User Manual for 4-in-1 Cleaning Robot (IIMT-CL-V)



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Purpose

This manual introduces the functions, technical specifications, and detailed operation methods of the 4-in-1 unmanned vehicle, helping users understand and operate the robot.

Reader target

This manual applies to:

- Client
- Sales engineer
- Installation and debugging engineer
- Technical Support Engineer

Revision history:

Time	Revision history
2026/01/16	First release
2026/01/31	Add edge operation guidance and elevator deployment guidance
2026/02/06	Add product unpacking instructions
2026/03/09	Modify peripheral settings, add overlay path to generate edge paths, and provide network connection guidance

1. Safety Signage Description

This chapter primarily outlines the safety principles and regulations to be observed when using robots or robotic systems. Users should carefully read and strictly adhere to the safety-related content in this manual. Operators must fully recognize the complexity and hazards of robotic systems, with particular attention to the content related to warning signs.



warning ：

This sign indicates a potentially hazardous situation that, if not avoided, may result in personal injury or serious damage to equipment.



Note ：

This refers to a situation that, if not avoided, may lead to machine damage.



Reminder ：

Common errors, if not avoided, may prevent the operation from being completed.



The Jitri 4-in-1 Cleaning Robot is an automated cleaning device that combines floor washing, sweeping, vacuuming, and dust pushing functions. Designed for public spaces such as office buildings, commercial complexes, and shopping malls, it effectively cleans various flooring surfaces including terrazzo, marble, ceramic tiles, epoxy resin, sandstone, artificial stone, and short-haired hard carpets.

2、Security Notice

2.1 Usage Notes



Warning ：

● Robots are prohibited from loading goods, open flames or stoves, and any flammable solids, gases or liquids.

● If the robot accidentally enters the wrong position due to obstructions, pause the task immediately (press the emergency stop button on the right side of the screen), push it to the correct path, and resume the task (release the emergency stop).

● Do not play or roughhouse in front of the robot to avoid unnecessary injuries.

● The robot is equipped with automatic obstacle avoidance, but it has blind spots. Do not suddenly block the robot while it is moving at high speed, as this may cause safety hazards.

Reminder ：

● This wheeled self-cleaning robot is designed for indoor flat surfaces only. Do not use outdoors (e.g., open balconies) or on uneven terrain (e.g., stairs).

● Do not drag the robot during operation. To push or move the robot, click the screen to pause it.

● Do not push the robot backward while it is powered on.

● Do not block the robot's sensors, as this may cause abnormal movement or loss of positioning.

● Temporary adjustments are prohibited during robot operation. All actions must be initiated after pausing the robot by tapping the screen.

● Do not perform cleaning or maintenance while the machine is running.

● When transporting robots, ensure the water in both the clean water tank and the wastewater tank is completely drained. Do not tip over the machine during transport, as this may damage the unit.

2.2 Environmental Notice



Warning ：

● This robot is designed for flat surfaces and is not suitable for environments with steps, steep slopes, or overly compact terrain.

● It is not recommended to use robots on heavily oil-contaminated ground.

● Loose power cords or other debris on the floor may trip or entangle the robot. Remove them before use.

● When using this product on protruding surfaces like thresholds, ensure the height of any protrusions on the floor is within 20mm.

● The optimal clearance width for robots should exceed 100cm, while longer passages require a width of over 110cm to ensure optimal flow.

● The robot's maximum climbing angle is 8° (in non-cleaning mode). To prevent potential risks from the robot slipping during uphill movement, avoid pausing the robot while climbing.

● The robot is only suitable for cleaning flat surfaces (when in cleaning mode).

● Do not use it on visible slopes (greater than 3°).

● In environments with ground heights between 14-22cm, surfaces like solid black (e.g., baseboards), mirror-like walls, or fully transparent surroundings may interfere with the robot's radar reflections, causing movement anomalies. Technical support should assess the situation and potentially modify the environment (e.g., applying adhesive tape) to ensure proper radar reflection.

2.3 Power Supply Notes

Warning ：

● For first-time use, fully charge the robot to 100% before using it.

● To ensure optimal robot performance and battery longevity, always maintain the battery level above 10%.

● When the battery level drops below 10%, the robot will enter low-power mode and requires immediate charging.

● When the battery level drops below 2%, the robot enters protection mode and cannot operate. It must be recharged before use.

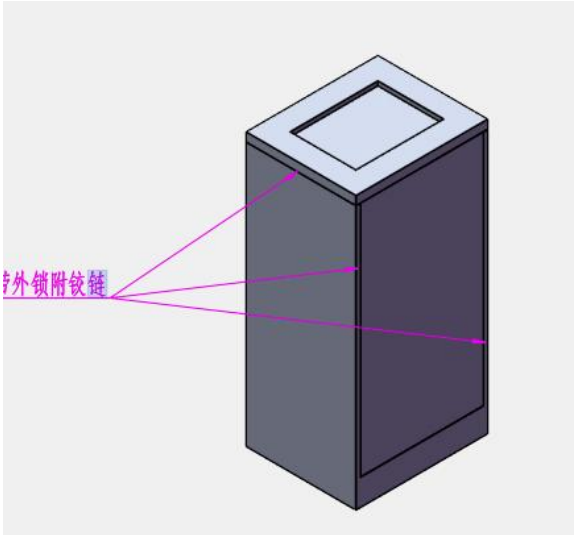
● If the machine is not used for a long time, unplug the power cord.

● For devices left unused for extended periods, ensure the battery is fully charged every two weeks.

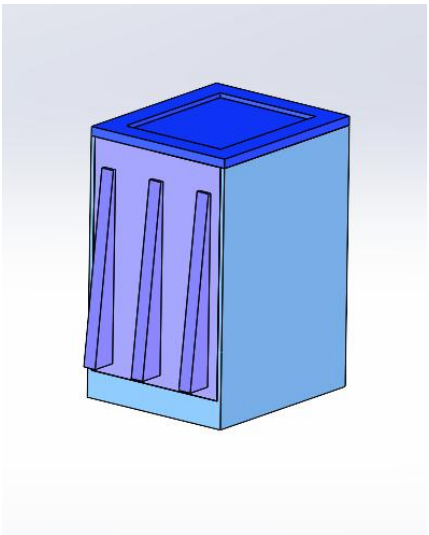
3. product formation

3.1 Product Packaging

The product delivery includes two separate packages: one for the robot and another for the charging station.



Charging station



Robot

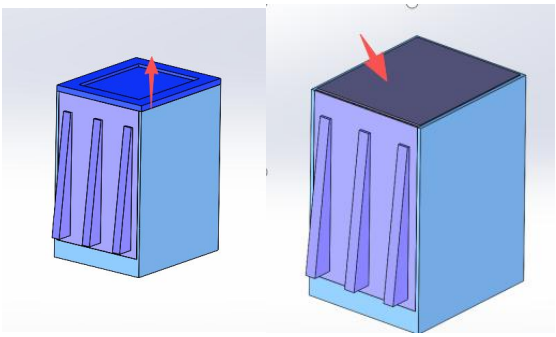
Name	Length	Width	Height
Charging pile	560mm	500mm	1235mm
Robot	954mm	700mm	1160mm

3.1.1 Robot Unboxing

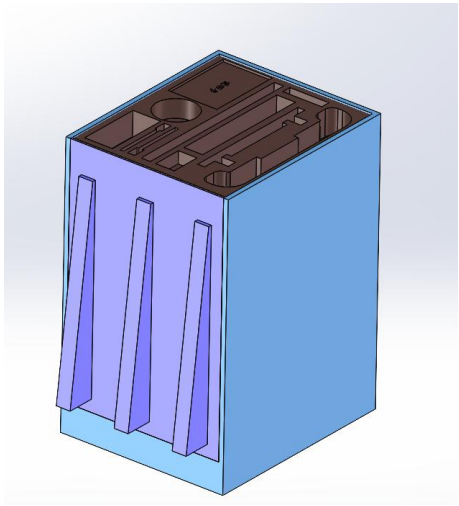
1. After receiving the package and confirming it is level, we will first loosen the hinge of the top cover.



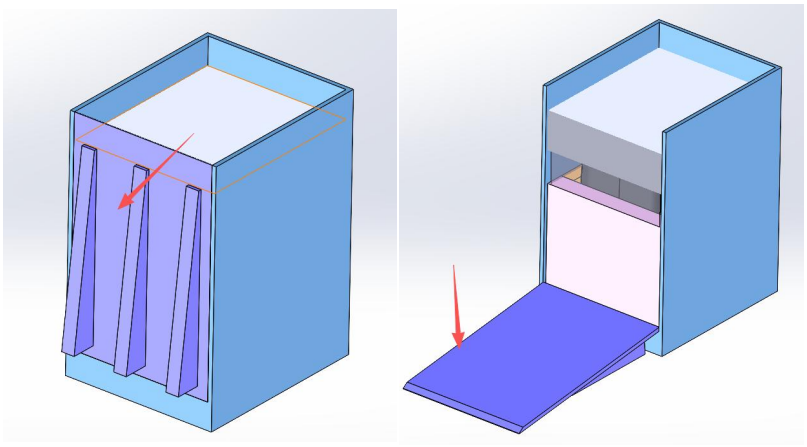
2. Then open the top cover to expose the shock-absorbing foam.



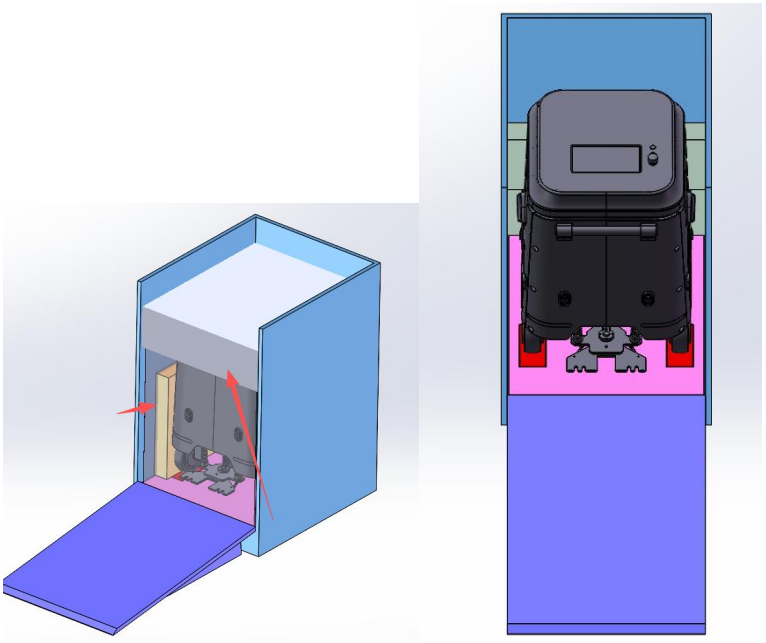
3、Lift the foam cover to reveal the accessories below: water-absorbing brush, dust-absorbing brush, dust-removing brush, roller brush, edge brush, and instruction manual.



4、After removing all the upper components, the lower layer becomes the robot. First, loosen the hinge on the front panel, then you can directly lower it. The lowered panel forms a sloping surface.

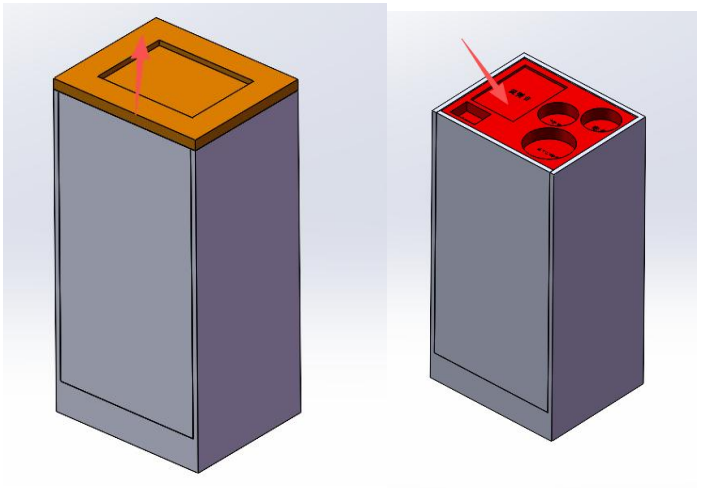


5、At this point, you can remove the shock-absorbing foam around the robot and push it off the slope.

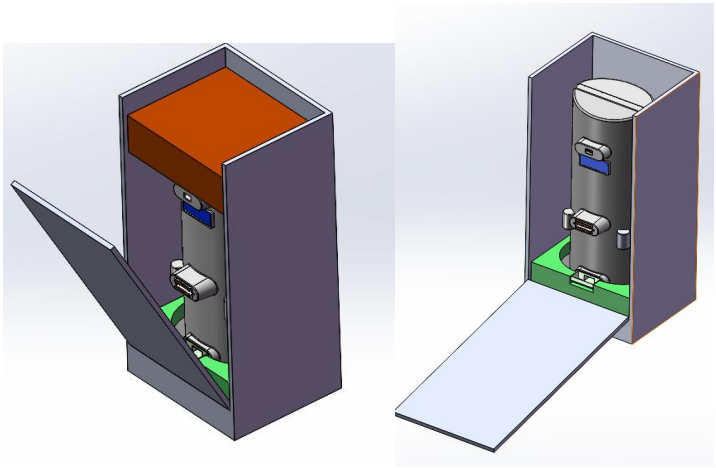


3.1.2 Unboxing of Charging Piles

1. The same applies to charging station disassembly: first loosen the cover hinge, then remove the top cover to expose the charging station components, including power cord, water hose, hand pump cord, filter sponge, and user manual.

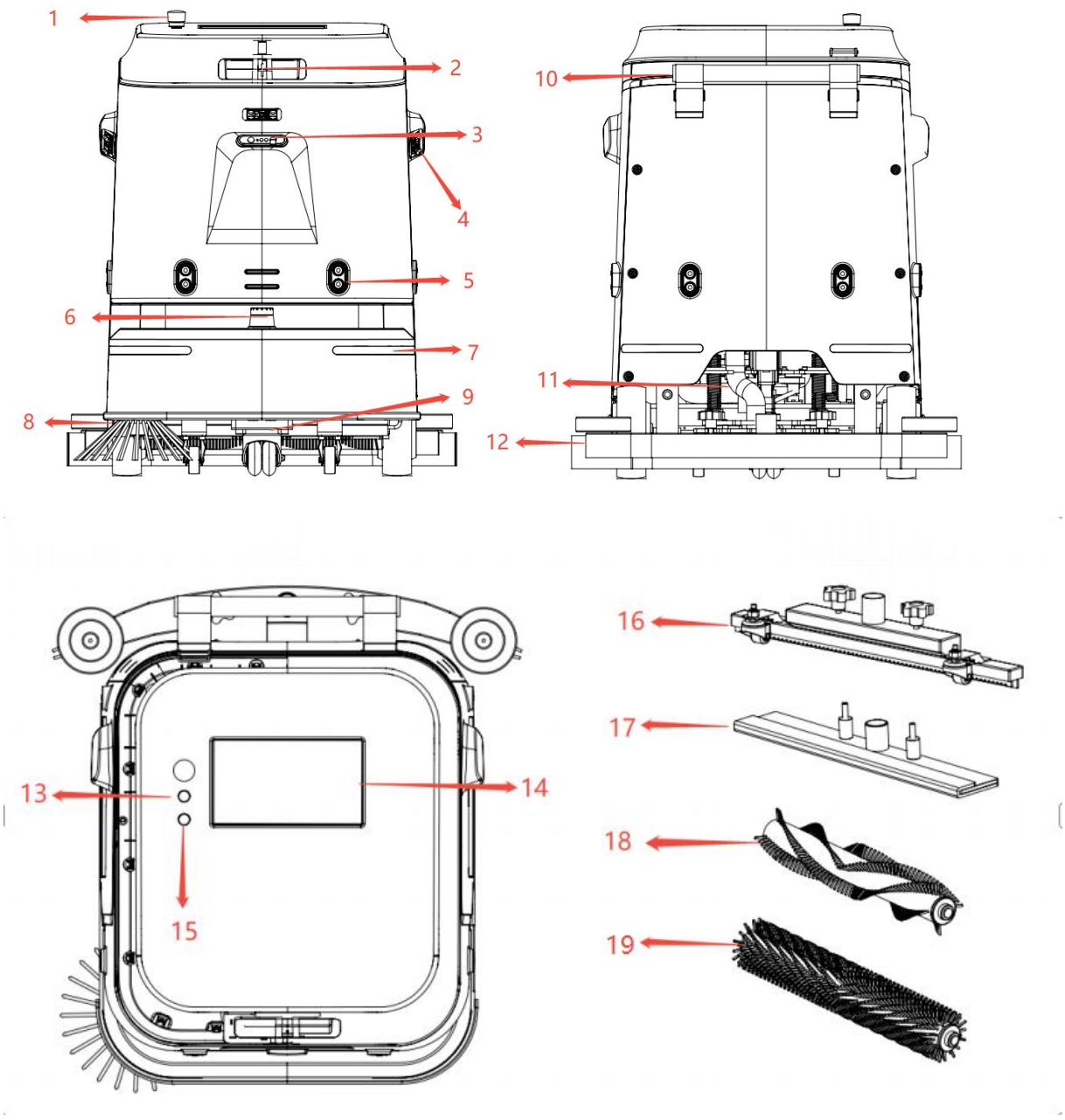


2、After removing all upper components, detach the front panel hinge and lower the panel to expose the charging station. Then, remove the shock-absorbing sponge around it and finally extract the charging station.



3.2 Packing List

1 unit of the entire machine, 1 battery, 1 charger, 1 floor-washing roller brush, 1 sweeping roller brush, 1 side brush, 1 water-absorbing pad, and 1 dust collection component.
1 pusher, 1 water pipe fitting, and 1 product manual.



NO.	Explaination
1	Emergency stop switch
2	Water inlet
3	Depth camera
4	Side depth camera
5	Ultrasonic radar
6	Laser radar
7	Indicator
8	Brush
9	Drain outlet
10	Handrail

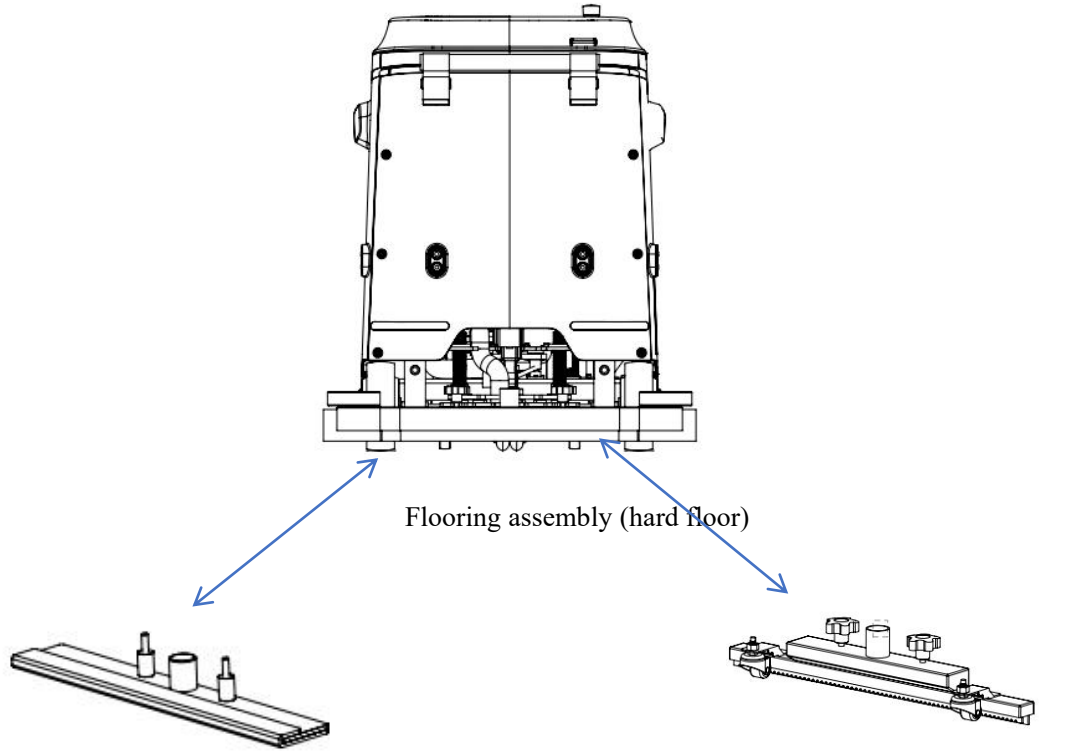
11	Aspiration channel
12	Water-absorbing plough
13	Wake button
14	LED hold
15	Mains switch
16	Vacuum cleaning assembly
17	Dust thrower assembly
18	Vacuum cleaner brush
19	Floor scrubber

3.3 Performance Parameters

Product features	**Explaination**
Product model	IIMT-CL-V
Working voltage	DC 23V~29.2V
Power input	AC 100V~240V,50/60 Hz
Power output	29.2V，15A
Charging interval	About 3.5 hours (from 10% to 100%)
Duration	Floor cleaning: 3.5 hours; vacuuming and pushing: 3.5 hours; carpet vacuuming: 3 hours; dust pushing: 10 hours
Total weight of the machine	107kg
Machine dimensions	75 cm long, 70 cm wide, and 85 cm high
Material of the entire machine housing	ABS
Cruising speed	0.2~1 m/s ui adjustable (default: 0.6)
Noise of cleaning operation	<72dB
Minimum width	90cm
Maximum obstacle clearance	20mm
Maximum climbing angle	8°
Clean width (including edge brush)	56cm
Cleaning efficiency	800 ± 50 m^2/h
Cage capacity	1.15L
Tank capacity	Clear tank: 15L
	Sewage tank: 12L
Operating system	Ubuntu

Communication network	support WiFi
Mobile terminal APP	support
Assignment Mode	Manual mode, automatic mode
Auto charge & auto water replenishment	Supports (requires a workstation)
Optional features	Workstation/charging station
Work environment	Temperature: 1℃~40℃; Humidity ≤85% RH
Storage environment	Temperature: -20°C to 60°C; Humidity ≤85% RH
Working altitude	<2000 m
Applicable ground	terracotta, marble, floor tiles, epoxy resin, sandstone, artificial stone flooring, short pile carpet, etc.
Levels of protection	IPX4

3.4 Post-Cleaning Components



Flooring assembly (hard floor)

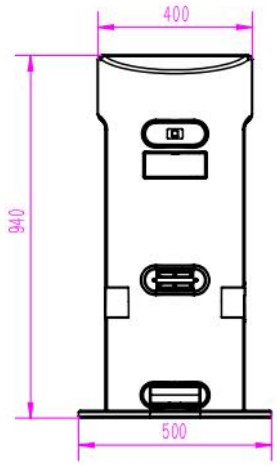
Dust removal assembly (hard floor)

Vacuum cleaner (soft carpet)

4. Installation of charging stations

4.1 Placement Requirements

1. The charging station measures 0.94 meters in height, 0.5 meters in width, and 0.37 meters in thickness. It must be installed flush against the wall, with no obstacles within 1.5 meters on either side and no barriers within 3 meters in front (Note: Avoid reflective materials around the charging station).



2. Charging stations must be placed on flat surfaces and should not be installed on slopes or carpets.
3. The charging electrode height of the charging station must match the electrode on the 4-in-1 cleaning robot. If misalignment occurs, adjust the charging station height to achieve proper alignment.
4. Charging stations should be positioned in fixed locations to prevent the four-in-one cleaning robot from misplacing itself during charging. Marking the designated areas can help ensure proper placement.

4.2 Power Supply Requirements

1. The charging station comes with a standard three-core plug compliant with national standards, supporting 110-230V mains power. With a 1.7-meter cable, the charging station should be placed within 1.5 meters of the outlet for optimal charging.



4.3 Water Acceptance Requirements

1、The charging station comes with a standard 2mm diameter hose for water intake, measuring 2.1 meters in length and featuring a 4mm internal thread connector. Therefore, when installing the water supply, the faucet must be placed within 2 meters of the charging station and equipped with a 4mm external thread fitting.





4.4 Discharge Requirements

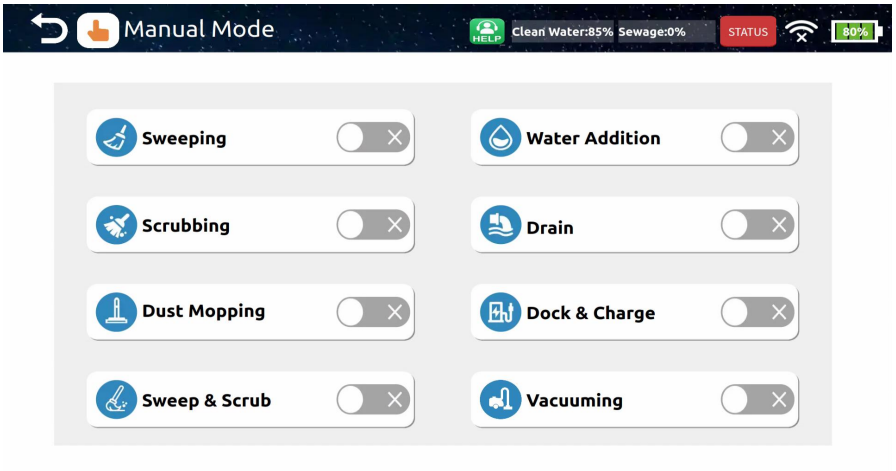
1. The charging unit's discharge pipe is a 1.3-meter telescopic hose, so the drain must be installed within 1.3 meters of the charging station.



4. 5 自动充电

4.5 Automatic Charging

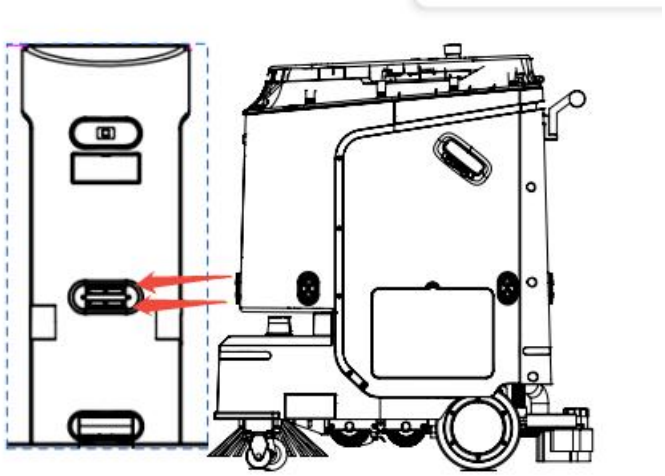
1. Confirm the 4-in-1 cleaning robot has reached the back point (add back point by referring to Section 5.6 'Create Route Points'). Click the 'Find Charging Piles' button in the UI-General User-Auto Mode to automatically locate and charge the robot.



2. When the charging electrode of the 4-in-1 cleaning robot contacts the charging electrode of the charging station, a current sound is emitted. The right-side indicator light turns red, signaling that charging is in progress. The charging process ends when the current sound stops or the light turns green.

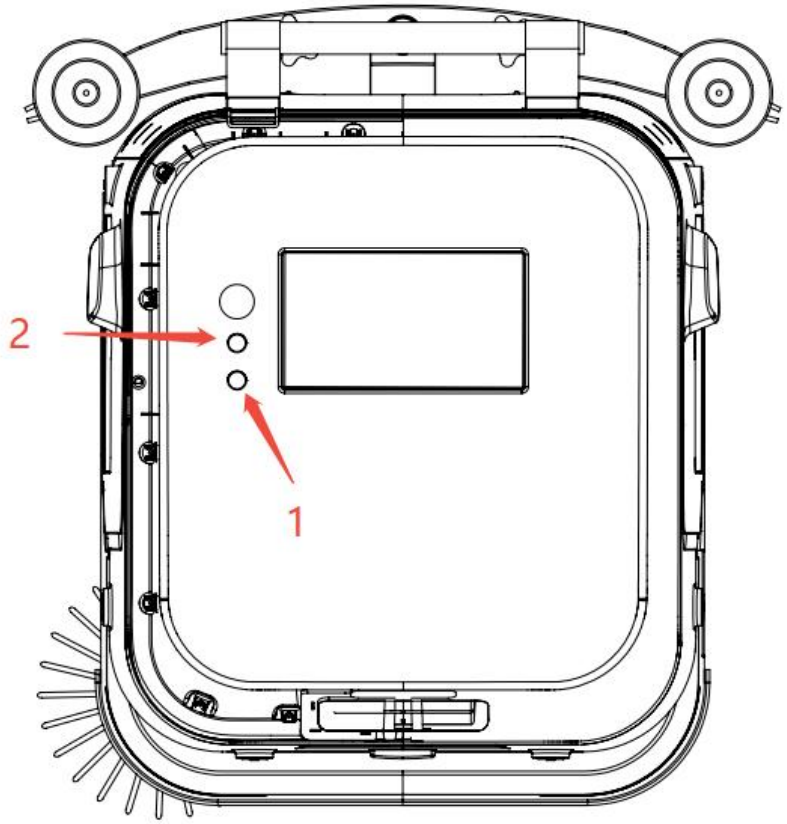
4.6 Manual charging

Guide the 4-in-1 cleaning robot to the charging station. When the robot's charging tip contacts the charging electrode, the right-side indicator light turns red, signaling that charging is in progress. The charging process ends when the current sound stops or the light turns green.



5. Product Usage

5.1 Power On/Off



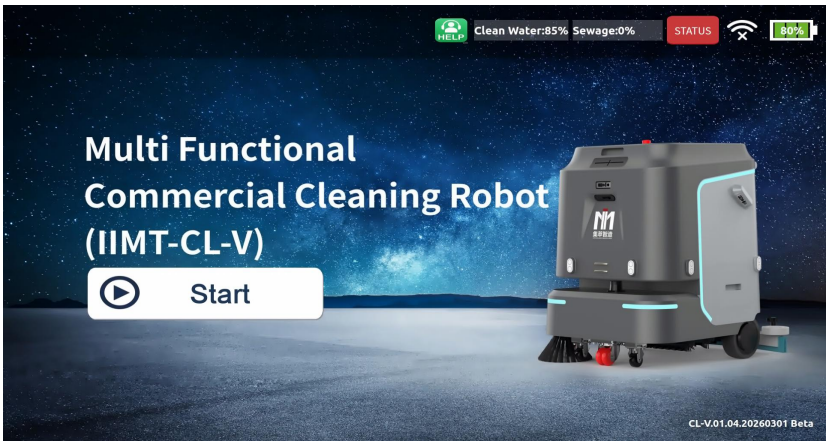
First press the ① "Power" button. After 1 second, hold the ② "Wake Up" button for 2 seconds. When the "beep beep beep" sound is heard, the 4-in-1 cleaning robot will turn on. (Note: It is recommended to start the robot at the original mapping point. Starting it at a non-mapping point may cause positioning errors. The default location is in front of the charging station.)

shut down

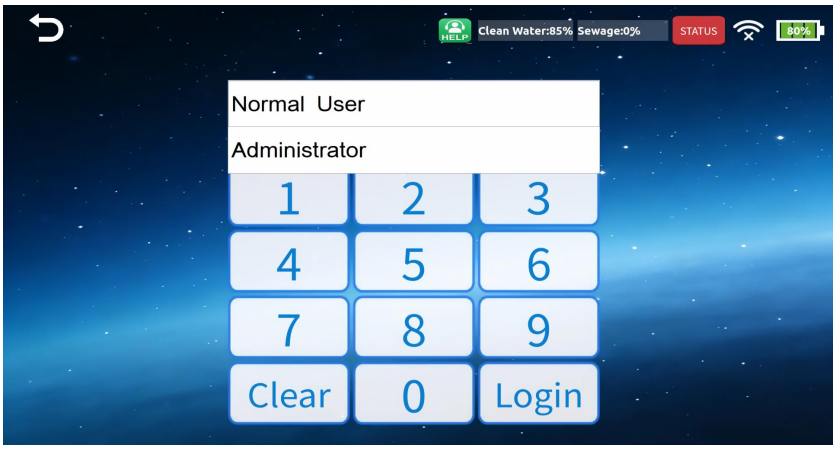
Press the ① Power button to shut down.

5.2 User Login

UI operations are divided into two types of users: administrator users for deployment personnel and regular users for general operators. Both need to enter the homepage, click 'Start Operation', and log in.

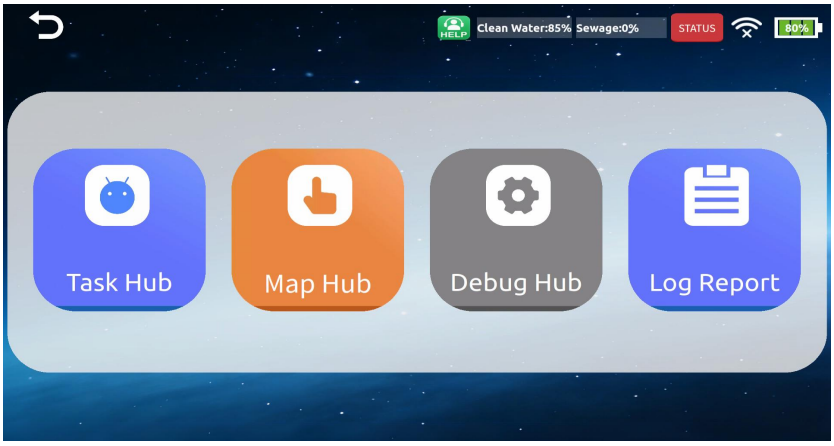


On the login page, click the options to select the required user. The default password for regular users is "123456", and for administrators, it is "1". After entering the password, click "Confirm" to proceed with the user's operations.



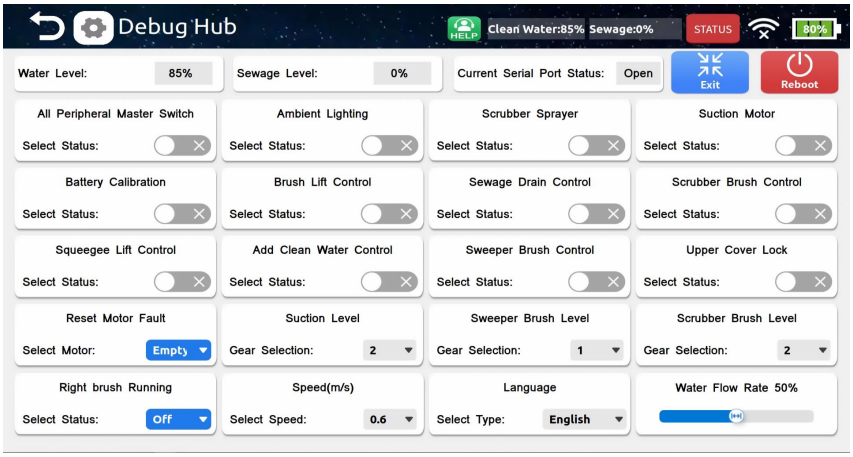
5.3 Peripheral Device Inspection

After receiving the machine, check all its peripherals. You can log in as an administrator to access the debugging management page.



- Clear water level: Displays the current clear water level.
- Wastewater level: displays the current wastewater level.

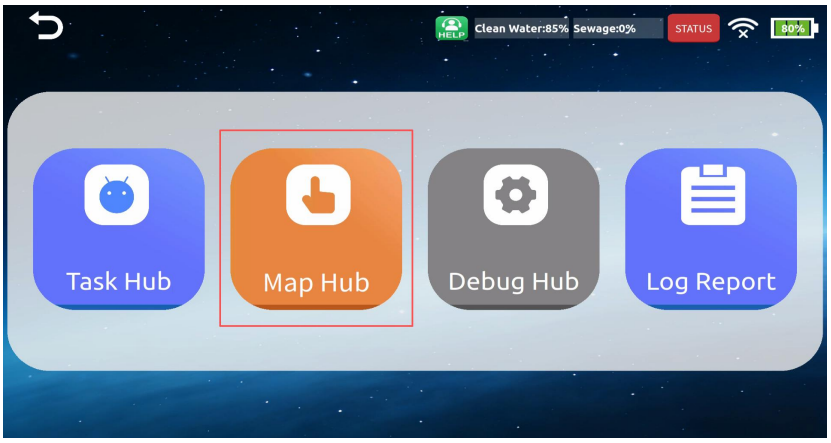
- Current serial port status: displays the current serial port status.
- Exit full screen: Show the built-in Ubuntu system and view system logs and other information.
- All Peripheral Switch: Shows the current status of all peripheral switches, allowing you to turn all peripherals on or off directly.
- Ambient light: Shows if the ambient light is on and allows you to control the switch.
- Floor cleaning spray: Shows whether the floor cleaning spray is enabled. You can turn it on or off.
- Vacuum motor: Shows whether the vacuum motor is on. You can turn it on or off.
- Vacuum brush lift: Shows whether the vacuum brush lift is enabled and controls its operation.
- Vacuum brush down: Shows whether the current vacuum brush down is enabled, allowing you to control the vacuum brush down.
- Drainage control: Shows whether the drainage function is enabled or disabled.
- Floor scrubber control: Shows whether the floor scrubber is on or off.
- Water-absorbing claw lift: Shows whether the water-absorbing claw lift is currently open and allows control of its operation.
- Water-absorbing plunger descent: Displays whether the water-absorbing plunger descent is enabled and allows control of its descent.
- Vacuum roller control: Shows whether the roller is on or off.
- Clear water control: Shows whether the clear water tank pump is on, enabling or disabling the pump function.
- Vacuum suction level: Adjust the motor power to 2nd (default). Level 1 is quiet, ideal for low-flow floor cleaning. Level 2 delivers higher power for carpet suction. Level 3 provides maximum power for hard surfaces with deep stains, requiring high-flow cleaning.
- Vacuum cleaner level: Adjust the recommended default power setting.
- Vacuum cleaner settings: Adjust the power level. Use setting 1 for standard cleaning, and increase power for deeper stains.
- Speed: Adjusts the robot's movement speed. The default is 0.8 m/s.
- Language: Switches the robot's language type.
- Water output: Adjust the spray water output (default 50) based on the cleanliness of the floor.



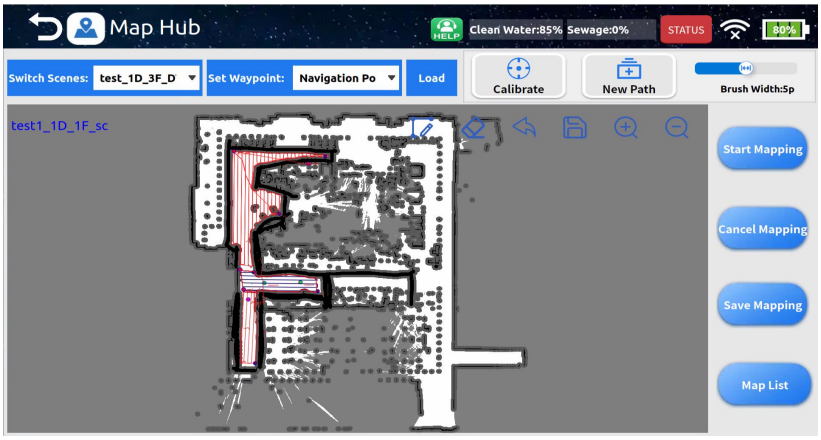
5.4 Create a Map

1. When creating a map, ensure the machine is powered on before the pile (the origin is the default

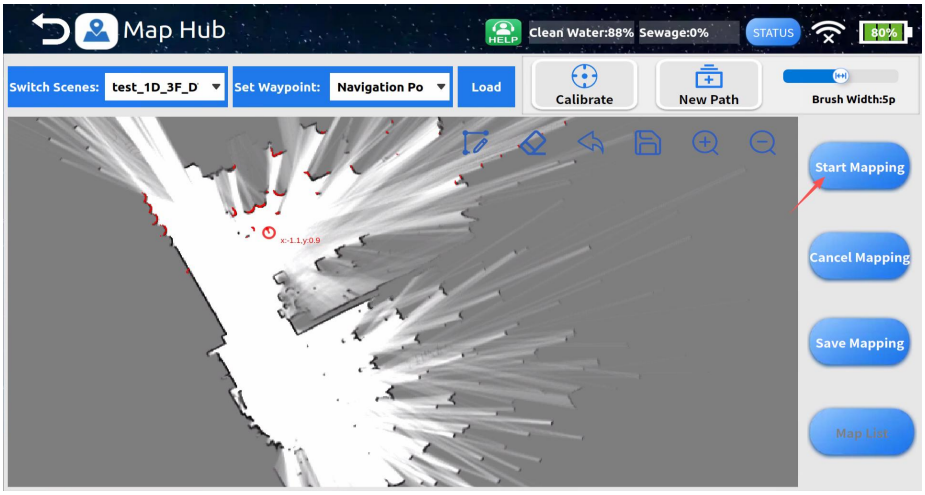
starting point after startup or reboot). For example, if you start the machine at the pile for map creation, subsequent operations will automatically locate it correctly. However, if you restart the machine at a non-origin position, the machine will fail to locate it by default and require manual adjustment. After that, log in as an administrator and click to access map management.



2. Start map creation and select the map size (small map for areas under 300m², large map for areas over 300m²) as prompted.

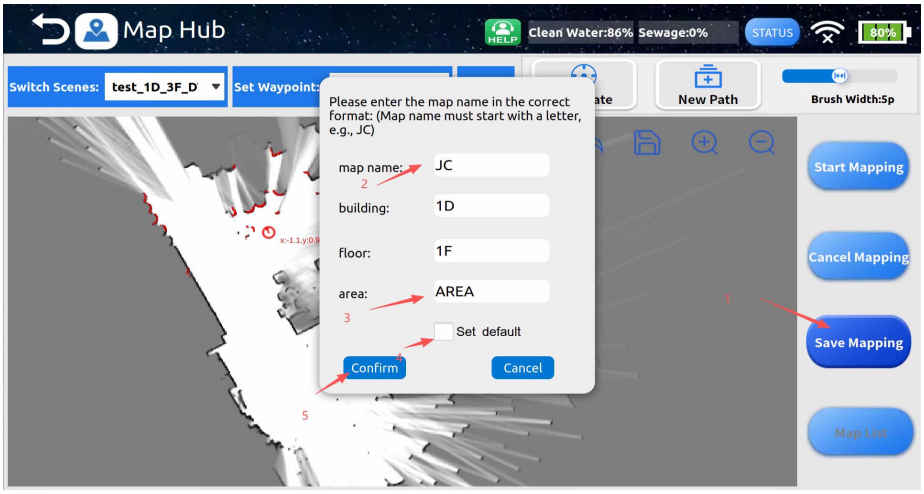


3. The interface center displays a red circle with a dot indicating the robot's position, where the red bar inside the circle shows its orientation. The surrounding red dots represent the radar point cloud. At this stage, the 4-in-1 cleaning robot can be activated to scan the surrounding environment (push the vehicle forward to let its front end sweep the entire space). During the scanning process, the screen will simultaneously display the white areas indicating drivable zones and the gray areas representing prohibited zones or obstacles. When scanning, maintain a steady speed in straight lines and slow down when turning. The white areas indicate executable zones, while the gray areas represent obstacles.



4. After the environmental scan is complete, push the machine back to the charging station, click Save Map, and a naming prompt will appear.

5. Enter the map name as prompted and save it. Note the format [xxx_xD_xF_xxx], where the black part is for free input (e.g., [JCMap_1D_1F_area]). You can check it to set as the default map (the map used by default when the device starts).



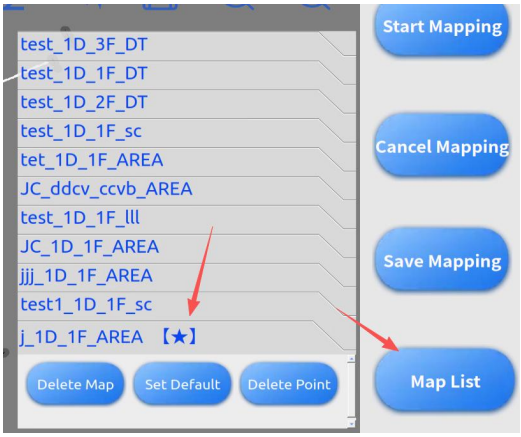
6. After about 5 seconds, the map obstacles will display a gray layer indicating the map is ready for further operations.

5.5 Map List Map Management

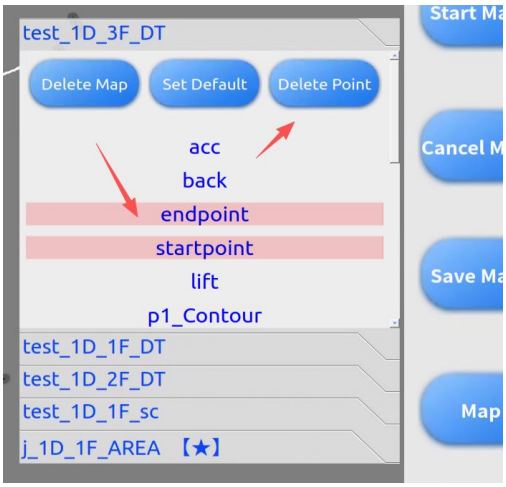
In the map management interface, click "Map List" in the lower right corner to expand the list and view all created maps. Click a map name to display the action buttons: "Delete this map", "Set as default map", and "Delete selected point".

1、Delete this map: Clicking confirm will delete the current map and its points. Proceed with caution.

2、Set as default map: Click to set this map as the default map. The default map primarily contains workstations. If the default map lacks a return point, the task cannot be started. As shown in the figure, the default map name will have a ⋆ mark.



3、Delete selected point: Click the road point name below, then click Delete Selected Point to remove it.



5.5.1 Switch map

The system automatically switches to the corresponding floor map during elevator operation. If you need to switch to another map, manually click the "Switch Scene" dropdown menu in the top-left corner of Map Management. All map options will then appear. Simply select the desired map name to complete the switch.

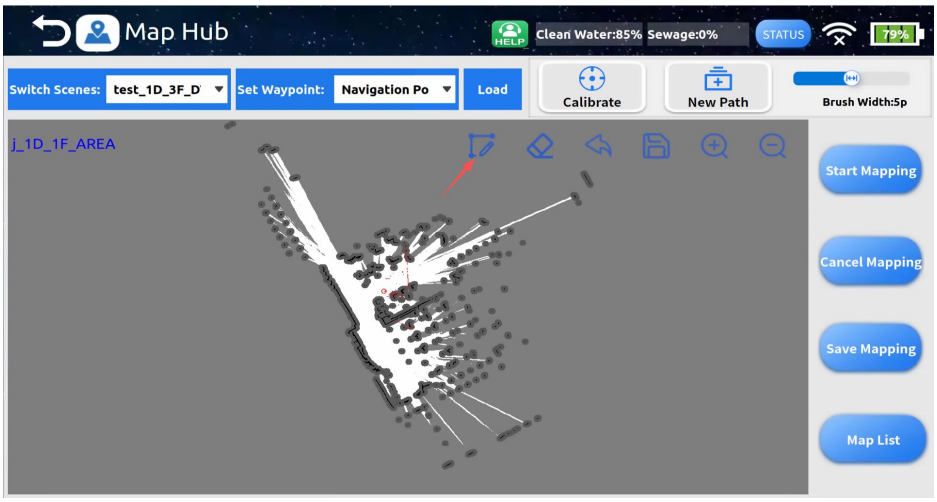


5.5 Edit Map

The map editing button is in the top-right corner of the map:

(1) The first feature is the virtual wall brush, which allows direct drawing on the map upon activation. The designated area acts as a machine-recognized obstacle, preventing machine passage. This tool is typically deployed in hazardous zones like transparent glass partitions or stairwells to create barriers for machine movement.

(2) The second feature is the eraser tool, designed to address temporary obstacles in map construction. These may be removed later but remain visible on the map, allowing users to click the "eraser" button to delete them.

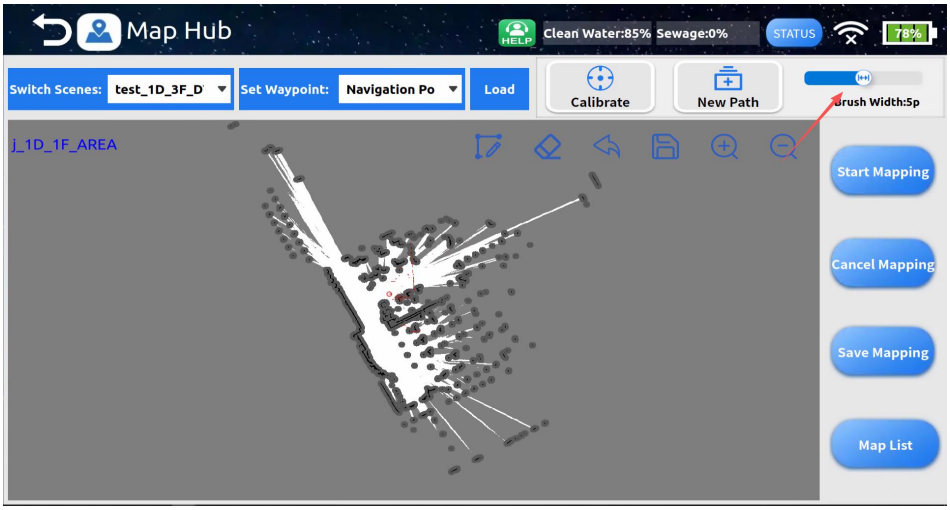


(3) The third is the undo button. When you want to undo your drawing or erasure edits, just click it.

(4) The fourth is the Save button. Click Save after drawing or erasing to make your edits effective.

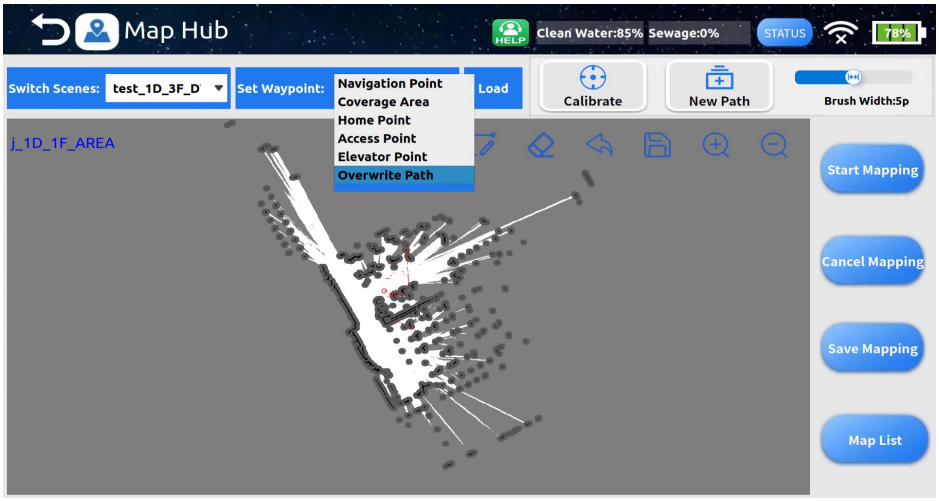
(5) The fifth and sixth buttons are for zooming in and out of the map.

(6) The brush width in the upper right corner is configured for drawing and erasing.

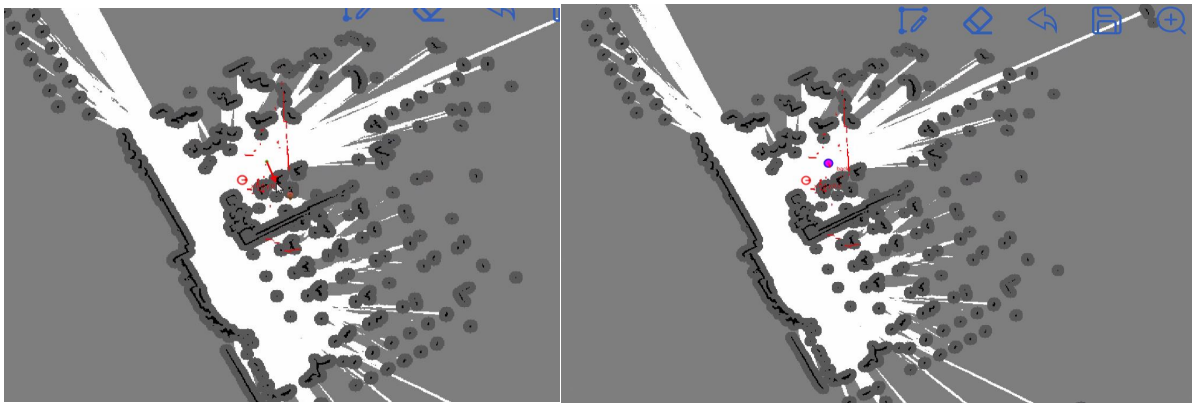


5.6 Create a Route Point

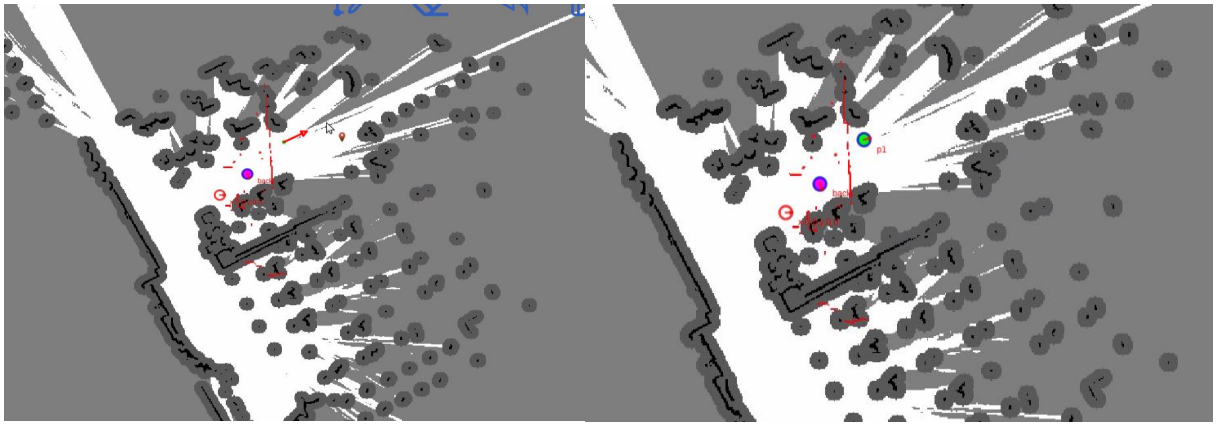
Click the drop-down window in the top-right corner of the map to view the route point types.



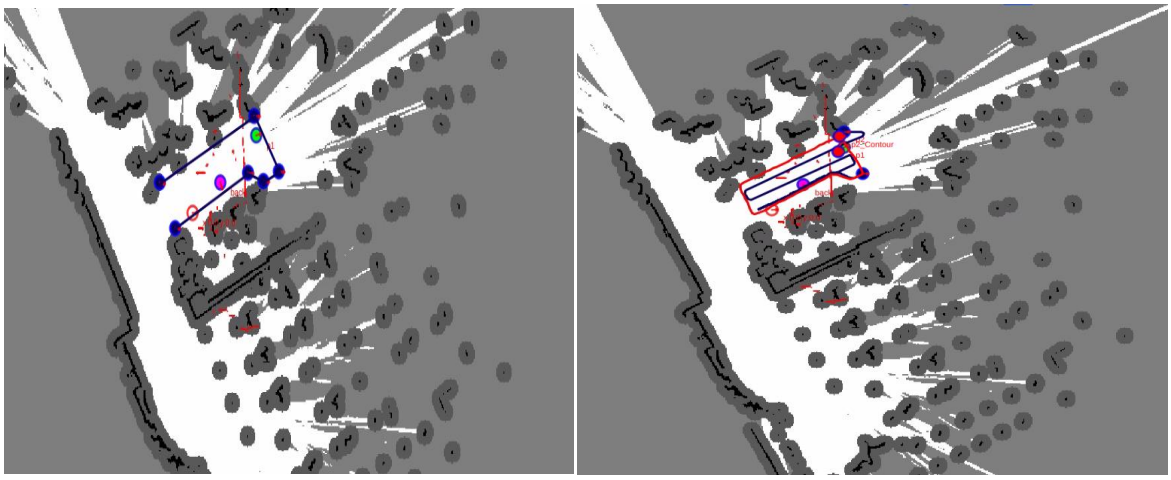
1. Set the return point on the map (required): Select [Return Point] from the [Set Route Points] dropdown, then locate the actual charging station. Hold your finger about 0.5m in front of the station, swipe toward it, and release. A red arrow will appear with a name field. Enter [back] and save. A rose-red circle will then appear on the map, with a red arrow inside pointing to the charging station—indicating successful creation.



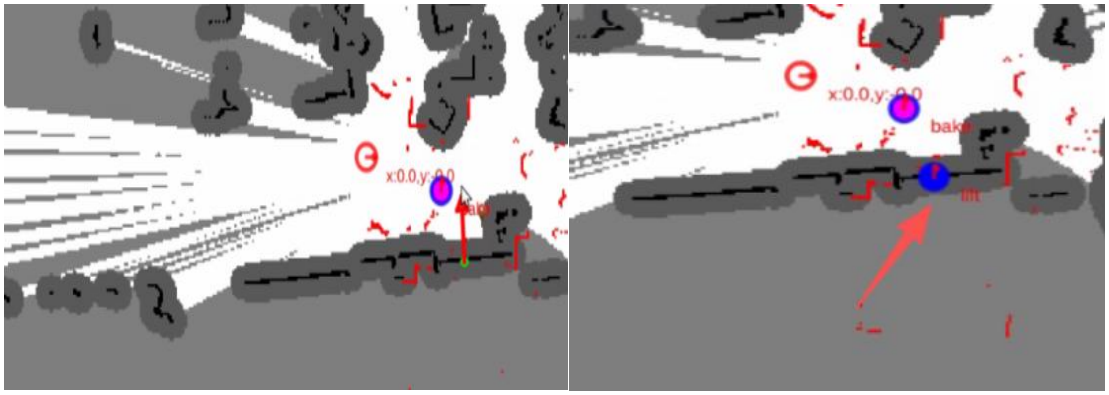
2. To set up a regular route point on the map: 1. Select "Navigation Point" from the "Route Point Settings" dropdown. 2. Tap the location you want to set, then swipe the screen in a specific direction (the machine will face the chosen direction when it arrives). 3. Release and a red arrow will appear with a name field. Enter a name (e.g., P1) and save. 4. A green circle will appear on the map, with the red arrow inside matching your swipe direction. This confirms the route point was successfully created.



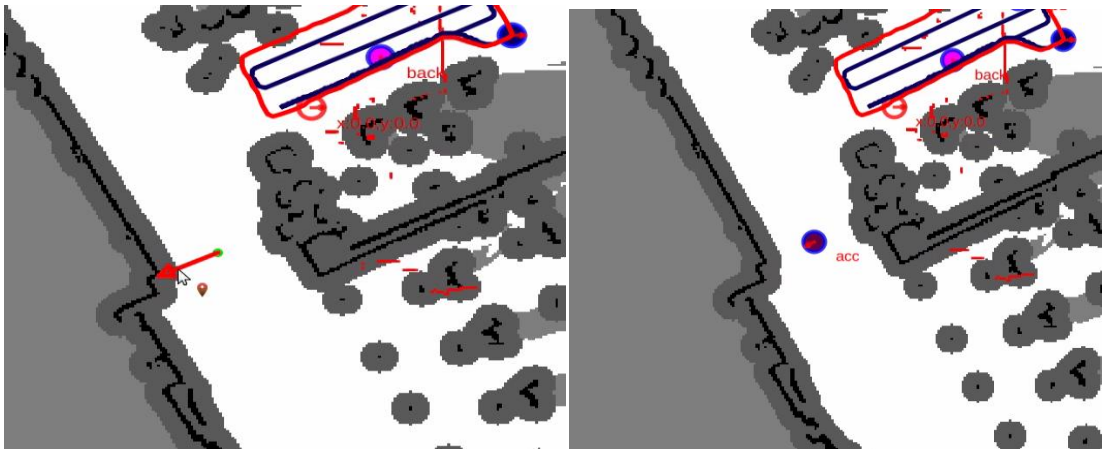
3. Configure coverage zones (required) on the map: Select [Coverage Zone] or [Coverage Points] from the [Set Route Points] dropdown. The coverage zone must be a quadrilateral, while coverage points can be polygons. Tap the target location, then swipe the screen in one direction (to the machine's front-facing direction). Set additional points clockwise or counterclockwise based on the environment. Release the screen when the last point aligns with the first, and a naming dialog will appear. Enter a name (e.g., FG1) and save. The route will then display the covered area on the map, confirming successful creation.



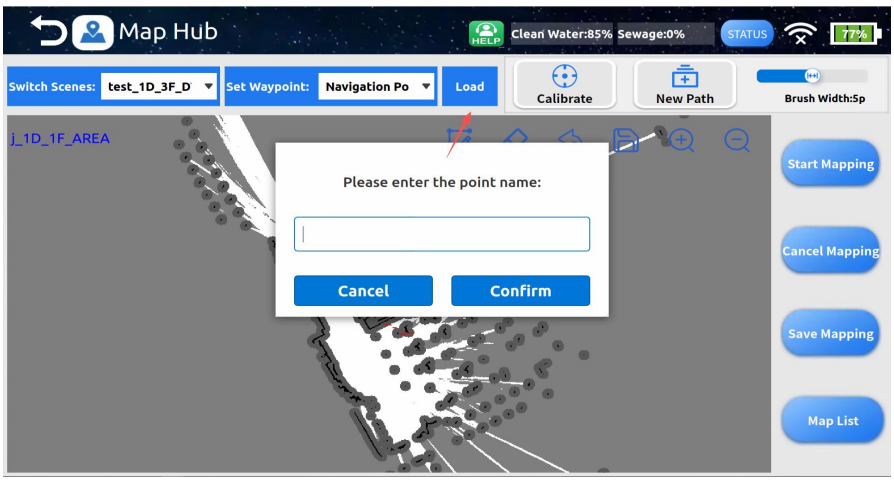
4. To set up an elevator stop on the map: 1. Select "Elevator Stop" from the [Set Route Point] dropdown. 2. Locate the actual elevator position on the map. 3. At a distance of 0.5m to 1m from the elevator door, press and hold the screen while sliding your finger diagonally toward the door (aligned at a right angle). 4. The name box will pop up. Enter "lift" and save the change. 5. A blue circle will appear on the map, with a red arrow inside pointing in the same direction as your slide. This confirms the successful creation.



5. To configure access control points on the map: 1. Select "Access Control Point" from the [Set Route Point] dropdown. 2. Locate the actual access control point on the map. 3. Center your finger on the device and swipe left/right (matching the device's orientation) to open the naming dialog. 4. Enter "acc" and save. 5. A blue-purple circle will appear on the map with a red arrow aligned with your swipe direction, confirming successful creation.



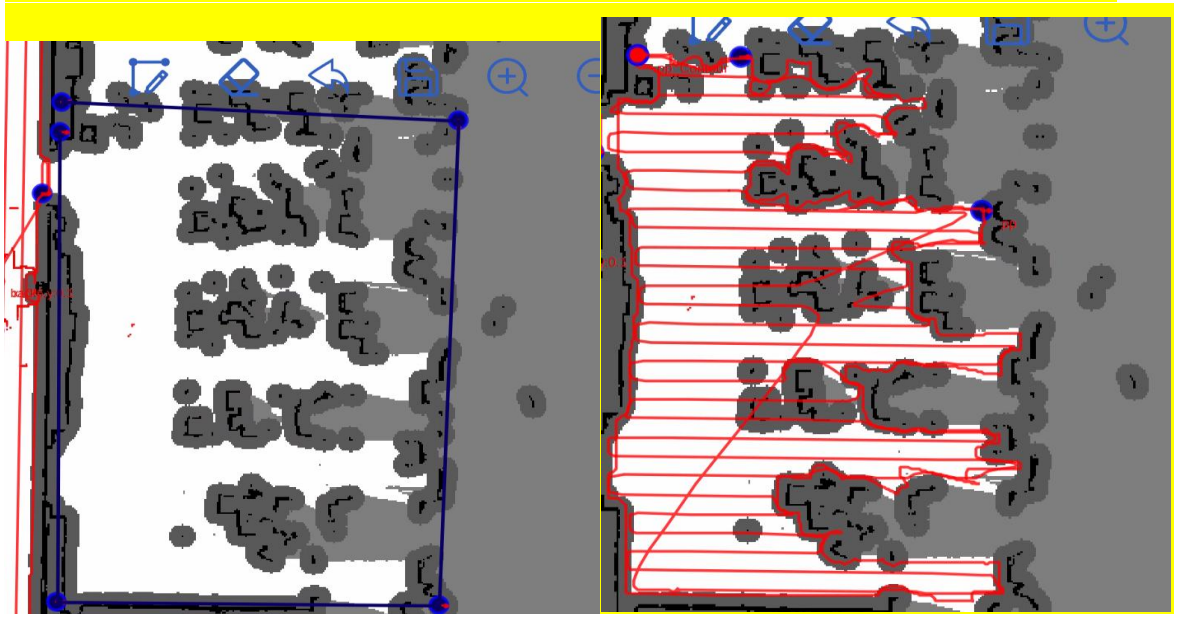
6. **If the vehicle's position is hard to control when creating a route point, you can push it to a designated location and click "Load". This will generate a point at the current machine's position and orientation, making all route points available.**



5.7.1 Generate edge path from coverage path

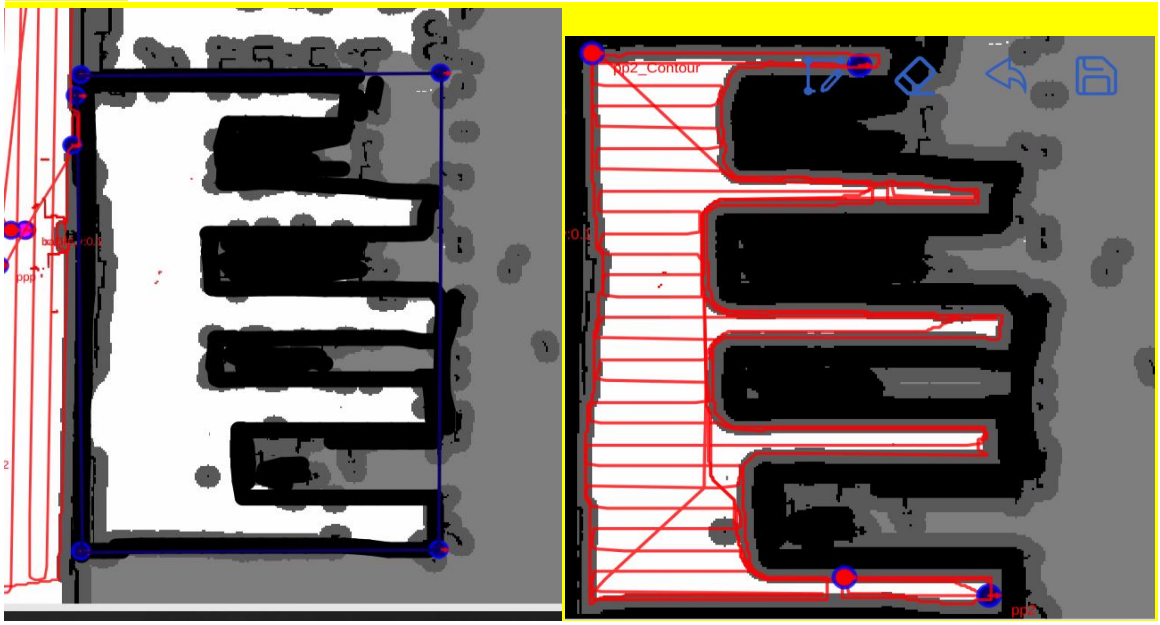
When creating overlapping route points, the system automatically generates edge routes. Since the safety distance between edge points is reduced, we need to pay attention to editing restricted zones on the map.

1、For irregular areas — such as passageways with door openings that create recesses or gaps between restaurant seating arrangements — edge routing algorithms may inadvertently plan paths into these spaces, increasing the risk of purely wall-contact collisions during implementation.



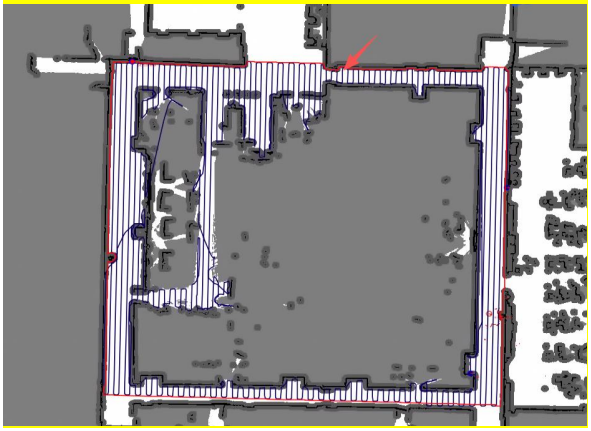
(Error example)

2、We aim to maintain straight lines where edges need to be adhered. For concave areas on the map—such as tables, chairs, doorways, and narrow passages—we fill them with brushes, as shown in the figure.



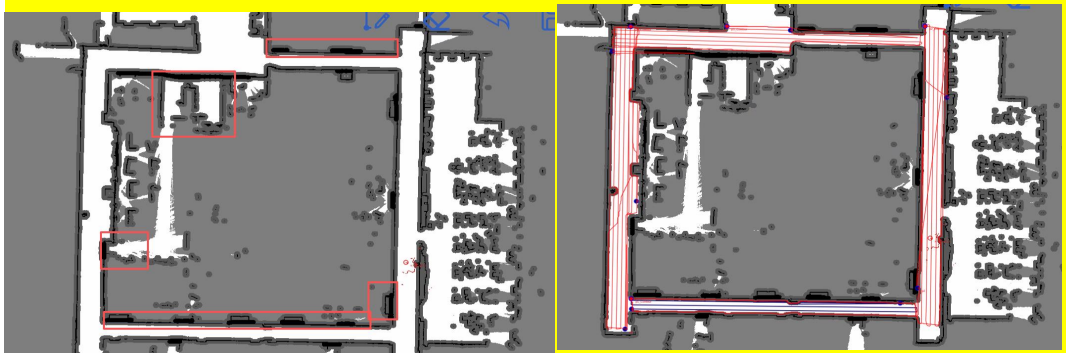
3、For a loop-shaped corridor, we cannot plot a single point across the entire area, as shown in the

diagram: two corridor routes would form short straight lines, and the inner edges would not generate edge-aligned paths.



（Error example）

4、First, we need to edit the map by using brushes to block impassable doors and doorways to prevent friction from irregular edge routes. Then, we apply overlay points to each edge individually.

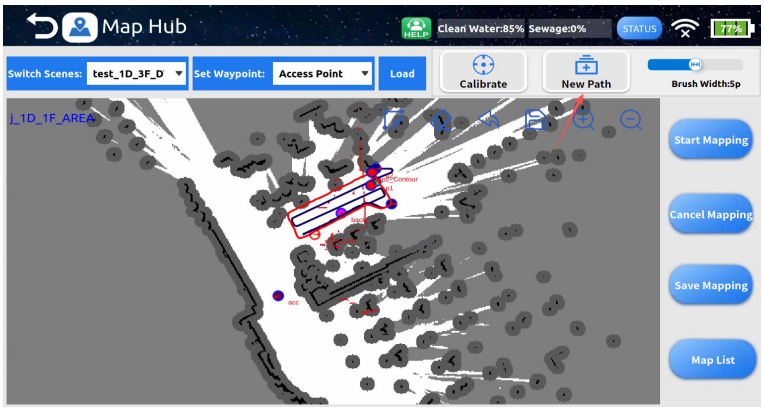


2、This generates the cleaning area route and automatically generated contour route. The generated contour route name matches the overlay point and is prefixed with _Contour. You can select this option when adding tasks.

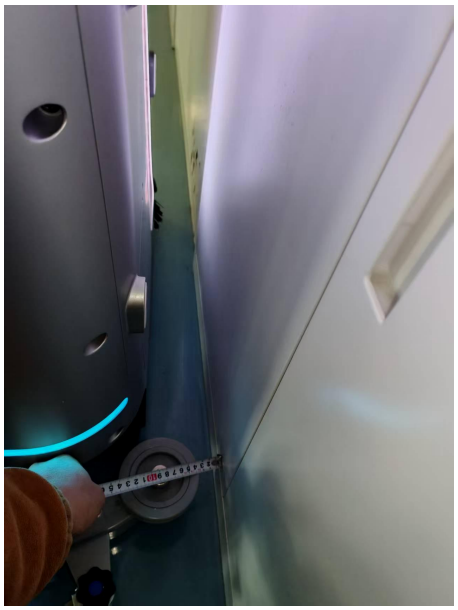
5.7.2 Demonstration Path (Edge)

Since robots normally maintain a safe distance from obstacles, edge cleaning currently relies on the teaching function.

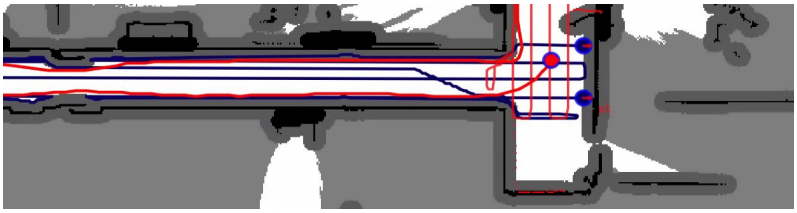
1. As the edge brush is positioned on the right, we add the teaching path by pushing the vehicle along the right side. First, move the vehicle to the right-side path (note: avoid starting near the wall), then click "Create Teaching".



2. Then manually guide the robot to add the teaching path, ensuring the suction claw is about 2 cm away from the wall for safe operation when adhering to the edge.

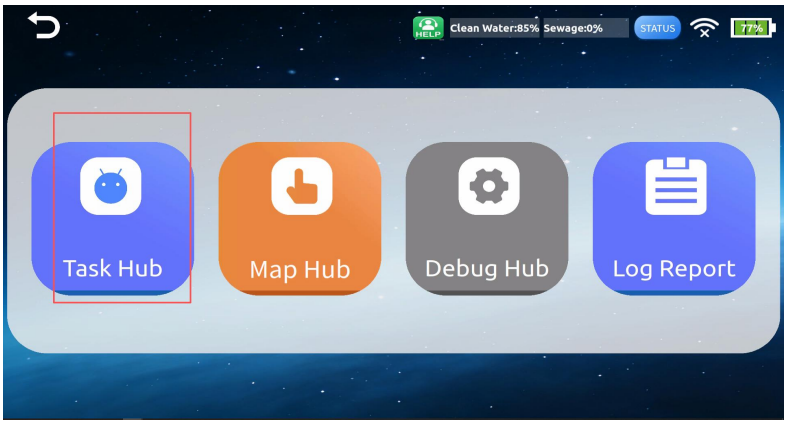


3. When routing, the system displays the planned path on the map. Click 'End Teaching' to finalize the edge-teaching setup. Subsequent tasks will automatically follow this predefined route.



5.8 Create Task

1. Log in to Task Manager with administrator privileges.



2. Create a task (no elevator feature).

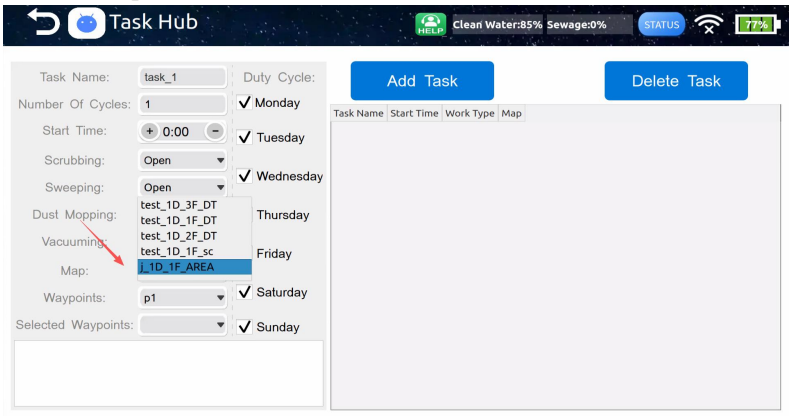
(1) Enter the task name;

(2) Enter the loop count;

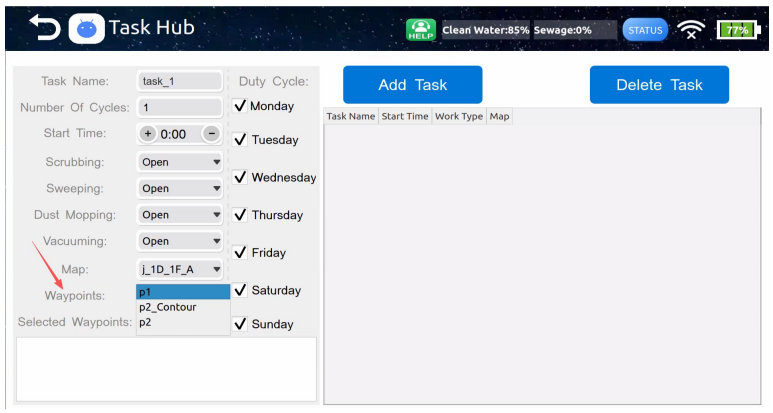
(3) Select when to execute the task.

(4) Select to enable or disable the work mode.

(5) Select a map;

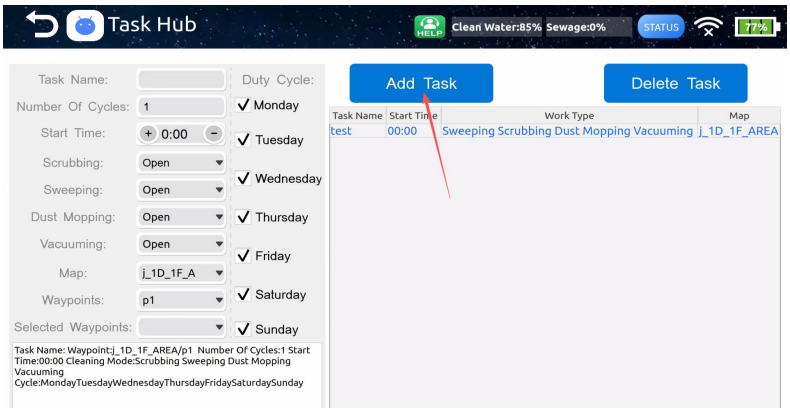


(6) Select a point on the map (e.g., FG1) to be cleaned.



(7) Select a work cycle.

3. After selecting, click Add Task to complete the task.

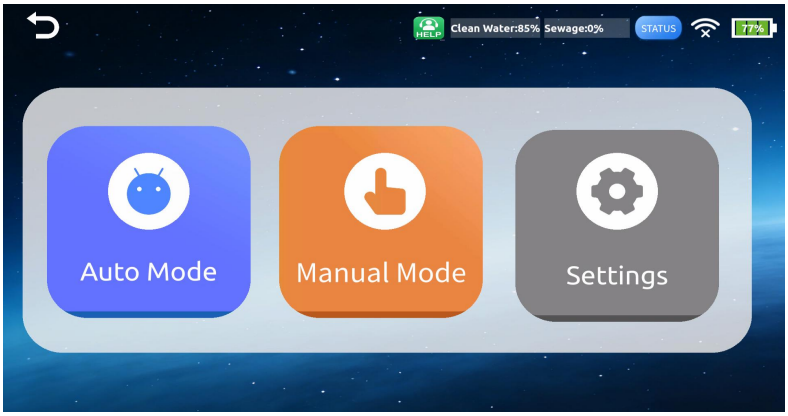


4. Click to release the task. It will execute automatically when the scheduled time arrives.

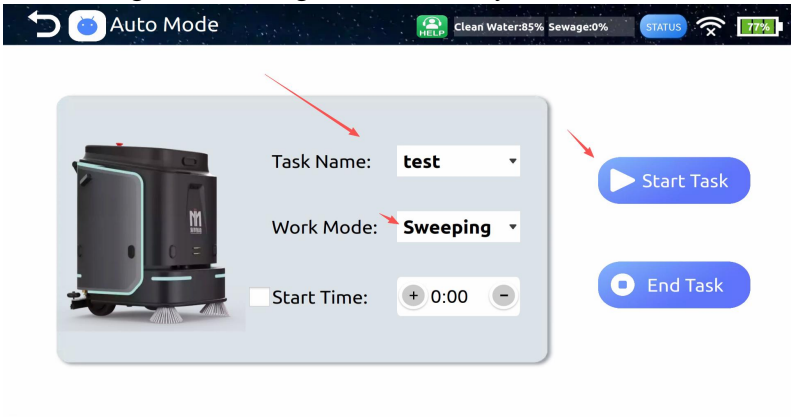
Note: When the elevator function is enabled, you must configure elevator access points and two standard route points [startpoint] and [endpoint] on each floor. The locations for [startpoint] and [endpoint] are not restricted, but it is recommended to place them near the cleaning area. When assigning tasks, select these two route points before and after the cleaning route. For example: "JCMap_1D_1F_area" -- [startpoint] "FG1" "endpoint", "JCMap_1D_3F_area" -- [startpoint] "FG3" "endpoint". For details, refer to Chapter 5.14.

5.9 Task Execution

1. Go back to the home page and enter automatic mode with regular user permissions.

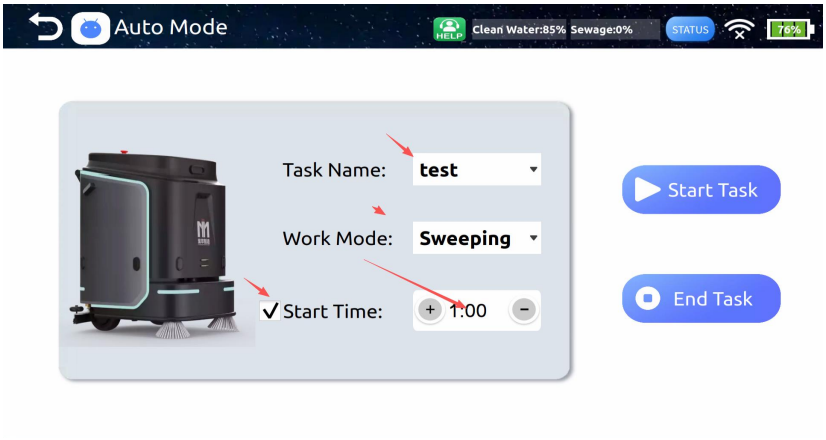


2. Select any task from the task list.
3. Click Start to begin the cleaning task immediately



5.10 Scheduled Task

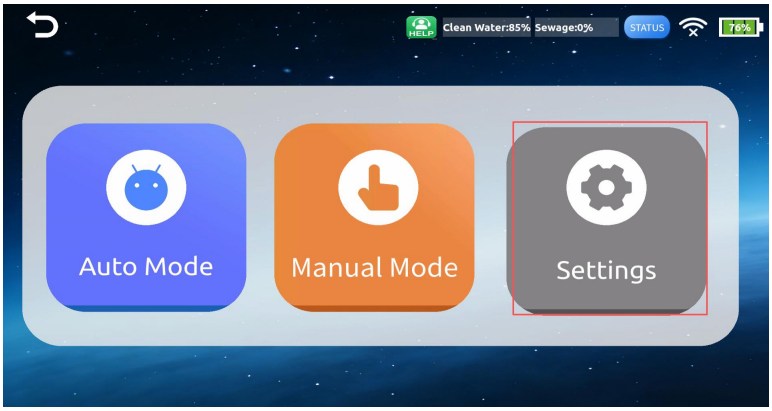
1. Regular users can access automatic mode.
2. Select any task from the task list.
3. Check the time to set the start time.
4. Click Start. The cleaning vehicle will begin its task when the scheduled time arrives.

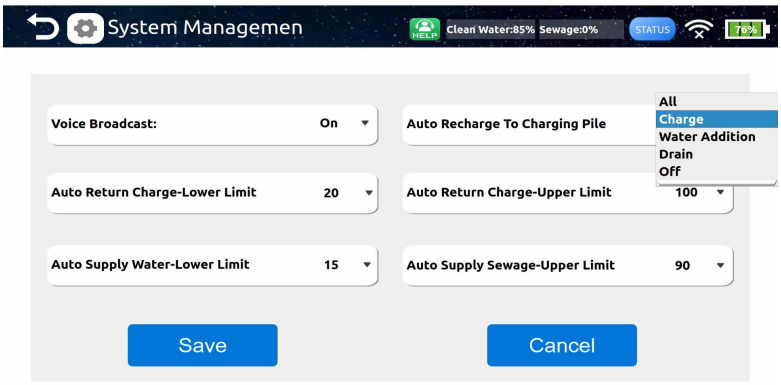


5.11 Pile replenishment

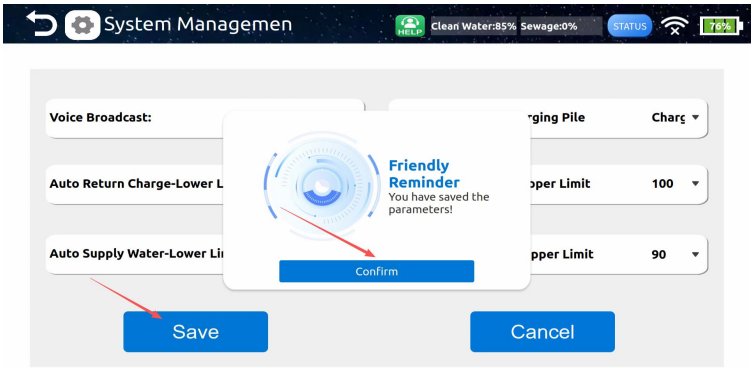
Regular users can access the system management page and set up the following:

- Voice prompt: Turn on or off voice prompt.
- Automatic pile replenishment: When the power level, fresh water, or wastewater reaches the upper or lower limit, the system automatically returns to the pile to recharge, add fresh water, or discharge wastewater.
- Auto-recharge-Battery Low: Recharge automatically when the battery reaches the set low level.
- Auto-recharge-Battery limit: When the battery reaches the set limit, it automatically detaches from the charging station and resumes the task.
- Automatic replenishment-clear water lower limit: When the clear water level reaches the preset lower limit, the system automatically refills the pile with clear water.
- Automatic replenishment-Sewage level limit: When the sewage level reaches the preset upper limit, the system automatically returns to the pile to discharge until the tank is completely empty.





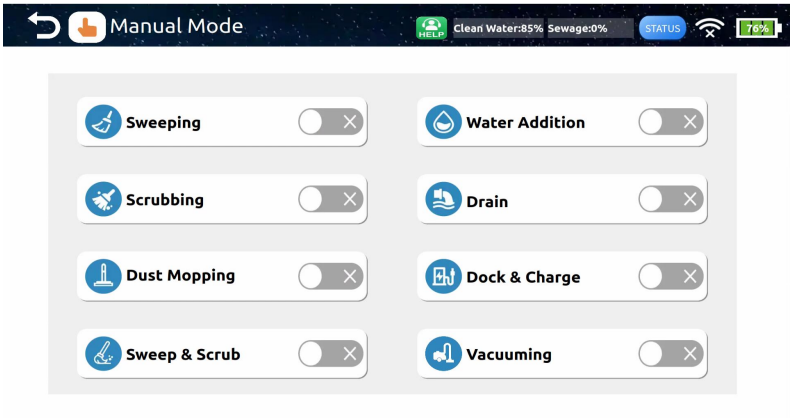
When enabling automatic pile replenishment, note the following: If the on-site workstation cannot connect to water supply or sewage, select 'Charging'; if it can connect to cleaning but not to sewage, choose 'Water Supply'; if only sewage connection is available without water supply, select 'Sewage'; if all conditions are met, select 'All'.



Configure according to the on-site environment. Click Save to apply the changes.

5.12 Manual execution

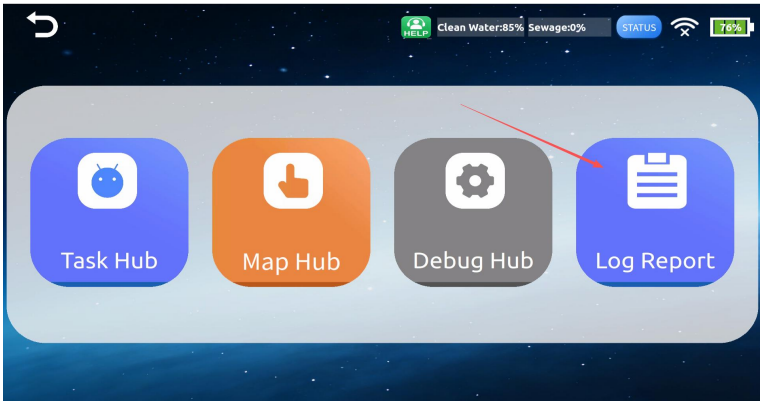
- Vacuum: Set the cleaning mode to open the brush, lower the cleaning module, or open the roller brush.
- Floor cleaning: Set the cleaning mode, lower the cleaning module, activate the floor brush, lower the water suction claw, and turn on the suction fan motor.
- Dust Push: Set to dust push mode, activate while brushing, and lower the water-absorbing scraper.
- Wash & Sweep: Both cleaning and washing functions are activated simultaneously.
- Manual water refilling: When the vehicle is at a supply station, manually open the water inlet to add clean water.
- Manual drainage: The vehicle is at the refueling station, and the drainage port is manually opened to begin the drainage process.
- Pile search and charging: The vehicle terminates its mission and returns to the supply station to begin pile search and recharge.



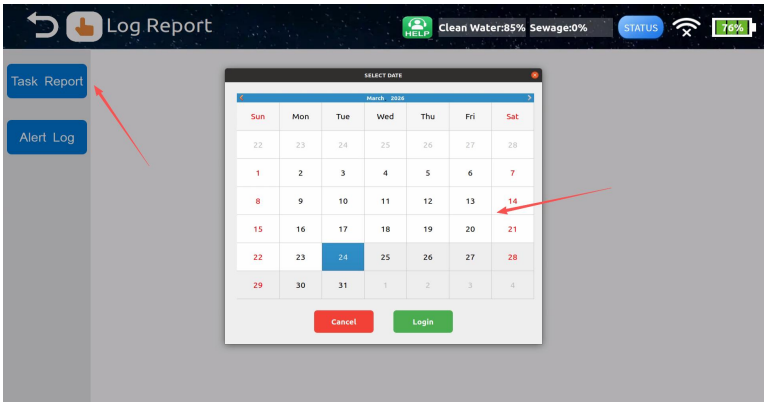
5.13 Task Record

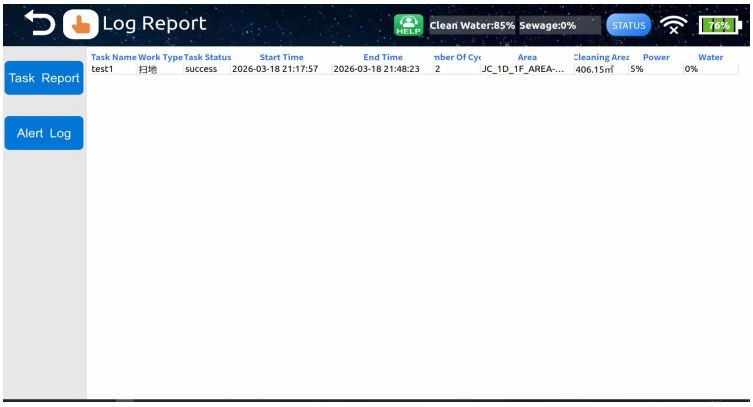
1、Return to the homepage or log reports for administrator users.

2、Click Task Report, select the date to view, and confirm.



3. Displays all task records for the selected date, including: task name, work type, task status, start time, end time, cycle count, area, cleaning area, power consumption, and water consumption.





5.14 Check status

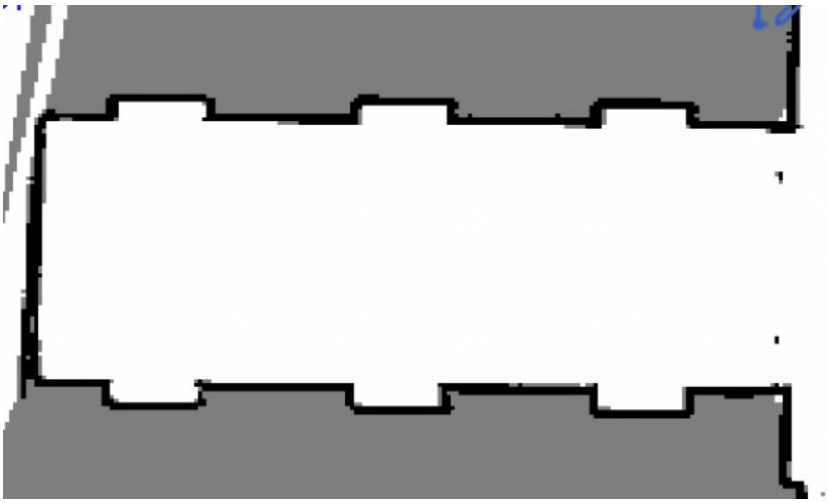
Click the "STATUS" button at the top of the system to check the machine's current status. A red button indicates a fault.



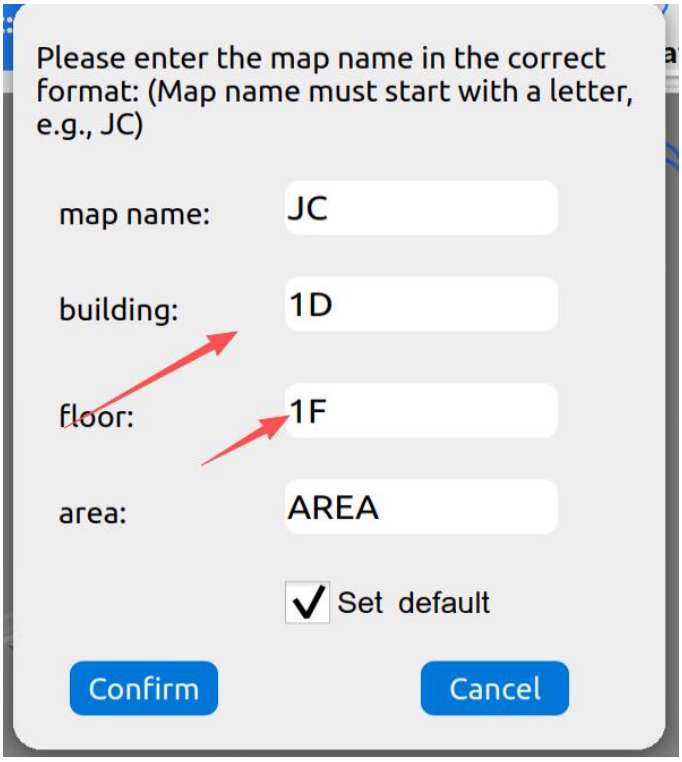
5.15Deployment of Elevators, Access Control, and Turnstiles

The robot can operate in scenarios such as elevator rides, access control, and turnstiles (optional if not required). As elevator and turnstile environments vary by site, customers with such needs should contact our sales team in advance to arrange on-site deployment or remote guidance by our professional technicians.

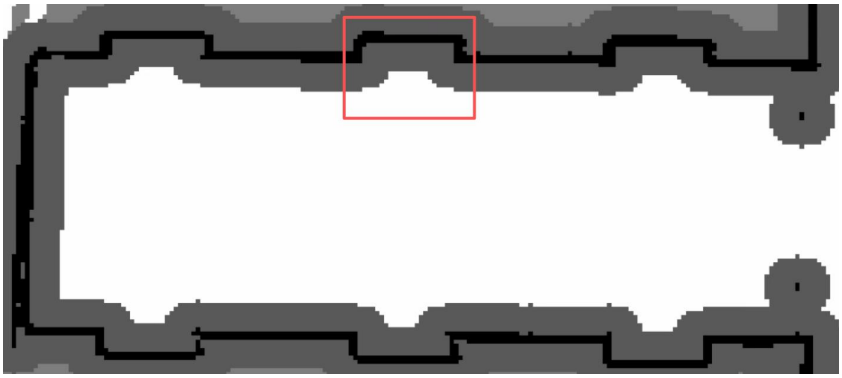
1. After completing the elevator control deployment, ensure 360° rotation during scanning to avoid blind spots when mapping the elevator lobby.



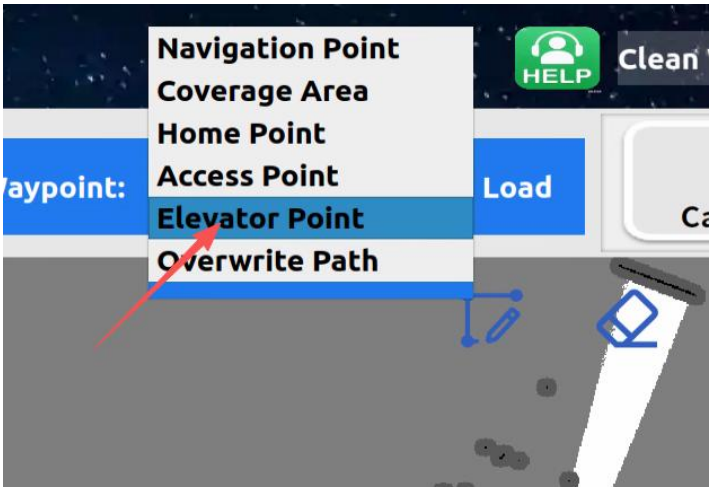
2. When naming the map, ensure to accurately record the building and floor numbers as they are.



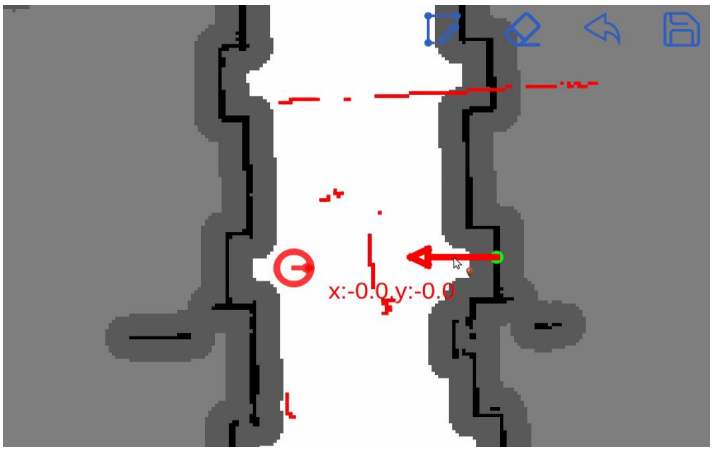
3. After completing the floor plan, we need to add special points. First, locate the elevator where the ladder control is installed.



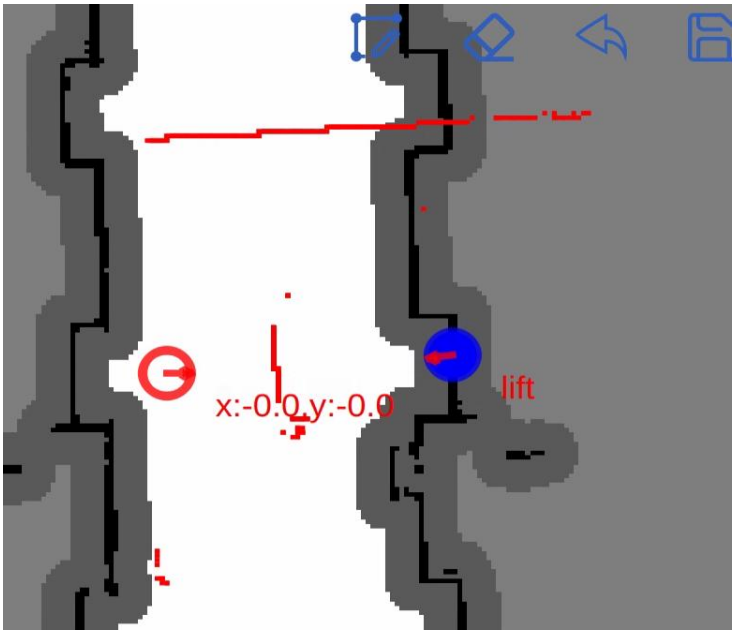
4.Next, click the 'Set Route Points' dropdown at the top and select 'Lift Point'.



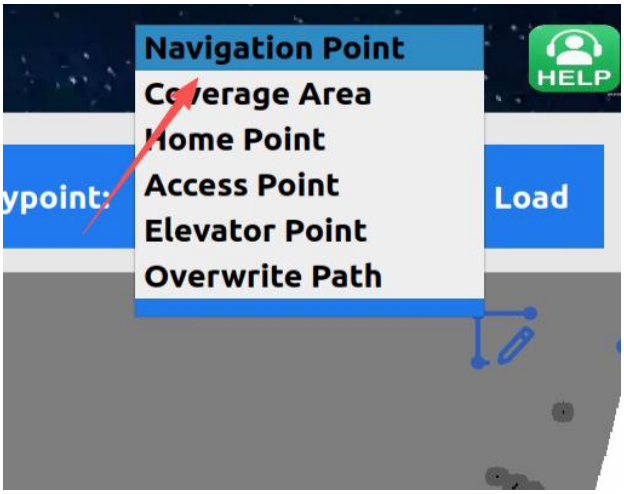
5.The elevator door with ladder control will slide out to the front door after being clicked.



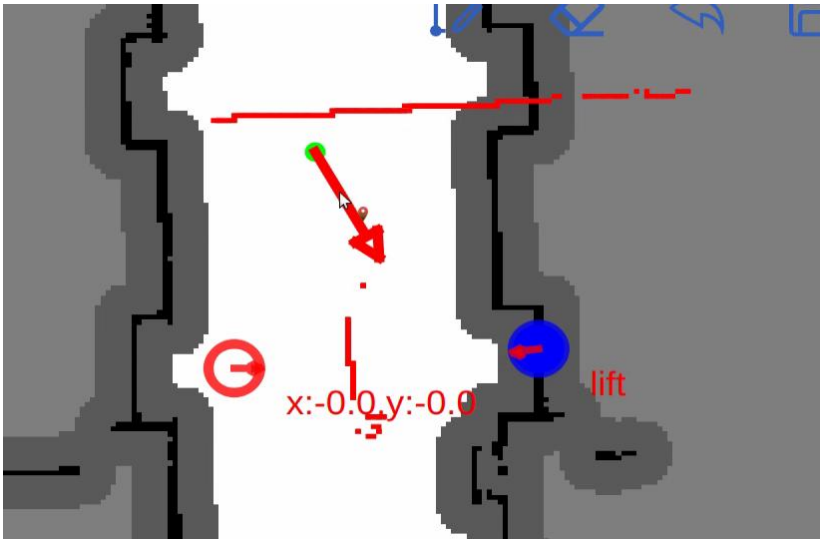
6.Then simply name it 'lift' (as this is a special location; please notify the debugging team in advance if a name change is required).



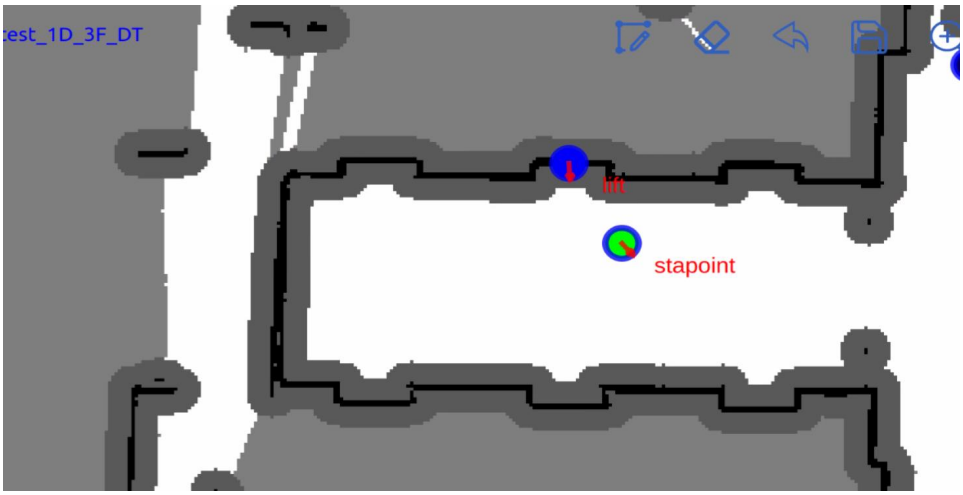
7.After completing the addition, you need to add two navigation points— 'startpoint' and 'endpoint' —to control the external device switches for entering and exiting the elevator. Continue clicking to set the route points, then select the navigation points by dropping down.。



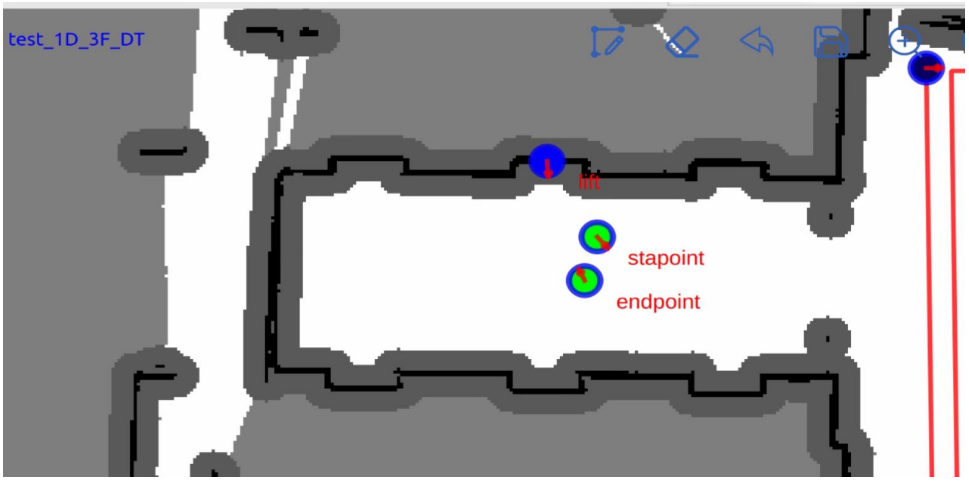
8.Then, click and drag at the target location to add a navigation point (the arrow indicates the robot's orientation).



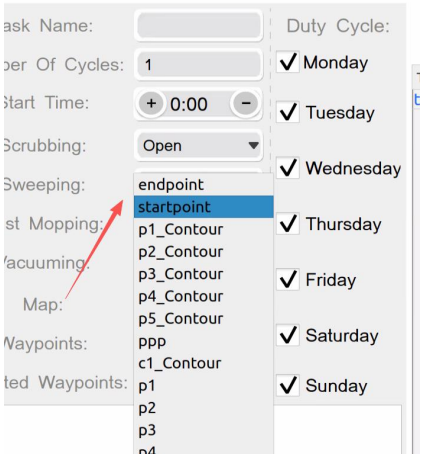
9.Name it "startpoint".



10.The same applies to the engpoint (end point): ensure the startpoint is set after exiting the elevator and the endpoint is set before entering it.



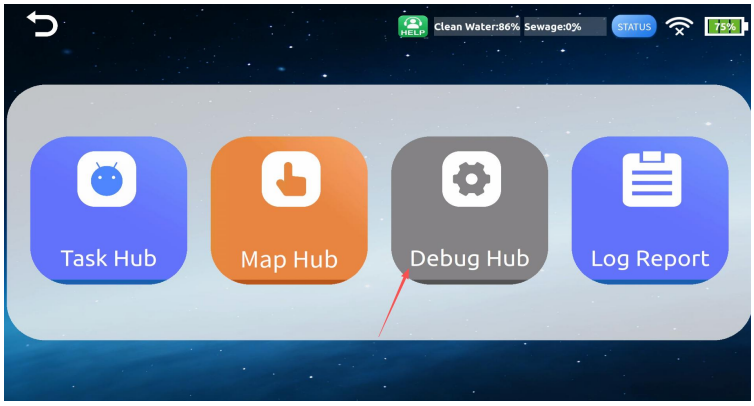
11.To create a floor map, first select the required starting point. Then, go back to Task Management and add a task by choosing the floor map. Click the route points below: select the 'startpoint' first, then choose the area to be cleaned, and finally select the 'endpoint' as the last point. For cross-floor operations, click the map again, select the floor to span, and click 'route points' to choose the starting and ending points.



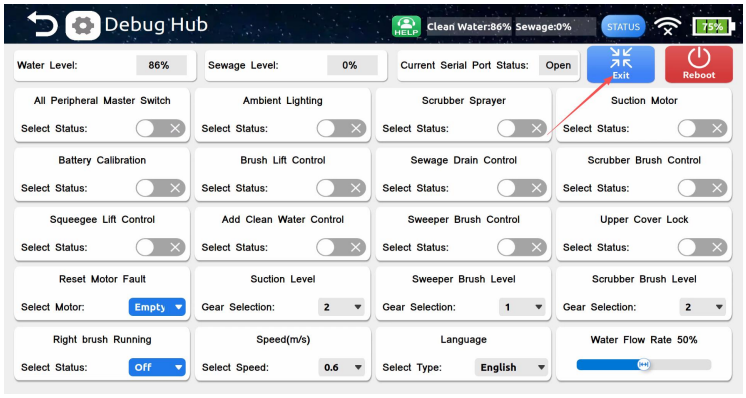
12.After editing, click Add Task.

5.16 Network Wi-Fi connection

1、Normal machine deployment execution does not require internet dependency. For software system upgrades, we provide Wi-Fi network connectivity to first access debugging management.



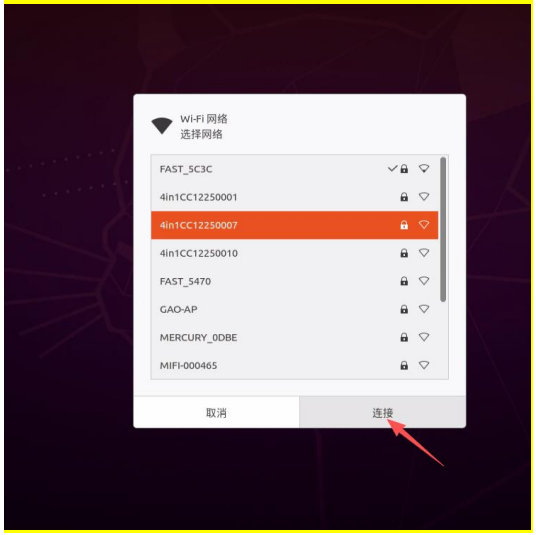
2、Click Exit Full Screen to return to the computer system interface



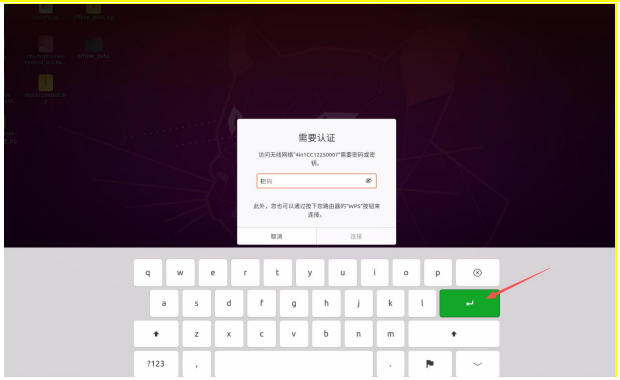
3、Click the Wi-Fi icon in the top-right corner to select a network



4、Select the Wi-Fi network you want to connect to and click Connect



5、If you cannot enter the password on the password input screen, press Enter first to proceed.



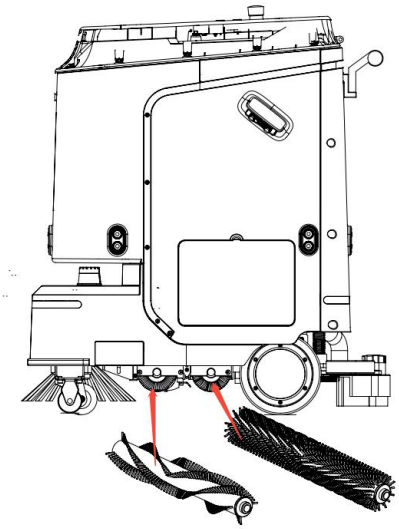
6. Replacement and cleaning of consumables

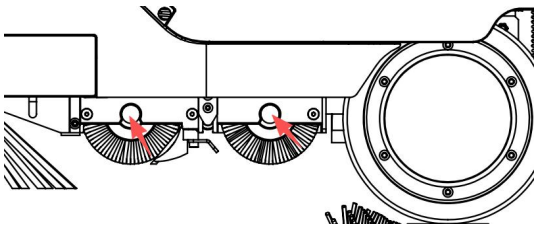
List of 4-in-1 consumables and replacement cycle	
Consumable name	**Upgrade cycle**
Brush	Replace every 150 hours of operation. After cleaning, it can be reused. Replace if damaged during use.
Vacuum cleaner brush	Replace every 150 hours of operation. After cleaning, it can be reused. Replace if damaged during use.
Floor scrubber	Replace every 150 hours of operation. After cleaning, it can be reused.

	Replace if damaged during use.
Absorb water and peel off the rubber	Replace every 150 hours of operation. After cleaning, it can be reused. Replace if damaged during use.
Filter cotton of suction port of sewage tank	Replace the machine every 48 hours after operation. After cleaning, it can be reused.
Charging pile sewage filter cotton	Replace every 150 hours of operation. After cleaning, it can be reused. Replace if damaged during use.
mop	Clean once after each day of use

6.1 Replacement of the Roller Brush

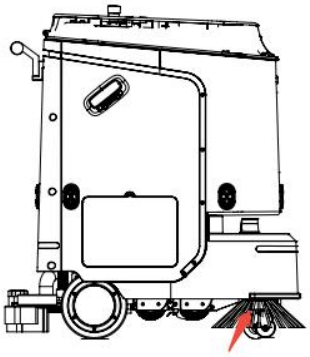
When replacing the sweeping and cleaning brushes, note that in idle mode, the sweeping brush assembly is in an upward position. The brush with lower density at the front is the sweeping brush, while the one with higher density at the rear is the cleaning brush. As shown in the diagram, press the circular ring on the brush slot to disengage it from the slot, allowing the brush to be removed. The installation process is identical: the gear groove on the right side should be tilted upward and first engaged with the rotating brush gear (if calibration is difficult, rotate the brush). After engagement, press the rear of the slot upward to align the brush slot with the designated point.





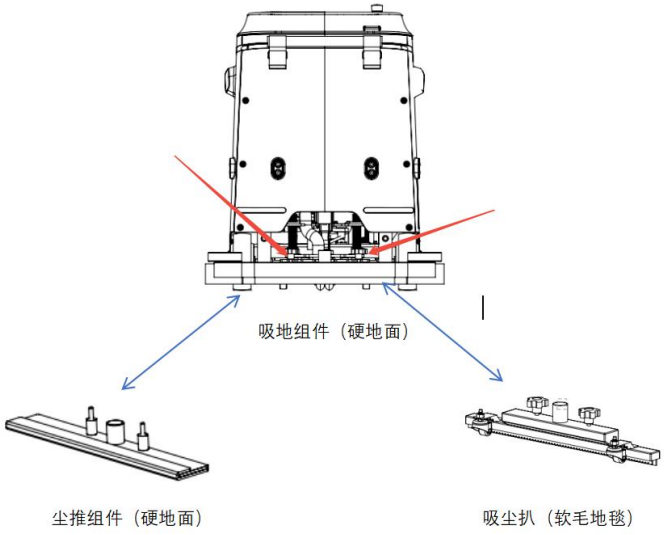
6.2 Edge Brush Replacement

When replacing the edge brush, note that in idle mode, the brush assembly is in an upward position. Since it uses strong magnetic force for adsorption, simply grip the top of the edge brush and pull it downward firmly. For installation, align the gear groove upward. If rotation calibration is not possible, simply ensure alignment, and the brush will automatically adhere.



6.3 Replacement of water suction, dust suction, and dust pushing components

Remove the fixing nut by rotating counterclockwise, then detach the suction pipe to disassemble and replace the components, enabling different functions for each part.



6.3.1 Water-absorbing adhesive strip replacement

Press one hand on the left bolt clip of the water-absorbing scraper, then grip the rubber outer part and pull it out. For the new rubber, press the clip and reinsert it along the same path.



6.3.2 Replacement of Dust Pusher Mop

The dust removal component is secured with Velcro and can be easily removed.



6.4 Cleaning the edge brush, sweeping/washing roller brush, and the roller brush housing shaft end

During operation, hair and fine fabrics may become entangled on the shaft ends of brushes, roller brushes, and roller brush chambers. Failure to clean them regularly will affect cleaning efficiency.
The cleaning effect may even affect the motor's service life.
Cleaning method:
Use a brush to clean the edge brush, sweeping brush, or floor-washing roller brush, and remove any tangled debris.
Clean manually the hair, hair chips and other entangled objects accumulated at the end of the brush bin shaft.

Cycle: Clean every 2 days or perform random cleaning based on dirtiness level.

6.5 Cleaning the Sewage Tank

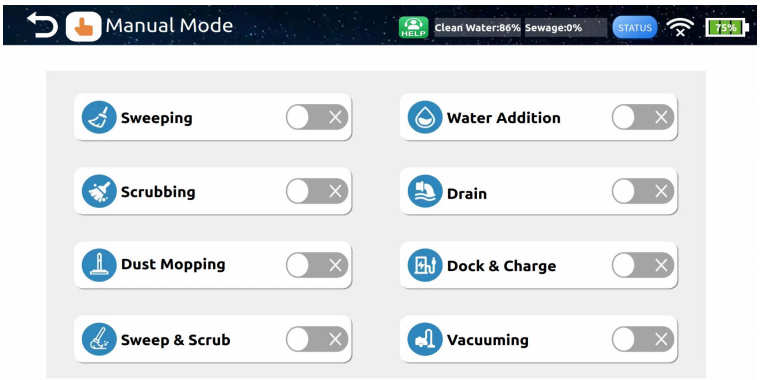
The long-term accumulation of dirt in the sewage tank will produce a foul smell and easily lead to the blockage of the sewage valve.

Cleaning method:

1. First, the robot must return to the charging station to maintain charging status.
2. Next, use the groove above the water inlet to flip up and open the top cover. Once the cover is open, you'll find the sewage tank inside. Simply release the two latches to open the tank cover.



3. Then log in as a regular user, switch to manual mode, and activate the 'Pollution Discharge' function.



4. After completing sewage drainage, flush the tank with water pipe and scrub it thoroughly with a brush until all sediment and wastewater are removed. Then, close the 'drainage' valve, secure the tank's clamps, and close the top cover.

Cycling: Clean once daily or every other day (if an automatic drainage station is deployed, clean the inner walls of the sewage tank 1-2 times weekly as needed).

6.6 Cleaning and Replacing Filter Sponge

6.6.1 Filter cotton for the suction port of the sewage tank

Open the sewage tank, remove the component directly above the suction port, then rinse with clean water or replace it.



6.6.2 Sewage Filter Cotton for Charging Piles

At the discharge port of the charging station, simply remove the component, rinse with clean water, or replace it.



FAQ

Q1: Can't start?

Possible reasons:

battery low

Rx ：

Charge manually for 30 minutes before attempting to power on.

Q2: Did the 4-in-1 cleaning robot fail to follow the planned route or encounter navigation failure?

Possible reasons:

1) The cleaning vehicle failed to start before the charging pile, resulting in machine misalignment.
2) The cleaning vehicle is not calibrated after being started or restarted.
3) Map drift;
4) Missing route points (updated or deleted points);
5) The scene changes too much, and the reference object changes;
6) signal interference ；

7) Lidar or camera disconnection or damage.

Rx ：

The robot is moved to the pile and restarted. After successful startup, check the robot's positioning status and fault codes (Chapter 5.13). A positioning quality of 0.8 or higher indicates successful positioning.

Q3: Charging failure with a clean vehicle?

Possible reasons:

1) The charging station is not powered on.
2) The reflective strips on charging stations may shift, fall off, or be obstructed.
3) The QR code light strip on the charging station is not working or is blocked.
4) The camera of the pile is disconnected.
5) Reflective objects are placed near the charging station.

Rx ：

Check if the reflective strips and QR codes on the charging pile are obstructed.

Q4: Why can't the cleaning vehicle enter or exit the elevator?

Possible reasons:

1) Parameter configuration error.
2) The elevator has a reflective surface;
3) The elevator stop is set either close to or far from the elevator.

Rx ：

First, check if the robot's entry direction is misaligned, then verify if the elevator has any reflective surfaces. If neither is present, contact the maintenance team to confirm the parameters are functioning properly.

Q5: Which of the following is the primary effect of enabling or disabling the elevator function on task settings?

Rx ：

Each task layer must include both a startpoint and an endpoint for task routing. The cleaning vehicle starts its task by reaching the startpoint to activate the peripheral device, and stops at the endpoint to deactivate it. The names of the startpoint and endpoint must follow this format.

Q6: How to handle elevator malfunctions?

Rx ：

Press the emergency stop button for 5 seconds before releasing the elevator, then push the machine to the back point to restart or manually adjust its position.

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