

➤ USER MANUAL

Solar Panel Cleaning Robot



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Thank you for choosing Multifit Solar Panel Cleaning Robot (refer to as: G1 Robot Model No.MULR-*)**

Please read the product manual and safety manual carefully before using this product.

The person in charge of the robots should ensure that all users read and follow this manual.



■ Release the Sensor Wheel by screw and extend the its length, then screw the Sensor switch again.

The robot may fall from the solar panel if the Sensor wheel does not be released

Safety Manual



Warning

Caution

Obviously potential bad or dangerous use, if not avoided, it will cause serious personal injury.

Note

- Obviously potential undesirable or dangerous use, if not avoided, it will cause certain personnel injury or certain material and environmental damage.
- User manual to help users operate and use technically correctly and effectively !

This equipment is only used for cleaning solar panels.



Forbidden

- Start the robot without reading this manual
- Use outside the designated use range of the robot
- Destroy the safety system, remove instructions or danger signs
- Open the robot with a tool (such as a screwdriver)
- Update or modify this robot
- Use accessories from other manufacturers that are not approved by Guangdong Multifit Solar Co., Ltd.
- Use to clean other products beyond solar panels.

Use Restrictions

Multifit Solar Panel Cleaning Robot is designed to be used in an environment suitable for human survival, **and cannot be used in a corrosive or explosive environment.**

TO : USER

Limitation of Liability

Guangdong Multifit Solar Co., Ltd. as the original manufacture, is responsible for providing safe products including manuals and original accessories.

Responsibilities of Non-originating manufacturers (Non-Multifit Solar Co.,Ltd)

For accessories of Multifit robot produced by Non-originating manufacturers (Non-Multifit), the manufacturer shall be responsible for the development of its products and provide safe accessory products !

Responsibilities of robot operators:

The person in charge of the robot must ensure that it is operated in accordance with the instructions.

The person in charge should also ensure that other users use the robot in accordance with the instructions.

The person in charge of the robot has the following responsibilities:

- Must understand the product safety instructions and instructions in the user manual.
- Must be familiar with local safe working rules.
- Once the robot has a safety problem, immediately contact Guangdong Multifit solar Co., Ltd.

Guangdong Multifit Solar Co., Ltd.

Robot Function

The functions of the robot are introduced here.

Slow Start

Robot protection mechanism. When the robot starts, it runs slowly for the first 3 seconds, about 5 meters per minute, to protect the equipment from falling off the solar panel.

Manual Cleaning Mode

The specified position of the solar panel can be manually cleaned, and the direction and speed of manual cleaning can be adjusted.

Automatic Cleaning Mode

Automatic cleaning of solar panels, with customized cleaning time and frequency.

Raindrop Induction Automatic Cleaning Mode

The robot is equipped with a raindrop sensor. When the rainfall reaches the specified value, it will start an automatic cleaning round.

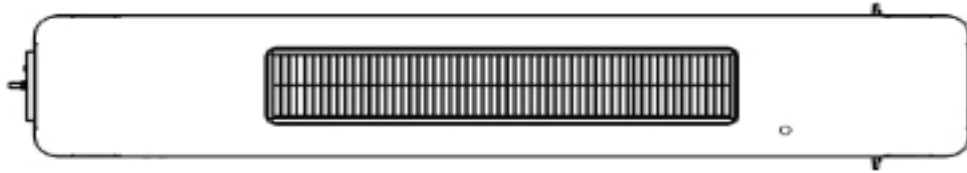
Self-Charging

The Top of the robot is equipped with a solar panel to continuously charge the battery of the robot.

Robot Parts Function

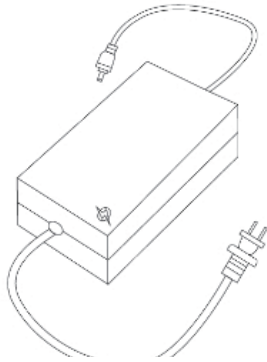
Check the accessories, the quantity of each part is shown on ().

Robot (×1) User Manual (×1)

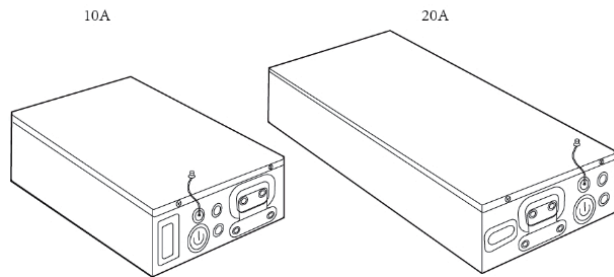


Power Adapter (×1) The power adapter varies depending on the country/region.

Battery Charger (×1)



Lithium Battery 24V-10AH/20AH (×1)



Remote Control (×1)

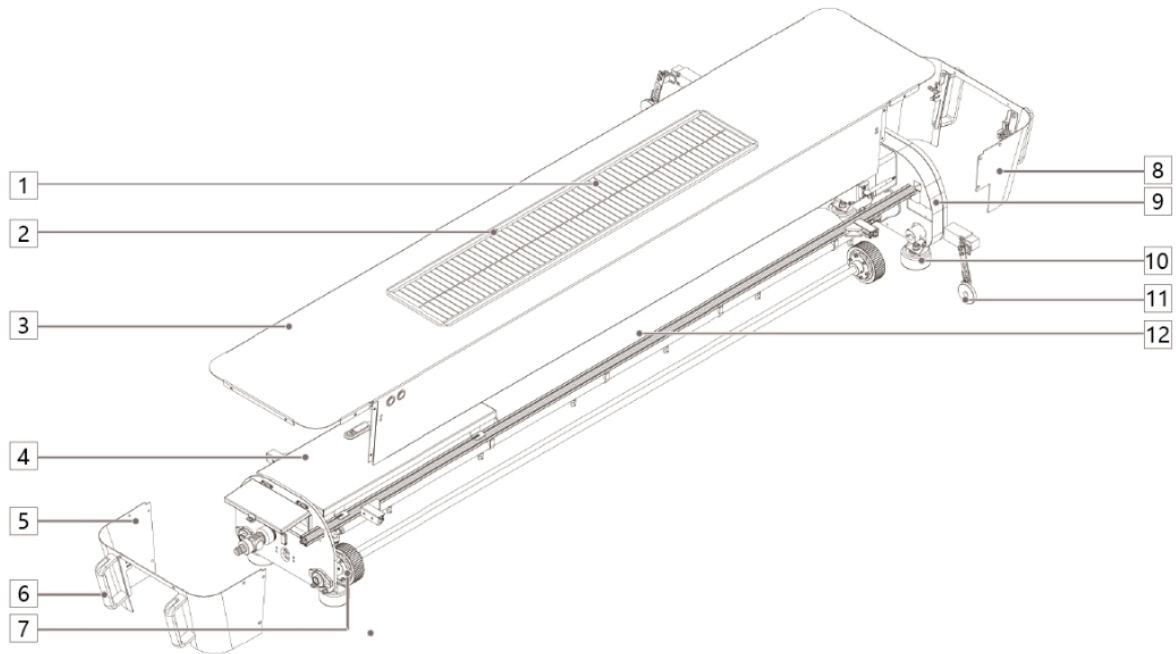


Micro USB Cable (×1)



Product Inspection

1. Robot Internal View



1. Self-charging Solar Panel

2. Raindrop Sensor

3. Outer Top Shell

4. Power Control Box (1)

(Including circuit boards, batteries, integrated circuits and solar controller)

5. Side Shell

6. Carrying Handles

7. Walking wheel

8. Side Shell

9. Gearbox

(The mechanical gearbox serves the robot transmission system and integrates the brush disassembly structure.)

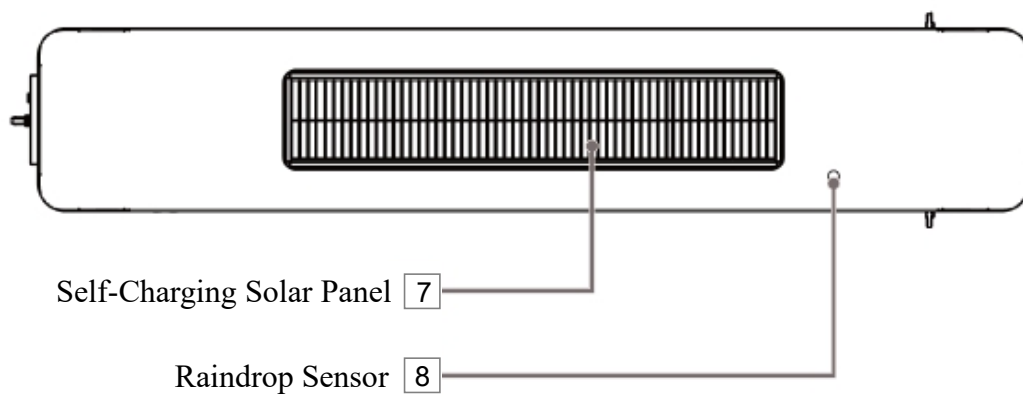
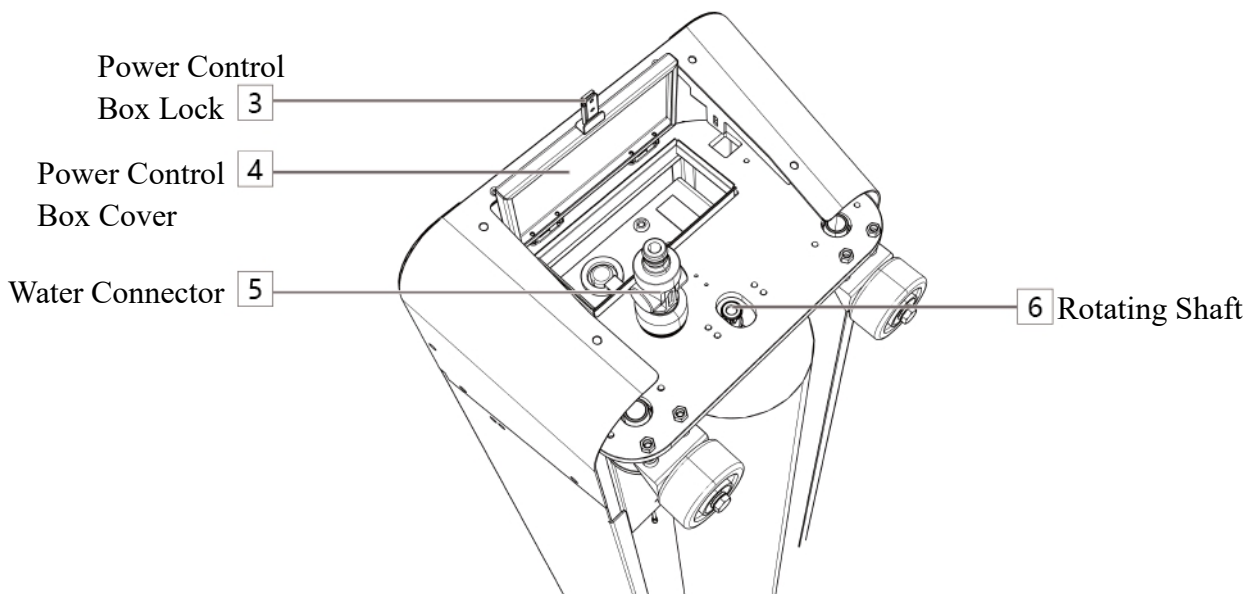
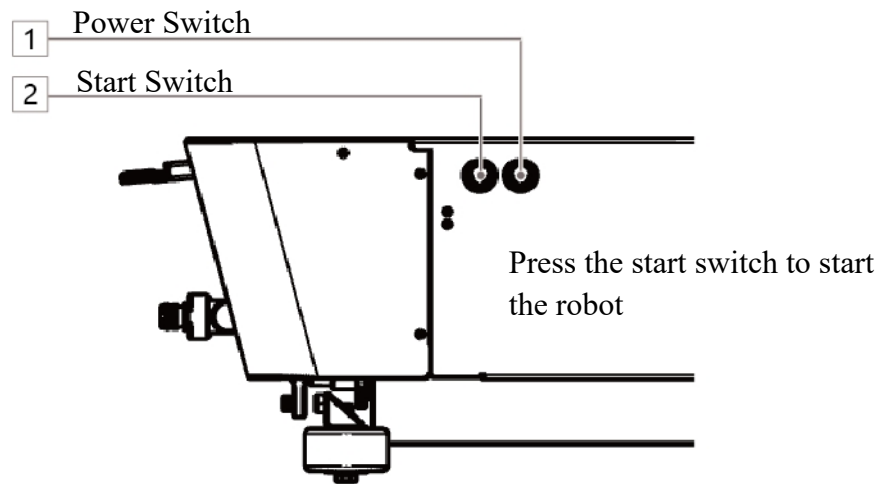
10. Support Wheel

11. Sensor Wheel

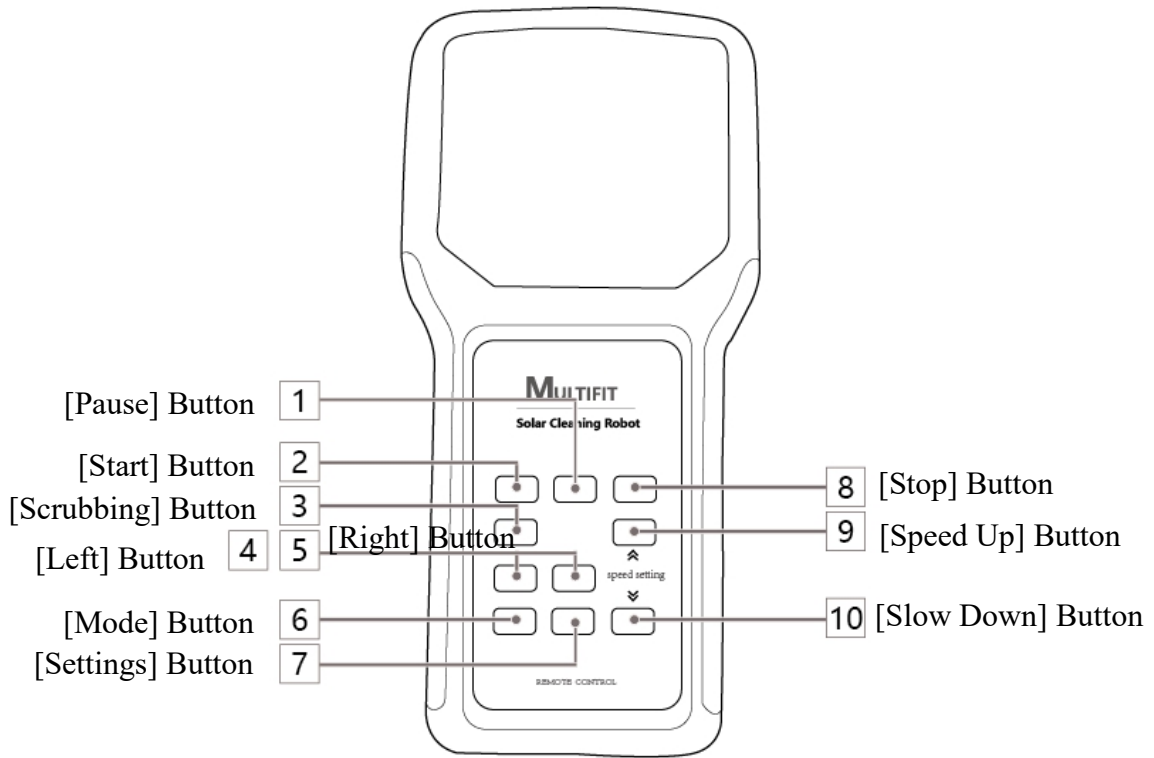
(The cleaning robot is restricted to move on the solar panel, and the cleaning robot can be controlled to automatically move in the reverse direction.)

12. Rolling Brush

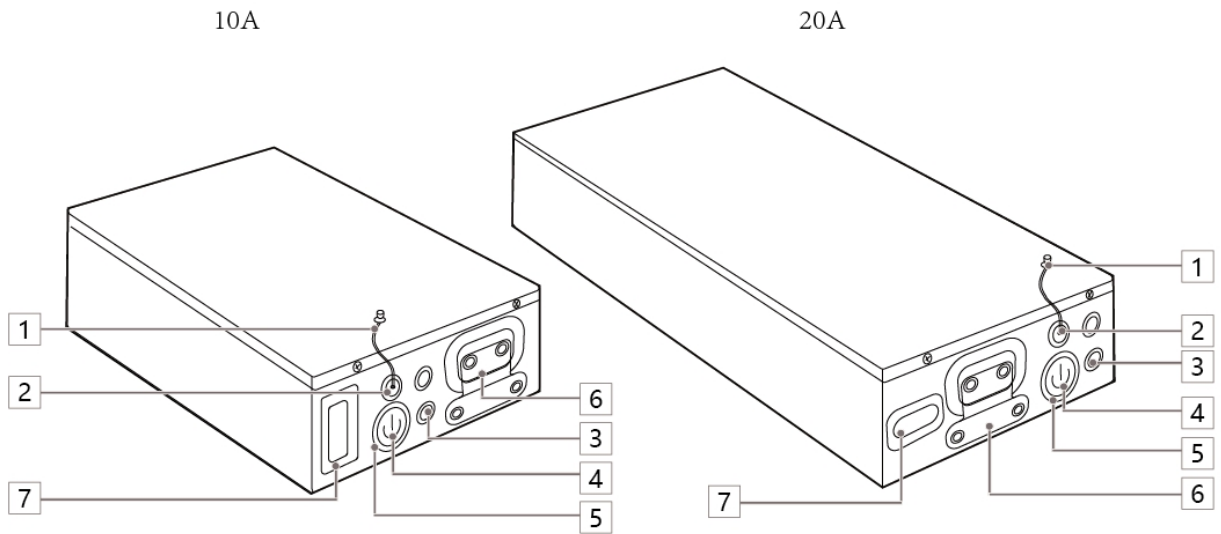
2. Robot External View

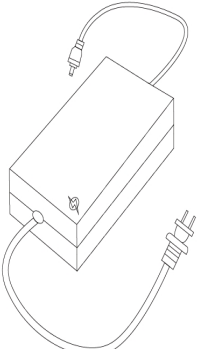


Remote Control & Charger



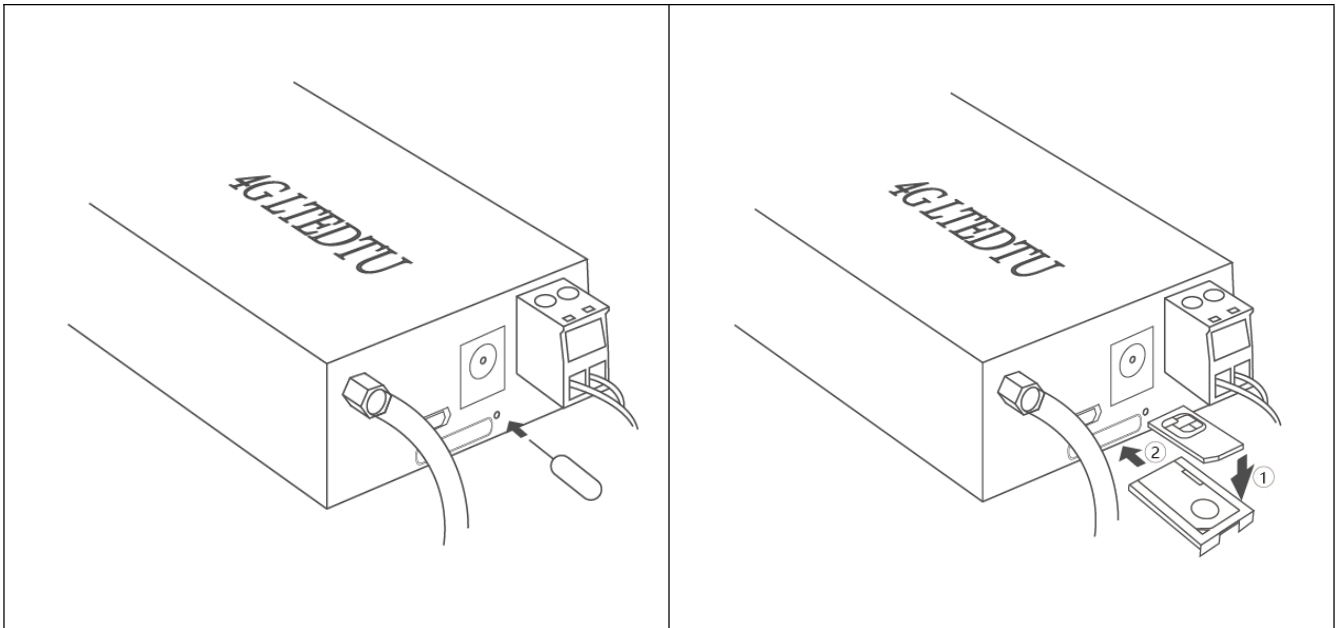
Battery & Charger



Battery details	Battery Charger
<ul style="list-style-type: none"> 1. Charger Cover 2. Charger Port 3. Battery Cable 4. Battery Switch/Battery Power Button 5. Battery Power Indicator 6. Handle 7. Battery Power Display, The percentage of remaining battery power is displayed 	

Work Preparation

Install/Replace SIM Card



SIM card installation method :

1. Take off the lock of Power Control Box;
2. Unplug the battery cable and take out the battery from box;
3. Press the bottom holder switch to the middle, then take out the 4G Module. **Do not unplug power cable!**
4. Touch the card hole with the pin as picture 1, and the SIM card slot will pop up automatically;
5. Put the SIM card into the card slot and insert to the 4G Module as picture 2;
6. Press the bottom switch of 4G Module, then insert and fix the 4G Module in the power control box;
7. Insert the battery and connect the battery cable;
8. Close and lock the cover.

Note:

Do not take out the cable of 4G module! The 4G module can not work if SIM card is install incorrectly!

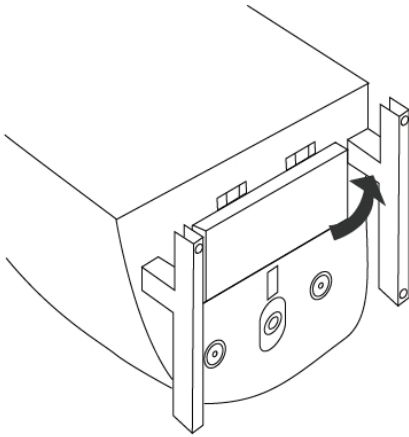
Install/Replace Battery

The battery of robot should be charging at the first use. Battery can be charging even there is still electricity left.

Battery can be used in condition of unfinished charging.

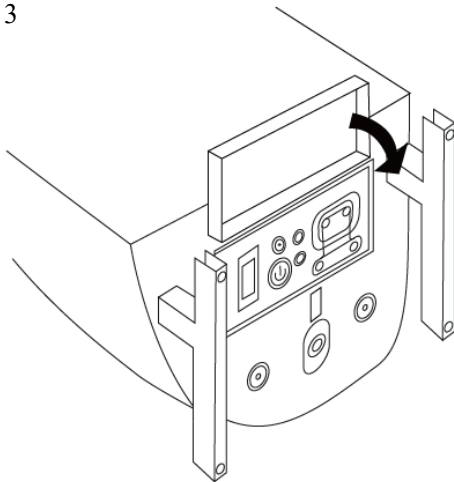
The full-powered battery would be consumed even if it is not working.

figure 1



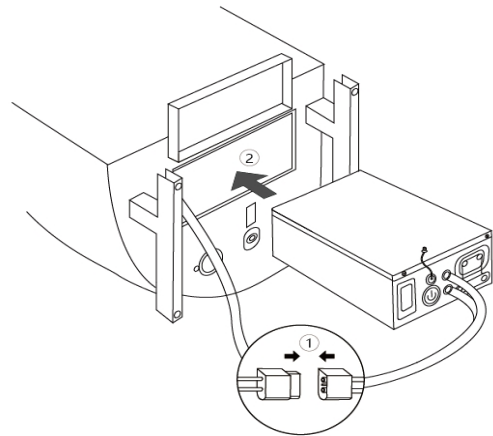
1. Take off the lock of Power Control Box;

figure 3



5. Close and lock the cover

figure 2



2. Unplug the battery cable;
3. Take out/Insert the battery as picture 2;
4. Plug the battery cable correctly. Press the switch button and make sure the installation is finished.



Note:

(1) Battery has automatic power off function. You can unplug the battery cable without turning off the battery!

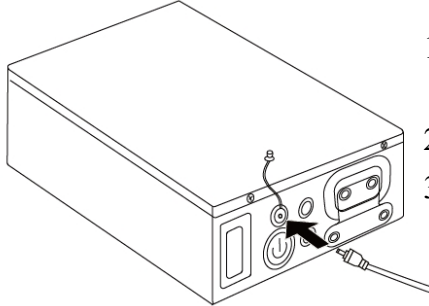
(2) Red wire is the positive pole, Black wire is the negative pole of the battery.

Battery Power Display

1. Press the switch button and the battery power percentage will be showed on the screen.
2. Suggest to charging the battery once power is less than 20%.

Note: Battery power may deviate when in different condition and environment.

Battery Charging



1. Battery capacity is 24V 10Ah/20Ah lithium battery and can be cycling charging and discharging safely.
2. Please use the assigned charger when charging.
3. Charging time: It takes 5 hours(10Ah)/10 hours(20Ah) for charging.

Note:

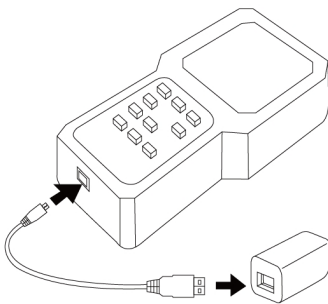
- (1) Above charging time is applicable to temperature at -10~25°C.
- (2) It may take longer time for charging when in different condition and environment.

Charge On/Off

Press on button and the indicator light is on and the battery power is on the screen. The battery is ready.

Note: Turn off the battery by pressing battery button again, the light and display screen are off.

Remote Controller Charging



1. Use Soft-pack type lithium battery and can be cycling charging and discharging safely.
2. Please use the Micro USB wire and adapter when charging.
3. When the remote control starts charging, the indicator will on.
4. When the remote control is fully charged, the indicator will off.
5. Charging time: It takes 90 minutes for charging.

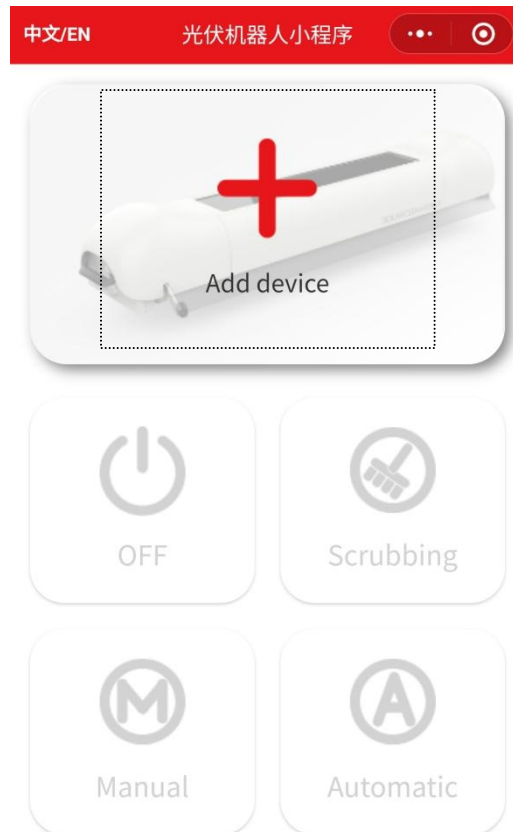
Note:

- (1) Please do not charge many times that has just finished charging or has not been used. It will affect battery performance.
- (2) Please remember take off the charger after charging.
- (3) Above charging time is applicable to temperature at -10~ 25°C.
- (4) It may take longer time for charging when in different condition and environment.
- (5) Make sure to use 5V1A/2A Charger! Or the mismatched voltage will damage the remote control.

Robot & Remote Control

1. Start Robot
2. Aim remote controller at Robot.
3. Remote control is connected with the robot automatically.

Robot & Phone Apps



1. Start Robot
2. Scan the QR code or search the mini program “Multifit Robot”.
3. Register and login on the mini program.
4. Click the [Add Device] button to add Robot.

Robot Operation

Please check the following precautions before starting the robot

1. Put on the corresponding solar panel array refer to the robot model and solar panel size.

The walking wheel should be fitted to the solar panel frame.

2. Check the position of robot, whether it is placed in the right position.

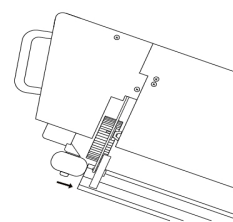
3. Check the position of robot, the support wheel should be close to the solar panel frame. (Figure 1)

4. Release the Sensor Wheel by screw and extend its length, then screw the Sensor switch again. (Figure 2)

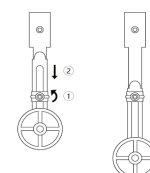
The robot may fall from the solar panel if the Sensor wheel does not be released.

5. Turn on the battery in the Power Control Box and then lock the cover.

The cover cannot be opened during the robot running!



(Figure 1)



(Figure 2)

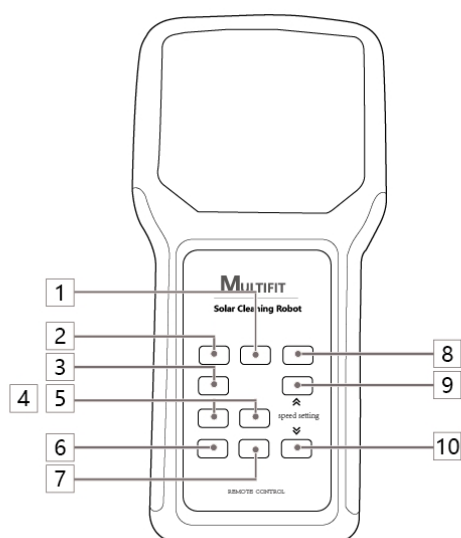
Robot Power Button

1. Power on the robot by pressing the [Power] on the robot side.

2. Start the robot by the follow 3 ways:

- (1) Press the [ON] on the robot side;
- (2) Press the [ON] on the remote control;
- (3) Press the [ON] in the Apps.

Manual Cleaning Mode-Remote Control



1. Press the [ON] Button, the robot starts cleaning at an initial speed of 18 m/min.

Press the [OFF] Button, the robot will stop.

2. During the cleaning, press the [Scrubbing] button, the robot repeatedly cleans within 30cm of the current position to the left/right. Press the [OFF] Button, robot finish the positioning clean.

3. During the cleaning process, press the [Speed Up] button, robot speed increased by 1 m/min, the maximum speed is 23 m/min.

Press the [Speed Down] button, robot speed reduced by 1 m/min, the minimum speed is 15 m/min.

During the cleaning process, press the [Left] button, robot turn to the left.

Press the [Right] button, robot turn to the right.

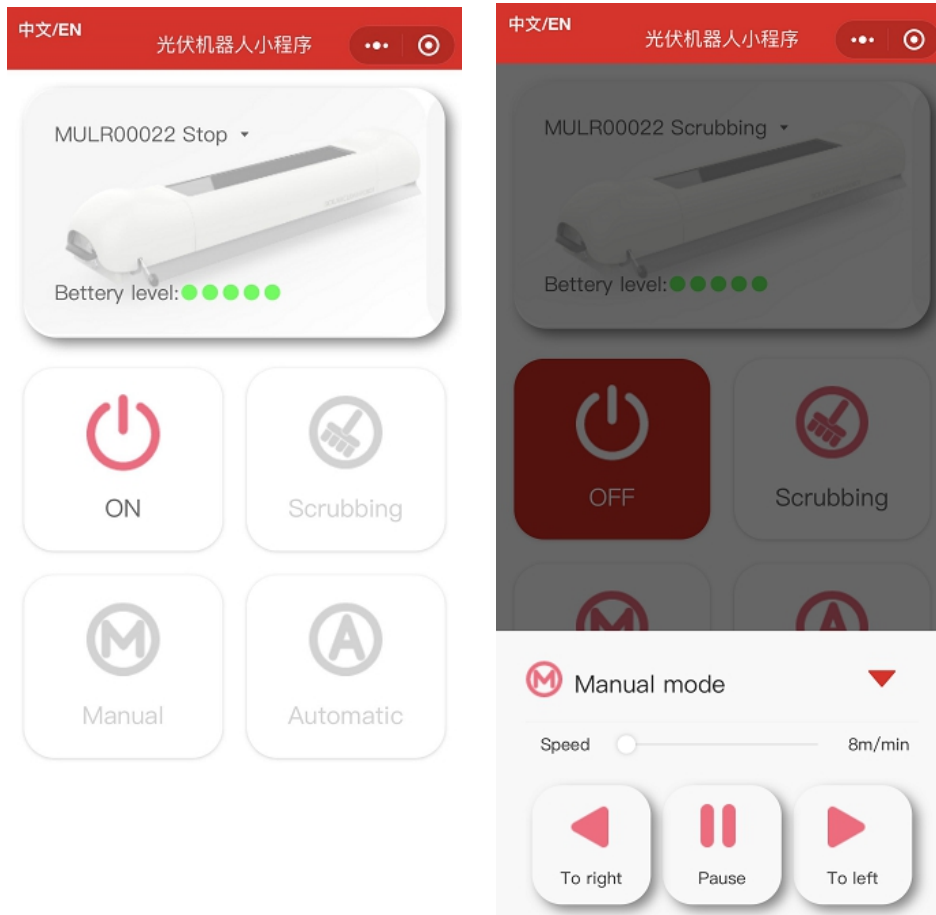
Note:

(1) Cleaning Cycle: robot is cleaning forward on the solar panel frame, when the limit switch is triggered, the robot will be suspended. Then it goes to wash to the opposite direction, when the limit switch is triggered again then robot will stop.

This process is a cleaning cycle.

(2) According to different conditions of use and environment, the running speed of robot is subject to actual measurement.

Phone Apps Control



1. Press the [ON] Button, the robot starts cleaning at an initial speed of 18 m/min.
2. Press the [OFF] Button, the robot will stop.
3. During the cleaning, press the [Scrubbing] button, robot repeatedly cleans within 30cm of the current position to the left/right. Press the [OFF] button, robot finish the positioning clean.
4. Press the [Manual] button to see the manual operation diagram.
5. During the cleaning process, press the [Speed Up] button, robot speed increased by 1 m/min, the maximum speed is 23 m/min.
6. Press the [Speed Down] button, robot speed reduced by 1 m/min, the minimum speed is 15 m/min.
7. During the cleaning process, press the [To Left] button, robot turn to the left.
8. Press the [To Right] button, robot turn to the right.

Note:

- (1) Cleaning Cycle: Robot is cleaning forward on the solar panel frame, when the limit switch is triggered, the robot will be suspended. Then it go to wash to the opposite direction, when the limit switch is triggered again then robot will stop. This process is a cleaning cycle.
- (2) According to different conditions of use and environment, the running speed of robot is subject to actual measurement.

Automatic Cleaning Mode

Phone Apps Control

1. Press the [ON] Button and [Automatic] button to see the automatic operation diagram.
2. You can select [mode 1], [mode 2], [mode 3], [mode 4] and [customized mode].
3. Select the required automatic mode and click the [Save] button to save.
4. Auto back to the home page, the [Automatic] button lights up, and the display starts to count down the automatic cleaning time.

Note:

Mode 1: Robot auto stops after 2 cycles cleaning, then go to automatic cleaning again every 3 days (72 hours).

Mode 2: Robot auto stops after 3 cycles cleaning, then go to automatic cleaning again every 7 days (168 hours).

Mode 3: Robot auto stops after 3 cycles cleaning, then go to automatic cleaning again every 10 days (240 hours).

Mode 4: Robot auto stops after 3 cycles cleaning, then go to automatic cleaning again every 15 days (360 hours).

Customized Mode: the cleaning frequency and cleaning time of robot can be customized.

Caution: If you do not click [Save] button, you will lose the automatic mode setting!

Alarming

1. When the robot low power alarm, the robot [on] button indicator flashes quickly.



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