

Original instructions

# C5 Product Manual



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## Foreword

IMPORTANT SAFETY INSTRUCTIONS  
READ ALL INSTRUCTIONS BEFORE USING C5

Thank you for purchasing the cleaning robot C5 (hereinafter referred to as the product or equipment). This product is developed by Shanghai Zhiyuan Innovation Technology Co., LTD. (hereinafter referred to as our company) for the commercial cleaning industry.

Before operation and maintenance of the equipment, please read the instructions in this manual carefully, and strictly follow the instructions to achieve the best cleaning effect and extend the life of the machine. If you have any comments and suggestions, please contact us in time. We will provide you with warm and efficient service!

The specific operation in different versions may be different, this manual is only for end-user's reference. Our company reserves the right to modify and interpret this manual.

**CAUTION** Read the instructions before using the machine.

**WARNING:** Read all safety warnings and instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Shanghai Zhiyuan Innovation Technology Co., Ltd.  
8/F, Building 29, No.2555 Xiupu Road, Pudong New Area, Shanghai, China





# 1. Safety Protection Measures

## 1.1 Safety Guide

In order to ensure safety, please comply with the following regulations when operating and the C5:

### 1.1.1 WARNING: Do not operate the robot:

1. Unless you have received professional training or been authorized by the manufacturer/distributor.
2. Unless you have read and fully understood the user manual.
3. Unless you are physically and mentally able to operate the machine properly according to the user manual.
4. If the machine doesn't meet the working conditions, such as charging, draining or refilling water.
5. If the machine is installed with unauthorized accessories or consumables, it may cause the machine to work abnormally.
6. Do not use the machine in an unsuitable environment, on the floor with unsuitable material, or where there is a risk of falling objects. If you have any questions, please contact after-sales technician.
7. Operators shall be adequately instructed on the use of these machines.
8. The operation of this machine is strictly reserved to trained and qualified operators.
9. This machine is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge.

### 1.1.2 Before turning on the robot:

1. Check there is enough battery to complete the task.
2. Check the machine consumables are in normal status.
3. Check the components of the machine are in good condition.
4. Check the water level of the clean water tank is sufficient to complete the task.
5. Check whether the water level of the sewage tank is close to or reaches the high limit.
6. Check whether the emergency button is working properly.

### 1.1.3 Precautions during manual operation of the robot:

1. If it is not manual cleaning, please lift the roller brush and squeegee.
2. Pay attention to the reminder of full sewage during manual operation. Please make sure to stop cleaning and drain sewage when prompted.





3. Strictly follow the user manual to control machine's movement and perform other operations.
4. Please grip the handrail under manual operation, slow down when turning, do not violently turn the direction, pay attention to the surrounding environment to avoid collision.
5. If any emergency, please press the red emergency stop button immediately.
6. If there is a risk of slipping, move the machine at a slow speed on the floor to avoid danger.
7. Report for repair in time when the machine malfunction.

#### **1.1.4 When the cleaning task is complete:**

1. Make sure to power off except for charging.
2. Drain the sewage and flush the sewage tank to avoid odor.
3. Please store the machine in the designated location and be careful not to put the machine on the slope.

#### **1.1.5 WARNING: Ensure the power is completely turned off when doing maintenance:**

1. Use the spare parts and consumables specified by the manufacturer for replacement.
2. Do not disassemble the machine on your own, and contact the professional repair personnel designated by the manufacturer if repairs are required.
3. Please do not modify the machine by changing its original design or configuration. Any modification to the machine requires manufacturer authorization.

#### **1.1.6 When transferring the robot:**

1. Power off when transferring the machine. Do not touch the laser and other sensors directly, otherwise it will affect the performance.
2. In order to reduce the pressure of freight and avoid water splashing or leakage in the water tank during transportation, it is necessary to empty the water tank before transporting the machine.
3. If you want to transport the machine by vehicle, please use packing belts, boxes, wooden plates, foam, etc., to pack and protect the machine, so as to avoid unnecessary damage.
4. Caution Risk of crushing for body.
5. Caution Protection equipments are necessary when transferring the robot.

#### **1.1.7 When the robot is not been used for a long time:**

1. Store the machine in a temperature of -10~45 ° C.





2. The machine needs to be fully charged at least once every 60 days, otherwise the battery life will directly be affected.
3. If the user does not use the machine for more than a week, make sure to drain clean water and sewage.
4. If the user does not use the machine for more than one week, please ensure that the machine power is not less than 60% before shutdown, and turn off the main power switch.

### 1.1.8 Anti-freezing protection:

1. When the machine is not working, please drain the water in the clean water tank and sewage tank in time to avoid freezing, water pipe blockage or cracking. Pay attention to storing the machine in a dry and warm place.
2. The machine must be used in the indoor environment of 0~40°C to avoid freezing of the waterway.

## 1.2 Precautions for Use

1. WARNING - To reduce the risk of fire, electric shock, or injury: Do not use outdoors.
2. WARNING Do not use on slopes.
3. CAUTION This machine shall be stored indoors only.
4. CAUTION This machine is for indoor use only.
5. The C5 is only suitable for scenarios that meet the standards. Please do not use on uneven and soft floor or there is a lot of garbage, pits, etc.
6. Please draw the blind areas If there are blind areas on the floor.
7. Please draw carpet areas If there are carpet areas on the floor.
8. Please draw virtual walls for isolation If there are fall-risk areas such as steps, stairs, elevators, and open pools in the environment.
9. Please draw virtual walls for isolation If there are ground lights or where the machine may cause damage to them.
10. The protection level of the machine is IPX3. It is forbidden to directly pour water on the machine or flush the machine.
11. Do not operate the vacuum in an area where there are lit candles or fragile objects on the floor to be cleaned.
12. Do not operate the vacuum in a room that has lit candles on furniture that the vacuum may accidentally hit or bump into.
13. Do not allow children to sit on the vacuum.
14. Do not operate the vacuum in a room where an infant or child is sleeping.





15. Do not pick up anything that is burning or smoking, such as cigarettes, matches, or hot ashes.
16. Do not use without dust bag and/or filters in place.
17. Do not allow to be used as a toy.
18. Close attention is necessary when used by or near children.
19. Use only as described in this manual.
20. Use only manufacturer' s recommended attachments.
21. Do not put any object into openings. Do not use with any opening blocked; keep free of dust, lint, hair, and anything that may reduce air flow.
22. Keep hair, loose clothing, fingers, and all parts of body away from openings and moving parts.
23. in order to prevent unauthorized use of the machine, the power source shall be switched off or locked, for example by removing the key of the main switch or the ignition key.
24. Do not use to pick up flammable or combustible liquids, such as gasoline, or use in areas where they may be present.
25. Charge the machine after use every day.
26. Please check the battery of the machine before using it every day.
27. It is better to use warm water for cleaning, please make sure water temperature not higher than 70°C.
28. Please do disassembly and replacement for the cleaning parts (roller brush, side brush, squeegee, dust mop plate, etc.) after the machine powers off.
29. When cleaning with cleaning solution, it is necessary to add an appropriate amount of defoamer in the sewage tank first.
30. Please note that changes or modifications not expressly approved by the party responsible for compliance could void the user' s authority to operate the equipment.
31. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: —Reorient or relocate the receiving antenna. —Increase the separation between the equipment and receiver. —Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. —Consult the dealer or an experienced radio/TV technician for help.





32. This equipment complies with radio frequency exposure limits set forth by the FCC for an uncontrolled environment.
33. This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
  - (1) This device may not cause interference;
  - (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

  - (1) L'appareil ne doit pas produire de brouillage;
  - (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
34. This equipment complies with radio frequency exposure limits set forth by the Innovation, Science and Economic Development Canada for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the device and the user or bystanders. This device must not be co-located or operating in conjunction with any other antenna or transmitter. Cet équipement est conforme aux limites d'exposition aux radiofréquences définies par la Innovation, Sciences et Développement économique Canada pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre le dispositif et l'utilisateur ou des tiers. Ce dispositif ne doit pas être utilisé à proximité d'une autre antenne ou d'un autre émetteur.
35. the device for operation in the band 5150-5250MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems. les dispositifs fonctionnant dans la bande de 5 150 à 5 250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

If you are not clear about whether you can use the C5 in your scenarios, please contact a professional for details.

### 1.3 Maintenance Items

1. Within the warranty period, we will provide free maintenance for non-human damage. It needs to be paid if it is human damage. Please refer to the after-sales service policy for our company's standard maintenance.
2. Over the warranty period, you can choose to extend the warranty or charged maintenance.
3. It is strictly prohibited to disassemble the machine without authorization. Once found, the user will not be able to covered by the established warranty policy.





4. If the machine works abnormally and cannot be solved by conventional investigation measures and solutions, please contact the after-sales personnel or distributor in time.





## 2. Product Overview

### 2.1 Product Introduction

C5 is an intelligent cleaning robot designed for medium and large scenes. The C5 has a variety of cleaning modes such as floor scrubbing, sweeping and dust mopping, while the cleaning capability was comprehensively upgraded. The robot is equipped with multiple sensors and using laser and vision fusion for localization, which make C5 suitable for all kinds of indoor scenes. Equipped with workstation, C5 can realize automatic charging, clean water refill, drainage and cleaning of sewage tank, reduce the difficulty of comprehensive maintenance and operating costs. It can easily cope with the hard floor in medium and large scenes such as ceramic tile, epoxy floor, marble, emery and cement.

This machine is intended for commercial use. The product can be widely used in industrial premises, high-speed rail stations, airports, logistics warehouses, office buildings, commercial complexes, hospitals, schools, pavilions, supermarkets and other indoor scenes, which can improve cleaning effect, reduce the pressure on cleaning staff, and realize digital cleaning to help with smart facility management transformation. It brings a new, intelligent and worry-free service experience.

This machine complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### 2.2 Product Features

With the integration of following designs: professional and efficient cleaning design, safe and reliable machine design, stable and intelligent automatic driving algorithm, humanized interaction design, the C5 can achieve efficient and independent cleaning in a variety of scenarios. The product features are mainly including following aspects:

#### 2.2.1 Professional Cleaning

##### Strong cleaning ability

- All in one machine(Sweeping, Scrubbing, and Dust mopping)
- Innovative dual-roller brush structure, combining heavy dirt cleaning and small trash pickup functions, comprehensive garbage cleaning rate >95%
- Two 400W roller brush motors, with a pressure intensity of 16Kpa, and a maximum water flow of 800ml/min for heavy stain cleaning
- Pioneered dual-chamber squeegee design and secondary sewage treatment module, ensuring cleaner wastewater treatment
- Dual side brushes for precise edge cleaning, reducing the need for corner cleaning tasks





## High cleaning efficiency

- Cleaning width of 550mm, achieving a theoretical cleaning efficiency up to 1980 m<sup>2</sup> /h
- 90L water tank and 80Ah battery ensure simultaneous water and power endurance, avoiding frequent refills
- 3 hours of endurance with 1.5 hours of industrial fast charging, extending effective operation time
- Utilizes advanced automatic zoning algorithms to automatically generate efficient cleaning sub-tasks

## Highly Automated

- Missed area scanning and closed-loop cleaning
- Sewage pipe blockage detection, which prevents abnormal blockages that could lead to excessive wastewater residue on the floor
- Can be equipped with a workstation for automatic charging and wastewater discharge. With the industry's first self-cleaning wastewater tank feature, it can significantly reduce maintenance time
- Capable of integration with access control and elevator systems for seamless cross-floor and cross-area cleaning

## 2.2.2 Intelligent and Easy To Use

### Easy deployment

- Map expansion: new areas can be quickly merged into the map and automatically adjust cleaning tasks
- Feature in development: Including full-map automatic zoning capabilities, automatically generating cleaning tasks, which greatly reduces deployment workload. Future updates will be available via OTA (Over-the-Air)
- Enhanced perception capabilities reduce the workload for mapping virtual walls, ground lights, and accessible pathways
- Feature in development: automatic map updates for environmental changes without the need for redeployment. Future updates will be available via OTA (Over-the-Air)

### Easy to use

- Initialization from any location, greatly simplifying on-site usage processes
- Remote wake-up capability allows for the initiation of cleaning tasks at any time
- User-friendly operation with one-click task initiation on both the machine and mobile app, supporting scheduled task triggers
- Automatic scheduling and report generation, with multi-dimensional visualized data being clear and





easy to understand

### **Easy to maintain**

- Automatic fault warning with over 90% coverage of hardware self-checks
- Remote operation and maintenance for quick fault diagnosis and recovery

## **2.2.3 Safe and Reliable**

### **Safe to use**

- Dual positioning technology of laser + vision significantly enhances localization reliability
- Point cloud + vision fusion perception technology effectively identifies various obstacles
- Innovative chassis design increases the laser detection angle, reducing blind spots

### **Machine safety**

- Multiple safety measures such as drop detection, collision detection, and runaway detection ensure the safe operation of the equipment throughout
- Real-time fault diagnosis with a diagnosis rate of over 90%; actively alerts for abnormal situations
- Designed to comply with functional safety certification standards, with dual control design for hub motors enhancing safety

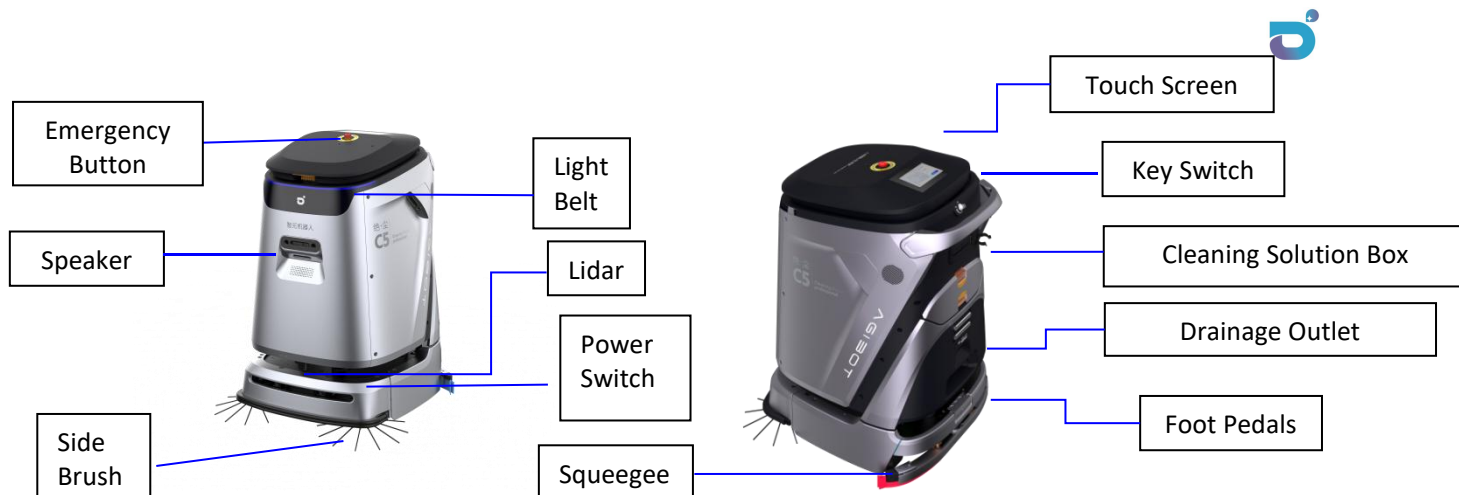
### **Durable and Long-lasting**

- High-specification selection of core components, with fan lifespan up to 10,000 hours
- Dual-pump and dual-circuit design for precise control of water spray volume, enhancing service life

## **2.3 Product Parts**

The automatic driving sensors installed on C5 include Lidar, Depth Camera, Fisheye Camera, Hub Motor, IMU, Edge Detect Sensor, etc. The components of the Cleaning Structure include Clean Water Tank, Sewage Tank, Garbage Collection Box, Cleaning Solution Box, Roller Brush, Side Brush, Squeegee, Water Refill Inlet, Drainage Outlet, Automatic Charging Port, Drainage Pipe and so on. The main part of human-machine interaction is: Touch Screen, Light Belt, Speaker and so on. The components of the whole machine are indicated as follows:





- **Power Switch**

The power switch of the device is the direct switch of the external output of the device battery. When the device is not used for a long time, the power switch needs to be turned off.

- **Key Switch**

This is the device control switch. Insert the key into the keyhole and twist the key from Off to On to turn on the device so that the operator or manager can operate the device through the touch screen. After the device completes the task, make sure to turn off the device by turning the key from On to Off. When the device is completely powered off, take out the key and save it.

- **Touch Screen**

This is touch screen for operation. User completes human-machine interaction through the display screen. After the machine is turned on, the cleaning APP will be automatically loaded on the display screen. The user can change tasks and parameters settings, control the device through the app.

- **Emergency Stop Button**

This is used for emergency stop. The use of the emergency stop button is pretty simple. Press the button directly to stop the machine immediately. At this time, the machine cannot be manually pushed or operated. To restore the previous state of the machine before pressing the emergency stop button or perform other operations on the machine, rotate the button clockwise for 30° to unlock the machine and the operation can be continued.

Note: Do not press the emergency stop button arbitrarily. Only press the button in emergency situations to stop the machine immediately.

- **Power Assistance Button**

This is used for manual push assistance. When the machine is turned on, switch the machine to manual mode through the touch screen, hold the handrail with both hands and press the power assistance button at the same time. When the machine is moved forward, the power assistance mode will be activated. It is easier to push the device in the power assistance mode, and the assistance will stop after releasing the button.

Note: When using the power assistance function, it is necessary to control the speed of pushing to avoid any safety risks caused by excessive speed.

- **Clean Water Tank**





This is used to store clean water. During the cleaning process, the water is sprayed from the clean water tank. The capacity of the water tank is 45L, which meets the requirements of long-term uninterrupted operation in the normal cleaning process of the machine.

- **Sewage Tank**

This is used to store sewage. There is a garbage filter basket installed in the sewage tank, which can collect some larger size garbage. And it needs to be regularly maintained. The sewage tank also has a deodorizing device, which can eliminate the odor of the sewage tank by adding deodorizing balls. In addition, the sewage tank has self-cleaning function, which can be manually triggered or automatically triggered for replenishment. The self-cleaning function of the sewage tank is to wash the interior of the sewage tank to prevent the water tank from smelling. The total capacity of the sewage tank is 45L.

- **Garbage Collection Box**

This is used to collect the garbage. The garbage collection box collects the garbage on the ground during the cleaning process. The garbage box needs to be cleaned regularly to avoid the squeegee is blocked by the garbage overflowing from the garbage box. The side baffle of the machine can be opened to take out the garbage box for cleaning and maintenance.

- **Cleaning Solution Box**

This is used to store the cleaning solution. Adding cleaning solution helps to effectively clean dirty floors. You can manually take out the cleaning solution box and add the corresponding cleaning solution into it. For different cleaning solution brands, the dilution ratio can be set through the software to achieve the most suitable cleaning effect. The cleaning solution box volume is 2.4L.

Note: Only neutral and alkaline cleaning solution are supported in the pipeline of the machine, and strong acidic cleaning solution are prohibited.

- **Roller Brush**

This is for cleaning the floor. The roller brush is located at the bottom of the machine. You can open the baffle on the side of the machine to take out the roller brush for maintenance. The roller brush of the machine mainly performs the sweeping and scrubbing operation to the ground. It is necessary to turn on the water spray and absorption function in the process of cleaning. The rolling pressure and rolling speed can be set on the App to achieve excellent cleaning effect according to different types of floor and debris.

- **Side Brush**

This is used to collect garbage from surrounding area by sweeping garbage on both sides to the middle of the machine. At the same time, the side brush can collect garbage from the edge and corner to achieve better cleaning effect, which reduces the frequency of manual cleaning to the edge and corner.

- **Squeegee**

This is the sewage inlet for the machine. It can collect the sewage generated in the process of cleaning. When the machine cleans the floor, the suction motor draws air from the sewage tank to create a negative pressure environment, which causes the sewage to be sucked up to the sewage tank and ensures cleanliness of the floor during the cleaning process.

- **Clean Water Inlet**

This is the inlet for adding water. The clean water tank can be automatically refilled through the workstation, or manually refilled by the provided water filling device. When refilling water manually, it is





necessary to pay attention to insert the water filling device deep into the water inlet to avoid water leakage.

- **Automatic Drainage Outlet**

This is used for automatic sewage drainage. When the machine replenishes itself automatically, the sewage is automatically drained into the workstation through the outlet.

- **Manual Drainage Pipe**

This is the manual sewage drainage outlet. Remove the manual drainage pipe and then open the pipe cover to align the drainage connector with the sewage pool, then drain sewage. After draining the sewage, restore the drainage pipe and securely close the cover.

- **Automatic Charging Port**

This is used for automatic charging in conjunction with the workstation.

- **Manual Charging Port**

This is used for manual charging. The manual charging port of the device is located behind the lower panel on the right side of the machine. Insert the charger connector directly into the manual charging port to charge the machine. Once charging is complete, close the rubber cover and store the charger properly.

- **Foot Pedals**

Equipment maintenance and transportation auxiliary device. It is located on the chassis directly behind the device. When using the device, pull out the foot pedal, step on the foot pedal and press down the device with both hands through the armrest. The front wheel of the device can be cocked up for maintenance or transfer. Restore the device after use.

- **Speaker**

This is the device to play the audio of the machine.

- **Maintenance Interface**

This is the maintenance interface for the machine. You can copy data through this interface, which is mainly for professional debugging and after-sales service.

- **Light Belt**

This is the status indicator light located on the head of the machine. You can judge the machine status by the color of the light belt as following table:

Machine status	Light strip to show condition
Turning on	White light on
Idle state	Blue light breathing
Cleaning status	Blue light blinking slowly
Heading to workstation	The red and green lights are flashing alternately and quickly.
Replenishing	Green light breathing





Emergency stop status	Red light flashing
Lost location	Red light flashing slowly
Malfunction	Red light on

- **Product Wireless Module**

The machine includes 4G, WIFI and Lora wireless modules. The machine communicates with the outside world through the above-mentioned wireless modules.

Serial number	Wireless module	Operating frequency range	Maximum transmitting power
1	WIFI	2.400 GHz to 2.4835 GHz	22dBm
2	4G	824MHz to 2690MHz	23dBm
3	Lora	868MHz to 915MHz	22dBm
4	5G WIFI	5180MHz-5320MHz; 5500MHz-5825MHz	22dBm



## 3. Operation Guidance and Instructions

### 3.1 Power On/Off

#### 3.1.1 Daily Power On/Off

Power on: Turn the key to "On"

Power off: Turn the key to "Off"



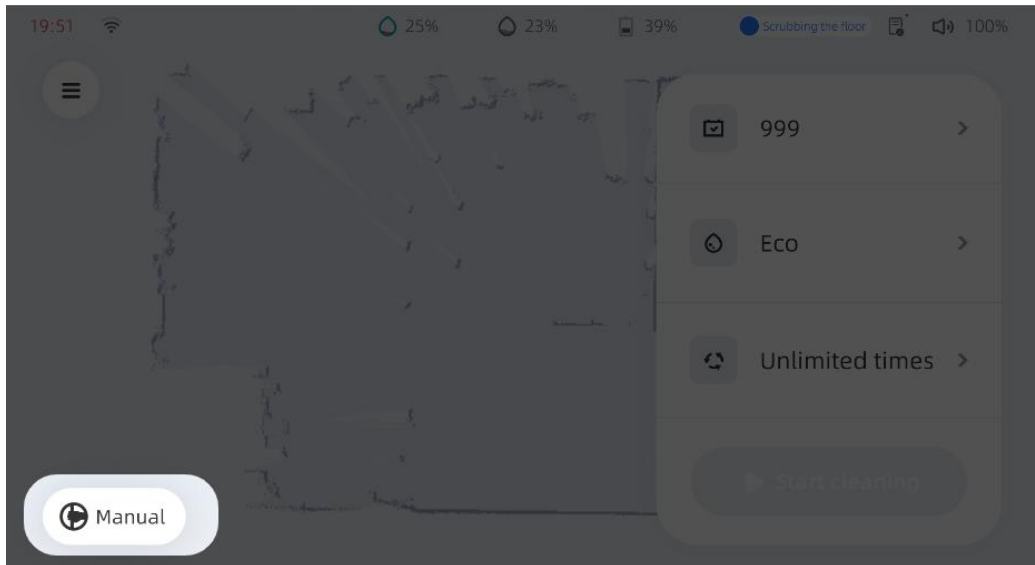
#### 3.1.2 Battery Power Off

The machine's power supply can be turned on/off by flipping the ship-type switch button by hand.

### 3.2 Manual Push

The machine can be pushed directly after it is turned off.

When the machine is turned on, click the "hand push" button in the lower left corner of the screen to switch to the hand push state if the user needs to push the machine or do manual cleaning.



When passing the sill or speed bump, you need to use the foot pedal to assist.

#### **How to use the foot pedal:**

Step on the pedal with your right foot, hold the handle with both hands and pull back hard at the same time. The machine will lean back, then you can slowly push the machine through the sill.

### **3.3 Manual Water Refill**

When the machine needs to be refilled with clean water, please connect the water pipe with the water refill inlet and the water volume is displayed in real time at the top of the screen. There is also a level gauge on the side for observation.

**Note:** Water volume should not exceed 100%

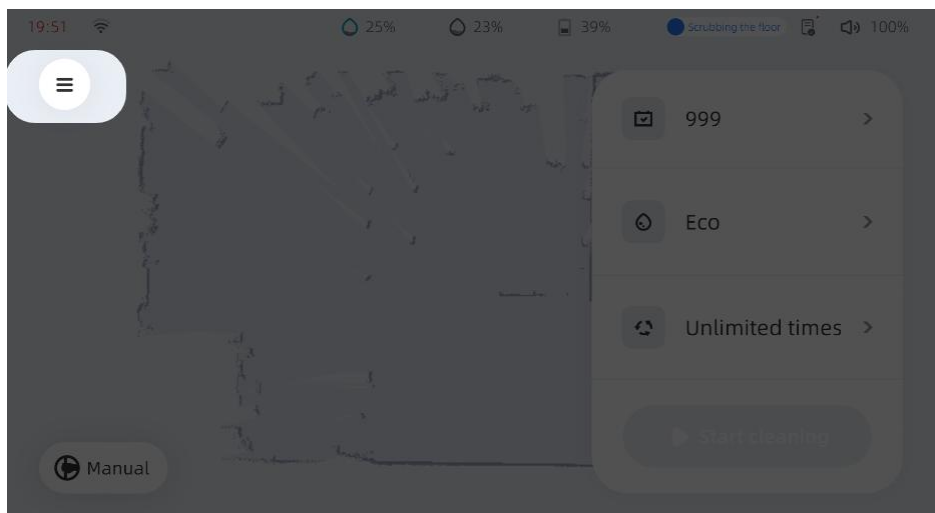
### **3.4 Manual Relocation**

**Relocation is required only when the location is lost. The relocation methods include:**

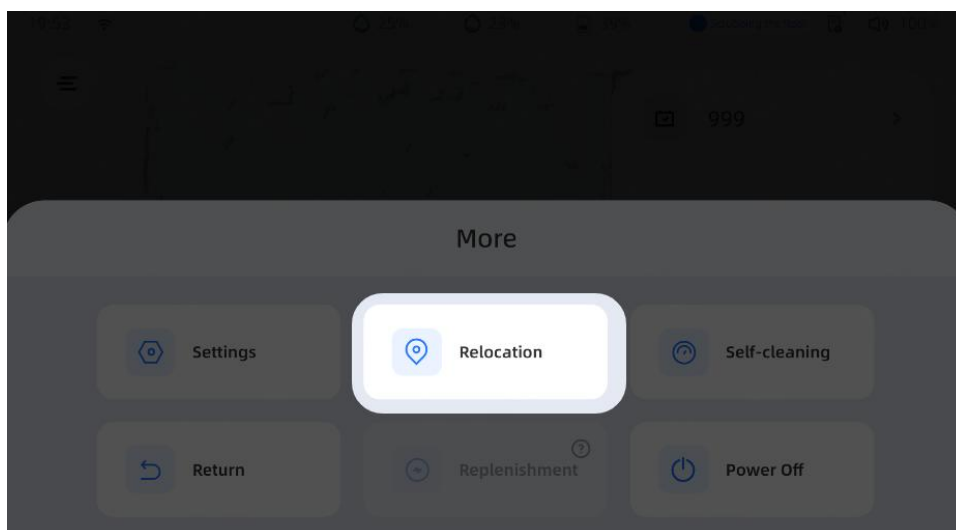
- **Method 1:** Push the robot in the clean area slowly and relocate according to the characteristics of the ceiling
- **Method 2:** Push the robot to face the front of the workstation, with the distance controlled within 1m, then the robot location can be corrected
- **Method 3:** Let the robot face the QR code on the wall with the distance controlled within 50cm, and scan the QR code for relocation.

#### **"Manual Relocation Process Description"**

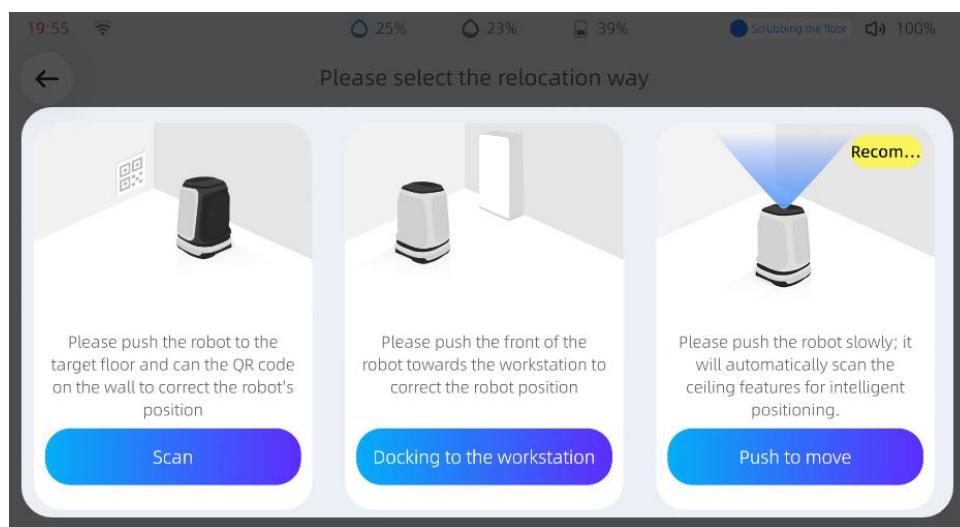
① : Click on [More] at the top right corner of the screen



② : Select 【 Relocation 】



③ : According to the system prompts, choose the appropriate relocation method



### 3.5 Manual Cleaning

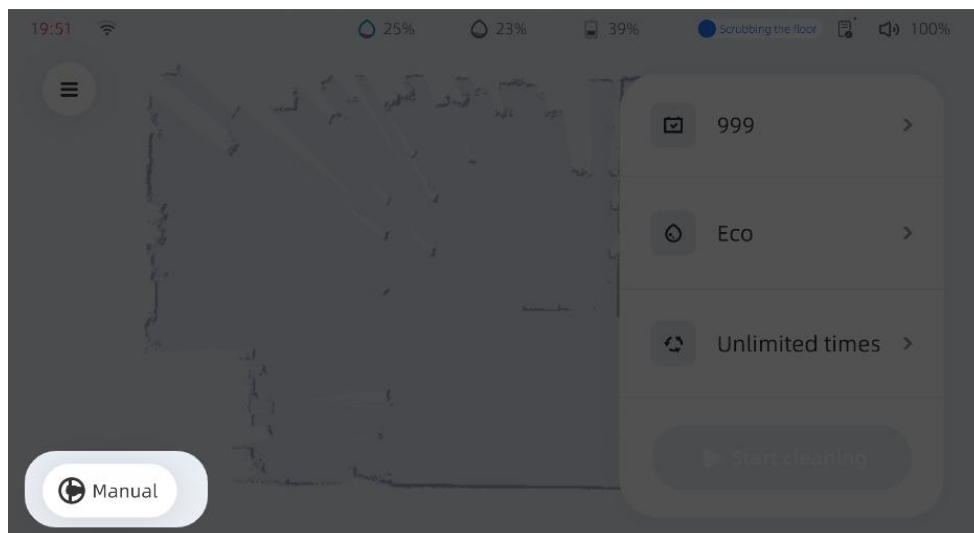




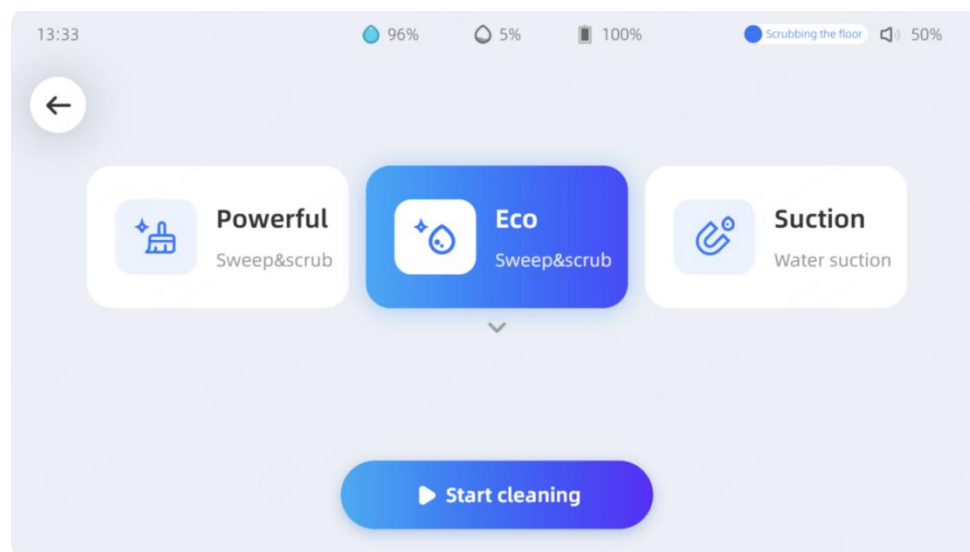
Manual cleaning mode allows you to control the cleaning process by pushing the robot to where it needs to be cleaned.

### "Manual Cleaning Process Instructions"

① : Click the "hand push" button at the lower right corner;



② : Select the cleaning mode, and then click [Start cleaning].



## 3.6 Manual Charging

When you want to manually charge the robot, open the cover of the right shell (the cover can be directly opened since it uses the magnetic structure), and firstly connect the plug of the charger with the robot, then connect the input of the charger to the AC power socket.

## 3.7 Scheduled Tasks

If there are obvious regular cleaning tasks in the scene, or the robot is expected to clean at a specific time in the future, the scheduled task can be set. When it is the scheduled task start

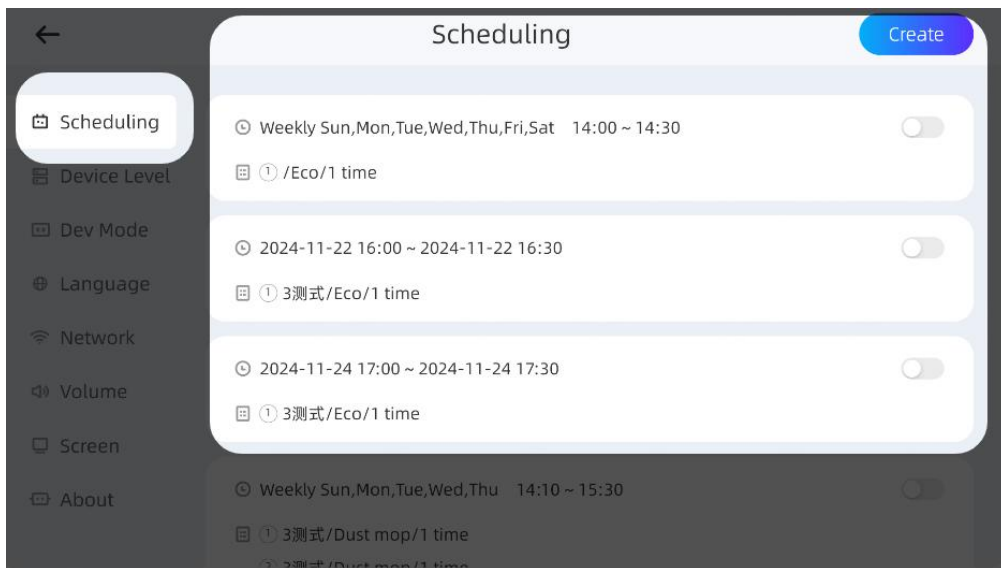




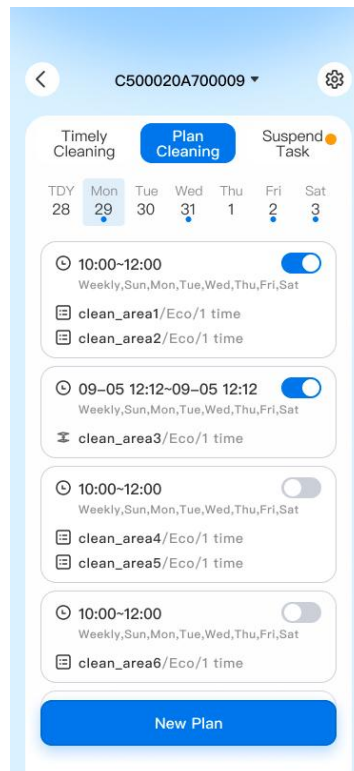
time, the robot will automatically perform the tasks that have been set (multiple tasks can be set). When it is the end time of scheduled task, the robot will end the task and return to the docking point. The scheduled task can be created on the screen or mobile App.

### "Instructions for Creating a Scheduled Task"

① Screen: click [More] at the upper right corner of the screen, select [setting], and then select [scheduling task] in the right menu bar. You can click [create] at the upper right corner to create a new scheduled task.

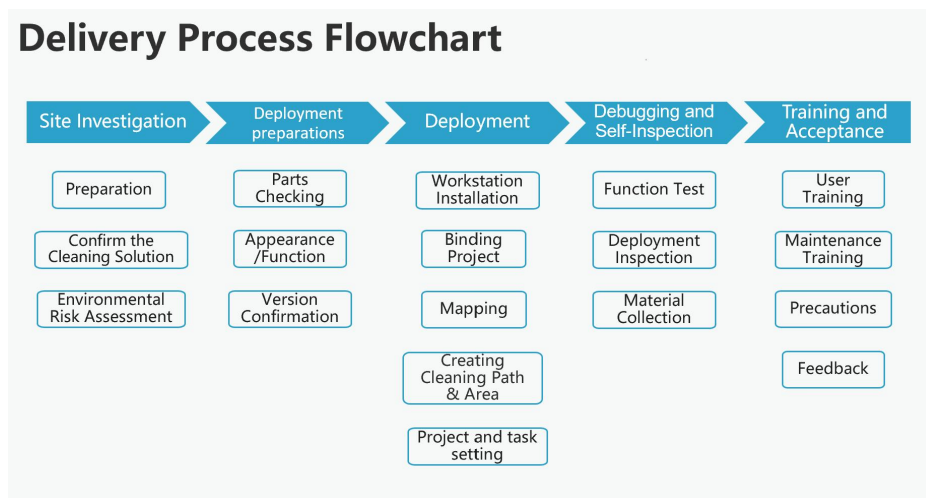


② Mobile App: select [task] in the bottom menu bar and click [create scheduled task], then configure the robot, repeat time, and combined tasks according to the guidance prompts.



## 3.8 Field Deployment

### 3.8.1 Deployment Process



### 3.8.2 Site Investigation

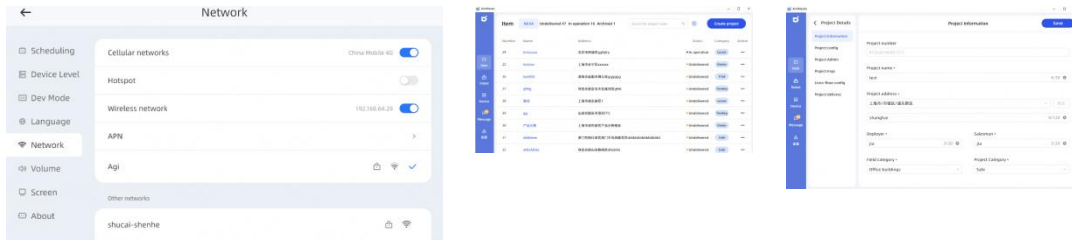
- Confirm the cleaning solution and workstation installation location.
- Environmental risk assessment: Confirm that the cleaning area can meet the basic requirement for machine's operation according to the boundary requirements.

### 3.8.3 Deployment Preparations

- Check the parts on the machine
- Check the appearance of the machine
- Power on to check the machine status

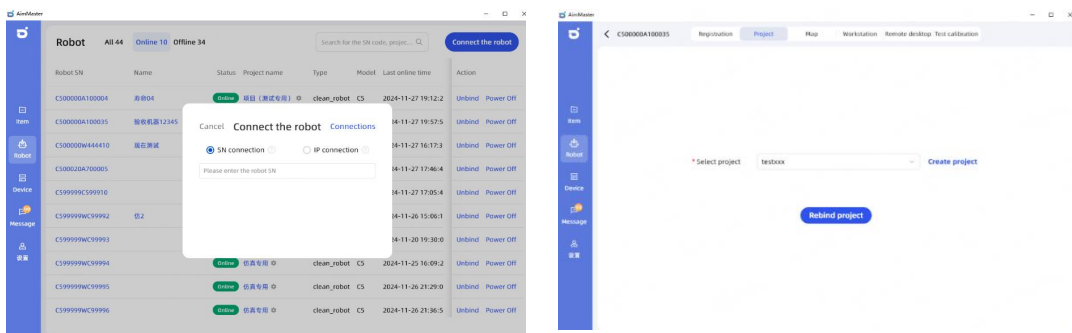
### 3.8.4 Robot Deployment

- Creating project
  - Download deployment software → Go to the app store to download it or contact technical support.
  - Connect to the Internet and download the deployment software, add project and fill as required
  - When deploying on site, open the robot's hotspot (as shown in the picture), and then use a computer or tablet to connect the robot's hotspot.
  - Click [Add project] to jump to [Project Details] and fill in all project information as required



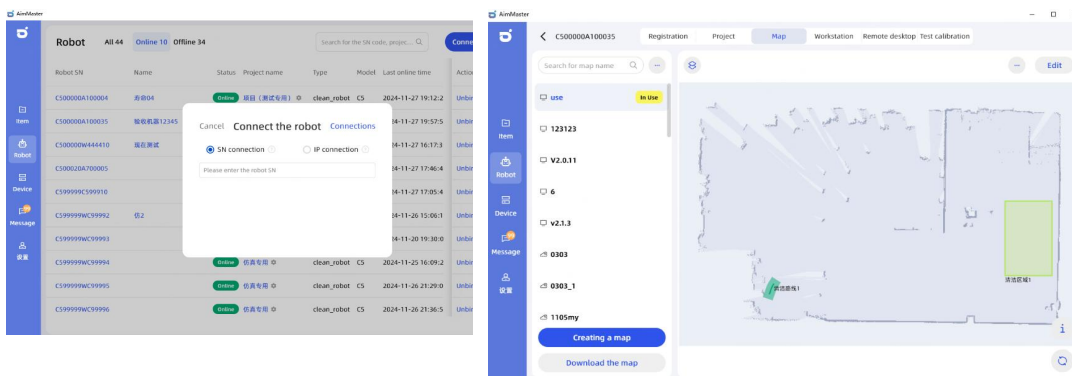
○ Binding a project

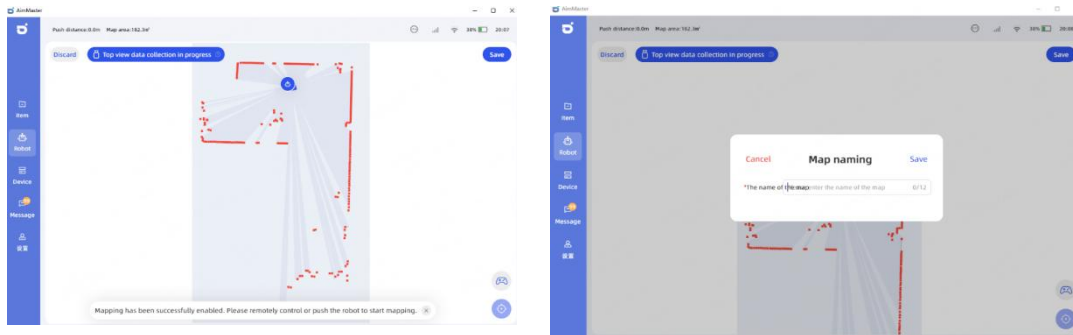
- i. After connecting to the robot's hotspot, click on the [robot] to select [Connect the robot], and then click on the [IP connection] to enter 10.42.0.1
- ii. After connection, click [binding project] and select the project to bind



○ Mapping

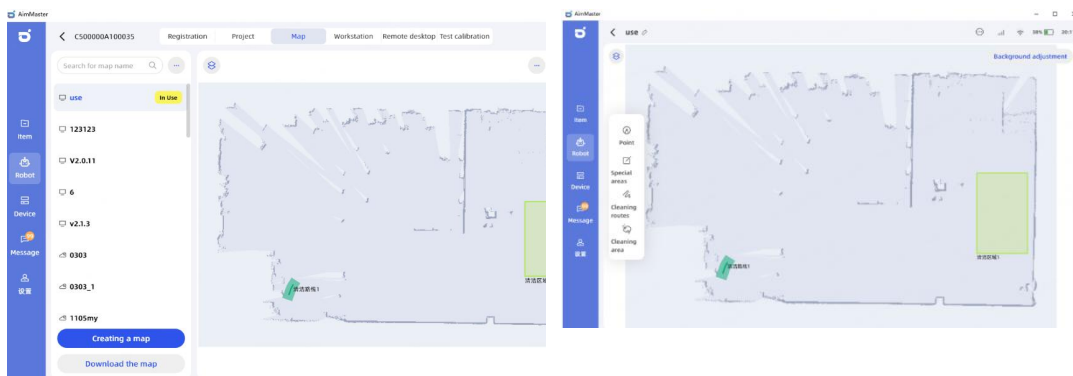
- i. Click [Connect the robot] and select [IP connection] to enter IP address :10.42.0.1.
- ii. Click on [Map management] and choose [Creating a map].
- iii. Manually push the robot for mapping. After mapping, check the map for missing area, overlapping shadows or failure. Confirm and click [Finish].
- iv. Please fill in the map name, building and floor information according to the actual situation. Map name format: city + customer name + floor, such as: Shanghai Pudong International Airport T2 1<sup>st</sup> Floor.





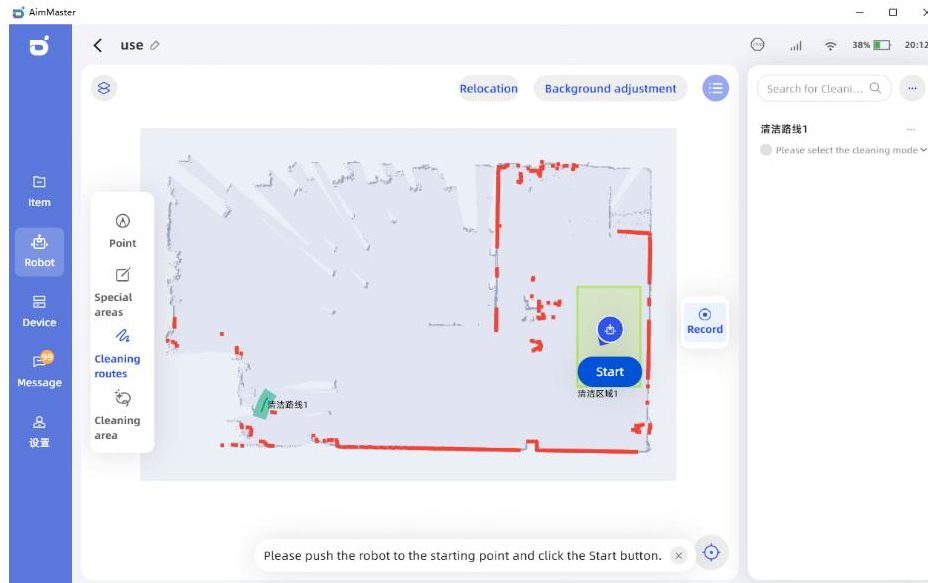
- Map Editing

- i. After saving the map, you will return to the map management interface. Follow the steps below to enter the map editing interface.
- ii. Find the map you want to edit and click [Edit].
- iii. Add virtual walls in [Special areas], add cleaning tasks in [Cleaning areas], and erase known areas in [Background map adjustment]



- Create cleaning routes

- i. Confirm the machine location is normal and relocate if the location is abnormal.
- ii. Click [Cleaning route] and select [Record], then push the robot to the start point and click [Start]. Creating routes one by one according to the cleaning solution. The outer circle of recording cannot cover the inner circle, and the entire area to be cleaned needs to be manually recorded.



- o Create cleaning area
  - i. Click [Cleaning area] and select [Create]. You can customize the cleaning area after clicking [Start] on this interface, which supports various ways such as hand-drawn polygon and automatic rectangle generation.

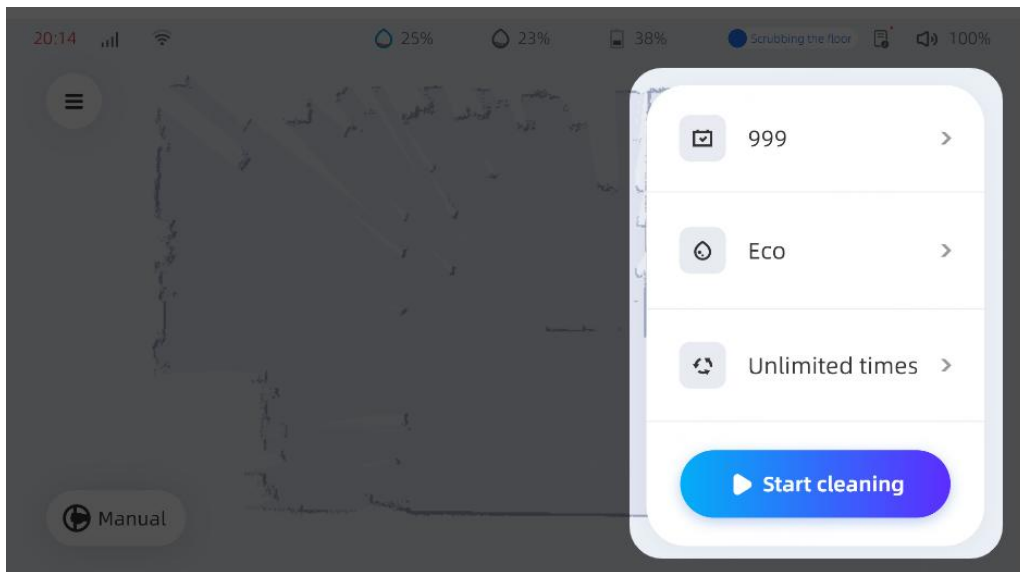


### 3.8.5 Automatic Tasks

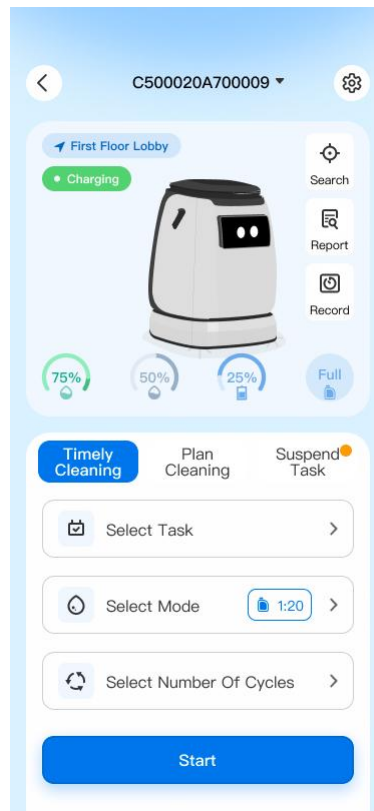
Under the automatic cleaning mode, the machine will carry out a comprehensive and systematic cleaning of the designated area according to the preset parameters and routes, which can be assigned through the screen or the mobile App.

#### "Instructions for Automatic Cleaning Process"

- ① Screen: Select the task, cleaning mode and number of cycles on the screen and click [Start cleaning].



② Mobile App: Find the corresponding robot in the App and select the task, cleaning mode, number of cycles, then click [Start cleaning].



\* Please refer to Delivery Manual for details.



## 4. Maintenance and Suggestion

The operator needs to carry out simple maintenance before and after use of the robot every time, periodically carry out the necessary inspection of the robot, regularly replace the consumables to ensure the best performance of the robot and maximize the service life.

### 4.1 Routine Maintenance

We need to carry out necessary maintenance of the robot in order to increase the life of the robot and maintain the cleaning ability, so that the robot is in good condition for a long time and create more value for customers.

- Before maintenance, the power must be turned off to prevent accidental electric shock or parts damage.
- The machine should be placed in a dry and ventilated place to prevent humid environment from affecting electronic and electrical components and shortening their lifespan.
- If it is less than 5 degrees Celsius in the storage environment, please ensure the entire waterway is free of water.

#### 4.1.1 Daily Maintenance

1. Drain the water in the sewage tank and clean the sewage tank with a pipe or spray gun to ensure the water tank is clean, prevent the accumulation of dirt from blocking the sewage tank. Please avoid water spilling to other places during the process. After each drainage of sewage, please close the cover of manual drainage pipe in time, and put the manual drainage pipe back to the fixed place of pipe clamp. You can turn on the self-cleaning on the machine's app. If the workstation is equipped, the sewage tank can be self-cleaning each time and only weekly maintenance need to be carried out.
2. The garbage filter basket in the sewage tank needs to be dumped daily. Please put back garbage filter basket to the original position after the cleaning is completed. At the same time, check the sewage tank for large garbage and debris and clean up in time.
3. Garbage box cleaning: It is necessary to pour out the garbage in the garbage box to prevent odor after daily operation.
4. After the cleaning task is completed, please check the battery. Please charge it in time if necessary.

#### 4.1.2 Weekly Maintenance

1. Squeegee cleaning: Remove the squeegee module and check whether there is blockage in the suction tube and clean it. Please use a wet towel to clean inside of the squeegee to prevent the accumulation of dirt such as hair, which may affect the suction efficiency. And keep the surface clean to reduce the loss and extend the service life. It is recommended to clean and maintain the module every week. If the site environment is





harsh, the maintenance frequency can be appropriately increased to ensure the best cleaning effect.

2. Check whether there is dirt on the sensor and use a soft cloth or paper to gently wipe it. Please avoid wiping with your hands directly, which may cause scratches and other damage.
3. Check the wear and tear of the rubber and replace it if necessary.
4. Remove the roller brush every week and wash the roller brush to clean the hair and dirt that may become entangled.
5. Remove the side brush every week and clean the side brush for any tangled hair and dirt.
6. Weekly maintenance and deep cleaning of the sewage tank every week to wash the inner wall and bottom of the sewage tank where may accumulate sediment.

### 4.1.3 Monthly Check and Maintenance

1. Check whether the rubber of the roller brush module is seriously deformed or damaged and replace it in time if necessary.
2. Check whether the rubber of the squeegee module is seriously deformed or damaged and replace it in time if necessary.
3. Check the abrasion of the roller brush's bristles (refer to the mark). If the bristles are obviously shorter, please adjust the cleaning parameters in time to ensure the best cleaning effect.
4. Check whether there is serious ash accumulation or mildew in the HEPA of the sewage tank and replace it in time if necessary.
5. Check whether the manual drainage pipe is damaged and air leakage and replace it in time if necessary.
6. Check the air tightness of the sewage tank and whether the rubber around the sewage tank is damaged. If there is air leakage, please check it further.

### 4.1.4 Half-year Maintenance

1. Check whether the springs, screws and sheet metal parts of the squeegee structure are loose, deformed or damaged.
2. Check whether there is abnormal noise, which affects the normal use.
3. Check whether there is rust on the squeegee lifting module and lifting mechanism. If yes, please spray rust remover first and then apply grease.
4. Check whether the synchronous belt of the roller brush module has cracks and aging phenomenon and replace it in time if necessary.
5. Check whether the two ends of the roller brush module and the transmission mechanism are stuck. Please further check or replace if necessary.
6. Check whether there is rust on the lifting mechanism of the roller brush module. If there





is rust, please spray rust remover first and then apply grease.

7. Check whether there is interference and the phenomenon of stuck in the universal wheel. Please further check or replace if necessary.
8. Check whether the driving wheel is skewed. If it is skewed, please contact professionals immediately for further inspection or replacement.

## 4.2 Description of Consumables

The main consumables of the C5 include squeegee rubber, roller brush, side brush, water blocking rubber, HEPA, etc. Their replacement cycle varies according to the different floor materials in the scenario. If the cleaning frequency of the machine is too high or too low in the actual scenario, user can shorten or extend the replacement cycle of the consumables appropriately. Please adjust according to the observed cleaning effect of the machine.

The consumables and recommended replacement cycles are as follows:

Serial number	Name	Quantity	Categories	Regular Scenarios	High Consumption Scenarios
1	Side brush	2	Custom parts	3 months /400h	2 months /300h
2	Roller brush	2	Custom parts	4 months /500h	2 months /300h
3	Squeegee rubber	2	Rubber parts	4 months /500h	2 months /250h
4	Water-blocking strip of the roller brush	1	Rubber parts	4 months /500h	2 months /250h
5	HEPA	1	Custom parts	2 months /300h	1 month /200h
6	Bristles of roller brush	1	Custom parts	4 months /500h	2 months /300h
7	Deodorizing balls of sewage tank	1	Standard part	2 weeks	1 week





\* The above data are laboratory data and may change depending on different scenarios.

## 4.3 Battery Maintenance

- The battery is not allowed to be disassembled or replaced without permission in order to avoid unnecessary loss.
- Keep batteries away from heat sources, high pressure places, and prolonged sunlight exposure.
- Do not put the battery in water or fire.
- Short-circuiting the positive and negative battery terminals with metal is prohibited.
- Avoid excessive physical shock and impact on the battery. Do not hit, drop, or step on the battery.
- Without the permission and guidance of the manufacturer, it is strictly prohibited to disassemble or assemble the battery.
- Do not mix batteries of different manufacturers, types and models.
- Do not use or store in a high temperature ( $> 45^{\circ}\text{C}$ ) environment, otherwise it will cause heat, fire or reduce the service life of the battery.
- Do not use in a low temperature ( $< -10^{\circ}\text{C}$ ) environment, otherwise it will cause machine malfunction and reduce battery life.
- Normally the battery needs to be fully charged every 20 charges.
- If the machine is stored for more than 2 months, please keep the battery at least 60% and charge the battery every 60 days.
- For the purposes of recharging the battery, only use PFC1200-24CH40S provided with this appliance.
- Please stop using the battery when it has abnormal odor, discoloration, noise, leakage, serious deformation, etc. And contact qualified after-sales service personnel for further handling.
- If the electrolyte leaks into the skin or eyes, rinse with water and seek medical attention immediately.
- Keep batteries out of reach of pets and children.
- When loading and unloading batteries during transportation, please be careful not to drop them. Do not stack more than 3 layers or turn them over. Please ensure the front side is up.
- This appliance contains batteries that are only replaceable by skilled persons.
- A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
- Do not use a battery pack or appliance that is Damaged or batteries may exhibit unpredictable behavior resulting in fire explosion or risk of injury.





- Do not charge the battery pack or appliance outside of the temperature range specified in the instructions. Charging improperly or at temperatures outside of the specified range may damage the battery and increase the risk of fire.
- The battery shall be removed from the appliance before it is scrapped; the battery shall be disposed of safely





## 5. Troubleshooting

Sometimes the machine may not work as expected. According to the feedback data of technical support, we have counted the most regular malfunction cases. Now we provide effective troubleshooting methods and solution for the above malfunction cases. You can refer to the following table to troubleshoot at the first time when you encounter malfunction.

<b>Malfunction symptoms</b>	<b>Possible cause of Malfunction</b>	<b>Solution</b>
Machine cannot work automatically	The machine runs out of battery and couldn't be turned on and move.	Please connect the charger to the charging port of the machine for charging, and operate the machine after the battery is fully charged.
	The machine is not turned on and cannot move.	Please turn on the machine by twist the power key on the machine control panel. Please check whether the main power switch is on and try to operate the machine if not working.
	The machine is under manual mode.	You need to switch to automatic mode through the APP.
	The red emergency stop button on the control panel is pressed, causing the machine to stop urgently and unable to move.	Please turn the emergency stop button 30° clockwise to restore.
	The location is abnormal and the machine cannot operate automatically.	Please push the machine to the fixed startup location to restart or push the device to move 2m where the characteristics of top view environment are obvious.
	The moving speed is too fast when mapping, which causes low mapping quality.	Slow down and remapping.



The mapping is unclear or showing overlapping shadows	The sensor is dusty or obstructed.	Use a dust-free cloth to clean the outside of the laser sensor, and check whether there is any foreign body near the sensor and remove it in time if necessary.
	The environment is complex and there are glass walls and other high-transparent materials.	Please draw a virtual wall in time to control the map boundary when there are high-transparent materials in the surrounding environment.
Location failure	Wrong map is selected.	Choose the right map
	The initialization location selected by the APP differs greatly from the actual location, which required to be within 3m.	Pay attention to the matching degree between the laser data and the map, it is recommended to find a location with obvious landmarks for relocation, or move the machine for 2m, where the characteristics of the top view environment is obvious.
	There are many onlookers at close range.	No close onlookers are allowed when the machine is being started or relocated.
The roller brush does not rotate	Wrong cleaning mode is selected.	Set the right cleaning mode, the corresponding pressure and speed of the roller brush.
	The roller brush is entangled by hair or other linear objects, which causes the motor overcurrent protection.	Check whether alarms exist. Remove the roller brush and check whether the roller brush is entangled.
	Squeegee is not been	Enter the cleaning mode setting on the App homepage, check whether the squeegee is put down. Put it down, and observe



The machine does not suck up water or doing well	put down.	whether the rubber is put down if necessary.
	The cleaning mode is selected incorrectly or the suction level does not match.	Enter cleaning mode setting on the App homepage, turn on the air suction and observe whether it is normal.
	It could be that App prompts the sewage tank information, which indicates that the sewage tank is full or there is no clean water, and the machine cannot continue cleaning tasks.	Please drain the sewage or add clean water before continuing the cleaning tasks.
	The suction pipe is improperly connected or blocked due to inhalation of unknown objects.	Check whether the suction pipe is properly connected to the front of the suction rubber and the sewage tank, or whether there is blockage. Please adjust or remove it in time if necessary.
	The squeegee is not in good touch with the floor.	Adjust the height of the squeegee so that the rubber is in good touch with the floor.
	There is solid residue on the squeegee rubber, or the rubber has been deformed, damaged or seriously worn, which affects water suction.	Clean the squeegee rubber, adjust the structure shape or directly replace a new one.
	Seal failure	Please check whether the sewage tank is covered and the buckle is stuck. Please make sure that the head cover is closed and fastened.  Please check whether the cover of the manual drainage pipe is





		closed and sealed.
Poor cleaning effect	The roller brush is not cleaned for a long time. The dust and garbage are collected to much, which affects the cleaning effect.	Remove the roller brush for cleaning, and then restore it after cleaning.
	The roller brush is badly worn and has poor cleaning effect.	Replace with a new roller brush of the same specification.
	The amount of water is too small or the floor is too water absorbent.	Please increase water spraying parameter.
	The floor is too dirty and the machine cannot finish cleaning at one time.	Do pre-cleaning and pick up the fixed garbage before starting the cleaning tasks. You can repeat the cleaning task to ensure the final cleaning effect.
Unable to charge	Power socket cannot provide power.	Make sure the power socket is connected and you can connect the charger to another socket for verification.
	The charger is damaged and cannot be charged.	Please check whether the charger is green light on. After the charger is connected and charged, the red light will turn on and the cooling fan rotates. If it does not meet the above conditions, please stop charging and contact professional technicians.
	The battery is damaged and cannot be charged	If the charger works normally, but the percentage of battery does not increase with the extension of charging time, it indicates the battery is damaged or abnormal. Stop charging and contact






	properly.	professional technicians.
Failure to turn on	The main power switch is off	Turn the main power switch.
	The battery is dead.	Charge the battery.
	The key switch is off.	Turn on the key switch.

If you have tried all the solutions to the above problems and the problem still persist, or if the problem you are experiencing is not on the above list, please promptly contact the distributor or professional technician for further help. Thank you for your support.



## 6. Product Specifications

C5 parameters			
Serial number	Categories	Specification Items	Parameter information
1	Machine specifications	Dimensions	820 (L) x 680 (W) x 1130 (H) mm
2		GVW	215Kg
3		Maximum operating speed	1.0 m/s
4		Vertical obstacle passing height	15mm
5		Angle of climbing	 $\leq 2\%$
6		Minimum pass width	800mm
7		Minimum turning radius	1720mm
8		Noise	$\leq 70\text{db (A)}$
9		Vibration	$\leq 2,5 \text{ m/s}^2$
10	Cleaning parameters	Battery specification	24V, 80Ah
11		Rated input	24VDC, 50A
12		Working Current	25A
13		Charging time	1.5 h
14		Battery Life	Scrubbing: 3h Dust mopping: 8h



15	Cleaning width (including side brush)	840mm
16	Corner cleaning distance (with side brush)	0cm
17	Cleaning width	550mm
18	Maximum cleaning efficiency	1920 m <sup>2</sup> /h
19	Roller brush motor power	400W*2
20	Pressure intensity on the floor from roller brush	16kPa
21	Clean water tank capacity	45L
22	Sewage tank capacity	45L
23	Garbage collection box capacity	1.8 L
24	Squeegee width	730mm
25	Maximum interference amount of roller brush	5mm
26	Maximum amount of spraying water	800ml/min
27	Intensity of vacuum pumping	18.18 kPa



## 7. Product nameplate label description



The symbol with the crossed-out wheeled bin means that electrical and electronic equipment must not be disposed of with household waste. Consumers are legally obliged to collect electrical and electronic equipment separately from unsorted municipal waste at the end of their useful life. In this way, an environmentally friendly and resource-saving recycling is ensured. Batteries and accumulators that are not firmly enclosed by the electrical or electronic device and can be removed without being destroyed must be separated from the device before it is handed over to a collection point and taken to a designated disposal facility. The same applies to lamps that can be removed from the device without destroying them. Owners of electrical and electronic devices from private households can hand them in at the collection points of the public waste disposal authorities or at the collection points set up by the manufacturers or distributors. The disposal of old devices is free of charge. Dealers with a sales area of at least 400m<sup>2</sup> are obliged to take back electrical and electronic equipment. The same applies to grocers with a total sales area of at least 800 m<sup>2</sup>, provided they offer electrical and electronic equipment permanently or at least several times a year. Distance sellers with a storage area of at least 400 m<sup>2</sup> for electrical and electronic equipment or a total storage area of at least 800 m<sup>2</sup> are also obliged to take them back. In general, distributors are obliged to ensure that old devices are taken back free of charge by providing suitable return options within a reasonable distance. Consumers have the option of handing in an old device free of charge to a distributor who is obliged to take it back if they purchase a new device of the same value with essentially the same function. This possibility also exists for deliveries to a private household. In distance selling, the possibility of free collection when purchasing a new device is limited to heat exchangers, display devices and large devices that have at least one outer edge with a length of more than 50 cm. The distributor must ask the consumer when concluding the purchase contract whether they intend to return the goods. Apart from that, consumers can hand in up to three old devices of a device type to a distributor's collection point free of charge, without this being linked to the purchase of a new device. However, the edge lengths of the respective devices must not exceed 25 cm.



The CE mark indicates that the product meets the requirements of the European Union's health, safety and environmental protection regulations and can be sold and distributed within the member States of the European Union.

Disclaimer: The product complies with the relevant CE certification directives, including:

Directive 2006/42/EC - Machinery directive(MD) .

Directive 2014/53/EU - Radio equipment directive(RED).





Directive 2011/65/EU - Restriction on the use of certain hazardous substances in electrical and electronic equipment(RoHS) Annex II and its amendment



This FCC label states that the device has been tested under Part 15 of the FCC Rules and meets the restrictions for Class B digital devices. These restrictions are intended to provide reasonable protection against harmful interference in residential installations. The equipment complies with radio frequency exposure limits set forth by the FCC for an uncontrolled environment.



Before using the C5 product, please read the product manual carefully to avoid poor experience and other risks.

SAVE THESE INSTRUCTIONS.

