



U1

UV disinfection robot user manual

Produced by Shuangqing Technology (Hangzhou) Co., Ltd.

Table of Contents

1、 Introduction.....	1
2、 Safety rules.....	1
3、 Product introduction.....	2
3.1、 Product/Accessories List.....	3
3.2、 Product basic parameters.....	5
4、 Robot installation and operation process.....	5
4.1、 Initial operation flow.....	6
4.2、 Robot disinfection workflow.....	6
5、 Initial operation.....	6
5.1、 Robot charging.....	6
5.2、 Install charging pile.....	8
5.3、 Install the robot.....	8
5.4、 Robot power on and off (including other button instructions).....	10
5.5、 Use tablet to connect robot hotspot.....	12
5.6、 Log in to the tablet app.....	13
5.7、 Create a map.....	14
5.8、 Edit map.....	15
5.8.1 Modify the map-remove obstacles.....	16
5.8.2 Modify map-virtual wall.....	17
5.8.3Marking dot-charging point.....	18
5.8.4Marking dot-navigation point.....	19
6、 Start using the robot.....	21

6.1、New disinfection task.....	22
6.1.1、Immediate disinfection task.....	22
6.1.2、Scheduled disinfection tasks.....	25
6.3、Elimination process.....	28
6.4、Disinfection record.....	28
6.5、Statistical data.....	29
6.6、Seetings.....	30
6.6.1、Disinfection settings.....	31
6.6.2、Robot settings.....	31
6.6.3、Robot details.....	34
7、Automatic recharge.....	36
8、Security protection mechanism.....	37
8.1、Software protection mechanism.....	37
8.2、Hardware protection mechanism.....	37
8.3、Forced stop mechanism.....	38
9、Accessories instructions.....	38
9.1、Joystick.....	38
9.2、Protective suit.....	39
9.3、Remote control.....	39
10、Appendix.....	39
10.1、Troubleshooting instructions.....	39
10.2、Care instructions.....	40
10.3、Common problem.....	41
10.4、Appendix.....	43
10.5、Contact details.....	44

1、Introduction

This manual is a user manual for UVC robot product instructions, quick start guide, safety information and correct maintenance concepts. This manual is suitable for U1 model. In order to ensure your correct use, it is recommended that you read it carefully and Understand the entire manual.

2、Safety rules

Before using this product, please follow the following safety rules.

- * Before using this product, please read and understand the entire manual.
- * When installing the product, please follow the instructions strictly.
- * Please strictly follow the instructions when using the product, and do not use it with other products.
- * Strictly follow the instructions during the disinfection process.
- * For product safety during use, please memorize the safety protection mechanism of this manual (Chapter 8).
- * When using this product, please wear protective clothing for the personnel operating this product.
- * Please deliver the remote control to the administrator to ensure that the security protection mechanism is effectively activated during the use of this product.
- * When a fault occurs, please refer to 10.1 troubleshooting instructions in this manual.
- * Please refer to 10.2 maintenance instructions of this manual, and perform maintenance work regularly.
- * When operating this product, please ensure that the operator has the authority to operate the product.
- * Do not let this product be used by other operators who are not familiar with this product.

3、Product introduction

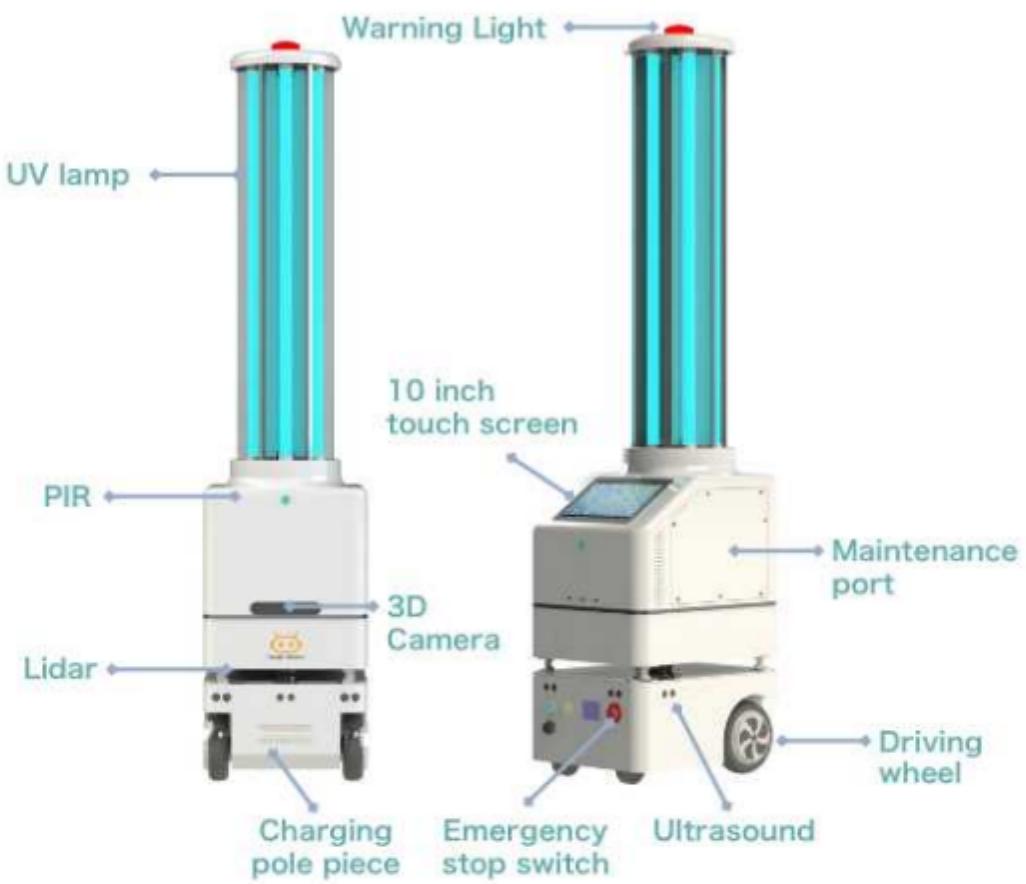
Futural U1 uses a smart chassis as a carrier and integrates an ultraviolet disinfection system. Combining the robot's intelligent movement and autonomous work characteristics, it realizes full-automatic and rapid UV disinfection in the whole area without manual intervention, reducing the intensity of manual work and the risk of infection.

The use of short-wave UVC ultraviolet rays for disinfection and sterilization can destroy the DNA and RNA of the germs in a few minutes, which can effectively achieve the killing effect. After testing, its disinfection mode can kill 99.99% of the spores on the surface of the environment (smooth surface, rough porous surface) and various multi-drug resistant bacteria.

It is suitable for biosafety laboratories, infectious wards, ICU wards, inspection departments, scientific research institutes, dust-free workshops, schools, food companies and other places that require space for regular disinfection.

In order to achieve this effect, please read and understand this manual thoroughly. According to the instructions provided in the manual, perform disinfection settings for the area to be disinfected, and conduct disinfection consultation with the technicians you contact before proceeding with disinfection.

In addition, the UVC robot can only be used for disinfection. Please do not use it in combination with other related products or accessories not provided in this manual, otherwise it will cause unnecessary safety hazards or cause a certain degree of damage to the product. If you fail to abide by the operation of this manual during use, the relevant warranty rules will be invalid, and the effective use of this UVC robot will not be guaranteed.



3.1、Product/Accessories List

No.	Part	Picture	Number
1	Smart chassis		1
2	Automatic charging pile		1
3	Light box		1

4	UV lamp		8
5	Protective suit		Optional
6	Warning sign		1
7	Remote control		1
8	Joystick		1
9	Guarantee		1
10	Warranty Card		1
11	Allen wrench		1
12	USB cable		1
13	7 inch tablet		1
14	Type-C usb cable		1

3.2、Product basic parameters

Components	Specification
Overall size	460×380×1722 mm
UV lamp	6 pcs
Ultraviolet radiation	360°
Radiation illuminance at 1 meter	600uW/cm ²
Sterilization rate	Kill 90 square meters in 10 minutes
UV power	330W
Type of battery	Lithium battery
Battery capacity	45Ah
Battery interface	29.4V
Charging method	Automatic / Manual
Charging pile charging time	2.5h (10%-80%)
Lidar	270° , 10m
Ultrasound	7 groups
3D Camera	3D obstacle avoidance
PIR	Front and rear, cone angle 140°
Drive way	2 front wheel drive + 2 rear guide wheels
Maximum clearance width	3cm
Maximum walking speed	1.2m/s
Navigation walking speed	0.48m/s

4、Robot installation and operation process

After receiving the robot for the first time, the initialization operation needs to be completed first. After the initialization operation is completed, the robot

can be disinfected. In addition, please refer to 4.1 and 4.2 for the specific details of the initial operation process and the robot disinfection workflow.

Initial operation process --> Robot disinfection workflow

4.1、Initial operation flow

Install the charging pile --> install the robot --> turn on and off the robot --> log in to the tablet --> create a map --> modify the map --> mark and do a dot --> save the map

4.2、Robot disinfection workflow

The robot disinfection workflow is divided into two types of disinfection workflows: "immediate disinfection task" and "timed disinfection task".

***Immediate disinfection task:**

Add an immediate disinfection task --> select the disinfection location and task type --> go to the disinfection area/location --> count down to prepare for disinfection work --> start disinfection --> return to the charging station after the disinfection task is completed

***Timed disinfection task:**

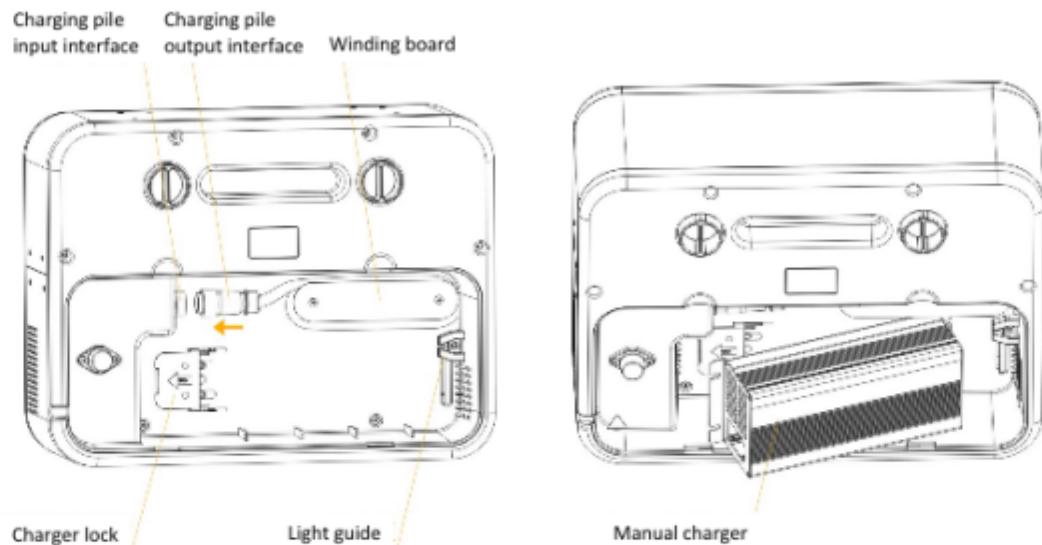
Add a scheduled disinfection task -> select the disinfection location and task type --> go to the disinfection area/location after the scheduled time is up --> count down to prepare for disinfection work --> start disinfection --> return to the charging station after the disinfection task is completed

5、Initial operation

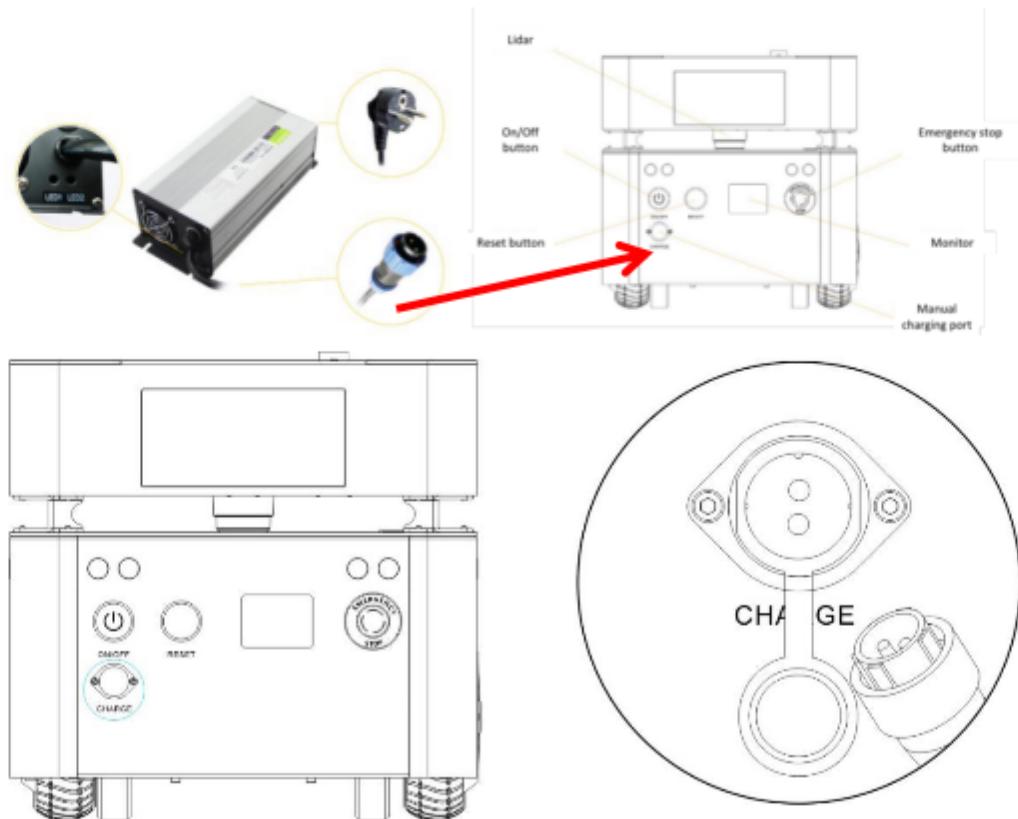
5.1、Robot charging

After the "smart chassis" and the "charging pile" are taken out of the

package, it is recommended to remove the "manual charger" behind the charging pile and charge the smart chassis first.



Insert the "manual charging head" into the "manual charging port" of the smart chassis for charging. After the charging is completed, the subsequent initialization of the robot can ensure that the robot does not need to be recharged during the initialization process, thereby interrupting the initialization work.



5.2. Install charging pile

Place the charging pile in a suitable location, and plug it in after placement.

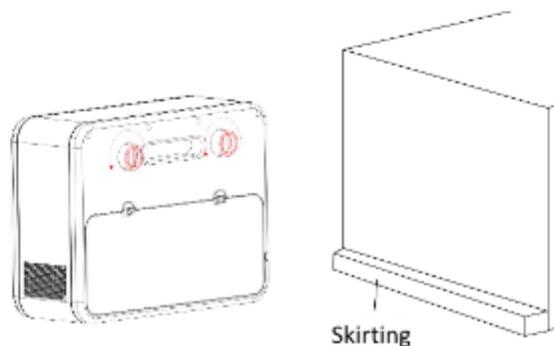
The placement requirements are as follows:

- (1) Please do not place any obstacles within a radius of 2.5 meters around the wall of the power supply. If there are obstacles in the selected wall area, please remove the obstacles to effectively ensure that the robot automatically recharges effectively.
- (2) Please ensure that the ground and wall are flat, and place the charging pile against the wall. Please do not place it on an uneven place, it may shake the charging pile after installation, causing the automatic recharging work to not work normally.



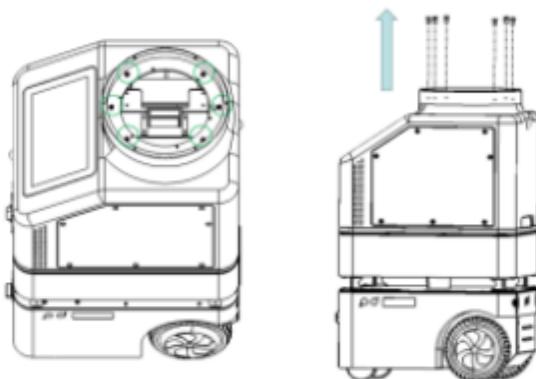
Place this side against the wall
and ensure that there is no
obstacle in the surrounding

- (3) For walls with skirtings, please adjust the charging pile knob so that the back of the charging pile is close to the wall to increase the stability of the charging pile.

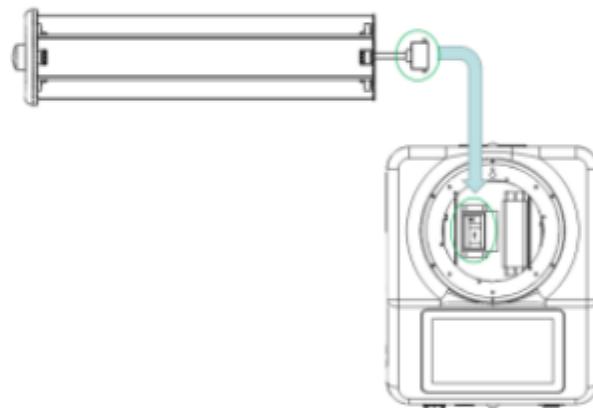


5.3. Install the robot

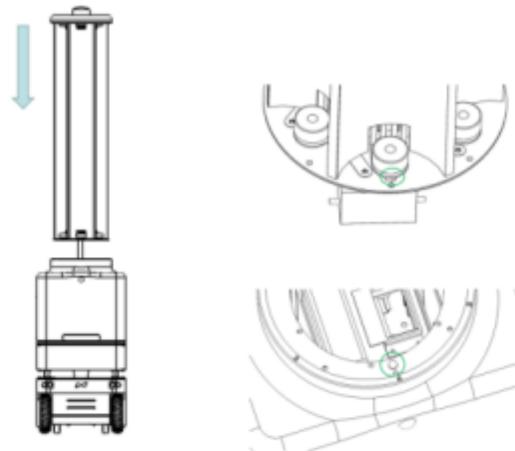
Step 1: Use the M5 hexagon socket tool in the box to remove the 6 bolts pre-installed on the top of the host.



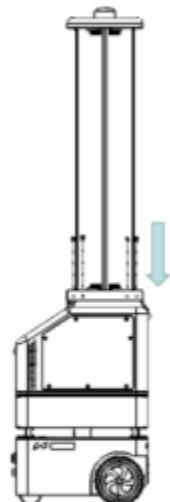
Step 2: Connect the movable wire harness connector on the side of the light box with the wire harness connector fixed in the main box



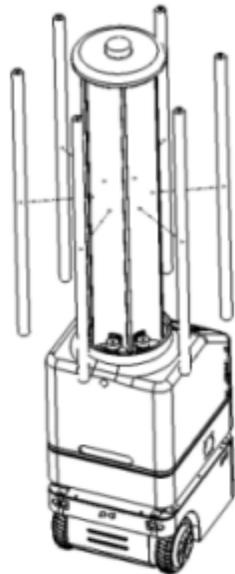
Step 3: Install the light box on the host vertically, insert the positioning hole at the bottom of the light box into the positioning post near the host number "4".



Step 4: Put the 6 bolts taken out in step 1 back to their original positions.

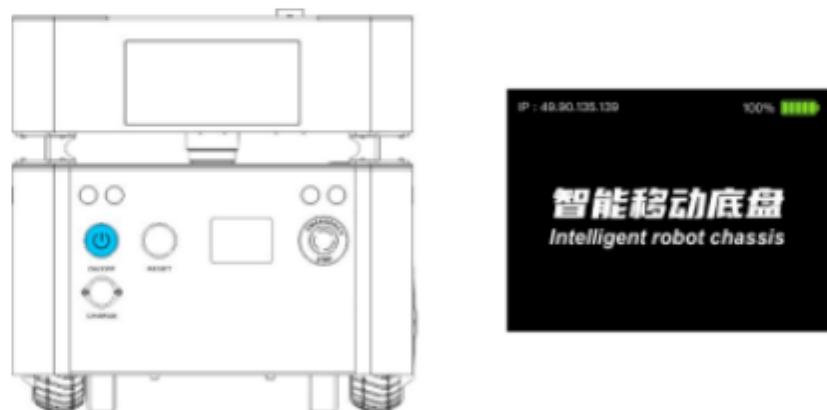


Step 5: Take 6 UV tubes packed in the box, put the upper and lower ends of each tube into the lamp holders at the upper and lower ends of the same light box, and then rotate the tubes. When you hear two beeps, it means Installed in place.

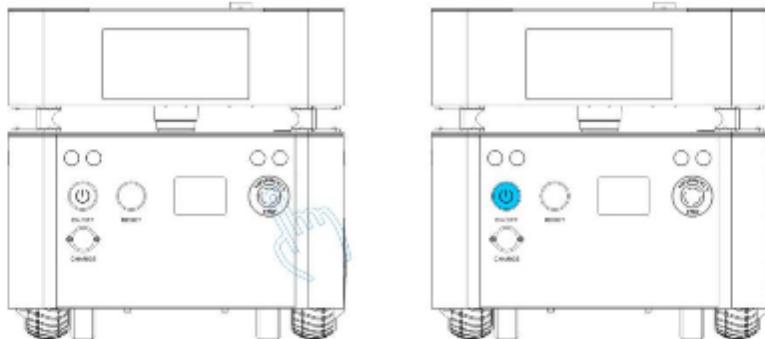


5.4、Robot power on and off (including other button instructions)

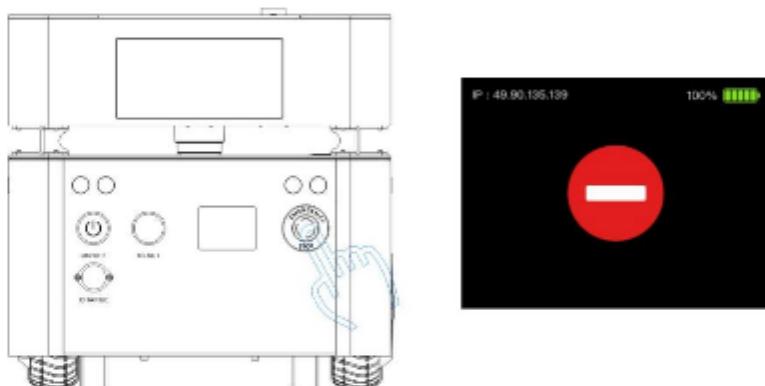
(1) **Power on:** Press the ON/OFF button to indicate that the iris is illuminated, which means normal startup. After normal startup, the screen will display as shown below.



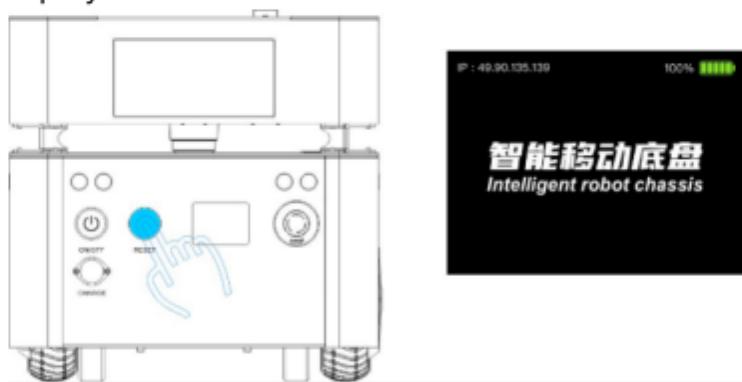
(2) **Power off:** Press the STOP button first to stop the robot, then press the ON/OFF button, release to complete shutdown.



(3) **Pause:** Press the STOP button, the machine stops moving, and the screen displays as follows.

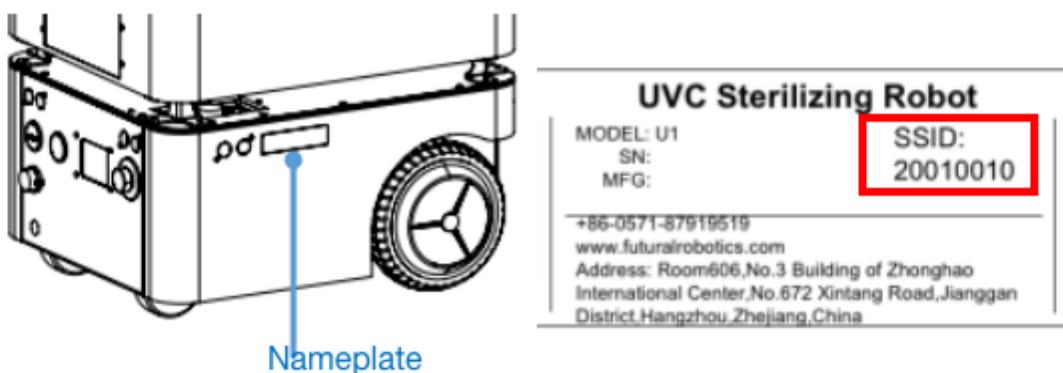


(4) **Unpause:** You need to press the STOP button first, and then press the RESET button to release the emergency stop. After resetting, the screen will display as shown below.



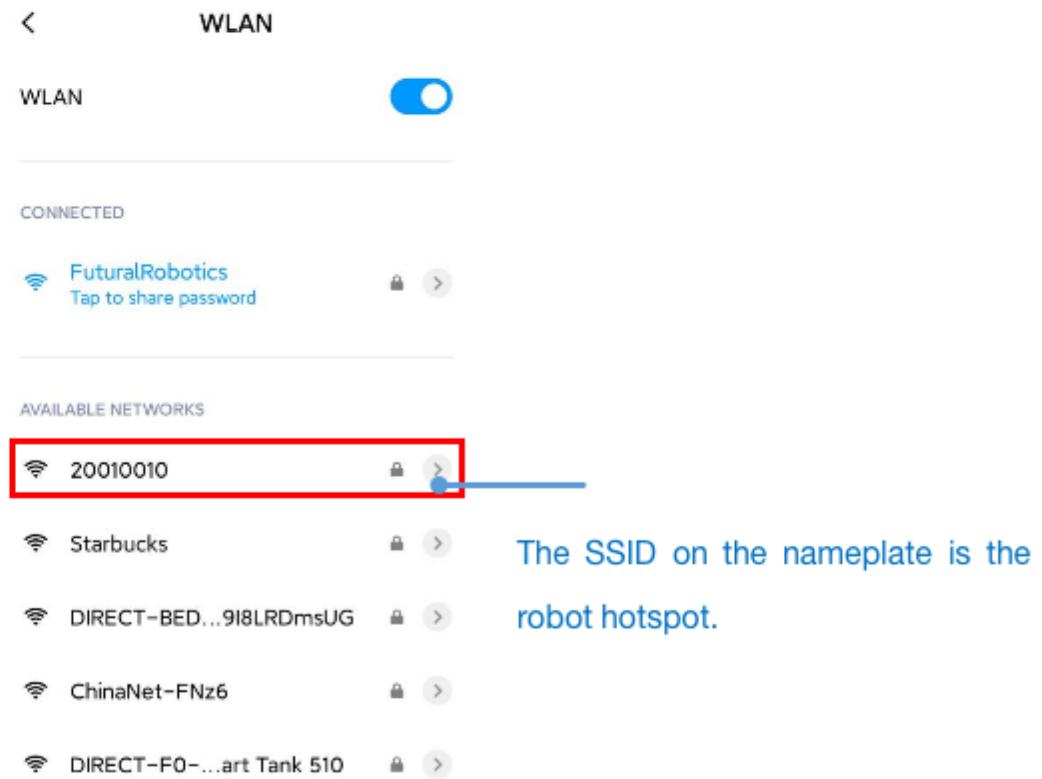
5.5、Use tablet to connect robot hotspot

After the robot is turned on, please turn on the tablet, and then turn on WiFi to connect to the robot hotspot. The steps are as follows: "Turn on the tablet --> system settings --> WLAN".

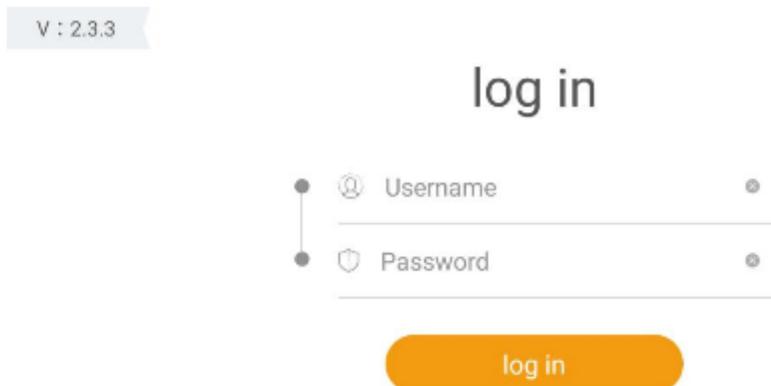


The robot hotspot needs to check the SSID on the nameplate (as shown in the picture above, each SSID is unique and different), and then find the corresponding SSID in the WIFI list of the system on the tablet, which is the hotspot (as shown in the picture below, the SSID on the nameplate will be displayed WIFI list), you need to enter a password when you click to connect, the password is as follows:

Password: @futural



5.6、Log in to the tablet app



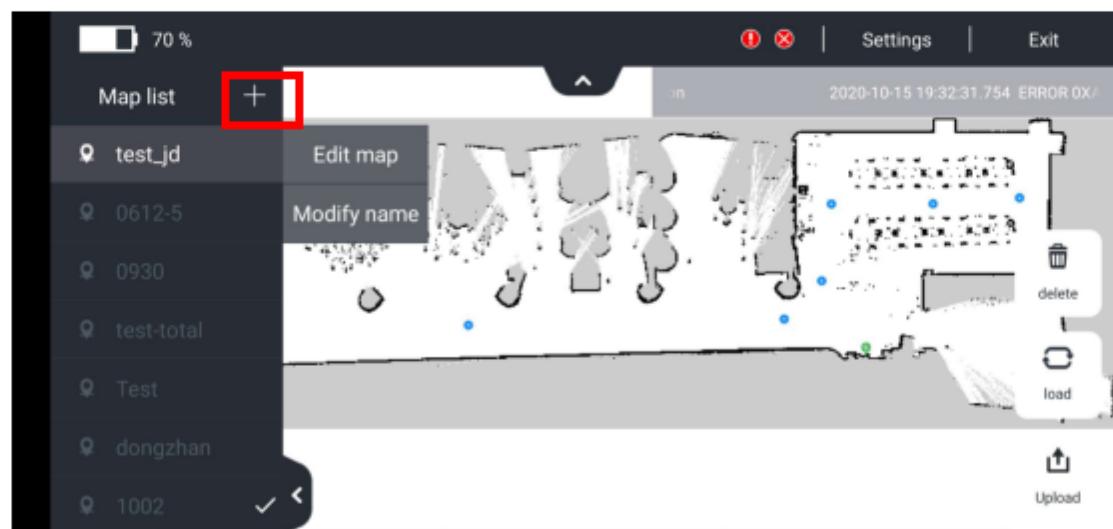
After turning on the tablet, click to open the "Futural Robotics" APP.

After you finish opening the APP, you will enter this login page, follow the prompts to enter your login name and password, and click login after entering.

Login name: admin

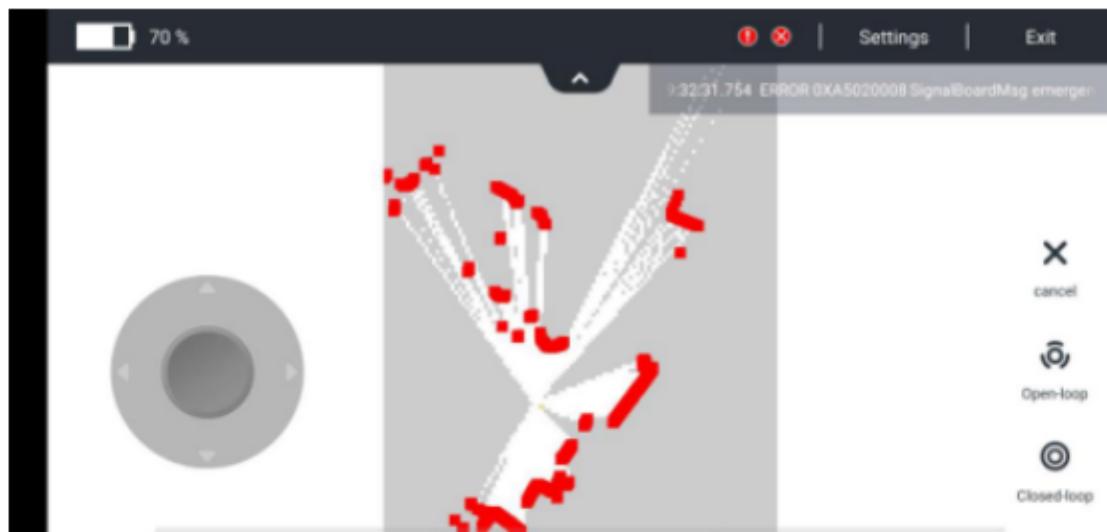
Password: Robot

5.7、Create a map



After logging in, you will enter the interface above, click on the "+" on the left

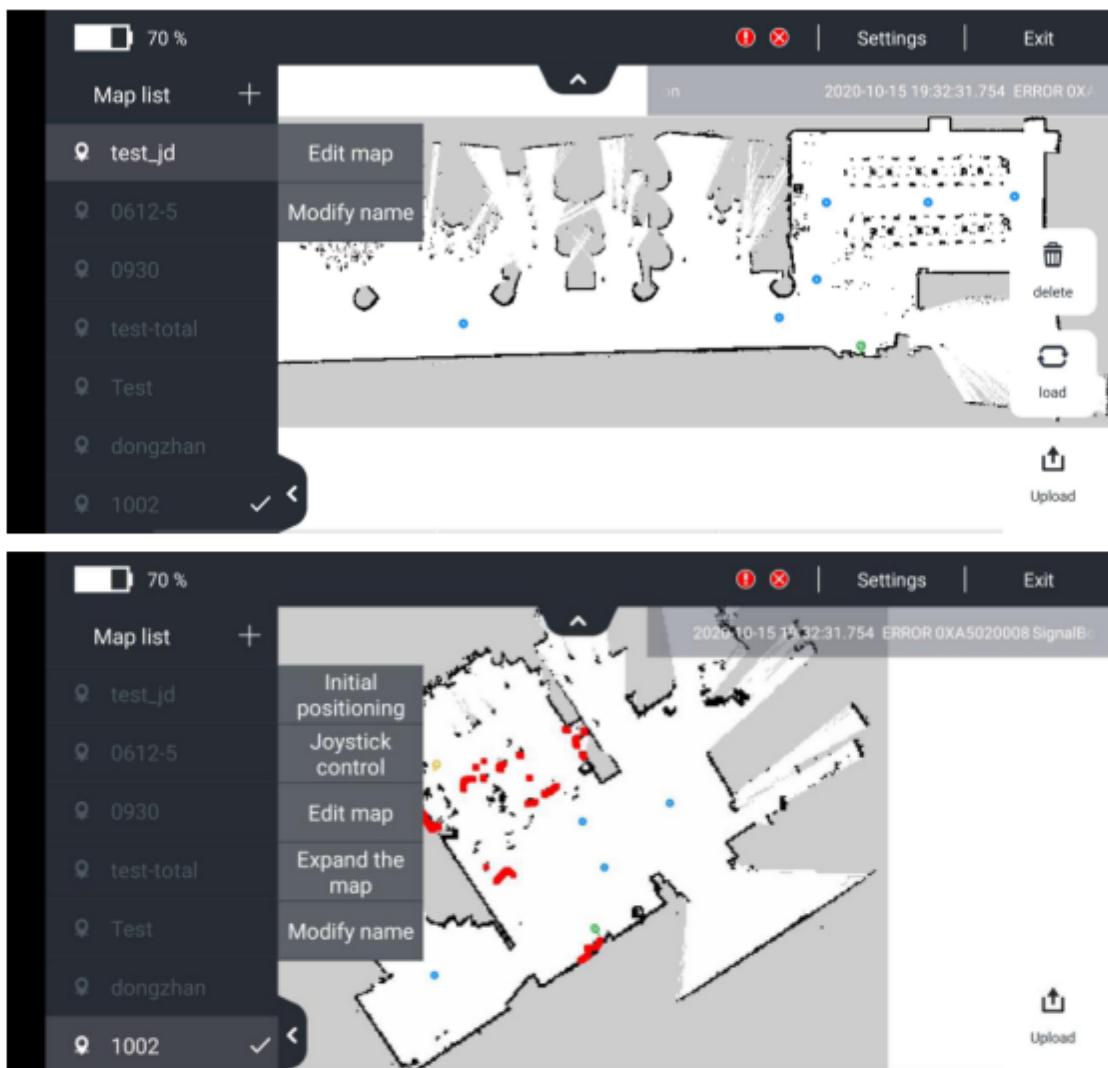
side of the map list to start building the map.



Use the virtual joystick on the left to operate the robot to create a map, and the white area is the completed scanning area. When the entire mapping is scanned, you can select "Open-loop mapping" and "Closed-loop mapping", and the map will be generated after selection. The difference between open-loop mapping and closed-loop mapping is introduced as follows:

- **Open-loop mapping:** Different from closed-loop mapping, it is a map type with lower similarity, and you can choose to use open-loop mapping.
- **Closed-loop mapping:** The built maps have high similarity, such as long corridors, circular maps, etc. Please select the closed-loop map.

5.8、Edit map



After the map is created, you can see the map list on the homepage. The map that has been created is displayed on the left side of the map list, but there will be missing scans during the map creation process, or in the case of special obstacles, manual operation is required to correct the pattern.

The above two pictures show two types of maps, ticked and not ticked. The ticked one is the default map of the system, and there are more options for editing and control, while the unticked one is the general map library.

After the map is created, you can edit the navigation points, charging points and map errors. You only need to select "Edit Map". The available editing tools include "**Remove Obstacles**", "**Virtual Wall**", and "**Charging point**" and "**Navigation point**".

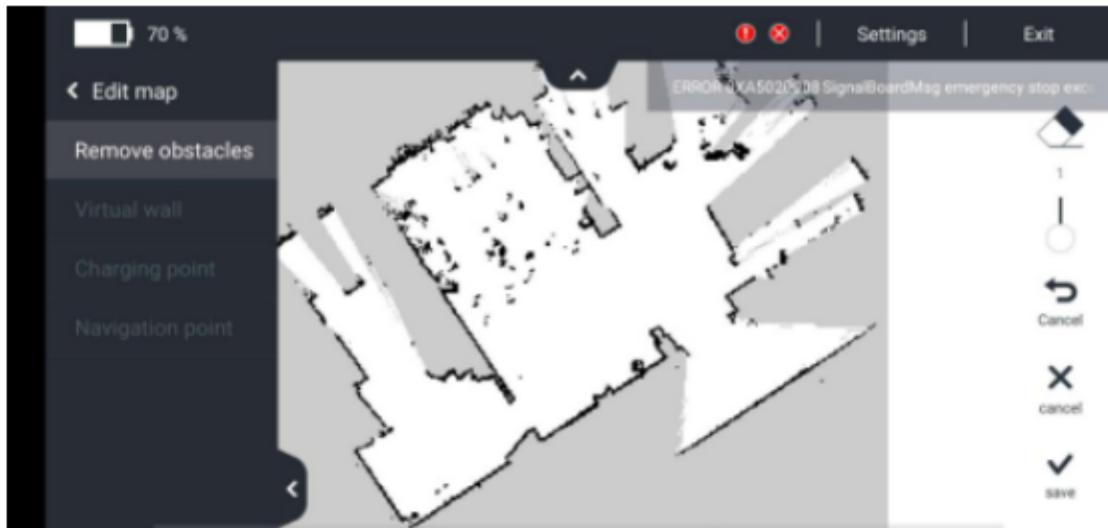


Please use "Remove obstacles" and "Virtual wall" to modify the map. "Remove obstacles" is to erase unnecessary areas, while "Virtual wall" can create a virtual wall. , After the establishment, the robot will default to the virtual wall being built as a wall, so the robot will not pass through the wall area during the mission.

Marking points are divided into "charging point" and "navigation point". The "charging point" is the location of the charging pile. If automatic charging is required, this point is necessary. The "navigation point" means that the robot will pass Or staying points, if you want to select disinfection points, these navigation points are the points that can be selected for disinfection.

5.8.1 Modify the map-remove obstacles

Generally, in the process of mapping, because there are moving objects on the route of the scan, which are regarded as obstacles, you need to use "remove obstacles" to remove them.



The size of the noise removed can be removed by dragging the size with the tool. If you decide that the black spots on the image after removal are not obstacles, you can use Remove Noise to remove them. If you find an error in the cleaning process, you can click to go back, and you can return to the state before cleaning. After clearing, click to save the revised map.



5.8.2 Modify map-virtual wall



The situation in the above picture is a complicated situation. The results of the scan during the mapping process will not be consistent with the actual situation, and the result is not identified as an obstacle, or when some areas do not want the robot to walk, you need to use the "virtual wall" function. The addition of obstacles and virtual walls. After adding, the robot will treat the virtual wall as a non-walkable obstacle.

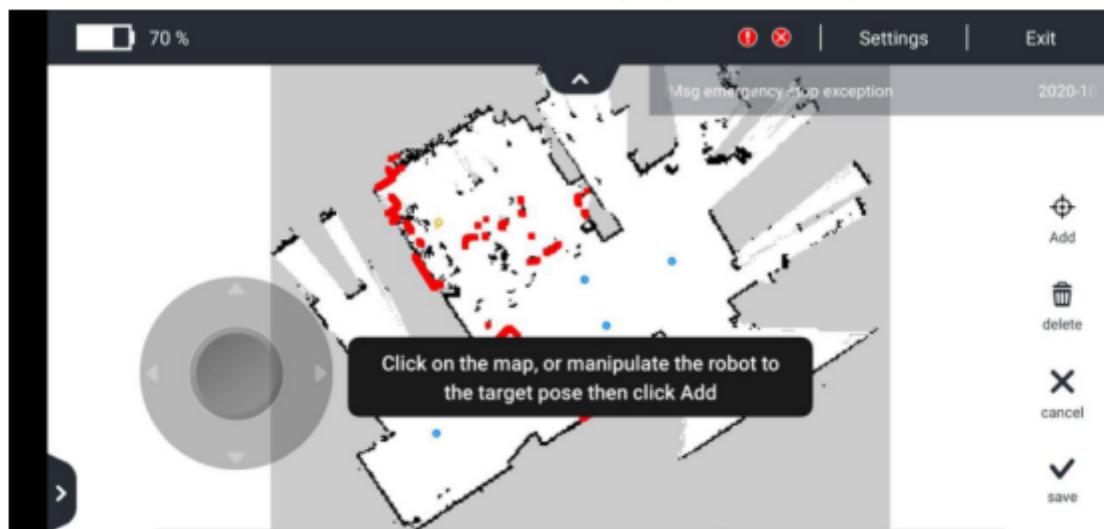


The virtual wall needs to be drawn by touching the screen with your finger. After drawing, you can compare the actual scene and plan to confirm that it is correct, and then save the settings of the virtual wall. If you need to change, you can add a new virtual wall, and delete unnecessary virtual walls.

5.8.3Marking dot-charging point

After clicking the "charging point", it is recommended to use the virtual

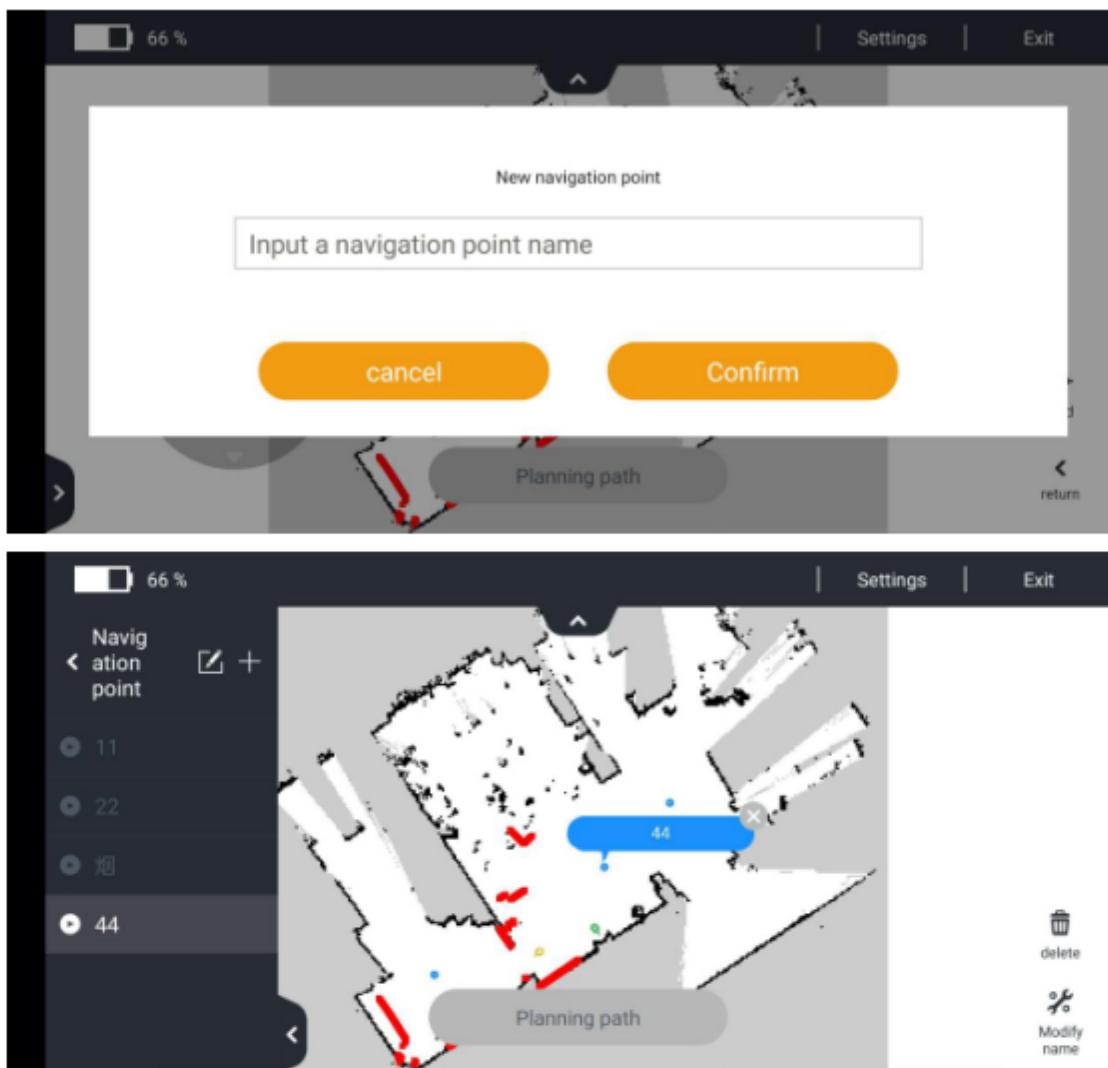
joystick on the left to control the robot to the position of the charging pile, and to correspond the charging pole piece to the charging pile. It is recommended that the distance be within 0.5m. When the robot reaches the set position, click  **添加** And click save, and finish charging point management.



In addition, only one charging point can be established per map, and multiple charging points are not supported.

5.8.4 Marking dot-navigation point

The navigation point construction logic is the same as the charging point. You can still use the virtual handle to control the robot to the location that needs to be disinfected, click Add, enter the corresponding navigation point name, and click OK to complete the navigation point creation.



In addition, in general scenarios, it is recommended that the linear distance between the navigation point and the navigation point is 5 meters. If higher intensity disinfection is required, the linear distance between the navigation points can be less than 5 meters. The shorter the distance, the more the For highly dangerous viruses, the corresponding table for the specific navigation point distance and disinfection time for the scene can be referred to the following table (the other table is the same as in the appendix 10.4).

Type of disinfection	Distance between navigation point and navigation point (m)	Time for disinfection of single navigation point (minutes)
----------------------	--	--

General bacteria	0.3	0.09
	0.5	0.14
	1	0.35
	1.5	0.73
	2	1.18
	2.5	1.77
	3	2.49
	3.5	3.09
	4	3.88
	4.5	4.76
Bacterial spores	5	5.75
	0.3	0.88
	0.5	1.35
	1	3.51
	1.5	7.34
	2	11.82
	2.5	17.73
	3	24.88
	3.5	30.86
	4	38.76
Fungal spores	4.5	47.62
	5	57.47
	0.3	5.4
	0.5	8.12
	1	21.05
	1.5	44.05
	2	70.92
	2.5	106.38
	3	149.25
	3.5	185.19
	4	232.56
	4.5	285.71
	5	344.83

6、Start using the robot

The scope of work on the PAD side is to plan disinfection maps and establish navigation points, while the software control on the robot side covers all disinfection-related tasks, including "New disinfection tasks", "Disinfection records", "data statistics" and "Settings". class.

6.1. New disinfection task

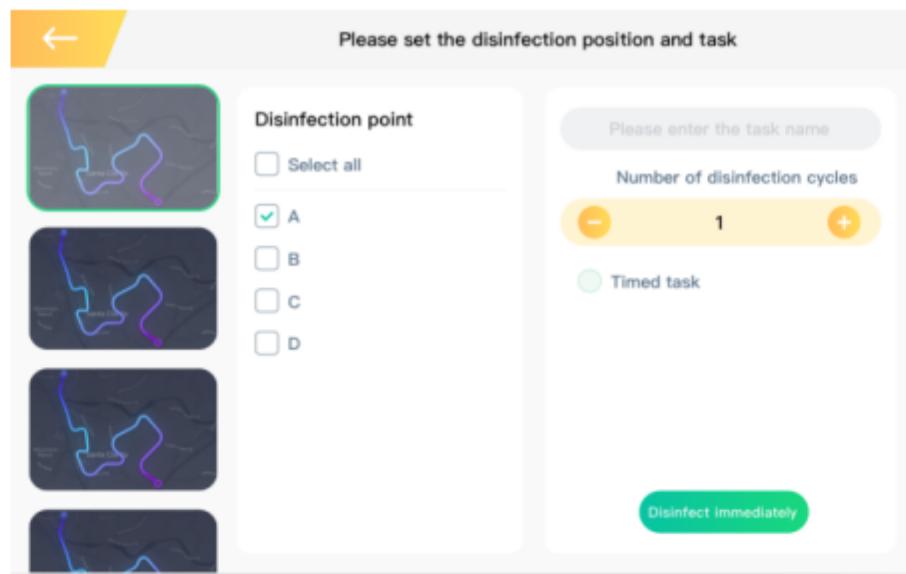
To create a disinfection task, please click "New Plan" in the upper right corner of the homepage. The new plan is divided into "**Immediate disinfection task**" and "**Timed disinfection task**". Different tasks can be selected according to on-site disinfection needs. See 6.1.1 for immediate disinfection tasks, and 6.1.2 for scheduled disinfection tasks.



6.1.1. Immediate disinfection task

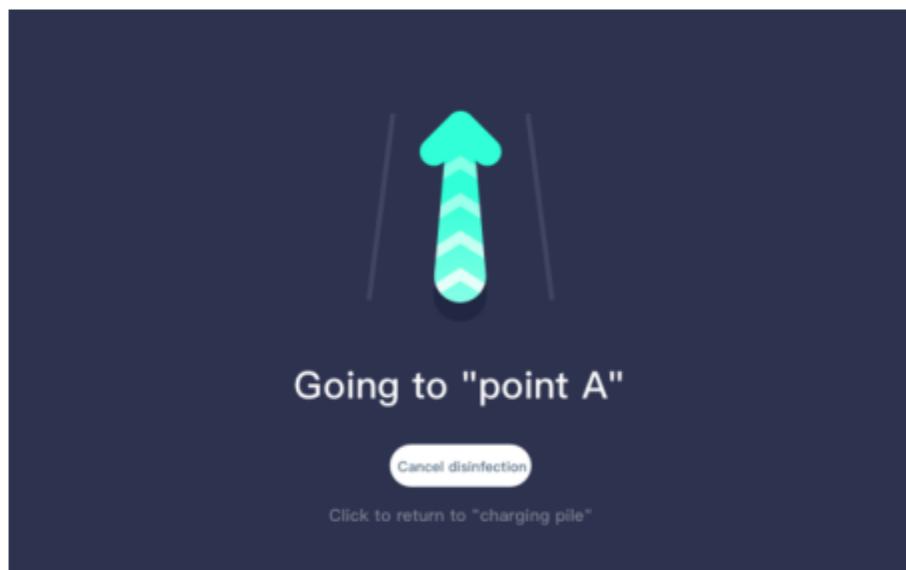
After clicking the new plan, you need to set the disinfection location and task. The leftmost is map selection, and the right is to select the disinfection location (the location of the point is the navigation point established by PAD for the map), and the rightmost is to fill in The name of the disinfection task and the number of disinfection cycles. After selecting and setting all the above, click "Disinfect Now" to start the disinfection task.

Remarks: If you click the timed task, it is to set the timed disinfection task. For details about the timed disinfection task, please refer to 6.1.2.



After the robot receives the immediate disinfection task, it will go back to the nearest navigation point and prompt you to the target location of the robot.

Note: If you find that the task setting is wrong at this time, you can click "Cancel disinfection" to cancel the action at this time. After the robot accepts the cancellation action, it will return to the charging station.

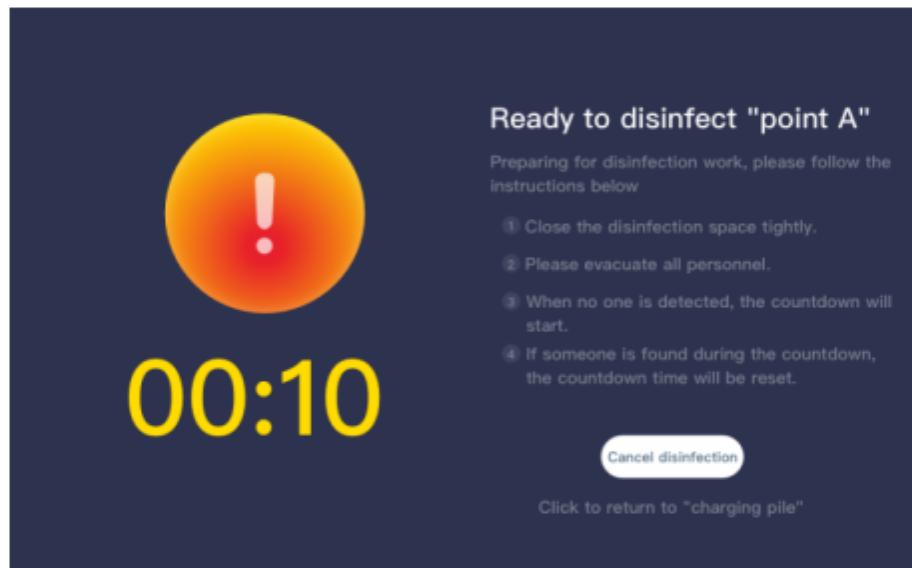


When the robot reaches the designated navigation point, it will start the countdown work only when there is no one or an animal, and only after the countdown is completed, will the disinfection work start. In the preparatory work phase, the robot will voice announcement and flashing warning lights to inform that it is preparing for disinfection.

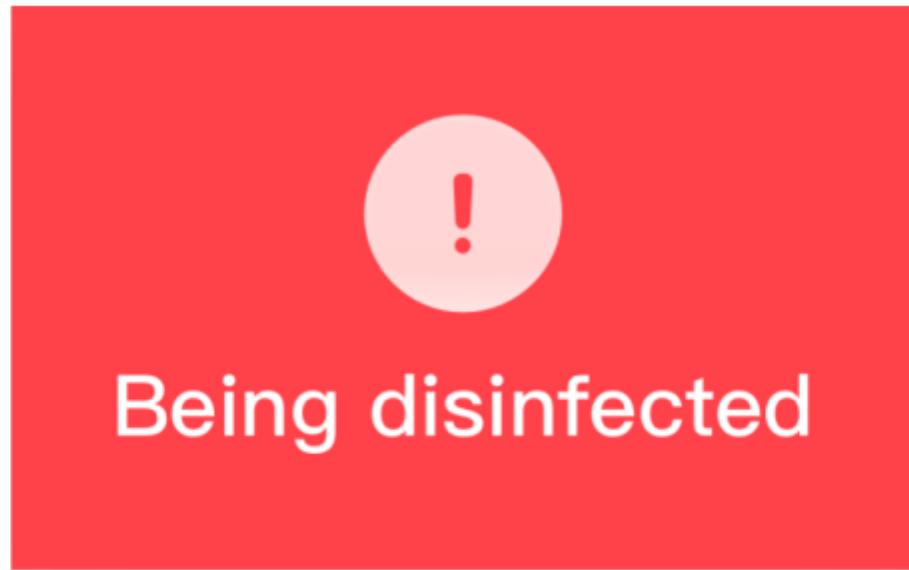
The following are the precautions when preparing for disinfection:

- *Please close the space to be disinfected.
- *Please evacuate all personnel.
- *When a person or animal appears in the countdown phase, the countdown seconds will be reset and paused. The disinfection start will not restart until the person or animal has left.
- *The default countdown second is 10 seconds.

Note: If you find that the task setting is wrong at this time, you can click "Cancel disinfection" to cancel the action at this time. After the robot receives the cancellation action, it will return to the charging station.

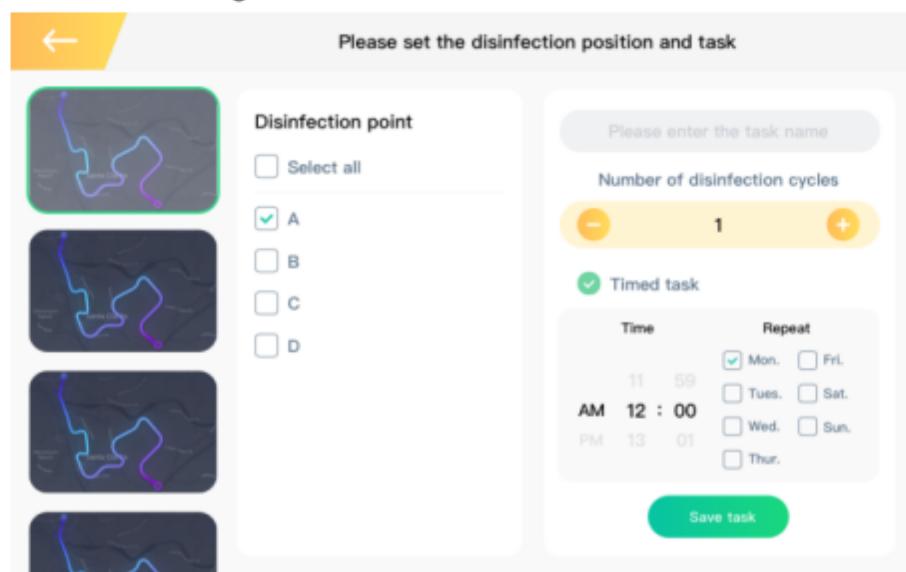


After the countdown is over, the robot starts to perform disinfection work. During the disinfection process, a voice announcement and a flashing warning light will inform that the disinfection work is in progress. The default disinfection time for each disinfection position is 10 minutes. If you need a longer disinfection time, please refer to 6.4.1 for setting changes.

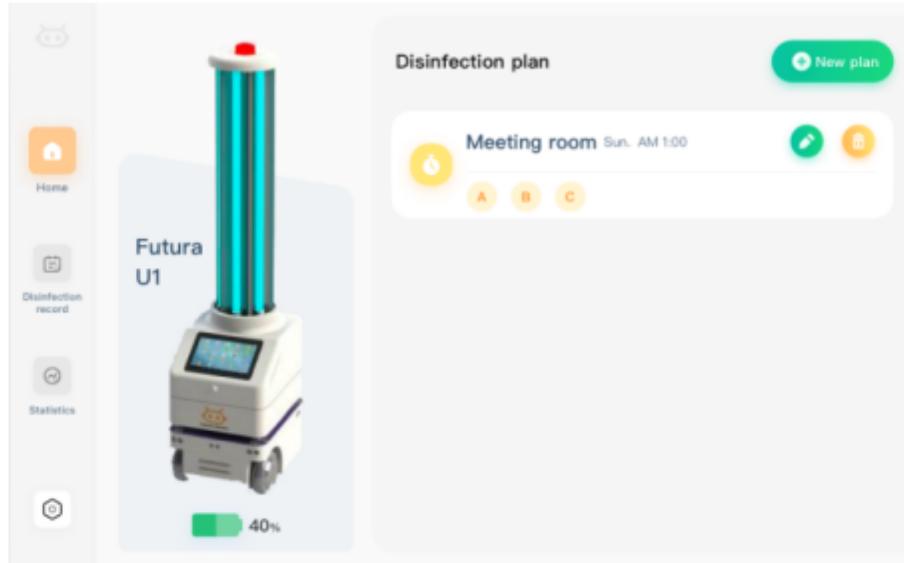


6.1.2. Scheduled disinfection tasks

The timed disinfection task is the same as the immediate disinfection task. To set the timed disinfection task, click "Add Plan" on the home page, and set the selection of the disinfection area and location, edit the task name and select the number of disinfection cycles. The only difference is that the scheduled disinfection task needs to check the "timed task" button. After checking, you need to select the time and repetition period. After the above settings are completed, select the save task to complete the scheduled disinfection task setting.



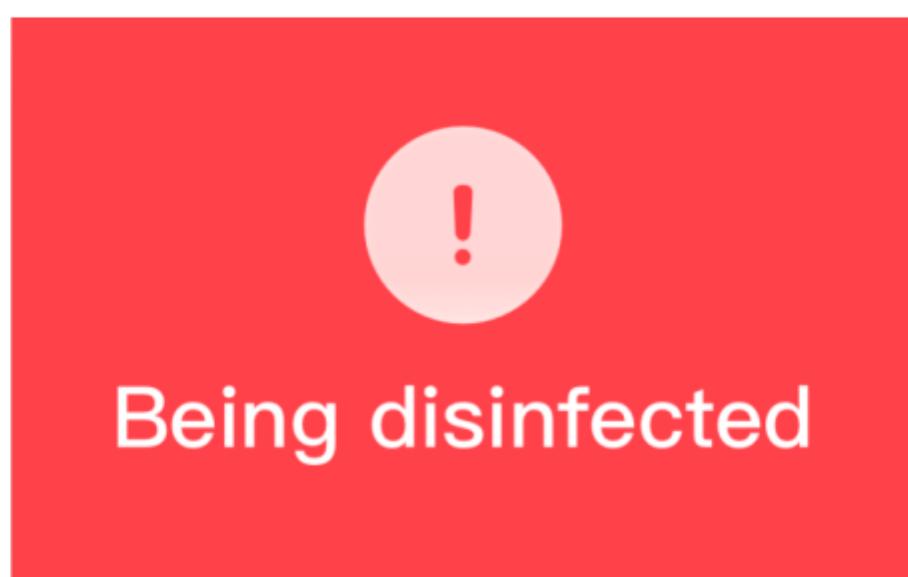
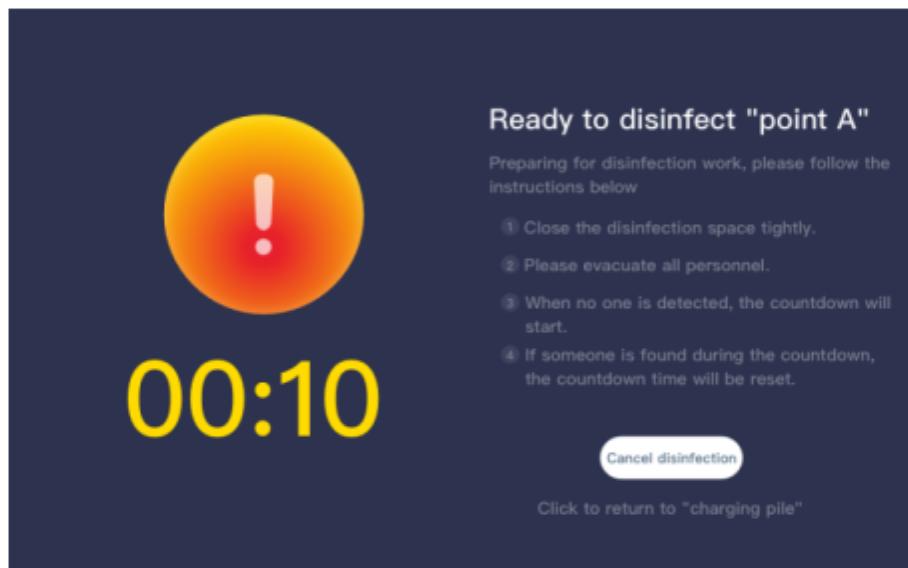
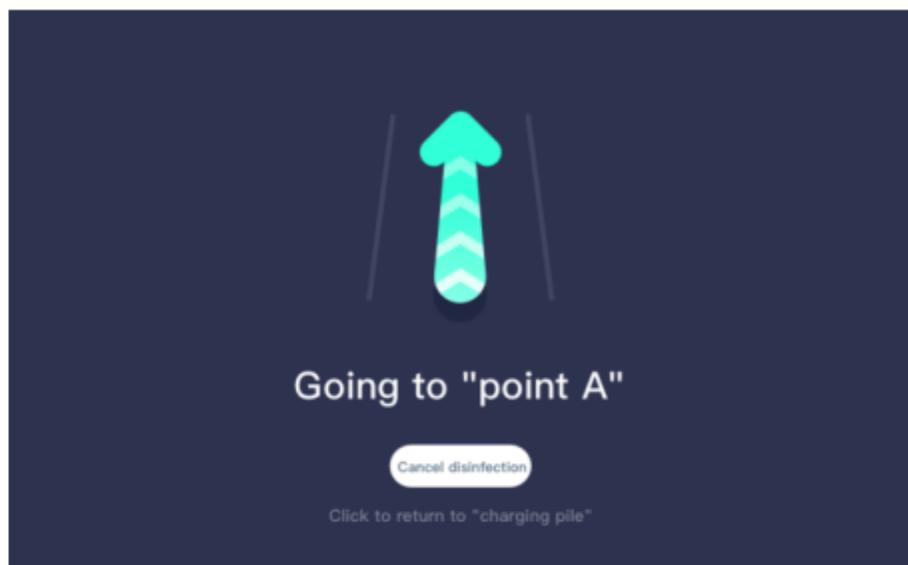
After the scheduled disinfection task is saved, it can be viewed, edited and deleted on the home page.



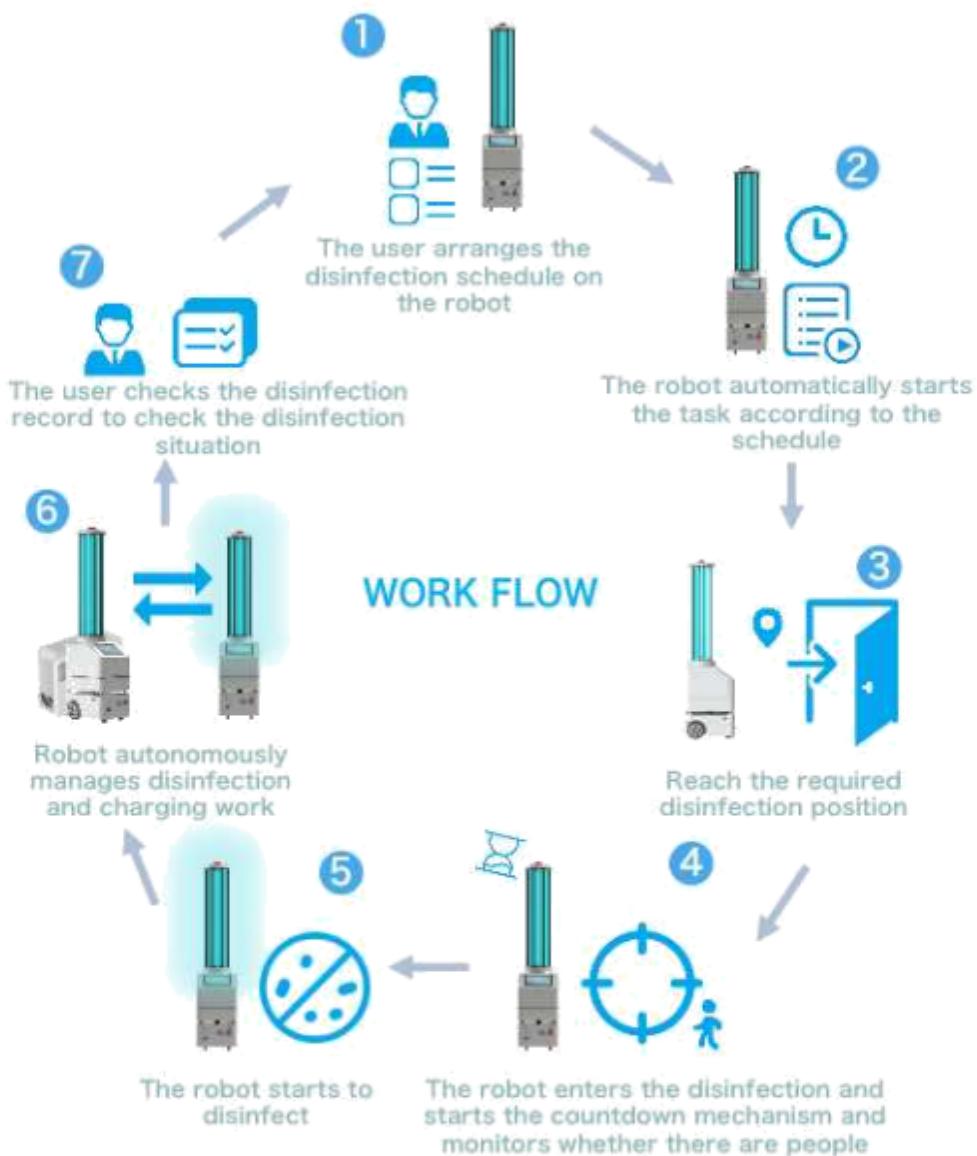
The set timed disinfection task will automatically execute the disinfection task when the start time is reached. The process of executing the disinfection task is equivalent to that of the immediate disinfection task. It will first go to the nearest navigation point, and after reaching the navigation point, perform the countdown to prepare for disinfection , Disinfection will begin immediately after the countdown is complete.

[The disinfection task process when the scheduled time of the scheduled disinfection task arrives:](#)

* Go to the disinfection area/location --> Countdown to prepare for disinfection work --> Start disinfection --> Return to the charging station after the disinfection task is completed



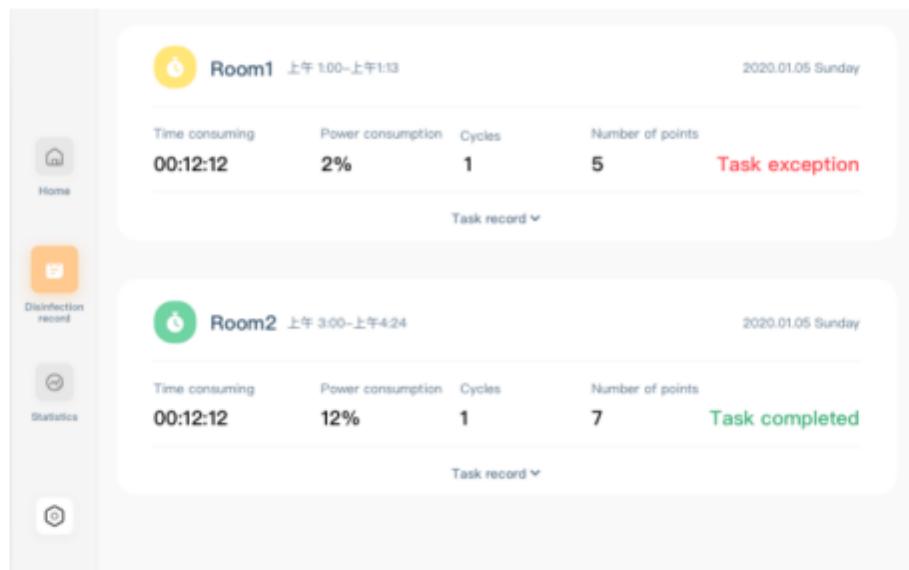
6.3、Elimination process



6.4、Disinfection record

The disinfection record will record each disinfection situation for you, and you can judge from the disinfection record whether the task performed each time

is normal.



Each disinfection record will record the task record in detail, and display the results of the execution. You can also check the task record and troubleshoot the abnormality that occurred (for troubleshooting, please refer to 10.1).

Point	Task type	Starting time	End time	The result of execution
A	Spot disinfection	2020.06.07 AM1:00	2020.06.07 AM1:00	Finish
B	Spot disinfection	/	/	Jump point
C	Spot disinfection	2020.06.07 AM1:00	2020.06.07 AM1:00	Abnormal disinfection
D	Spot disinfection	/	/	Not performed
Charging pile	Return, Recharge	/	/	Not performed

6.5、Statistical data

The statistical data mainly shows the disinfection use time, cumulative disinfection time and the number of cumulative disinfection tasks of the six ultraviolet lamps.



It is worth noting that the service life of each lamp tube is 2000 hours. If it exceeds this service life, the disinfection effect will be reduced, so please remember to replace the lamp at this time. After the lamp is replaced, please click "Reset", the statistics will be reset to zero and start to calculate the lamp disinfection statistical time for you again.

In addition, the label of the lamp can correspond to the upper edge of the lamp of the robot, and the upper edge of the lamp will display the number, which is convenient for you to replace the lamp, and you can calculate the disinfection time corresponding to the corresponding numbered lamp.

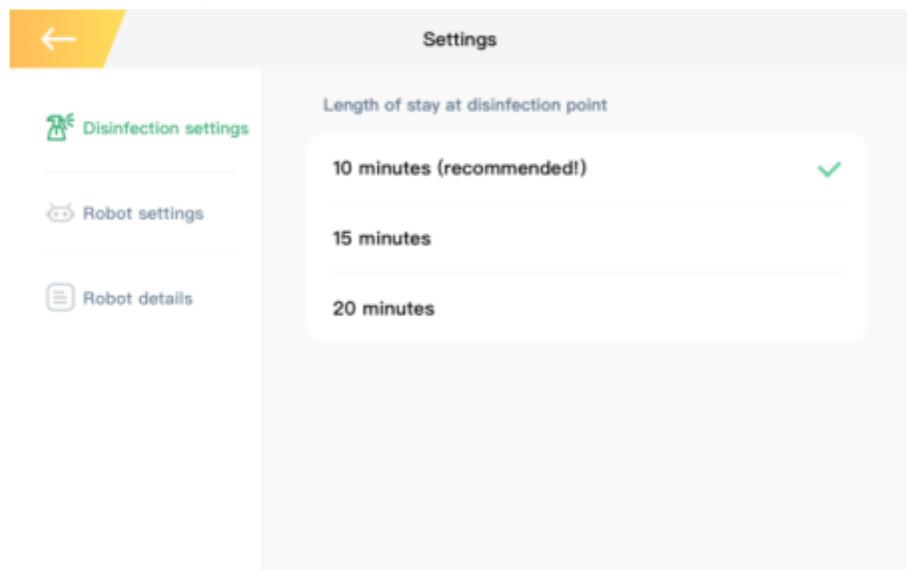


6.6、Seetings

The settings are divided into "Disinfection settings", "Robot settings" and "Robot details"

6.6.1、Disinfection settings

The disinfection setting part is set for the "Disinfection point disinfection duration". Each time the robot performs a task, it will stop at the disinfection point and start disinfection, and will stop and disinfect according to the set disinfection duration. The recommended disinfection time is 10 minutes, and you can adjust the disinfection time at the disinfection point according to the scope and situation you want to disinfect.



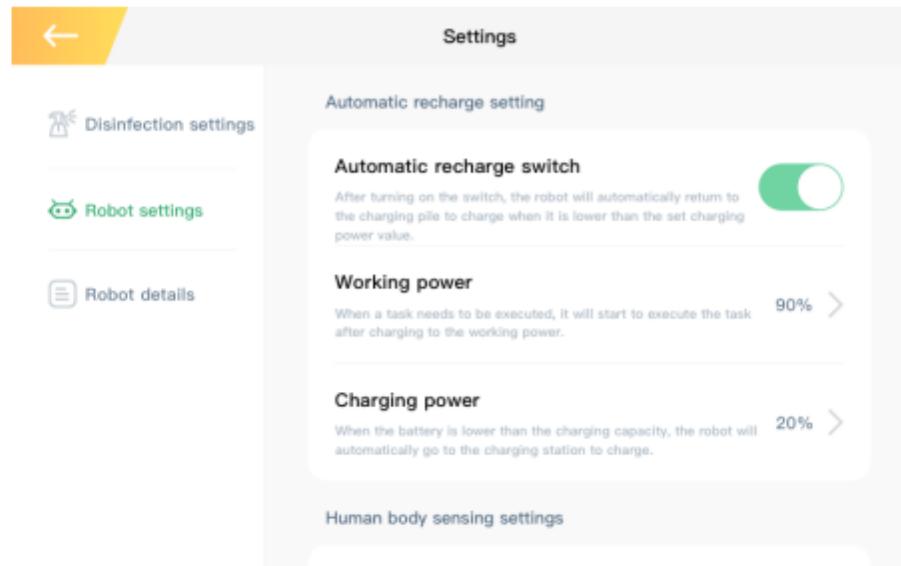
6.6.2、Robot settings

The robot settings are divided into "Automatic recharging settings" and "Human body induction settings".

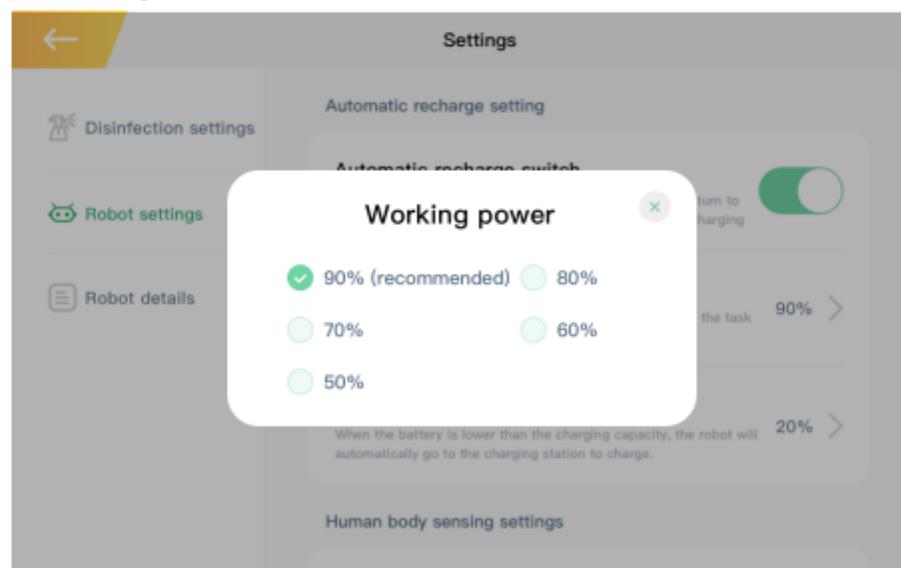
The automatic recharging setting is divided into "Automatic recharging switch", "Working power" and "Charging power". The detailed setting function description is as follows:

* Automatic recharging switch: The automatic recharging switch is divided

into two states: "on" and "off". When the automatic recharging switch is turned on, the robot will automatically return to the charging pile to charge when the amount of charging power is lower than the set value .

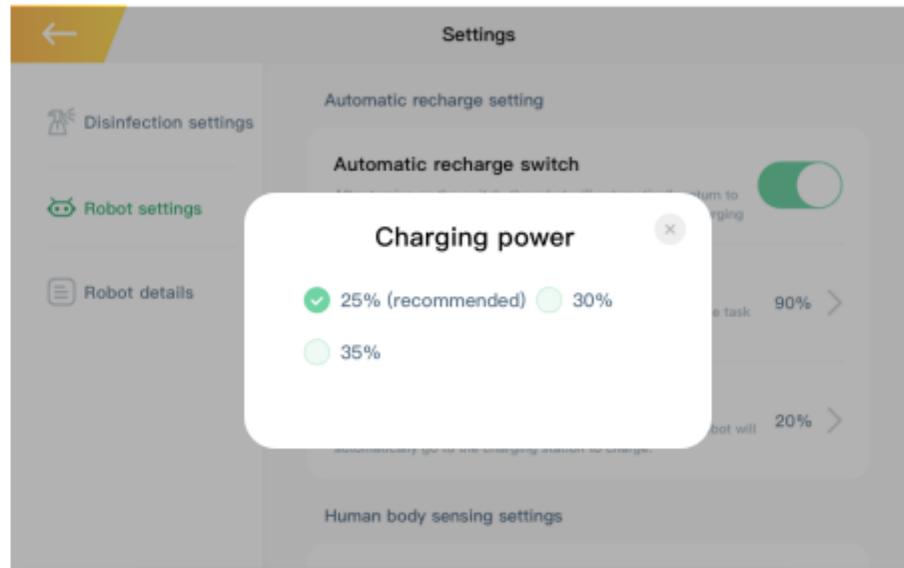


*Working power: The purpose of setting working power is that when there is a task that needs to be executed, the work will start after being charged to the working power. The power percentage setting of working power is divided into five values: 90%, 80%, 70%, 60%, and 50%. The recommended working power percentage is 90%.

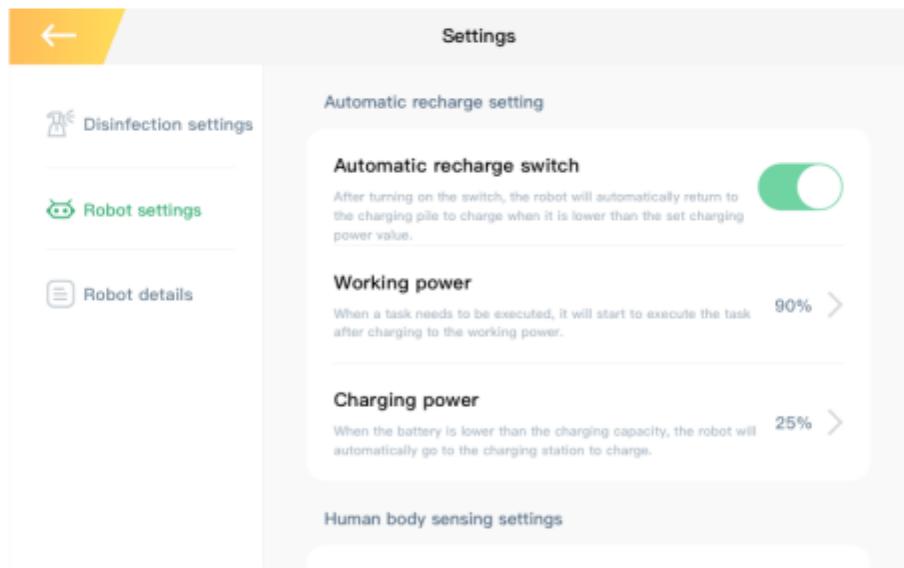


* Charging power: The purpose of charging power setting is that when the battery power is lower than the charging power, the robot will automatically

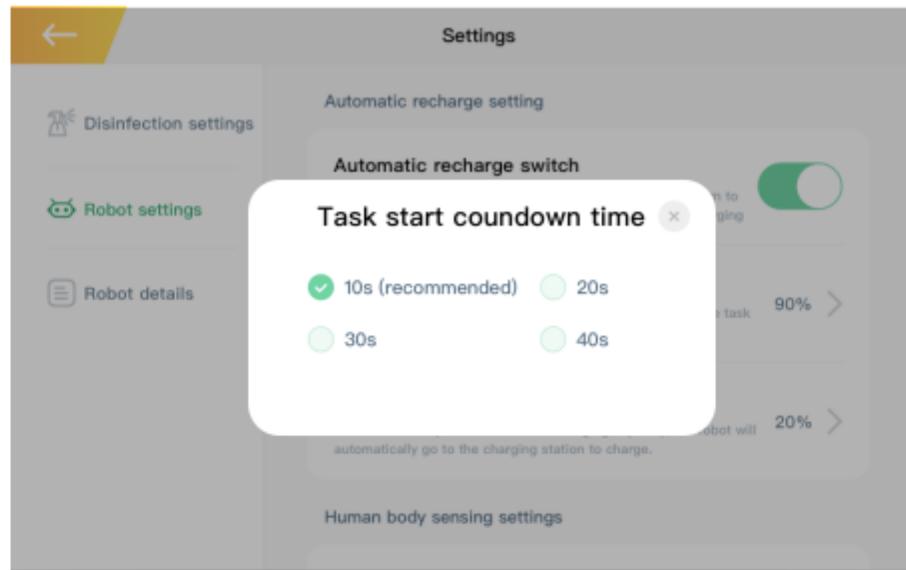
charge to the charging station. The charging power percentage setting is divided into 25%, 30% and 35%, and the recommended charging power percentage setting is 25%.



* Human body induction switch: After the human body induction switch is turned on, when someone is found during the task, the task will be suspended immediately.

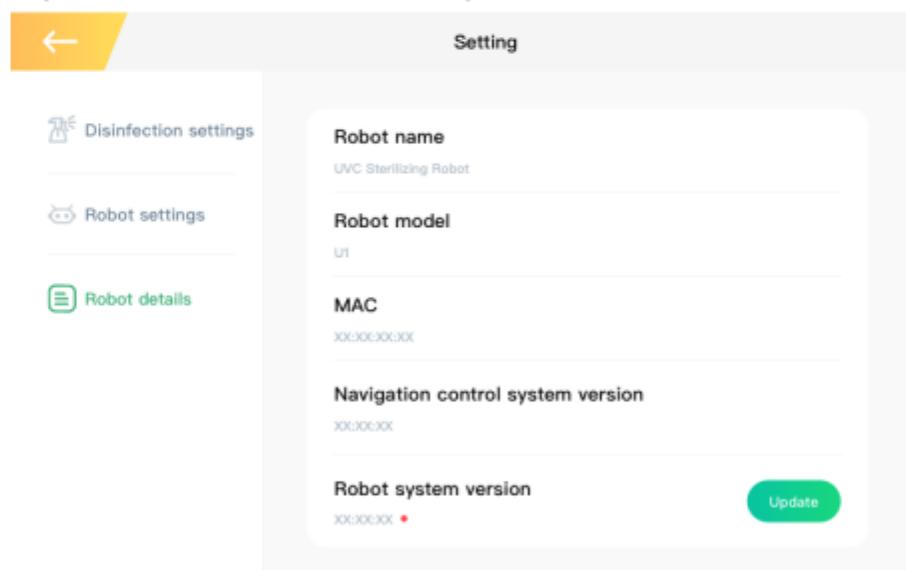


* Task start countdown time: When the task is about to start, it will enter the countdown timer. The countdown time is 10 seconds, 20 seconds, 30 seconds and 40 seconds. When the countdown is completed, the robot starts to perform the task.



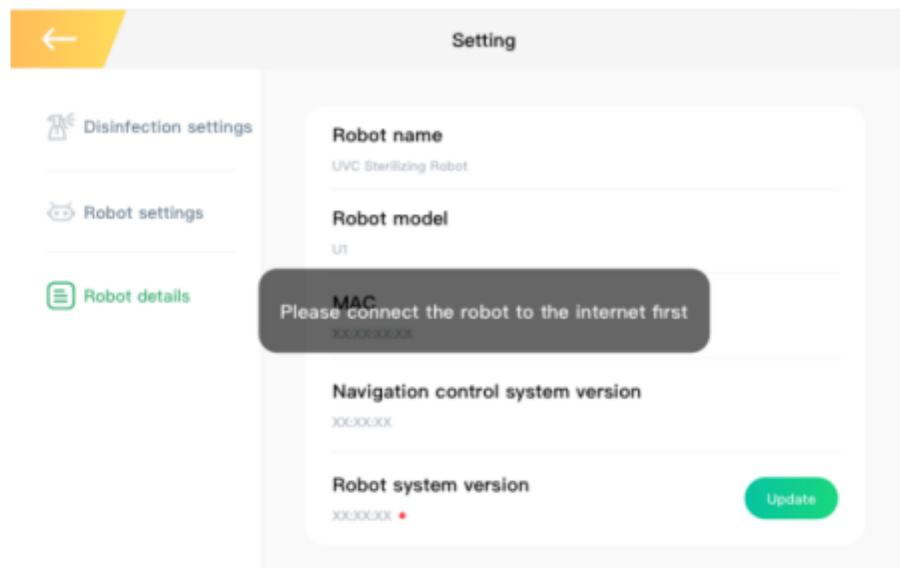
6.6.3、Robot details

Robot details include "Robot name", "Robot model", "MAC", "Navigation control system version" and "Robot system version".

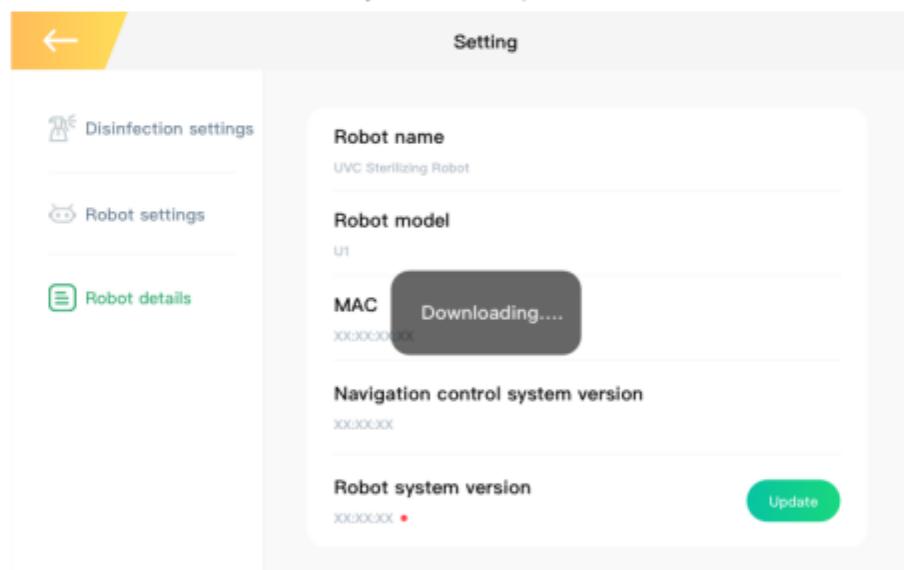


*Robot system version: The version of the robot system will be monitored. When there is a new version, a red dot reminder will be displayed, and you can click the "Update" button to update the system version. When the robot is not connected to the Internet, when you click "Update", you will be prompted to connect to the Internet, please refer to 6.5.4 for the Internet

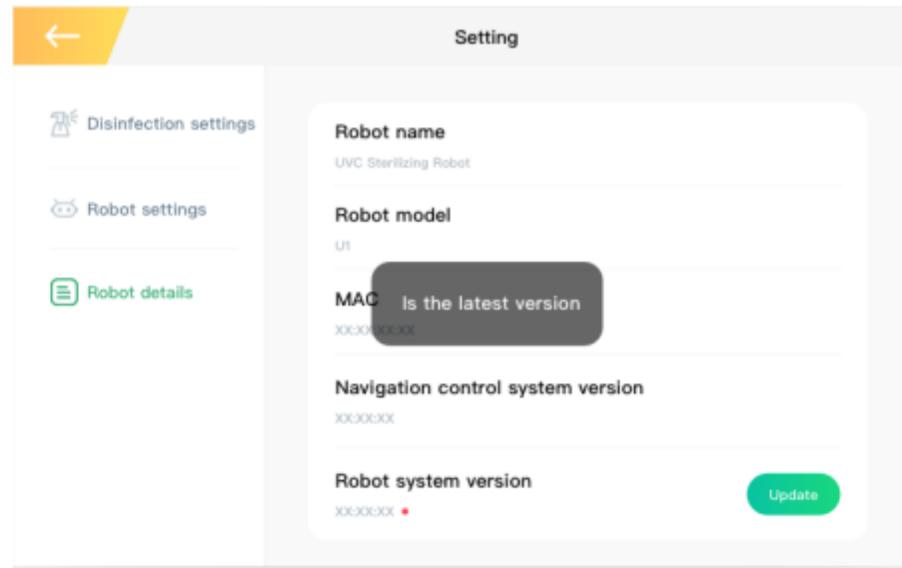
connection operation).



When the robot is connected to the Internet and the version needs to be updated, it will download when you click Update.



When the robot is already the latest version, clicking update will display to inform you that it is the latest version.



7、Automatic recharge

First of all, the automatic recharge switch can be set in the settings (see 6.4.2). When the automatic recharge switch is turned on, the robot will automatically recharge according to the following logic.

*Automatic recharge logic for scheduled disinfection tasks –

	Power is lower than charging power	The power is between the charging power and the working power	Power is higher than working power
No task	Automatic recharge	Stay at the charging point	Stay at the charging point
Task in progress	Recharge after the task is suspended, and perform the task after charging to the working power	Continue the task	Continue the task
Scheduled tasks are ready to be executed	After charging to the working power, perform the task	Start execution task	Start execution task

*Automatic recharge logic for immediate disinfection tasks –

	Power is lower than charging power	The power is between the charging power	Power is higher than working power

		and the working power	
No task	Automatic recharge	Stay at the charging point	Stay at the charging point
Task in progress	Recharge after the task is suspended, and perform the task after charging to the working power	Continue the task	Continue the task
Start an immediate disinfection task	It cannot be started, and the immediate disinfection task can be started until the charge exceeds the charge capacity.	Start execution task	Start execution task

8、Security protection mechanism

8.1、Software protection mechanism

*Task error can be cancelled:

When the disinfection task is in progress, there are two situations to cancel the task. The first is to click the cancel button when the task goes to the disinfection point. The second is when the task is ready to be executed, you can click the button to cancel the task in the countdown screen that appears.

*Countdown mechanism:

When the disinfection task is ready to be executed, it will enter the countdown, and there is no need to worry about the disinfection work when it reaches the disinfection point. During the countdown process, you can evacuate people and leave the disinfection point. After the countdown, you can start disinfection.

8.2、Hardware protection mechanism

*Human body detection:

After the human body induction detection is turned on (need to turn on the human body induction switch, please refer to 6.4.2), it will monitor the presence of people during the disinfection and the countdown of the task.

When a person appears during the disinfection process, the robot will stop disinfection and enter the countdown status page. After the person leaves, it will reset the countdown seconds and count down. After the countdown is complete, the robot will start disinfection.

8.3、Forced stop mechanism

Remote control:

In the event of an abnormal failure, or when you want to cancel the robot action in an emergency shutdown task, you can use the remote control provided in the accessory kit. After pressing the shutdown button, the upper half of the robot can be turned off.

9、Accessories instructions

9.1、Joystick



The joystick is used to control the robot, and the robot can be controlled without the cumbersome PAD login.

When the joystick is in the normal power-on state of the robot, insert the handle receiver into any USB port of the robot. After connecting, you only need to press the A key and press the front, back, left and right keys to

operate the robot control.

9.2、Protective suit



The protective clothing is used when setting up immediate disinfection. The left picture is used for wearing on the head, the middle picture is worn on the body, and the right picture is worn on the hand. After the wear is confirmed, the immediate disinfection setting can be performed.

9.3、Remote control



The remote control is used in the disinfection process and needs to stop the robot immediately. You can press "Off" to turn off the robot's UV lamp. On the contrary, press "ON" to turn on the UV lamp (it will not be turned on immediately after pressing it, but the UV lamp can be turned on smoothly when the task is executed next time).

10、Appendix

10.1、Troubleshooting instructions

1.What should I do if the robot fails halfway?

First confirm whether the robot is turned on. If it is not turned on, please try to turn it on and press the RESET button. If it cannot be turned on, please confirm whether it is dead, if it is dead, try using a hand charger to charge it. After successfully booting, you can use the handle to control the robot to the charging pile and re-plan the disinfection task.

If the fault is halfway for many times, and it has not been effectively solved, please try to contact after-sales personnel.

2.The robot cannot walk and the wheels will not move?

Please confirm whether the emergency stop switch is pressed, if it is pressed, release it to unlock it.

3.The robot cannot be turned on?

Please check if charging is required. Check whether the machine process is correct.

10.2、Care instructions

This chapter requires careful reading. It is recommended that you use Futural U1, which requires simple routine maintenance work once a week. The work content is as follows:

1. Please use the handle to connect the robot, and listen to whether there is any abnormal sound when walking. If any abnormality is found, please contact after-sales personnel.
2. Please check whether there is any damage on the appearance of the robot. If there is related damage, please contact after-sales personnel.
3. Please check the disinfection records, check the detailed records of robot tasks this week, and check whether there are any abnormal tasks. If the records show abnormalities, please contact after-sales personnel.
4. Please check whether the UV light bulb is broken. If this happens, please

ensure that the room is ventilated for more than 20 minutes before removing and replacing it.

5. Clean the plastic body and UV lamp of the robot. Remember not to wipe the reflector behind the UV lamp with any objects, otherwise the reflection effect will be poor and the disinfection function will be lost.
6. Please wipe the provided tablet.
7. Please wipe the handle provided.

Note: Do not use alcohol or any highly corrosive chemical products for wiping. It is recommended that you use cleaning fluid.

10.3、FAQ

1. How to charge the tablet?

A: Please use the provided MicroUSB cable for charging.

2. Why does Futural U1 not automatically charge?

A: First, please confirm whether a charging point has been established. When you have not established a charging point, you cannot perform any tasks, and Futural U1 cannot be charged. Second, please confirm whether you turn off the automatic charging switch in the robot software. You can check and change it in the robot software. Third, please confirm whether your charging point and the position of the charging pile are the same. If they are inconsistent, Futural U1 cannot perform automatic charging. Fourth, if you find the above conditions are correct, Futural U1 still does not perform automatic charging, please contact after-sales personnel.

3. Is there a time limit for the automatic charging of Futural U1?

If you turn on the automatic charging function, you can 7*24 hours without managing the charging time. As long as the Futural U1 is lower than the charging power you set (20% by default), it will automatically charge.

4. Why does Futural U1 count down when performing tasks?

For safety, Futural U1 will enter the countdown timer start state when it reaches the required disinfection point when performing tasks. During the countdown process, it will monitor whether anyone exists. If someone is found, the countdown will be suspended and wait until no one is there. The countdown time will be reset to start the countdown, and during the entire countdown process, when no one is detected and the countdown is completed, Futural U1 will turn on the UV lamp for disinfection. All this is to protect personal safety.

In addition, Futural U1 has an audible warning reminder, the purpose is to effectively let people around know that the disinfection is in progress, and ensure that everyone is not close.

5. Can the scheduled disinfection task be cancelled?

Yes, you can delete tasks in the task list on the homepage.

6. After the task is started, I find that this is not the task I want and can be terminated immediately?

There are two ways to terminate. Corresponding to the situation at that time, I will give you the following suggestions.

* If Futural U1 is going to the disinfection point or is in the countdown work, there is a button in the interface to stop the robot disinfection work.

* If the Futural U1 is being disinfected, it is recommended that you do not stop it in the past. Please use the attached remote control to press Close to close the disinfection work.

7. How do I know if Futural U1 disinfection is successful?

You can click the disinfection record on the robot side, there will be a detailed disinfection record in the record, and you can check whether the disinfection is normal.

8. When should I replace the UV lamp?

It is recommended that you use the UV lamp for disinfection for 2000 hours

before replacing the UV lamp immediately to ensure the disinfection effect. After the replacement, please click the corresponding UV lamp reset button in the statistical data on the robot side, so that the robot can recalculate the disinfection time of the UV lamp for you.

9. What can the emergency stop switch do?

After pressing the emergency stop switch, the Futural U1 can not walk.

10. Where can Futural U1 be used for disinfection?

Futural U1 is suitable for biosafety laboratories, infectious wards, ICU wards, inspection departments, scientific research institutes, dust-free workshops, schools, food companies and other places that require space for regular disinfection.

10.4、Appendix

Comparison table of various bacterial navigation points and disinfection time:

Type of disinfection	Distance between navigation point and navigation point (m)	Time for disinfection of single navigation point (minutes)
General bacteria	0.3	0.09
	0.5	0.14
	1	0.35
	1.5	0.73
	2	1.18
	2.5	1.77
	3	2.49
	3.5	3.09
	4	3.88
	4.5	4.76
Bacterial spores	5	5.75
	0.3	0.88
	0.5	1.35
	1	3.51
	1.5	7.34

	2	11.82
	2.5	17.73
	3	24.88
	3.5	30.86
	4	38.76
	4.5	47.62
	5	57.47
Fungal spores	0.3	5.4
	0.5	8.12
	1	21.05
	1.5	44.05
	2	70.92
	2.5	106.38
	3	149.25
	3.5	185.19
	4	232.56
	4.5	285.71
	5	344.83

10.5、Contact details

Address: Room606-1, No.3 Building of Zhonghao International Center, No.672 Xintang Road, Jianggan District, Hangzhou, Zhejiang, China

Phone: 0571-87919519

URL: www.futuralrobotics.com

E-mail: sales@futuralrobotics.com