PowMr M25A-12V/24V

PowMr M25A-12V/24V 25A MPPT Solar Charge Controller User Manual

Model: M25A-12V/24V | Brand: PowMr

1. Introduction

This manual provides comprehensive instructions for the installation, operation, maintenance, and troubleshooting of your PowMr M25A-12V/24V 25A MPPT Solar Charge Controller. This device is designed to efficiently manage power flow from your solar panels to your 12V or 24V battery system, supporting various battery types including lead-acid and lithium batteries.

Figure 1: PowMr M25A-12V/24V 25A MPPT Solar Charge Controller. This image shows the front view of the solar charge controller with its LCD screen and four control buttons.

2. Safety Instructions

- Read all instructions carefully before installation and operation.
- Ensure all power sources are disconnected before wiring to prevent electric shock.
- Use appropriate tools and wear protective gear during installation.
- Install the controller in a well-ventilated, dry environment, away from flammable materials.
- Ensure correct polarity when connecting batteries and solar panels. Incorrect wiring can damage the controller and other components.
- Do not disassemble or attempt to repair the controller yourself. Contact qualified personnel for service.
- The controller is designed for 12V/24V battery systems. Do not connect to other voltage systems.

Figure 2: Intelligent Protection Features. This image illustrates the nine built-in electronic protections of the PowMr solar controller, including over-discharging, overcharging, overload, short circuit, reverse current, temperature compensation, and reverse polarity protection.

3. Setup and Installation

Follow these steps for proper installation of your solar charge controller. Adhering to the correct connection sequence is crucial for system safety and functionality.

3.1. Preparation

- **Solar Panel:** Ensure your solar panel's voltage and power output are compatible with the controller and battery system.
- **Battery:** Use a compatible battery type (e.g., AGM, Gel, Flooded, Lithium) for your 12V or 24V system.
- **Cables:** Use appropriately sized cables to minimize power loss and prevent overheating. Ensure proper fusing for all connections.

3.2. Wiring Sequence

The correct wiring order is essential. Always connect the battery first, then the solar panels, and finally the load (if applicable).

1. **Connect the Battery to the Controller:**
   First, connect the positive (+) terminal of the battery to the battery positive (+) terminal on the charge controller. Then, connect the negative (-) terminal of the battery to the battery negative (-) terminal on the charge controller. Ensure correct polarity. The controller's display should illuminate, indicating a successful battery connection.
2. **Connect the Solar Panels to the Controller:**
   Connect the positive (+) lead from your solar panel array to the PV positive (+) terminal on the charge controller. Then, connect the negative (-) lead from your solar panel array to the PV negative (-) terminal on the charge controller. Ensure the solar panels are receiving sufficient sunlight for power generation.
3. **Connect the DC Load (Optional):**
   If you are using the DC load output, connect the positive (+) lead of your DC load to the load positive (+) terminal on the charge controller, and the negative (-) lead to the load negative (-) terminal. Refer to the operating section for load control settings.

Disconnection Sequence: To disconnect the system, reverse the order: first disconnect the load, then the solar panels, and finally the battery.

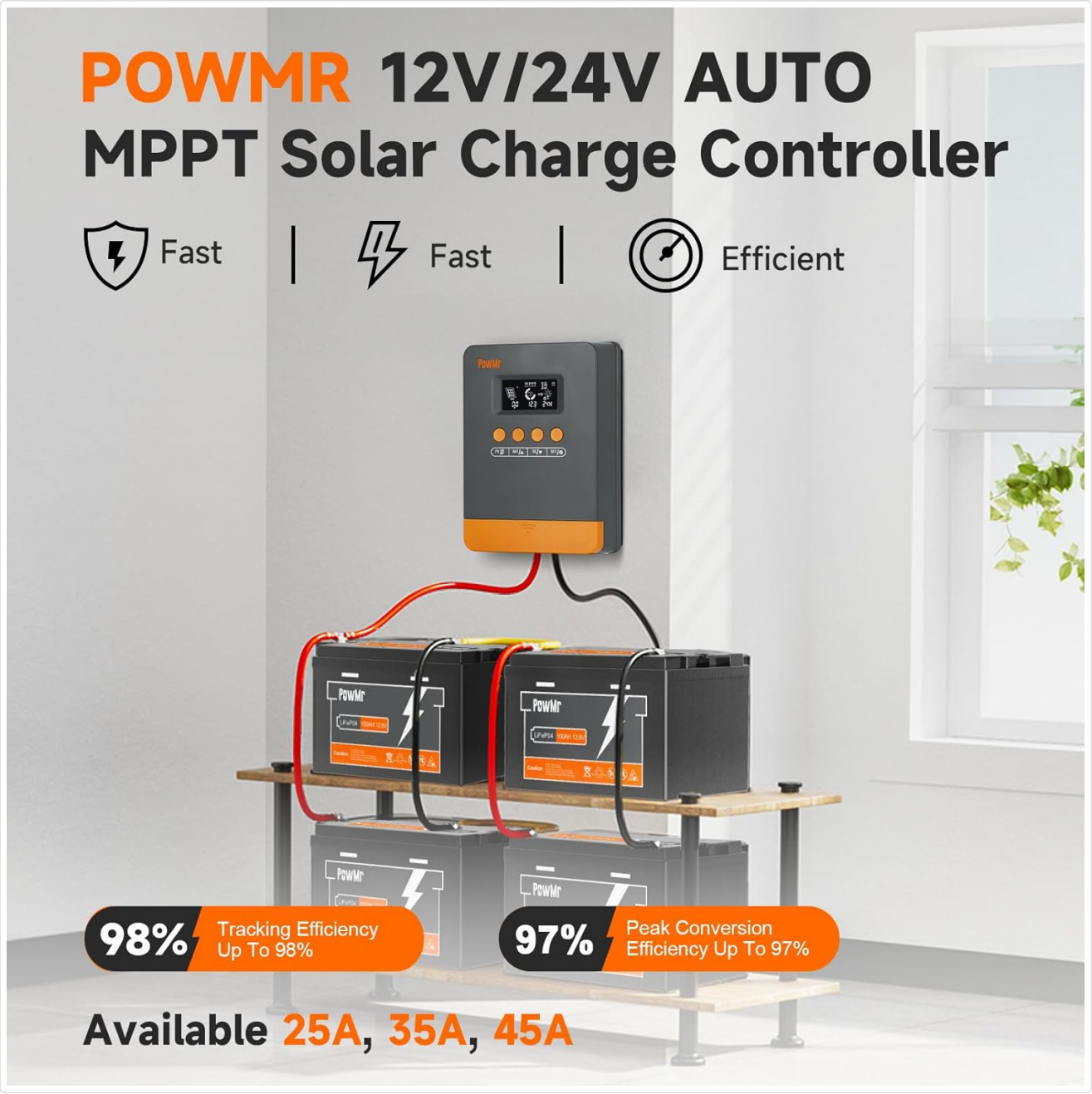


Figure 3: Basic Wiring Diagram. This diagram illustrates the connection of the solar charge controller to solar panels and a battery bank, showing the flow of power.

Figure 4: Simplified 2-Step Connection. This image provides a simplified visual guide for connecting the battery first, then the solar panels, and finally showing the charging process.

4. Operation

The PowMr M25A-12V/24V controller features an intuitive LCD screen and four buttons for easy monitoring and configuration.

4.1. LCD Display and Buttons

The backlit LCD screen displays real-time system status, including PV input, battery voltage, charging current, and load

status. The four buttons (PV, BAT/▲, DC/▼, SET/⚙) allow navigation and parameter adjustment.

Figure 5: Backlit LCD Screen. This image shows the controller's LCD display, indicating PV input, battery status, and load output, along with the control buttons.

4.2. Battery Type Settings

The controller supports various battery types. To set the battery type:

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.

Pre-set options include Sealed, Gel, Flooded, and Lithium (LFP). A "User customize" option is available for specific parameter adjustments.

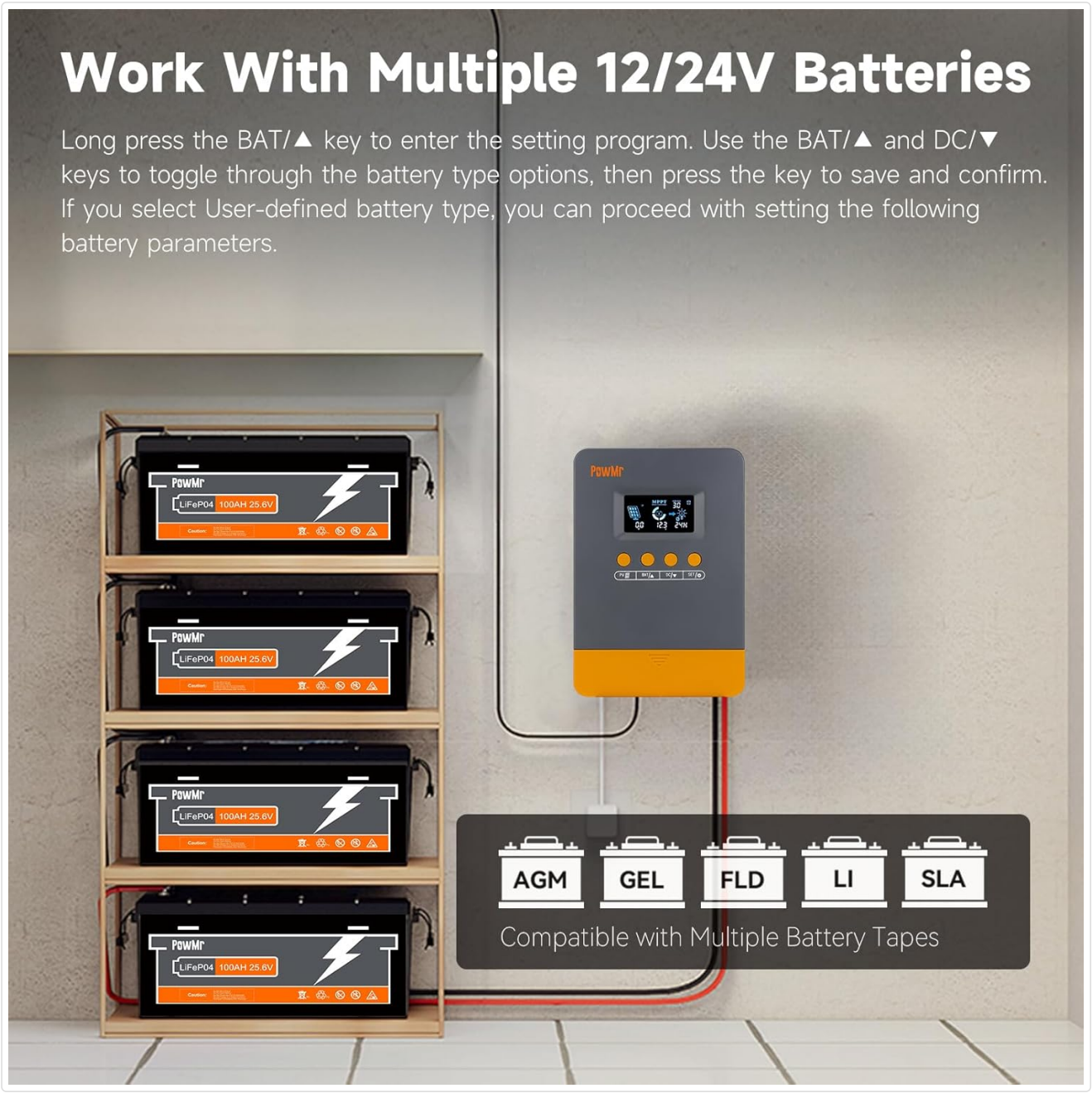


Figure 6: Compatible Battery Types. This image displays the controller's compatibility with various battery types, including AGM, GEL, FLD (Flooded), LI (Lithium), and SLA (Sealed Lead-Acid).

4.3. Load Work Modes

The controller offers multiple load work modes to manage your DC output:

- **00H:** Load Turn OFF (Load is always off).
- **24H:** Load always Turn ON (Load is continuously on).
- **01H~23H:** Time control (Set the duration for which the load remains ON).

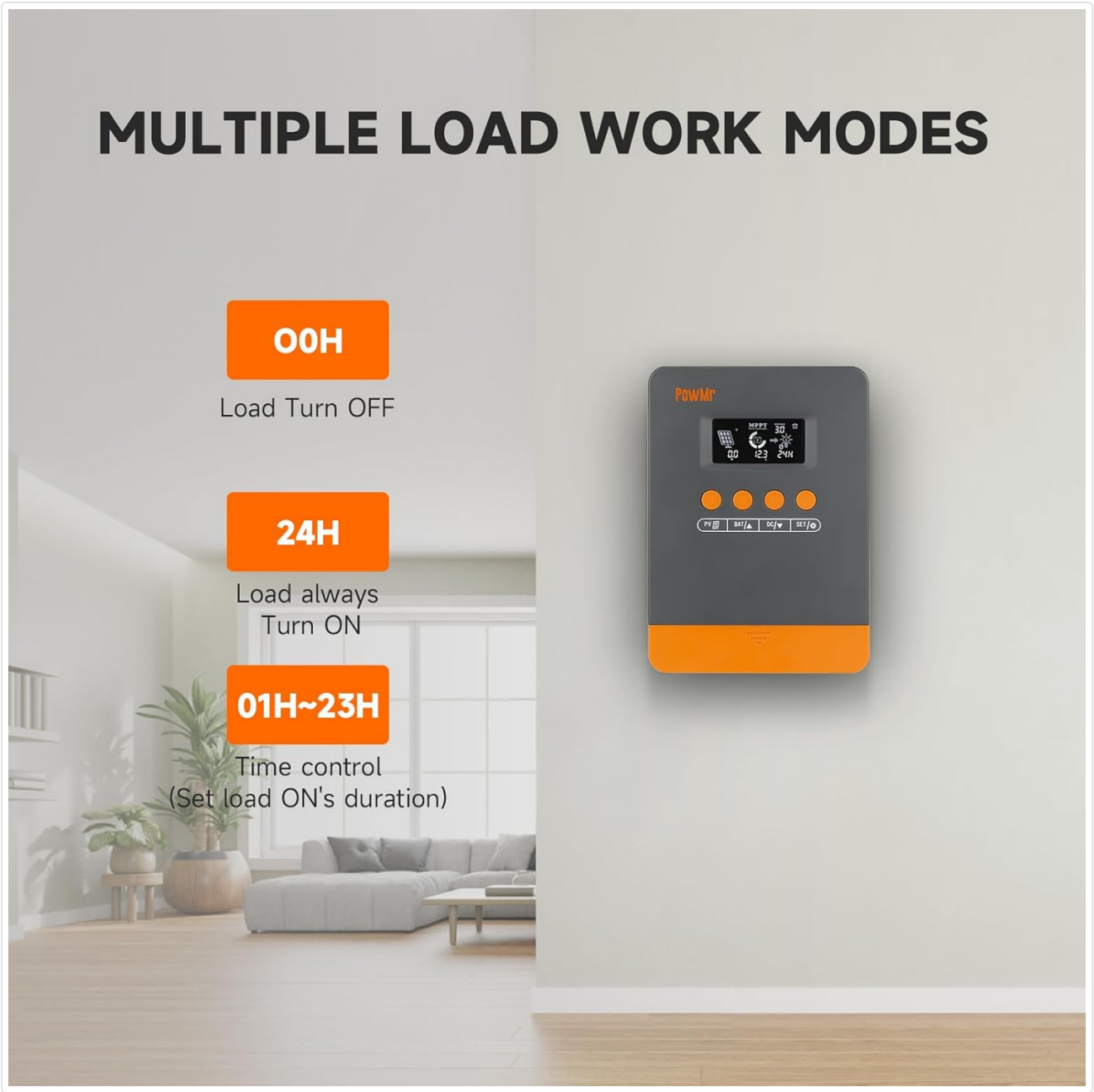


Figure 7: Load Work Modes. This image illustrates the different operational modes for the DC load output, including always off, always on, and time-controlled duration.

4.4. Calibrating Battery Voltage

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

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

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 8: Battery Voltage Calibration. This image shows the controller's display during the battery voltage calibration process, allowing users to adjust the displayed voltage to match an external measurement.

5. Maintenance

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

- **Inspect Connections:** Periodically check all wiring connections for tightness and corrosion. Loose connections can lead to power loss or damage.
- **Clean Controller:** Keep the controller clean and free from dust and debris. Use a dry cloth for cleaning. Ensure ventilation openings are not obstructed.
- **Battery Inspection:** Regularly inspect your batteries for signs of damage, leakage, or swelling. Ensure battery terminals are clean.
- **Solar Panel Cleaning:** Clean solar panels periodically to remove dirt, dust, or snow that may reduce efficiency.

- **Monitor Performance:** Observe the controller's display for any unusual readings or error codes.

6. Troubleshooting

This section provides guidance for common issues and their solutions. Refer to the LCD screen for specific error codes.

6.1. Error Codes and Solutions

Fault Code	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 Default/Parameters 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	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.

6.2. General Troubleshooting Tips

- **No Display/Power:** Check battery connections and ensure the battery has sufficient charge. Verify polarity.
- **Battery Not Charging:**
  - Ensure solar panels are connected correctly and receiving adequate sunlight.
  - Check solar panel voltage and current.
  - Verify battery type settings on the controller.
- **Load Not Working:**
  - Check load connections and ensure the load is within the controller's rated capacity.
  - Verify the load work mode setting (00H, 24H, or time control).
  - Ensure the battery has sufficient charge.
- **Inaccurate Readings:** Calibrate battery voltage as described in Section 4.4.

7. Specifications

Feature	Detail
Model	M25A-12V/24V (POW-M25-PRO)
Brand	PowMr
System Voltage	12V / 24V Auto
Max. PV Input Power (12V System)	300W
Max. PV Input Power (24V System)	600W
Max. PV Open-Circuit Voltage	<60V
Rated Charge Current	25A
Tracking Efficiency	Up to 98%
Peak Conversion Efficiency	Up to 97%
Supported Battery Types	Sealed, Gel, Flooded, Lithium (LFP), User-defined
Product Dimensions (L x W x H)	4.52" x 2" x 7" (11.48 cm x 5.08 cm x 17.78 cm)
Item Weight	1.1 Pounds (500 Grams)
Date First Available	September 3, 2024

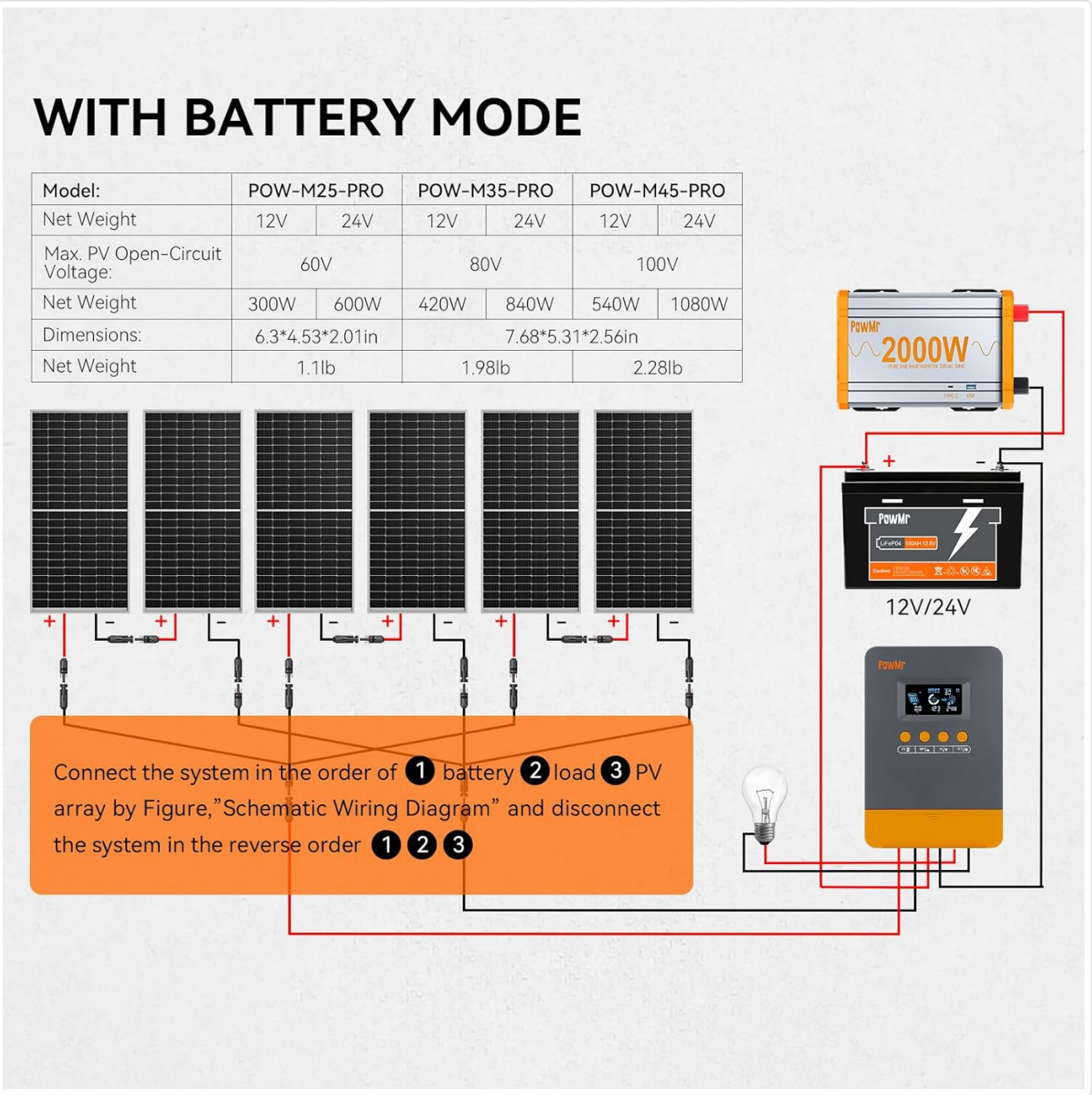
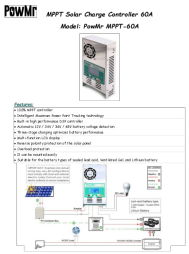


Figure 9: System Wiring and Model Specifications. This image provides a detailed schematic for connecting solar panels, battery, and load, alongside a table outlining specifications for various PowMr MPPT controller models, including the M25A-12V/24V.

8. Warranty and Support

For warranty information and technical support, please refer to the official PowMr website or contact their customer service directly. Keep your purchase receipt for warranty claims.

Related Documents - M25A-12V/24V

 Troubleshooting	MPPT Solar Charge Controller Troubleshooting Guide A comprehensive troubleshooting guide for PowMr MPPT Solar Charge Controllers, covering common issues like LCD display problems, power-on failures, voltage discrepancies, and charging issues. Includes test steps and contact information for warranty support.
	PowMr POW-M60-PRO MPPT Solar Charge Controller User Manual This user manual provides comprehensive instructions for the PowMr POW-M60-PRO MPPT Solar Charge Controller, covering safety guidelines, installation procedures, operational modes, charging characteristics, protection features, troubleshooting, and detailed technical specifications for optimal solar energy system management.
	PowMr MPPT-60A Solar Charge Controller User Manual PowMr MPPT-60A Solar Charge Controller User Manual providing detailed instructions on installation, operation, safety precautions, troubleshooting, and technical specifications for efficient solar power management.
BSC Controller Installation Manual (PDF)	BSC Controller Installation Manual This manual provides instructions for the installation of the BSC Controller, a solar charge controller designed for various battery types.
	PowMr POW-M Series Solar Charge Controller User Manual User manual for the PowMr POW-M Series solar charge controllers (POW-M25-PRO, POW-M35-PRO, POW-M45-PRO). This guide provides detailed information on installation, wiring, operation, safety guidelines, protection features, troubleshooting, maintenance, and technical specifications for efficient solar energy management.
	PowMr MPPT Solar Charge Controller 60A - Technical Specifications and Guide Detailed specifications, features, and usage tips for the PowMr MPPT Solar Charge Controller 60A (Model: PowMr MPPT-60A). Covers technical parameters, system compatibility, safety features, and installation advice.