

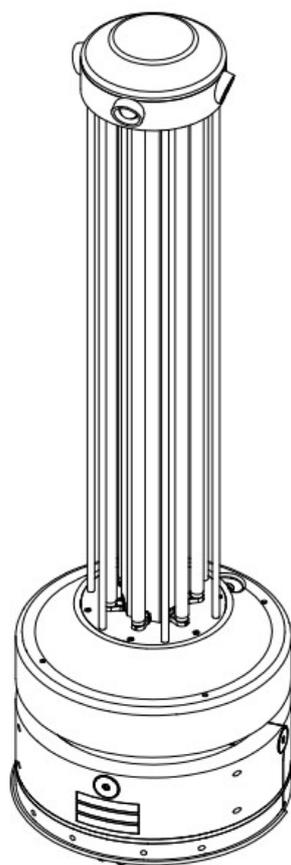


BooCar 布科思

Better Robot better robot

UV Disinfection Robot UV200S

User Manual v 1.0.1



BOOCAX TECHNOLOGY CO., LTD

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Safety And Usage Precautions

Thank you for purchasing BooCax Robot, please read through the manual carefully before using the product and operate it .

For the use of the robot, please follow each operation instruction of the product, and over-use is strictly prohibited! The company will not be responsible for any damage caused by improper operation beyond the use specification.

01/ Safety instructions for robot use

1) The following actions are prohibited

- ① It is strictly forbidden for people or animals to approach during robot disinfection to avoid damage to eyes and skin.
- ② It is strictly forbidden to use the robot in combustible gas and similar flammable and explosive environment.
- ③ It is strictly forbidden to use the robot in combustible gas and similar flammable and explosive environment.
- ④ strictly forbidden to wrap the lamp with paper or fabric, etc., in order to avoid fire caused by high temperature.
- ⑤ It is strictly forbidden to disassemble and repair or debug without permission. If it is necessary to do so, please do it under the approval and guidance of BooCax.

2) Safety instructions for use

- ① Park and run the robot in a flat, solid, room temperature position as much as possible.
- ② If you find any abnormal sound in the robot at work, please turn off the power immediately and report to after-sales service.
- ③ Check that all safety devices (sensors, emergency stop switch, etc.) are normal before starting the robot.
- ④ If you find water on the road or more grease, please sweep the road and remove the grease in time.
- ⑤ When performing maintenance on the robot body, be sure to have it done by a trained specialist.

02/ Daily maintenance instructions

When performing routine maintenance on the robot, please make sure the robot is turned off and has been unplugged or moved away from the charging station!

1) Cleaning

- ① Wiping the body and UV lamp gently with a dust-free cloth every week.
- ② Regularly use a brush to clean the surface of the active wheel and the universal wheel of the robot.
- ③ Contact the after-sales service regularly to carry out maintenance work such as oiling and dustproofing at the vibration damping spring and gimbal bearing.
- ④ The LIDAR sensor is an expensive and precise part of the robot, so it should be wiped

with a dust-free cloth on a regular basis, not with other cleaning agents, otherwise it will easily cause functional damage.

- ⑤ When the robot is not in use for a long time, try to store it in a dry and cool location indoors.

2) Check whether the screws are loose

Shake the assembly periodically and observe whether there is a loose noise. If you find a similar phenomenon, please check whether the screws at the relevant assembly mounting are loose. All screws of the robot are treated with anti-loosening treatment and are not easy to loosen. However, for safety reasons, please reinforce them promptly in case of loosening.

03/ Legal disclaimers, etc.

BooCax Technology owns many of the patents involved in this robot, and no organization or individual is allowed to use it without permission.

The internal structure of the robot is very precise, and disassembly by private parties can easily affect safety. Anyone other than authorized Bukos Technologies personnel may not disassemble the robot, or the product will lose its warranty. Bukos Technologies will not be held responsible for any damage, malfunction, or property/personal damage caused by unauthorized disassembly. Determination of disassembly will be based on the anti-disassembly markings on the body of the robot

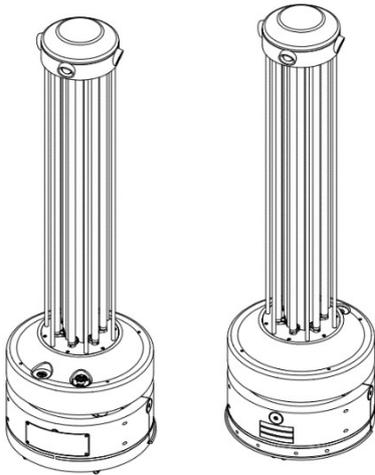
04/ After-sale Support

You can contact us by phone/email as shown in this manual if you have any questions about maintenance, safety, etc. during the use of Bukos robots, and we will be happy to provide you with product-related services.

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1. Product Description



BooCax UV disinfection robot UV200S uses a mobile robot platform as a carrier and is equipped with a professional UV disinfection module. It can replace operators in entering dangerous areas, public areas, unmanned areas and other enclosed spaces to quickly kill bacterial propagules, spore fungi, pathogens and other pathogens. Microorganisms, complete disinfection of indoor air and objects at 360° without dead ends.

Ultraviolet disinfection robot UV200S adopts teaching-style automatic map creation, autonomous navigation, automatic path planning, automatic charging, and low-power automatic recharging, realizing one-stop unattended disinfection management.

Product Features



Total UV radiation intensity: 870 μ W/cm², higher efficiency disinfection killing

UV irradiation intensity is the key indicator of sterilization, which determines the effect and efficiency of sterilization; The higher the irradiation intensity, the faster and the higher the efficiency. With a total UV irradiation intensity of 870 μ W/cm², the disinfection speed is faster and the efficiency is higher, and a single charge can sterilize multiple rooms.



Professional UV quartz lamp, 99.9% disinfection rate

Comply with A3.1.2 of the Technical Standards for Disinfection in Medical Institutions" WS/T 367-2012; UV disinfection lamps comply with GB 15982 standards.

Passed EU CE certification and the national professional organization CMA testing certification.

The 6 high-end professional UV quartz disinfection lamps arranged in an integrated surround, disinfection without dead ends, without preheating, it can start sterilization faster. 254 nm out of the light, it can destroy the DNA or RNA molecular structure of pathogenic microorganisms, making it inactive until death, to achieve 99.9% of the killing effect.



Safe, non-toxic, environmentally friendly and non-polluting, intelligent protection

The quartz ultraviolet germicidal lamp's adopted, which is safe for people and environmentally friendly without secondary pollution. Multi-level safety protection, intelligent detection, the ultraviolet light is automatic turned off when people enter, safe to use.


APP visualized control, fully automatic operation

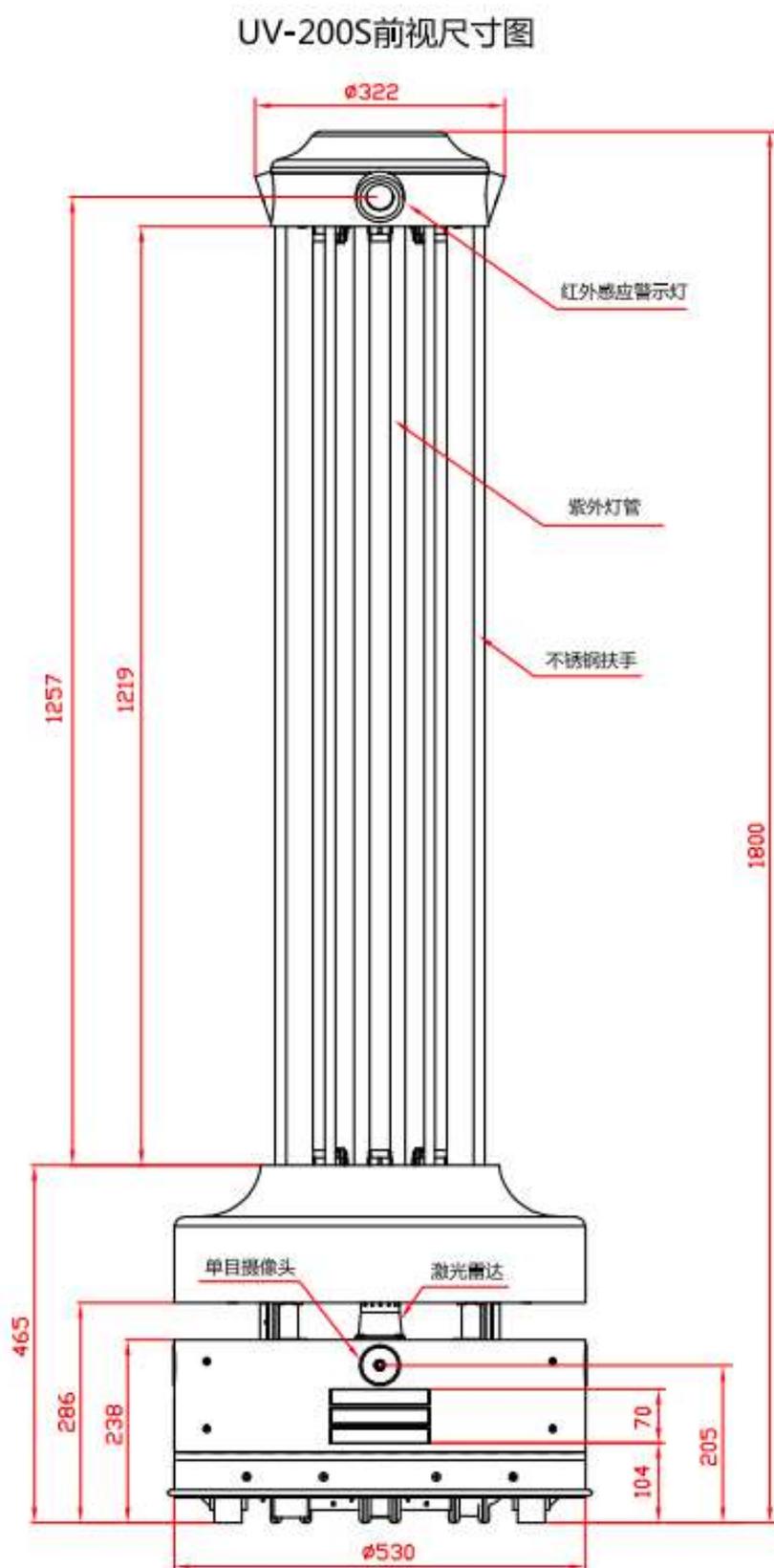
Industrial-grade products, accurate positioning, autonomous navigation, intelligent obstacle avoidance, automatic recharging, Mobile APP visual operation, support custom disinfection tasks, disinfection range (multiple rooms), disinfection route, timing, automatic start of disinfection at fixed points.

2. Specification Parameters

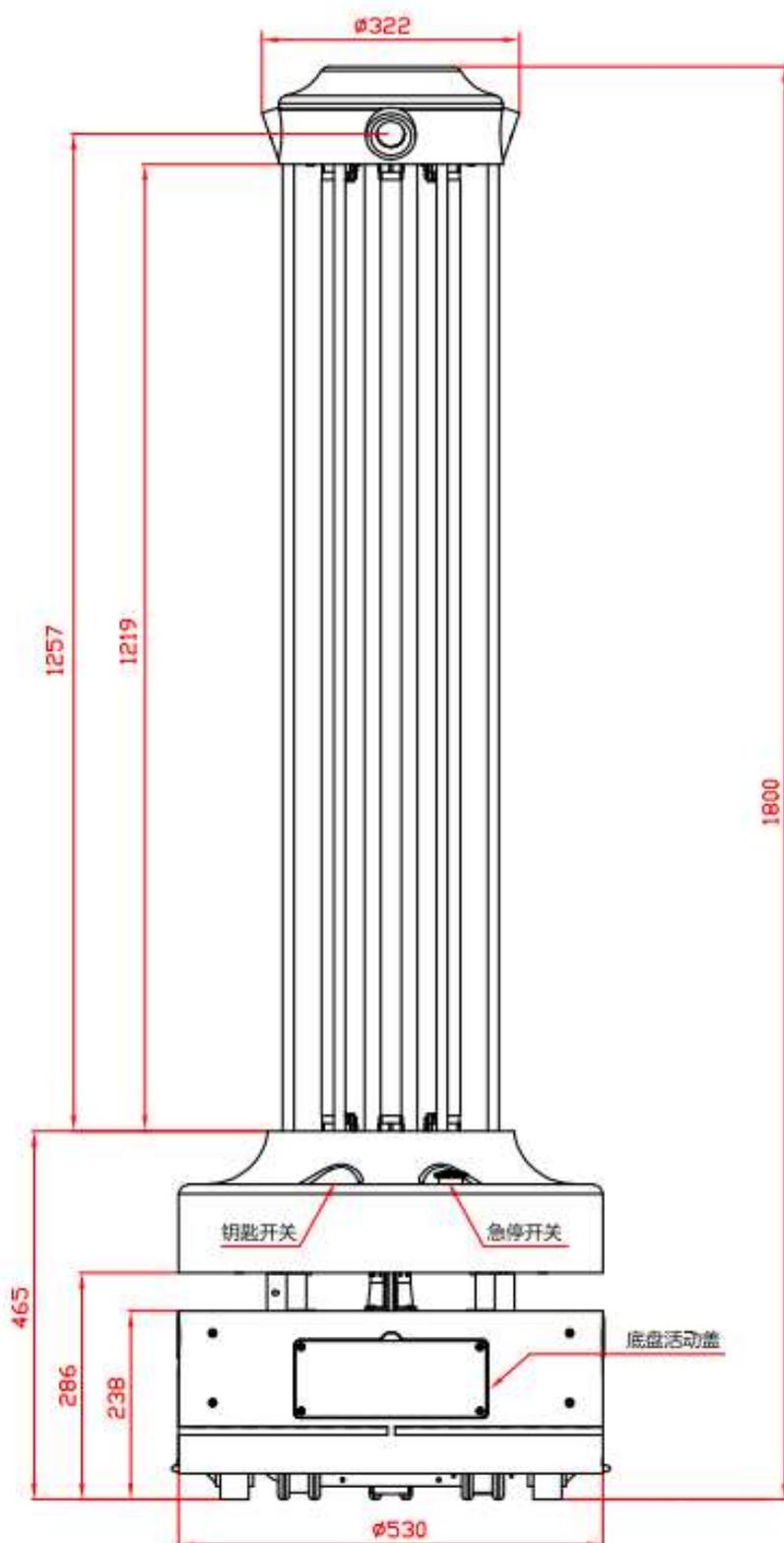
Types	Name	BooCax UV Disinfection Robot
Basic parameters	Model	BKS-UV-200S
	Application	Thorough disinfection of indoor air and objects at 360 degree without dead ends
	Size	diameter 530mm * height 1800mm (lamp
	Machine Weight	60kg
	Whole power	276W
	Application Scenarios	hospitals, hotel lobbies, restaurants, community hallways, office buildings, etc.
UVC sterilization capacity	UV lamp wavelength	254nm
	UV lamp material	Quartz
	Number of UV lamps	6
	Lamp power	36W*6
	UV power	15 W*6
	Illumination intensity	145 $\mu\text{w}/\text{cm}^2*6$
	Lamp life	15000 h
	Irradiation direction	360° Omni-directional
	Sterilization category	bacteria, molds, viruses, etc. on the surface of
	Safety	no human-machine coexistence
	Start-up method	specific command start-up
Mobility capacity	Moving speed	0.3 m/s lamp life
	Drive method	differential drive
	Cross-barrier cacapability	≤ 10 mm
	Gradeability	$\leq 8^\circ$
	Driving channel width	≥ 750 mm
Power supply	Battery Capacity	25.2V / 28Ah

	Usage Time	1.5h
	Charging method	Auto-charging
	Charging time	3h
	Charging Piles	Support 110V~240V wide voltage input
	Full-load current	15A
	Short-circuit current	250A
Safety Design	Emergency stop switch	1 group
design	Bumper strip	1group
	Noise	≤60dB
	Operating temperature	0° ~ 50°

3 . Appearance Structure



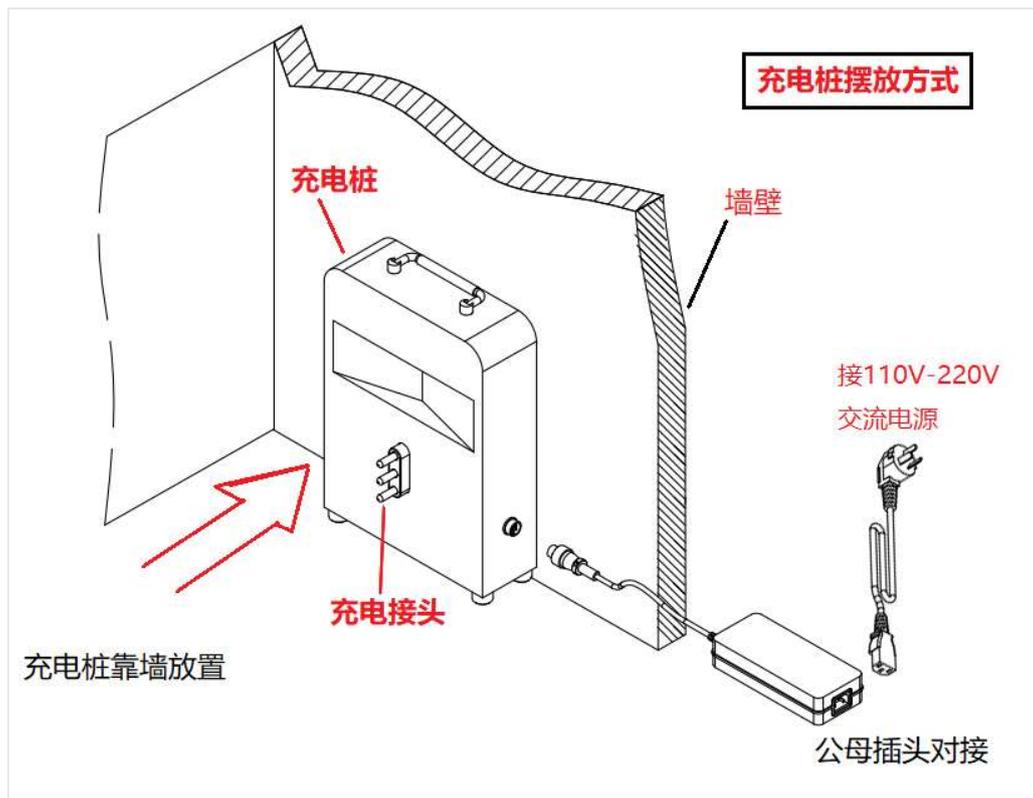
UV-200S后视尺寸图



4. Preparation before use

4.1 Deploy charging piles

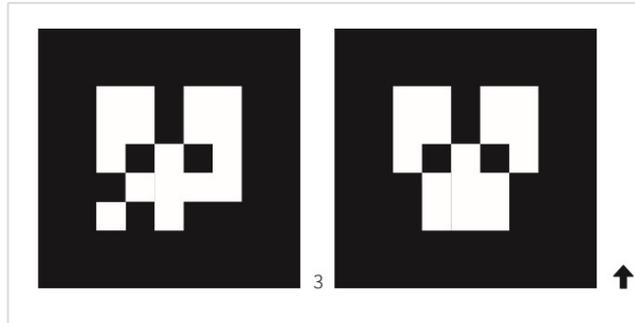
The robot's charging post should be placed in a safe and neat place, placed on a horizontal floor and backed against a flat wall. As shown in the figure below.



- ① Place the back of the charging post against the wall, then rotate the padded feet at the bottom of the adjustment to make the charging post placed smoothly
- ② Dock the adapter with the charging post plug, then connect the three-plug power cord with the adapter, and finally plug it into a 110V/220V AC outlet to officially complete the power-on preparation.

4.2 Paste QR code

To enhance the robot positioning accuracy, it is randomly equipped with QR code, which can ensure more stable long-term operation of the robot.

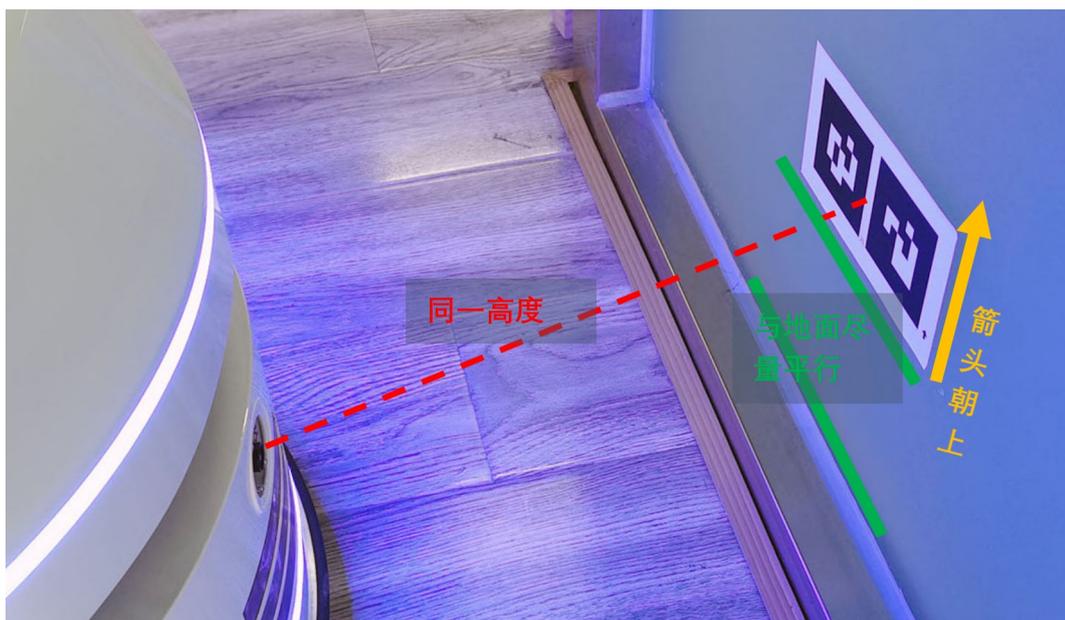


Regarding the use of QR codes, they are generally pasted at locations where robot positioning is prone to deviations: for example, corridors over 25m, it is recommended that a QR code be pasted at every 15m interval in long corridors to aid positioning. There are also more open scenes where the environmental features are not obvious enough, and QR codes need to be posted to enhance positioning.

1) QR code paste specification.:

- Avoid locations where the light is too strong, so as not to affect the camera's collection effect.
- The paste height should be consistent with the height of the robot camera.
- When pasting, the arrow in the lower right corner points (the arrow direction is upward) to paste

2) The sample is as follows:

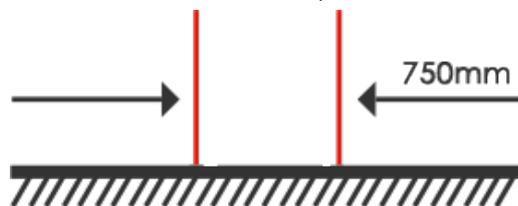


3) QR code precautions

- The same QR code board cannot appear in the same environment.
- When the robot is composing the picture, pass by the QR code board to retrieve 1-2 to ensure that the QR code information can be saved .
- The QR code of the charging pile is recognized by the front camera of the robots as far as possible, and the QR code of the corridor is recognized by the left and right cameras of the robot .
- When incrementally composing a picture, it is necessary to ensure that the current positioning of the robot is accurate, and then recognize and save the two-dimensional code.

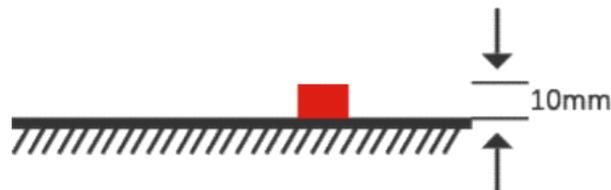
4.3 Clean up environmental coverings

- 1) Before using the robot, you need to move the aisle covering where the robot is walking and charging out of the way so as not to interfere with the robot's work and charging (especially flower pots, tables and chairs, etc.)



The narrowest walking width of the robot is 750mm

- 2) Confirm that there are no vertical steps over 10mm on site, and there should be no objects over 10mm in height (books, wooden boards, stones, etc.) in the robot's working path;



10mmThe height of the robot's crossing is 10mm

- 3) Confirm that there is not too large slope on the site:



The robot can climb up to 8°

4.4 Download and install the App on your phone

Android 8.0 and above phones scan to identify the QR code below, then download the App

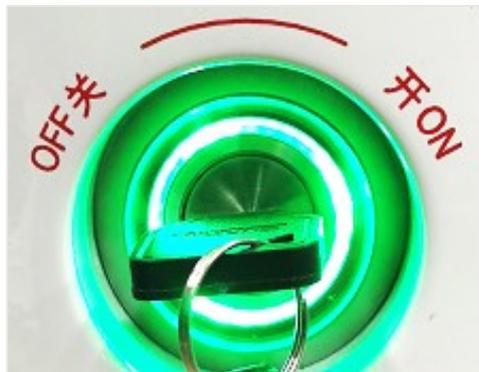
to your phone and install it:



WeChat or mobile browser scan recognition to download the App

4.5. Turn on and connect to robot

- 1) When turning on the robot for the first time, turn the power key switch  to “on” to turn on the power .



电源开关

- 2) Turn on the mobile WiFi, connect to the network starting with “ BKS-UV -200, enter the

equipped password (the initial password is “ robot 123 ”)to connect the mobile phone to the robot ;

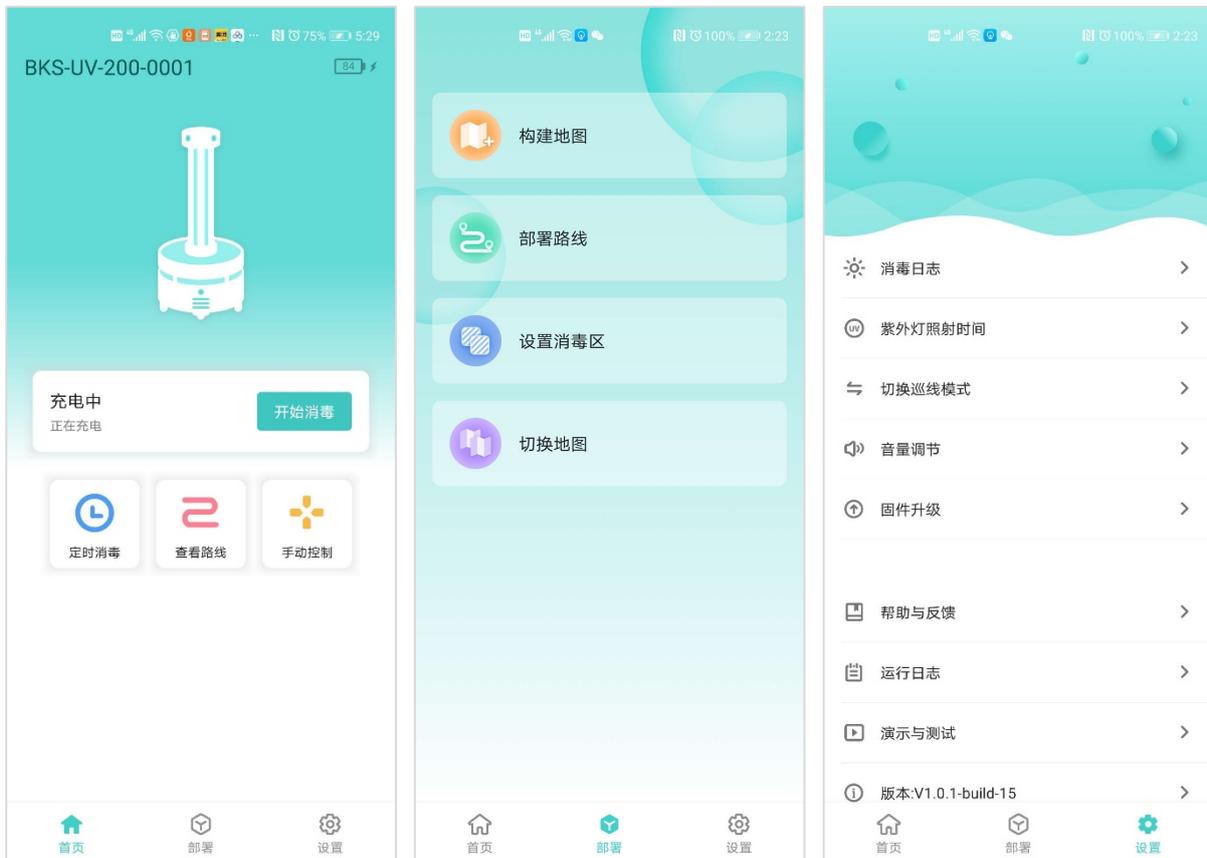


- Open the mobile app, you will find the robot starting with "BKS-UV-200" (as shown in the picture below), click to the login :



- Enter the home page of the app, and when you see the interface shown below, it means that the connection is normal, then you can proceed to the next operation - build the map .

Robot control App interface screenshots and function button descriptions.



App Homepage:

- Robot name, power
- Robot status
- Timed disinfection settings, view route, manual control

App Deployment:

- Build a map
- Deployment route
- Set up disinfection area
- Switch the map

App Setting:

- Disinfection log
- UV lamp irradiation time
- Switch Line Patrol Mode
- Volume adjustment
- Firmware upgrade
- Help and feedback

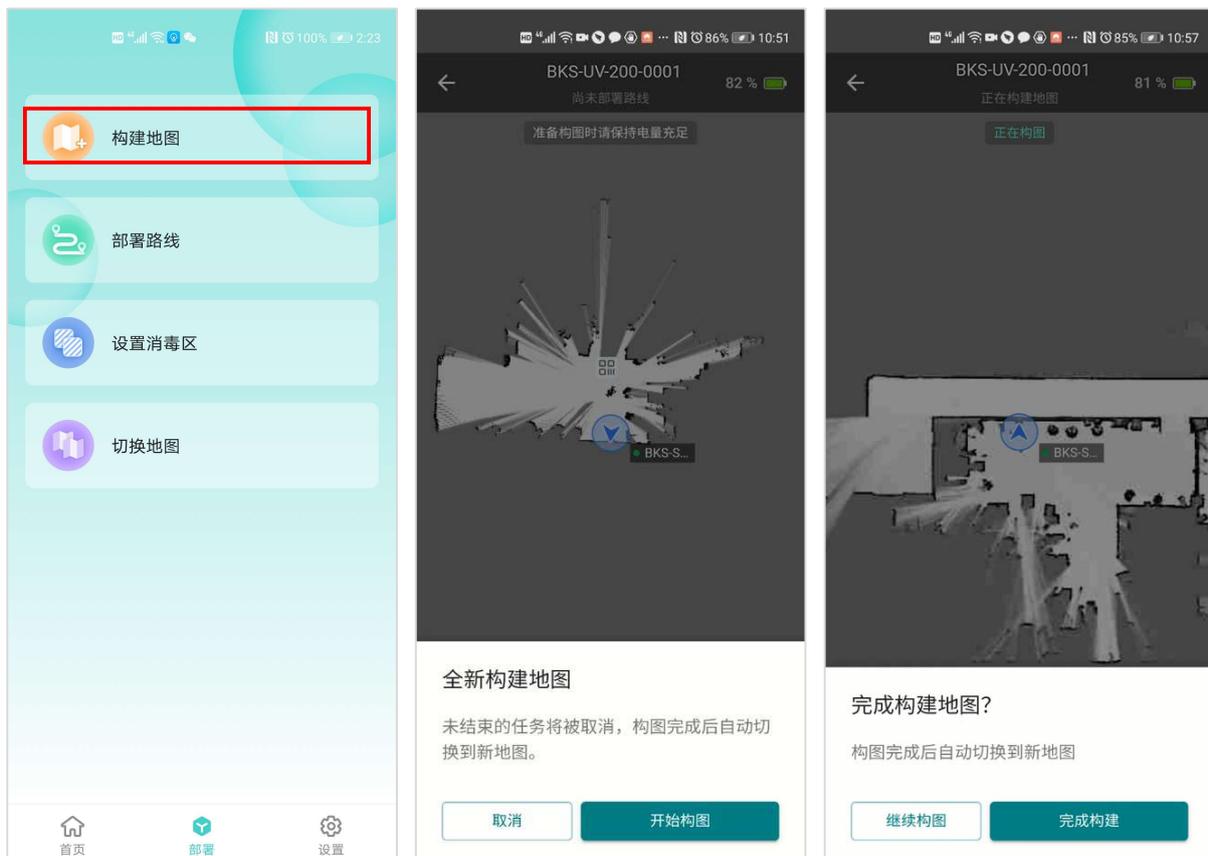
4.6. Constructing a scene map

1) Preparation before composition

- Push the robot to a position of 0.5-1m facing the charging pile
- The battery power of the robot > 50%

2) Start building the map

Click App Deployment-Build Map, you will see the "Build Map" interface (as shown in the middle below), click "Start Composition" to start building a 2D map of the robot's work scene (when composing the picture, push the robot by hand)



Instructions:

- white radial - the range that has been scanned by the laser.

- black thick lines - obstacles that have been scanned (special objects such as transparent glass may not be identified).
- Gray area - the area that has not been scanned yet.

⚠ Precautions:

- ① When pushing the robot to compose the picture, start with the charging pile as the starting point, then push the robot to start moving slowly within the scene, and finally return to the charging stake position to form a big loop.
- ② When composing the picture, do not get too close to the wall and keep a distance of at least 0.5m
- ③ The operator must stand behind the robot to avoid leaving noise on the map.
- ④ When turning, walk slowly to allow the robot to collect as much feature point data as possible.
- ⑤ Abnormal environment (glass, mirror, pure black object, grid, etc.)LIDAR will be inaccurately recognized, and appropriate auxiliary processing is recommended, such as pasting on frosted stickers, gray tape, reflectors, ect .
- ⑥ If the scene is too large and there are too many noises in the first composition, you can use " incremental composition" to repair the local map;
- ⑦ When passing the QR code, stay in front of it for more than 1 second, and there will be a corresponding voice prompt when the entry is successful.

4.7. Setting up the disinfection route

The walking path of the robot consists of charging points, path points, and disinfection points.

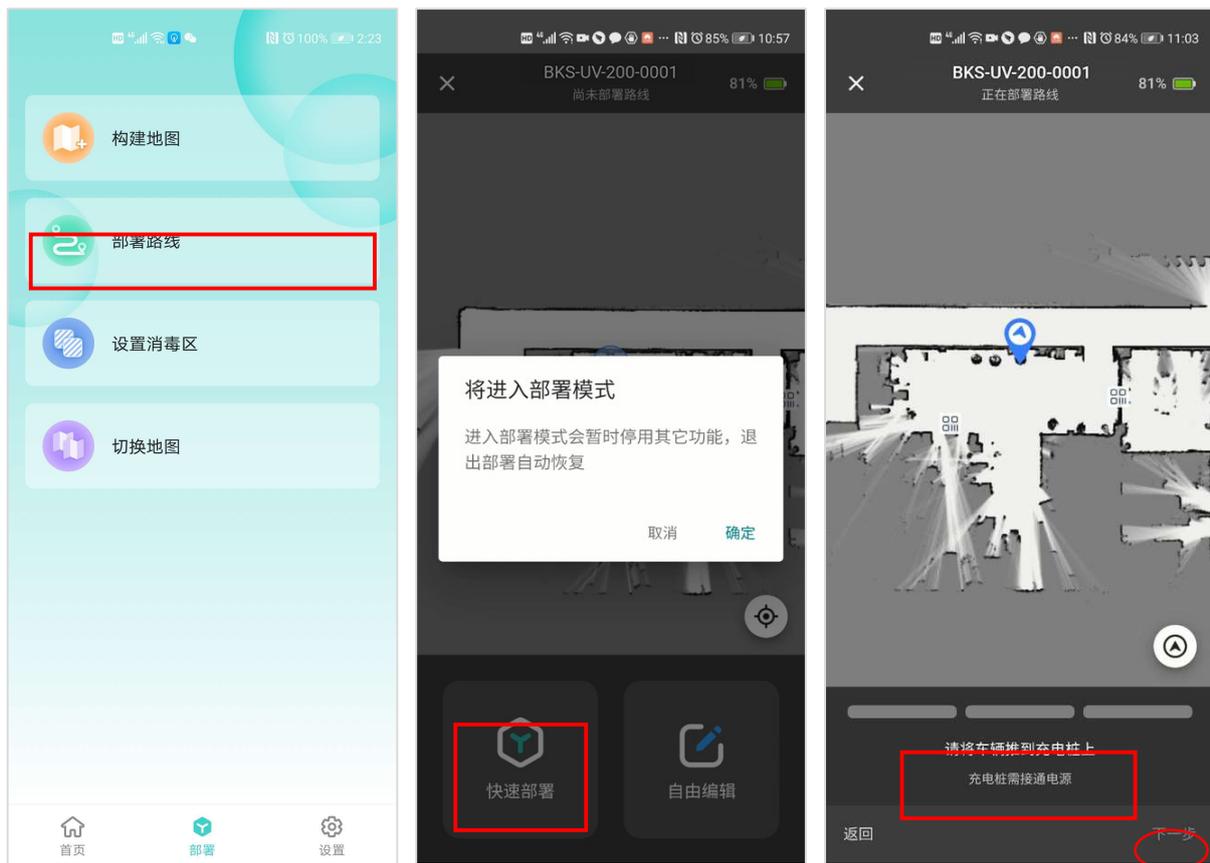
The disinfection route of the whole robot is made up of path points and disinfection points in each disinfection area in series.

The detailed settings steps, which are performed according to the App prompt operation are shown below.

1) Rapid deployment

Charging point: the point where the robot connects with the charging pile. Click "Quick Deployment" to enter the route setting mode, push the robot to the charging pile and click Next to complete the setup.





- Path points and disinfection points: pushing the robot or dragging the map, and click on

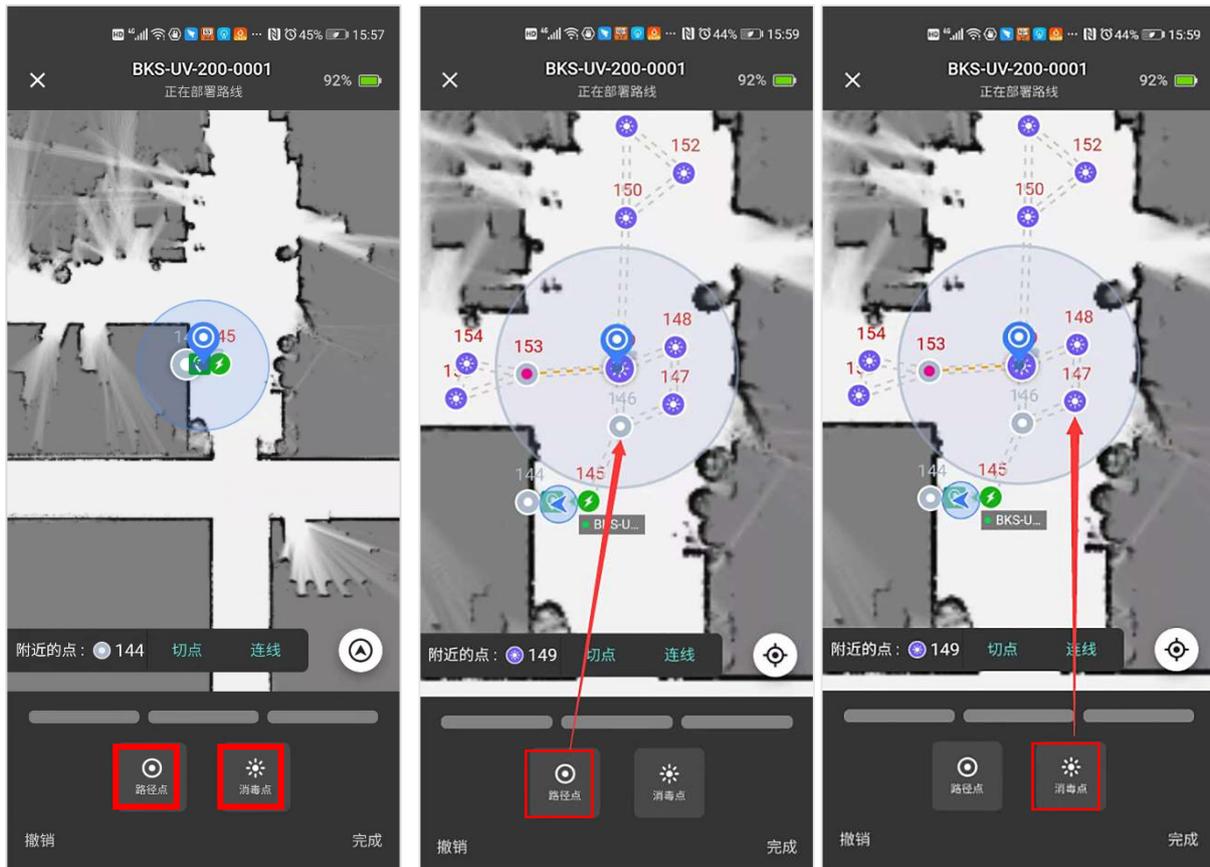
the desired location  to set the corresponding path points or disinfection

points ( small blue icons indicate the corresponding location points) .

Path points  are the route points that the robot must go through, such as bending, crossing the door, and a pathpoint must be marked (as shown in Figure 2 below: the gray point is the path point) .

Disinfection points  are set according to the needs of the environmental site (as shown in Figure 3 below: the purple icon is the disinfection point).

are set according to the needs of the environmental site (as shown in Figure 3 below: the purple icon is the disinfection point).



The functions of "tangent point" and "connection": mainly used to connect "nearby points" in series.

The "point of cut" is the switch point, that is, the robot is switched from the current position to the selected nearby point (you can operate by sliding your finger on the map); after finishing the point of cut operation, if you click on the "connect", you can switch The last path point or disinfection point of the robot is connected with the current point. The two functions of cut point and connection are mainly designed for the convenience of route editing.

2) Free edit-adjust path

- If the rapid deployment path is not applicable, click "Free Edit" to adjust the route, support adding/deleting/moving points, changing the driving route, changing the disinfection point, etc.



△Note:

When deploying a route, you need to deploy waypoints at the turning position, and the path cannot go through walls, as shown below:



As shown above, the robot is sterilized from A-C. If there are walls or fixed obstacles present, the correct path deployment should be A-B-C, with B being the key node where the turn must be set up as a path point. The figure on the right shows the wrong deployment, the path will go directly through the wall and cause the robot to be unable to walk.

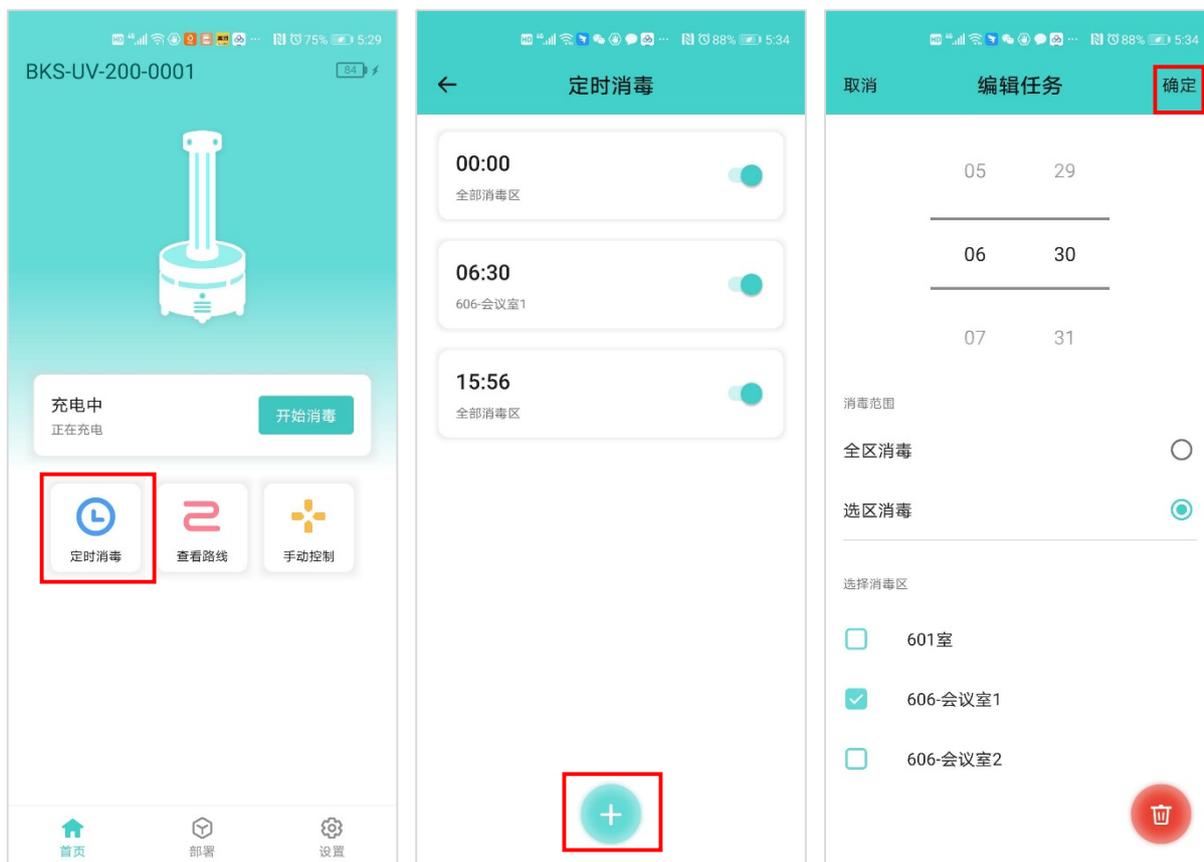
4.8. Set up disinfection area



- Click the "Set Disinfection Area" menu to "Create a New Disinfection Area" and name each zone individually.
- After creating a new disinfection zone, check the disinfection points contained in the zone (click on the map to check the purple nodes, as shown in Figure 3 above: 59 and 60 in the red box are the disinfection area "606-Meeting" Room 2" the selected disinfection point), the robot will go to disinfect according to the order of the checked disinfection points.

4.9. Set timed start time

According to the needs, you can freely set (add/modify) the time to start the killing for each area (as shown in the figure below)



Click "Timed Disinfection" on the homepage to enter the editing interface

Then click the "+" button to set the start-up time and disinfection area of the equipment

After setting the time and area, click "OK" in the upper right corner to save

4.10. Other settings

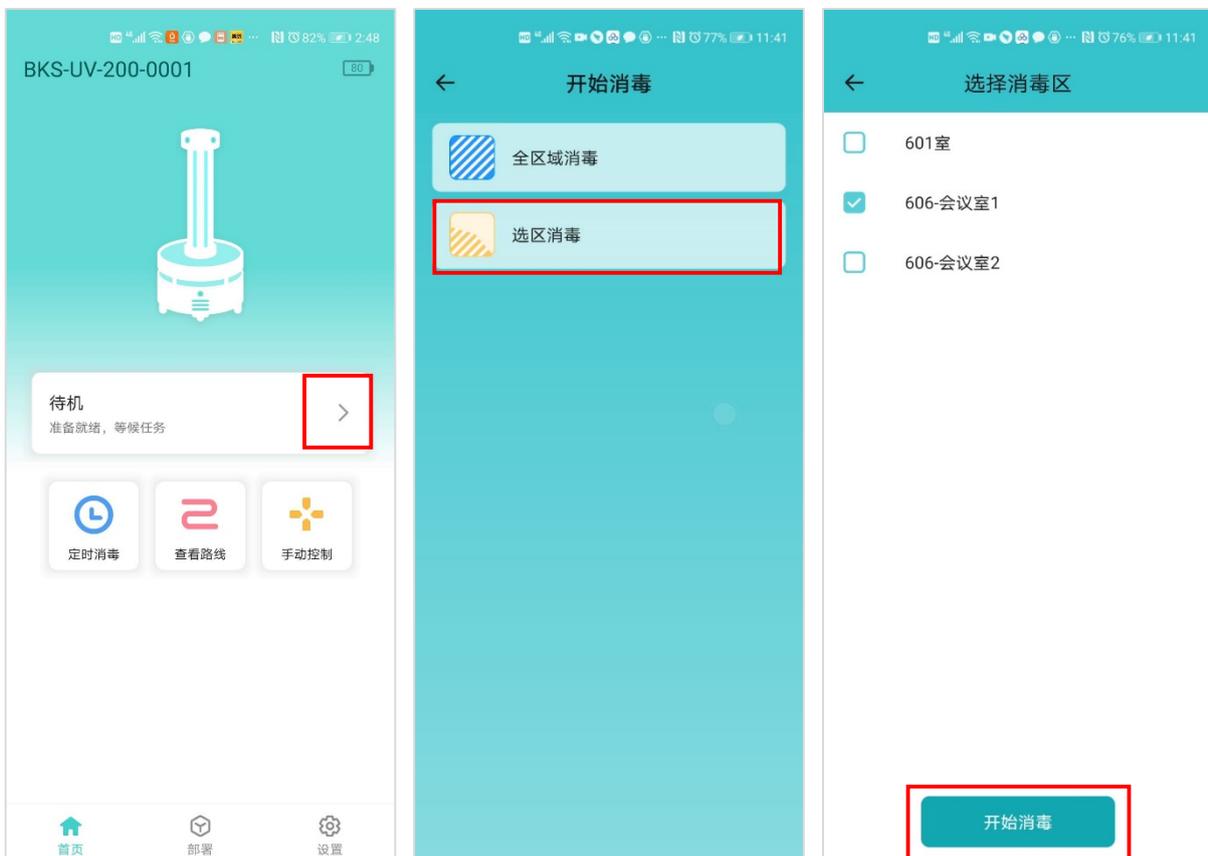
UV lamp irradiation time, patrol mode, volume level adjustment and firmware upgrade are all in the "Settings" menu, which can be set by yourself.:



5. Start Working



- 1) Everything is ready, turn on the UV lamp safety switch;
- 2) Return to the home page of the App, click the "Start Disinfection" button, and select "Disinfection in all areas/Disinfection in selected areas", and the robot can start the disinfection work according to the set path.



The robot will start the disinfection work regularly at the set time every day.



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Business cooperation / After-sales support line: 400-161-8661