameters: Walking Subsystem Parameters: Environment Threshold Settings

5.13. Remote Disposal & Warning Deterrence

Managers can implement remote handling through the background, initiate two-way intercom to the robot through the backend , turn on the robot's night light, turn on the robot's flashing light, and turn on the robot's expulsion siren .

5.13.1. voice intercom on the backend

When the selected robot interaction subsystem is online, click the audio button to make a remote call (the local computer must be equipped with a MIC and a speaker to conduct a remote audio conversation) .

[Operation method] Click "Monitoring Navigation->Real-time Remote Control" in sequence, and click Remote Call on the right. After activation, the backstage staff can initiate a talkback to the robot.



Real-time remote control : voice call switch

5.13.2. The back end turns on the robot's flashing lights

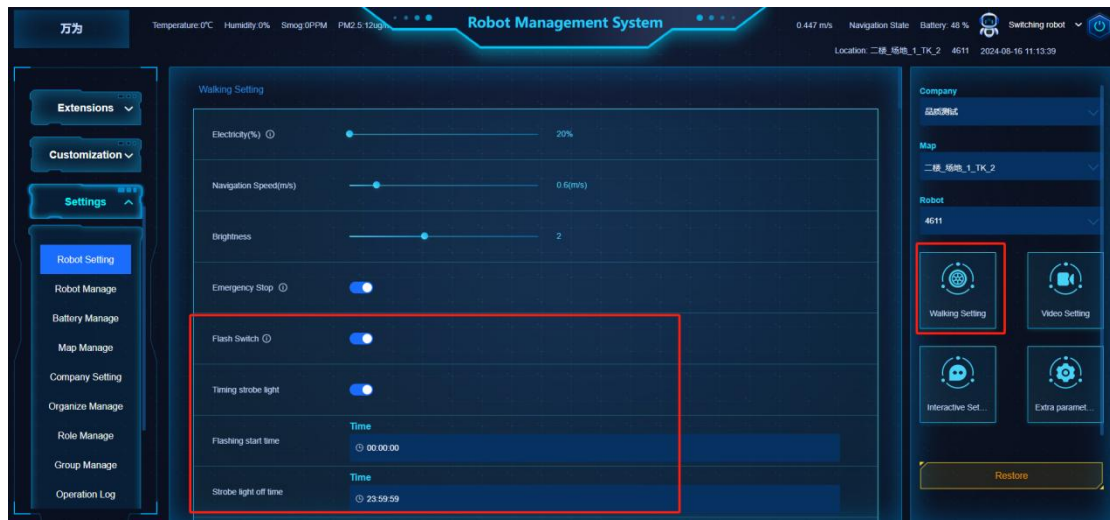
on the backend , and the robot will automatically turn on the flashing light when performing navigation tasks .

[Operation method] Warning light : turn on or off. If turned on, you can remotely turn on the flashing light when the robot is navigating .



Real-time remote control : strobe light switch

[Operation method] Click "Management Settings->Robot Parameters" in sequence, select the walking subsystem on the right, and set the timing for the flashing light to turn on. After setting, the machine will turn on and off the flashing light at a scheduled time regardless of the state .



Management Settings->Robot Parameters: Walking Subsystem Parameters: Flashing Light Timing Settings

5.13.3. Backend turns on the robot siren

Warning sound effect : On or off. If on, you can remotely let the robot turn on the SOS alarm.

[Operation method] Warning sound effect : turn on or off. If turned on, you can remotely let the robot turn on the SOS alarm .



Real-time remote control : warning sound switch

5.14. Multimedia Services

5.14.1. Audio and video management

Select Media Management in the function bar, then select Audio and Video Management to enter **the Audio and Video Management interface** . You can select Company->Media Type (audio, video, entry) for query .



Media Management-> Audio and Video Management: Media Type Query

The queried data can be played , looped, auditioned, modified, and deleted; if it is not sent to the robot when you click Play, it will be automatically sent (server file)



Media Management-> Audio and Video Management: File Operations

Local files can be auditioned, deleted, and sent to robots (files that have been sent to the selected robot)

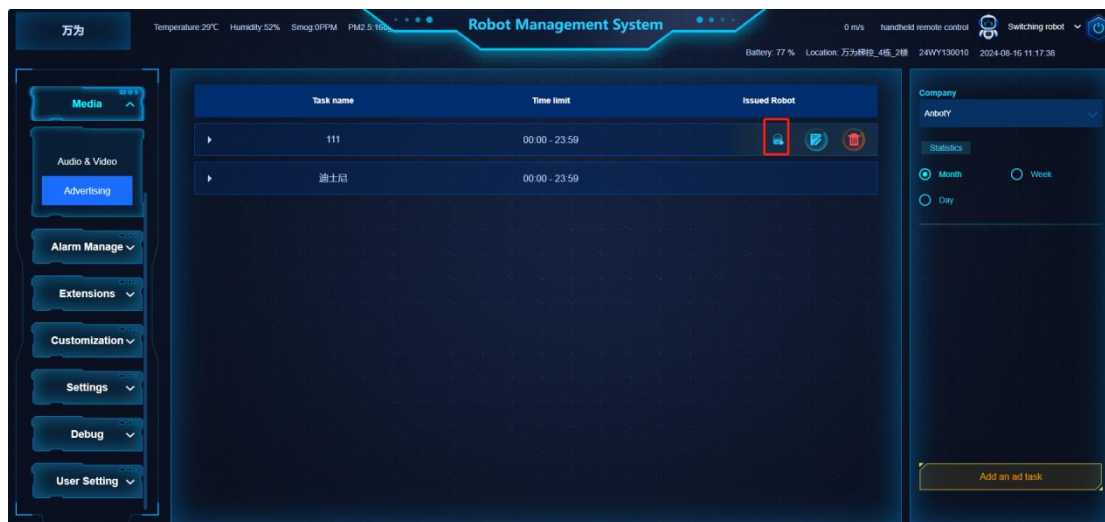


Media Management-> Audio and Video Management: File Upload

[Notes] The audio playback sent from the background has a higher priority. The robot will stop the current patrol broadcast or intelligent intercom with pedestrians and start audio broadcast.

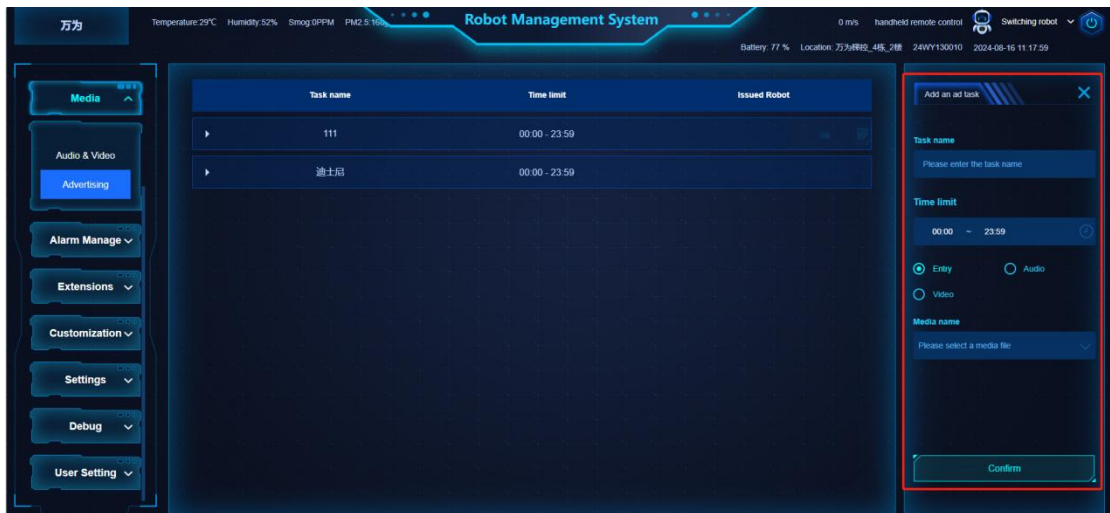
5.14.2. Advertising

Select Media Management in the function bar, then select **Advertising** to enter the Advertising interface, as shown in the figure below.

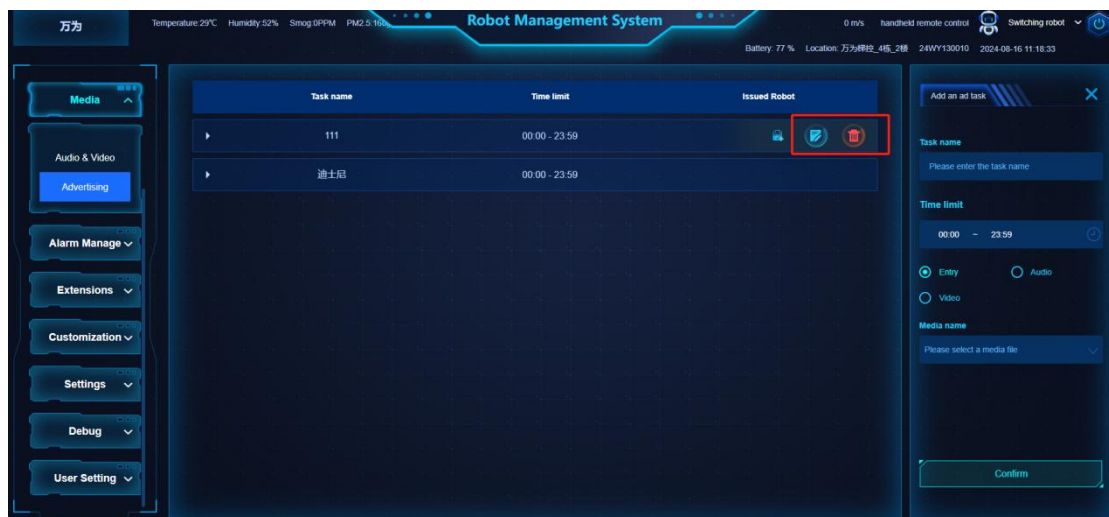


Media Management-> Advertising

To add a delivery task , click Add Delivery Task -> Enter the task name -> Select the media file -> Click Confirm



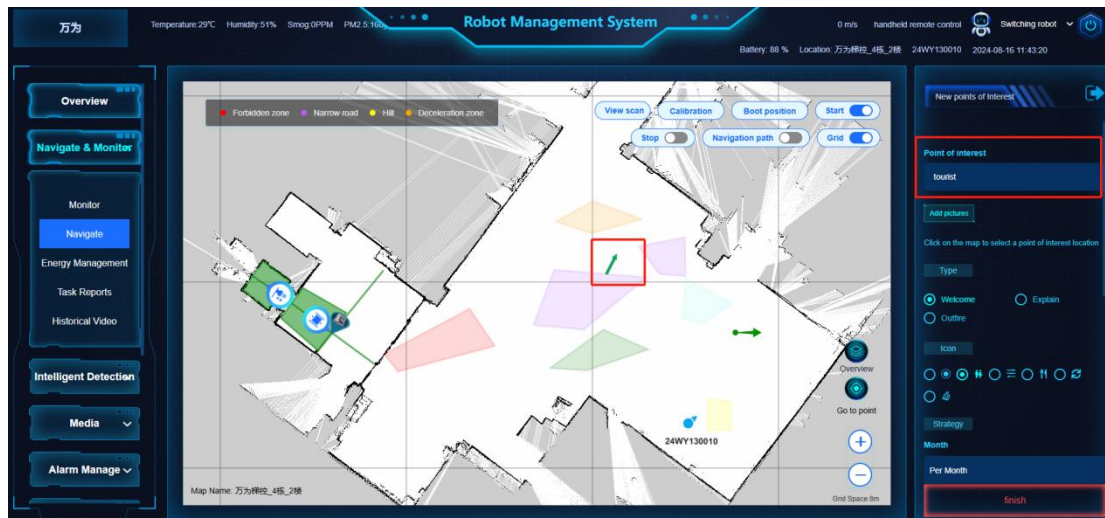
Issue, modify, and delete delivery tasks . After the delivery, the robot starts to execute the corresponding tasks.



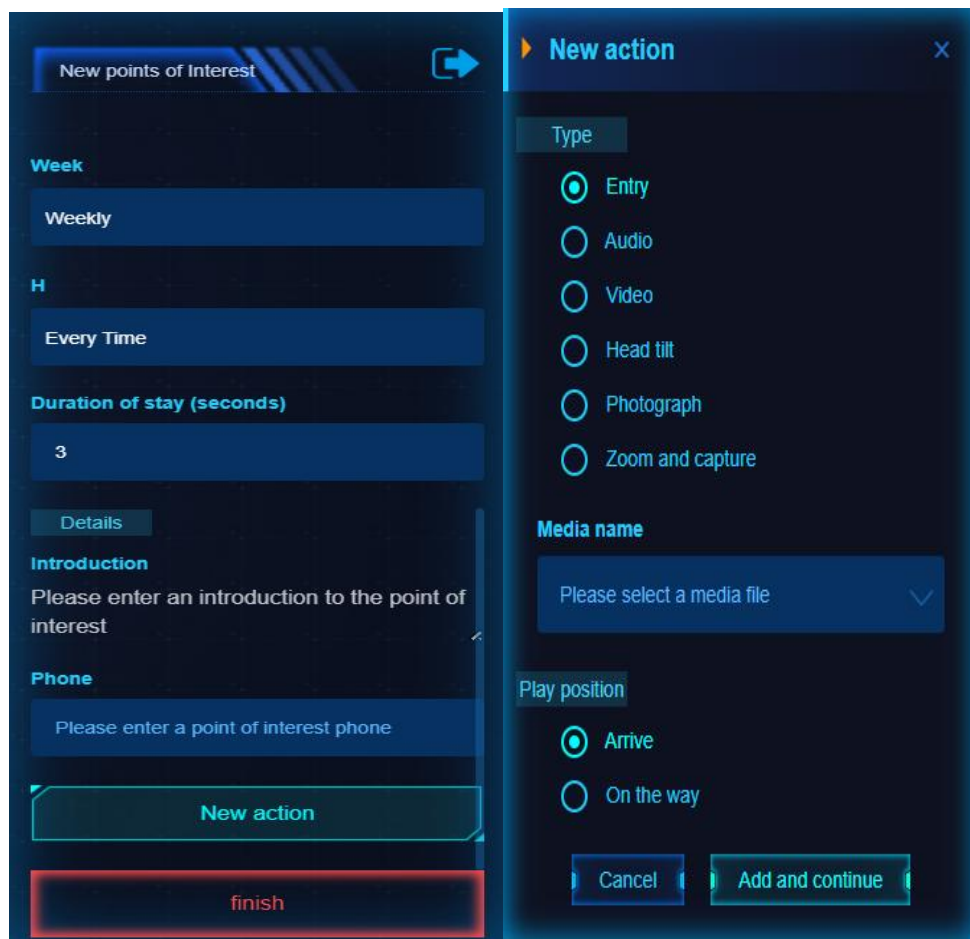
5.14.3. Points of Interest

Create a new point of interest : Click Points of Interest -> Create a new point of interest -> Select a point on the map to adjust the direction -> Enter the name of the point of interest -> Finish; (This is a required item, and the others can be modified or added according to your needs)

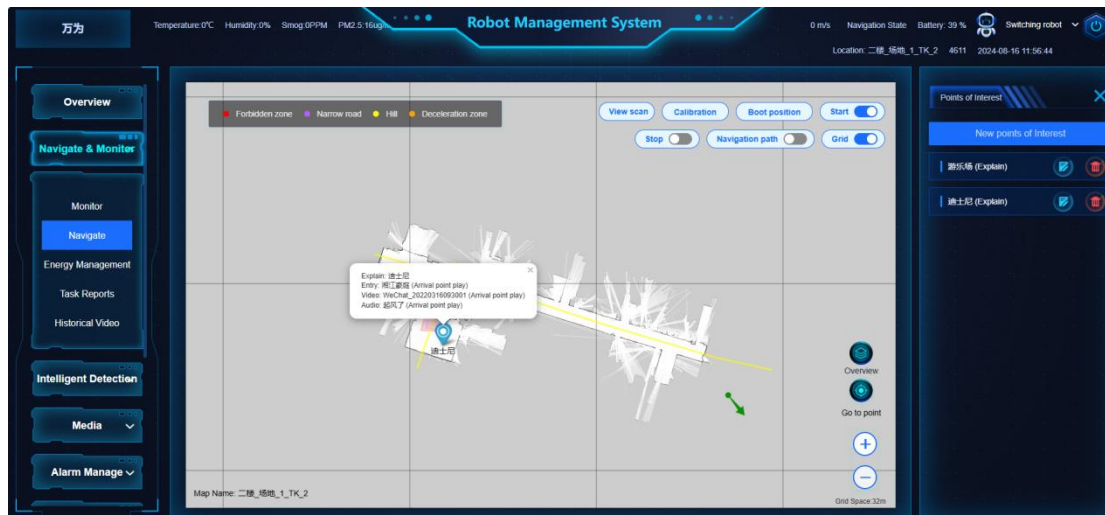
[Notes] Only one " welcome point " can be set. The welcome point serves as the standby point when the robot has no tasks. It is recommended to set it at the charging station .



You can add actions, click Add Action -> Select Type -> Select Media File -> Select Play Location -> Add and Continue



Modify POI and delete POI : The content of modifying POI and creating new POI is the same

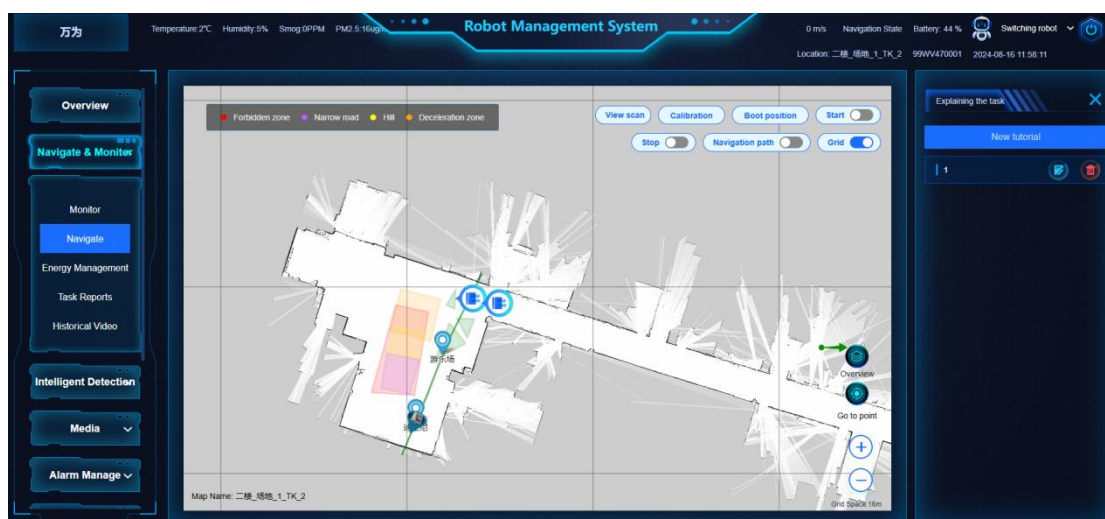


5.14.4. Broadcasting Tasks

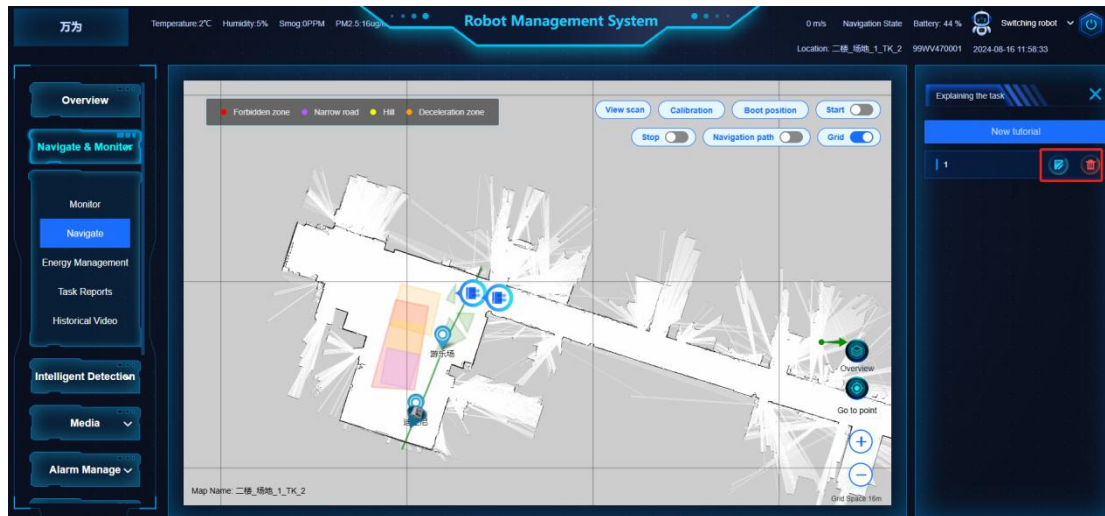
new broadcast task : The broadcast task is a navigation task. Set the action of the point of interest. The robot walks to the specified point of interest within the specified time and performs the broadcast task . The broadcast task is executed cyclically. The set time period will be executed when the time starts and stop when the time ends.

[Operation method] Click on the explanation task -> create a new explanation task -> select the task type (broadcast task) -> select the points of interest to be passed -> fill in the task name and time -> confirm (the points of interest must be greater than or equal to two)

[Notes] The broadcast task is time-triggered and cannot conflict with the navigation task ; the explanation task requires voice interaction triggering, and Anbot-Y does not support voice interaction.



Modify and delete explanation tasks : add and reduce points of interest ;
delete explanation tasks

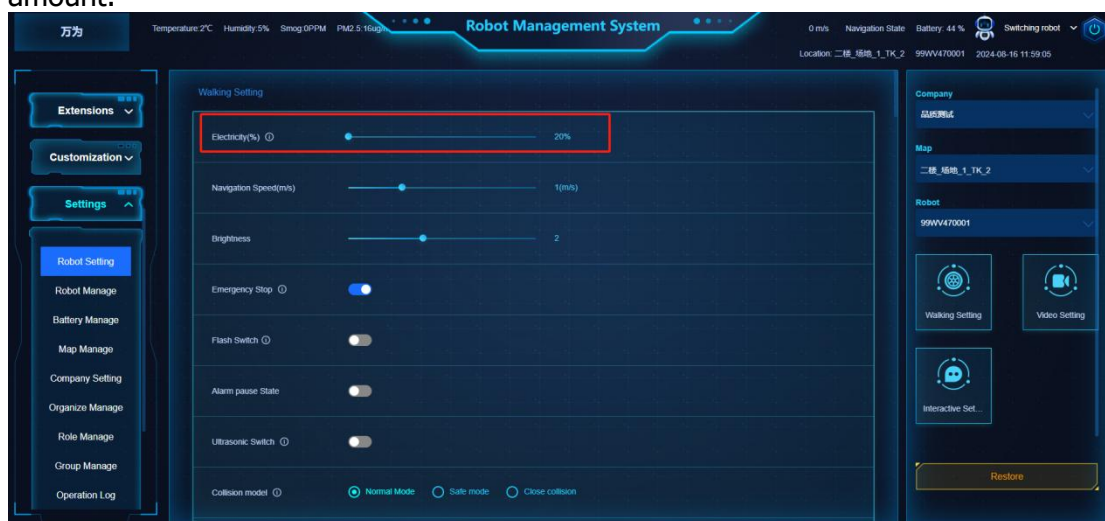


5.15. Charge

5.15.1. Autonomous charging

When the battery level is less than 20% (the threshold can be set by yourself), the robot can navigate to the vicinity of a preset charging station by itself, and align itself with the charging station through lidar positioning , thereby realizing autonomous charging function.

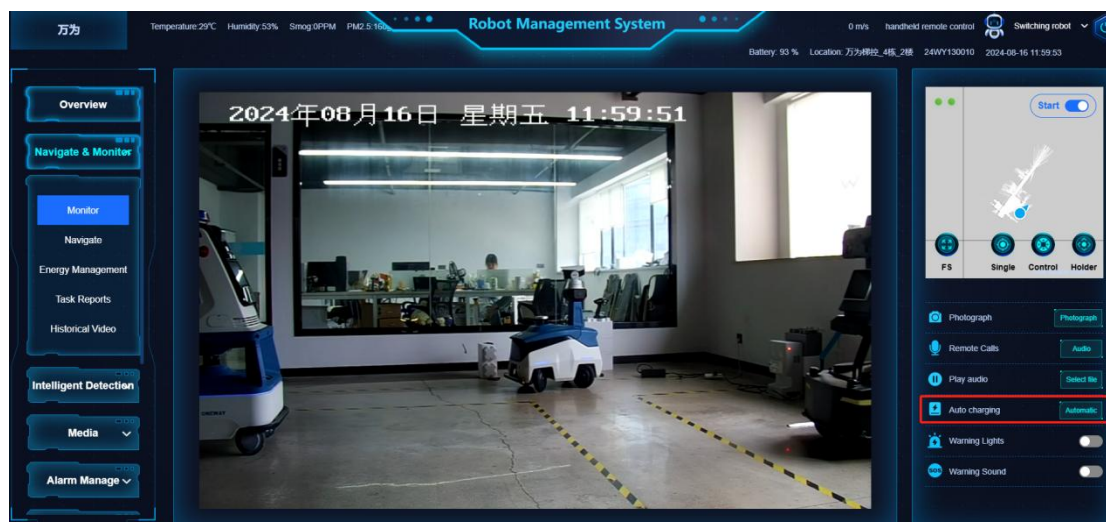
Charging threshold setting: [Operation method] Click "Management Settings->Robot Parameters" in sequence, and click the walking subsystem parameters on the right to set the recharge amount.



Management Settings->Robot Parameters: Walking subsystem settings, set the recharge capacity

5.15.2. Instruction charging

Click the "Auto" button on the right side of autonomous charging. When the robot's position is accurate, you can click "Auto Charge" anywhere on the map. Regardless of the robot's current battery level, the robot will receive a recharge command and return to the charging station to execute the charging command (the robot's default recharge threshold is 20%). The robot will go to the charging station to charge autonomously (when the robot has a navigation mission, it will start patrolling after the charge reaches 70% (adjustable). If there is no mission, it will default to charging to 90% and then leave the charging station to enter the idle state)

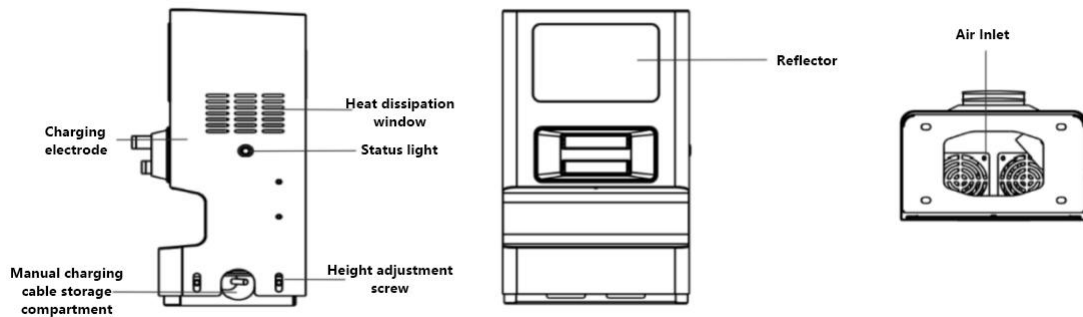


[Note] When the robot is in the navigation task time period and the charging power reaches 70%, it will automatically detach from the charging pile and continue to perform the navigation task.

5.15.3. Manual charging

There is a direct charging cable hidden on the side of the charging pile. Take out the connecting cable, connect the power socket and the charging port on the back of the robot to charge. This method has a shorter charging time than charging with pole pieces.

[Note] If you choose manual charging, please control the robot remotely or push it to the charging plug before shutting it down. If the robot is shut down or has zero power, you cannot push it (the four wheels cannot be pushed if they are in an X shape. You can only manually turn the front and rear drive wheels of the robot to a straight line and then push it. For specific methods, refer to 6.1)

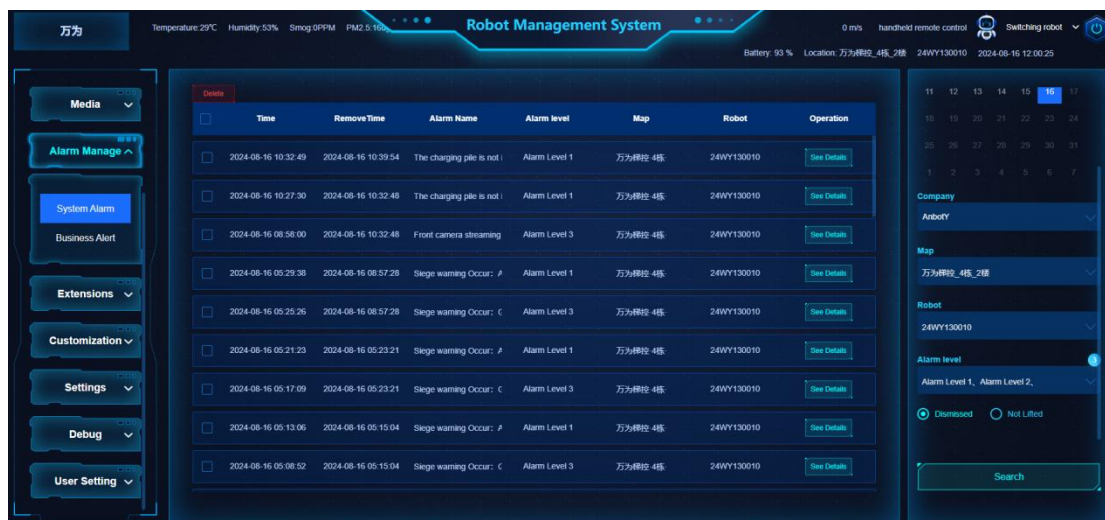


There is a manual charging cable on the charging pile side

5.16. Other background functions

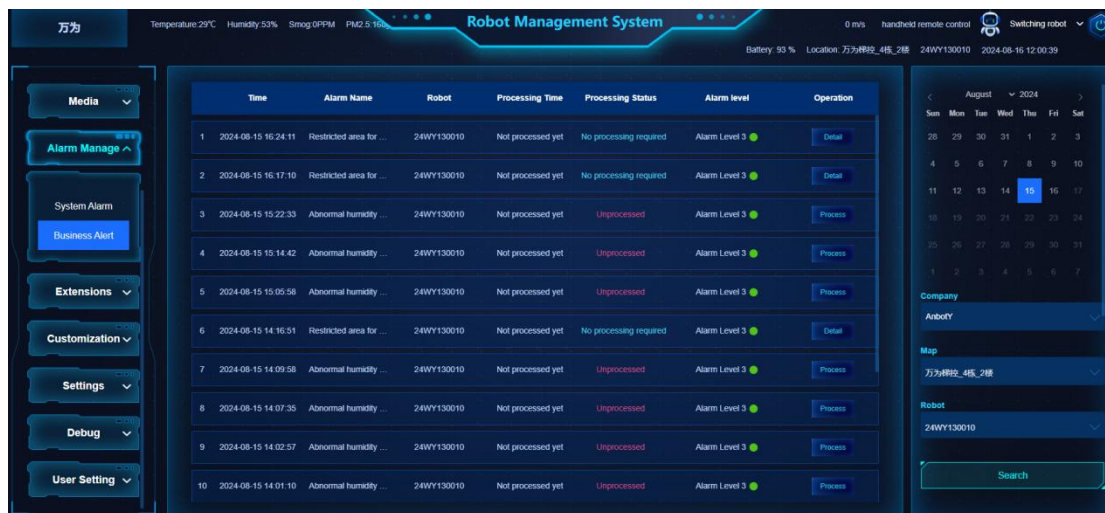
5.16.1. Alarms and faults

- ✧ System Alarm : Select Alarm Management in the function bar , then select **System Alarm** to enter the system alarm interface, select company name , map, robot, alarm level and status for query, and you can query and delete alarms of specified dates .



- ✧ Business alarm :

Alarm Management in the function bar , then select **Business Alarm** to enter the business alarm interface, select company name , map, robot, alarm level and processing type to query , process and delete .



5.16.2. Reporting and reporting functions

- ✧ Data export: can generate reports for different time periods (the report content includes robot working hours, face detection statistics, business alarm statistics, etc.).

[Operation method] Select the robot -> select the report time to query the report (the report content mainly includes the robot's working time, face detection statistics, business alarm statistics, etc.) .

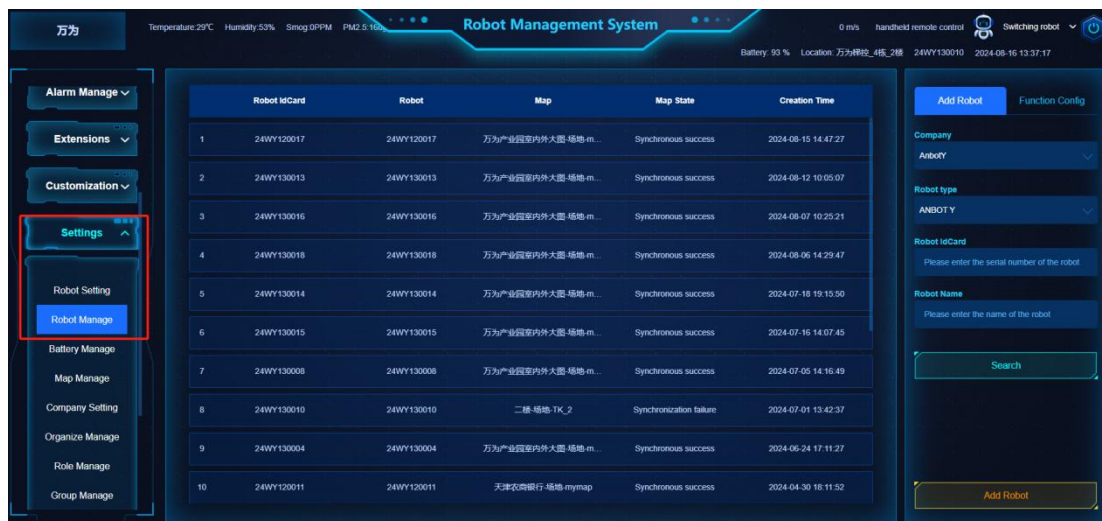


- ✧ Mailbox management : used to send reports to relevant personnel. You can create new mailbox groups, delete mailbox groups, and change the members in the mailbox group.

[Operation method] Click "Extended Function-Mailbox Management" in sequence.

5.16.3. Other management settings

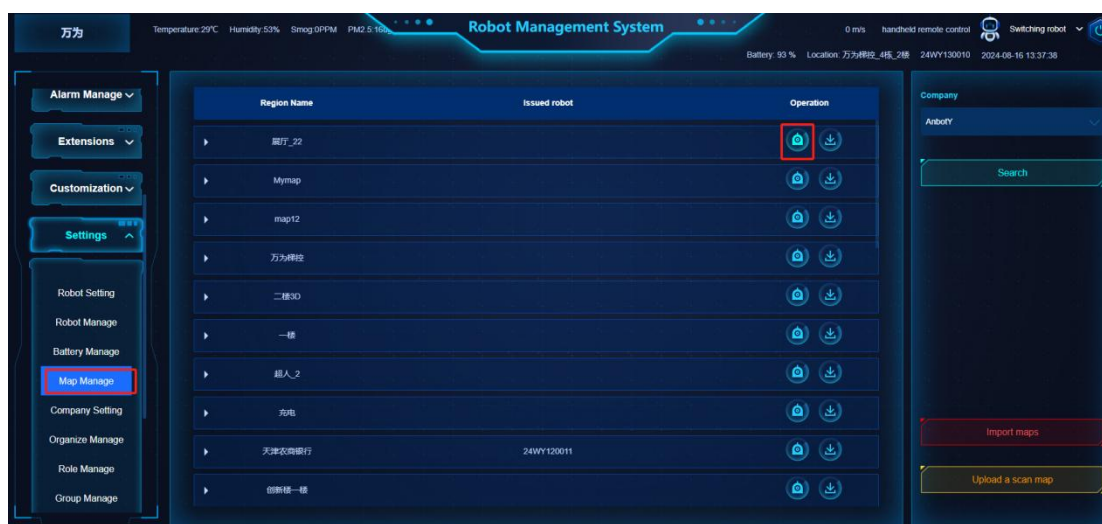
Management Settings-> Robot Management : If more than one robot is equipped, you can use this interface to manage all robots under the server and perform operations such as adding, modifying information, and deleting.



Admin Settings->Bot Management

Management Settings-> Map Management : You can operate the maps on the server. You must upload the maps created by the tablet/mobile phone to the server in advance. You can send, download, delete, etc. the maps.

[Note] Each robot can only save and use one map. If a new map is issued, the new map will overwrite the old map. The robot will automatically load the new map when it is turned on. Please use this function with caution. Map errors will cause the robot to malfunction.



Admin Settings->Map Management

Management Settings-> Organization Management : You can add, delete, modify information, reset passwords, and perform other operations on robot management users.

Management Settings-> Operation Log : You can query user login and operation records.

For more background settings, please refer to: "RMS User Manual V5.0.7 ".

6. Common problems and solutions

6.1. Introduction to several methods of mobile robots

✧ How to move the robot to a certain target location?

method	Applicable working conditions	How to operate
Single-point navigation	In the boot state, the robot successfully connects to the server	The background control allows the robot to automatically walk to the target point. For operation methods, refer to 5.1 1.1.3 Single Point Navigation Settings
Backstage remote control	In the boot state, the robot successfully connects to the server	The backstage remote control moves it forward, backward, left, and right until it reaches the target point. For operation methods, refer to 5.10 Remote Control Function
Hand push robot	● Battery failure, system power failure	Refer to the following #How to push the robot #

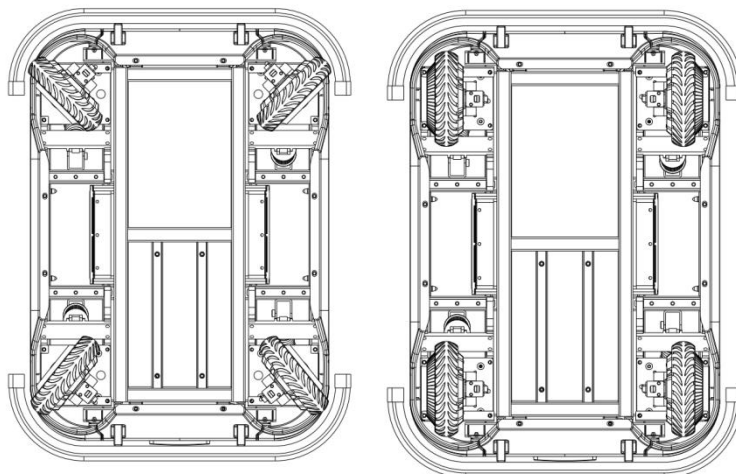
✧ Why push robots?

When the robot's battery fails and cannot power the system, the robot's four wheels are in a "crossed" state and cannot be remotely controlled or pushed directly.

✧ **How to push the robot?**

● **Battery failure, unable to turn on**

1. Manually rotate the motor: When the robot cannot be turned on, the driving wheels of the robot are in a "crossed" state. At this time, you need to hold the front/rear driving motor and rotate it to a straight line at the same time.
2. Pushing the robot: When the motor is in a straight line, push the robot directly by hand. When turning is required, gently lift the robot until the rear wheels are off the ground, turn the body, and then continue pushing. When it reaches the manual charging position, stop pushing, immediately charge manually or perform battery troubleshooting.



6.2. Virtual track setup failed

- ✧ Please check whether there are any noise points or obstacles on the virtual track. If so, please re-plan it.

6.3. The robot is in the navigation task period but is stationary

- ✧ Check whether the remote control has been released to the autonomous navigation position
- ✧ Check whether the robot's position on the map is correct. If the position is incorrect, try to correct it in the background.
- ✧ Check whether the robot is in the restricted area and try to remotely control or push the robot out of the restricted area.

- ✧ When the robot is set to walk on the virtual track, check whether the virtual track setting is disconnected or too close to the restricted area. If so, reset the virtual track.

6.4. Robot position error

- ✧ Carefully check whether the robot's position on the map is consistent with its actual position. If not, perform position correction.
- ✧ If the position is lost multiple times, the hardware may be faulty or the parameter settings may be unreasonable, or it may be caused by a significant change in the surrounding environment. Please contact the manufacturer for support.

6.5. The robot does not move after reaching the charging station

- ✧ Check whether the charging electrode is in a normal pop-up state (if the electrode is in a pressed-down state, the robot will stop moving). If it is accidentally pressed down, you can manually lift the electrode.

6.6. The robot is leaning against the charging station but is not charging

- ✧ Check whether the indicator light on the charging pile is always green (normal charging state). If the indicator light is not green, you can remotely control the robot to leave the charging pile and then click to try charging.
- ✧ Check whether the pole piece is clean, free of stains and rust.
- ✧ If the problem still cannot be solved, please contact the manufacturer for support.

7. Regular care and maintenance

Maintenance and overhaul: The robot needs to be inspected regularly to ensure normal operation. The overhaul activities are performed by the customer's professionals/ONEWAY operation and maintenance personnel/ONEWAY factory according to different situations. For details of the overhaul, please see the following overhaul item list .

Maintenance Items List											
Maintenance area		Maintenance interval					Maintenance method	Maintenance content	Maintenance personnel		
		daily	between Every 500h	between Every 2000h	between Every 5000h	between Every 10000h			Professionals	Qualified	Manufacturing Company
1	Appearance shell	√					Visual inspection	sweep away dust; Check all parts for cracks and damage	√	√	√
2	Appearance Logo	√					Visual inspection	Check for looseness or missing parts; fill any gaps	√	√	√
3	Anti-collision strip	√					Visual inspection	Check for damage or missing parts; fill in any gaps	√	√	√
4	Cover bolts		√				wrench	Check for missing or loose parts; fill in any gaps and tighten.	√	√	√
5	LiDAR		√				Visual inspection wrench	Check for stains and looseness; clean and tighten		√	√
6	Cooling fan			√			Visual inspection wrench	Check the fan rotation to see if it is dusty; clean and replace		√	√

7	Charging electrode			√			Visual inspection Hand touch	Check for rust, stains, and good spring feedback; Clean, replace		√	√
8	Motor			√			Hand touch wrench	Check for looseness, abnormal noise, or abnormal high temperature ; tighten or replace		√	√
9	Servo			√			Hand touch wrench	Check for gaps, looseness, or abnormally high temperature s; tighten		√	√
10	wheel				√		Visual inspection wrench	Check the degree of wear and tear and whether there is any foreign matter; clean and replace		√	√
11	Terminal Blocks				√		Visual inspection Hand touch	Check whether the terminal is securely connected and whether the wire is damaged; replace		√	√
12	Switch button				√		Hand touch multimeter	Check whether the button rebounds sensitively and whether the conduction is normal; replace		√	√
13	Display screen				√		Visual inspection	Check whether the screen has dead pixels and whether the color display is normal; replace		√	√

14	Battery				√		Visual inspection multimeter	Check whether the battery life is 8 hours and the charging speed is normal.		√	√
15	Overhaul					√					√

Maintenance instructions:

(1) Regular maintenance and inspection are necessary for the normal operation of the robot, and also ensure the safety of equipment and personnel during work.

(2) The maintenance interval is set based on the time the robot is powered on. It is implemented in hours or years, whichever is shorter. It is generally divided into the following types:

A. Daily Inspection

B. Check every 500 hours (1 month)

C. Check every 2000 hours (half year)

D. Check every 5000 hours (1 year)

E. Check every 10,000 hours (2 years)

(3) The maintenance time is the time when the robot stops running and is in idle state.

(4) Maintenance work must be completed by personnel with relevant project maintenance qualifications and records must be kept for the record.

8. Appendix - Map Building APP

8.1. Software Overview

The Map Building APP is an application used to operate robots. It is designed to facilitate operation and maintenance personnel to build maps, remotely control, view basic information, etc. on robots. It currently only supports Android systems.

8.2. Operating Environment

This software can run on phones and tablets with Android 4.4-Android 8.1 versions, and cannot be installed on phones and tablets with Android versions lower than 4.4.

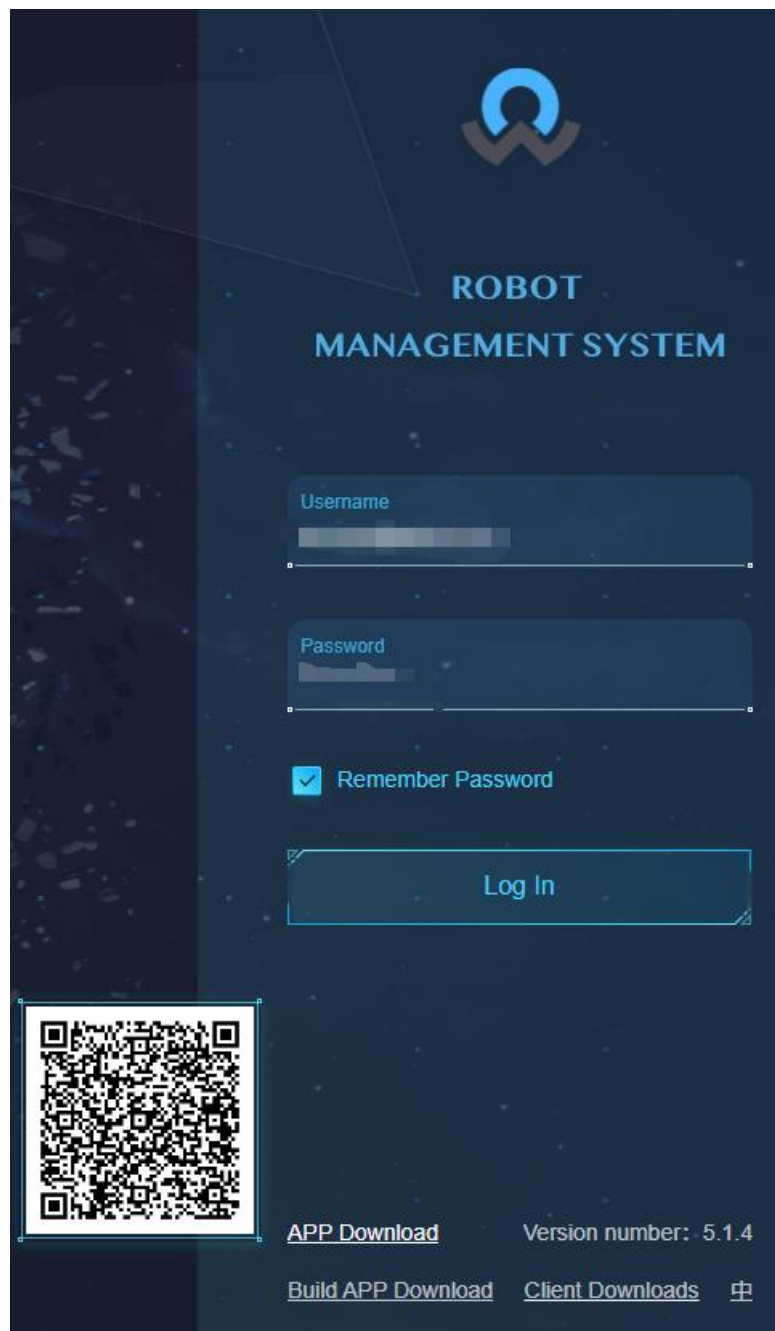
Recommended environment: Android tablet (screen 10 inches or more, memory 4G or more, storage space 32G or more)

8.3. How to use

8.3.1. Software Installation

1. Open the server where the current robot is located, such as:
<http://www.anbotcloud.cn/#/> (cloud server domain name)

2. Move the mouse to the download button of Jiantu APP, and use the browser or a third-party browser to scan the QR code in the picture below.



QR code interface



Mobile browser home page

3. Click to continue access



The browser scans the page

4. Click the download button in your mobile browser



Browser download page

5. Wait for the mobile browser to download and then click to install



App installation page

6. The following picture shows that the installation has been successful (the page may be different for different mobile phone models)



Installation completed page

8.3.2. Software Licensing

1. When you open the app for the first time, you need to authorize 2 permissions, as shown below



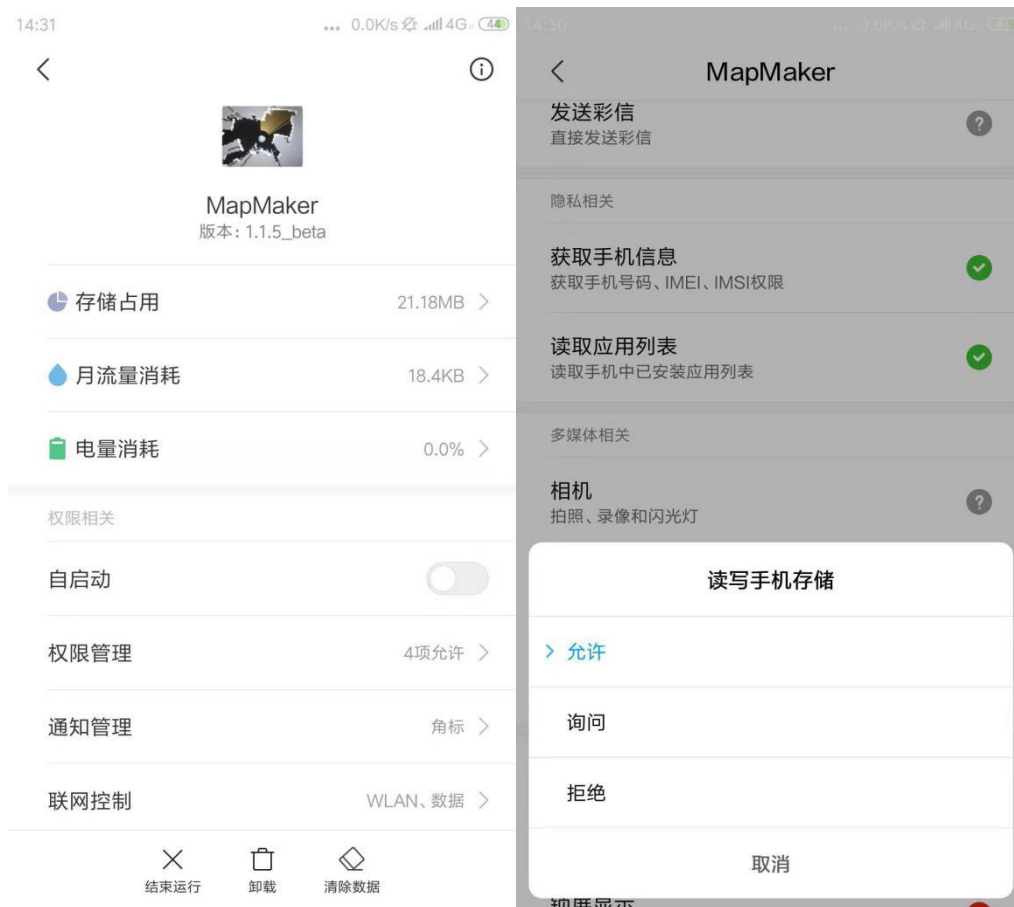
Disk License



Information Access Authorization

Click Allow for all

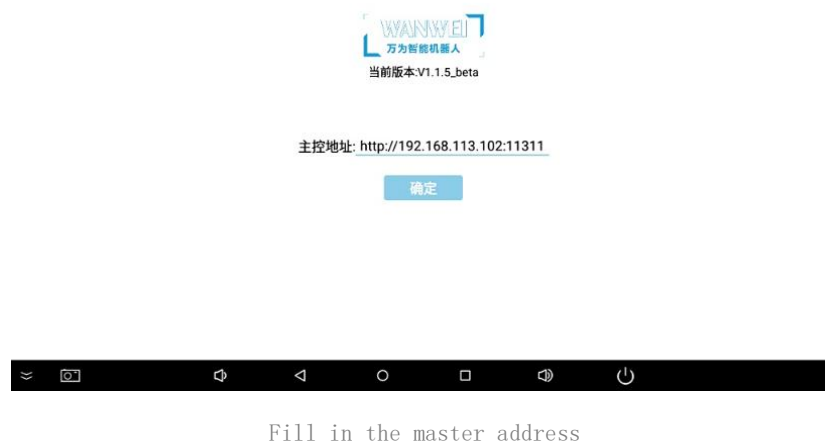
【Note】 : If you accidentally click "Reject", you can open it again in System Settings-->Application Management-->MapMaker, as shown below



Re-authorize your app

8.3.3. Connecting to ROS

1. Network connection: Please use the Ethernet to USB card to connect your phone/tablet or directly connect to the router on the robot (if any)
2. Open the map building app and fill in the main control address, which is fixed at: <http://192.168.113.102:11311>;
3. This page allows you to view the program version number. To update the version, you need to download the new program and reinstall it.



8.3.4. View real-time information

After filling in the master address, click Confirm to enter the main page. On the current page, you can view the current power, network status, collision information, speed, real-time status, fault information, SLAM matching, selected coordinates, and laser data.

【Note】: 1. The red color of the collision information plate indicates the collision status, and the blue color indicates the normal status;

2. Speed information: The current moving and turning speed of the robot. The recommended speed for map building is about 0.5m/s;

3. Real-time status: the current status of the robot: initial state, idle state, remote control state, navigation state, charging state, and charging state;

4. Fault information: Any fault or abnormality of the robot will be displayed in the fault information column;

5. SLAM indicates the matching degree between the current map and the actual environment. The higher the percentage, the more accurate the match.

6. Selected coordinates: After starting the map and selecting a point, the position of the currently selected point in the map's coordinate system is displayed on the map;

7. Current power: When charging, the robot's current power is indicated by the charging icon;

8. Network status: The slower the signal bars, the stronger the signal. When the icon is in a warning state, it means the signal is weak or disconnected.

8.3.5. Automatic charging

1. After entering the APP main page, you can perform charging operations

2. Automatic charging can be selected depending on whether the charging pile is set up

【Note】 : Charging is not possible in the map building state or error state, and single-point navigation is not possible in the charging state.



View real-time information and charging settings

8.3.6. Set the image resolution

1. Click to start building a map, enter the resolution in the input box, and set the building resolution

2. Resolution Description

Resolution is the scale of the map, in meters/pixels. Simplify the company office into a rectangle of 75*50m, and use 0.025m/pixel. The map size is: $50/(0.025)*50/(0.025)=3000*2000$. In addition, there will be a little expansion when building the map with gmapping, so the actual map size we get is: 3126*2670. The map cannot be infinite, because the computer memory is limited, and currently the map is loaded into the memory at one time.

According to the current test results: 6000*7000 is the limit. A map that is too large will also cause many algorithms to take longer. Generally speaking: it is reasonable to control the map size within 5000*5000.

The Lugu Park is about 500*200m. Assuming a resolution of 0.025 is selected, the map size is: 160000000, 16G, and it is impossible to build the map successfully.

Therefore, the formula for selecting resolution is: simplify the site into a rectangle and select the larger of the length and width (in meters).

The larger range of length and width (in meters)	Reference resolution (flat panel setting value)	Example
0-75 (inclusive)	10	indoor
75-150(inclusive)	8	Airport, etc.
150-300 (inclusive)	6	Rehabilitation Center
300-600 (inclusive)	2	Lugu Park
600-900 (inclusive)	1	none

【Note】 : The image cannot be created in the charging state and error state



Set the image resolution

8.3.7. Start building a map

1. After setting the resolution, drive the robot to build the map, laser scan in real time, and draw the map after uploading the data immediately

2. When building a map, you can choose to control the robot to move and build the map by pushing, single-point navigation, and remote control.

【Note】: 1. Position calibration, manual charging and automatic charging are not possible in the image building state.

2. If the speed is too fast when building the map, there will be a lot of black noise in the built map. The noise that has not been uploaded can be removed by multiple scans. The recommended map building speed is 0.5m/s

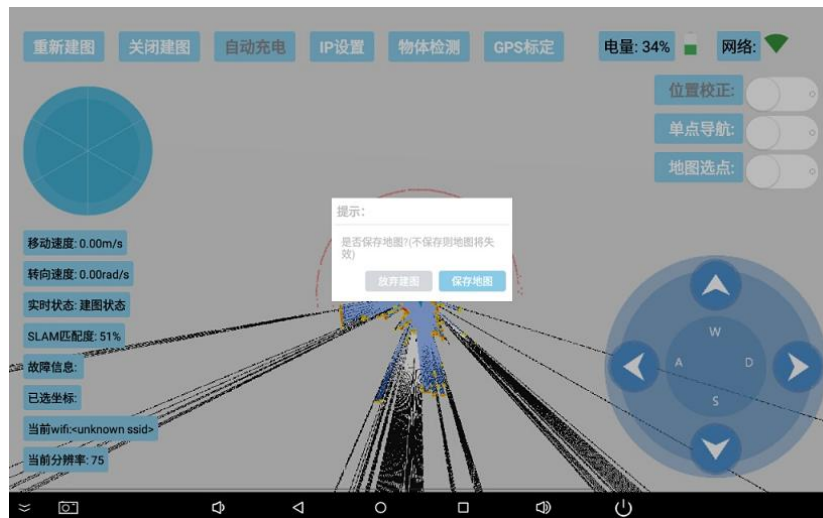


Real-time data for mapping

8.3.8. Close the drawing

1. Click to close the map construction, and a pop-up window will pop up to confirm whether to save the map;

2. After the pop-up window appears, click "Save Map" to save the newly created map, and click "Abandon Map" to abandon saving the map. The robot can only save one map. When the newly created map is overwritten, the previously created map will be overwritten.



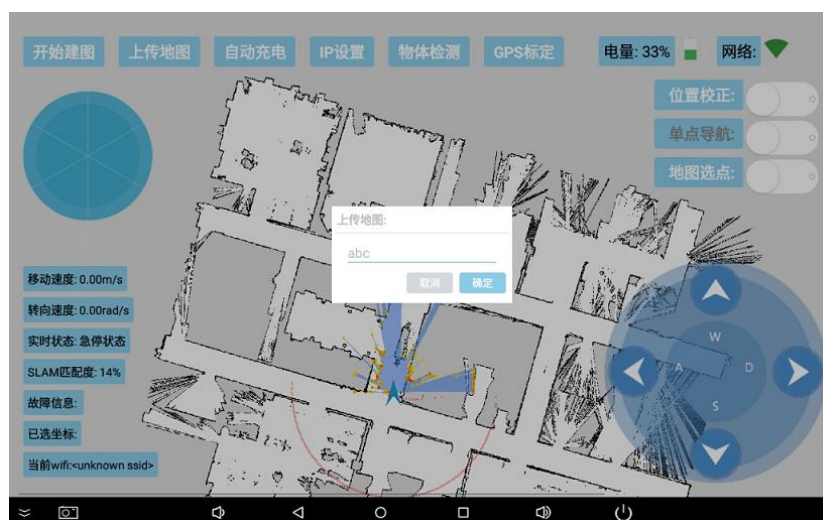
Close the drawing

8.3.9. Upload a map

1. After closing the map building, click Upload Map and fill in the map name in the pop-up window. When the page prompts: "**.pgm file uploaded successfully!", "**.yaml file uploaded successfully!", the map building upload is successful;

2. If the map name is the same as the server map list or the robot is not connected to the server, the map upload will fail. After changing the map name or connecting to the server, the map can be uploaded successfully.

3. After the newly created map is uploaded, the newly created map will replace the map currently being used by the robot



Upload a map

8.3.10. Rebuild the map

1. If you need to change the resolution or create another map during the map building process, you can click Rebuild Map. Before rebuilding the map, make sure that the map being built has been saved and uploaded.

2. Currently, the robot can only save one map under construction locally. Rebuilding a map or starting to build a map again will overwrite the previously saved map

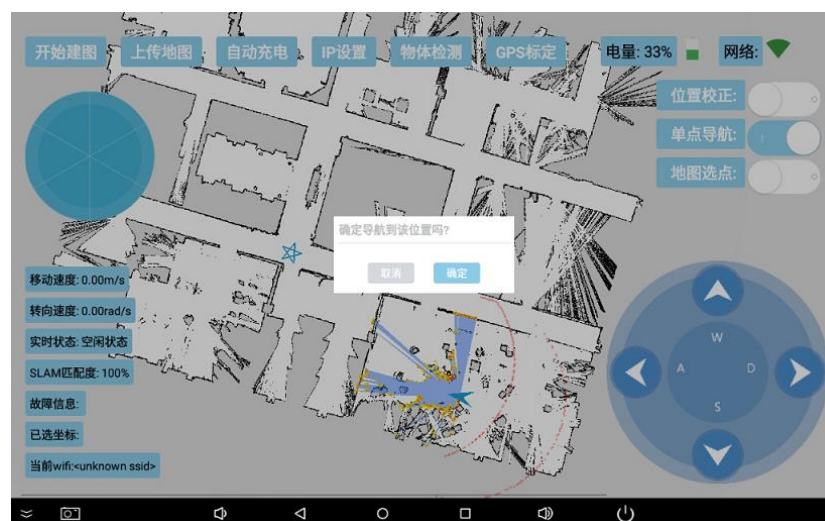
8.3.11. Single-point navigation

1. Turn on the single-point navigation switch to set single-point navigation. During the setting process, you can zoom in and out on the map. Click on the map and a pop-up window will pop up to confirm the target point. Click the Cancel button after the pop-up window to abandon the navigation target point setting.

2. Click on any accessible location within 5m of the robot's current location on the map to set a single-point navigation target point. After setting, the robot will plan a navigation path and navigate to the target point;

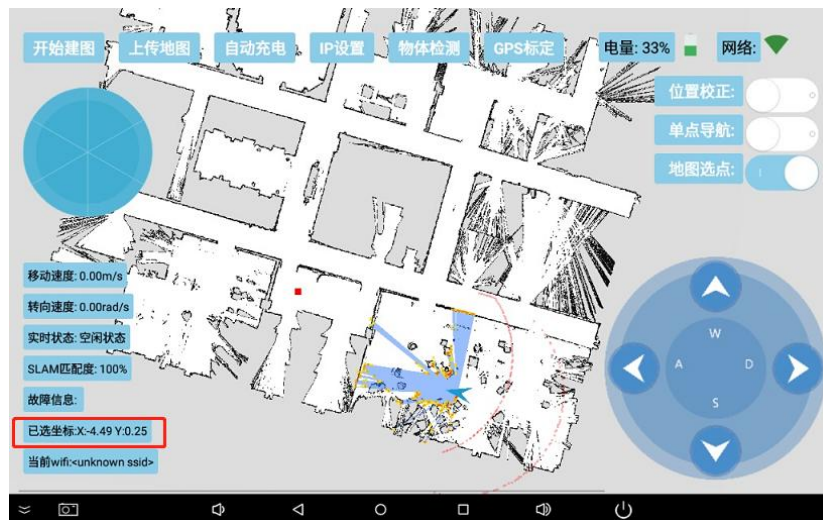
3. During navigation, upload data in real time and update the currently built map

【Note】: Single-point navigation settings are only available in the drawing state and idle state.



8.3.12. Map selection

1. Turn on the map point selection switch, click anywhere on the map, and the coordinates of the currently selected target point will be displayed in real time;
2. Zoomable mobile map during setup



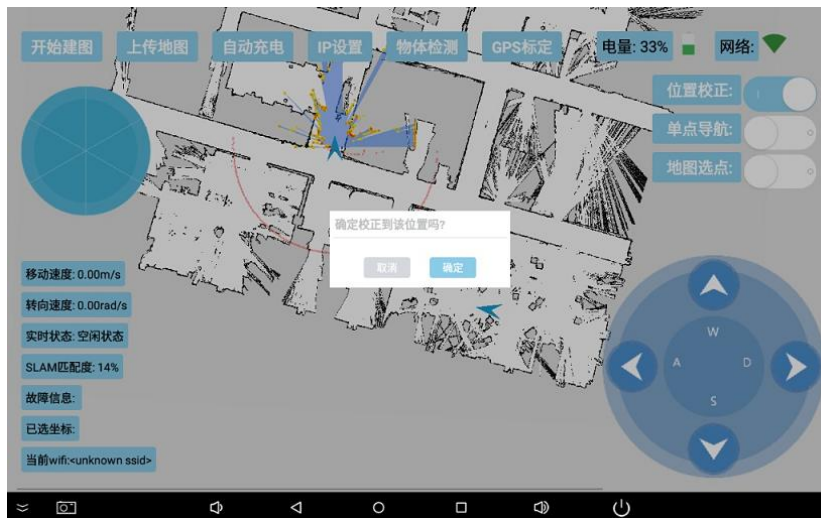
Map selection

8.3.13. Position correction

1. Turn on the position correction switch, press and hold anywhere on the map to trigger the position correction function, which can adjust the direction of the robot. After a pop-up window is displayed for confirmation, the robot position is adjusted to the position just set. Click the Cancel button after the pop-up window to abandon the selected position and select again.

2. Only one of the three functions, position correction, single point navigation, and map point selection, can be set at the same time

【Note】: Position correction cannot be set in the drawing state



Position Correction

8.3.14. remote control

When the robot is not in emergency stop state, click the remote control button to move forward, backward, turn left, and turn back.

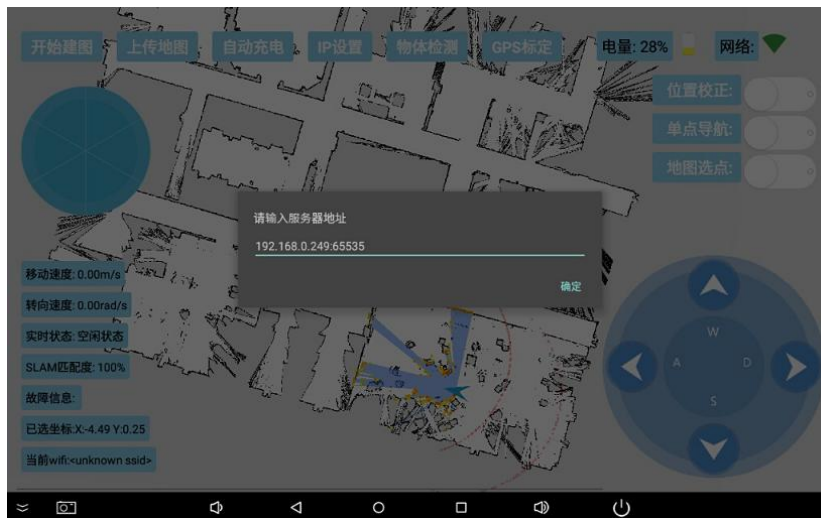


Remote Control Robot

8.3.15. IP Settings

The map building APP can set the server that the robot needs to connect to. The message is sent by the map building APP to the interactive subsystem, and then the interactive subsystem configures itself, the video subsystem, and the walking subsystem. After the configuration is successful, the interactive subsystem will be restarted and the map building APP will be returned to see whether the configuration is successful.

【Note】 : The server IP needs to fill in the port number

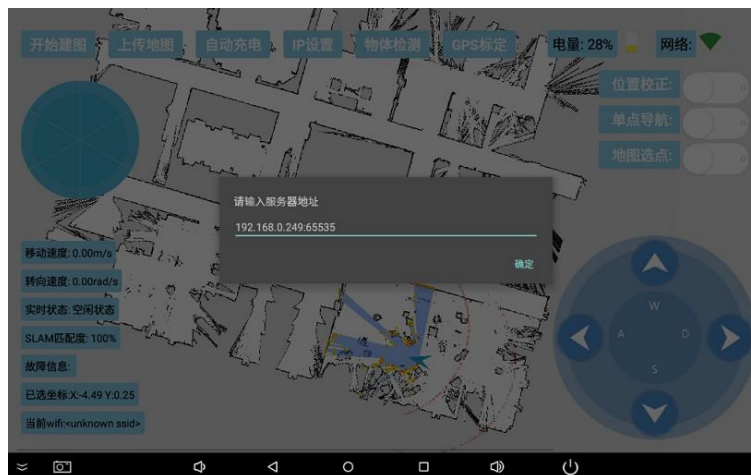


IP Settings

8.3.16. Object Detection

This module is the input module of the robot's object detection function. It connects to the server through the map building APP and sends the image captured by the front camera to the server for detection. If the image contains the detectable object type and location information, the input is successful. The operation process is as follows:

1. Click the object detection button to connect to the corresponding server



Object Detection Connection Server

2. Click the camera button to capture the picture



Capture photos of inspection points

3. Fill in the name and type of the test point



Fill in the testing point information

4. Click the upload button to upload the test points

8.4. Frequently Asked Questions about Mapping

✧ After clicking "Start Map Building", no map scan data is uploaded and the connection timeout is displayed.

1) Possible reason 1: Network connection failed. Check whether the tablet is successfully connected to the robot's internal network.

2) Possible reason 2: The mapping program failed to start successfully. You can restart the mapping program or restart the robot.

- ✧ Uploading the map failed, and the connection timed out
 - 1) The map building app fails to connect to the robot network. Check the network and reconnect.
 - 2) If the network connection with the server fails, you can reconnect to the server by checking the network.
- ✧ Object detection cannot connect to the server
 - 1) Check the map building APP network
 - 2) Check whether the entered IP contains a port number.
- ✧ IP setup failed for one or more subsystems
 - 1) The interactive subsystem feedback is successful, indicating that at least the interactive subsystem has been successfully modified. At this time, you need to check the connection between the other two subsystems and the interactive subsystem. If they are disconnected, restart the robot.
 - 2) Check whether the entered IP contains a port number
- ✧ The resolution will not be selected when building the map
 - 1) Refer to the section Setting the Image Resolution