AUTONOMOUS DRIVING SCRUBBER-MIX1

无人驾驶清扫车
MIX1 AUTONOMOUS DRIVING

PRODUCT MANUAL
产品使用说明手册

注意： 在使用产品前， 必须详细阅读本说明书。
机器的功能更新可能会导致实际表现与说明书不一致，请以实际为准。
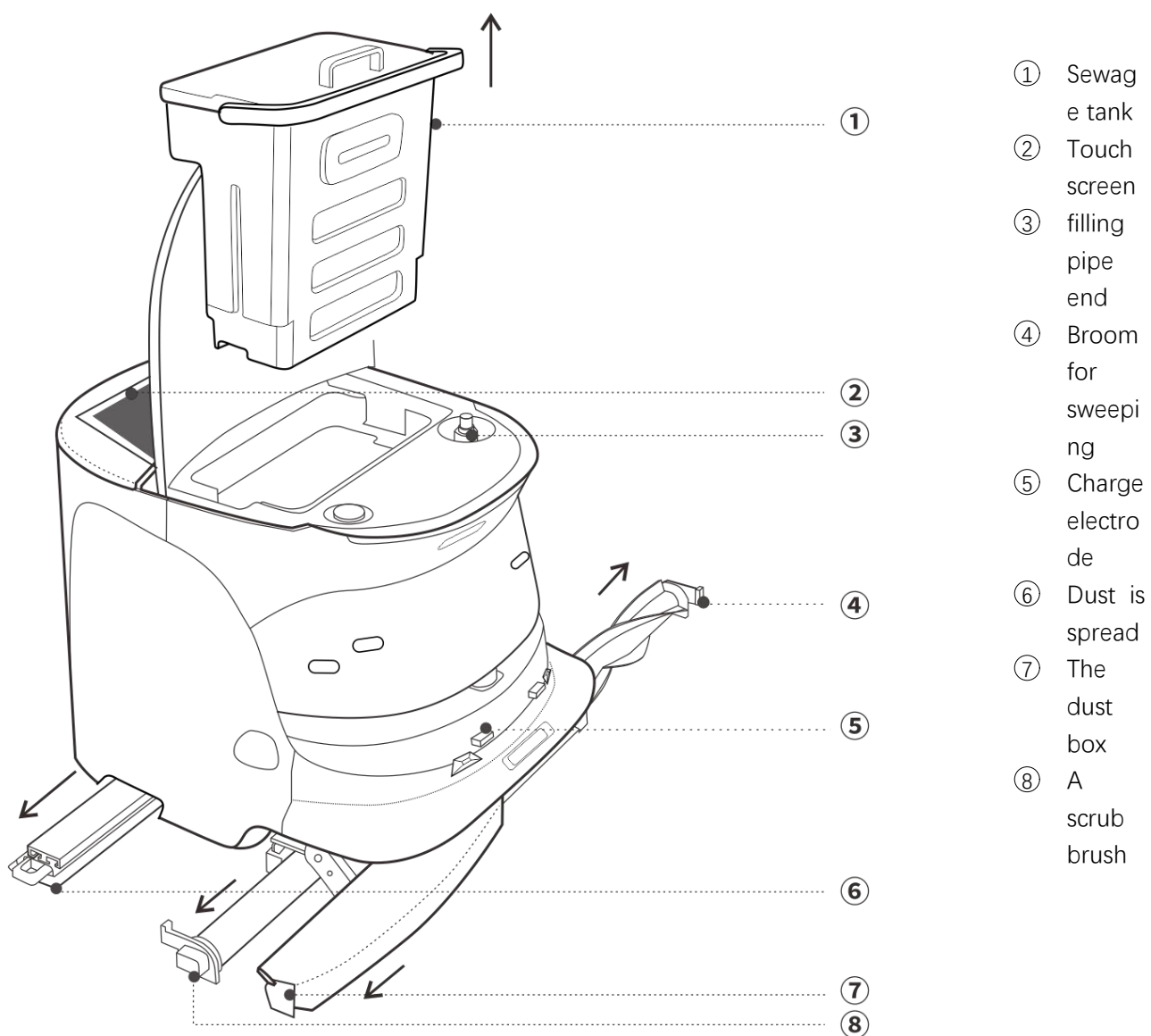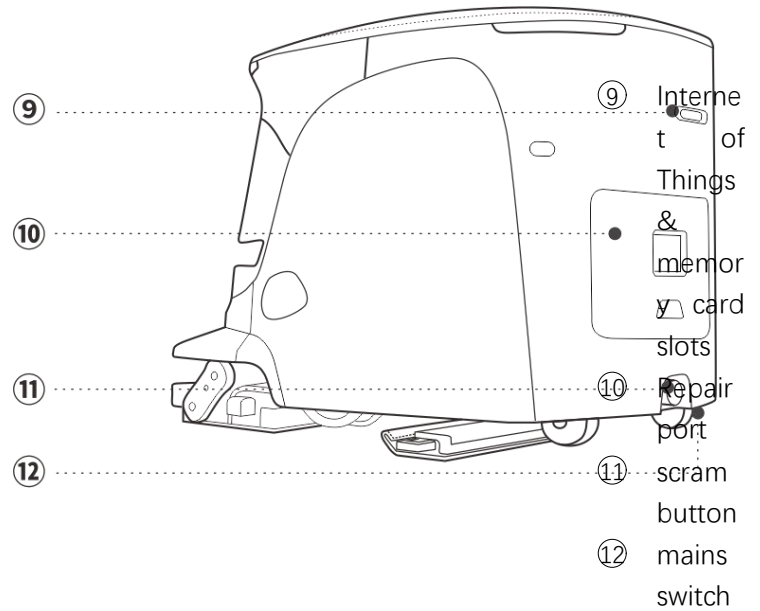如有任何疑问， 请及时联系售后技术服务。

catalogue

Product Introduction

1.1　The composition of the robot

① Sewage tank
② Touch screen
③ filling pipe end
④ Broom for sweeping
⑤ Charge electrode
⑥ Dust is spread
⑦ The dust box
⑧ A scrub brush

⑨ Internet of Things & memory card slots

⑩ Repair port

⑪ scram button

⑫ mains switch

See the parameter table at the back for details of the sensor distribution

1.2 Product Parameter

Model	MIX1
size	650mm*580mm*550mm (L*W*H)
Net weight of the machine (excluding water)	70kg

Clean performance	Clean mode and efficiency	Standard washing: ~1197 ㎡/h
		Power washing: ~1197 ㎡/h
		Standard smoking: ~1368 ㎡/h
		Silent sweeping and suction: ~1368 ㎡/h
		Suction and push: ~1368 ㎡/h
		Standard dust push: ~1368 ㎡/h
	Mode switching method	Supports one-click switching on the APP side of the fuselage, without the need to replace the cleaning components

	Maximum suction	15 KPa
	Effective cleaning width	Washing mode: 520mm (brush width)
		Dust push mode: 540mm (dust push cloth width) /580mm (optional)
	Edge width	10cm * The actual edge effect will vary depending on the site environment and deployment
	Capacity of the water tank	22L
	Tank capacity	15L
	Tank life	Standard washing: 4.5h Power washing: 2.5h
	Chamber capacity	1L
	Quick assembly of components	support
Appearance material	**material quality**	ABS
	pigment	Black and silver, black and white
	classification of waterproof	IP43
Built-in tablet	**screen size**	10.1 inches
	resolution ratio	1920*1200
radio communication	**4G**	LTE cat4
	WiFi	802.11b/g/n/ac
Drive system	**climbing capacity**	Maximum uphill Angle: 6° Maximum operating slope: 8°
	Ability to cross the river	Non-clean state and standard dust push mode: 20mm Other cleaning mode: 5mm * It is not recommended to use it frequently in an environment with uneven ground
	Overcapacity	35mm
	trafficability characteristic	Minimum 700mm (Gates, turnstiles, or passages less than 1m in length)
	Default speed	Standard washing/dry cleaning: 0.6m/s Standard sweeping/silent sweeping/sweeping and pushing: 0.7m/s Standard dust push: 0.8m/s Non-working state operation: 1.2m/s
	maximum speed	1.2m/s
	usage scenario	Indoor floor, marble/stone/pavilion/PVC/short pile carpet (<5.5mm), etc
HEPA	**HEPA**	H13(99.97%)
dynamical system	**Battery materials**	lithium iron phosphate
	Battery rated voltage and capacity	25.6V / 40Ah
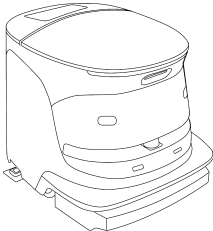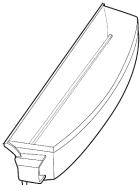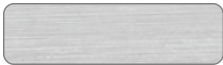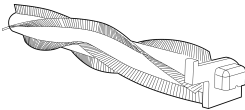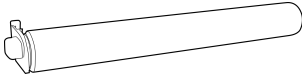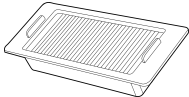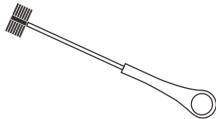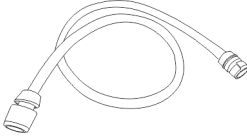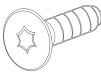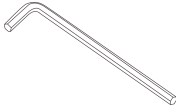
	operate time (From 100% to 10% power)	Standard washing: 4.5h
		Power washing: 3.5h
		Standard sweep/sweep push: 4.5h
		Silent sweeping and suction: 19.5h
		Standard dust push: 28h
	charger	Positive contact charging electrode
		100-240V AC
	charging interval	<4 hours
	Charging method	When the power is 10%, it will automatically recharge
	Battery life	2000 charge and discharge
Equipment noise	**Work noise**	Washing: 55dB dust push: 45 dB
Other devices	**suona**	Dual speakers, support voice reminder and broadcast, work music playback
	scram button	Located below the back end of the machine
	mains switch	Located at the bottom right of the emergency stop button
	tape lights	Front and rear light strips, support color indication and steering indication
Motion planning and perceptual navigation	**Clean route**	Bow-shaped
	Perception mode and scope	Multi-sensor 360° fusion sensing. Sensing range: 0.02-50m
		Detailed sensor parameters are shown in the table below
work environment	**Temperature & humidity & altitude**	Temperature 0~40°, humidity 5%~85%RH, altitude below 2000m
	Terrain constraints	Create minimum area requirements for clean areas:>5 ㎡
		Minimum area for path generation in the cleaning area: 1 * 1m (L*W)
software application	**fuselage APP**	support
	Web end	support

Sensor parameters
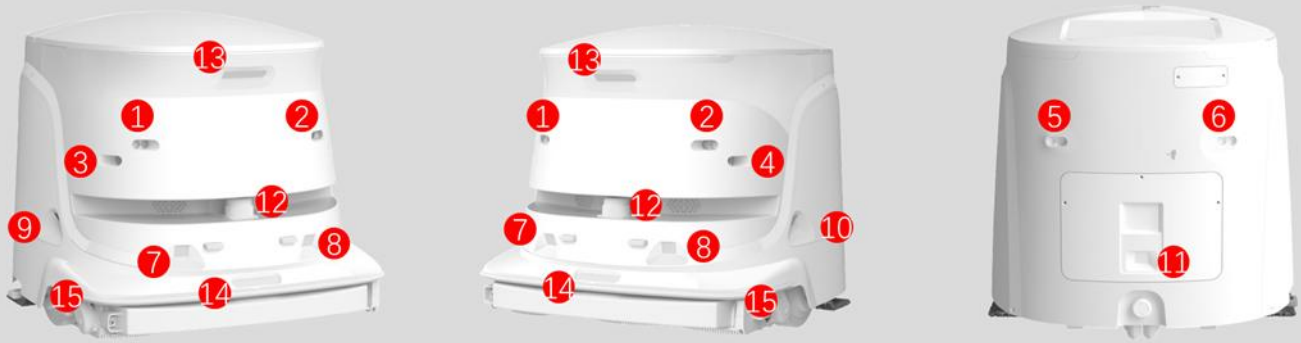
number	sensor	position	mounting height	measuring range	FOV
1	ultrasonic	the place ahead	34.5cm	0.02~0.25m (0.3m)	60°
2	ultrasonic	the place ahead			
3	ultrasonic	the place ahead	31.7cm		
4	ultrasonic	the place ahead			
5	ultrasonic	rear	35.2cm		
6	ultrasonic	rear			
7	Line lasers	Up front	17.1cm	0.025-0.3m	50°
8	Line lasers	Up front			
9	Line lasers	left side	21.1cm	0.025-0.3m	
10	Line lasers	offside			
11	Line lasers	rear	17.1cm	0.025-0.3m	
12	ladar	the place ahead	23.7cm	0.05~50m	±108.8°
13	Depth camera	the place ahead	46cm	0.2~4m	H73.8° V58.8° D86.4°
14	Depth camera	the place ahead	15.8cm		
15	A crash bar	the place ahead	14.2cm	/	/

1.3   Unbox materials

Cleaning robot *1	Charging pile *1	Dust box * 1
Dust is spread *5	Broom for sweeping *1	Wash the floor brush *1
HEPA filter element *5	Clean brushes *2	Water inlet pipe *1
Huawei screws *5	Huawei wrench *1	Hex key *1

Precautions before use

2.1 Safety instructions

Read the following safety warnings and instructions carefully before attempting to operate the equipment or perform any maintenance.

The warnings provided here are intended to alert users that improper use of this product may cause serious injury and property damage to both the user and others. This manual details safety warnings, correct operating procedures, and other regulatory information related to the machine, battery, and battery charger to ensure the safety and compliance of users. Please note that the warnings in this manual do not cover all possible scenarios. Therefore, in any case, pedestrian and surrounding personnel safety must be prioritized, and high vigilance should be maintained. To ensure safety, operators should always follow warnings regarding machine installation, maintenance, and usage, and keep this manual within easy access. It is strongly recommended that operators take appropriate health and safety precautions based on their environment to ensure the smooth operation of the equipment.

In case of the following emergency situations, press the emergency stop button immediately and turn off the main power switch:

- The machine is in a dangerous state (e.g., smoking, unable to operate, tipping over, etc.).
- The machine is about to cause harm to people or things around it.
- The machine operation (behavior) is unpredictable, or the operation mode is inconsistent with this manual.

2.2 Warning signs and meanings

To ensure that you understand all the instructions, please first understand the following symbols and conventions used in this User's Guide:

- Danger: "content that is highly likely to cause death or serious injury".
- Warning: "content that may cause death or serious injury".
- Note: Content that may cause minor personal injury or property damage.
- Important matter: indicates "a potential dangerous situation that may result in property damage or damage to equipment".

Please follow all warnings and instructions on this equipment and manual.

danger	warn	pay attention to	material particulars

2.3　Environmental precautions

This robot device is a commercial cleaning robot suitable for indoor environment. Please read and follow the following instructions carefully.

<div style="background-color: #C0500C; color: white; text-align: center; font-weight: bold; padding: 10px;">warn</div>

- Do not use the robot immediately after extreme temperature changes (e.g., moving from a cold outdoor environment to a warm indoor environment).
- Do not use the robot in an environment with too much dust, moisture, rain, dust or near a magnetic field.
- Do not use robots in thunderstorms or lightning weather.
- Do not use robots in flammable, explosive, or near heat sources. Avoid exposing robots to direct sunlight for long periods of time.

<div style="background-color: #F5C842; text-align: center; font-weight: bold; padding: 10px;">pay attention to</div>

- Avoid using robots in places surrounded by glass doors, glass walls and glass floors.
- Avoid using robots in confined Spaces (robots can automatically avoid chairs and tables up to 0.6~0.8m).
- Avoid using robots in areas with low hanging objects or decorations (objects or decorations should be higher than the height of the robot>500mm).
- Avoid using robots in areas with loose cables and hoses.
- Avoid using robots in places with stairs, steps or height difference> 5cm.
- Avoid running in a narrow one-way channel.
- Avoid starting the robot too close to the obstacle (it is recommended to keep it empty within a radius of 2m).
- Avoid using robots during busy hours.
- This cleaning robot is suitable for cleaning the following floor materials: epoxy floor, tile, marble, wood floor and other hard floors.
- This cleaning robot is not suitable for cleaning the following types of garbage: tiny particles and fine dust; garbage higher than 2cm; soft water
- Pipes or loose wires, etc. Forcing the cleaning of the above types of garbage will cause damage to the machine.

<div style="background-color: #2E4A9E; color: white; text-align: center; font-weight: bold; padding: 10px;">material particulars</div>

- Please use the robot in the temperature range of 5℃ ~40℃, and store the equipment and accessories in the

temperature range of 0℃ ~50℃.

- The ground where the robot runs should be firm, smooth and flat. It is not recommended to use the robot on carpets, soft and uneven ground, outdoor places, etc., which will reduce the performance of the robot or cause the risk of falling.

- As the robot can move autonomously and complete various actions, please pay special attention to: do not move on the ground with a slope, in order to prevent the robot from accidental tipping or uncontrolled operation caused by personnel injury, robot damage and damage to equipment, facilities and articles,
  If moving on a sloping road, special care is required. Do not use robots in flammable, explosive, or near heat sources.

- Please be aware of the presence of steps or steps to avoid the robot moving in this area to prevent falling and falling.

- When using full glass doors and walls, be sure to attach safety signs that are visible between 22cm and 25cm above the ground. People (especially children) should maintain a safe distance from the robot (at least 1 meter away) to prevent injuries or damage caused by the robot's operation. Provide the robot with sufficient space to move around to avoid collisions with surrounding objects, which could damage both the robot and other items.

2.4   Precautions for operating the robot

<div align="center">

warn

</div>

- Do not allow liquids or any foreign matter to contact the robot's charging metal plate.
- Please be careful not to let dust attach to the lidar sensor, depth camera, or other sensors.
- Do not cover the robot's sensors.
- When using the automatic cleaning mode, ensure that the operator can respond to alerts or notifications received on the application in a timely manner.
- When using a robot, make sure its wheels are always in contact with the ground.
- In areas where the robot cannot be operated or moved due to lack of power, please move the robot to a safer location.
- Do not perform any illegal operation not specified in this manual.
- Only use the battery charger that comes with the robot to charge the robot's battery.
- Do not place any decorations that may interfere with the operation of the robot or the emergency stop button.
- When replacing the broom, washing brush, dust push cloth, or cleaning the dust box, please lower the cleaning mechanism before operation.
- Before starting the cleaning task, make sure that the HEPA filter is correctly installed to avoid dust contamination and damage inside the machine.
- Do not use a high-pressure washer to clean the robot.
- Do not use robots to collect hazardous or explosive waste.

- When lifting the robot off the floor, be sure to do it with two people at the same time.
- When the robot is running, do not let babies, children, pets near the robot, or put feet or hands near the bottom of the robot.
- Please do not allow infants, children or pets to come into contact with the robot.
- Do not tilt or move the robot when there is water in the tank.
- Do not apply excessive pressure to the screen or any surface of the robot to avoid damage.
- Do not drop, fall, compress, bend, poke, cut, microwave, burn or paint the robot.
- Do not move the robot on the slope to avoid tripping and causing injury or damage.

pay attention to

- This cleaning robot is for indoor use only.
- The cleaning robot can only be stored indoors.
- Lifting and long-distance moving should be operated in the off state. Lifting or moving the machine in the emergency stop state is easy to cause the machine to lose its position, so it is necessary to use the auxiliary positioning function to find the position before restarting the task.
- Do not attempt to disassemble the robot. Only authorized professionals can disassemble it.
- If the cleaning mechanism is blocked or tangled with garbage, please be sure to carry out cleaning operations under the guidance of professionals. Do not forcibly pull and tear the cleaning mechanism to damage it.
- To ensure the reliability and safety of the product, please use only authorized accessories.
- This equipment is not suitable for people with physical discomfort, or intellectual defects (including children), or operators who lack experience and knowledge. If the robot falls over, press the emergency stop button, and then turn off the main power switch of the robot.
- Do not insert any object into the robot.
- When filling the water tank with water pipe, please note that the water pressure requirement is 0.05MPa (minimum) and 0.8MPa (maximum).
- Use room temperature water no higher than 60° C for cleaning.
- If the robot is not running properly (abnormal sound, smell, sound, smoke, etc.), press the emergency stop button immediately to stop the robot, turn off the main power switch, and contact customer support.

2.5 Battery and charging pile operation precautions

danger

- Before using the charging pile, please make sure that you fully understand the contents of this manual and operate it correctly.
- Please use a power supply with correct grounding, in accordance with local regulations and requirements of this manual, otherwise it will cause electric shock to personnel and damage to the robot.

- Do not smoke near the battery or place objects near the battery that may cause flames or sparks.
- Do not connect the charging contact to other metal objects.
- Improper operation of the battery may cause accidents such as battery explosion, fire, leakage corrosion and so on. If there is liquid leakage in the battery or charging pile, do not touch it by hand.
- Do not touch or operate the robot when it is charging.
- Do not drop or hit the charging pile.

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- Ensure that the ground where the charging pile is deployed is flat and there are no bumps or slopes.
- Ensure that the deployment location of the charging pile is not located in a dark and damp place. Too wet environment may cause damage to the internal circuit or electronic components of the charging pile.
- Please use the original AC power cable and charging pile configured by the robot to charge the robot.
- Please use the accompanying charging pile to charge the robot.
- Do not use the charging pile to charge other devices.
- Make sure not to cover the charging pad with fabric, etc., and keep sufficient heat dissipation conditions. Do not use or place near a heat source, and avoid direct sunlight.
- Check that the voltage provided is suitable for the charging pile.
- Ensure that there is no foreign matter or other foreign matter attached to the charging pile.
- Do not use if the charging pile or power cord is damaged.
- If you do not use or maintain the charging pile for a long time, be sure to unplug the charging pile from the socket.
- If the charging pile does not work properly, takes longer than usual to charge, or produces sparks, smoke, odor, etc., please immediately unplug the plug from the socket and contact customer support personnel.
- When the power cable is connected to the charging pile, do not step on the power cable or make it bear excessive force.
- If you hear thunder, unplug the charging pile from the socket.
- Charging piles may heat up, so be careful during charging or after processing.
- If you do not use the robot for a long time, it is recommended that you charge it every 15 days or so to ensure that the battery is always in the best active state.

<div style="background-color:#FBD35B; color:black; text-align:center; font-weight:bold; padding:8px;">pay attention to</div>

- The charging pile should be placed in a wall and within 2 meters of the radius.
- Do not drop, step on or place objects on the charging pile, whether it is connected or not. Do not use where you may be stepped on.
- When unplugging the power plug, please hold the plug body instead of the power cable. Do not pull the power cable to unplug the charging pile.

Basic functions and buttons

3.1   Turn on and off

The machine switch button is located below the right side of the back emergency stop button, as shown in the figure below. The switch button is a metal round button. In order to prevent accidental touch, the position of the switch button is designed to be more hidden, and the position of the switch button can be located by touching it with your hand.

On/off button
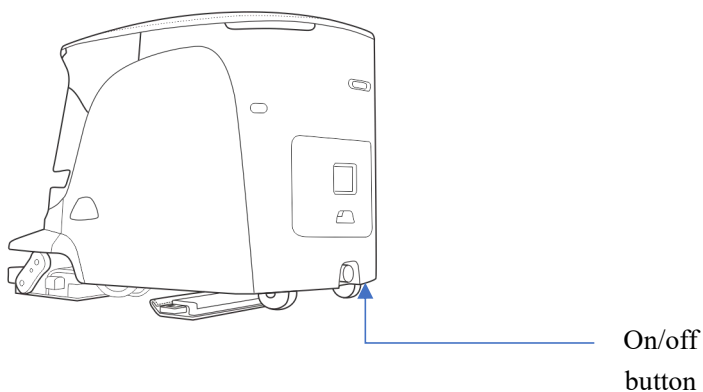
Start up: press the switch button once, the machine can be started

Shut down: Press the switch button once to turn off the machine

Reminder: You can click the shutdown button through the software page. It is recommended to use the software to shut down the machine first. In the upper left corner of the home page of the software, click the user profile picture, and a pop-up window will appear. In this pop-up window, you can choose to shut down, restart and self-test.

3.2   Emergency stop button

The emergency stop button allows the machine to stop immediately in any state and unlock the hub, at which point the machine can be manually pushed

The stop button is located at the bottom of the back of the machine, as shown in the figure below.

scram button
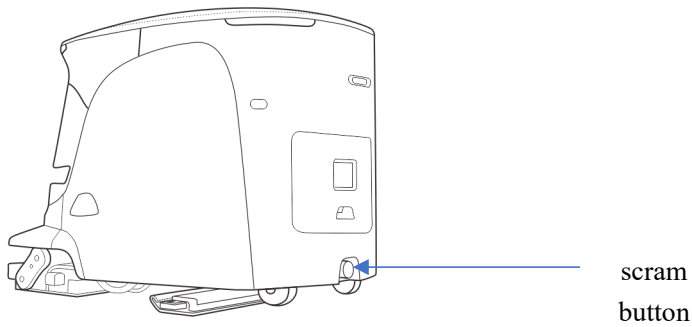
How to use the emergency button

● Press: In an emergency, pressing the button will stop the machine and unlock the hub so that the machine can be pushed

● Loosen (rotate to the right and gently pull out): Let the machine release the emergency stop state, hub lock, and the machine cannot be pushed

Use of emergency stop button:

● The machine needs to stop in case of emergency

● The machine needs temporary push

|	
pay attention to	● Do not press or knock the emergency stop button too hard to avoid damage ● In non-emergency situations, you can use the "pause task" function to pause the machine

3.3   charging pile

Connect the charging station to the power source and press the power switch on the side of the charging station. For environmental requirements for deploying charging stations, please refer to Chapter 4.1 (Preparations). Push the machine to the charging station and align the metal electrode of the machine with the electrodes on the charging station to start charging. If the machine is in a powered-off state, it will be forcibly automatically started (powered on) when placed on the charging station.

The warning light on the charging pile

● Green: The charging pile is powered and is charging the machine

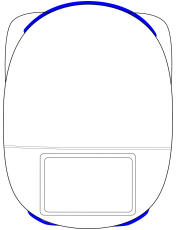● Blue: The charging pile is powered on, but it is not in the charging state
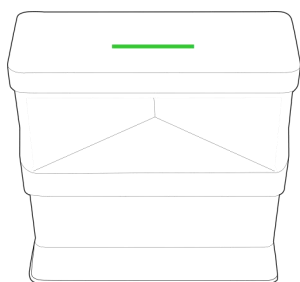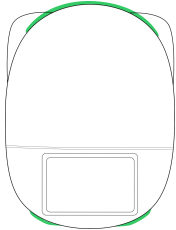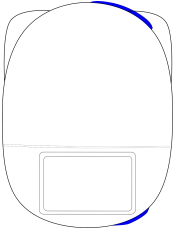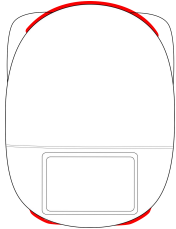
The green indicator light is on
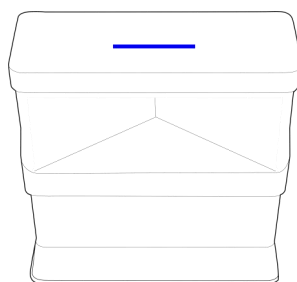
The blue indicator light is on

3.4   Indicators belt

There are two sets of light strips on the machine, which will remind you of different colors and flashing modes when the machine is working.

Blue always on: non-charging standby, cleaning work	Green on: Charging
Single-sided flashing: steering alert	Red: Emergency stop status and other alarms

Deployment and use

4.1 dead work

4.1.1 Install charging pile

Before installing the charging pile, please pay attention to the following installation environment

requirements:

- Power supply: select a power socket near the installation location, and do not be too far away from the power socket, so as to facilitate the power supply of the charging pile.
- Ground: The ground is flat and easy to install, not easy to shake, and easy for the robot to reach.
- Wall: The back fixed wall must be flat, firm and not loose.
- Space: The charging pile should reserve at least 2 x 2m space, and there should be no obstacles in the surrounding space to ensure that the robot can normally exit and return the pile. Try to choose a position with less pedestrian passage or protected area.

- It should be used indoors. Do not use it outdoors.
- Do not choose a position with strong light or direct sunlight.
- Do not choose the position with direct light source, such as lamp belt, spotlight, etc.
- Within the height range of the charging pile, do not set objects with reflective surfaces around the wall, such as glass and mirror.
- If the back panel of the charging pile is glazed tile and painted wood board, the machine recharge situation

needs to be verified on site. If the recharge fails, the charging pile position needs to be changed.

Remove the charging station and power cord from the packaging box, connect the charging station to the power supply, at this time the blue light on the charging station will be on. For the setting of the charging station in the machine APP, please refer to section <4.2 Map Management>. After completing the setting of the charging station in the APP, the machine will automatically return to the charging station for charging after performing tasks or using one-click navigation.

4.1.2 Prepare the machine

① **appearance inspection**

Check the machine for obvious scratches and cracks, including the top cover, left and right side shells, front and rear shells, and all accessories.
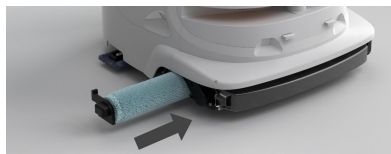
② **Accessory inspection**

When unpacking, the following components have been installed inside the machine. Please check them one by one:

- Broom for sweeping
- A scrub brush
- The dust box
- Dust is spread
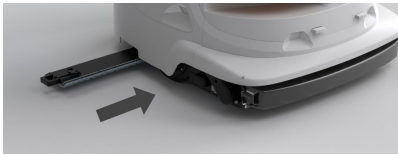- Sewage tank (lid with HEPA)
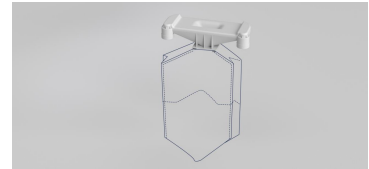- Dust bags (if any)

| Broom for sweeping | A scrub brush | The dust box |

| Dust is spread | slop pail | Dust bags (if any) |

③ **Turn on the battery switch**

Under normal circumstances, in order to ensure the safety of transportation, the battery power inside the machine will be turned off when the machine is delivered. Before enabling the machine, the maintenance rear cover of the machine needs to be opened to open the battery power.
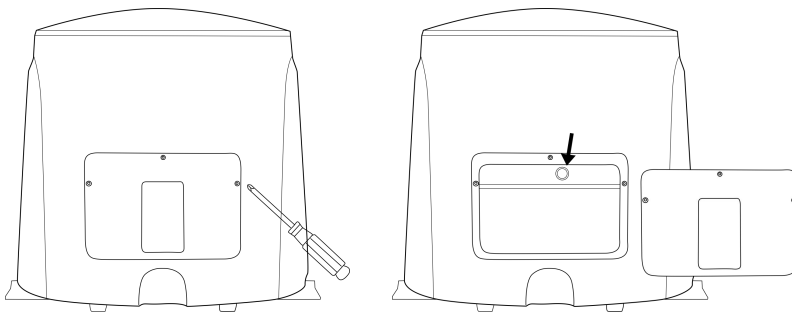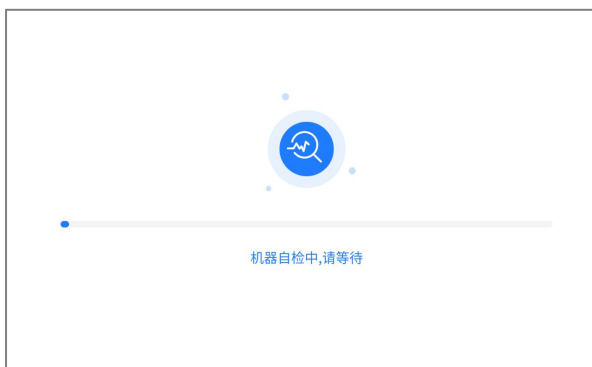

a) Use the included plum blossom screw tool to open the back cover of the machine

b) The machine battery has a physical switch that turns it on and starts supplying power

c) When the battery switch is not turned on, even if it is pushed to the charging pile for charging, it cannot be turned on

④ **Start the machine**

After opening the battery switch, you can try to start the machine directly. Refer to Chapter <3.1 On and Off> for the starting method. Or push the machine to the charging pile for automatic forced start.

⑤ **self-checking**

When the machine is started, it will perform a self-test to ensure that the internal hardware status is normal. After the self-test is completed, it will enter the login interface. If there is an alarm or error during the self-test, please contact the after-sales technical personnel immediately.

机器自检中,请等待

自检完成	
电源版本	正常
BMS	1.4.1.14
通讯模块	正常
SIM卡	正常
SN	A11123BC44
电量	30
清洁主控版本	1.1.6
APP版本	1.5.24
继续开机	关机

⑥ **Check the charge**

After starting up, check the power display on the screen. If the power is less than 20%, charge it to at least 45% before proceeding with subsequent operations.

Machine power description

● When the power of the machine is lower than 5%, it will shut down automatically

● When the power of the machine is less than 10%, new tasks cannot be executed

● When the power of the machine is lower than 10%, the current task ends and it automatically returns to charging

4.2.3 linked network

The machine can be used for the first time by connecting to WLAN or 4G network. In some cases, the machine will come with a SIM card

Use locally. If the machine is not configured with a SIM card or needs to use another SIM card, consult your local network operator for APN Settings.

At the bottom of the login page, you can choose to enter WiFi and 4G network Settings

WLAN

a) Click to enter WLAN Settings

b) Connect to a WIFI hotspot with good signal in the premises

c) Go back to the login page of the Clean APP and check whether the WIFI signal in the upper right is green, which means the connection is successful

4G network

a) Click to enter 4G network Settings

b) Add APN according to the following regional categories

● For Japan, add APN and set the APN item to ctm-mobile

● In the European and American regions, please add APN and set the APN item to data641003

● Chinese mainland There is no need to set APN in the region

c) After the setup is complete, click Save

d) Back to the login page of the Clean APP, check whether the 4G signal in the upper right is green, that is, the connection is successful

4.2.4 users login

Please contact the sales representative or after-sales technical service for the login user name and password of the required machine. If you forget the user password, please contact the after-sales technical service immediately for password recovery.

4.2.5 Home function layout

Home layout and some function introduction:

The home page of the machine APP has many functions to facilitate daily operation. The functions of the home page are roughly divided into four areas:

① **Top status bar**

The status bar at the top displays the login user information, alarm center, 4G network, WLAN, power and time information. Clicking on the user profile picture can enter a pop-up window to select the restart and shutdown functions. Clicking on the alarm center can view recent alarm notifications.

② **Map function area**

This area shows the map where the real-time task is located. Click the gear button to enter the map management interface. The one-click navigation function can quickly command the machine to go to the charging pile and other docking points.

③ **Machine status area**

The real-time status of the machine is displayed in this area, and it can be judged whether further operation is needed for the machine according to each index, such as sewage treatment and maintenance of components. Click the "maintenance" button below to lower the cleaning mechanism in front of the machine, so that the roller brush and dust box can be maintained. Please follow the APP prompts to operate.

④ **Task area**

This region contains two types of task lists: scheduled tasks and temporary tasks. You can switch between them by clicking the tab at the top of the list. Select a task from the list, then click "Start Task" below to directly launch the

task. If you need to modify the task configuration, click "Task Management" below to enter the corresponding scheduled/temporary task management interface, where you can perform the modification operations.

Once the machine is ready, you can start creating and managing maps and tasks.

The logical diagram of map and task management functions of this product is shown below:
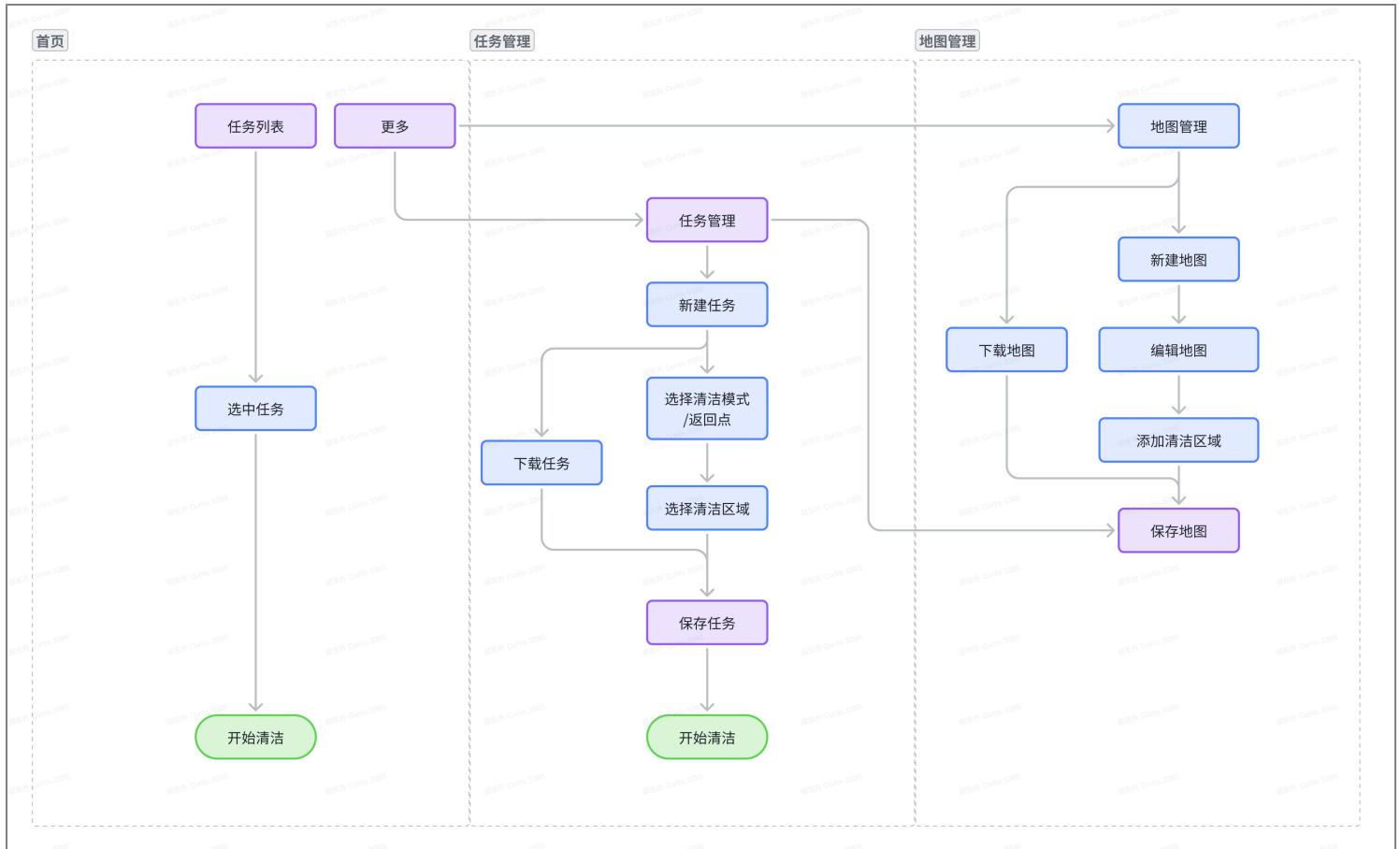
4.2   Map management

Before using the robot, you need to create a map. The map is obtained by scanning the lidar on the fuselage, and you can control the robot to scan the environment manually or remotely. There are two ways to create a map:

1. New maps
    a)   Create a new blank map
2. Download maps from the cloud
    a)   The map must have been downloaded only if the same robot had been operating normally at the site to ensure accuracy.
    b)   After downloading the map, you will download the functional areas, functional points and floor information in the map.

## 4.2.1   Create a map

Survey the environment

Before starting the drawing, make sure that the environment has been cleaned and there are no temporary obstacles in the area that need to be cleaned, such as temporary furniture, appliances, etc. If there are temporary obstacles in the site, you need to edit the map after completing the map scan and delete these temporary obstacles on the map.

Initial point selection
● Try to start building the map at a location with rich and fixed features, close to the center of the scene, such as a fixed column or corner of a wall
● Do not choose to start mapping in places such as movable flower pots/shelves, doors that can be opened at any time, near high anti-obstacle objects, or corridors with no obvious characteristic values
● Don't start building the map with transparent glass.
● After finding the right initial point, adjust the direction of the machine so that it is parallel to the long straight walls in the scene, creating a more regular map

Draw the steps
1)   Press the emergency stop button and push the machine to the initial point. After reaching the initial point, release the emergency stop button to release the emergency stop state.
2)   Click [More] - [Map Management] - [Create] on the home page to start creating a map.
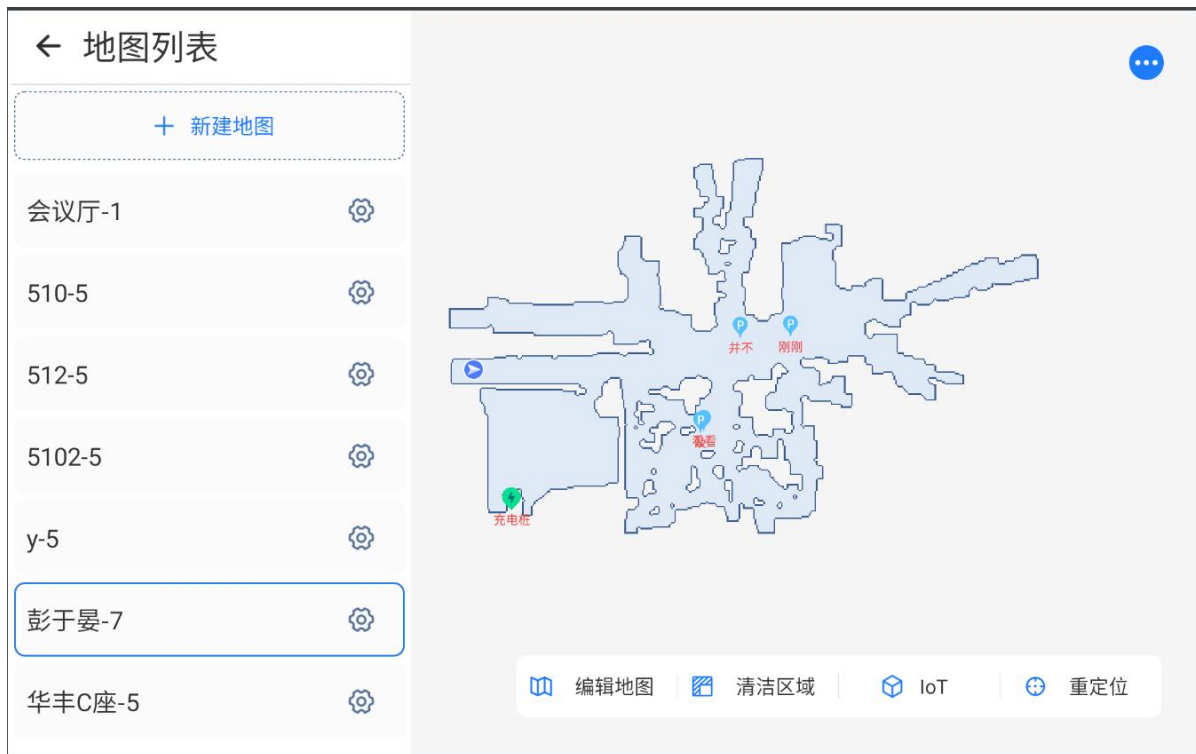
3) Enter the map name and floor information, and start drawing the map. At this time, you can control the machine to scan and build the map directly by pushing the machine or using the remote control.

Manual mode: Push the machine directly for scanning. Please note that when pushing the machine for

scanning, the operator must stand behind the machine and there should be no obstructions in front of the lidar position.

Remote control mode: To start remote control mode, please follow the following steps.
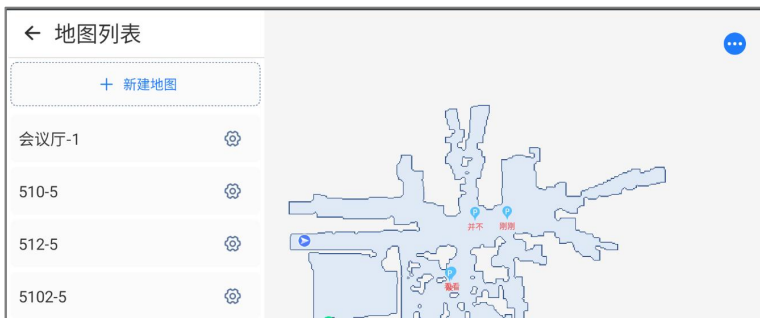
Function description of the remote control button

a) Connect the remote control USB to the slot (next to the SIM card slot)
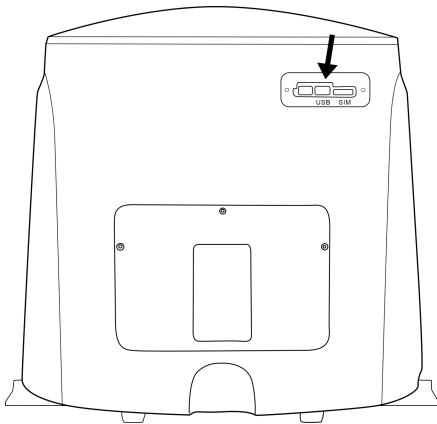
b) On the robot screen interface, click [More] - [Map Settings] - [New Map]

c) Find the switch on the remote control and turn it on. The power indicator light on the remote control will light up

d) Click the [remote control] in the upper right corner of the screen and enter the initial password [123456] to start using the remote control
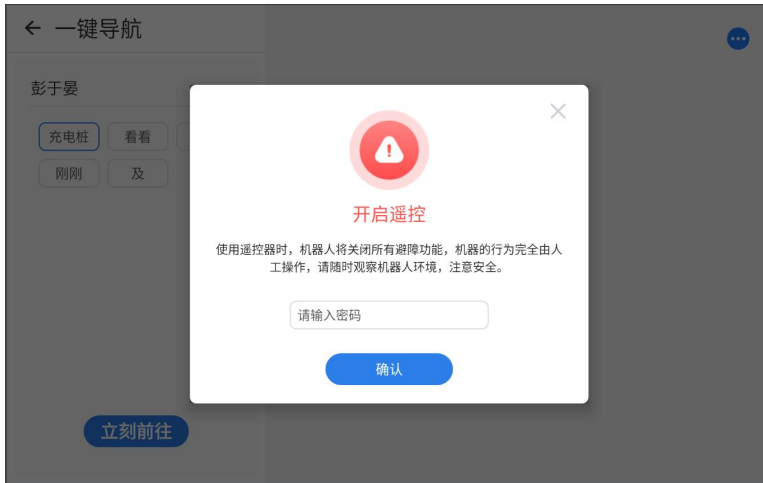
e) Read the warning message carefully before using the remote control

f) After entering the remote control mode, you can control the robot to move forward, backward and rotate left and right by operating the left joystick or direction key of the remote control. Note: The other buttons have no function at present

g) After scanning the map, click the robot interface to exit the remote control mode and save the map. At this time, the control of the remote control has been cut off

h) After use, turn off the remote control

4) Save the map

<div align="center">

material particulars

</div>

- The robot is equipped with Li-DAR lidar, which can scan the space within a range of 20m. Do not remotely control the robot to run too close to walls or other obstacles to avoid collision.
- The lidar is not embedded in the front shell of the machine, so there is a certain scanning blind area.
- Make sure the robot passes through all the areas that need to be cleaned, so that the map contains all the areas you want to clean. You can immediately check the map image on the robot to determine if it has been scanned.
- In the corner, corner, pillar and other areas, the orientation of the robot can be moved and rotated to fully scan the corner area.
- If you encounter a circular corridor area, be sure to scan the corridor more than once.
- After the drawing is completed, click Save Map immediately to avoid forgetting it.

4.2.2 Download the map

When a machine acquires a map through scanning in a location and establishes and executes tasks, the local map information and task information are synchronized to the cloud platform. If the machine unfortunately fails and needs to be replaced with a new one, the download function can be used directly during deployment. The downloaded map and tasks will retain their original information and can be used immediately.
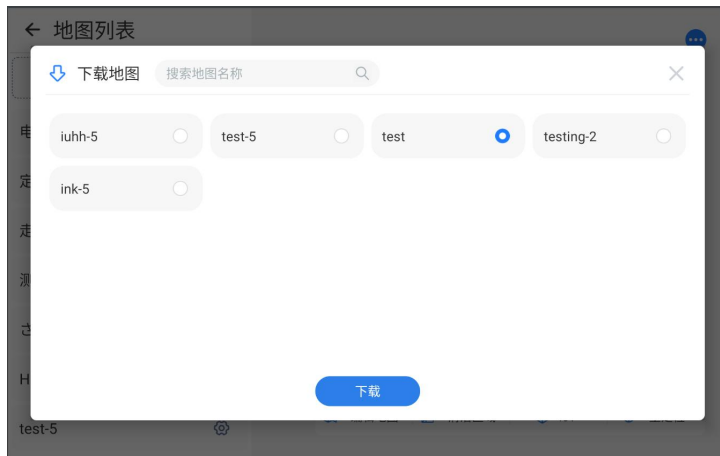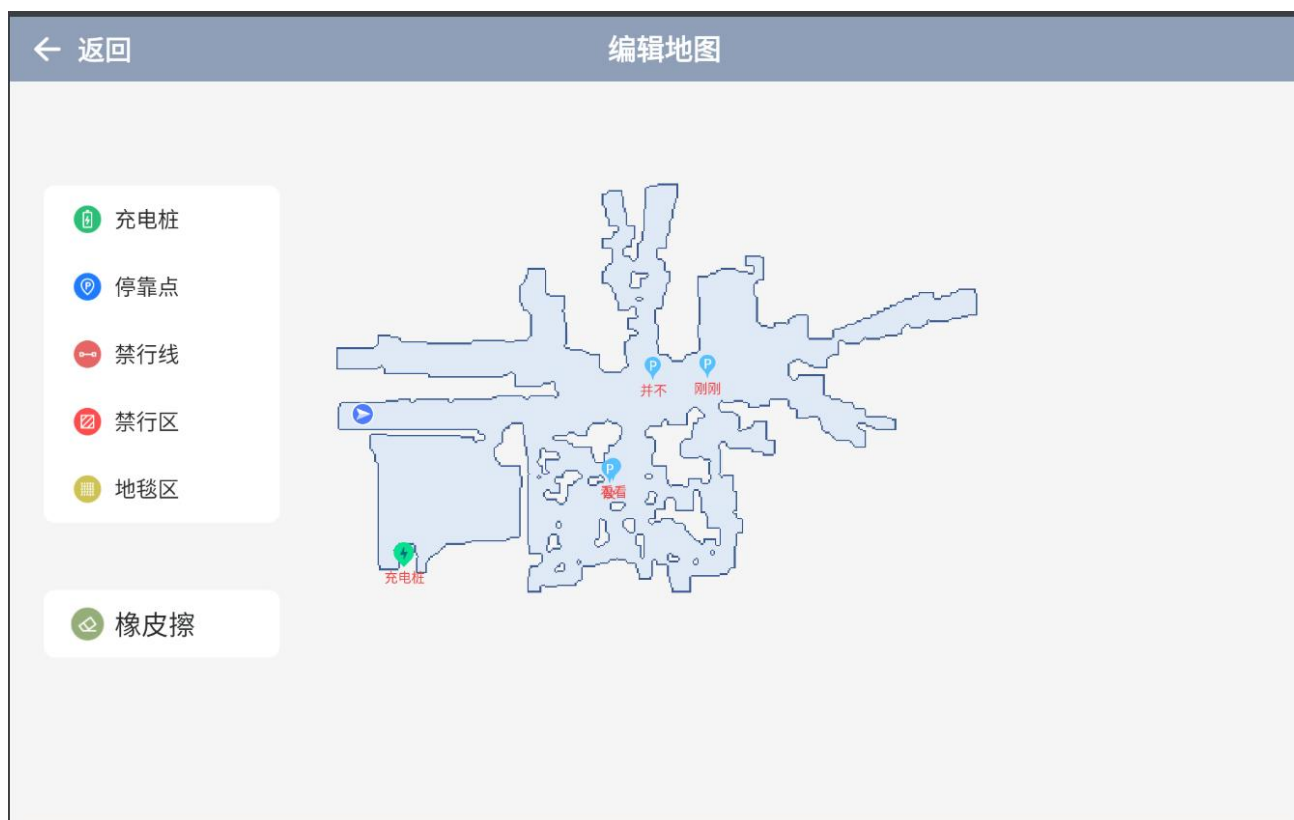
For Your Attention:

- Confirm that the cloud platform has a map of the site

- Multiple maps can be downloaded

- You can only download one map at a time

- After downloading the map, you will download the functional areas and points, IOT, floors and other information in the map

4.2.3　Edit the map

After scanning the map, you must further process the map to facilitate the machine to perform tasks. Or after downloading the map, you may need to further process the map according to the situation.

The map editing function includes the following:

| charging pile	You can add the location of the charging pile in the map. Only one charging pile can be added to a map. The machine will automatically return to the charging pile position after the task is finished or using the [one-click navigation] function.
Stop point	The machine needs to be temporarily docked at a location, such as a water change point, maintenance point, display point, etc. Multiple docking points can be added. After adding docking points, the machine can be directed to the docking point through the [one-click navigation] function.
No-go line	Use to plan lines that prohibit machines from passing through. When creating a map, you must determine which locations are not allowed for machines to pass through and use the no-pass line to plan when editing the map, such as stairwell (to prevent machines from falling), in front of fragile exhibits, etc.
No-go zone	When it is not convenient to plan the range of the no-go line, the no-go zone can be used to plan the area where machines are not allowed to enter.
The carpet area	The carpet area is a special area where the machine will force the use of the wash mode (no water) to avoid damage to the carpet. The carpet area can be cleaned in vacuum mode.
eraser	When creating a map, the graphics obtained by lidar scanning sometimes contain areas that do not need to be cleaned, or there are temporary obstacles or people during the scan, resulting in several noise points in the scanned map. You must record this information during the operation and erase it using the eraser function when editing the map.

Map editing steps:

① **Remove map noise and unnecessary areas**

② **Add charging points**

Push the robot to the charging pile for 1 meter distance, facing the charging pile. Then enter the map editing, click the screen to add the charging pile, the machine will automatically record the location and direction of the charging pile.

③ **Add a no-go line/no-go zone**
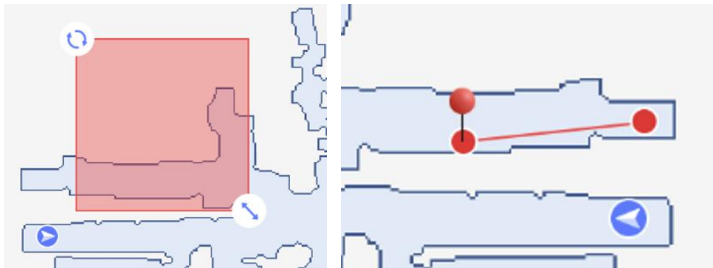
You can set a no-go area in the area where you do not want the robot to enter. Follow these steps to create a no-go area.

- Walls, stairs, door gaps, glass walls/doors, steps, decorations, flower beds, plants, floor sockets, billboards, or any other space you think is dangerous and do not want the robot to enter, are recommended to add corresponding no-go areas to ensure the safety of the machine's operating environment

- Drag and zoom in / out to adjust the size and position of the area

- If the environment contains a large number of glass walls and the map shows a large amount of external space obtained by lidar through glass, it is necessary to create no-go zones to cover all external space to avoid incorrect identification during mission execution

- Try to establish a no-go area close to the edge of the actual obstacle. If the no-go area has too much impact on the edge cleaning, you can adjust the position of the no-go area slightly inside the area

- If the exact location of the obstacle is not certain, the machine can be pushed to the edge of the obstacle for actual comparison

④ **Add carpet area**

This applies only to short pile carpets. If there is no carpet area, skip this step

⑤ **Save the map**

<div style="background-color:#2E5597; text-align:center;">

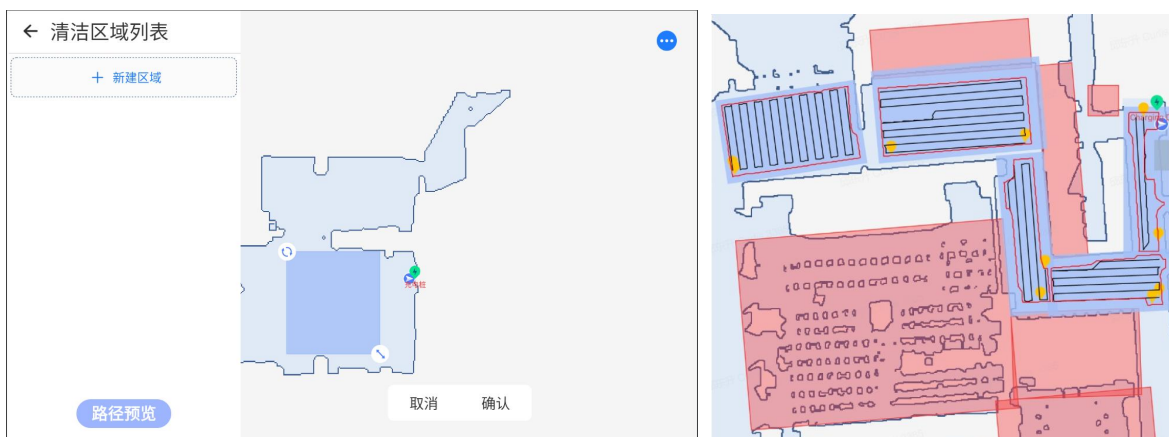material particulars

</div>

- After scanning the map, the map must be edited and the charging point added, otherwise the machine cannot perform the task.

- Although machines have powerful sensor systems that can identify most obstacles and avoid them, it is still the safest way to avoid risks by adding no-go lines and no-go zones. It is recommended to plan no-go areas in advance for all dangerous areas in the environment.

- When using the eraser function, if you are not sure whether it is a temporary obstacle or human noise, you can push the machine to the uncertain noise position, and then erase according to the actual environment.

4.2.4 Add a cleaning area

After editing the map, you can continue to the next step in the map management interface: Add cleaning areas. You can add several cleaning areas, and select some or all of them for task planning when creating tasks in the future.

Click [Clean Area] to enter the Clean Area Editing page. When creating a new clean area, you can use rectangles or polygons to define the area and adjust its size by dragging and zooming in/out. When planning the clean area, the edges of the rectangle/polygon should be close to the actual edges of the area that needs cleaning, or slightly overlap, to ensure that the robot's path covers as much of the area as possible.

You can create multiple workspaces to cover different areas. After creation, click [Path Preview] to check the path planning of the selected area individually to see if it meets expectations.

- The minimum space required for the generation path is 5 square meters.
- If the generated path is not satisfactory, you can adjust the workspace and regenerate it.
- In the cleaning area, due to the size and operational safety of the machine, the minimum terrain that can generate a path is limited to 1*1m. Areas smaller than this limit will not generate a path. If you find that a small part of the area has not generated a path, check whether it is a very narrow corner or space between large objects.

4.2.5 IoT equipment

The IoT function supports the communication Settings of the elevator and gate modules. The configuration of this function is complex, please contact the sales representative or after-sales technical service to add IoT devices.

4.2.6 Delete the map

Enter map management, select the map that needs to be renamed, click the gear on the right, select delete, you can delete the map.

4.2.7 Modify map information

Enter map management, select the map that needs to be modified, click the gear on the right, select modify, you can rename the map and modify the floor information.

4.3　task management

This device supports two types of tasks:

➢ Temporary task: A temporary task is a type of task that is not scheduled. After creating it, you can immediately click to start the task or wait for the need to start the task. This type of task does not automatically execute at a certain time.

➢ Scheduling task: Scheduling task is a scheduled task type, and it also supports clicking to start the task immediately at any time. After setting the scheduling task and selecting enable, the task will automatically start executing the task at the set time.

Creating tasks on these two types is similar. You can enter the management page of both tasks in the home page and in the [More] function.

home page

More features

4.3.1 Create a task

You can create tasks in two ways:

➢ Create a task directly

➢ Cloud download task

    a) The map used must also be downloaded from the cloud before the download task is performed

    b) There must be a machine of the same model that has performed the task normally at the site

Create steps

The steps for creating a temporary task are almost the same as those for creating a scheduling task, which requires setting an automatic execution time and period for the task.

① **Go to the Task Management page**

② **Click [Create Task] to start creating a task**

③ **Enter task information**

For both types of tasks, you can directly select and click Start Task to immediately execute the task. For scheduled tasks, the robot will automatically execute the task according to the scheduled time.

④ **Check the clean area**
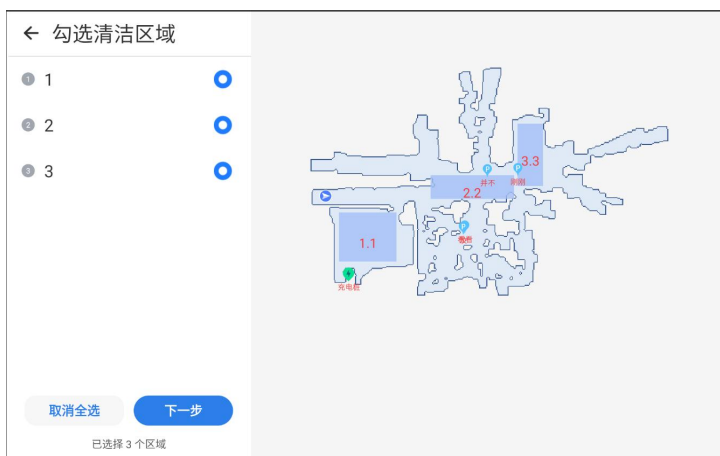
⑤ **Set the cleaning order**
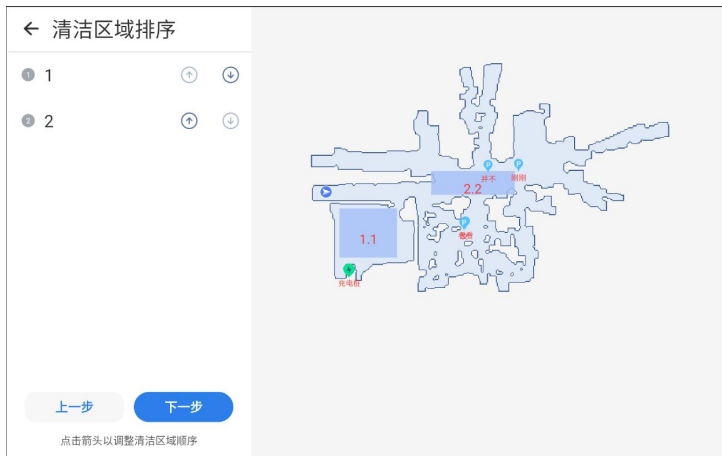
⑥ **Set the spacing of the clean path**

The machine will carry out cleaning work according to the bow-shaped path. The spacing of the bow-shaped path will affect the generation of the path and the efficiency of the machine's work. The smaller the spacing, the denser the path can be generated, and the time required for cleaning will also be correspondingly extended.
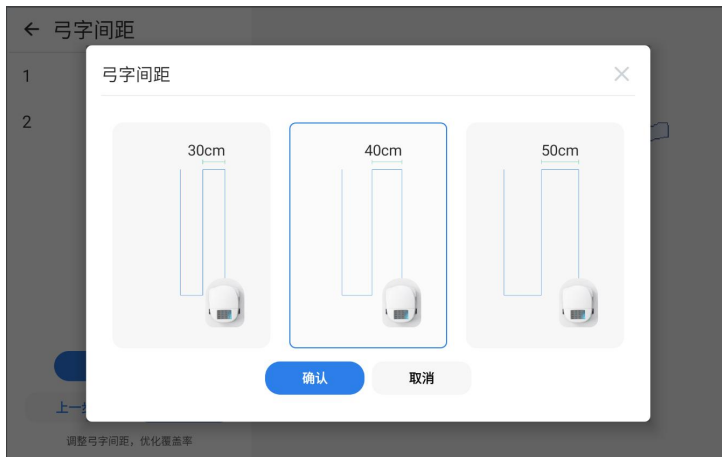
⑦ **Save the task**

4.3.2 Download the task

After downloading the map, you can download the associated tasks in the map. Note again:
  a)   The map used must also be downloaded from the cloud before the download task is performed
  b)   There must be a machine of the same model that has performed the task normally at the site
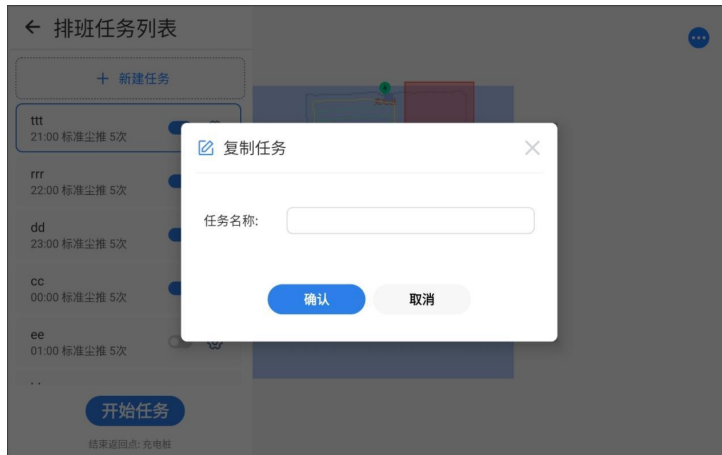

4.3.3 Task information editing

To enter temporary task or schedule management, select the task and click the gear on the right to display the edit button. Click to enter the task information edit page.

4.3.4　Copy the task

To enter temporary task or schedule management, select the task and click the gear on the right to display the copy button. Click to copy the task.

Note: If the current map has been edited (such as the change of no-go area, expansion, etc.), all tasks under the map need to be regenerated. Method: In the task list page, edit all tasks respectively, and then save.

4.3.5　Delete the task

To enter temporary task or schedule management, select the task and click the gear on the right to display the delete button. Click to delete the task.
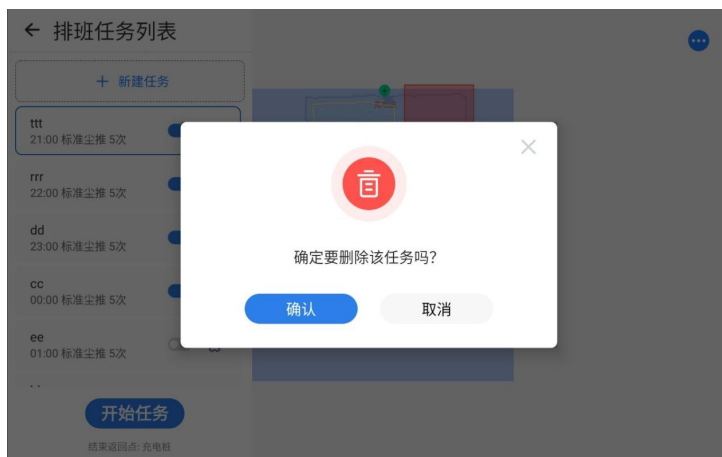
4.4   One-click navigation

The one-click navigation function can command the machine to go directly to a specified location. During task execution, the machine needs to pause the task first before using the one-click navigation function. The navigation points need to be set in the map editing function; see <4.2.3 Map Editing>. The one-click navigation function button is located at the top left corner of the homepage.
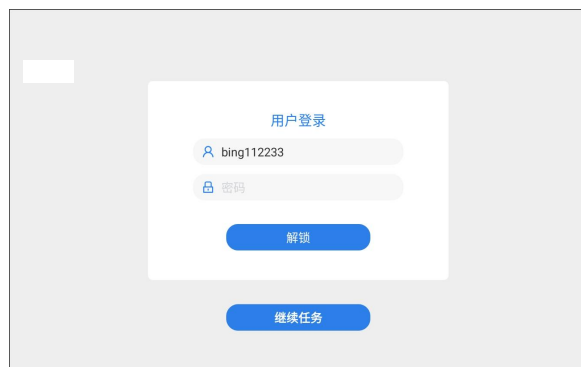

home page
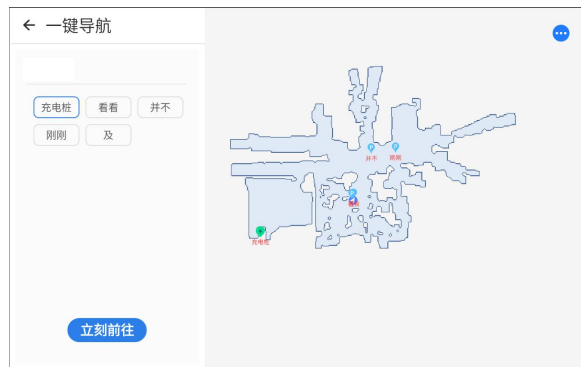
List of navigation points

4.5   task suspension

After the task is started, you can click the "Pause Task" button on the following pages to pause the task in progress. After the lock screen, you need to double-click the screen with your finger to enter the login page, and then the pause button will appear.
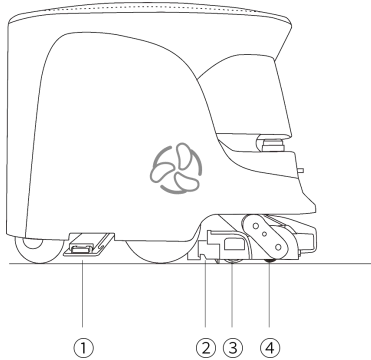

home page

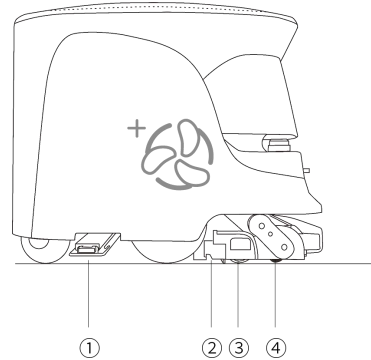Lock screen interface-login page

4.6 Clean mode

4.6.1 Overview of cleaning mode

<table>
<tr><td>

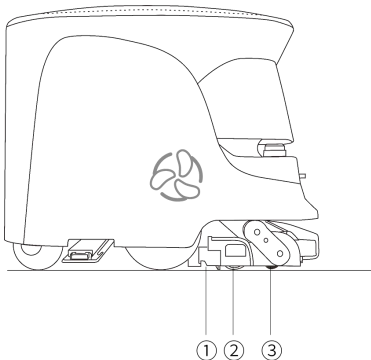**1. Standard floor cleaning**

① Dust push cloth, ② fan, ③ floor brush, ④ sweeping brush start to work at the same time, and water is injected

</td><td>
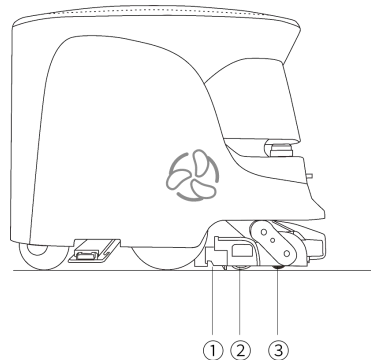
2. Power wash the floor

① Dust push cloth, ② fan, ③ floor brush, ④ sweeping brush start working at the same time, and water is injected. In this mode, the roller brush speed and fan suction will be increased

</td></tr>
<tr><td>

3. Standard smoking and inhalation

① The fan, ② the floor brush and ③ the broom start working at the same time
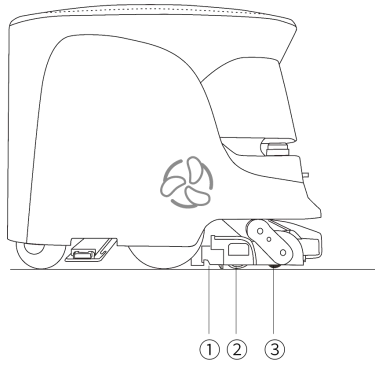
</td><td>

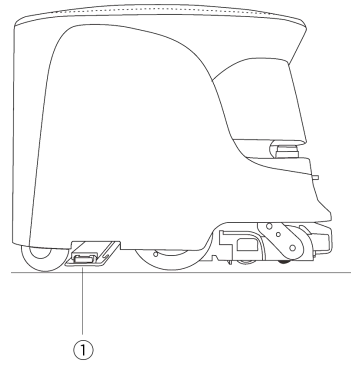**4. Silent sweeping and suction**

① The fan, ② the floor brush and ③ the broom start working at the same time. In this mode, the intensity of the fan will be slightly reduced

</td></tr>
<tr><td>

5. Suck, blow and push

</td><td>

6. Standard dust pusher

</td></tr>
</table>

① Dust push cloth, ② fan, ③ floor brush, ④ sweeping brush start work at the same time

① The dust pusher cloth begins to work

4.6.2   Customize the cleaning mode

For existing cleaning modes, you can customize some function parameters, including moving speed, brush rotation speed, fan suction and water intake of the pump. After changing the cleaning mode, it will be applied to the established tasks globally.

4.7   Supplies management

Under normal use, the machine consumables have corresponding consumption cycles. The following is the recommended replacement cycle for each consumable part. Whether the consumables need to be replaced can be checked by referring to the cycle time provided in the following table. For some low-loss parts, it can be judged whether they need to be replaced through inspection.

Component name		It is recommended to change the cycle
Sweeper Brush Set Broom assembly	Sweeper Brush Floor brush	Six months
	Sweeper Squeegee Clean the brush strip	12 months
	Synchronous Belt Roll brush synchronous belt	12 months
Scrubber Brush Set Washing brush assembly	Scrubber Brush Floor scrubber	3-6 months
	Scrubber Squeegee Wash the floor with glue strips	3-6 months
	Synchronous Belt Roll brush synchronous belt	12 months
Mop Pad Dust spread cloth		3-6 months
Waste Water Tank Set Sewage tank assembly	Waste Water Tube Sewer pipe	12 months*
	Rubber Seal Ring 1 Sealing ring 1	12 months*
	Rubber Seal Ring 2 Sealing ring 2	12 months*
Clean Water Tank Set Water tank assembly	Rubber Stopper Clean the rubber stopper	12 months*
	Peristaltic Pump Tubing Soft rubber hose for peristaltic pump inlet	12 months
HEPA		Every 2 weeks/months *
Dust Bag Dust bag		weekly

The replacement of this type of component depends on the actual damage. If the recommended replacement time is reached but the condition of the component is still relatively good, it can be used for 3-6 months. Please refer to the relevant content in the Maintenance Manual for specific inspection methods.

The consumable management page can be used to view the consumption of consumables. If the remaining life is less than 10%, it is recommended to prepare consumables in advance for replacement and maintenance.

Each time the consumables are replaced, maintenance operations need to be carried out in the machine APP, and the consumables management page should be entered to confirm the replacement of corresponding consumables. The machine will update the consumables life value.

4.8　Device information and upgrades

In the more functions-Settings, you can view the local information and update the software. When there is an important update, the technical personnel will contact the equipment manager to carry out the upgrade operation. Please be sure to carry out the upgrade operation under the guidance of the technical personnel, so as not to cause the machine can not work normally due to operation errors.