



Power Meter Monitor

**Business and Mission-
Critical Solutions Provider**

DIRT BUSTER VEHICLE MOUNT PV PANEL CLEANING

Data Sheet



Gentle on surface, Strong on dirt

Model: PMMDIRTBUSTER

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www.Pmm-usa.us

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DECLARATION OF CONFORMITY

This restriction is subject to protect the operational process of the system in the business environment, which will produce, use, and transmit radiofrequency energy. Harmful interference to radio communication could result if instructions to the correct installation and usage were not applied. The interference prevention cannot be guaranteed even with proper installation according to the manual. If the device causes a bad effect on the radio / TV signal. The user could preclude that by turning the device on/off.

When this device produces some harmful interference, the user can use the following measure to solve the interference problem:

1-Setting the receiving antenna's direction or location to increase the distance between this device and receiver.

2-Plug in the device's power connector into different circuits of the power outlet with the receiver.

3-If any technical support is needed, the dealer or experienced radio/TV technical personnel must be informed.

TECHNICAL SUPPORT AND SERVICE

Visit Pmm-usa.us to browse FAQs and get further details.

User should collect the following information before submitting technical support and service requests:

- Product name, model and serial number.
- Installed software (operating system, OS version, installed applications and so on).
- Full description of the problem
- Detailed information about every error.

SAFETY INSTRUCTIONS

- Only trained and qualified personnel can install, operate, or maintain the device.
- Before starting the installation, all safety precautions must be read and warning labels affixed to the device must be observed. Doing so protects the device from damage and ensures your safety.
- Safety precautions provided in this document may not cover all safety aspects, note to always remain mindful of safety.
- PMM is not liable for any consequence that results from violation of regulations pertaining to safe operations or safety codes pertaining to design, production, and equipment usage.
- DO NOT use liquids or decontamination spray to clean the device surface and assure that it is totally disconnected while cleaning.
- Take all measures to prevent device drop before or during installation.
- Prior to connecting the device to power source, ensure the source and device voltage and power are 100% matched.
- Keep the cables in a suitable covered place.
- If the device is not used for a long time, shut off the power to avoid the damages by transient overvoltage.
- DO NOT allow any liquid flow into the device; to avoid fire or short circuit.
- The recommended storage temperature range should NOT be less than 30°C OR higher than 85°C.



Warning:

- Read the power source and device inlet carefully.
- Handle device with both hands.
- Clean and maintain the device using recommended, safe and suitable methods.



Caution:

If any unauthorized changes of settings or repairs are done without PMM approval; then user's rights of controlling this device will be canceled.



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KEY FEATURES

- A compact-sized and sturdy Tractor model.
- Equipped with a strong, powerful, low-water consumption water jet nozzle.
- UV-resistant brush with a sensor that enables automatic adjustments of it to maintain a safe distance from the PV solar panel.
- Sturdy hydraulic system with safe and high precision hydraulic arm positioning capabilities.
- Fast and requires minimal manpower.

It is designed to be compact in size to enable it to perform well in tight places, reach areas where other cleaning machines can't, easy to maneuver, transport, operate and park.

It is designed to make the job easier and by one operator. It is fast too, as it is possible to clean a 1MWp site in about 3 hours. It is powerful on dirt with its optimized water nozzle design that delivers the right pressure on the surface to clean the dirt, though economical on water usage.

DirtBuster washing system technology usage on PV Solar farms will assist operators to decrease their O&M cost, manpower needs, and possible injuries while increasing the energy yield of the PV Solar farm and hence the financial returns.

DESCRIPTION

The DirtBuster is PMM's tailored washing system mount solution designed to clean the ground-mount photo-voltaic solar panel arrays for medium and large PV Solar farms.

The DirtBuster PV washing mount system comes with two models, the Tractor mount model, and the Truck mount model, and it comes with various cleaning brush length dimensions.

The system mechanism is equipped with strong, powerful low-water consumption water jet nozzles. The UV-resistant brush, which is made of special material that is soft and gentle on the PV Solar panel surface prevents abrasions to the surface of the panels, but strong on dirt to get it cleaned.

The system mechanism features a 4.5m (177.16") and 2m (78.74") wide brush that can turn at speed from 90 – 160 RPM, and it has a sensor that will automatically adjust the brush to maintain a safe distance between the brush and the PV Solar panel.

The UV-resistant brush is made of special soft material that cleans well and prevents abrasions to the surface of the panels and can be easily swung to the side of the vehicle while driving between the solar panels which increases the efficiency of the process.

DIRT BUSTER 5Ps

READY TO FULLFIL ALL YOUR SOLAR CLEANING NEEDS



POWER

PRECISION

PROTECTION

PRODUCTIVITY

PERFORMANCE

POWER:

DirtBuster's design is all about power, through its Brush and Nozzles that are strong on dirt, yet gentle on the PV panel surface. The UV-resistant brush enables using power in the right way through its characteristics that prevent abrasions and scratches to the surface of the panel, the size can also be customizable.

PRECISION:

DirtBuster is mainly a precision-oriented solution that fits the critical nature of the PV solar panels perfectly, through safe and high-precision arm positioning supported by joystick control.

PROTECTION:

DirtBuster represents the type of investments that are economical, cost-effective and affordable with a high long-term value due to its ability to optimize the capability of PV solar cells, hence the financial returns. It also requires low O&M cost, one manpower operator which all results in high return of investment.

PRODUCTIVITY:

DirtBuster's hydraulic system ensures productivity at its best, through its high performance, sturdy, effective, safe and precise arm positioning. It is simple, requires easy attachment, provides ease of operation and versatility with efficient performance.

PERFORMANCE:

DirtBuster as a whole solution, functions to provide a high-quality, effective, forceful, fast and easy execution to ensure the optimum performance of the PV solar farm.

TECHNICAL SPECIFICATIONS

Brush System

Brush / Filament Material	Special made UV-resistant, high durable material. Nylon, PP, PE, PBT, PET, Soft Selected Material.
Brush System Control Panel	Joystick control.
Brush Turns Angle	Variable angels and 180 degrees to both sides.
Brush Length	4.5 m (90 cm x5 brushes) 2 m option is available. *OEM sizes are available upon special order.
Brush Rotation Speed	The brush speed should not exceed 90-160 rpm. The speed can be regulated by the accelerator pedal or the throttle at the swivel joint.
Brush Diameter	30-45 cm.
Filament Colors	White, Black, Red, Green *Customized color is available upon special order.
Base Material	Plastic, Teflon, Steel, Wooden Cylindrical Pipe.
Custom Shaft	Steel Shaft or Stainless-Steel Shaft.
Package	Carton, Plywood Case, Pallet *Customized package is available upon special order.
Certificates /Approvals	Royal Scientific Society (RSS) Electroluminescence Test.
Custom Instructions	Provide the accurate data and the drawing.

Hydraulic system

Hydraulic Power	The continuous hydraulic power of at least 45 l/minute at approx. 180 bar.
Hydraulic Arm	Articulated arm with two trunks with a rotation turret on the roller bearing gives flexibility for angle and rotation freedom.
Control Unit	12 Volt 24 volts control unit is available (option).
Washing pump pressure	Up to 20 bars adjustable by the user.
Washing Speed (Low/High)	1.5 km/h to 4.5 km/h.
Water Jet Nozzles	The high double multi-jets header on both sides that allows delivering water pressure in both directions for maximum cleaning.
Sensor	Proximity sensors to keep a safe distance of the brush from the surface panels.
Oil	Mineral or synthetic oil.
Operating Temperature	-20°C to +65°C with installed special radiator for hot temperature weather.
Terrain	Multi-terrain operation.

Water System

Location of the washing system	Back of the tractor on a special assembly.
Water Pump	The water pump is racked on rear PTO (power take-off). A variable 540 revolutions (up to 20 bars adjustable by user). An electrical submersible pump to refill the water with a pre-filtered tank (Additional).
Water Pump (other vehicles)	Powered by a hydraulic motor connected in parallel to the brush.
Water Filter	The water filter connected to the water tank to ensure pumping clean water (note that it should be cleaned regularly).
Water Quality	Use rainwater or softened water only for the cleaning process. Do not utilize hard water.
Water Hose	2 water hoses for manual cleaning when needed.
Water Tank	700 Liters. 2000 Liters (optional).
Water Consumption	Consumption depends on the dirtiness of the surface, type of dirt, weather conditions, and cleaning process driving speed.
Net Weight	450KG with the brush length of 4.5m. Counterweight of 450KG on rear wheels.

ORDERING INFORMATION

Brush System Options

DBT-FT45	With Brush length 4.5m
DBT-FT20	With Brush length 2m

Control Unit Options

PMMCU12V	Control Unit 12 volts (Check your vehicle battery voltage)
PMMCU24V	Control Unit 24 volts (Check your vehicle battery voltage)

Water Tank Options

Water Tank 700 Liters	700 Liters (Standard)
Water Tank 2000 Liters	2000 Liters (Optional).

Carrier Options

TR01 (Tractor)	HARS Turkish tractor, 50 HP, regular gear, 3 cylinders, 4x4
TR02 (Tractor)	HATTAT Turkish tractor, 50 HP, regular gear, 3 cylinders, 4x4
TR03 (Tractor)	John Deere Make, 5075E with AC cabin
TR04 (Tractor)	John Deere Make, 5075E without AC cabin
TR05 (Tractor)	John Deere Make, 5055E with AC cabin
TR06 (Tractor)	John Deere Make, 5055E without AC

Carrier Mounting (if the carrier vehicle not purchased from PMM)

Customized Mount Service on client vehicle	Carrier vehicle from PMM is not mandatory, client can only purchase the PMM Cleaning System to be mounted on the existing vehicle (Tractor, Truck, Tele-handler)
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CONTACT INFORMATION:

- For direct inquiries or any customized orders, contact us on sales@Pmm-usa.us