TP-FC100 – Solar Panel Cleaning System



The TP-FC100 Photovoltaic Cleaning Kit breaks through limitations imposed by flight altitude and control links. Equipped with an onboard 80 L water tank containing the two 10–15 MPa high-pressure pumps and a triple-nozzle spray system, it uses a pump pressure of 10–15 MPa to precisely remove stubborn contaminants, restoring the cleanliness of photovoltaic panels and instantly maximizing their power generation efficiency; its proprietary remote-control adjustment technology enables seamless stepless regulation of swing amplitude, speed, and pressure. Combined with 5G networking and a cloud-based smart platform, the device can remotely dispatch targeted cleaning tasks, truly enabling unmanned operation of power plant stations throughout all weather conditions and ushering in a new era of automation for photovoltaic operation and maintenance.

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Product Parameter

order number	project	technical parameter
1	Product Weight	<8 kg (excluding water tank)
2	Nozzle size	1120*371*263mm
3	Number of water pumps	2
4	Pump pressure	10-15Mpa
5	power	2500W
6	service voltage	36-72V
7	communication mode	PSDK
8	Number of nozzles	3
9	way to install	1/4 quick-release
10	Nozzle swing angle	Adjustable from 5–65° via electronic control
11	rate of flow	5–20 L/min; electrically adjustable
12	water box	80L large capacity

Core Features

1. High-pressure powerful cleaning system featuring dual water pumps and a triple-nozzle high-pressure jet configuration, with a pump pressure of 10–15 MPa to effectively remove various stubborn contaminants from photovoltaic panels, including dust, bird droppings, hardened mud/sediment, and algae.

2. Full-parameter electronic control with stepless adjustment: The spray head's swing angle, swing speed, water outlet pressure, and water outlet flow rate can all be remotely controlled via electronic means, making it suitable for various levels of contamination and different types of photovoltaic modules.
3. Quick-installation design utilizes a 1/4 quick-release mounting system, enabling rapid attachment to compatible large industrial drones; this facilitates effortless installation and removal, thereby enhancing the operational efficiency during field deployments.

4. Remote intelligent operation extension supports PSDK communication integration with drone platforms; when paired with 5G networking and a cloud-based control platform, it enables remote flight path planning, the dispatch of targeted cleaning tasks, and the realization of unmanned automated maintenance operations.

5. Wide voltage compatibility: supports a wide power supply range of 36–72 V and is compatible with mainstream industrial-grade multi-rotor UAV power supply systems.

system composition

1. High-pressure cleaning nozzle assembly (swinging mechanism + 3 sets of nozzles)
2. Dual High-Pressure Water Pump Unit
3. Electronically Controlled Drive and PSDK Communication Control Module
4. 1/4 Quick-release mounting bracket
5. High-pressure water transmission pipeline assembly

Note: The water tank is a matching optional accessory and is not included in the weight of the main kit.

Operation description

1. Compatible models: Industrial-grade heavy-lift multirotor drones equipped with the PSDK expansion interface;
2. Cleaning medium: clean water; a neutral photovoltaic-specific cleaning agent may be added as needed;
3. Control methods: Local real-time control via remote controller / Remote task control via cloud platform;
4. Applicable scenarios: cleaning and maintenance services for photovoltaic modules used in ground-mounted PV power stations, commercial and industrial rooftop PV systems, mountainous PV installations, etc.

matters need attention

1. Before operating the kit, verify that the water supply pipeline is free of bends or leaks; it is strictly prohibited to run the water pump without water flow.
2. The operating voltage shall be maintained within the range of 36–72 V; overvoltage power supply is strictly prohibited.
3. High-pressure nozzles must not be aimed at human bodies to prevent personal injury caused by high-pressure water jets;
4. After completing work in low-temperature winter conditions, drain all residual water from the piping system to prevent freezing-induced cracking of the pipes and pump housing;
5. Regularly inspect the nozzle wear and sealing components for signs of aging to ensure stable cleaning pressure.