PowMr POW-M60-PRO

PowMr MPPT 60A Solar Charge Controller User Manual

Model: POW-M60-PRO

1. Introduction

This manual provides essential instructions for the installation, operation, and maintenance of your PowMr MPPT 60A Solar Charge Controller. This controller is designed to efficiently manage power flow from your solar panels to your battery bank, ensuring optimal charging and system protection. Please read this manual thoroughly before installation and use to ensure safe and correct operation.

Package Contents:

- 1 x PowMr MPPT 60A Solar Charge Controller
- 1 x User Manual (English)

2. Safety Instructions

Always observe the following safety precautions to prevent personal injury and damage to the controller or other components:

- Ensure all connections are correct and secure before applying power.
- The correct connection sequence for the solar controller is to connect the battery first, then the solar panel. Always adhere to this specific order. When disconnecting, follow the reverse order: disconnect solar panel, then battery.
- Do not disassemble or attempt to repair the controller yourself. Contact qualified personnel for service.
- Install the controller in a well-ventilated area, away from flammable materials and direct sunlight.
- The solar charge controller is equipped with electronic protections against overcharge, over-discharge, overload, and short circuit. It also features battery temperature compensation, enhancing overall operational safety.
- Use appropriate circuit breakers or fuses for all connections to prevent damage from overcurrent.

3. Product Features

- **Advanced MPPT Technology:** The 60A MPPT solar charge controller features automatic battery voltage detection for 12V, 24V, 36V, and 48V systems. It utilizes advanced Maximum Power Point Tracking (MPPT) technology, ensuring a tracking efficiency of no less than 99.5% and a maximum conversion efficiency of up to 97%.

- **Universal Battery Compatibility:** Supports various battery types for charging, including sealed, gel, flooded, LiFePO4, and Li(NiCoMn)O2 cells. User-defined battery parameters are available for custom battery types.
- **Comprehensive Protections:** Equipped with electronic protections against overcharge, over-discharge, overload, and short circuit. Includes battery temperature compensation for enhanced safety and battery longevity.
- **Multifunctional LCD Display:** Provides real-time system information, including solar panel voltage/power, charging current, battery voltage, and load status.
- **Efficient Cooling:** Features forced air cooling with an aluminum alloy construction for effective heat dissipation, maintaining optimal performance even under high temperatures.
- **Dual PV and Battery Connection:** Designed for straightforward connection of both photovoltaic arrays and battery banks.
- **Multiple Load Working Modes:** Offers various load control options, including Load OFF, Load always ON, and Time Control.

Image: Product features and automatic protection functions. Highlights include a multifunctional LCD display, dual PV and battery connection, precise error codes, forced air cooling, aluminum alloy construction for heat dissipation, and electronic protections.

4. Product Overview

Image: PowMr MPPT 60A Solar Charge Controller dimensions (165mm x 230mm x 72mm) and its LCD display interface. The display shows solar panel voltage/power, charging current, battery voltage, and load information. Key buttons for PV, Battery, DC Load, and Settings are also visible.

The controller features an intuitive LCD display and control buttons for easy monitoring and configuration. The display provides real-time data on solar input, battery status, and load output.

1. Day or night indicating icon
2. Battery icon and SOC (State of Charge)
3. Work Mode
4. State and Warning indication
5. Solar panel voltage/power/current
6. Charging power/charging current/battery voltage
7. Load working Mode / Load power / Load current / Load voltage

5. Installation and Setup

5.1 Mounting the Controller

- Choose a dry, well-ventilated location, protected from direct sunlight, high temperatures, and water.
- Ensure there is sufficient airflow around the controller for proper cooling.

- Mount the controller vertically on a wall or suitable surface using appropriate fasteners.

5.2 Wiring Connections

Important: Always connect the battery first, then the solar panel, and finally the load. Disconnect in reverse order.

1. **Connect the Battery:** Connect the positive and negative terminals of your battery bank to the corresponding battery terminals on the controller. Ensure correct polarity. The controller will automatically detect the battery voltage (12V/24V/36V/48V).
2. **Connect the Solar Panel:** Connect the positive and negative terminals of your solar panel array to the corresponding PV input terminals on the controller. Ensure correct polarity. The maximum open circuit voltage (Voc) from the PV array should not exceed 160V.
3. **Connect the DC Load (Optional):** If using a DC load directly from the controller, connect its positive and negative terminals to the load terminals on the controller.

BATT. VOLTAGE	12V	24V	36V	48V
INPUT SOLAR POWER	720W	1440W	2100W	2800W
INPUT SOLAR VOLTAGE	DC20V~DC80V	DC37V~DC105	DC50V~DC160V	DC72V~DC160V

Image: Diagram illustrating recommended wiring configurations for 12V, 24V, 36V, and 48V battery systems, including corresponding input solar power and voltage ranges. Also shows the three load working modes (Load OFF, Load always ON, Time control).

5.3 Battery Type Selection

The controller supports various battery types. You can select the appropriate type through the controller's settings menu.

For lithium batteries (LiFePO4, Li(NiCoMn)O2), it is essential to set the specific start and end charging voltages according to the battery manufacturer's specifications. Refer to the detailed instructions in the user manual for proper configuration.

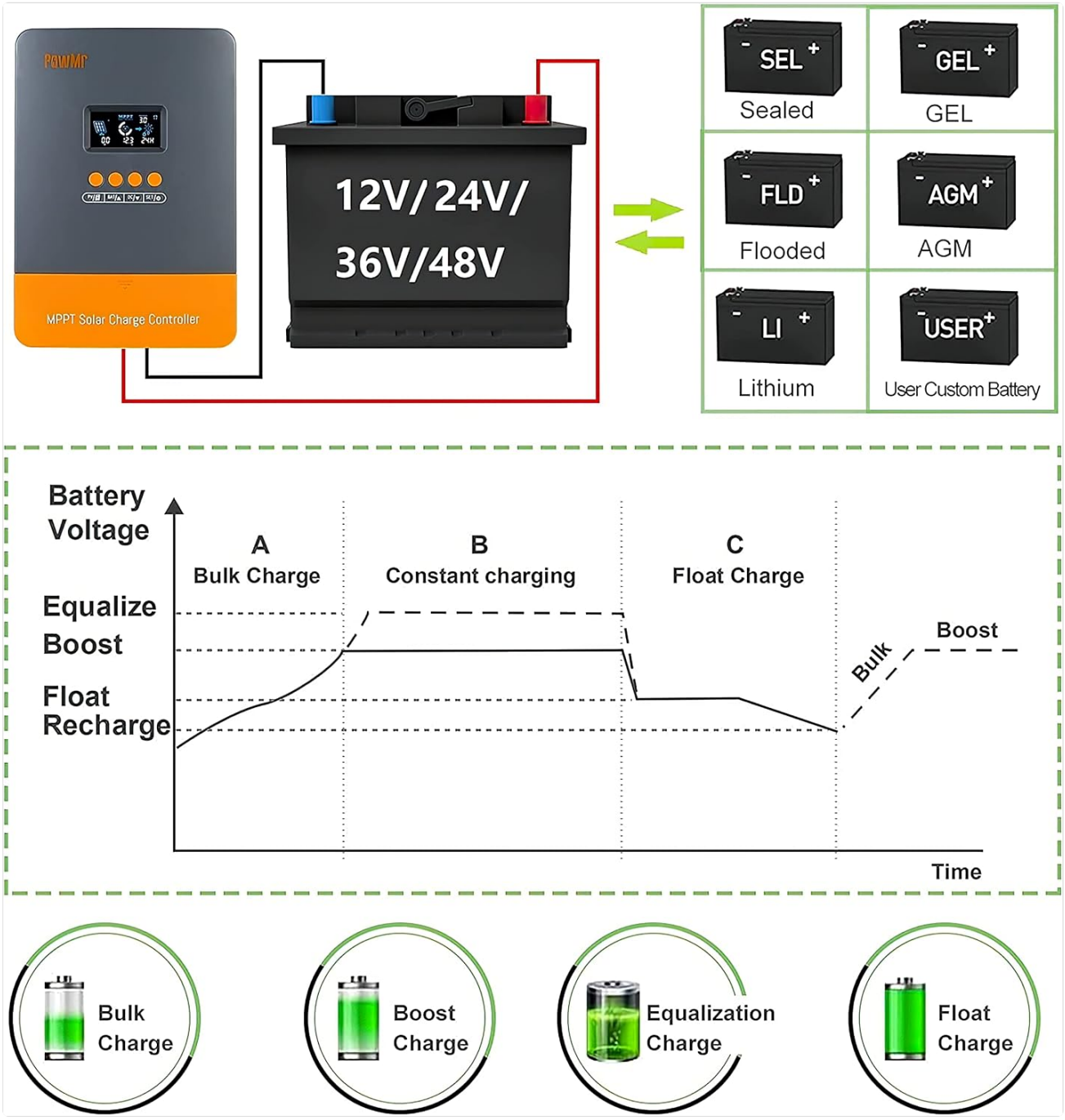

Image: Illustration detailing the supported battery types (Sealed, GEL, Flooded, AGM, Lithium, User Custom Battery) and a graph depicting the four-stage battery charging process: Bulk Charge, Constant Charging (Boost/Equalize), and Float Charge.

6. Operating Instructions

6.1 LCD Display and Buttons

The LCD display provides real-time system status. Use the buttons (PV, BAT, DC, SET) to navigate through menus and adjust parameters. Refer to the detailed manual for specific button functions and menu navigation.

6.2 Charging Stages

The controller employs a multi-stage charging algorithm to optimize battery life and performance:

- **Bulk Charge:** Charges the battery at maximum current until voltage rises to the absorption level.

- **Constant Charging (Boost/Equalize):** Maintains a constant voltage, allowing the current to gradually decrease. Equalization is a controlled overcharge for flooded batteries to balance cell voltages.
- **Float Charge:** Reduces the voltage to a lower level once the battery is fully charged, maintaining it at a safe level to prevent self-discharge.

6.3 Load Working Modes

The DC load output can be configured with different working modes:

- **Load OFF:** The load output is always off.
- **Load Always ON:** The load output is continuously on.
- **Time Control:** The load output operates for a specified duration after sunset.

7. Maintenance

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

- Periodically inspect all wiring connections for tightness and corrosion.
- Clean the controller's exterior with a dry cloth. Do not use liquids or solvents.
- Ensure the ventilation openings are clear of dust and debris to allow for proper heat dissipation.
- Monitor the LCD display for any error codes or unusual readings.

8. Troubleshooting

If you encounter issues, refer to the following common problems and solutions. For more complex issues, contact customer support.

Problem	Possible Cause	Solution
No display/No power	Battery not connected or low voltage; reversed polarity.	Check battery connections and voltage. Ensure correct polarity.
Battery not charging	Solar panel not connected; low solar input; PV reversed polarity; battery type misconfigured.	Check solar panel connections and polarity. Verify sufficient sunlight. Confirm correct battery type settings.
Load not working	Load mode set to OFF; overload; short circuit; low battery voltage.	Check load mode settings. Reduce load. Inspect for short circuits. Charge battery.
Error code displayed	Specific system fault.	Refer to the full user manual for a list of error codes and their corresponding solutions.

9. Specifications

Parameter	Value
Model Number	POW-M60-PRO
Brand	PowMr
Rated Charge Current	60A
System Voltage	12V/24V/36V/48V Auto-Identify
Max. PV Input Voltage (Voc)	160V DC

Parameter	Value
Max. Solar Panel Power (for 48V system)	2880W (12V: 720W, 24V: 1440W, 36V: 2160W)
Tracking Efficiency	≥99.5%
Conversion Efficiency	Up to 97%
Supported Battery Types	Sealed, Gel, Flooded, LiFePO4, Li(NiCoMn)O2, User-defined
Display Type	LCD with backlight
Product Dimensions (L x W x H)	16.5 cm x 7.1 cm x 23.1 cm
Product Weight	1.3 kg
Operating Temperature	-20°C to +50°C (Max. 60°C ambient)

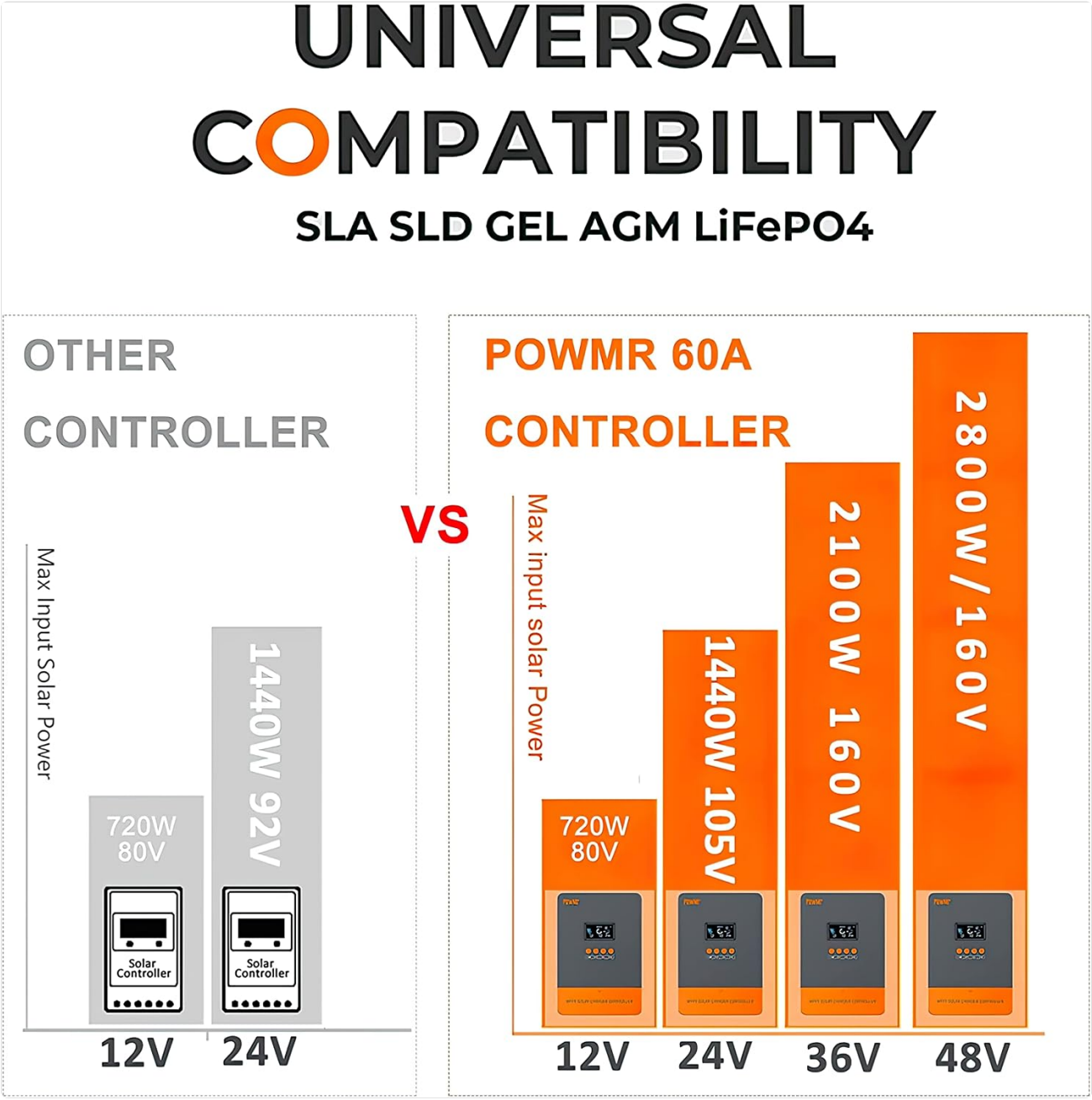

Image: Universal compatibility of the PowMr 60A MPPT controller compared to other controllers. It highlights higher maximum input solar power and voltage for 12V, 24V, 36V, and 48V systems, supporting SLA, SLD, GEL, AGM, and LiFePO4 battery types.

10. Warranty and Support

For warranty information, technical support, or any questions regarding your PowMr MPPT 60A Solar Charge Controller, please contact PowMr customer service. Refer to the product packaging or the official PowMr website for contact details.