PowMr 60A MPPT Solar Charge Controller

PowMr 60A MPPT Solar Charge Controller User Manual

Model: 60A MPPT Solar Charge Controller

1. Introduction

This manual provides essential information for the safe and efficient operation of your PowMr 60A MPPT Solar Charge Controller. Please read all instructions carefully before installation and use. This controller is designed to manage power flow from solar panels to various battery types, including Vented, Sealed, Gel, NiCd, and Lithium batteries, supporting 12V, 24V, and 48V systems, with the capability for parallel connection of up to 12 units.

2. Safety Information

- Ensure all wiring is performed by qualified personnel.
- Always connect the battery first, then the solar panels, and finally the load. Disconnect in reverse order.
- Verify correct polarity for all connections to prevent damage to the controller and connected devices.
- Install the controller in a well-ventilated area to ensure proper heat dissipation.
- Do not attempt to disassemble or repair the controller yourself. Contact customer support for assistance.

3. Product Overview

The PowMr 60A MPPT Solar Charge Controller features advanced Maximum Power Point Tracking (MPPT) technology for high efficiency (≥98.1% PV utilization ≥99%). It includes an LCD display for real-time monitoring and a bladeless fan for quiet and efficient heat dissipation. The controller automatically detects 12V/24V/36V/48V battery voltages and supports various battery types.

3.1. Main Unit



Figure 1: Front view of the PowMr 60A MPPT Solar Charge Controller, showing the LCD display and control buttons.

3.2. Dimensions



Figure 2: Physical dimensions of the PowMr 60A MPPT Solar Charge Controller, indicating its compact design.

3.3. Included Components

- 1 x PowMr 60A MPPT Charge Controller
- 1 x User Manual
- 1 x Temperature Sensor
- 1 x Mounting Brackets
- 1 x Terminal for parallel connection

4. Setup & Installation

4.1. Mounting the Controller

Securely mount the controller on a wall using four screws. Ensure a minimum clearance of 75mm (approximately 3 inches) on the top, bottom, left, and right sides to allow for proper airflow and heat dissipation. This is crucial for the efficient operation of the

bladeless fan cooling system.

4.2. Wiring Sequence

Follow the correct wiring sequence to prevent damage:

1. **Connect the Battery:** Connect the positive and negative terminals of the battery to the controller's battery terminals.
2. **Connect Solar Panels:** Connect the positive and negative terminals of the photovoltaic array to the controller's solar input terminals.
3. **Connect the Load:** Connect the positive and negative terminals of your DC load to the controller's load terminals.

Always ensure all connections are tight and secure. Disconnect in the reverse order: load, then solar panels, then battery.



Figure 3: General wiring diagram showing connections for solar panels, battery, and DC load.

4.3. Temperature Sensor Installation

The controller includes a temperature sensor. Plug the sensor into the designated port on the controller. This sensor helps the controller adjust charging parameters based on ambient temperature, optimizing battery life.



Figure 4: Illustration of the temperature sensor connected to the controller's port.

4.4. Parallel Connection

The PowMr 60A MPPT Solar Charge Controller supports parallel operation for increased capacity, allowing up to 12 units to connect in parallel. Use the provided terminal for parallel communication. Ensure proper communication line connections as shown in the video below.

Your browser does not support the video tag.

Video 1: This video demonstrates how to connect multiple PowMr 60A MPPT Solar Charge Controllers in parallel for expanded system capacity.

5. Operating Instructions

After successful installation, power on the controller. The LCD display will show various operating parameters. Use the 'Up' and 'Down' buttons to navigate through the main loop interfaces and the 'PRG/ESC' and 'ENTER' buttons for settings.

5.1. Display Interfaces

- **Interface 1:** Solar input voltage (PV) and load power consumption.
- **Interface 2:** Battery voltage (BATT) and charging current.
- **Interface 3:** Operating mode and device temperature (TEMP).
- **Interface 4:** Fault codes (FAULT) and parallel operation code.

5.2. Parameter Settings

Press the 'PRG/ESC' button to enter the settings interface loop. Use 'Up' and 'Down' to navigate and 'ENTER' to confirm changes.

- **d00 (Load Operating Mode):** Configures how the load operates. '24H' means the load is continuously on. '00H' operates in light control mode, where load output is determined by sufficient solar energy. Modes '1H' to '23H' represent timed light-on and constant-off modes.
- **d01 (Charging Voltage):** Configures the charging voltage the controller maintains after the battery completes the boost charging stage.
- **d02 (Boost Charging Voltage):** Sets the charging voltage during the boost charging stage.
- **d03 (Low Voltage Protection):** Sets the low voltage protection threshold for the battery.
- **d04 (Battery Voltage Calibration):** Used to calibrate the battery voltage value displayed by the controller. If the displayed value differs from a multimeter reading at the battery port, you can adjust it here.
- **d05 (Parallel Communication Code):** Configures the communication address of the controller in parallel operation. The controller with the lowest communication code acts as the master.

Your browser does not support the video tag.

Video 2: This video provides a detailed operation guide for the PowMr HHJ60-PRO Solar Charge Controller, including display navigation and parameter settings.

5.3. Battery Type Adaptation

The controller is compatible with various battery types. For sealed lead-acid, vented, or gel batteries, the controller adjusts automatically. For lithium batteries, you may need to adjust parameters (d01, d02, d03) according to the actual battery voltage, as lithium battery voltages can be unstable.



Figure 5: The controller supports various battery types including Sealed, Lead-acid, Lithium, Gel, and Flooded.

5.4. 4-Stage Charging

The controller utilizes a 4-stage charging algorithm: Bulk, Boost, Float, and Equalization. This process effectively prevents battery overcharging or over-discharging, extending battery life.



Figure 6: Diagram illustrating the 4-stage charging process: Bulk, Boost, Float, and Equalization.

6. Maintenance

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

- **Cleaning:** Periodically clean the controller's exterior with a dry cloth. Ensure the ventilation openings are free from dust and debris.
- **Connection Check:** Regularly inspect all wiring connections for tightness and corrosion. Loose connections can lead to power loss or overheating.
- **Airflow:** Ensure the area around the controller maintains adequate airflow. The updated bladeless fan system is designed for efficient cooling, but obstructions can hinder its performance.



Figure 7: Close-up of the bladeless fan heat dissipation system, highlighting the importance of clear airflow.

7. Troubleshooting

The controller's LCD display includes a troubleshooting function to help identify system faults. Refer to the display for fault codes and consult the full product manual (if available) for detailed explanations and solutions.

- **No Display/Power:** Check battery connections and ensure the battery has sufficient charge to power the controller (more than 12V).
- **No Charging:** Verify solar panel connections and ensure adequate sunlight. Check for any fault codes on the display.
- **Incorrect Readings:** Calibrate battery voltage using the d04 setting if multimeter readings differ.
- **Overheating:** Ensure sufficient clearance around the controller for airflow (75mm on all sides). Check if the fan is operating.

8. Specifications

Feature	Specification
Brand	PowMr
Model	60A MPPT Solar Charge Controller
Max. PV Input Voltage	160V DC
System Voltage	12V/24V/36V/48V Auto Detection
Max. Efficiency	≥98.1%
PV Utilization	≥99%
Display Type	LCD
Material	Metal, Plastic
Color	Orange
Operating Temperature	Up to 40 Degrees Celsius
Battery Compatibility	Vented, Sealed, Gel, NiCd, Lithium (User programmable)
Parallel Connection	Supports up to 12 units

9. Warranty Information

This PowMr product is covered by a standard manufacturer's warranty against defects in materials and workmanship. Please refer to the warranty card included in your product packaging or visit the official PowMr website for detailed warranty terms and conditions. Keep your purchase receipt as proof of purchase.

10. Customer Support

For technical assistance, troubleshooting, or warranty claims, please contact PowMr customer support through their official website or the contact information provided in your product documentation. When contacting support, please have your product model and purchase date available.

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