

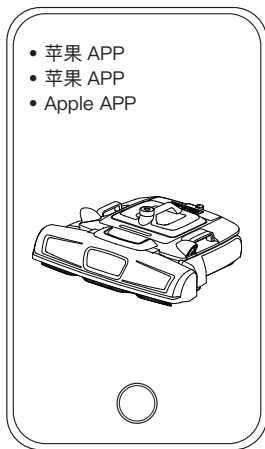
# 瑞智辉

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# RDNIMOS

## USER GUIDE

- 光伏清洁机器人手机 APP 使用说明书
- ラディアント製 パネル清掃ロボット取扱説明書
- Operating Instructions for Apple APP of Photovoltaic Cleaning Robot



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# I Introduction

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## 1.1 About the instructions

This manual is written to guide users of PG12 cleaning robot of Suzhou Radiant Photovoltaic Technology Co., Ltd to interact with the robot using Apple iPhone (or iPad). This manual mainly describes how to correctly use the APP and understand the corresponding functions of each interface module, so that users can be more familiar with the interaction between APP and robots.

## 1.2 About APP

The APP described in this instruction is developed by Suzhou Radiant Photovoltaic Technology Co., Ltd., and our company provides technical support, version update and release. This APP can be used together with PG12 cleaning robot developed and produced by Radiant. The target users are customers or users who purchase the PG12 cleaning robot.

# II Brief introduction of the function

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## 2.1 Function Support

This APP mainly monitors and controls PG12 cleaning robots in real time, and mainly supports the following functions:

1. Support AP direct connection and LAN connection.
2. Real time status data viewing and alarm prompt of robot.
3. Robot moving path planning and trajectory display.
4. Manual/automatic mode switching.
5. Cleaning level setting.
6. Local upgrade or online upgrade.

In the third chapter of this manual, four aspects are described in detail: Login Mode, Operating Mode, Draw Mode and Setting Mode.

## 2.2 Operating Environment

API level 13.0 or above for iOS phones.

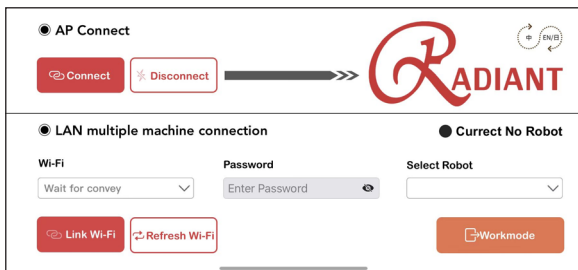
## 2.3 Download and Install

Users can search for "radiant" in the app store of the iPhone, then they can download and install it.

# III Instructions for Use

## 3.1 Login Mode

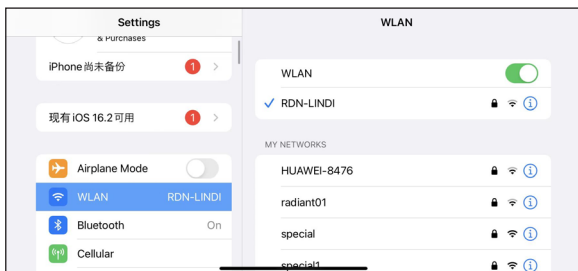
Run the APP to enter the login interface, as shown in Figure 3.1-1:



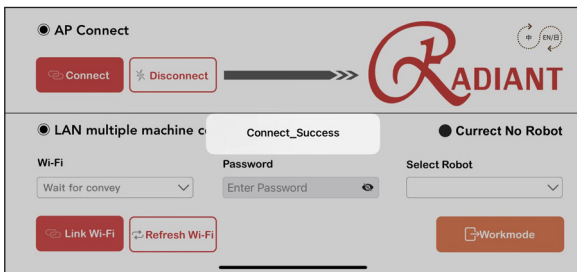
【 Figure 3.1-1 】

Login Mode: There are two login methods. One method is AP connection, which uses IP address to connect directly. Only mobile phones and machines are required. The disadvantage is that only one machine can be connected and checked. The other is LAN connection. When the mobile phone and the machine are under the same LAN, the mobile phone can connect all the machines in the area and view them.

First turn on the start switch of the cleaning robot, wait for 30 seconds, select the Wi-Fi of the machine and connect it (the Wi-Fi of the machine is shown in Figure 3.1-2, which is a wireless network with Rockchip-xxx), click the connection, and the result as shown in Figure 3.1-3 will pop up, indicating that the cleaning robot has been connected.

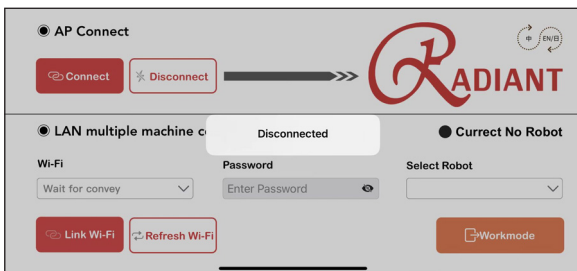


【 Figure 3.1-2 】



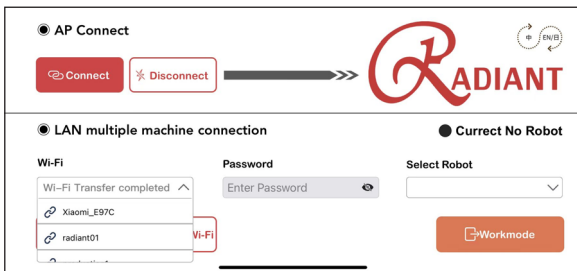
【 Figure 3.1-3 】

Click Disconnect to disconnect the connection, as shown in Figure 3.1-4:



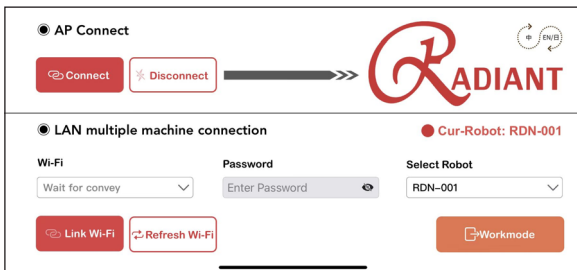
【 Figure 3.1-4 】

When the LAN connection is used, the first time to connect the machine in this way requires the operation of connecting the machine to the LAN. Based on the direct connection of AP, we click the refresh WIFI button, and the machine will automatically refresh the surrounding WIFI and display it in the corresponding drop-down list, as shown in Figure 3.1-5:

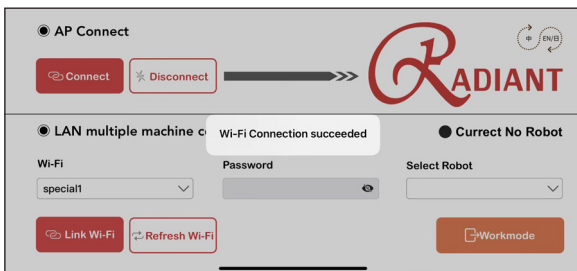


【 Figure 3.1-5 】

After selecting the LAN to be connected, enter the WIFI password, click Connect to WIFI, and wait for the machine to feedback that the WIFI connection is successful. Then let the phone connect to the WIFI just connected, return to the APP, wait for the phone to refresh the name of the machine, select the machine, that is, the LAN connection is successful, as shown in Figure 3.1-6 and Figure 3.1-7:



【 Figure 3.1-6 】



【 Figure 3.1-7 】

(Note: As long as the LAN around the machine remains unchanged, the phone can be directly connected to the LAN next time. Run the application and refresh the machine name.)

You can switch languages in the upper right corner. Chinese, English, and Japanese are supported. As shown in Figure 3.1–8 to 3.1–10:



【 Figure 3.1–8 】



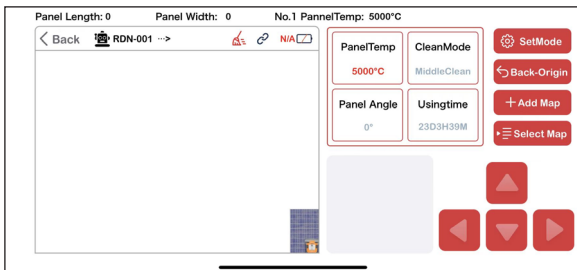
【 Figure 3.1–9 】



【 Figure 3.1–10 】

## 3.2 Operating Mode

Click the Enter button to run the operating interface, as shown in Figure 3.2-1 below:

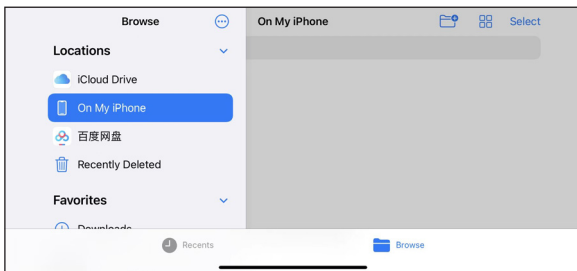


【 Figure 3.2-1 】

This interface displays the current information of the machine, including the machine name, connection status, battery power, photovoltaic panel temperature during operation, cleaning mode, panel Angle, and service time. In the lower left corner, the trajectory of the robot is displayed. The lower area in the middle displays the machine fault information, and the machine fault alarm information can be received when the machine fails. After switching to manual mode, remote control can be realized in the lower right corner.

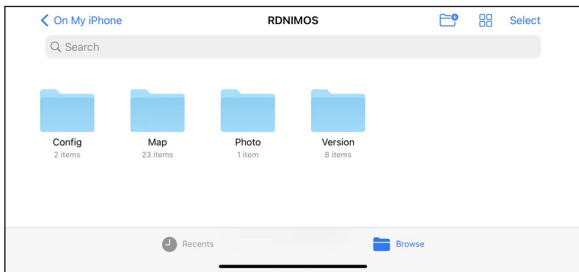
Press Return to Start button, the machine will return to its original starting position after finish cleaning.

Select the diagram which saved in photovoltaic array diagram on the mobile phone and send it to the machine for cleaning. Click the Select diagram button to select the saved diagram under Add diagram. (Under the radiant folder in my iPhone (or iPad) directory as shown in Figure 3.2-2~4:)

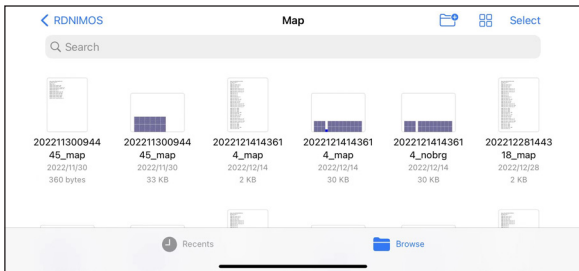


【 Figure 3.2-2 】



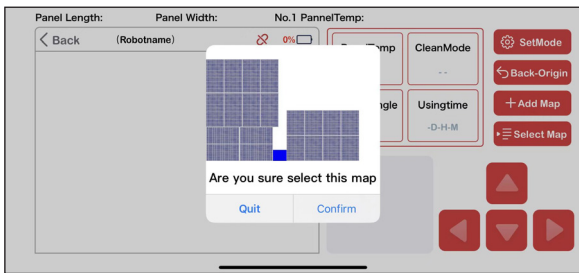


【 Figure 3.2-3 】



【 Figure 3.2-4 】

After clicking Select, you will be prompted whether to select this map. Click OK again, and you will be asked to choose whether to start cleaning from the leftmost or rightmost block. (If there is only one panel, there is no such option) as shown in Figure 3.2-5 and 3.2-6:



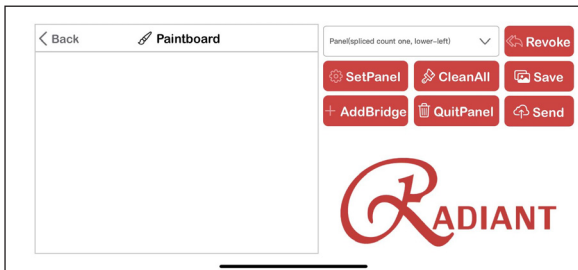
【 Figure 3.2-5 】



【 Figure 3.2-6 】

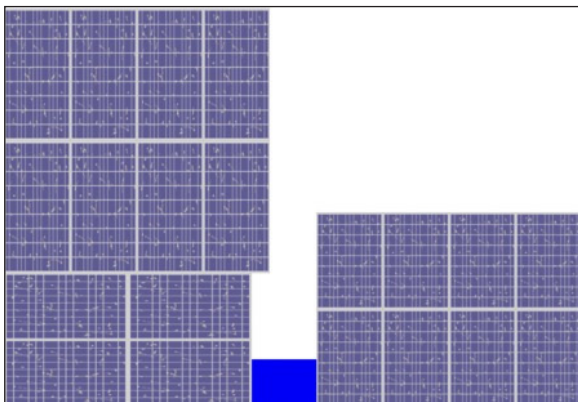
### 3.3 Draw Mode

Click Add Map in the operating interface to enter the map drawing interface, as shown in Figure 3.3-1:



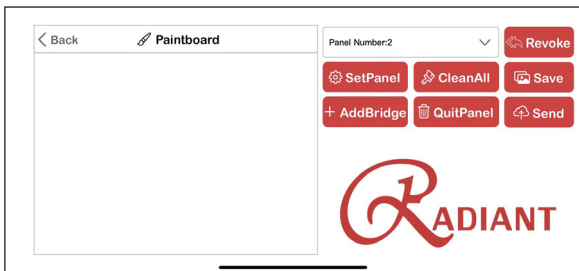
【 Figure 3.3-1 】

In this mode, users can design photovoltaic array diagram according to their own actual situation to meet customized requirements. The drawing of iOS app is somewhat different from that of Android. The splicing panel without bridging is a large panel, and the drawing logic is from bottom to top and from left to right. For example, you need to draw a panel as shown in Figure 3.3-2:

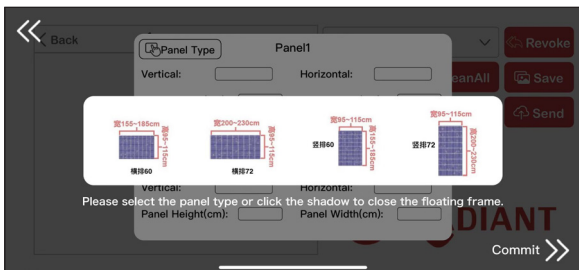


【 Figure 3.3-1 】

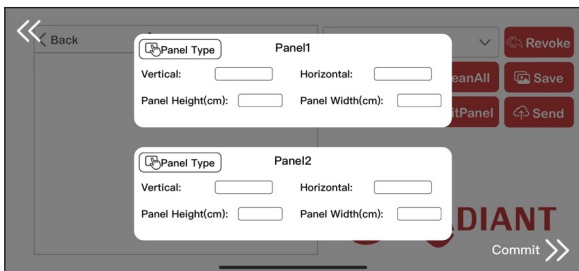
1. Click the drop-down box, select the number of panels: 2 (the number of panels here is the overall panel, and the splicing block is counted as one), click the setting panel, and input the bottom panels of all the overall panels first.
2. First, select the panel type of the bottom panel of the left large splicing panel: horizontal Row 72, enter the number of columns: 2 and rows :2 of the bottom panel, and enter the actual height and width of the bottom panel, which are 102 in height and 207 in width.
3. After that, input the data of the bottom panel type of the large right panel. Since there is no splicing panel on the right, input the panel type directly: 60 vertical row, input columns: 4 and rows :2 of the right panel, and input the length and width of the right panel, 160 height and 99 width.
4. Click Submit. As shown in Figure 3.3-3-5:



【 Figure 3.3-3 】

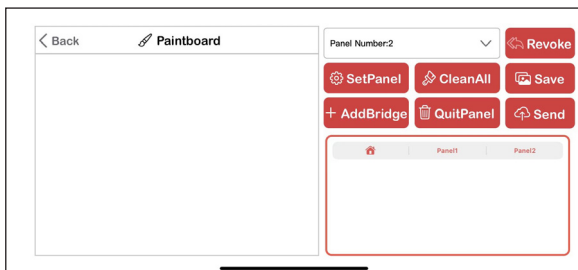


【 Figure 3.3-4 】

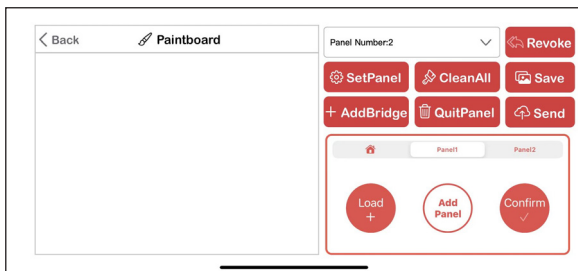


【 Figure 3.3-5 】

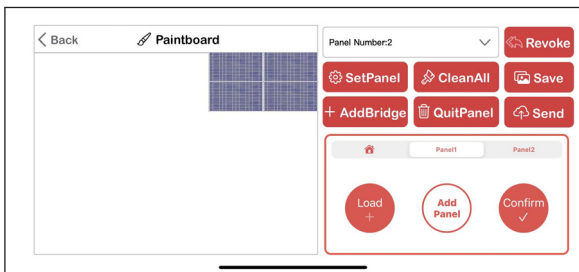
5. After clicking Submit, a selection box will appear in the lower right corner. Click Panel 1, and three buttons will appear: Load, Add Splice Block, and Confirm. After clicking the load button, the bottom panel that has just been set will appear. Adding splicing blocks means laying splicing block panels on the bottom panel after placing the bottom panel. "Confirm" means locking all panels of the current first panel and unlocking the loading function of the second panel. (Be sure to click Add Splice Block after laying the bottom panel, otherwise an error will occur) as shown in Figure 3.3-6~8:



【 Figure 3.3-6 】



【 Figure 3.3-7 】

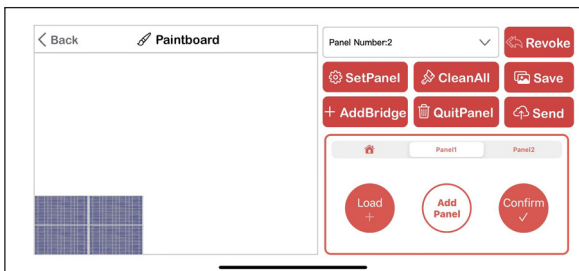


【 Figure 3.3-8 】

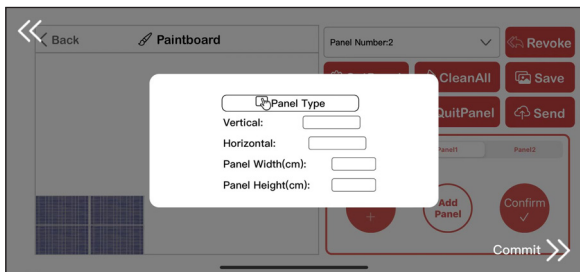
6. Drag the panel with your finger. No matter where you release it, the panel will be sucked downward and placed at the bottom. Even if you drag the panel out of the range of the draw, it will return to the draw and suck the edge downward.

7. After placing the bottom panel, click Add Splice Block, and input the panel information of the upper panel spliced on the bottom panel. Number of columns: 4, rows: 1, height: 225, width: 112.

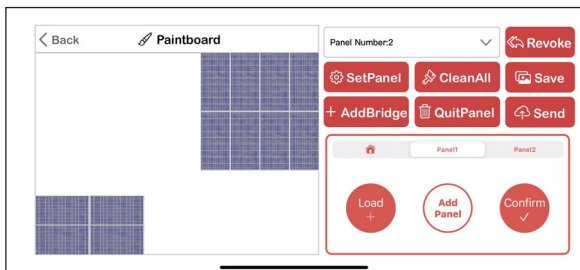
8. Click Submit, and the panel of added splices will appear in the upper right corner of the draw. Drag the panel with your finger. No matter where you release it, it will be sucked to the top of the bottom panel. Generally, they are left aligned or right aligned. If they are not aligned, the machine may not run according to the diagram. As shown in Figure 3.3-9~12:



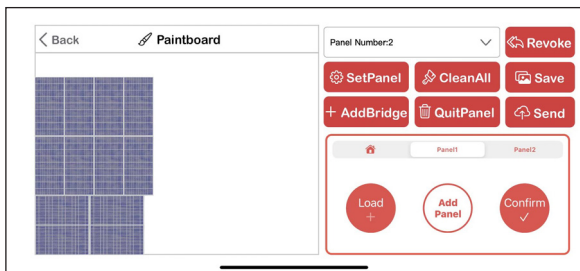
【 Figure 3.3-9 】



【 Figure 3.3-10 】

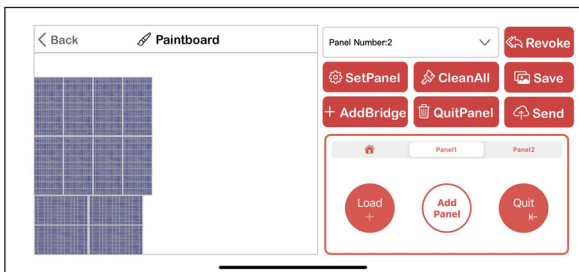


【 Figure 3.3-11 】

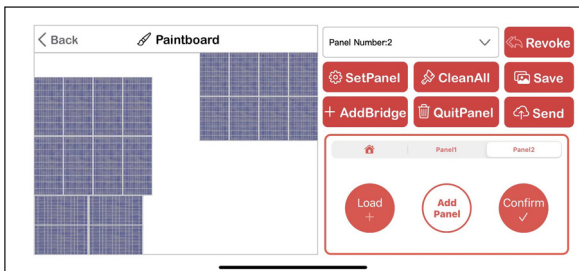


【 Figure 3.3-12 】

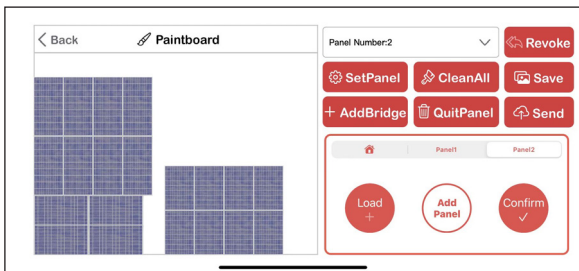
9. After click confirm, the placement of the second panel is also released. Click the second panel, then click Load. The bottom panel of the second panel will appear in the upper right corner. Since the second panel has only one panel, so you can directly drag it to the side of the first panel to complete the placement of the second panel. (The bottom panel of the second large panel will be a distance away from the bottom panel of the first large panel by default) as shown in Figure 3.3-13~15:



【 Figure 3.3-13 】



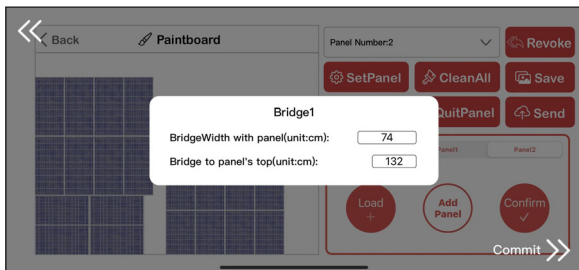
【 Figure 3.3-14 】



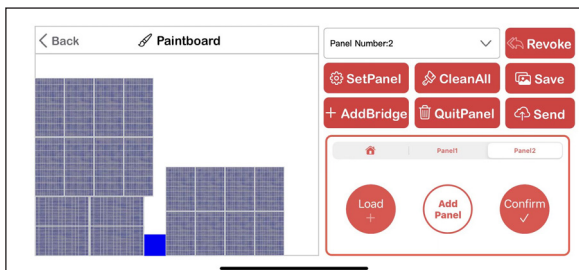
【 Figure 3.3-15 】



10. After placing the two large panels, it is necessary to add a bridge. Click Add Bridge and enter two pieces of information: the width of the bridge connected to the left panel, and the distance from the top of the bridge to the top of the left panel. Then click submit, and the bridge will be generated automatically. As shown in Figure 3.3-16~17:

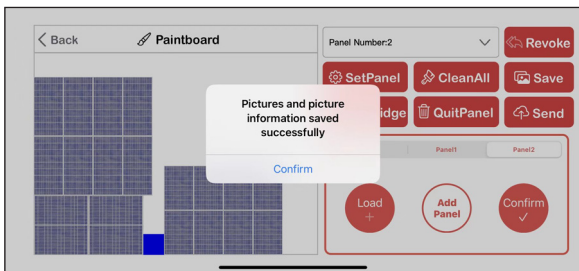


【 Figure 3.3-16 】

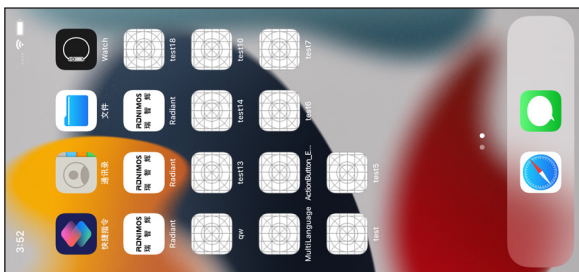


【 Figure 3.3-17 】

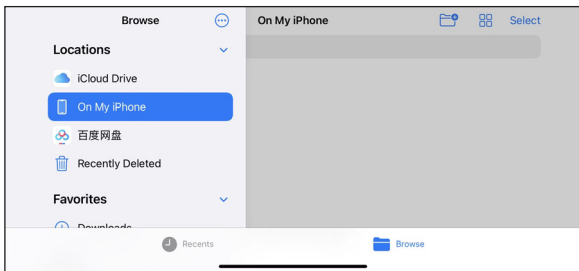
11. Finally, click Save diagram (When the machine is connected, you can also send a diagram and directly let the machine run the panel) . After the prompt box indicating that the diagram information has been saved is displayed, you can find the diagram you have drawn and the information (txt file with the same name) in the file → My iPhone (my iPad) → radiant folder, as shown in Figure 3.3–18–22:



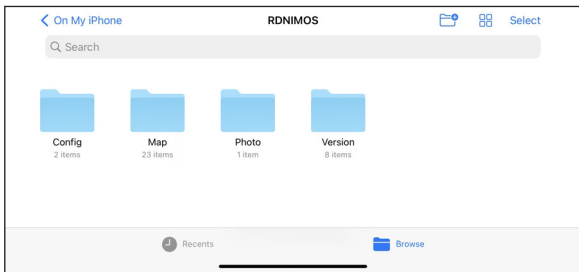
【 Figure 3.3–18 】



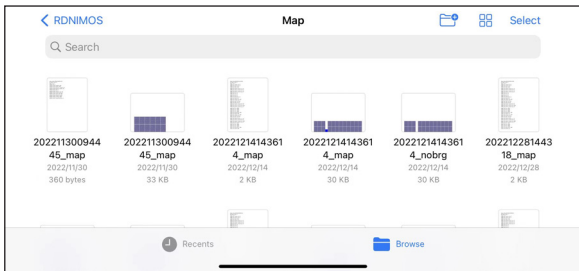
【 Figure 3.3–19 】



【 Figure 3.3–20 】



【 Figure 3.3–21 】

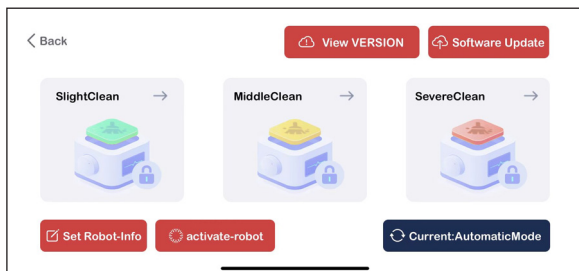


【 Figure 3.3–22 】

You can use Delete Panel button to delete the bottom panel that was drawn.  
 You can use Cancel button to cancel the added splice block.  
 You can use Clear button to clear all Settings and drawings with one click.

### 3.4 Setting Mode

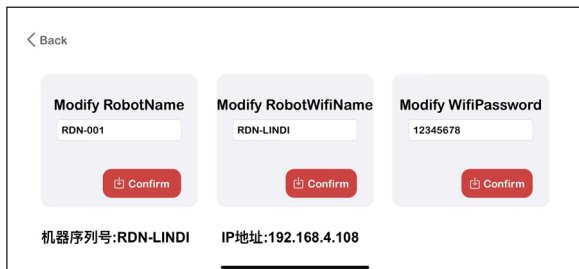
Click the Setting button in operating mode to run the setting interface, as shown in Figure 3.4-1:



【 Figure 3.4-1 】

In this interface, the user can set the cleaning level so that the machine can clean the photovoltaic panels with different levels of pollution. The cleaning level can be adjusted by switching to the manual mode at the lower right corner.

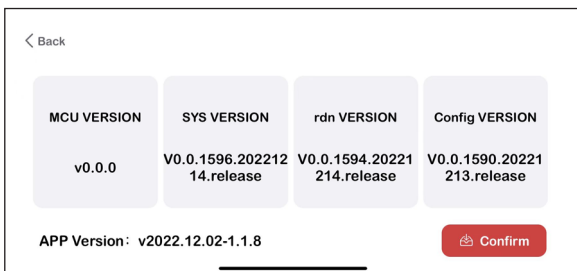
Click the Set Machine Information button, as shown in Figure 3.4-2:



【 Figure 3.4-2 】

In this interface, the user can check the version number of the machine, APP version number, algorithm version number, rdn version number, and mcu version number.

Click Check version number, button as shown in Figure 3.4–3:



【 Figure 3.4–3 】

In this interface, the user can check the machine version number, APP version number, algorithm version number, rdn version number, and mcu version number.

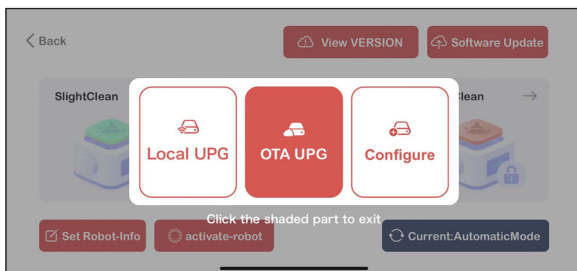
Click the Activate Machine button, as shown in Figure 3.4–4:



【 Figure 3.4–4 】

On this page, you can enter the activation code to activate the machine.

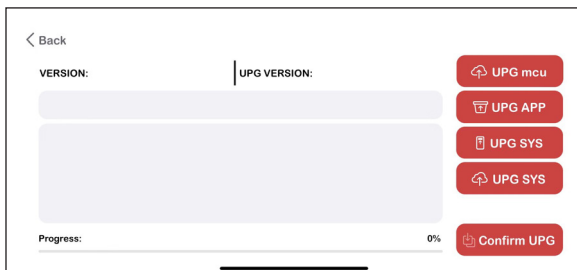
Click the Software upgrade button, as shown in Figure 3.4–5:



【 Figure 3.4–5 】

Software upgrade includes local upgrade and OTA upgrade.

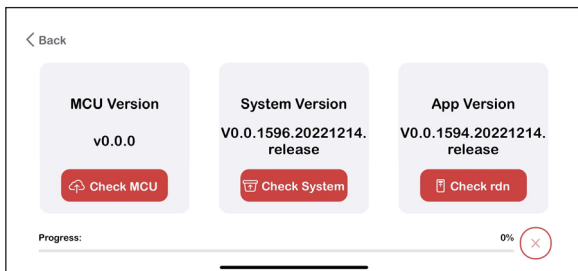
Local upgrade, as shown in Figure 3.4–6:



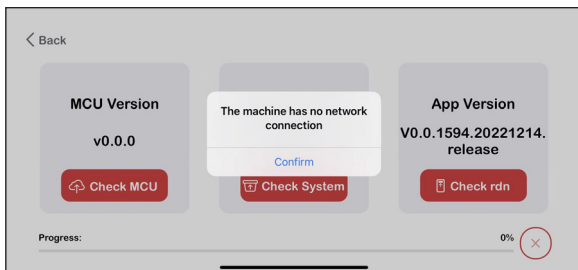
【 Figure 3.4–6 】

Click Upgrade mcu or Upgrade RK–3399 or Upgrade rdn, and then select the corresponding file (we will send the file) , After the file size and the corresponding file directory appear on the page (a prompt box will appear if the wrong file is selected), click OK to upgrade. (The machine must be connected during the whole process)

OTA upgrade, as shown in Figure 3.4–7~8:



【 Figure 3.4–7 】



【 Figure 3.4–8 】

Click any one of mcu version, system module version and application module version. After clicking, the machine will automatically detect whether there is a newer version. If there is a newer version, click "OK" to upgrade and click "x" button to cancel the upgrade. QTA upgrade requires the machine and app to be connected in the same LAN.

### 3.5 Exit

It depends on the user defined mobile phone to exit from the application.