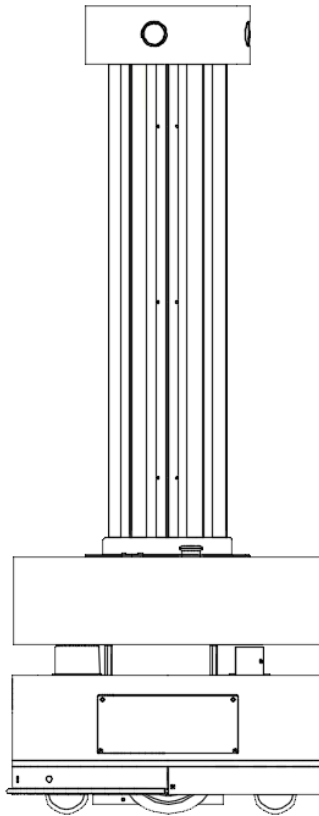# BKS-UVRobot-200

Product Manual

V 1.2.1

BOOCAX

0086 4001618661

<div align="center">

Precautions for Safety and Use

</div>

Thank you for purchasing BooCax robot. Please read this manual carefully before using it.

The use of robot shall follow the operation instructions. Use beyond the range is prohibited! BooCax will not assume any responsibilities for the losses caused by improper operation.

01/ Precautions for Safety

1) Prohibitions

① Person or animal should keep away from the working robot to avoid hurt to eyes or skin;

② Do not touch the UV tube with hands to avoid any damage to the tube;

③ Do not use in flammable gas environment or similar flammable and explosive environment;

④ Do not wrap the tube with paper or cloth, to avoid fire due to high temperature;

⑤ Do not replace any parts. If necessary, please do so under the direction of BooCax.

2) Precautions

① The robot should be parked or run in a flat and solid place at normal temperature;

② If there is abnormal noise during working, please immediately turn off the robot and report to the after service;

③ Before starting the robot, please check whether the safety components (sensor, emergency stop switch, etc.) Are in normal conditions;

④ If the floor is waterlogged and greasy, please clean the floor promptly;

⑤ The robot body must be maintained by a trained professional.

02/Routine maintenance

When performing routine maintenance, please make sure that the robot is turned off, unplugged or away from the charging pile! Otherwise, electric shock or serious failure may occur.

1) Cleaning

① Wipe clean the body part and UV tube gently with non-dust cloth every week;

② Regularly brush the surface of the driving wheel and universal wheel;

③ Regularly contact after-sales for maintenance services such as lubrication, dust-cleaning at the damping spring and universal wheel bearing;

④ Lidar sensor, as the expensive precision component in robot, should be wiped regularly with a non-dust cloth. Do not wipe with force or other detergent, which may be easy to cause functional damage.

⑤ If the robot will not be used for a long time, store it in a dry and cool place.

2) Check whether the screw is loose

Shake the components gently on a regular basis to observe whether they are loose. If there is any abnormal sound, please check the screws at the installation position of relevant components. All the screws of the robot have undergone anti-loosening treatment. However, for the sake of safety, please contact "BooCax After-sales" if any screw is found loose.

03/Disclaimer

BooCax possesses many patents related to this robot product. No organization or individual may use these patents without authorization.

The robot has precise internal structure. For the sake of safety, no one is allowed to disassemble the robot without permission except the authorized personnel of BooCax, otherwise the warranty will be invalid. BooCax will not assume any responsibility for any damage, breakdown and property/personal injury caused by unauthorized disassembly. The identification of unauthorized disassembly will be subject to the anti-disassembly mark on the robot body.

04/ After-sales

If you have any questions about maintenance, safety and other issues during use of BooCax robot, please contact us by phone or email provided on the back of this manual. We are very willing to provide you with product-related services.

Contents

1. Product Description

BooCax UVRobot, based on mobile robot platform, is equipped with professional UV disinfection module, which can replace operators to enter confined spaces such as dangerous areas, public areas and inaccessible areas to quickly kill pathogenic microorganisms such as bacteria, spore fungi, germs, etc., and thoroughly disinfect indoor air and articles without dead angle.

UVRobot adopts teaching type automatic mapping, autonomous navigation, automatic path planning, automatic charging and automatic return for charge at low battery, thus realizing one-stop unattended disinfection management.

Product features

Super sterilization, no residue or pollution

The top-level professional UV disinfection lamp emits light at 254 nm with a total irradiation intensity of 1500 µW/cm² , which ensures the disinfection effect by breaking the DNA and RNA chains of viruses, fungi, bacteria and other microorganisms, so that they are inactivated to reproduce. It can achieve a disinfection effect of 99.9%, without ozone and secondary pollution.

Ultra-high power to ensure higher efficiency

Total power of 410W, shorter disinfection time and higher disinfection efficiency.

APP control, full-automatic and safe operation

Industrial-grade product, precise positioning, autonomous navigation, intelligent obstacle avoidance, automatic return for charge, mobile APP control, user-defined disinfection route and time, automatic start of disinfection at scheduled time, multi-level safety protection, automatically turning lamp off upon infrared detection of object movement to ensure safe use.
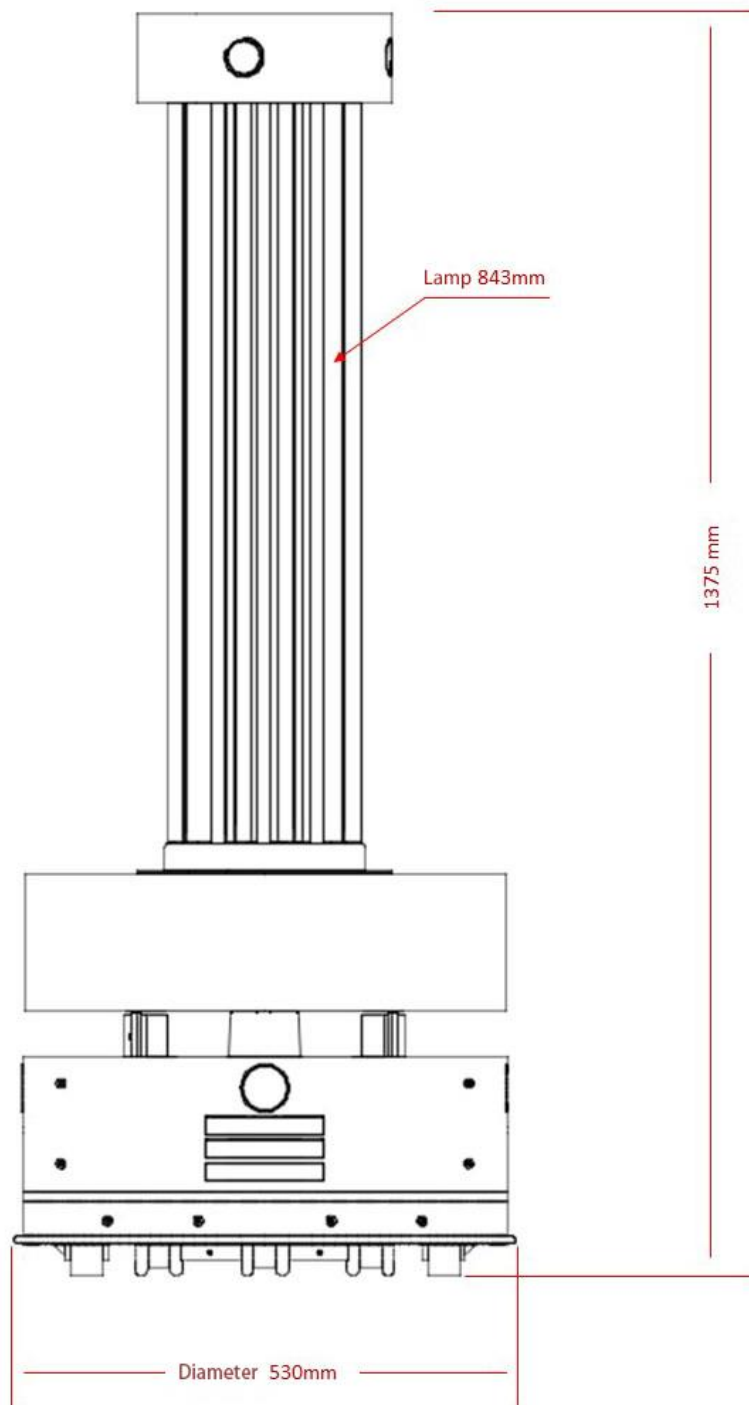
One-button return to autocharge

The robot will return to autocharge after completing the task, so the trouble of line charging is avoided.

2. Product specification

Type	Name	UVRobot
Basic parameters	Model	BKS-UV-200
	Intended use	Thoroughly disinfect indoor air and articles without dead angle
	Dimension	Diameter 530mm* height 1375mm (lamp tube 843mm)
	Body weight	55.6kg
	Total power	475W
	Applicable scenes	Hospitals, hotel halls, restaurants, residential corridors and office buildings
Ultraviolet sterilization	UV lamp wavelength	254nm
	UV lamp material	Quartz
	Qty. of UV lamp tubes	10
	UV lamp power	41W*10
	UVC power	16 W*10
	Cumulative light intensity	1500 μw/cm²
	Irradiation direction	360°
	Sterilization scope	Bacteria, molds, viruses, etc. on the surface of objects
	Lamp life	10000 h
	Safety	Robot and human shall not stay in the same environment.
	Mode of start	By specific order
Movement	Moving speed	0.45 m/s
	Driving mode	Differential driving
	Over-obstacle capacity	≤10 mm
	Gradeability	≤8°
	Passage width	≥750 mm
Battery	Battery capacity	25.2V / 38Ah
	Service time	1.8h
	Mode of charging	Autocharge
	Charging time	3.5h
	Charging pile	110V~240V wide voltage input

Safety design	Full-load current	15A
	Short-circuit current	250A
		6 / 23
	Emergency Stop Switch	1
	Bumper strip	1
	Noise	≤60dB
	Working temperature	0°~50°

3. Appearance size

Lamp 843mm

1375 mm

Diameter 530mm

4. Function modules

UV safety switch

UV lamp tube

Human body sensor

Laser radar

Auxiliary positioning sensor

Connector

Working status lamp

Power wheel

Crash sensor

Front

Power switch

Emergency
stop switch

Nameplate

Steering wheel
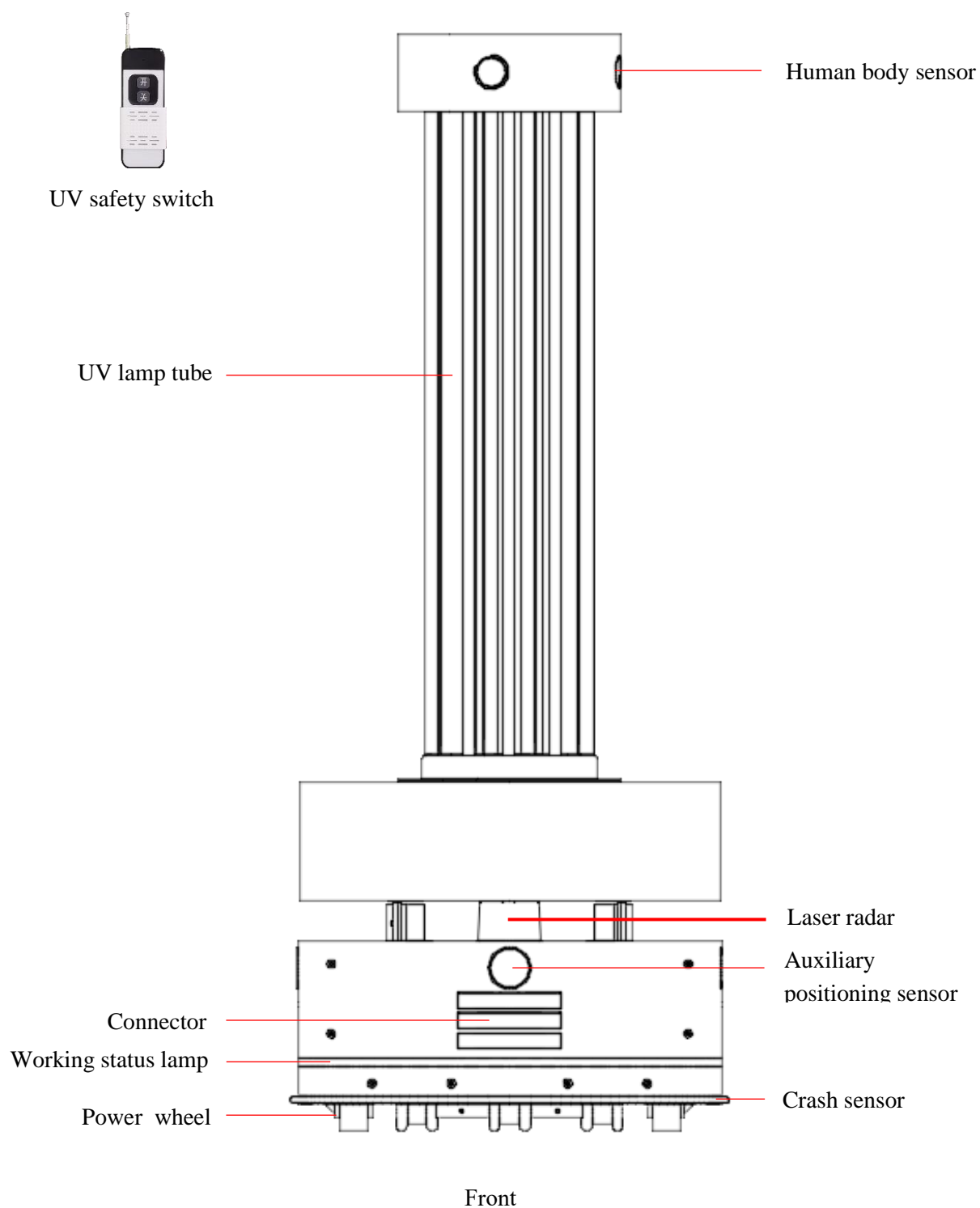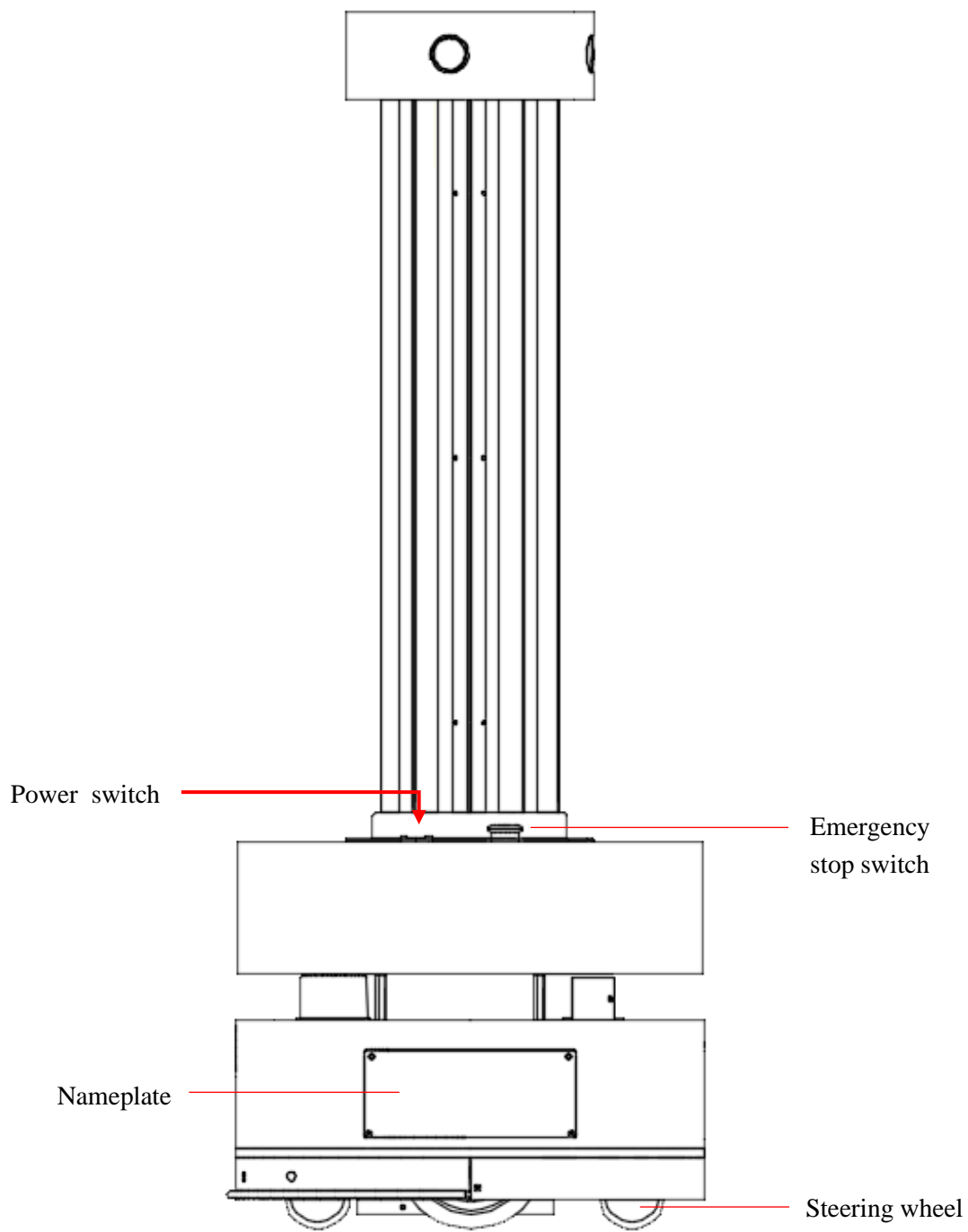
Back

5. Preparation before use

5.1. Install the charging pile

The charging pile of the spray robot should be placed in a safe and tidy place. It should be on the horizontal ground with its back against the flat wall, as shown in the following figure:
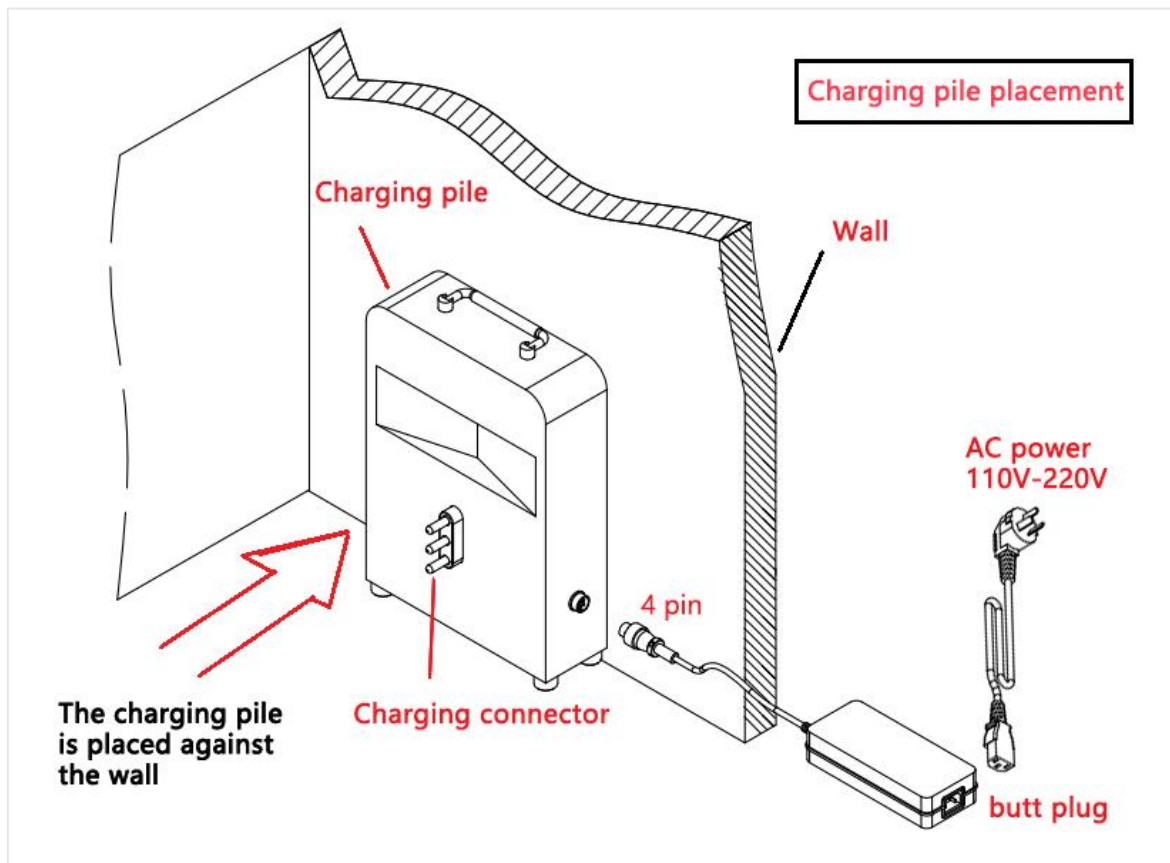
Schematic Diagram of Installation and Use of Charging Pile

① Place the back of the charging pile against the wall, and then turn the foot pads at the bottom to adjust the charging pile.
② Connect the power cord, adapter, and charging pile as shown above, and finally connect the end of the power cord to the 110V / 220V AC socket to formally complete the boot preparation.

5.2. Clean up barriers

1) Before using the robot, remove the barriers (especially flower pot, table and chair, etc.) in the aisle to avoid affecting the working and charging;
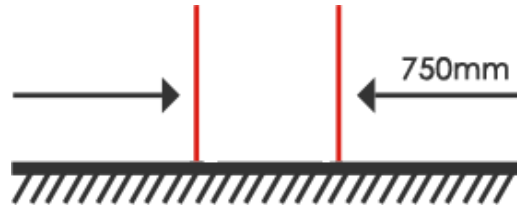
Minimum walking width: 750mm

2) Make sure that there is no vertical step over 10mm, and no objects (books, boards, stones, etc.) over 10mm in height on the working path;
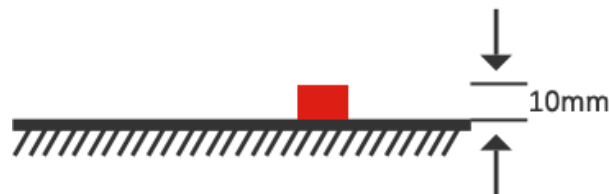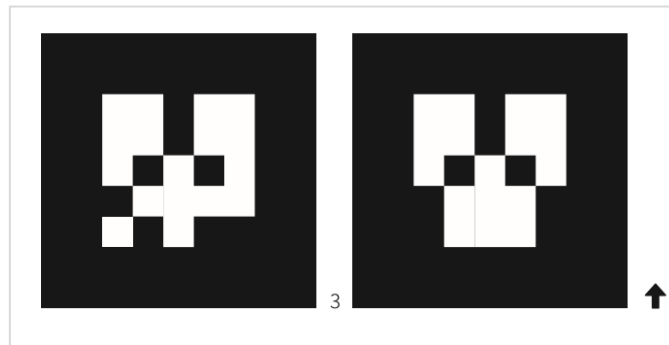

Surmounting height: 10mm

3) Make sure that there is no steep slope on site:

Maximum gradeability: 8°

5.3. QR code deployment

In order to enhance the positioning accuracy of the robot, QR codes are provided so that the long-term running is more stable.

The QR codes are generally used where the robot positioning is prone to deviation, for example, in a corridor longer than 25m, a QR code can be pasted at a distance of 15m to assist positioning. Or in a spacious place where the environmental characteristics are not obvious, QR codes are also required to enhance positioning accuracy.

1) QR code pasting:

- Avoid deploying at a place with strong light, so as not to affect the camera to capture the QR code image;
- The QR code should be pasted at the same level as the camera;
- Paste the QR code as the arrow points;

2) The example is shown below:

3) Precautions

1) No same QR codes can appear in the same environment;
2) When mapping, the robot stops at the QR code board for 1-2 seconds to ensure that the QR code is saved(Voice prompt will be given for successful identification);
3) The QR code of the charging pile should be identified by the camera in front of the robot, and the QR code of a corridor is identified by the cameras on two sides;
4) When incrementally mapping, it is necessary to ensure that the robot's positioning is accurate before identifying and saving the QR code.
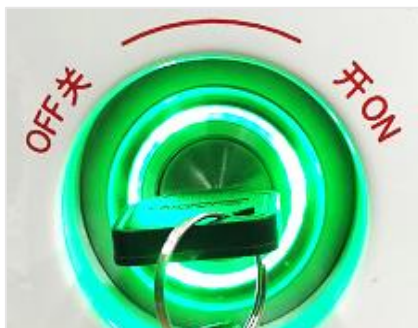
5.4. Download App

Android 8.0 and above mobile phone scan the QR code below to download the App and install it:
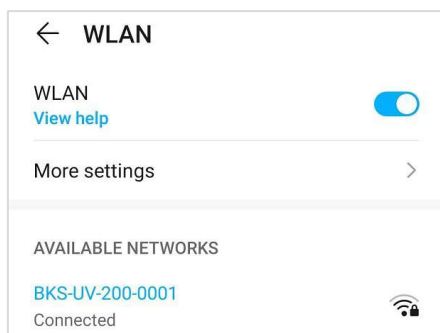

Scan by Wechat or mobile browser to download App

5.5. Turn on and connect the robot

1) When starting up for the first time, turn the power key switch ⏻ to "on" position to connect the power;

Power switch

2) Turn on the phone wifi, search the wifi network beginning with "BKS-UV-200", and enter the assigned initial password "robot123" to connect the robot;
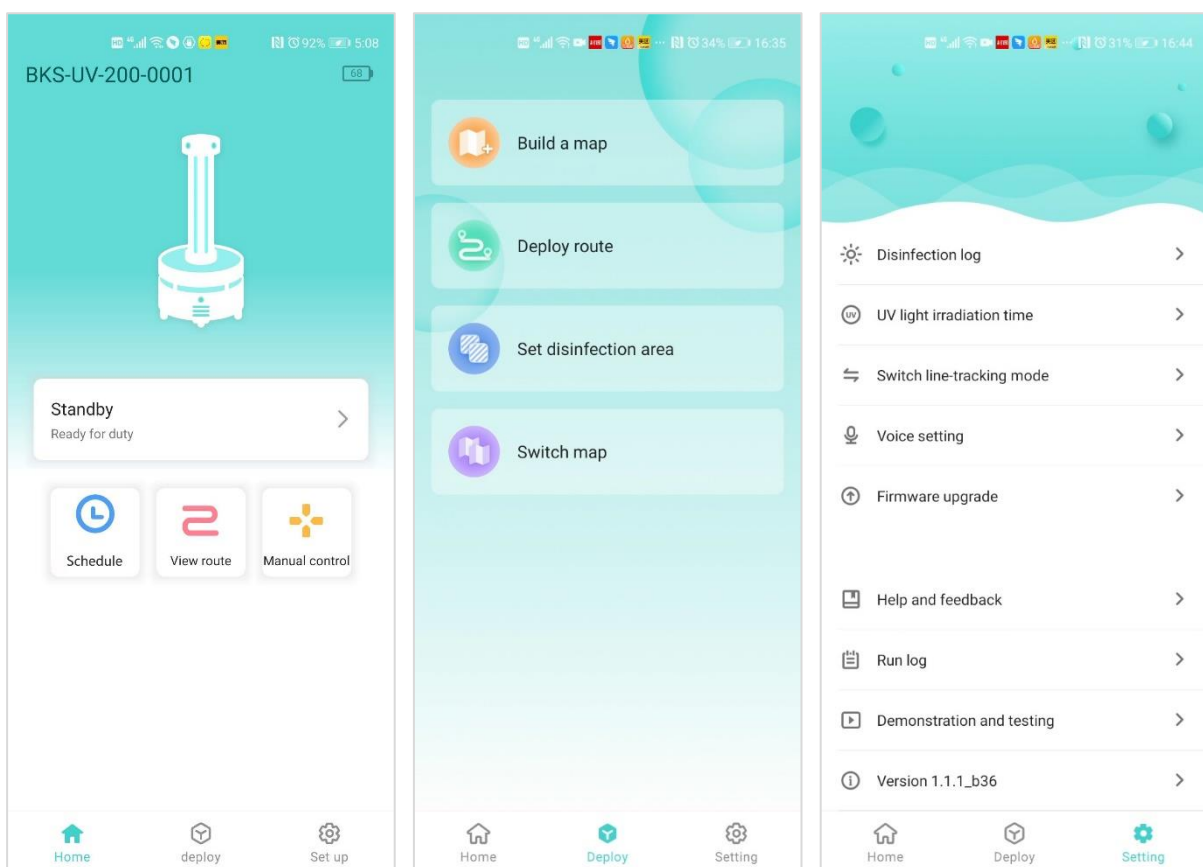
3) Open the App, you will find the robot beginning with "BKS- UV-200" (as shown in the following figure), click login;

Robot found

BKS-UV-200-0001-SERVER
192.168.31.75
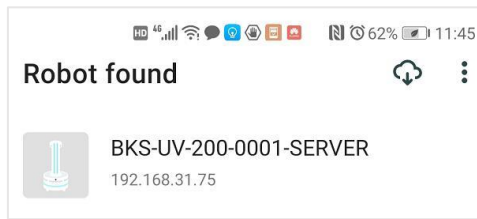
4) Go to the homepage of App, and the interface shown below indicates that the online connection is normal, then you can proceed to the next step, i.e., mapping.

Screenshots of App interface and function buttons:

App homepage:
- Robot name and battery
- Robot status
- Scheduled disinfection, view route, manual control

App deployment:
- Build map
- Deploy route
- Set disinfection area
- Switch map

App setting:
- Disinfection log
- UV light irradiation time
- Switch line-tracking mode
- Voice setting
- Firmware upgrade
- Help and feedback
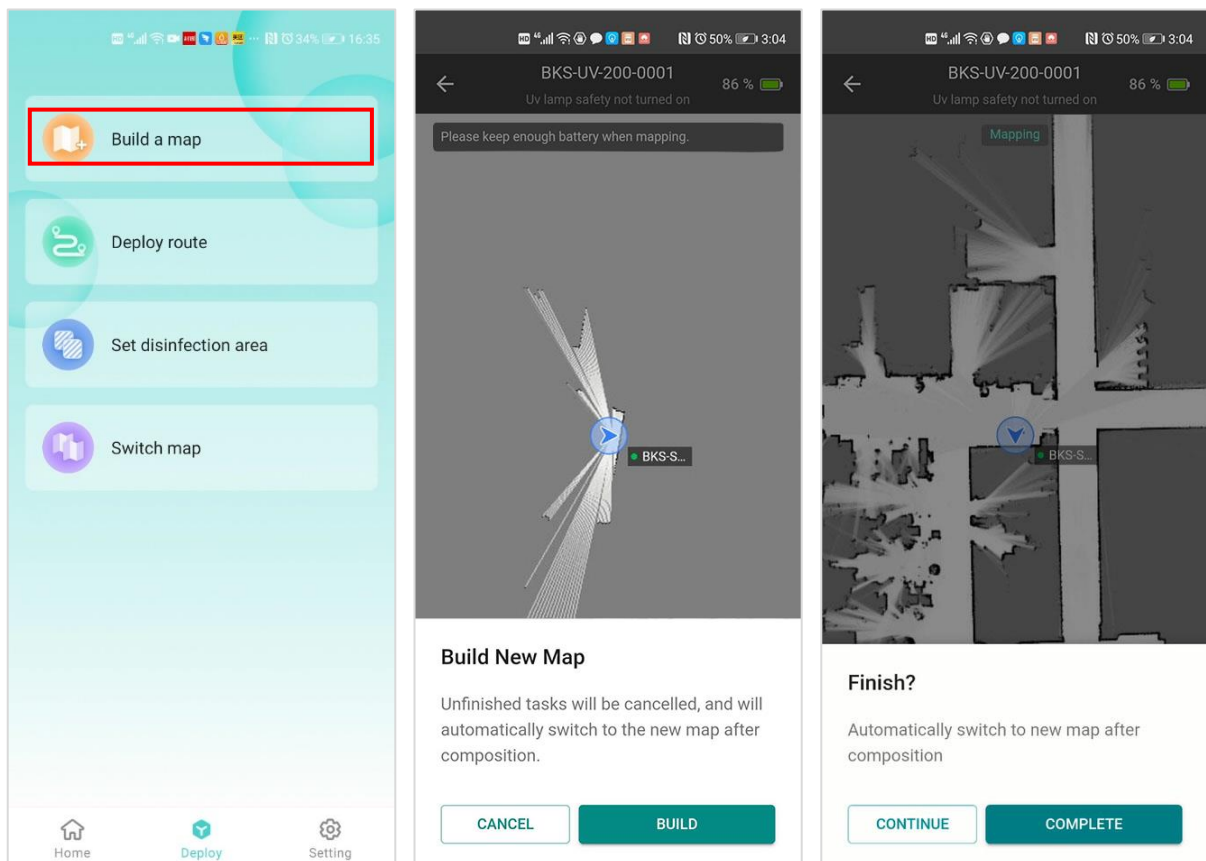- Run log
- Demonstration and testing
- Version 1.1.1_b36

5.6. Build map

1) Preparation

- Push the robot at 0.5-1m away from the charging pile.

- Robot battery>50%

2) Begin to build map

Click Deployment-Build Map on App, and you will see the "Build Map" interface (shown in the middle figure below). Click "Start to map" to build a 2D map of the working scene (push the robot by hand to build the map).

Legends:

- White radius—the range scanned by the laser;
- Black thick line—the scanned obstacles (special objects such as transparent glass may not be identified);
- Gray area: Area that has not been scanned.

⚠ **Attention:**

① When mapping by hand, push the robot forward slowly in the scene from the **charging pile** as the starting point, and finally return to the charging pile to form a large circle;

② When mapping, don't be 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** so that the robot can collect as much characteristic point data as possible;

⑤ As laser radar does not recognize accurately in abnormal environment (glass, mirror, pure

black object, grid, etc.), it is suggested to carry out appropriate treatment, such as pasting frosted sticker, gray adhesive tape, reflector, etc.;

⑥ If the working scene is too large/noise, you can use "**Incremental composition**" to enlarge/repair the map;

⑦ When passing the QR code, stay in front for more than 1 second, and there will be a **voice prompt** when it is successfully scanned.

5.7. Disinfection route setting

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

Specific setting procedures follow the instructions of App, as shown below:

1) Rapid deployment

➢ **Charging point**: The position of the robot docking the charging pile.

Click "Deployment routes" to enter the route setting mode; push the robot to the charging pile for docking as guided, and click Next to complete the setting.
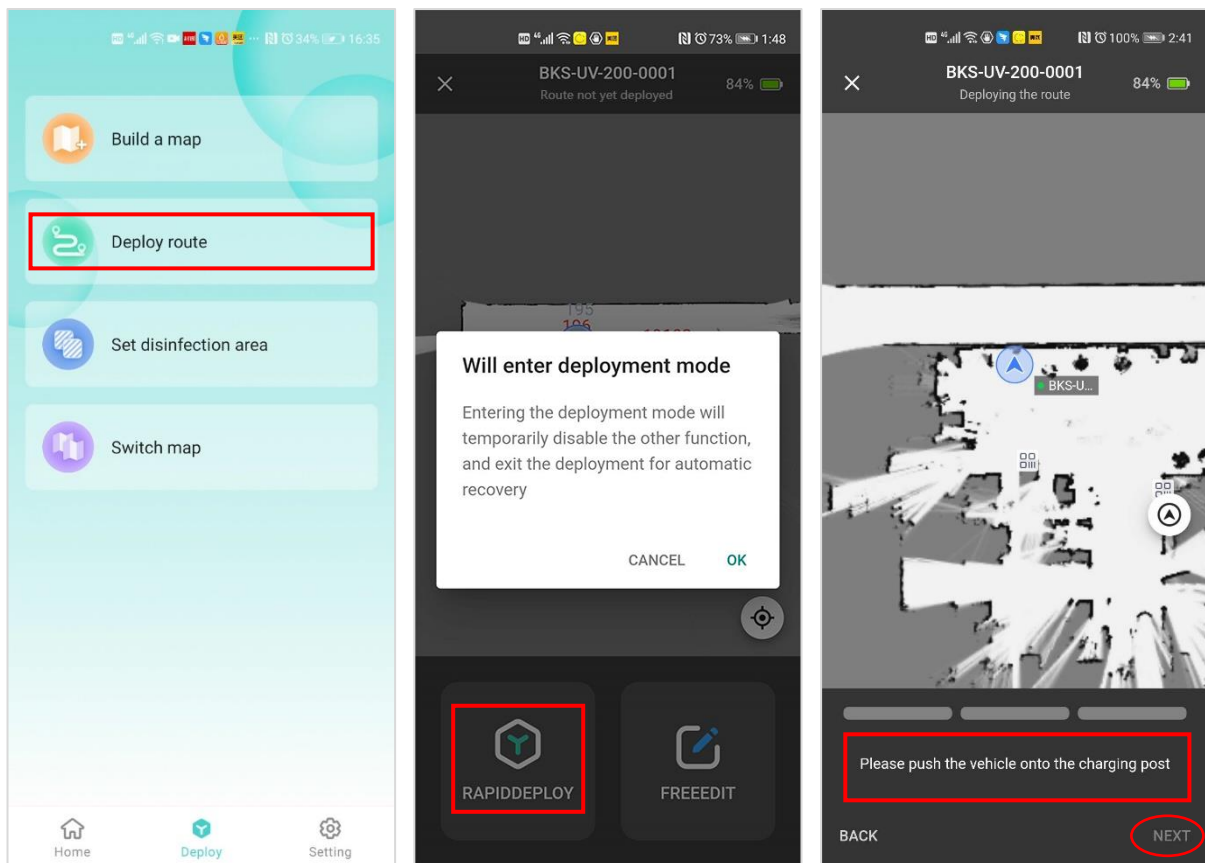
➢ **Path points and disinfection points:** deploy the points by pushing robot /dragging map

In the required position, mark the corresponding point(The small blue icon is the corresponding location point)

Path points need to be set for the route that the robot passes through, such as turns

and gates, which must be marked (as shown in Figure 2 below: gray points are path points).

Disinfection points ![DISINFECT] are set as required for the environmental site (as shown in Figure 3 below: purple icons are disinfection points).
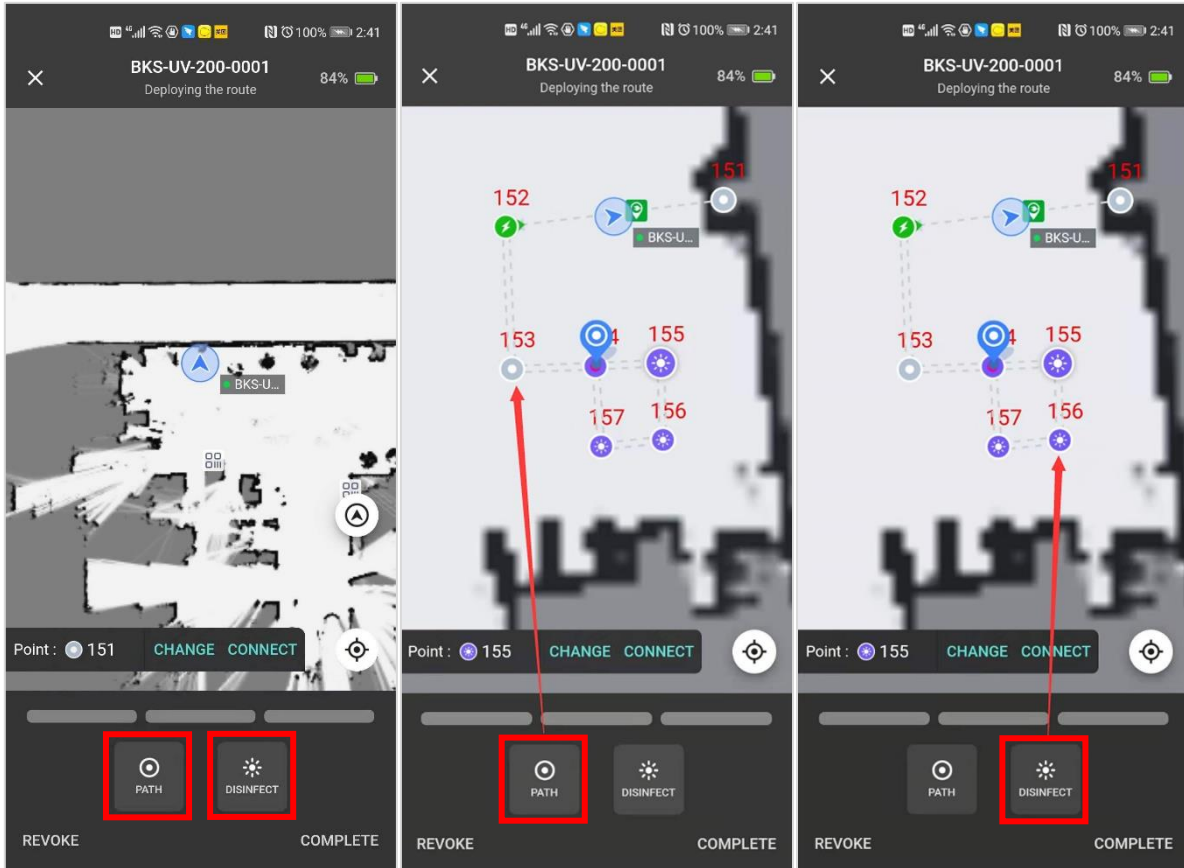

"Change"、"Connect" function：Mainly used to connect "nearby points" in series.

"Change" ![CHANGE] is to switch point, that is, changing the current point of the robot to the selected nearby point. After this operation, you can click "Connect ![CONNECT] " to connect the robot's previous path point or disinfection point with the current point. "Point Change"and "Point Connection", these two functions are mainly designed to facilitate route editing.
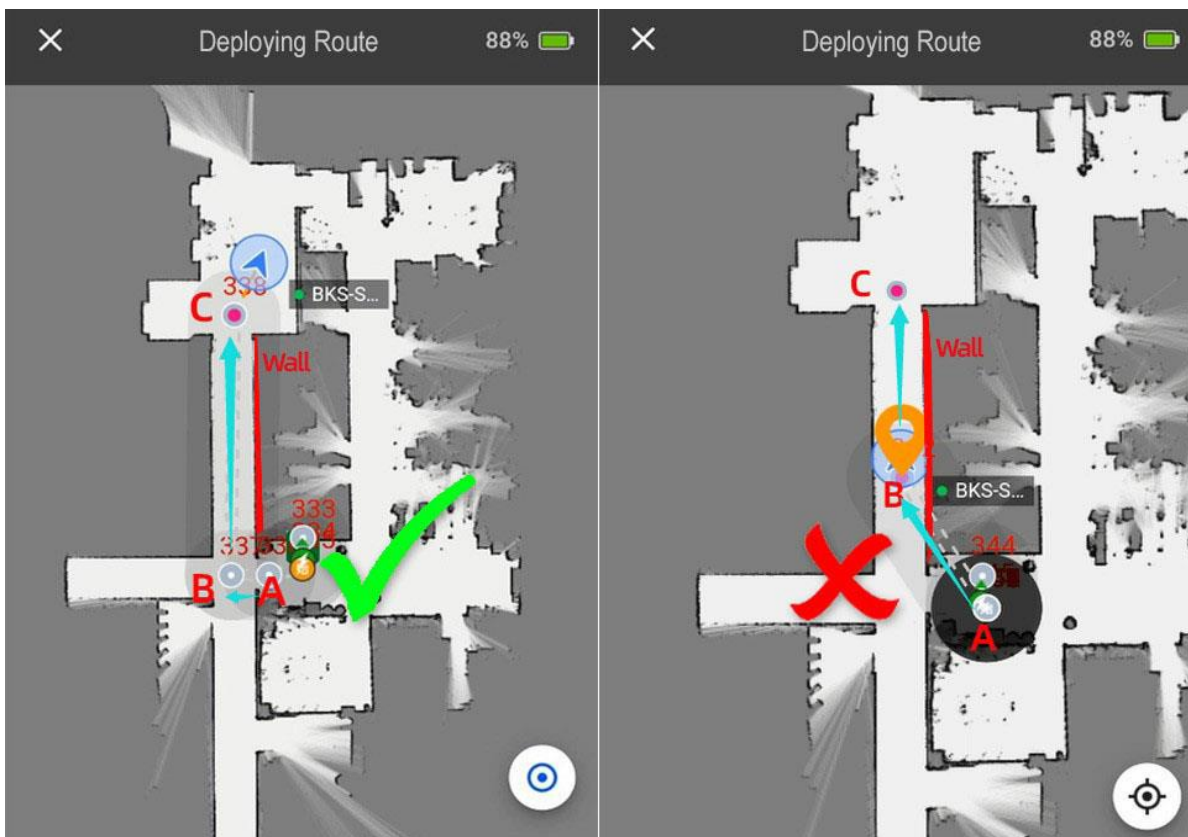
2) Free editing-adjust path

➢ If the route by rapid deployment is not applicable, click "Free Edit" to adjust the route. The robot supports adding/deleting/moving points, changing running route, changing disinfection points, etc.
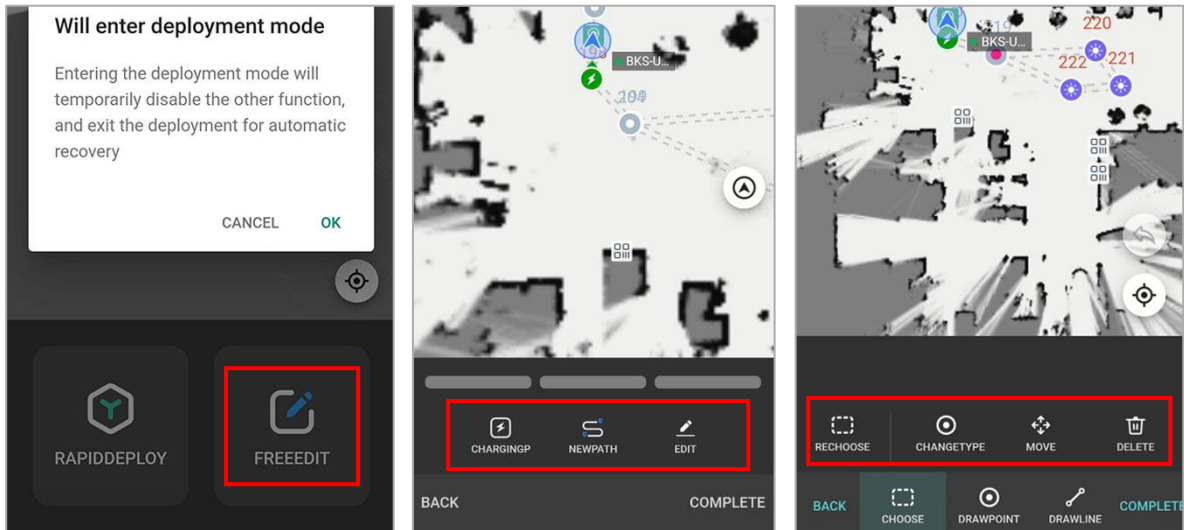
⚠ Attention:

When mapping, the turning should be deployed with path points which cannot pass through the wall, as shown in the figure below:

As shown in the figure above, when the robot has to move from A to C, but is obstructed by a wall or an unmovable obstacle inbetween, the correct path deployment should be A-B-C. **B** must be set as it is the key node of the turning. The figure on the right shows the wrong deployment, in which the path will go through the wall directly, causing the robot unable to walk.
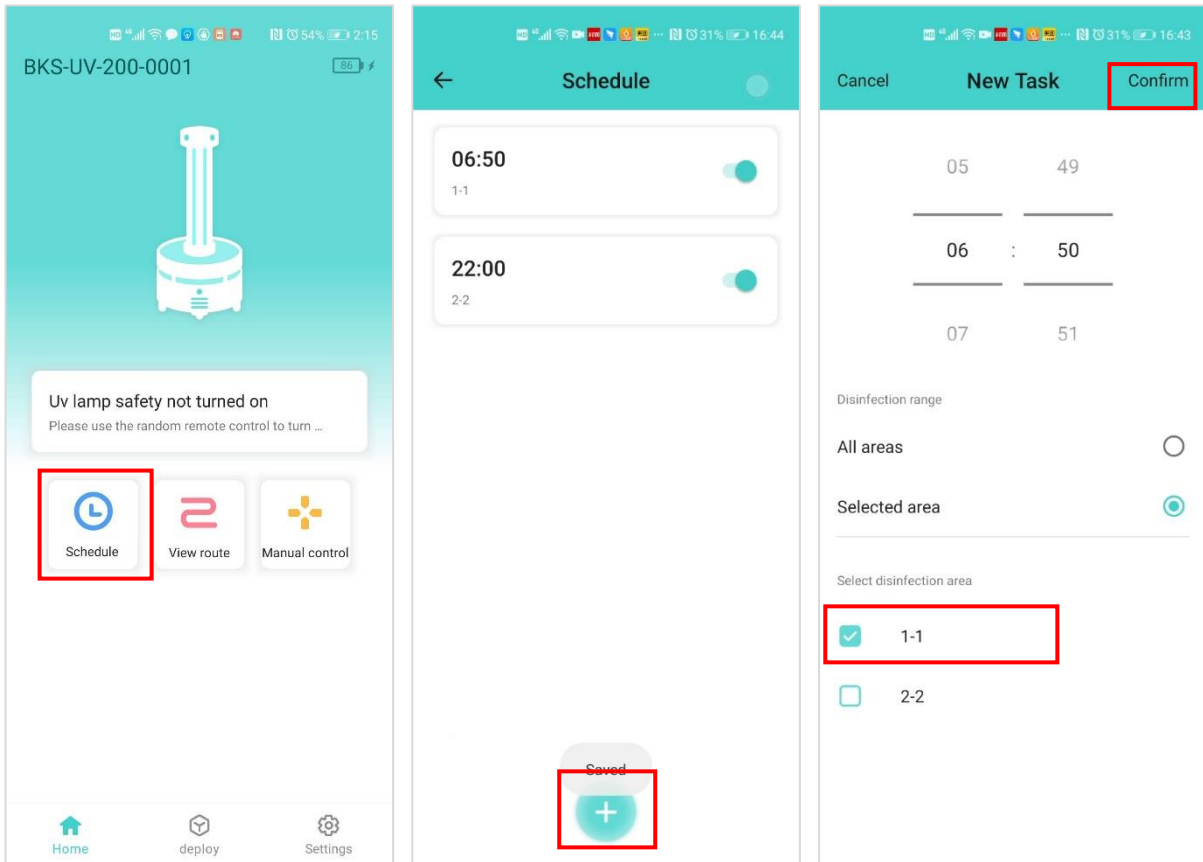
5.8. Disinfection area setting
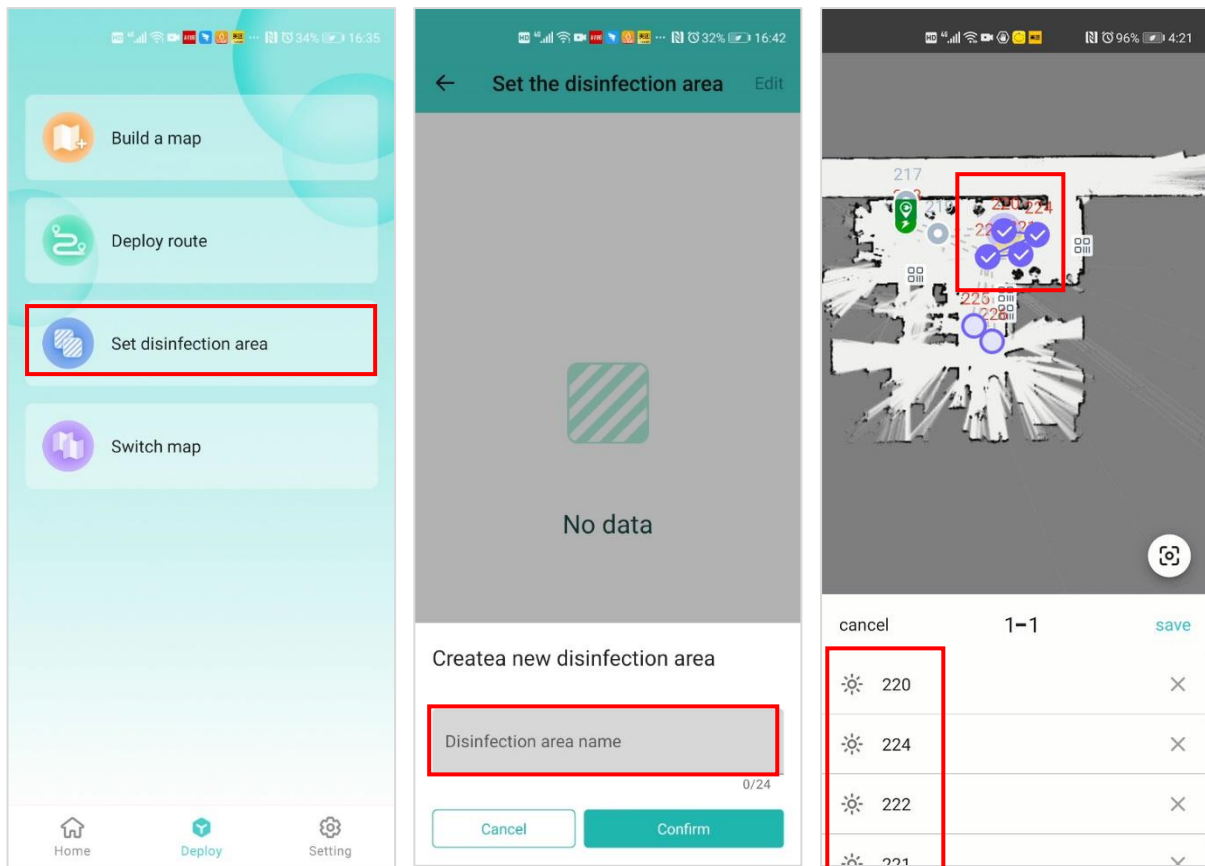
- Click "Set disinfection area" menu to "Create New Disinfection Area" and name each disinfection area separately;
- After creating a new disinfection area, click the purple nodes on the map to select the disinfection points in the area, as shown in Figure 4 above: 220、221、222 and 224 in the red box are the disinfection points selected in the disinfection area "1-1".

5.9. Scheduled disinfection setting

You can freely set (add/modify) the disinfection schedule as required (see the figures below).

Click "Schedule" on the homepage to enter the editing interface

Then click "+"button to set the starting time and disinfection area

After the time and area are set, click "Confirm" in the upper right corner to save the setting

5.10. Other settings

UV irradiation time, loop mode, volume adjustment and firmware upgrade are all contained in the "Settings" menu, which can be set by the user:
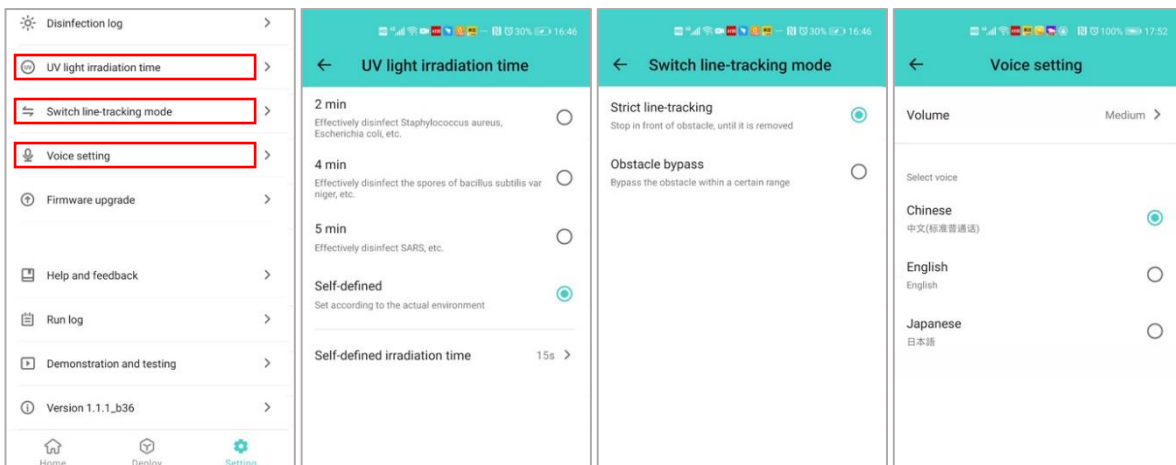
6. Start to work

1) When all are ready, turn on the UV lamp safety switch ![switch]( );

2) Go back to the homepage of App, click the "**Start Disinfection**" button, select "Full‑area Disinfection / Selected‑area Disinfection", and the robot will start working along the set path.
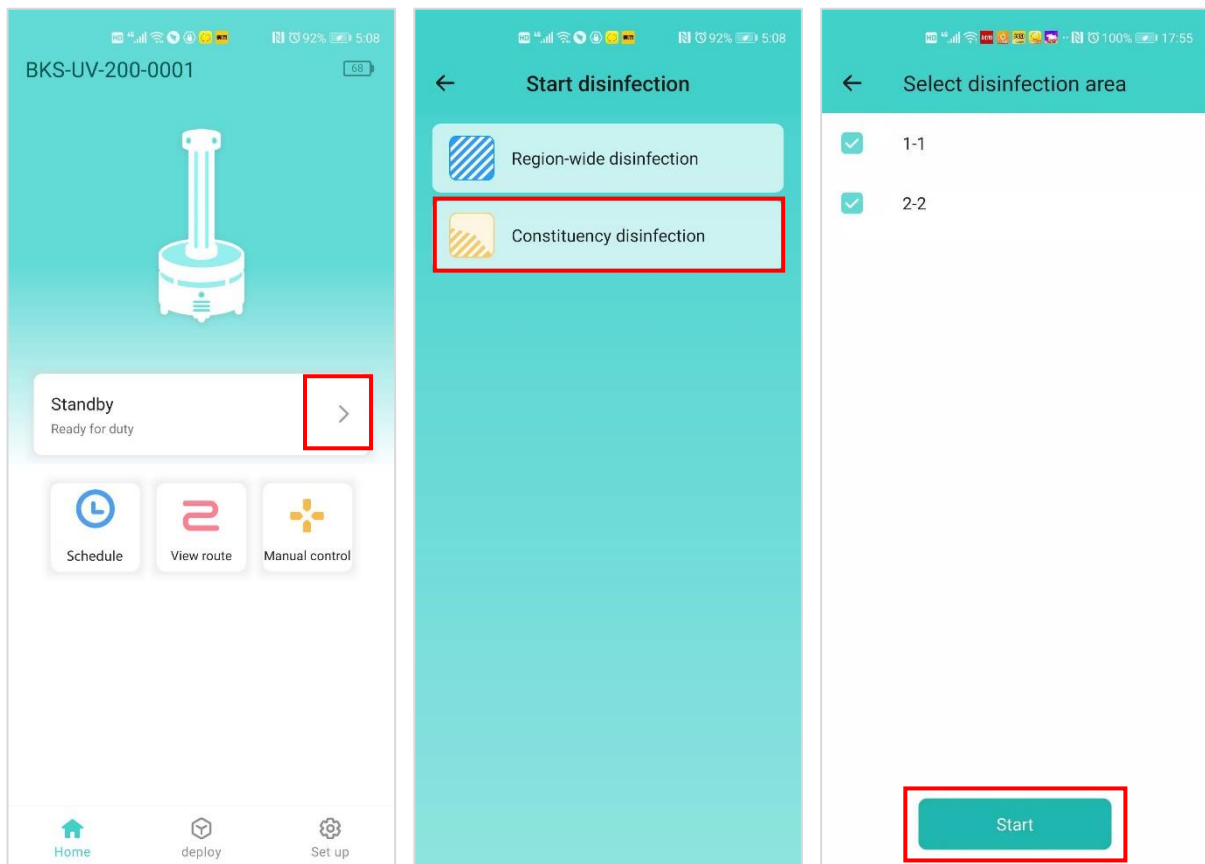
Thereafter, the robot will disinfect as scheduled every day.

www.boocax.com

Business cooperation / after-sales: 400-161-8661

Beijing Headquarter:	Shenzhen Branch:	Shandong Branch:
Room 606, Jianjin Center, Yongtaiyuan A No.1, Qinghe, Haidian District, Beijing	3F, Building 10, COFCO Fu'an Robotics Industrial Park, Fuyong Street, Baoan District, Shenzhen	No.269 Hengfeng Road, Zoucheng Central Electromechanical Industrial Park, Ji'ning, Shandong