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Temank 45A

Temank MPPT Solar Charge Controller User Manual

Model: 45A (POW-M45-PRO)

1. INTRODUCTION

This manual provides essential information for the safe and efficient operation of your Temank 45Amp MPPT Solar Charge Controller. This device is designed to maximize power harvesting from solar panels and efficiently charge various 12V/24V battery types, including lead-acid (Sealed, Gel, Flooded) and lithium (LiFePO4, Lithium-Ion) batteries. It features advanced Maximum Power Point Tracking (MPPT) technology for high tracking and conversion efficiency, ensuring optimal performance for your solar power system.



Image: Front view of the Temank 45Amp MPPT Solar Charge Controller, showing the LCD display and control buttons.

2. SAFETY INFORMATION AND PROTECTIONS

The Temank MPPT Solar Charge Controller is equipped with comprehensive protection features to ensure safe operation and protect your system components. Always adhere to local electrical codes and safety guidelines during installation and operation.

- **Negative Grounding Design:** Enhances overall system safety.
- **Short Circuit Protection:** Prevents damage from short circuits in the system.
- **Overcurrent Protection:** Safeguards against excessive current flow.
- **Reverse Polarity Protection:** Protects the controller and batteries from incorrect wiring of solar panels or batteries.
- **Overvoltage Protection:** Prevents damage from excessively high voltage.
- **Over-discharge Protection:** Protects batteries from deep discharge, extending their lifespan.
- **Over-temperature Protection:** Shuts down or reduces power to prevent overheating.
- **Lithium Battery Precautions:** Includes specific safeguards to prevent overcharging and avoids charging lithium batteries below 0°C.

CERTIFIED PROTECTIONS

PowMr MPPT Solar controller features 9 electronic protections to actively monitor changes of voltage, current, and load for efficient and safe battery charging.

9 Built-in Protections

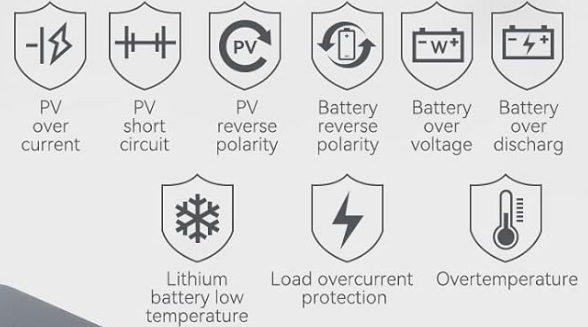


Image: Visual representation of the 9 built-in protection mechanisms, including PV overcurrent, PV short circuit, PV reverse polarity, battery reverse polarity, battery overvoltage, battery over-discharge, lithium battery low temperature, load overcurrent, and overtemperature protection.

3. PRODUCT OVERVIEW

The Temank MPPT Solar Charge Controller is designed for robust performance and ease of use. Its die-cast aluminum construction provides excellent heat dissipation, contributing to its durability and reduced power consumption.

Key Features:

- Advanced Maximum Power Point Tracking (MPPT) technology with up to 98% tracking efficiency and 97% peak conversion efficiency.
- Compatible with 12V and 24V battery systems.
- Supports various battery types: lead-acid (Sealed, Gel, Flooded) and lithium (LiFePO4, Lithium-Ion).

- Clear LCD screen with four intuitive buttons for easy operation and monitoring.
- Customizable settings for absorption voltage, float voltage, low voltage cutoff, and load timer.
- 3-stage battery charging algorithm for rapid, efficient, and safe charging.

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**

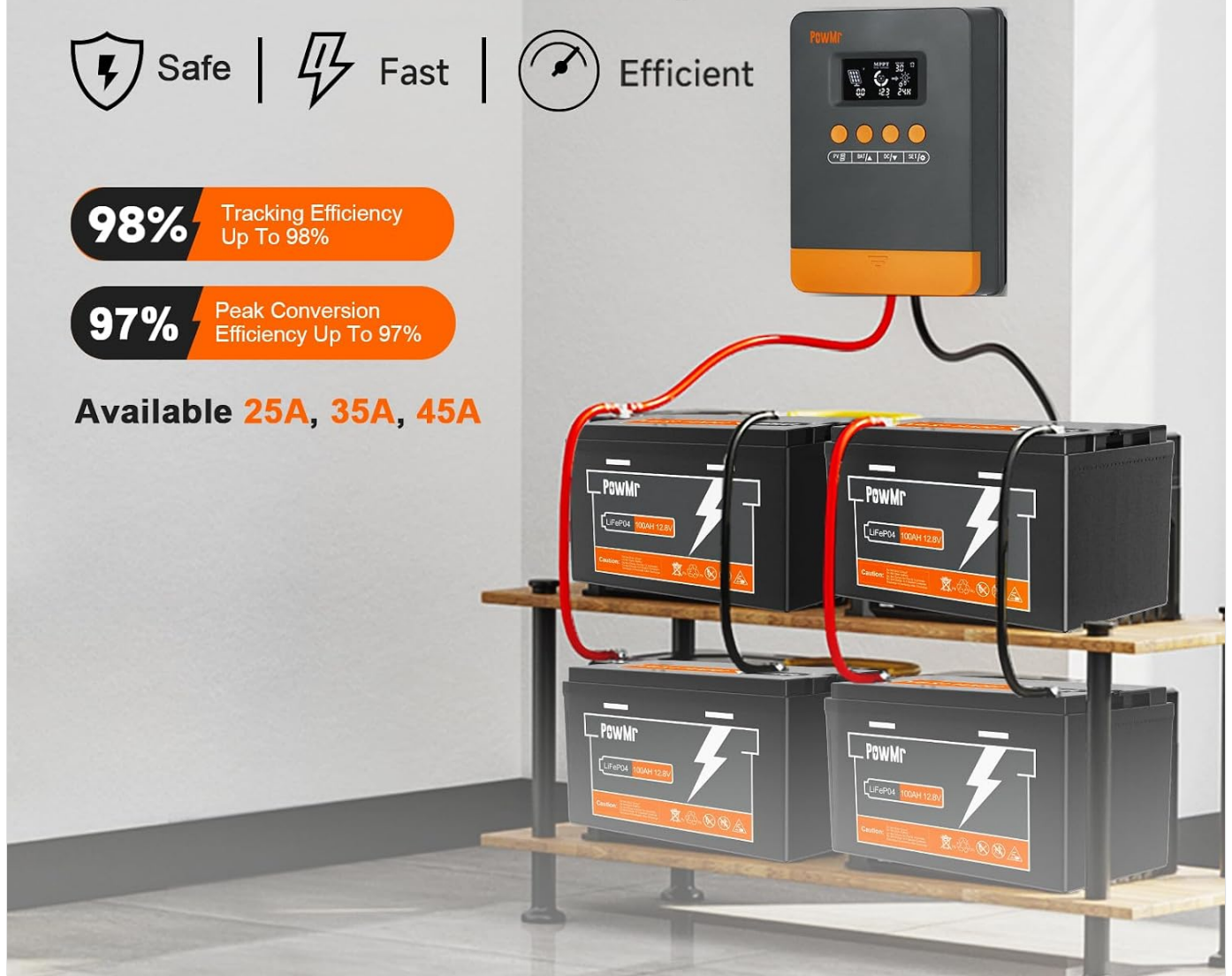


Image: The solar charge controller connected to a battery bank, highlighting its 98% tracking efficiency and 97% peak conversion efficiency.

4. SETUP AND WIRING

Proper wiring is crucial for the safe and efficient operation of your solar charge controller. Follow these steps carefully. Always ensure all power sources are disconnected before making any connections.

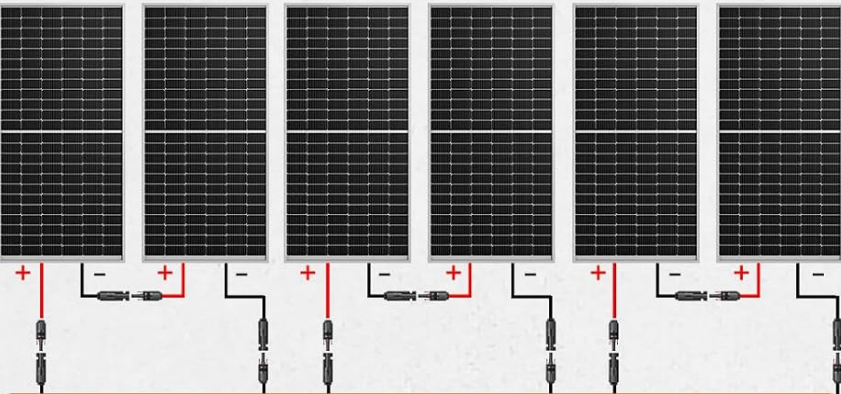
Wiring Sequence:

- 1. **Connect the Battery:** First, connect the battery to the charge controller. Ensure correct polarity (positive to positive, negative to negative).
- 2. **Connect the PV Array:** Next, connect the solar panel (PV) array to the charge controller. Ensure correct polarity.
- 3. **Connect the DC Load (Optional):** Finally, connect any DC loads to the designated load terminals on the controller.

Important: Connect the system in the order of **1) battery, 2) load, 3) PV array**. Disconnect the system in the reverse order (PV array, load, battery).

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	



Connect the system in the order of **1** battery **2** load **3** PV array by Figure, "Schematic Wiring Diagram" and disconnect the system in the reverse order **1** **2** **3**



Image: Schematic diagram illustrating the correct wiring order for the solar charge controller, connecting to solar panels, battery, and DC load.

Installation Video Guide:

Your browser does not support the video tag.

Video: A detailed wiring guide for the POW-M25/M35/M45-PRO solar charge controller, demonstrating the connection steps.

5. OPERATING INSTRUCTIONS

LCD Display and Navigation:

The controller features a clear LCD screen and four buttons for easy operation. The display shows real-time working status and process information.

- **PV Button:** Displays photovoltaic (solar panel) input information.
- **BAT/▲ Button:** Displays battery information and is used to increase values in settings. Long press to enter setting program.
- **DC/▼ Button:** Displays DC load information and is used to decrease values in settings.
- **SET/⚙ Button:** Enters or confirms settings.

BACKLIGHT LCD SCREEN

WORKING MODE

3.0—Night mode, no charging

4.0—MPPT Charging Mode

7.0—Boost Charging Mode

8.0—Floating Charge 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 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	
72	Overdischarging current	Reduce output terminal load to ensure total load is within rated limits of the controller and battery.

Image: Detailed view of the backlit LCD screen, illustrating various working modes (Night mode, MPPT Charging Mode, Boost Charging Mode, Floating Charge Mode) and providing a table of fault codes and their solutions.

Battery Type Selection and Calibration:

The controller is compatible with multiple battery types. To select or calibrate the battery voltage:

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 (e.g., Sealed, Gel, Flooded, LiFePO4, Lithium-Ion).
3. Press the **SET/⚙** key to save and confirm your selection.
4. If you select "User-defined" battery type, you can proceed with setting specific parameters like absorption voltage, float voltage, and low voltage cutoff.

If 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.

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.



Image: The controller display indicating compatibility with various 12V/24V battery types, including AGM, GEL, FLD (Flooded), LI (Lithium), and SLA (Sealed Lead-Acid).

Load Work Modes:

The controller supports different load work modes for managing connected DC loads:

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

MULTIPLE LOAD WORK MODES

00H

Load Turn OFF

24H

Load always
Turn ON

01H~23H

Time control
(Set load ON's duration)



Image: Visual explanation of the load work modes: 00H (Load Turn OFF), 24H (Load always Turn ON), and 01H~23H (Time control for load ON duration).

6. MAINTENANCE

To ensure the longevity and optimal performance of your Temank MPPT Solar Charge Controller, regular maintenance is recommended:

- Periodically inspect all wiring connections to ensure they are secure and free from corrosion.
- Keep the controller clean and free from dust and debris. Use a dry cloth for cleaning.
- Ensure adequate ventilation around the controller to facilitate proper heat dissipation.
- Monitor the LCD display for any fault codes or unusual readings.

7. TROUBLESHOOTING

The LCD display provides fault codes to help diagnose issues. Refer to the table below for common fault codes and their 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 '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.

8. SPECIFICATIONS

- **Model:** 45A (POW-M45-PRO)
- **Battery Voltage:** 12V/24V Auto-sensing
- **Max. PV Input Power (12V Battery):** 540W
- **Max. PV Input Power (24V Battery):** 1080W
- **Max. PV Open-Circuit Voltage:** <100V
- **Tracking Efficiency:** Up to 98%

- **Peak Conversion Efficiency:** Up to 97%
- **Display Type:** LCD
- **Material:** Aluminum
- **Item Weight:** 2.28 pounds
- **Package Dimensions:** 9.21 x 9.14 x 3.66 inches
- **Included Components:** Solar controller
- **Country of Origin:** China

9. WARRANTY AND SUPPORT

For warranty information or technical support, please contact Temank customer service through the retailer where the product was purchased. Please have your model number and purchase details ready for faster assistance.

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