01 /LY-SR1 HANDHELD SINGLE-HEAD ELECTRIC CLEANER

This product is designed for equipment used in mid to low altitude cleaning. It is driven by a DC motor to rotate the brush head and synchronized with a water pump for water spraying, achieving efficient cleaning results. Widely used in facilities such as billboards, storefronts, LED screens, glass wall curtains, sunrooms, large vehicles, photovoltaic power plants, road monitoring, etc.

Aluminum alloy rod/reinforced carbon fiber control rod

Power adapter

Water pump control box

Parallel water and electricity lines

20m water pipe

5A charger

29Ah lithium battery

Adapter cable
(Dual purpose accessories)

Accessory kit

Backpack

Instruction manual

NAME	UNIT	Mains Power Version	Lithium Battery Version	Dual-Use Version
Motor Speed	RPM	350	350	350
Motor Power	W	150	150	150
Motor Voltage	V	24	24	24
Telescopic Rod Wall Thickness	mm	1.1	1.1	1.1
Telescopic Rod Length/Section Count	m/Section	3.6/3、5.6/4、7.6/6 10/7、12/8	3.6/3、5.6/4、7.6/6 10/7、12/8	3.6/3、5.6/4、7.6/6 10/7、12/8
Max Pipe Diameter of Telescopic Rod	mm	35/40/47	35/40/47	35/40/47
Power Supply Method	/	Mains 220V	Lithium Battery Pack	Mains 220V/Lithium Battery Pack
Lithium Battery Voltage/Capacity	V/Ah	24/29	24/29	24/29
Lithium Battery Current	A	≤20	≤20	≤20
Usage Time/Battery Charging	h	/	5-7/6-8	5-7/6-8
Brush Bristle Material	/	PBT	PBT	PBT
Telescopic Rod Material	/	Aluminum Alloy/Carbon Fiber	Aluminum Alloy/Carbon Fiber	Aluminum Alloy/Carbon Fiber
Brush Head Diameter/Cleaning Width	cm	35	35	35

02/LY-SR2 HANDHELD DUAL-HEAD ELECTRIC CLEANER

This product is a dual-brush disc cleaning device specially designed and developed for photovoltaic (PV) panels. It delivers double the cleaning efficiency and is widely used for cleaning various facilities such as billboards, storefront signages, LED large screens, glass curtain walls, sunrooms, large vehicles, photovoltaic power stations and road monitoring devices.

Aluminum alloy rod/reinforced carbon fiber control rod

Power adapter

Water pump control box

Parallel water and electricity lines

20m water pipe

5A charger

29Ah lithium battery

Adapter cable (Dual purpose accessories)

Accessory kit

Backpack

Instruction manual

NAME	UNIT	Mains Power Version	Lithium Battery Version	Dual-Use Version
Motor Speed	RPM	350	350	350
Motor Power	W	150*2	150*2	150*2
Motor Voltage	V	24	24	24
Telescopic Rod Wall Thickness	mm	1.1	1.1	1.1
Telescopic Rod Length/Section Count	m/Section	3.6/3、5.6/4、7.6/6 10/7、12/8	3.6/3、5.6/4、7.6/6 10/7、12/8	3.6/3、5.6/4、7.6/6 10/7、12/8
Max Pipe Diameter of Telescopic Rod	mm	35/40/47	35/40/47	35/40/47
Power Supply Method	/	Mains 220V	Lithium Battery Pack	Mains 220V/Lithium Battery Pack
Lithium Battery Voltage/Capacity	V/Ah	24/29	24/29	24/29
Lithium Battery Current	A	≤20	≤20	≤20
Usage Time/Battery Charging	h	/	3-4/6-8	3-4/6-8
Brush Bristle Material	/	PBT	PBT	PBT
Telescopic Rod Material	/	Aluminum Alloy/Carbon Fiber	Aluminum Alloy/Carbon Fiber	Aluminum Alloy/Carbon Fiber
Brush Head Diameter/Cleaning Width	cm	35/70	35/70	35/70

03/LY-SG1 HANDHELD ROLLER BRUSH ELECTRIC CLEANER

This product is a cleaning device specially designed for photovoltaic panels, sunrooms, glass curtain walls and other applications. It supports both dry cleaning and wet cleaning. Unlike disc cleaning machines, it does not generate lateral movement force, making it much easier to maneuver and highly lightweight. This device is particularly suitable for dry cleaning.

Aluminum alloy rod/reinforced carbon fiber control rod

Power adapter

Water pump control box

Parallel water and electricity lines

20m water pipe

5A charger

29Ah lithium battery

Adapter cable
(Dual purpose accessories)

Accessory kit

Backpack

Instruction manual

NAME	UNIT	Mains Power Version	Lithium Battery Version	Dual-Use Version
Motor Speed	RPM	380	380	380
Motor Power	W	150	150	150
Motor Voltage	V	24	24	24
Telescopic Rod Wall Thickness	mm	1.1	1.1	1.1
Telescopic Rod Length/Section Count	m/Section	3.6/3、5.6/4、7.6/6 10/7、12/8	3.6/3、5.6/4、7.6/6 10/7、12/8	3.6/3、5.6/4、7.6/6 10/7、12/8
Max Pipe Diameter of Telescopic Rod	mm	35/40/47	35/40/47	35/40/47
Power Supply Method	/	Mains 220V	Lithium Battery Pack	Mains 220V/Lithium Battery Pack
Lithium Battery Voltage/Capacity	V/Ah	24/29	24/29	24/29
Lithium Battery Current	A	≤20	≤20	≤20
Usage Time/Battery Charging	h	/	4-6/6-8	4-6/6-8
Brush Bristle Material	/	PBT	PBT	PBT
Telescopic Rod Material	/	Aluminum Alloy/Carbon Fiber	Aluminum Alloy/Carbon Fiber	Aluminum Alloy/Carbon Fiber
Brush Head Diameter/Cleaning Width	cm	60	60	60

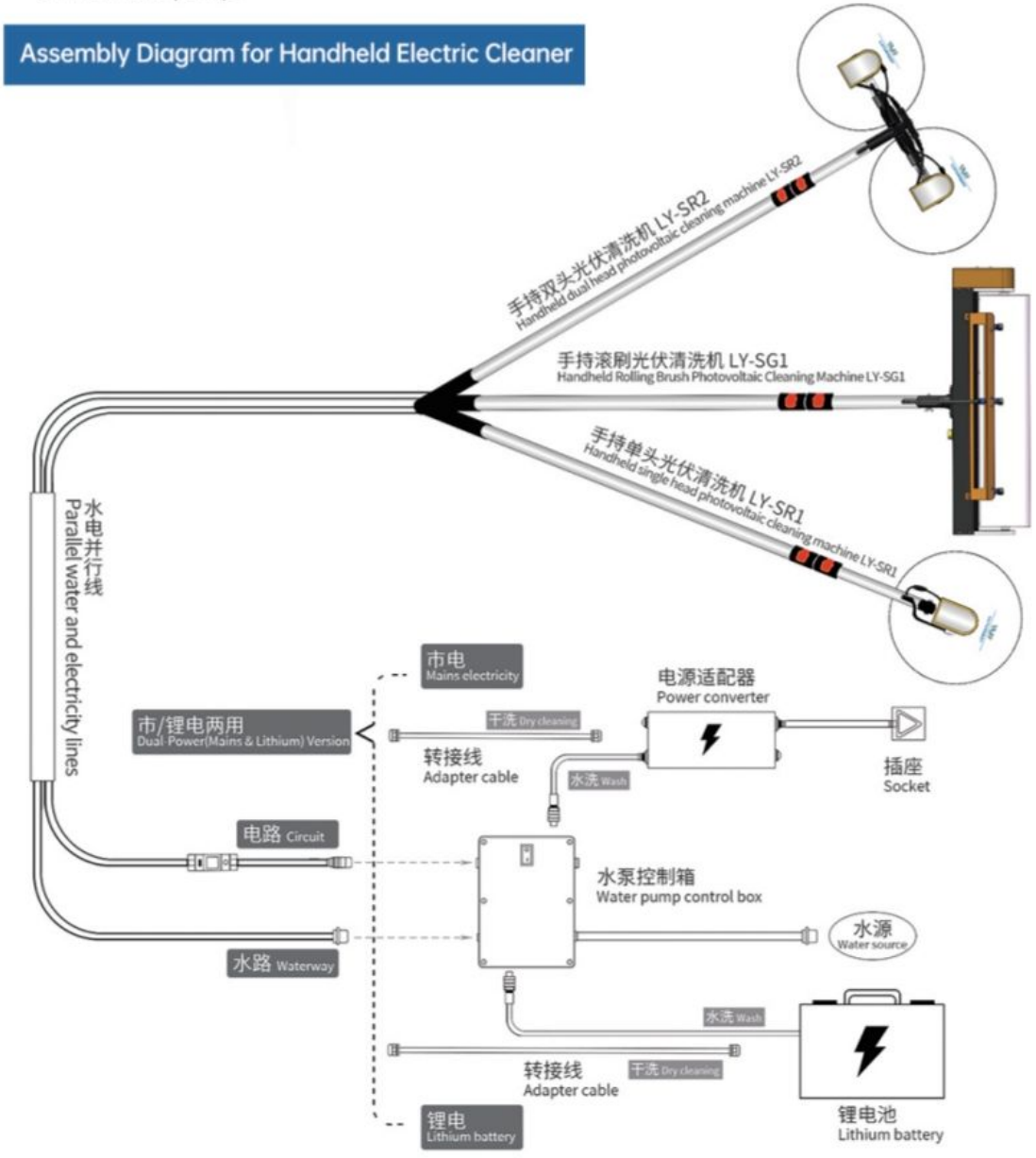
Operating Procedure for Handheld Electric Cleaner:

1. Place the filtered water suction pipe into the bucket containing diluted cleaning agent or water (follow the cleaning agent instructions for operation).
2. Turn on the water supply switch on the water pump control box.
3. Use the handheld cleaner to spread the cleaning agent evenly quickly.
4. Rinse again with clean water using the cleaner to remove the cleaning agent and dissolved dirt.
5. After cleaning, use a squeegee to remove water from glass surfaces to prevent water spots after drying; other materials can air dry naturally.
6. After completing the task, drain the water from the pipe and keep the device dry during storage.

Troubleshooting for Handheld Electric Cleaner:

1. When both the motor and water supply system fail to work, check if the power converter is properly plugged in; the power converter is connected when its indicator light is on.
2. When the motor does not work, check if the connectors are properly plugged in and if the switch is turned on.
3. If the machine does not draw water but the water pump can be heard running, there is air trapped inside the pump. Keep the water inlet pipe submerged in water, and while the pump is running, unplug the pump's water supply pipe and suck hard on it with your mouth to remove the trapped air from the pump.

Assembly Diagram for Handheld Electric Cleaner



04/LY-LS REMOTE-CONTROLLED TRACKED CLEANING ROBOT







1.2/1.3m Brush Head


Shock Absorption System


Anti-Fall System


Remote Controller
(Including Nanfu Batteries)


Instruction Manual


29/58Ah Battery*2


5/8A Charger*2


Remote-Controlled High-Pressure Water Pump


100m High-Press Water Hose


Accessory kit


Exquisite Packaging

1. Dual-purpose for Dry/Wet Cleaning

The machine is equipped with a high-pressure water hose, water pump, and multi-nozzle system, capable of cleaning dirty areas with stubborn stains, bird droppings, rust, and water stains. It can also be paired with special cleaning agents for more efficient cleaning operations. Meanwhile, for areas with inconvenient water supply or light dust coverage, direct dry sweeping is available—greatly enhancing the machine's versatility!

2. Anti-Fall Auxiliary System

The crawler chassis supports all-terrain operation, and the system is equipped with an omnidirectional anti-fall radar sensor. When the robot is remotely controlled to the edge of the photovoltaic panel, the radar detects the absence of the photovoltaic panel, triggering the internal control unit to stop the robot' s movement commands (forward, backward, left/right turning). At the same time, the top audible and visual alarm emits a prompt to notify the operator of the abnormal situation, thus enabling safer operations on the photovoltaic panel surface.

3. Large-Distance Crossing / Multi-Angle Application

Due to site constraints, photovoltaic modules leave certain gaps during installation. Therefore, the cleaning main unit is designed with extended crawler length and width to improve overall balance stability and crossing capability. Currently, it can cross horizontal gaps within 40 cm and vertical obstacles below 6 cm. The increased crawler contact area enhances traction friction, allowing adaptation to operations at larger angles.

4. Long-Range Remote Control Capability

Equipped with high-performance remote control components, it can achieve stable remote control within a 200-meter range (when there are no direct obstacles). It supports forward, backward, and 360° in-place rotation operations.

5. Large-Capacity Lithium Battery

It is configured with a new 18650 power cell ternary lithium battery pack, available in two specifications (29AH/58AH), ensuring stable and long-lasting cleaning operations.

Name	参数	单位
Robot body size	650*550*200	mm
Roller brush specification	1200/1300	mm
Lithium battery	29Ah/58Ah *2	Ah
Endurance time	10-12	h
Travel speed	48	m/min
System voltage	24	V
Single cleaning width	1200/1300	mm
Roller brush speed	300	r/min
Operating temperature	-10至50	℃
Battery life	1000	Secondary (deep charging and deep discharging)
Brush motor power	200	W
Travel motor power	150*2	W
Max applicable component angle	16	°
Cleaning efficiency	2200-2600	m²/h
Horizontal obstacle crossing ability	400	mm
Remote control distance	200	m

REMOTE CONTROL USAGE INSTRUCTIONS

05/LY-G SERIES FULLY AUTOMATIC WALL-MOUNTED INTELLIGENT CLEANING ROBOT

Working Modes of the Intelligent Cleaning Robot:

1. Automatic Water-free Cleaning
2. Robot Operating Mode: The robot charges during the daytime and performs cleaning tasks after the power station stops generating electricity in the afternoon.
3. It operates by moving along the frames of the modules without causing any damage or impact to the modules.
4. The cleaning brush rotates automatically to sweep dust on the surface of the photovoltaic modules along the path onto the ground (the brush is elastic and evenly stressed, so it will not damage the surface of the photovoltaic modules).
5. When the cleaning robot reaches the end of the cleaning path, it automatically runs in the reverse direction.
6. After cleaning the photovoltaic modules in the reverse direction and returning to the parking position of the line-shifting robot, the cleaning robot stops working.
7. The line-shifting robot starts to operate, transports the cleaning robot to the next row, and instructs the cleaning robot to start cleaning this row.
8. After the cleaning robot completes the cleaning of the row and returns to the parking position of the line-shifting

Built-in Charging System:

The Luyu Intelligent Photovoltaic Cleaning Robot is equipped with built-in photovoltaic panels and an energy storage device, requiring no external power supply. It can support the robot for continuous cleaning operations for more than 2–4 hours. The charging and discharging cycle of the energy storage device can reach over 800 times. Brushless DC Motor with a service life of more than 10,000 hours.

Wind-Resistant Design

1. The photovoltaic cleaning robot is placed in the outdoor environment all year round and may be exposed to severe weather such as strong winds. Therefore, our company has specially adopted the following wind-resistant designs for the photovoltaic cleaning robot.
2. The main body of the cleaning robot is equipped with an anti-disengagement device and an anti-falling design, which provide dual protection to resist harsh weather like strong winds, ensuring that the robot stays on the module frames without being blown away.
3. The track of the line-shifting robot adopts a wind-resistant design; the track clamping groove restricts and positions the robot's traveling direction, which can effectively resist external forces and reduce wind resistance. The unique structural design endows the robot with stronger stability, which can reduce the impact of severe weather such as strong winds on the robot's traveling performance.

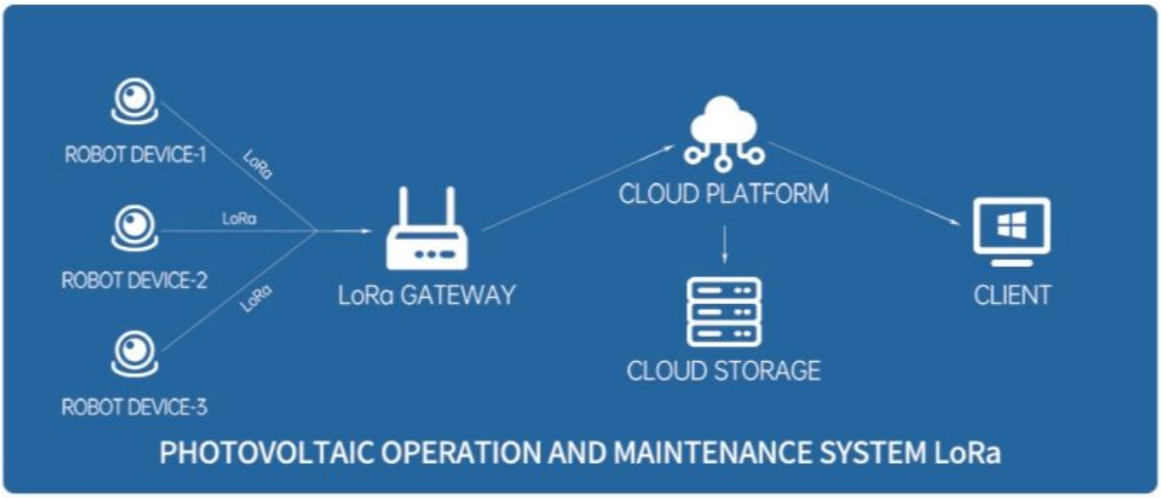
Flexible Brush That Won't Damage Modules

Most photovoltaic power stations are located in harsh climatic environments where water resources are scarce or inconvenient to utilize. The Luyu Intelligent Photovoltaic Cleaning Robot adopts a brush made of flexible dust-repellent material, and sweeps away dirt and debris on photovoltaic panels through the high-speed rotation of the brush roller.

Internet remote control:

The Luyu Intelligent Photovoltaic Cleaning Robot Operation and Maintenance System consists of device controllers, servers, clients, etc. It has powerful functions and good user experience, and can be widely used in large-scale centralized photovoltaic power stations. Remote control and management of photovoltaic cleaning robots through the operation and maintenance system is convenient, efficient, and easy to operate.

The LoRa scheme for photovoltaic operation and maintenance system is suitable for large-scale centralized photovoltaic power stations. A LoRa gateway can manage 100 cleaning devices, and the cleaning devices and LoRa gateway can form a self-organizing network, which is simple and fast. The LoRa gateway interacts with cloud platforms through Ethernet or 4G networks for data exchange. The cloud platform responds to client requests, receives, parses, stores, analyzes, and manages data from cleaning equipment to achieve data-driven management and operation of power plants. In an open outdoor environment, the number of control points can reach 100, and the communication distance is 2-4km.



06 /OPEN BOX INSPECTION

When delivering goods to your doorstep or picking them up at a courier outlet, be sure to inspect the goods first to check if they are intact and undamaged. If there are any abnormalities, contact us immediately and confirm that there are no problems before signing for them!

07 /WARRANTY STATEMENT

1. Anyone who purchases our company's products can enjoy a one-year warranty and lifelong maintenance.
2. The following situations are not covered by the warranty and require payment of accessory costs andround-trip shipping costs.
   - Damage caused by human factors, including use in abnormal working environments and failure to follow instructionsDamage caused, etc.
   - Users dismantle the machine without authorization and modify and repair it themselves.
   - Due to uncontrollable factors such as fire, earthquake, lightning, etc.