



**AUO Corporation.**

**AUO SunCleanBots**

**PR050VD0**

**User Guide**

Ver 1.0.0



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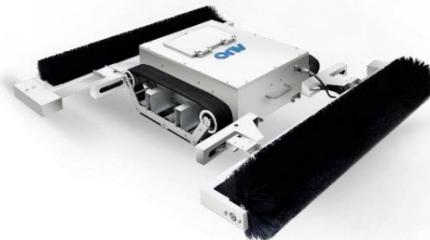


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## I Introduction to Cleaning Robots

### I.1 About AUO SunCleanBots



The AUO SunCleanBots, employs intelligent cleaning path planning to enhance the efficiency of solar field cleaning tasks. This innovation enables unmanned and safe operations while optimizing cleaning routes. Additionally, it is equipped with a 4G network capability for remote control, allowing real-time monitoring of roof environments. This not only reduces the manpower needed for cleaning and managing solar panels but also boosts power generation efficiency and safety.

PR050VD0	Standard	(IR) Used for general solar panels	Optional	(white light)Used for transparent solar panels
Recommended working conditions				Dry brush mode
Module inclination angle				15°
Module surface temperature				70°C
Ambient temperature				-10~60°C
Module spacing				50mm
Module height difference				10mm
Wind strength				Level 5
Waterproof and dustproof rating				IP65

## 1.2 Component Introduction



Wireless interface: : IEEE 802.11b/g/n ( 2.4GHz )      Antenna : Internal antenna  
 Maximum wireless data speed : 150Mbps

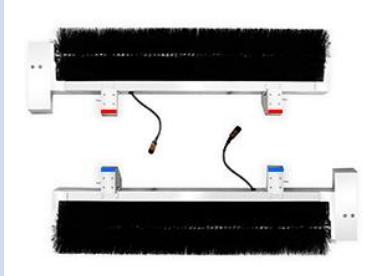
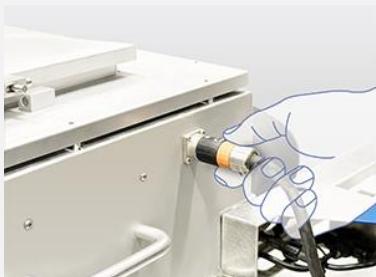
## 1.3 Indicators and Sounds



	Indicators	Sounds	Behavior
Power button	Green ●	None	Power On
Clean button	Blue ⚡ (flashing)	None	Connecting
Clean button	Blue ●	None	Connection Established (Standby)
Reset button	Orange ●	None	Driver Abnormality
	None	None	None (Standby)

## 2 Getting Started

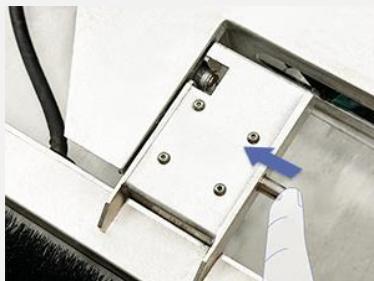
### 2.1 Brush Installation and Replacement

Action	Action Icon
<p>① Please ensure that the front and rear brushes are correctly inserted. If the size of the brushes is preventing them from fitting properly with the body, please verify their correct orientation.</p>	
<p>② Insert/remove the power cord.</p>	

③ Tilt the position to insert/remove.



④ Secure the safety lock.



⑤ Release the safety lock.



## 2.2 Powering On

**※Please note! For your own safety and the safety of the environment, please follow the following steps to turn on the device.**

Action	Action Icon	Action	Action Icon
<p>① Open the battery cover. Insert the battery.</p>		<p>② Connect the power cable. (Point-to-point connection required)</p>	
<p>③ Insert the SIM card into the "slot" next to the battery. (Insert the SIM card with the notch facing up and the metal side facing away from the battery)</p>		<p>④ Ensure that the cover is securely closed.</p>	

5 Verify the position and installation of the front/back brushes (Section 2.1).

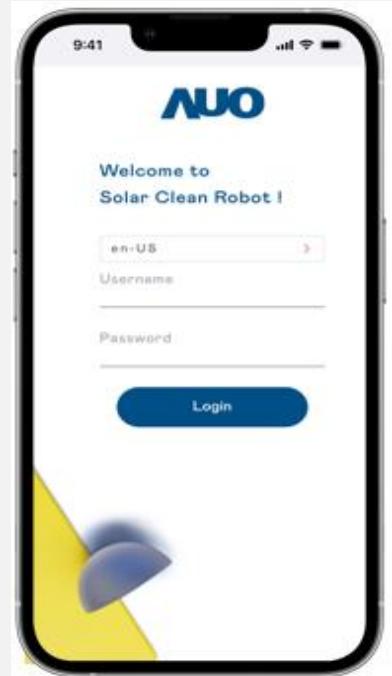
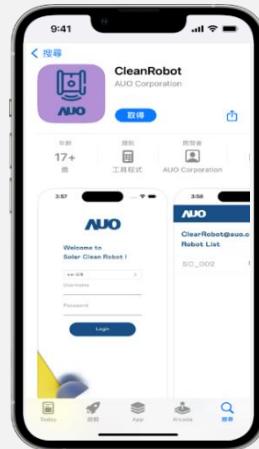
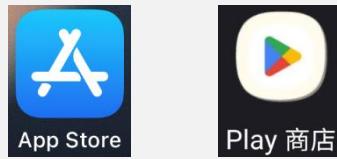
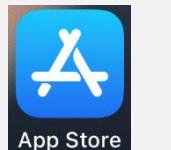


6 Press the "Power" button on the device.  
(If the "clean button" does not remain illuminated in blue for 15 seconds, please restart the device.)



7 After booting up, use an electronic device with internet access (such as a smartphone or tablet) to download the AUO "CleanRobot" app from the App Store (iOS) or Google Play (Android).

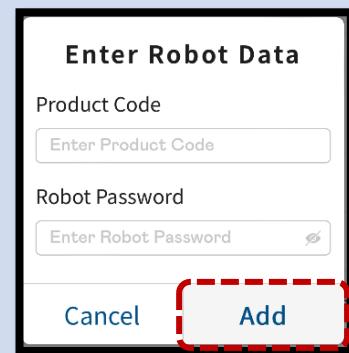
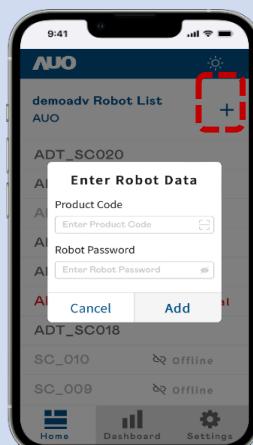
Please enter your Sunveillance membership account and password on the login screen.



8 Confirm if the device is registered.

If not registered, please click on the "+" icon in the top right corner. Enter the "Product Code" and "Robot Password", then click on the "Add" button to proceed with robot binding verification and add a new robot.

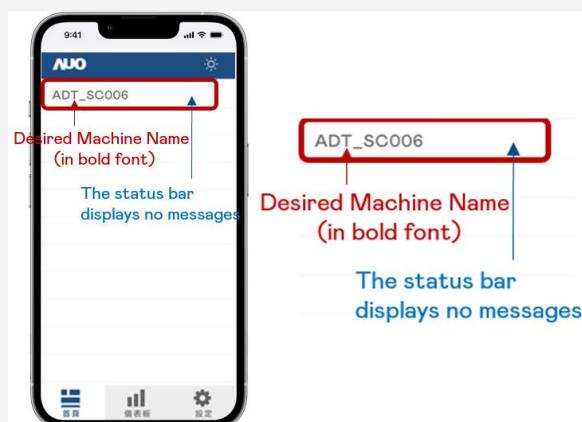
To delete a robot(refer to Chapter 3.7 )



9 Check the status of the robot.

(Normal state)

The device name appears in black text, without abnormal messages showing.

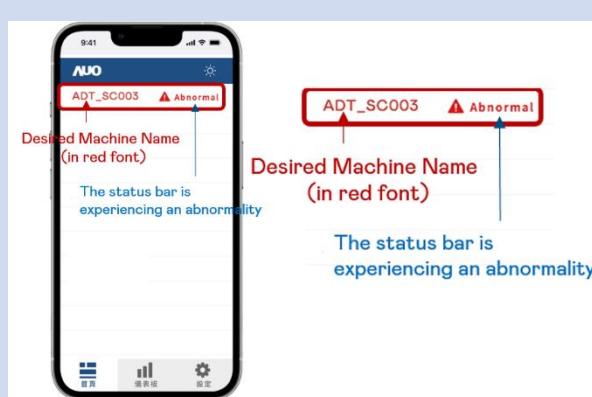


10 Check the status of the robot.

(Abnormal state)

The device name is displayed in red, or an "Abnormal State" message pops up.

If the robot displays an abnormal state, please refer to "7.Troubleshooting" for troubleshooting steps



### 3 4G Cleaning Modes

To ensure the proper functioning of the robot, please follow the steps below for operation settings.

#### 3.1 Selecting the Operating Device

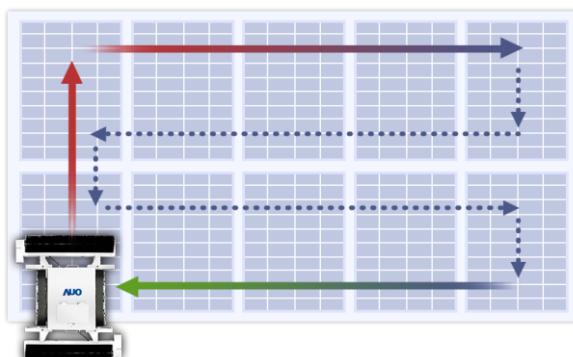
Steps	Action	Action Icon	Steps	Action	Action Icon
1	Click on the desired "device name"		2	Enter the machine's operating interface.	

## 3.2 Setting the starting point and cleaning speed

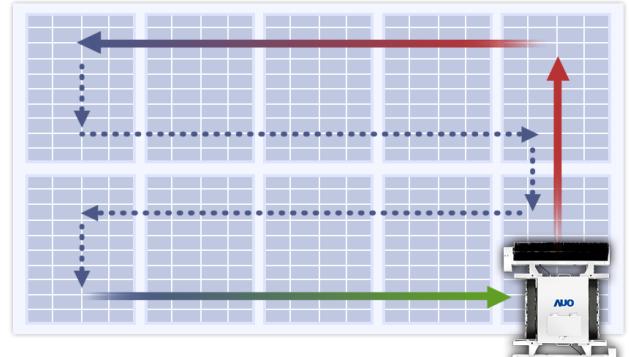
### 3.2.1 Setting the starting point

Setting the starting point prevents the robot from getting lost or entering areas for cleaning.

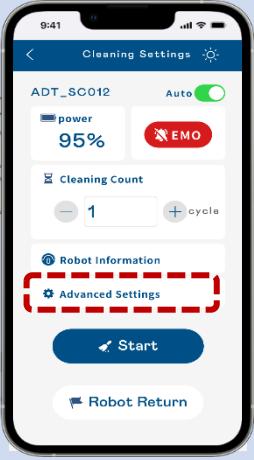
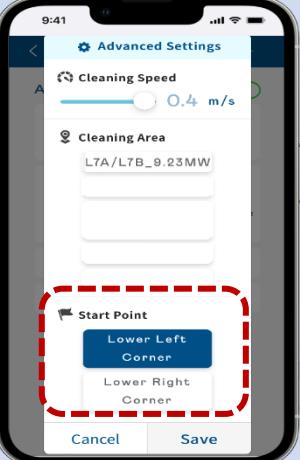
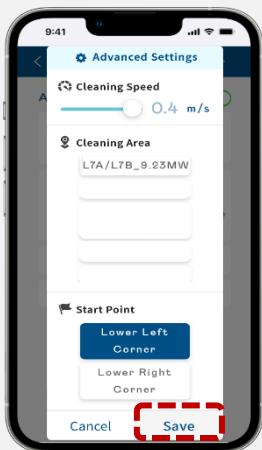
※Please note! The robot's starting position should be placed in the lower-left or lower-right corner, with the front facing up and the body perpendicular to the solar module.)



Lower left corner

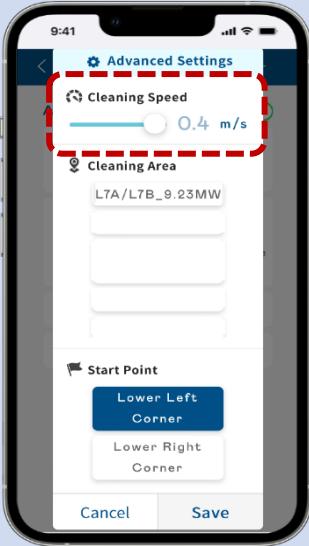
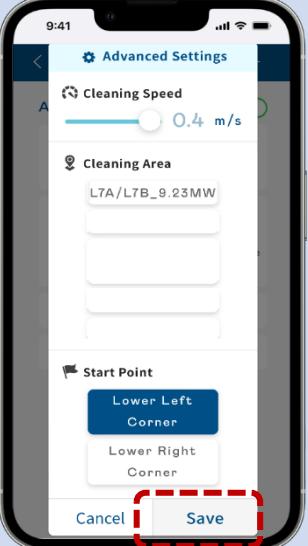


Lower right corner

Steps	Action	Action Icon	Steps	Action	Action Icon
1	Click on "Advanced Settings"		2	Click on "Cleaning Zone" and "Starting Point" according to the machine's position to update the machine's location	
3	Click on "Save Settings" to save the starting point position				

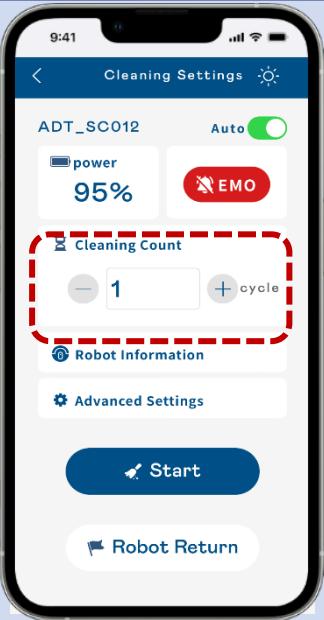
### 3.2.2 Setting the Cleaning Speed

In the "Advanced Settings" menu, set the cleaning speed of the robot.

Steps	Action	Action Icon	Steps	Action	Action Icon
1	Adjust the speed of the cleaning by dragging the slider for "Cleaning Speed"		2	Click on "Save Settings" to save the cleaning speed	

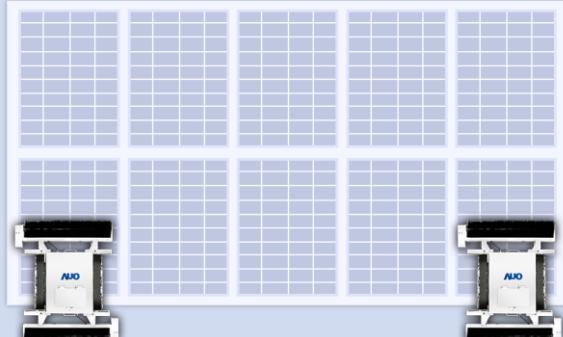
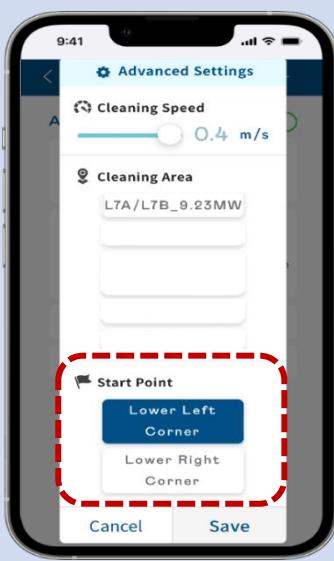
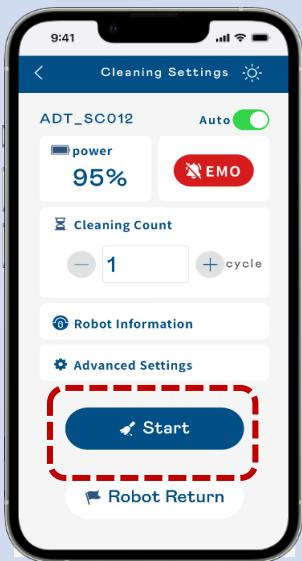
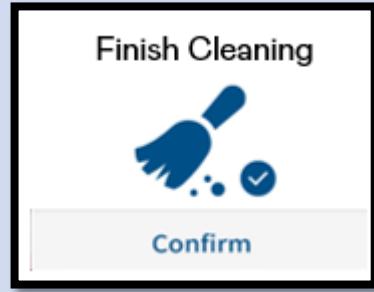
### 3.3 Setting the Cleaning Times

In the "Advanced Settings" menu, set the number of times the robot will clean.

Action	Action Icon
Click on "-" or "+" to set the cleaning times	

### 3.4 Performing the Cleaning Task

Before starting the cleaning task, please ensure that the robot's position is updated. Then, click on the UI to execute the cleaning task.

Steps	Action	Action Icon
1	Verify if the robot is at the starting point in the cleaning zone. If it is not, you can refer to section 3.8 for manual remote control mode to move the robot to the desired starting point.	 Lower left corner      Lower right corner
2	Confirm if the parameters of the starting point in the UI (refer to 3.2.1) are consistent with the machine's actual position	
3	"Start Cleaning" to initiate the cleaning task	
4	When the cleaning is completed, the system will display a "Finish Cleaning" window.	

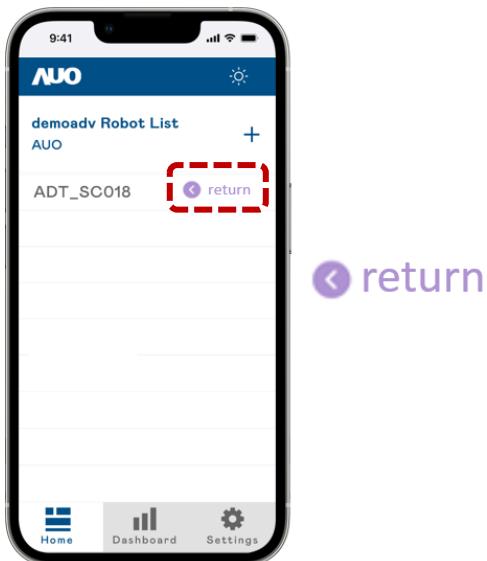


### 3.5 Returning to the Starting Point

When the robot has low battery or needs to return to the charging station forcefully, it will interrupt the cleaning task and return to the charging station.

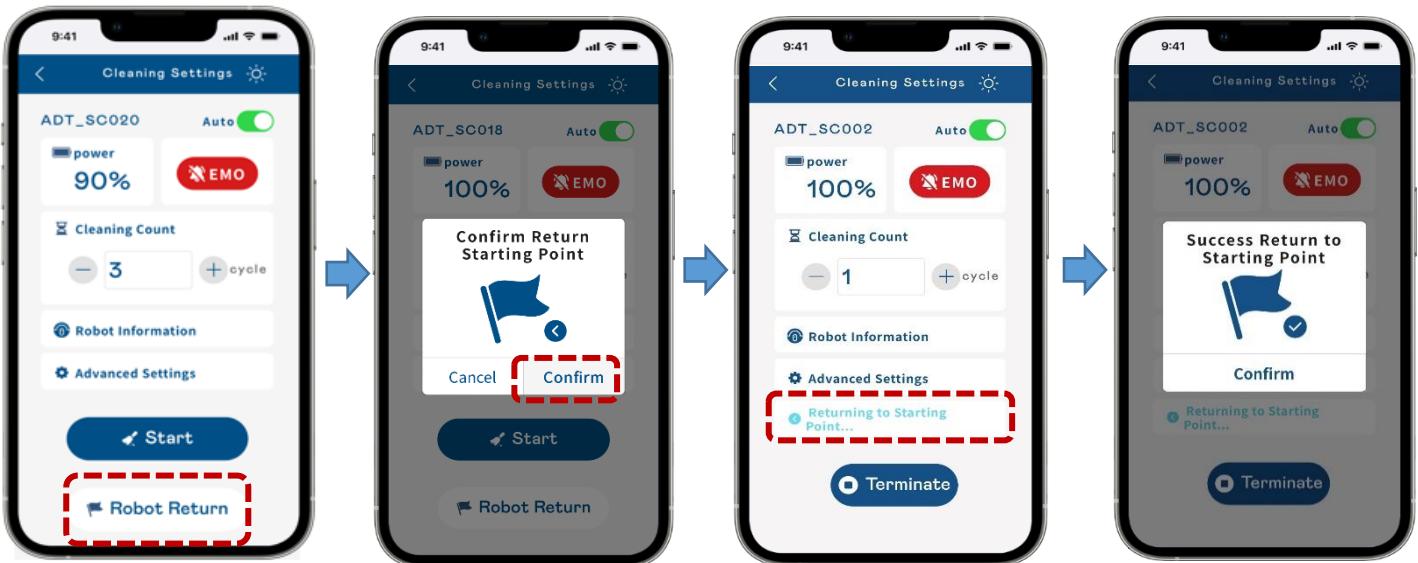
#### 3.5.1 Returning to the Charging Station with Low Battery

When the battery level is below 20%, the robot will interrupt the task, and the UI will display the message to return to the charging station.



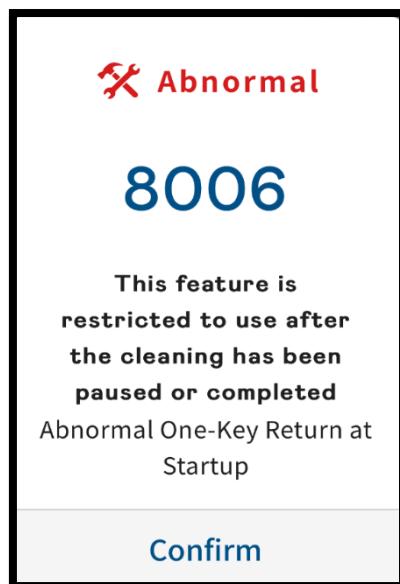
#### 3.5.2 Forcibly Returning to the Charging Station

Interrupt the task and display the "Return" message on the UI.

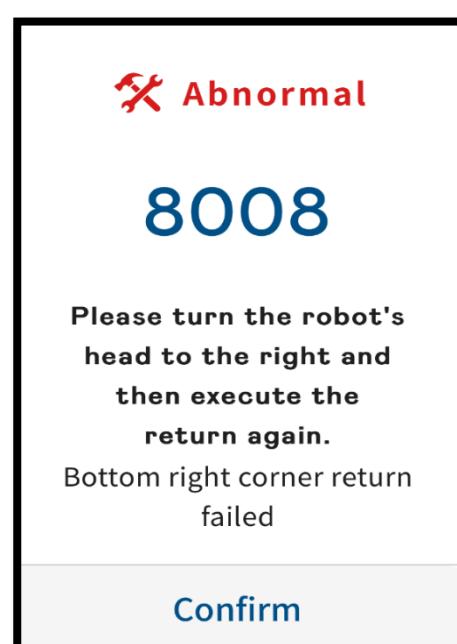
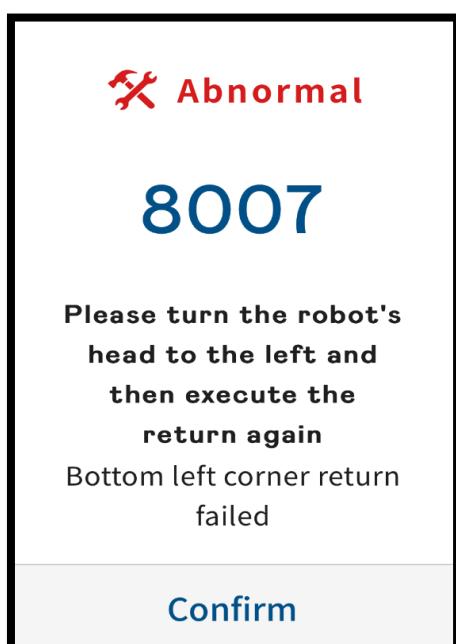


### 3.5.3 Return to starting point restrictions

The return to starting point function can only be used after the initial navigation has been started and then stopped or completed. Otherwise, it will prompt that the return to starting point function cannot be used.



When operating the return to starting point function, please be aware that if you have manually operated the robot in section 4.5 or section 6, **you need to ensure that the starting point is at the lower-left or lower-right corner**. If the orientation of the robot is incorrect, it will prompt that the orientation is wrong and you need to manually correct it before returning to the starting point.



## 3.6 View Robot Information and Cleaning Records

### 3.6.1 View Robot Information

Steps	Action	Action Icon	Steps	Action	Action Icon
1	Click on "Robot Information"		2	To view the information, click on "Confirm."	

### 3.6.2 View Cleaning Records

To access the cleaning record query, click on the "Dashboard" button located at the bottom of the homepage.

**1 Completed Cleaning Records**

You can view the desired information about cleaning records by filtering them based on time, machine, and location.

## ② Abnormal Events

You can view the necessary information about abnormal events by filtering them based on time, machine, and location.

(Refer to Chapter 7)

## 3.7 User Settings

In this section, you can perform the following settings : View login account、Logout、Download user manual、Add/Delete robots、Language settings、Customer service contact information、System information.



## User Manual

## Add/Delete Robots

## Language Settings

## Time Zone Settings

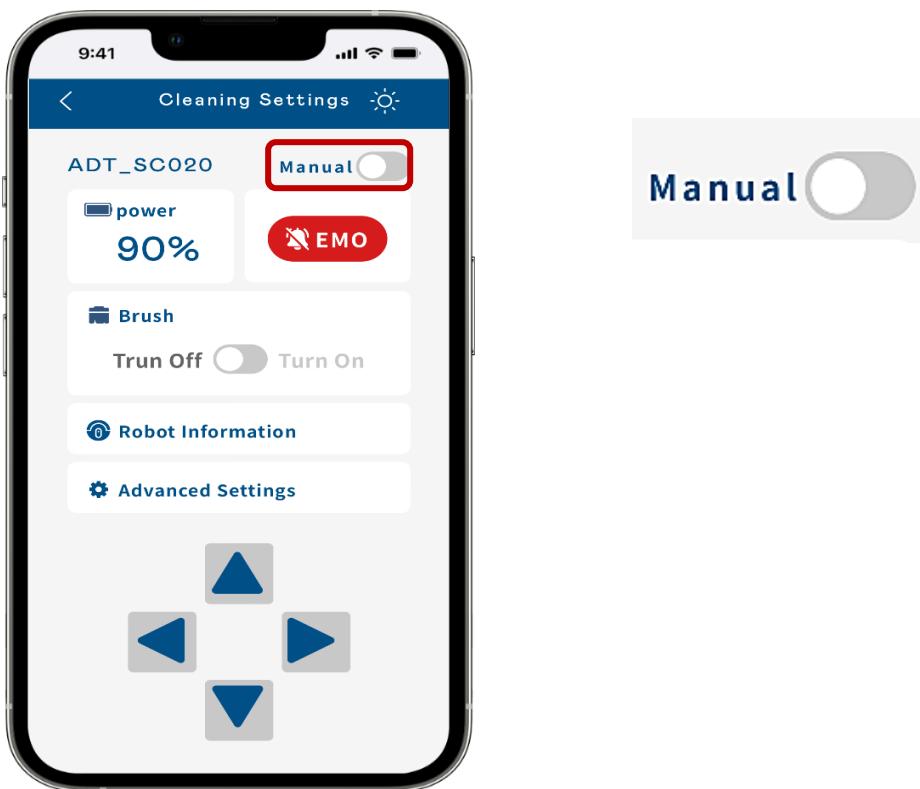
## Contact Information

## System Information

### 3.8 Testing - Manual Remote Control Mode

※Please note! For manual remote control, the button must be continuously pressed to move; releasing button will stop the movement. Please be cautious and ensure safety when near cliff edges.

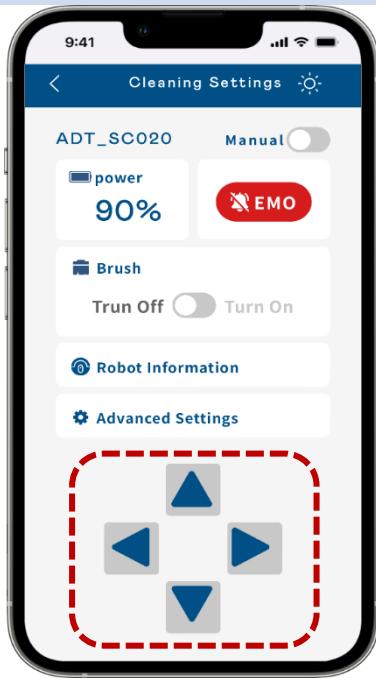
Click on the "Auto Mode" on the UI to disable it, as shown in the following image of the operation window.





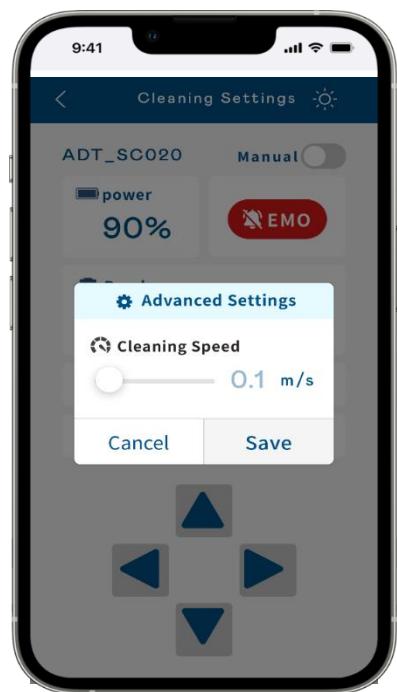
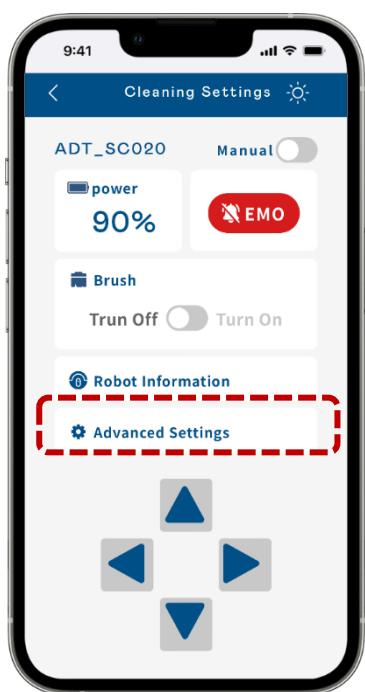
## Remote Control Robot Mode

Press and hold the remote control button to control the robot's forward, backward, left, and right movements. Releasing the button will stop the movement.



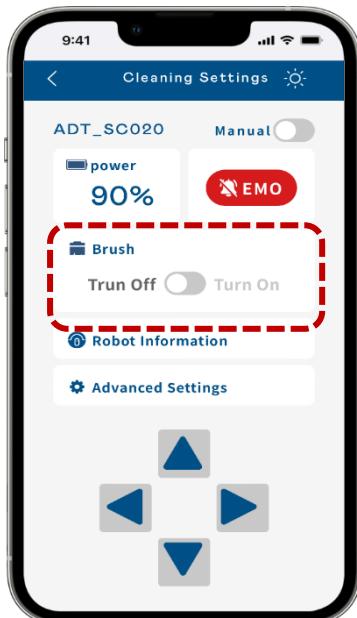
## Manual Speed Adjustment Mode

Click on "Advanced Settings" to adjust the speed of the robot.



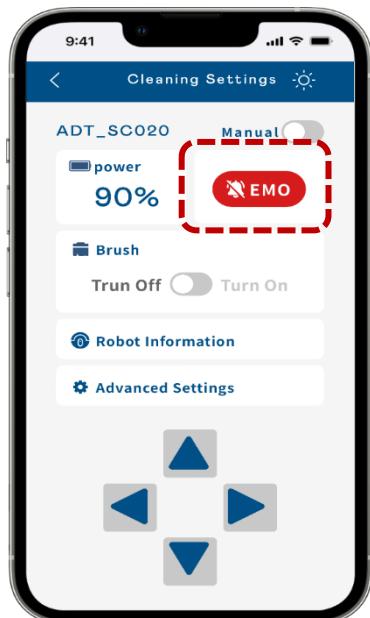
## Brush Device Activation

Click on the "Brush Switch" to turn the brush device on or off.



## Manual Remote Emergency Stop

Click on "EMO" to immediately stop the robot.

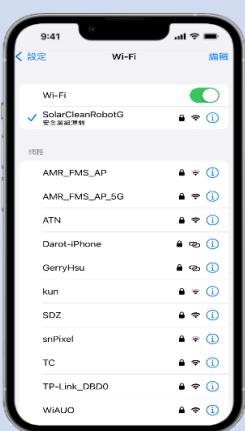
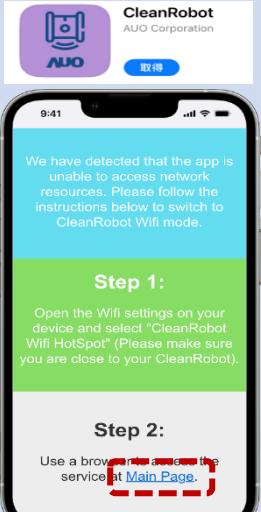
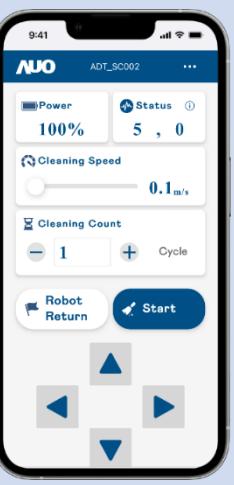




## 4 WIFI Cleaning Modes

This mode requires connecting to the robot's WIFI (with a connection distance of approximately 10 meters). If the robot's WIFI disconnects, please reconnect using the 4G app (refer to section 2.2). To ensure the proper functioning of the robot, please follow the steps below for operation settings.

### 4.1 Selecting the Operating Device

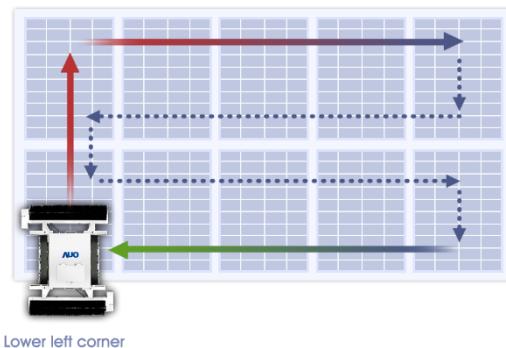
Action	Action Icon	Action	Action Icon
<p>1 Connect the "machine name" via Wi-Fi to operate it. Password: "suncleanbots"</p>		<p>2 Open the "Clean Robot" App. (the installation steps refer to section 2.2) Click "Main Page" To access the machine operation interface</p>	 

### 4.2 Setting the Starting Point and Cleaning Speed and Cleaning times

#### 4.2.1 Starting Point

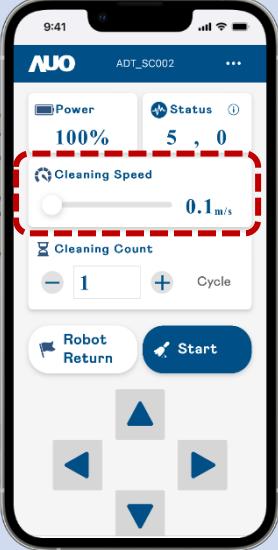
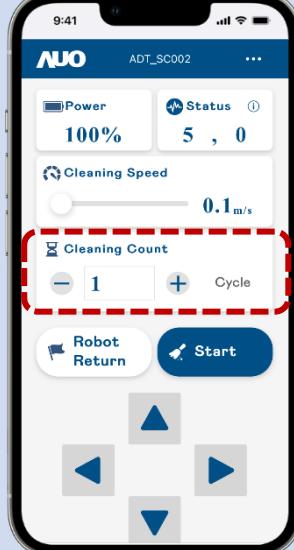
The starting point prevents the robot from getting lost or entering areas for cleaning.

※Please note! The robot's starting position should be placed in the lower-left corner, with the front facing up and the body perpendicular to the module.)



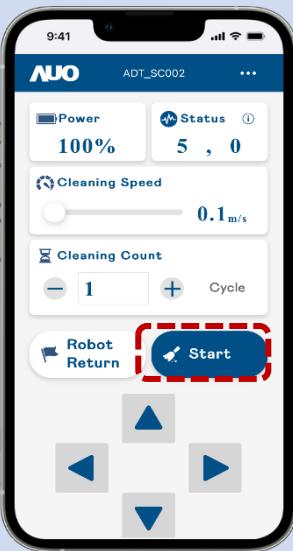
## 4.2.2 Setting Cleaning Speed and Cleaning times

In the menu, set the cleaning speed and cleaning times of the robot.

Steps	Action	Action Icon	Steps	Action	Action Icon
1	Adjust the speed of the cleaning by dragging the slider for "Cleaning Speed"		2	Click on "-" or "+" to set the cleaning times	

## 4.3 Performing the Cleaning Task

Before performing cleaning, please make sure the robot is positioned in the bottom left corner and then click on the UI to execute the cleaning task.

Action	Action Icon
"Start Cleaning" to initiate the cleaning task	



## 4.4 Returning to the Starting Point

When the robot has low battery or needs to return to the charging station forcefully, it will interrupt the cleaning task and return to the charging station.

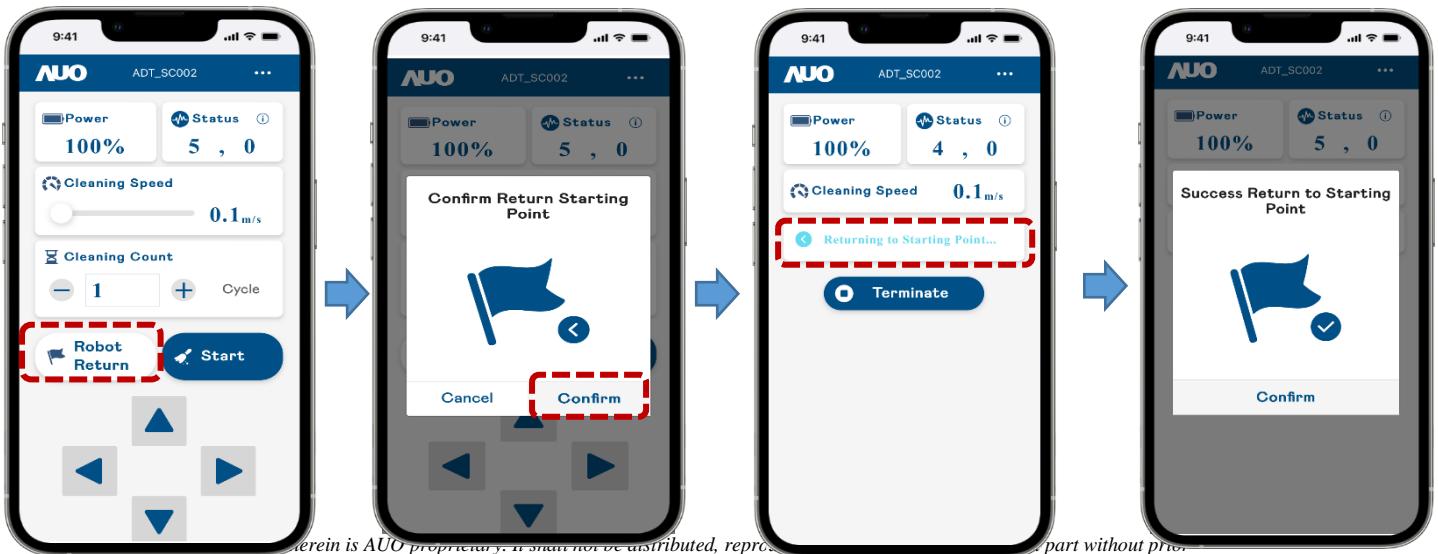
### 4.4.1 Returning to the Charging Station with Low Battery

When the battery level is below 20%, the robot will interrupt the task, and the UI will display the message to return.



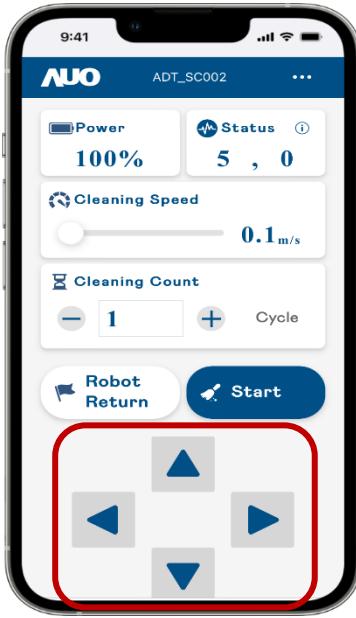
### 4.4.2 Forcibly Returning to the Charging Station

Interrupt the task and display the "Return" message on the UI.



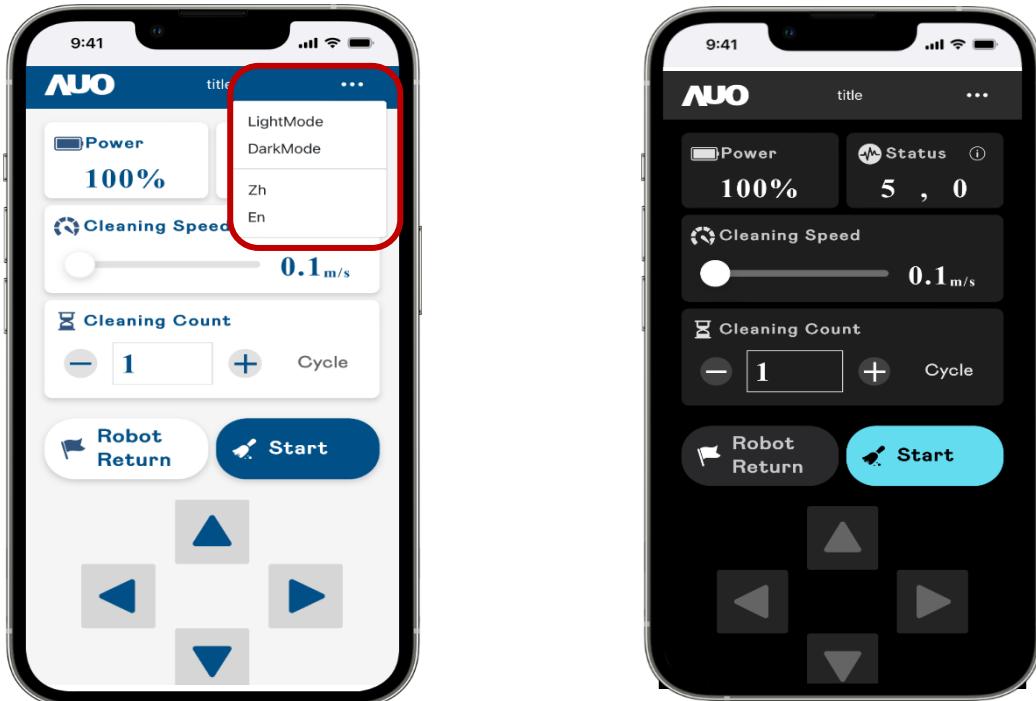
## 4.5 Testing - Manual Remote Control Mode

※Please note! For manual remote control, the button must be continuously pressed to move; releasing button will stop the movement. Please be cautious and ensure safety when near cliff edges.



## 4.6 Function Switching

Switching Background Color and Language (English/Chinese).



## 4.7 Shutting Down

Simply press the power button to turn off the device.

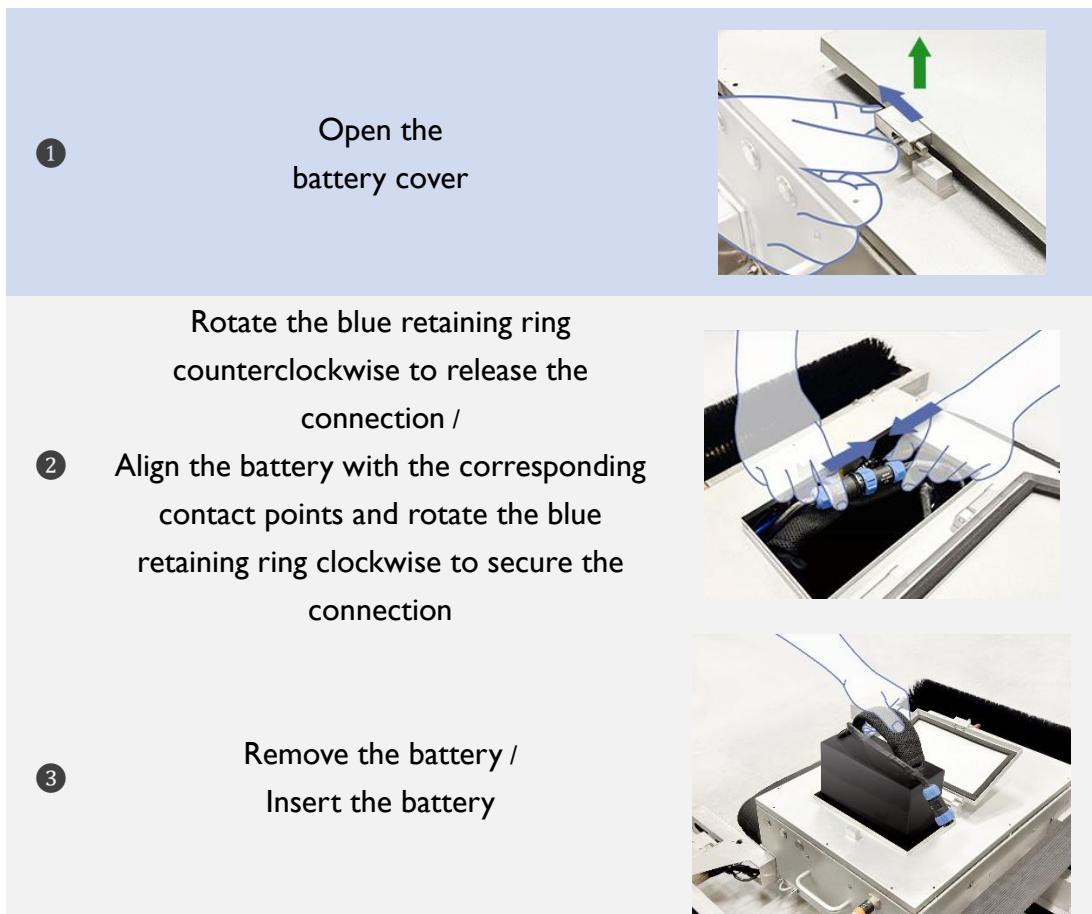


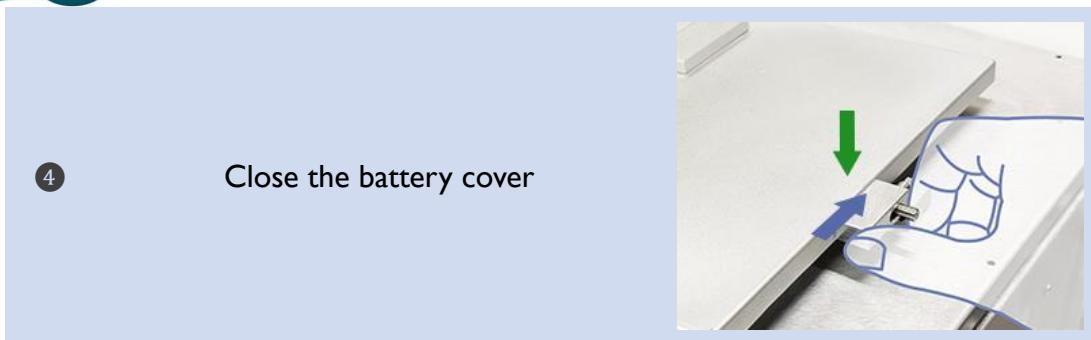
## 4.8 Battery Replacement

### 4.8.1 Battery Replacement

Remove the battery 1→2→3→4

Insert the battery 1→3→2→4





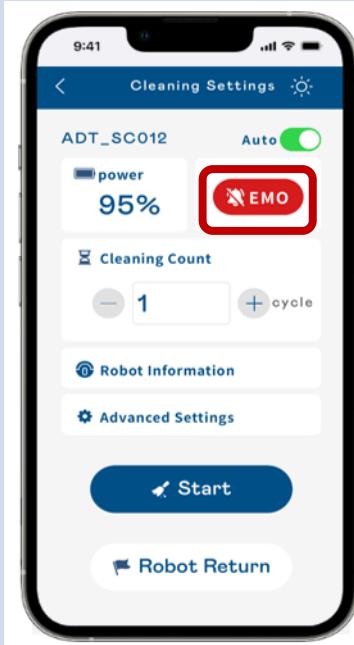
#### 4.8.2 Charging Process

Steps	Action	Action Icon	Steps	Action	Action Icon
①	Plug in the 110V power source		④	Start charging, indicated by a orange light	
②	Prepare for charging, indicated by a no light		⑤	Charging is complete when the light turns green. <b>Charging time: 3 hours.</b>	
③	Ensure that the connector is aligned with the white dot for successful connection		⑥	Turn off the power button	

## 5 Emergency Stop Function

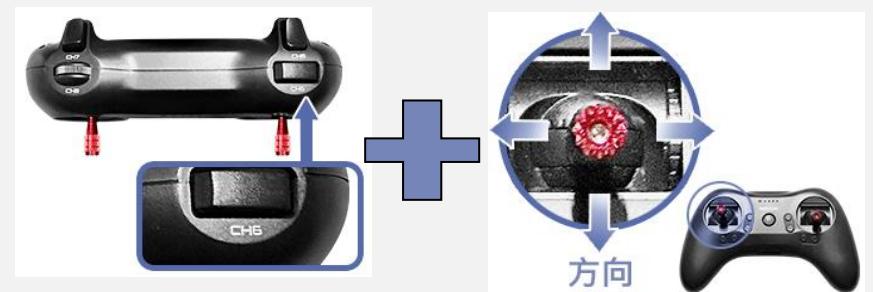
When the robot behaves abnormally, you can press the **emergency stop switch** or **Switch to remote control mode** to halt all robot movements.

### 5.1 Emergency stop method

method	Operation	Operation legend
1	Press the emergency stop button	
2	Switch to remote control mode (Press CH5 down)	

## 6 Remote Control Usage

Please follow the following steps and ensure that you are constantly observing the operation to avoid any falls.

Steps	Action	Action Icon
1	Approach the machine with the handheld remote control device at a distance of 2-3 meters and turn on the remote control	
2	Press the "Remote Control Mode" button	
3	Adjust vehicle body speed (default maximum speed 0.4m/s)	
4	Hold down CH6 to enable vehicle movement. Push the left joystick to begin controlling the vehicle	

## 7 Troubleshooting

### (1) The robot fails to perform properly after startup.

Step1: Check if there are any abnormal indicators or warning lights. (refer to chapter 1.2)

Step2: Verify if the SIM card is functional and properly inserted.

Step3: Check if the front and rear brushes are correctly installed.

Step4: If the robot continues to malfunction, try restarting it.

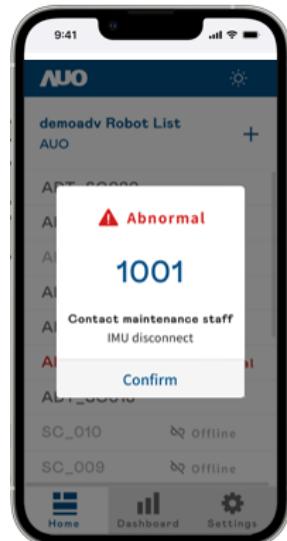
### (2) Rebooting the robot is required due to an abnormal fault

Step1: Manually move the robot to the lower-left or lower-right starting point.

Step2: Restart the automatic cleaning process

### (3) If an Error screen appears(Picture 1)

Please also notify the maintenance personnel simultaneously. (refer to chapter 7.1)



## 7.1 Troubleshooting by maintenance personnel

### Abnormal Shutdown

Step1 : Perform UI automatic return (If unable to perform automatically, proceed to Step 2)

Picture 1

(1) Conduct abnormal code lookup(Picture 2) (refer to section 7.2)

(2) Resolve the abnormal issue

(3) Restart the automatic cleaning process

Step2 : Perform remote control return (If unable to use remote control, proceed to Step 3)

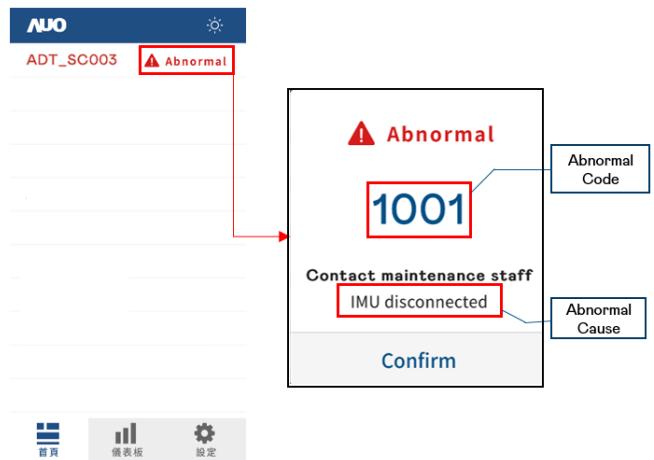
(1) Refer to Chapter 6 for remote control return instructions **that you are**

constantly observing the operation to avoid any falls.

- (2) Perform abnormal code lookup(Picture 2) (refer to section 7.2)
- (3) Check mechanical components
- (4) Resolve the abnormal issue
- (5) Restart the automatic cleaning process

Step3 : Perform manual retrieval

- (1) Check mechanical components
- (2) Perform abnormal code lookup(Picture 2) (refer to section 7.2)
- (3) Resolve the abnormal issue
- (4) Restart the automatic cleaning process



Picture 2

## 7.2 Abnormal Code Reference Table

Error Code	Explanation	Troubleshooting
1001	IMU disconnected	
1XXX	System exception	
2XXX	Control board abnormality	
3XXX	Motor abnormality	
5XXX	Sensor abnormality	
6XXX	Program reading exception	
9001	Camera connection abnormality	
4XXX	Battery abnormality	Please reboot the robot or notify the maintenance engineer
7001	Pedrail life is dead	Please replace the pedrail
7002	Brush life is dead	Please replace the brush
7003	Brush motor abnormal	Please restart the robot or replace the brush motor
8XXX	Navigation exception	Please place the car body correctly and restart the mission



## 7.3 Battery Replacement and Charging

### ● Charger Precautions

#### Precautions for digital chargers :

- ◎ Before charging, please confirm that the charging voltage setting meets the battery requirements..
- ◎ Charging should be done in a well-ventilated area and should not be exposed to excess moisture or dust.
- ◎ Using excessively long or small-gauge output cables can cause excessive voltage drop, prolonging the charging time and affecting the accuracy of the detection values.
- ◎ Confirm that the charging voltage and current meet the requirements of the battery. Different brands, capacities, and **new/old batteries should not be mixed.**
- ◎ Before use, please ensure that the input voltage selection switch matches the utility power supply to avoid damaging the charger.

### ● Battery Precautions

#### Precautions for Lithium-Iron Batteries :

- Before using the battery, be sure to carefully read the user manual and safety instructions.
- Use the designated charger and charge the battery according to the product specifications. Use the CC/CV charging mode. **Reverse charging is strictly prohibited** as it can deteriorate battery performance and lead to safety issues such as heat generation and leakage.
- Keep the battery out of reach of children.
- If children are using the battery, their guardians should explain the correct handling procedures.
- Batteries have a lifespan cycle, and if devices powered by the battery experience significantly shorter usage time than usual, it is recommended to replace the battery.
- When the battery is not going to be used for a long time, remove it from the device and store it in a place with low humidity and low temperature.
- Keep the battery pack away from areas/objects with static electricity when charging, using, and storing it.
- If the battery terminals become dirty, clean them with a dry cloth before use.
- Store the battery in a dry and cool place. It should be noted that if the battery is not used for a long time, due to its self-discharge characteristics, the battery may discharge excessively. To prevent excessive discharge, the battery should be regularly charged (once every three months) to maintain an SOC (State of Charge) of 30-50% or approximately a voltage between 25.57~25.82V.
- Under strong magnetic field conditions, the charging and discharging of batteries can be disrupted, leading to potential safety hazards.



## 8 Warning



Please strictly follow the requirements and conditions outlined in this operating manual. AUO will not be responsible for any misuse or improper use by the user.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

### FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

### NCC Caution:

1. To reduce electromagnetic wave impact, please use appropriately.



2. The standard value for electromagnetic power density MPE is: \_\_\_\_\_ mW/cm<sup>2</sup>. The measured value for the tested product is: \_\_\_\_\_ mW/cm<sup>2</sup>. It is recommended to keep the device antenna at least \_\_\_\_\_ centimeters away from the human body when in use.
3. There is a risk of explosion if the battery is replaced incorrectly. Please refer to the manufacturer's instructions for the proper disposal of used batteries (Refer to Chapter 7.3).
4. LTE frequency bands declaration: [B1/B3/B7/B8/B28](#)
5. Internal memory: Added memory information: Built-in main memory hardware capacity - 32 GB, users can use at least 0 GB of main memory capacity, expandable memory card support - 0 GB.