PowMr 60A MPPT Controller

PowMr 60A MPPT Solar Charge Controller User Manual

Model: 60A MPPT Controller

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your PowMr 60A MPPT Solar Charge Controller. This device is designed to efficiently manage power from solar panels to charge various battery types, including LiFePO4, Gel, Flooded Lead-Acid, and Lithium batteries, in 12V, 24V, 36V, or 48V systems. Please read this manual thoroughly before installation and use to ensure optimal performance and safety.

Image 1.1: PowMr 60A MPPT Solar Charge Controller with accessories.

2. Safety Instructions

- Ensure all wiring is correctly polarized. Reverse polarity can damage the controller and connected components.
- Always connect the battery first, then the solar panel, and finally the load. Disconnect in the reverse order.
- Install the controller in a well-ventilated area, away from flammable materials and direct sunlight.
- Use appropriate circuit breakers or fuses for all connections to prevent overcurrent damage.
- Do not attempt to disassemble or repair the controller yourself. Contact qualified personnel for service.
- Wear appropriate personal protective equipment (PPE) when working with electrical systems.

3. Product Overview

3.1 Key Features

- **Multiple Battery Types:** Supports 12V/24V/36V/48V systems with automatic detection. Compatible with LiFePO4, Gel, Flooded Lead-Acid, and Lithium batteries. User mode allows custom battery parameter settings.
- **High PV Input:** Maximum PV input voltage of 160VDC and maximum input power up to 2800W.
- **Easy Installation & Setup:** Features a customized large LCD display for clear status monitoring and parameter adjustment. Plug-and-play design simplifies wiring and enhances safety.
- **3-Stage Charging:** Intelligent charging for Lead-Acid batteries (Bulk, Absorption, Float) and 2-stage for Lithium batteries (Bulk, Absorption) to prolong battery life. Includes Lithium battery activation function.
- **MPPT Technology:** Innovative Maximum Power Point Tracking (MPPT) with up to 99% tracking efficiency and 98% conversion efficiency, ensuring optimal power harvest even in varying light conditions.
- **Comprehensive Safety:** Built-in protections against reverse polarity, battery overcharging/over-discharging, overload, short-circuiting, and overheating. Features aviation-grade die-casting aluminum backplate for efficient, silent heat dissipation.

3.2 Components and Interface

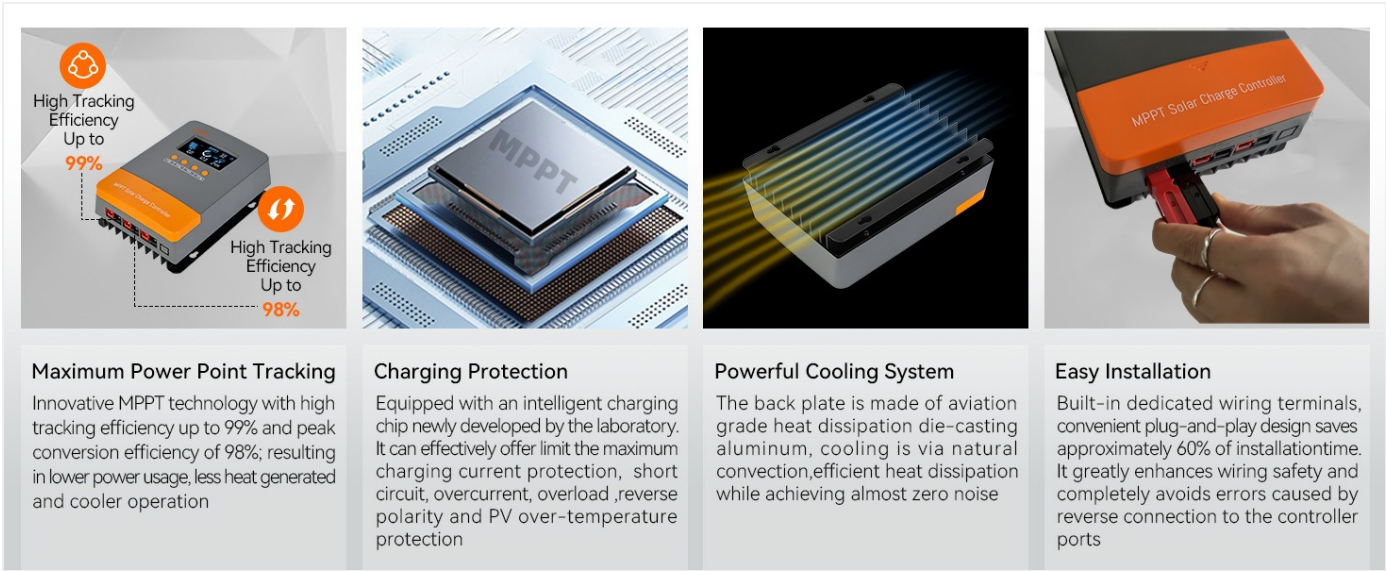

Image 3.1: Front and side view of the controller with labeled parts.

1. LCD Display Screen
2. Function Keys (PV, BAT/▲, DC/▼, SET)
3. PV Input Terminal
4. Battery Terminal
5. Load Terminal
6. Mount Hole
7. Heat Sink

4. Installation

4.1 Wiring Diagram

The following diagram illustrates the typical connection sequence for the solar charge controller in a solar power system. Ensure all connections are secure and correctly polarized.

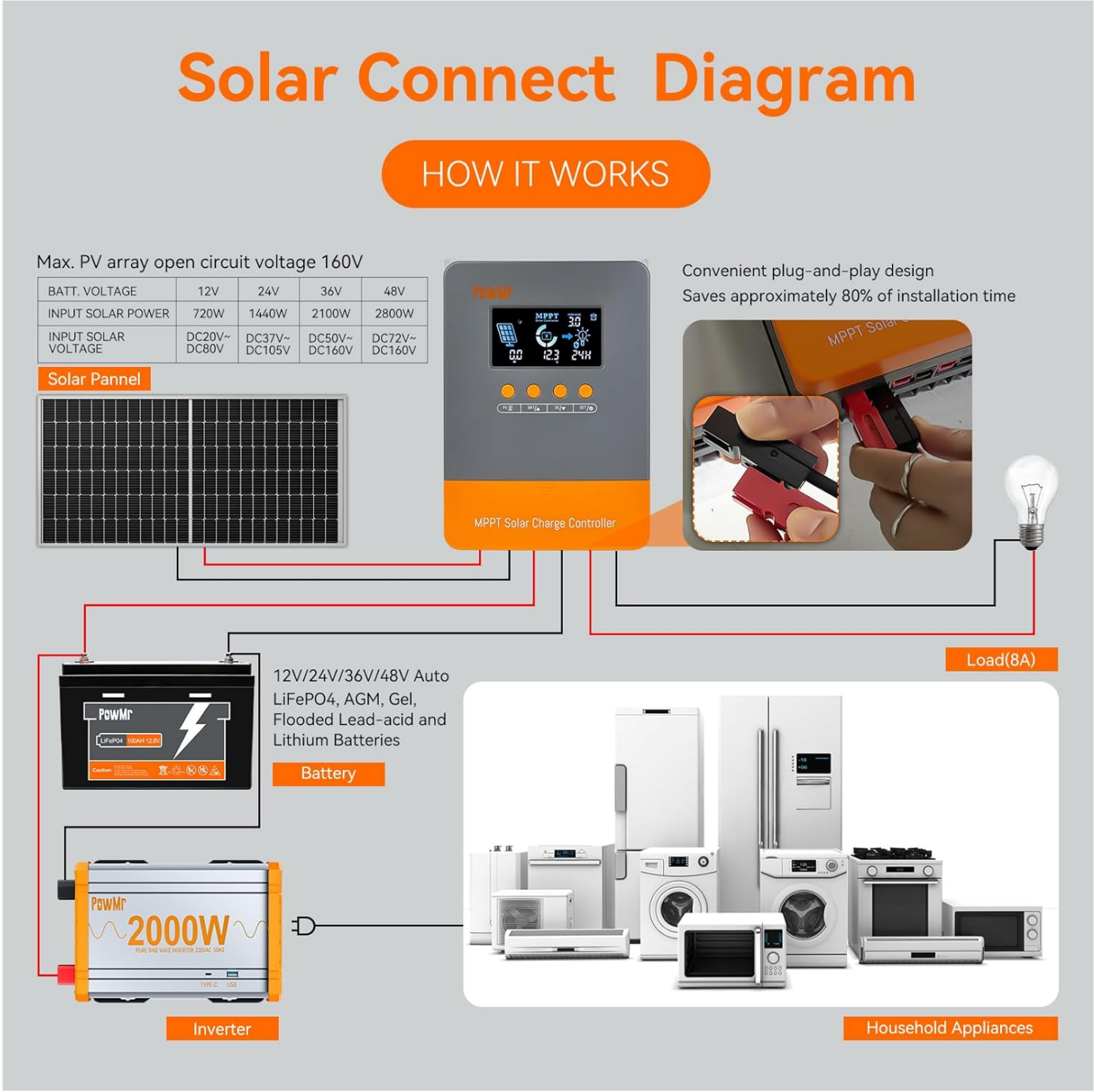

Image 4.1: Solar system connection diagram.

4.2 Connection Steps

Follow these steps for safe and correct installation:

1. **Mount the Controller:** Choose a suitable location for mounting the controller, ensuring good ventilation and protection from direct sunlight and moisture.
2. **Connect the Battery:** Connect the battery cables to the battery terminals on the controller. Ensure correct polarity (+ to + and - to -). The controller will automatically detect the system voltage.
3. **Connect the Solar Panels:** Connect the solar panel cables to the PV input terminals on the controller. Ensure correct polarity.
4. **Connect the Load (Optional):** If using the load output, connect your DC load to the load terminals.

Image 4.2: Illustration of cable terminal connection.

5. Operation

5.1 LCD Display Interface

The LCD display provides real-time information about the system status and allows for parameter adjustments. Use the function keys (PV, BAT/▲, DC/▼, SET) to navigate and modify settings.

Image 5.1: Backlit LCD screen displaying various parameters and working modes.

5.2 Working Modes

The controller operates in different modes depending on the time of day and charging status:

- **Code 3.0:** Night mode, no charging.
- **Code 4.0:** Bulk charging mode (MPPT mode).
- **Code 7.0:** Boost charging mode.
- **Code 8.0:** Float charging mode.

The load working mode can also be adjusted:

- **24H (Default):** Load is always on.
- **Solar Light Control Mode:** Load turns on at sunset and off at sunrise (OOH).
- **Timer Mode:** Adjust the load enable duration from 1 to 23 hours after sunset.

6. Battery Settings

6.1 Battery Type Selection

The controller supports various battery types. To select or customize your battery type:

1. Press the "BAT/▲" key to switch to battery information.
2. Navigate to the "Battery Type" setting.
3. Use the "BAT/▲" and "DC/▼" keys to select the desired battery type from the list or choose "USE" for user-defined parameters.
4. Press "SET" to confirm your selection.

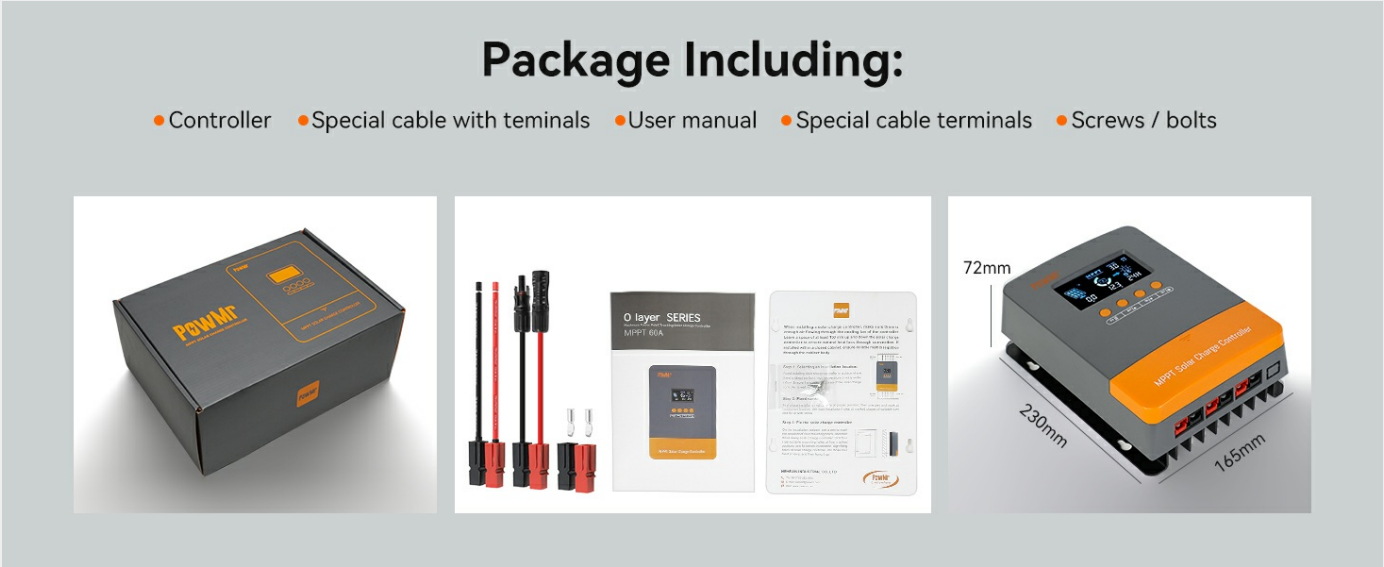

Image 6.1: Battery parameter setup and type selection.

6.2 Battery Voltage Calibration

To ensure accurate voltage readings, you can calibrate the battery voltage parameter:

1. Navigate to the "Battery Calibration Voltage" item on the display.
2. Press and hold "BAT/▲" to enter the calibration setting.

3. Use the "BAT/▲" or "DC/▼" keys to adjust the displayed voltage to match the actual battery voltage measured by a multimeter.
4. Press "SET" to confirm the calibration.

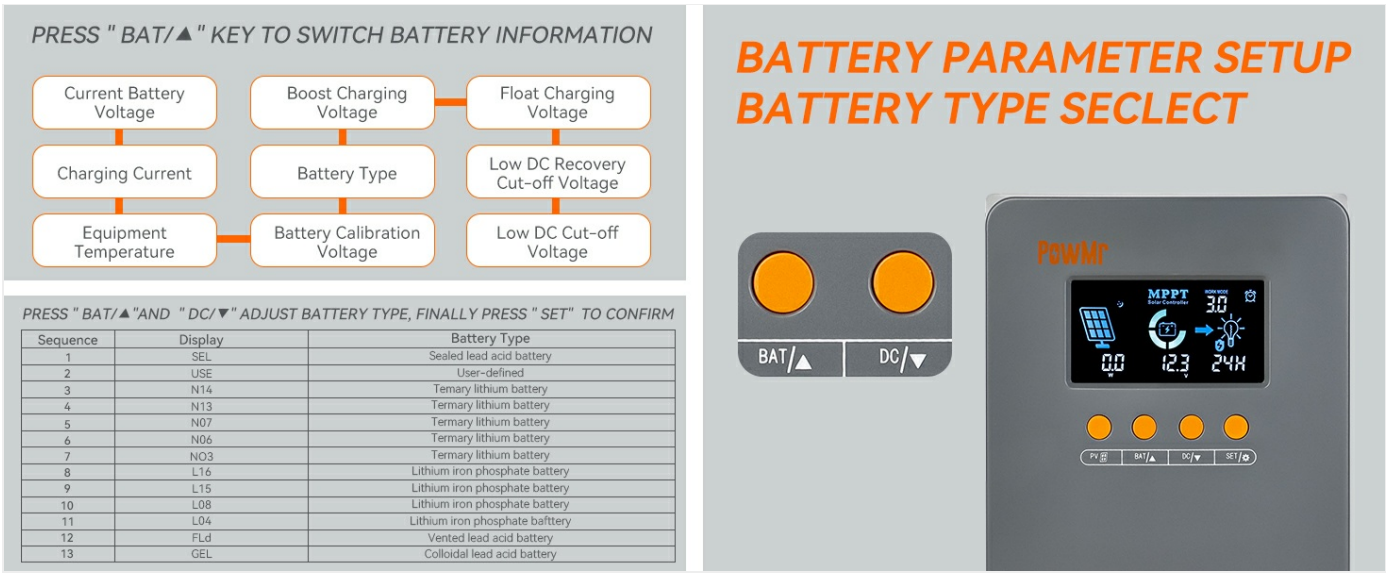

Image 6.2: Battery voltage calibration process.

7. Maintenance

- Periodically inspect all wiring connections for tightness and corrosion.
- Clean the controller's exterior and heat sink regularly to ensure proper heat dissipation. Use a dry cloth.
- Check battery terminals for corrosion and clean if necessary.
- Monitor the LCD display for any error codes or unusual readings.

8. Troubleshooting

Problem	Possible Cause	Solution
Controller not turning on	No battery connection or low battery voltage.	Check battery connections. Ensure battery voltage is above the minimum operating voltage.
No charging from solar panels	Solar panel not connected, low PV voltage, or PV reverse polarity.	Check solar panel connections and polarity. Ensure sufficient sunlight and PV voltage.
Battery not fully charged	Incorrect battery type setting, insufficient solar input, or battery degradation.	Verify battery type setting. Increase solar panel capacity or check for shading. Test battery health.
Overheating	Poor ventilation, excessive load, or high ambient temperature.	Ensure adequate airflow around the controller. Reduce load if possible. Relocate to a cooler area.
Error code displayed	Specific system fault.	Refer to the controller's display for the specific error code and consult the full product manual for detailed solutions.

9. Specifications

Feature	Detail
Product Dimensions	9.1 x 6.5 x 2.8 inches
Item Weight	4.27 pounds
Brand	PowMr
Voltage	12V/24V/36V/48V Auto (DC)
Max PV Input Voltage	160VDC
Max Input Power (12V)	720W
Max Input Power (24V)	1440W
Max Input Power (36V)	2100W
Max Input Power (48V)	2800W
Max DC Output Current	8A
Display Type	LCD
Included Components	MAX M60 With Cable
Color	Orange

10. Warranty and Support

For warranty information, technical support, or service inquiries, please contact PowMr customer service through their official website or the retailer where the product was purchased. Please have your product model number (60A MPPT Controller) and purchase details ready when contacting support.

For additional resources, visit the PowMr Store on Amazon.