

PowMr 25A MPPT Controller

PowMr 25A MPPT Solar Charge Controller User Manual

Model: 25A MPPT Controller

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, maintenance, and troubleshooting of the PowMr 25A MPPT Solar Charge Controller. This controller is designed for 12V/24V solar systems, supporting a maximum PV input of 60VDC, and is compatible with various battery types including AGM, Gel, Flooded, and Lithium batteries.

2. SAFETY INFORMATION

Please read all instructions and warnings carefully before installation and operation. Failure to follow these instructions may result in electric shock, fire, or severe injury. Keep this manual for future reference.

- Ensure all wiring is performed by qualified personnel.
- Always disconnect the battery and solar panel power before installing or adjusting the controller.
- Use appropriate circuit breakers or fuses for all connections.
- Do not disassemble or attempt to repair the controller. Contact support if service is required.
- Install the controller in a well-ventilated area, away from flammable materials and moisture.
- Ensure correct polarity when connecting batteries and solar panels to prevent damage.

3. PRODUCT OVERVIEW AND FEATURES

The PowMr 25A MPPT Solar Charge Controller utilizes advanced Maximum Power Point Tracking (MPPT) technology to optimize solar panel output and enhance charging efficiency. It features a 3-stage charging algorithm for lead-acid batteries (bulk, boost, float) and a 2-stage algorithm for lithium batteries (bulk, boost), ensuring efficient and safe charging.



Figure 3.1: Front view of the PowMr 25A MPPT Solar Charge Controller, showing the LCD display and control buttons.

POWMr 12V/24V AUTO MPPT Solar Charge Controller

Safe | Fast | Efficient

98% Tracking Efficiency
Up To 98%

97% Peak Conversion
Efficiency Up To 97%

Available **25A, 35A, 45A**

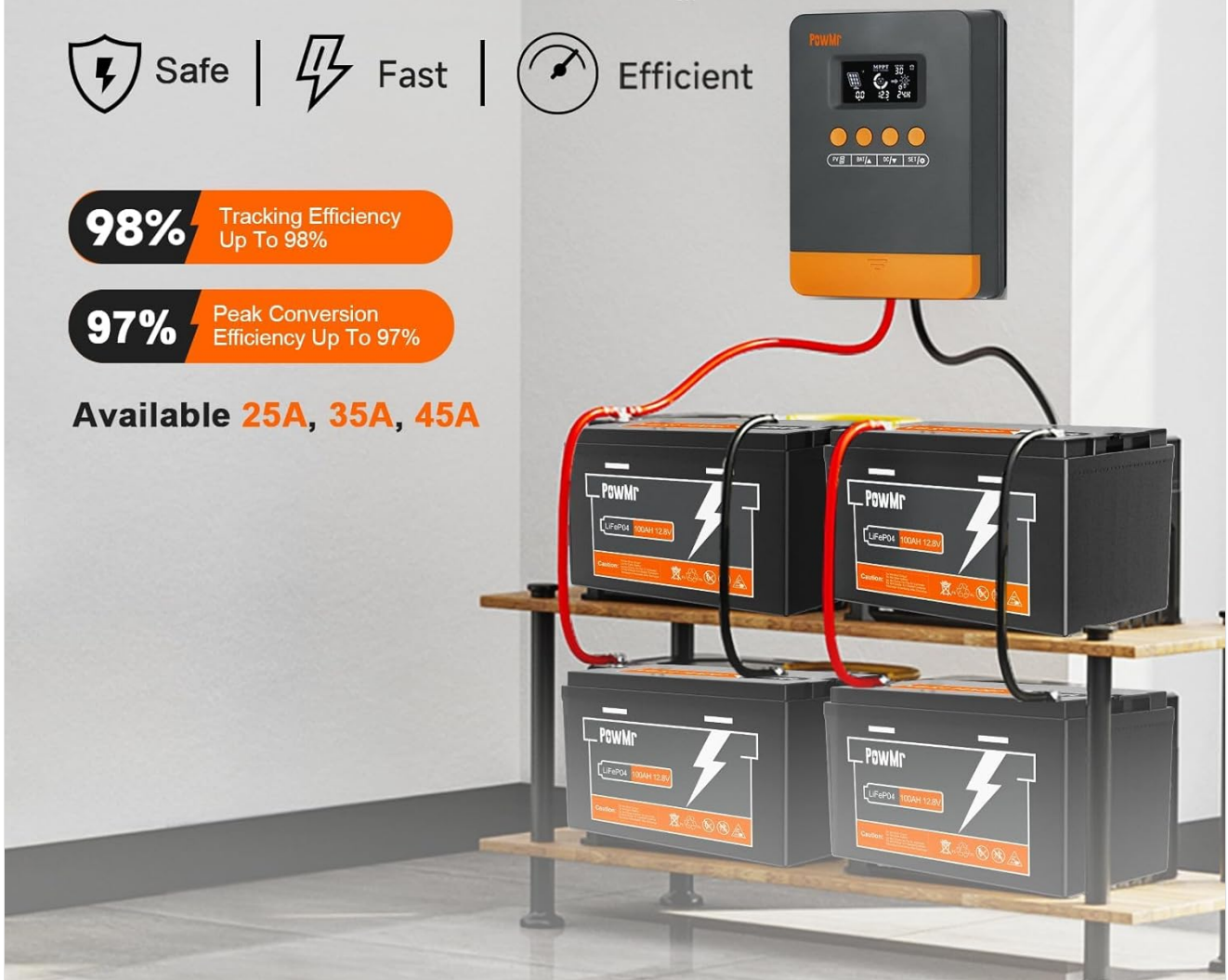


Figure 3.2: Key features highlighting the controller's safety, speed, and efficiency, with up to 98% tracking efficiency and 97% peak conversion efficiency.

Key Features:

- **Advanced MPPT Technology:** Up to 99% tracking efficiency and 98% peak conversion efficiency.
- **Wide Battery Compatibility:** Supports 12V and 24V lead-acid (sealed, gel, flooded) and lithium (LiFePO₄, lithium-ion) batteries.
- **Multi-Stage Charging:** 3-stage for lead-acid (bulk, boost, float) and 2-stage for lithium (bulk, boost).
- **Comprehensive Protections:** Includes short circuit, overcurrent, reverse polarity, over-discharge, over-charge, and over-temperature protection.
- **User-Friendly Interface:** Detailed LCD screen and four control buttons for easy operation and customizable settings.
- **Negative Grounding Design:** Enhances system safety.

4. SETUP AND INSTALLATION

Follow these steps for proper installation. Ensure all power sources are disconnected before beginning.

Wiring Sequence:

1. **Connect the Battery:** Connect the battery to the charge controller first. Ensure correct polarity.
2. **Connect the Load (Optional):** If using a DC load directly from the controller, connect it next.
3. **Connect the Solar Panels:** Connect the solar panels to the charge controller. Ensure correct polarity and that the PV open-circuit voltage does not exceed the controller's maximum input.

To disconnect the system, reverse the order: disconnect solar panels, then load, then battery.

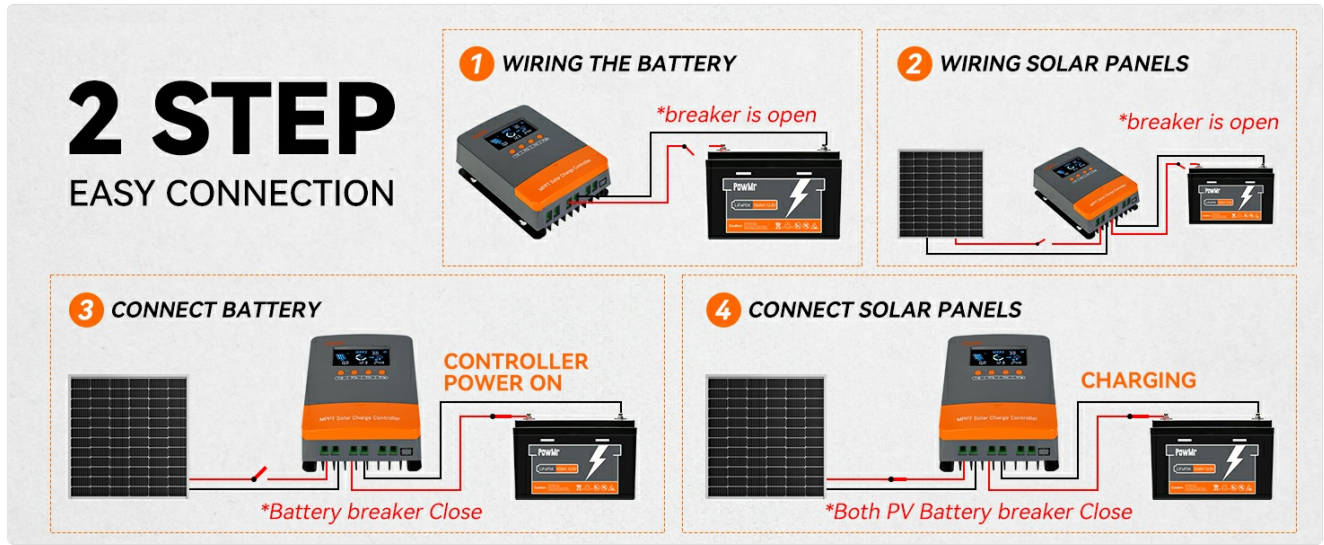


Figure 4.1: Simplified two-step connection diagram showing battery and solar panel wiring.

WITH BATTERY MODE

Model:	POW-M25-PRO		POW-M35-PRO		POW-M45-PRO	
Net Weight	12V	24V	12V	24V	12V	24V
Max. PV Open-Circuit Voltage:	60V		80V		100V	
Net Weight	300W	600W	420W	840W	540W	1080W
Dimensions:	6.3*4.53*2.01in		7.68*5.31*2.56in			
Net Weight	1.1lb		1.98lb		2.28lb	

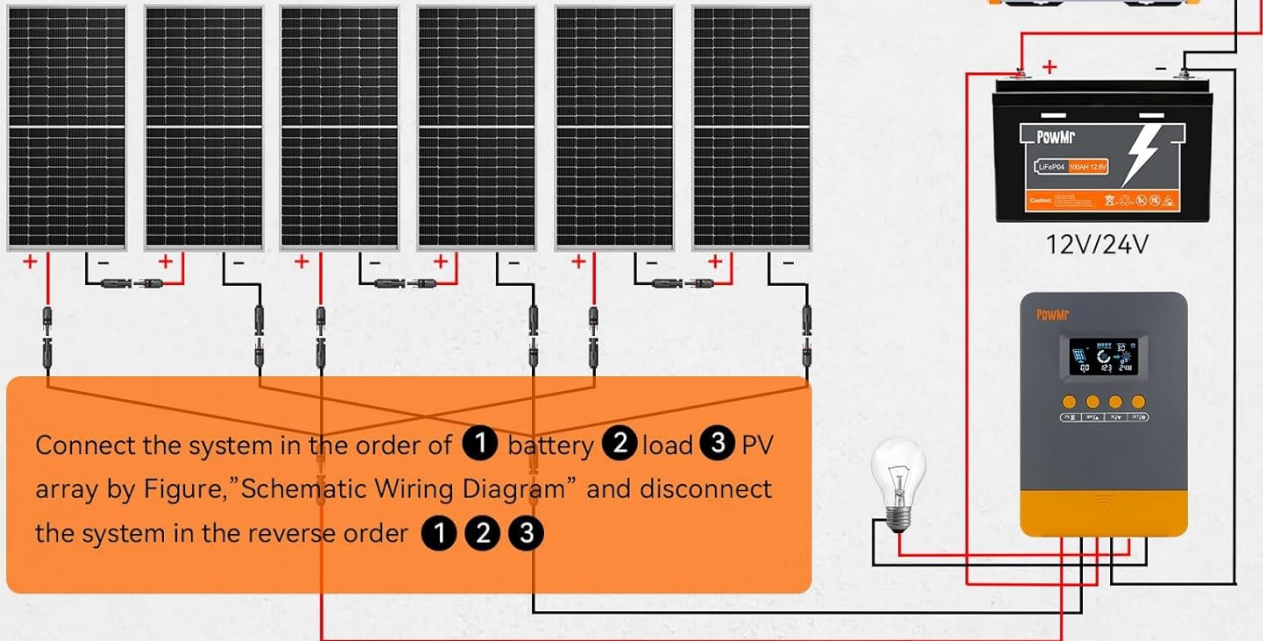


Figure 4.2: Schematic wiring diagram illustrating connections for solar panels, battery, inverter, and DC load. Connect in order: battery, load, PV array. Disconnect in reverse order.

5. OPERATING INSTRUCTIONS

5.1 LCD Display and Buttons

The controller features a detailed LCD screen and four buttons for monitoring and configuration. The buttons are typically labeled PV, BAT/▲, DC/▼, and SET/⊗.

5.2 Battery Type Selection

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

1. Long press the **BAT/▲** key to enter the setting program.
2. Use the **BAT/▲** and **DC/▼** keys to toggle through the battery type options.
3. Press the **SET/⊗** key to save and confirm your selection.

- If 'User-defined' battery type is selected, proceed to set absorption voltage, float voltage, low voltage cutoff, and other parameters as needed.

Work With Multiple 12/24V Batteries

Long press the BAT/▲ key to enter the setting program. Use the BAT/▲ and DC/▼ keys to toggle through the battery type options, then press the key to save and confirm. If you select User-defined battery type, you can proceed with setting the following battery parameters.



Figure 5.1: Illustration of battery compatibility and selection process for various 12V/24V battery types.

5.3 Multiple Load Work Modes

The controller offers several load operating modes to manage connected DC loads:

- 00H (Load Turn OFF):** The load output is always off.
- 24H (Load always Turn ON):** The load output is continuously on.
- 01H~23H (Time control):** The load output is controlled by a timer, allowing you to set the duration for which the load remains on.

MULTIPLE LOAD WORK MODES

00H

Load Turn OFF

24H

Load always
Turn ON

01H~23H

Time control
(Set load ON's duration)



Figure 5.2: Display of available load work modes for managing DC output.

5.4 Battery Voltage Calibration

If there is a discrepancy between the battery voltage monitored by the controller and a multimeter reading, you can calibrate the controller's voltage reading:

1. Long press the **BAT/▲** key to enter the setting program.
2. Use the **BAT/▲** and **DC/▼** keys to adjust the displayed voltage value to match the multimeter reading.
3. Press the **SET/⚙️** key to save and confirm the calibration.

HOW TO CALIBRATE BATTERY VOLTAGE?

When there is a discrepancy between the battery voltage monitored by the controller and the value measured by a multimeter, you can calibrate the battery voltage using this setting. Long press the BAT/▲ key to enter the setting program. Use the BAT/▲ and DC/▼ keys to adjust the value size, then press the key to save and confirm.



Figure 5.3: Instructions for calibrating the battery voltage reading on the LCD screen.

6. MAINTENANCE

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

- **Check Connections:** Periodically inspect all wiring connections for tightness and corrosion.
- **Clean the Controller:** Keep the controller clean and free from dust. Use a dry cloth for cleaning.
- **Ventilation:** Ensure the installation area remains well-ventilated to prevent overheating.
- **Battery Inspection:** Regularly check battery terminals for corrosion and ensure proper electrolyte levels for flooded batteries.

7. TROUBLESHOOTING

The controller's LCD screen displays working modes and error codes to assist in troubleshooting. Refer to the table below for common fault codes and their solutions.

BACKLIGHT LCD SCREEN

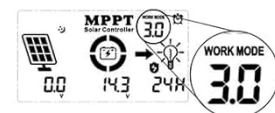


WORKING MODE

Working Mode and Troubleshooting

7.0—Boost Charging Mode

18 60 63 65 71 73 72—Error Code



Fault Code	Fault Cause	Solution
18	Input photovoltaic voltage too low	Increase the number of solar panels or connect them in series to raise the photovoltaic input voltage.
60	Overtemperature protection	Allow the equipment to cool to below the recovery temperature to resume normal charging and discharging.
63	Battery voltage too high	Measure to confirm if battery voltage exceeds rated voltage and disconnect photovoltaic array circuit breaker.
65	Battery voltage too low	Charge the battery until voltage exceeds the undervoltage recovery point. Refer to "3.7 DefaultParameters for Different Battery Types" for specific details.
71	Input photovoltaic voltage too high	Reduce the number of photovoltaic arrays connected to the controller to lower photovoltaic input; or adjust series and parallel connections to reduce voltage or current values.
73	Overcharging current	
72	Overdischarging current	Reduce output terminal load to ensure total load is within rated limits of the controller and battery.

Figure 7.1: LCD screen displaying working mode and a troubleshooting guide with fault codes and corresponding solutions.

Common Fault Codes and Solutions:

Fault Code	Fault Cause	Solution
18	Input photovoltaic voltage too low	Increase the number of solar panels or connect them in series to raise the photovoltaic input voltage.
60	Overtemperature protection	Allow the equipment to cool to below the recovery temperature to resume normal charging and discharging.
63	Battery voltage too high	Measure to confirm if battery voltage exceeds rated voltage and disconnect photovoltaic array circuit breaker.
65	Battery voltage too low	Charge the battery until voltage exceeds the undervoltage recovery point. Refer to '5.2 Battery Type Selection' for specific details.

Fault Code	Fault Cause	Solution
71	Input photovoltaic voltage too high	Reduce the number of photovoltaic arrays connected to the controller to lower photovoltaic input, or adjust series and parallel connections to reduce voltage or current values.
73	Overcharging current	Reduce output terminal load to ensure total load is within rated limits of the controller and battery.
72	Overdischarging current	Reduce output terminal load to ensure total load is within rated limits of the controller and battery.

8. SPECIFICATIONS

Technical specifications for the PowMr 25A MPPT Solar Charge Controller.

Specification	Value
Model	POW-M25-PRO
System Voltage	12V / 24V Auto
Max PV Input Power (12V Battery)	300W
Max PV Input Power (24V Battery)	600W
Max PV Open-Circuit Voltage	<60V
Rated Charge Current	25A
Battery Type Compatibility	Lead-acid (Sealed, Gel, Flooded), Lithium (LiFePO4, Lithium-ion)
Display Type	LCD
Material	Metal, Plastic
Dimensions	6.3" x 4.53" x 2.01" (160mm x 115mm x 51mm)
Net Weight	1.1 lb (0.5 kg)

9. WARRANTY AND SUPPORT

For warranty information, please refer to the documentation provided with your purchase or contact the seller directly. PowMr offers fast service support and detailed wiring instructions. For technical assistance or inquiries, please reach out to PowMr customer service.

