

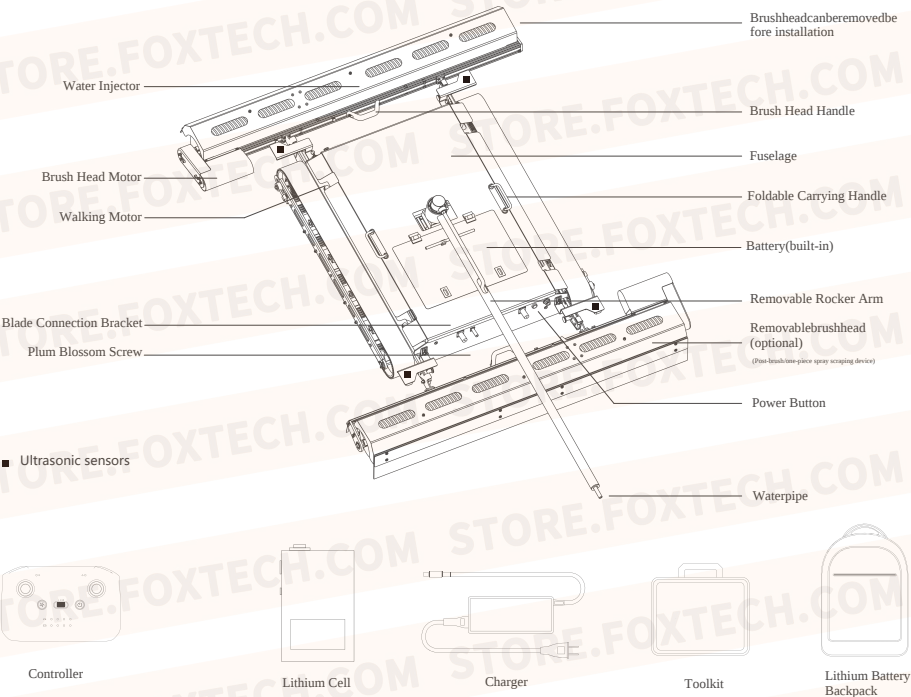
Sweeper-180/Sweeper-180 PRO

Remote Control Photovoltaic Cleaning Robot
User Manual

Product Presentation

Please read the instructions carefully before use and keep them properly.

Sweeper 180 Series remote-controlled crawler photovoltaic cleaning robot is a special cleaning equipment designed ,developed and manufactured according to the special environment of photovoltaic power station.It focuses on solving the environment where people can not reach or telescopicrods cannot be cleaned.The robot can be used for remote control cleaning,which is more efficient than traditional pole cleaning equipment and saves labor costs.



Note: The illustrations of products and accessories in the instruction manual are schematic diagrams for reference only. Due to product updates and upgrades, there may be slight differences between the actual products and the schematic diagrams. Please take the actual products as the standard.

Product Parameter

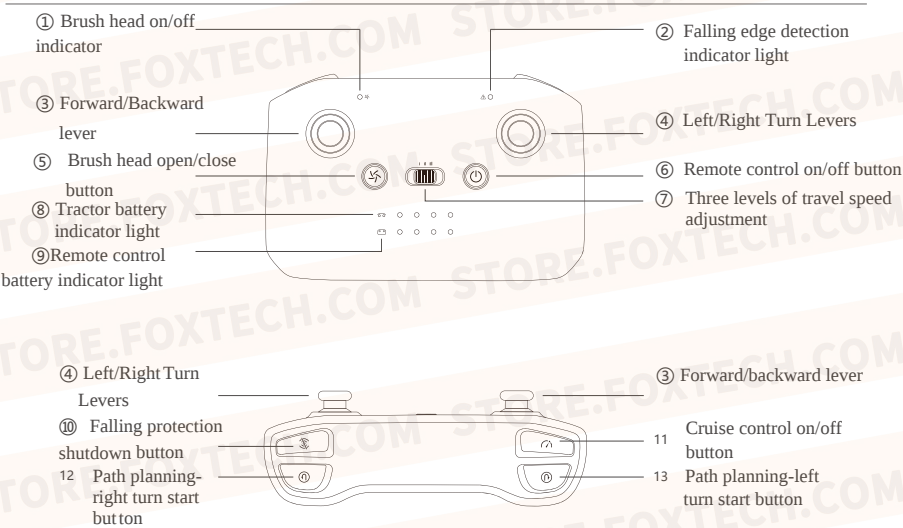
Cleaning width:1400/1800mm
Speed:20/30/40(Max)m/min(±2m)
Suitable photovoltaic inclination: low speed 20°/medium speed 15°/high speed 10°
Battery life: standard 3-3.5h
Charging time:8h(single lithium battery)
Shape size:1720*1550*300/1720*1950*300mm
Car weight:36KG
Brush weight:14.5/16.5KG
Post spray device:2.6/3KG
Battery weight:8KG
Horizontal span capacity:60cm

Lithium battery specifications:48V/25Ah
Drivemotor:200W*2
Brush head motor:180W
Landing speed:230-250r/min
Cleaning type:Water wash
Protection rating:IP65
Vehicle material:aluminum alloy, stainless steel, rubber, plastic (PA, PP, etc.)
Battery life:30h
Remote control charging time:6-8h
Remote control adapter charging voltage range:5 V/1A
Remote control charging port form:TP-C

Product Installation Method

- 1 Install the front brush:Install the front brush to the front of the car body and connect it power plug and water supply pipe.
- 2 Install the water spray scraper:Install the water spray scraper to the rear end of the car body and connect the water supply pipe.
Note: Double brush version This step is (after installation, brush head install the rear brush head to the rear end of the car body,and connect the power plug and water supply pipe.)
- 3 Install the water swing rod:Install the water swing rod to the upper end of the car body.
- 4 Install lithium battery:put the lithium battery in the specified position of the car body and connect the power plug.
- 5 Turn on the main power supply:Turn on the main switch located at the rear end of the car body.
- 6 Test operation:open the remote control,establish a connection with the car body and run the test.
- 7 Connect the water supply system:connect the high-pressure pipe to the water swing rod, open the water source and ensure that there is no leakage at the connection and the water flow is smooth.

How to use the remote control



1 Brush head on/off indicator
When the remote control of the crawler is on,long press the brush head button,and the corresponding brush head indicator light will remain on;when the brush head is not on (in the closed state),the indicator light will not be on.

2 Falling edge detection indicator light
When the remote control tracks the vehicle to the edge of the photovoltaic panel,the sensor will detect the"no occlusion"signal,and the edge detection indicator light will

Product installation method

always be on;when the remote control tracks the vehicle exits from the edge area of the photovoltaic panel,the indicator light will automatically turn off.

③ Forward/backward Lever

Push the rocker forward,the crawler truck moves forward;pull the rocker back,the crawler truck moves backward;release the rocker automatically return to the center,the crawler truck stops walking synchronously.

④ Left/Right Turn Levers

Push the rocker to the left,the crawler car turns to the left;push the rocker to the right,the crawler car turns to the right; release the rocker automatically back to the center,the crawler car stops turning synchronously.

⑤ Brush head open/close button

Press the button once,the brush head motor is connected,the brush head on/off indicator light,the green light is always on;

At this time,please move the remote control device and rotate the brush head(the brush head is linked with the drive motor).When the crawler car is stationary,the brush head will stop rotating automatically after 5 seconds to prevent excessive friction of the photovoltaic plate caused by continuous rotation of the brush head;

When the brush head is on,press again,the brush head motor is powered off,and the brush head on/off indicator light is turned off.

⑥ Remote control on/off button

Press the button for 2 seconds to turn on the remote control.

⑦ Three speed adjustments

By moving the speed control switch left and right,the travel speed of the crawler can be switched.The three gears from left to right are 20,30 and 40 meters per minute respectively.

⑧ Excavator battery indicator light

The indicator lights from left to right are 25%,50%,75% and 100% power.When the power is lower than 25%, the green indicator lights blink intermittently.Please replace the battery of the crawler truck in time.

⑨ Remote control battery indicator light

The indicator lights from left to right are 25%,50%,75% and 100% power.When the power is lower than 25%, the green indicator lights blink intermittently.Please replenish the power of the remote control in time.

⑩ Fall prevention edge detection off button

This function enables tracked vehicles to navigate between photovoltaic panel arrays spaced 60cm apart.To activate the safety feature:First,visually confirm the array spacing meets requirements.Press the anti-fall edge detection button to temporarily deactivate the sensor.The system then advances the vehicle through the designated area.When releasing the button,the sensor automatically reactivates,ensuring safe passage through the array zone.

⑪ Cruise control on/off button

How to start:Press the cruise button once when the forward/backward joystick is in the"push forward"state to start the cruise function.When you release the forward/backward joystick,the tracked vehicle can continue to move at the current gear speed.

Shut down:Pull the forward/backward joystick backward once to shut down;or press the cruise control on/off button again once to shut down.Both methods can be used.

⑫ Path planning-Right turn start button

The product is placed on the photovoltaic plate.When the button is pressed once,the crawler car continues to go straight and turns right when it meets the edge,and turns left when it meets the edge again,realizing the automatic arch driving.

⑬ Path planning-left turn start button

The product is placed on the photovoltaic panel.When the button is pressed once,the crawler car continues to go straight and turns left when it meets the edge,and turns right when it meets the edge again,realizing the automatic arch driving.

Note:After the remote control is turned on,the remote control automatically matches the device.At this time,ensure that the cleaning machine is in the on state to connect successfully.After the connection is successful,the 8 indicator lights in the center of the remote control change from flashing to the current remaining power display.

When the power is on,press the button for 2 seconds to turn off the remote control.

Precautions and Warnings

[SafetyWarning-InclinationAngle] The applicable angle of this product is less than or equal to 20°, and the dangerous angle is 15-20°. It must be bound with a safety rope! When near the edge, you need to slow down and strictly prevent falling.

Note: The manufacturer shall not be liable for losses caused by falling.

[Equipment maintenance] Clean the brush head after each use; hang the brush head up or in the air when stored to prevent deformation under pressure.

[Water washing pressure] The upper limit of pressure is 6MPa. Within this pressure range, the higher the water quantity, the higher the efficiency.

[Water warning] Batteries and chargers are afraid of water, do not soak or spray.

[Professional maintenance] Only professional personnel can guide the maintenance.

Maintenance Guideline

Pre-use inspection

- Check whether the brush is deformed, which may cause shaking. Hot water can quickly stretch the brush;
- Check the wear degree of the brush, and adjust the ground depth to 15-20mm for best results;

Post-use precautions

- When storing, lift the brush head in the air to avoid deformation of the bristles under long term pressure;
- Rinse the whole machine to keep the brush head, body and track clean;
- The battery should be removed when stored for a long time;

Monthly Maintenance

- Remove foreign matter in the nozzle to keep the water flow smooth;
- Check whether the brush head transmission sprocket/chain/bearings are seriously rusted/worn/loose, and need to be coated with grease or replaced;
- Check whether the screw on the brush head/drive motor output shaft is loose and tighten it;
- Check the surface bulge and wear of the track. If the wear is serious, it will slip and need to be replaced;

Cause investigation of photovoltaic panel cleaning effect is not ideal

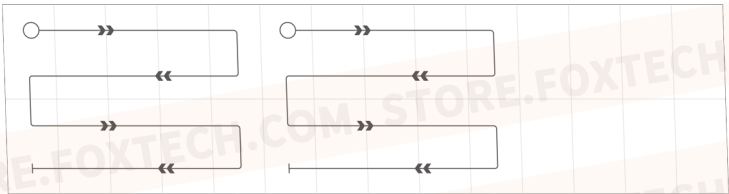
- Whether it is heavy dust deposition or special dirt
 - ① Severe dust deposition should be combined with large amount of water cleaning;
 - ② Oil, glue, viscosity, rust, bird droppings, cement solidification and other special pollutants need to be combined with the corresponding cleaning agent or repeated cleaning to achieve ideal results;
- Whether adequate water is provided

Check whether the fan-shaped mist is sprayed out in the state of spraying water. The water mist should basically cover the whole brush head; sufficient water can significantly improve the cleaning effect;
- Whether the edge cleaning effect of photovoltaic panels is poor due to deformation or bulging in the middle of photovoltaic panels

When the photovoltaic panel has a large protrusion the brush head may be suspended and unable to touch the photovoltaic panel, which affects the cleaning effect. In this case, the cleaning direction can be changed to clean along the convex surface to improve the cleaning effect.

·Whether the cleaning route is reasonably planned according to the inclination direction of the photovoltaic panel

The best cleaning route is to clean from top to bottom row by row to avoid secondary pollution caused by sewage flowing downward, as shown in the figure below;



·Whether to reduce the speed of travel or operation

The cleaning effect can be better obtained by reducing the moving speed or operating speed appropriately;

·Whether to overlap cleaning to avoid missing areas

The next line should be cleaned about 10cm overlapping with the previous line to avoid some areas not being cleaned;