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› [PowMr](#) /

› [PowMr 30A MPPT Solar Charge Controller User Manual](#)

## PowMr 30A MPPT Solar Charge Controller

# PowMr 30A MPPT Solar Charge Controller User Manual

Model: 30A MPPT Solar Charge Controller

## INTRODUCTION

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This manual provides essential information for the safe and efficient operation of your PowMr 30A MPPT Solar Charge Controller. This device is designed to manage power flow from your solar panels to your battery bank, ensuring optimal charging and protecting your batteries from overcharge and over-discharge. It supports 12V, 24V, 36V, and 48V battery systems and is compatible with various battery types including Vented, Sealed, Gel, NiCd, and Lithium batteries.

## SAFETY INSTRUCTIONS

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- Read all instructions carefully before installation and operation.
- Ensure proper ventilation around the controller to prevent overheating.
- Connect the battery first, then the solar panel, and finally the load. Disconnect in reverse order.
- Use appropriate wire gauges for all connections to prevent voltage drop and overheating.
- Install the controller indoors, away from direct sunlight, high temperatures, and moisture.
- Wear eye protection when working with batteries.
- Do not disassemble the controller. Refer to qualified personnel for service.

## PRODUCT FEATURES

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- Advanced Maximum Power Point Tracking (MPPT) technology for high efficiency.
- Automatic identification of 12V/24V/36V/48V battery systems.
- Three-stage charging: Constant Current (MPPT), Constant Voltage (Absorption), Floating Charge.
- Supports multiple battery types: Vented, Sealed, Gel, NiCd, and Lithium (user-defined voltage for others).
- Backlight LCD display for clear monitoring of system parameters.
- Dynamic response and recovery time of 100 $\mu$ s.

- High efficiency:  $\geq 98.1\%$ .
- PV utilization:  $\geq 99\%$ .
- Dual terminals for PV and battery connections to reduce current cost.

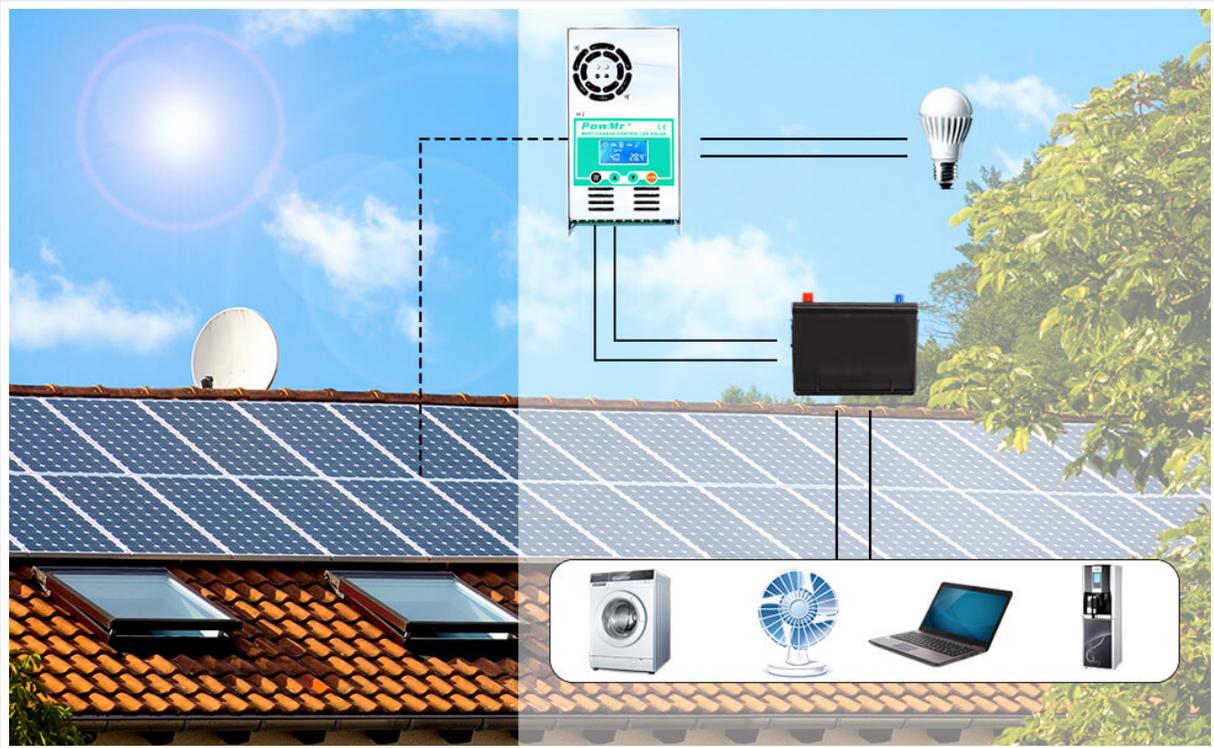
## PRODUCT OVERVIEW

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Familiarize yourself with the components of your PowMr MPPT Solar Charge Controller.



**Figure 1: Front View of the PowMr 30A MPPT Solar Charge Controller.** This image displays the front panel of the controller, featuring the LCD screen, control buttons (PRG/ESC, Up, Down, ENTER), and ventilation slots. The LCD shows real-time system data such as PV voltage and current.



**Figure 2: Detailed View of Controller Ports and Display.** This image provides a closer look at the controller's display interface and connection terminals. It highlights the input and output ports for solar panels, batteries, and DC loads, along with the LCD screen for monitoring and configuration.

## SETUP AND INSTALLATION

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Follow these steps for proper installation of your solar charge controller.

1. **Mounting:** Choose a dry, well-ventilated location, protected from direct sunlight and moisture. Mount the controller vertically to allow for proper heat dissipation.
2. **Wire Preparation:** Ensure all wires are of appropriate gauge for the current and length. Strip insulation approximately 10mm from the ends of the wires.
3. **Battery Connection:** Connect the battery wires to the battery terminals on the controller. Ensure correct polarity (+ to + and - to -). **Connect the battery first.**
4. **Solar Panel Connection:** Connect the solar panel wires to the PV terminals on the controller. Ensure correct polarity.
5. **Load Connection (Optional):** If using a DC load directly from the controller, connect the load wires to the load terminals. Ensure correct polarity.
6. **Verify Connections:** Double-check all connections for tightness and correct polarity before powering on the system.



**Figure 3: System Wiring Diagram.** This diagram illustrates the correct sequence and polarity for connecting solar panels, battery bank, and DC loads to the PowMr MPPT Solar Charge Controller. Always connect the battery first, then the solar panels, and finally the load.

## OPERATING INSTRUCTIONS

### LCD Display and Buttons

The controller features an LCD display and four buttons for navigation and parameter settings:

- **PRG/ESC:** Press to enter programming mode or exit current menu.
- **Up Arrow (▲):** Navigate up through menus or increase parameter values.
- **Down Arrow (▼):** Navigate down through menus or decrease parameter values.
- **ENTER:** Confirm selection or enter a submenu.

### Battery Type Selection

It is crucial to select the correct battery type for optimal charging and battery longevity. The controller supports Vented, Sealed, Gel, NiCd, and Lithium batteries. For custom battery types, you can define voltage parameters.

1. Press **PRG/ESC** to enter the main menu.
2. Use **Up/Down** arrows to navigate to the "Battery Type" setting.
3. Press **ENTER** to select.
4. Use **Up/Down** arrows to choose your battery type (e.g., Sealed, Gel, Lithium).
5. Press **ENTER** to confirm your selection.
6. For user-defined battery types, further parameters like absorption voltage and float voltage can be adjusted in subsequent menus.

### Monitoring System Data

The LCD display cycles through various system parameters automatically. You can also manually cycle

through them using the Up/Down arrows in the main display mode. Parameters include:

- PV Voltage and Current
- Battery Voltage and Charging Current
- Load Voltage and Current (if connected)
- Battery Temperature
- Total Charged Capacity
- Error Codes (if any)

## MAINTENANCE

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Regular maintenance ensures the longevity and optimal performance of your solar charge controller.

- **Inspection:** Periodically check all wiring connections for tightness and corrosion.
- **Cleaning:** Keep the controller's ventilation openings clear of dust and debris. Use a dry cloth to clean the exterior.
- **Environment:** Ensure the installation environment remains dry and within the specified temperature range.
- **Battery Check:** Regularly inspect your battery bank for any signs of damage, corrosion, or electrolyte levels (for flooded batteries).

## TROUBLESHOOTING

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If you encounter issues, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Controller not powering on.	Battery not connected or reverse polarity; battery voltage too low.	Check battery connections and polarity. Ensure battery voltage is above minimum operating voltage.
No charging from solar panels.	Solar panels not connected or reverse polarity; insufficient sunlight; PV voltage too low/high.	Check PV connections and polarity. Ensure panels are in direct sunlight. Verify PV voltage is within controller's operating range.
Battery not fully charged.	Incorrect battery type setting; insufficient solar input; battery degradation.	Verify battery type setting. Check solar panel output. Consider battery health.
Load not working.	Load not connected or reverse polarity; load overcurrent; battery voltage too low.	Check load connections and polarity. Ensure load current is within limits. Check battery voltage.

## SPECIFICATIONS

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Parameter	Value
Model	30A MPPT Solar Charge Controller

Parameter	Value
Rated Charge Current	30A
System Voltage	12V/24V/36V/48V Auto
Max PV Input Voltage	190VDC
Battery Types Supported	Vented, Sealed, Gel, NiCd, Lithium (user-defined)
Charging Stages	3-stage (MPPT, Absorption, Float)
Max Efficiency	≥98.1%
PV Utilization	≥99%
Item Weight	2.86 pounds (1.3 Kilograms)
Package Dimensions	9.96 x 9.61 x 2.76 inches

## WARRANTY AND SUPPORT

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For warranty information or technical support, please refer to the contact details provided with your purchase or visit the official PowMr website. Keep your purchase receipt for warranty claims.