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Temank 15A MPPT Solar Charge Controller

PowMr 15A MPPT Solar Charge Controller User Manual

Model: 15A MPPT Solar Charge Controller

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your PowMr 15A MPPT Solar Charge Controller. Please read this manual carefully before using the product to ensure proper function and safety. The PowMr 15A MPPT Solar Charge Controller is an advanced Maximum Power Point Tracking (MPPT) solar charge controller designed to efficiently charge 12V/24V battery systems from solar panels. It features an LCD display for easy monitoring and supports various battery types including AGM, Gel, Deep Cycle, Sealed, Lead Acid, Flooded, and LiFePO4 lithium batteries.

2. Safety Information

- Ensure all connections are correct and secure before operation. Incorrect wiring can cause damage to the controller or battery.
- Do not connect the solar charge controller to a battery system with a voltage higher than 24V.
- Always connect the battery to the controller first, then connect the solar panel. Disconnect in the reverse order (solar panel first, then battery).
- The controller is designed for indoor use or protected outdoor environments. Avoid direct exposure to water or extreme weather conditions.
- Do not disassemble or attempt to repair the controller yourself. Refer to qualified personnel for service.
- Ensure proper ventilation around the controller to prevent overheating.
- This device is equipped with multiple protection systems including overcharge, over-discharge, over-voltage, over-current, overload, short circuit, and reverse polarity protection. However, always exercise caution during installation and operation.

3. Product Overview

The PowMr 15A MPPT Solar Charge Controller features a compact design with an intuitive LCD display and user-friendly buttons for easy monitoring and configuration.

Figure 3.1: Front view of the PowMr 15A MPPT Solar Charge Controller, showing the LCD display, control buttons, and SAE input/output connectors.

3.1. Components and Display

- **LCD Display:** Shows real-time charging status, battery voltage, and other parameters.
- **SET Button:** Used to enter settings mode and navigate through options.
- **BAT Button:** Used to toggle battery mode settings.
- **Up/Down Buttons:** Used to adjust values or navigate menu options.
- **SAE Connectors:** For quick and easy connection to solar panels and batteries.

3.2. Protection Systems

The controller incorporates 8 comprehensive protection systems to ensure safe and reliable operation:

Figure 3.2: Visual representation of the 8 built-in protection systems, ensuring the safety and longevity of your battery and solar system.

- Over Charge Protection
- Over Temperature Protection
- Over Voltage Protection
- Over Current Protection
- Over Load Protection
- Short Circuit Protection
- Discharge Protection
- Reverse Polarity Protection

4. Setup and Installation

Follow these steps for proper installation of your solar charge controller:

1. **Connect the Battery:** First, connect the battery to the controller's battery terminals. Ensure correct polarity (positive to positive, negative to negative). The controller will detect the battery voltage (12V or 24V) automatically.
2. **Connect the Solar Panel:** Next, connect the solar panel to the controller's solar input terminals. Ensure correct polarity. The controller will begin charging the battery.
3. **Optional: Connect Load (if applicable):** This specific model is primarily a charge controller and does not have dedicated load terminals. If you are connecting a load, it should be connected directly to the battery or through an inverter connected to the battery.

Important Connection Order: Always connect the battery first, then the solar panel. When disconnecting, disconnect the solar panel first, then the battery.

4.1. System Wiring Diagrams

Below are examples of typical wiring configurations for solar panel systems with the charge controller.

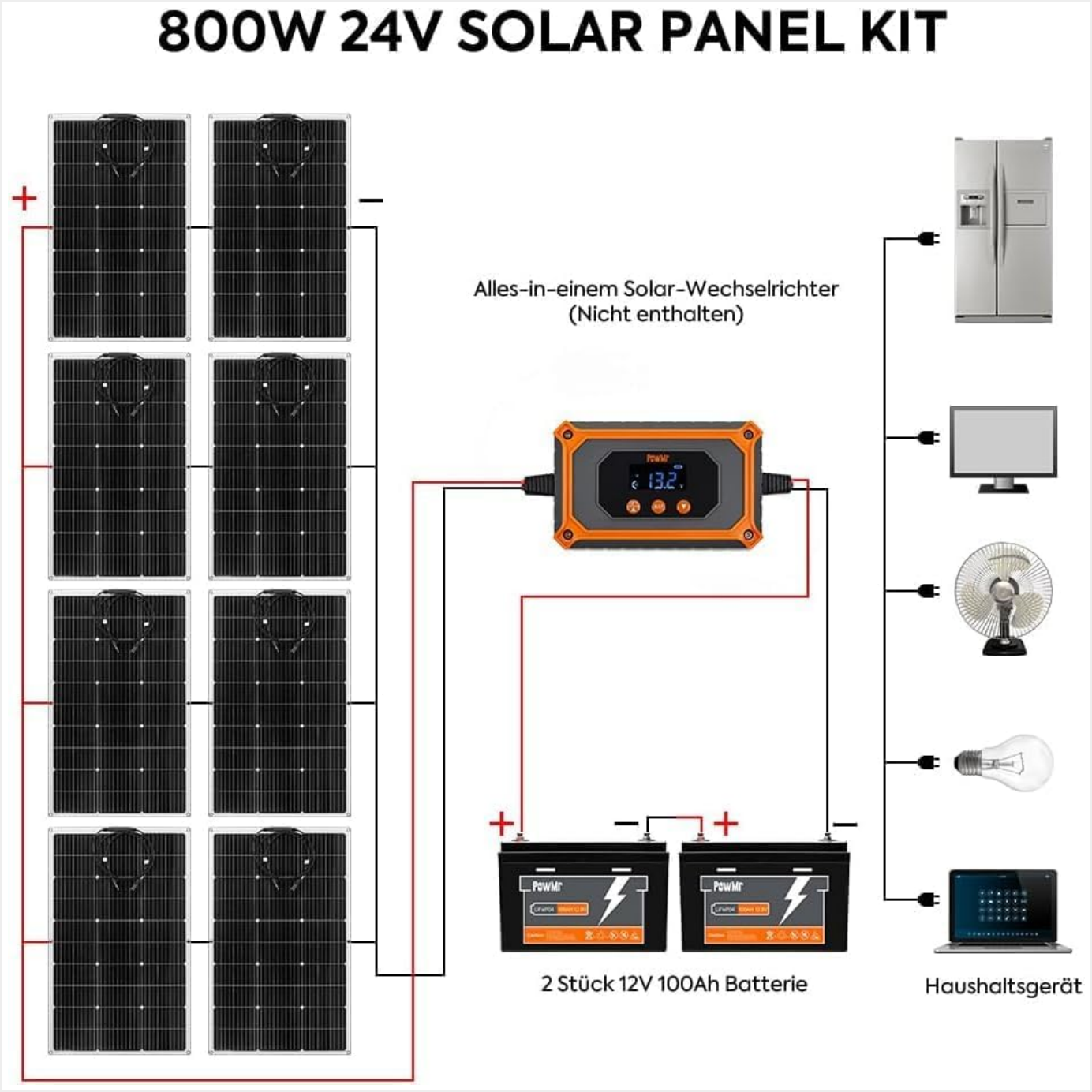

Figure 4.1: Example wiring diagram for a complete solar power system, including solar panels, charge controller, batteries, and an inverter for household appliances.

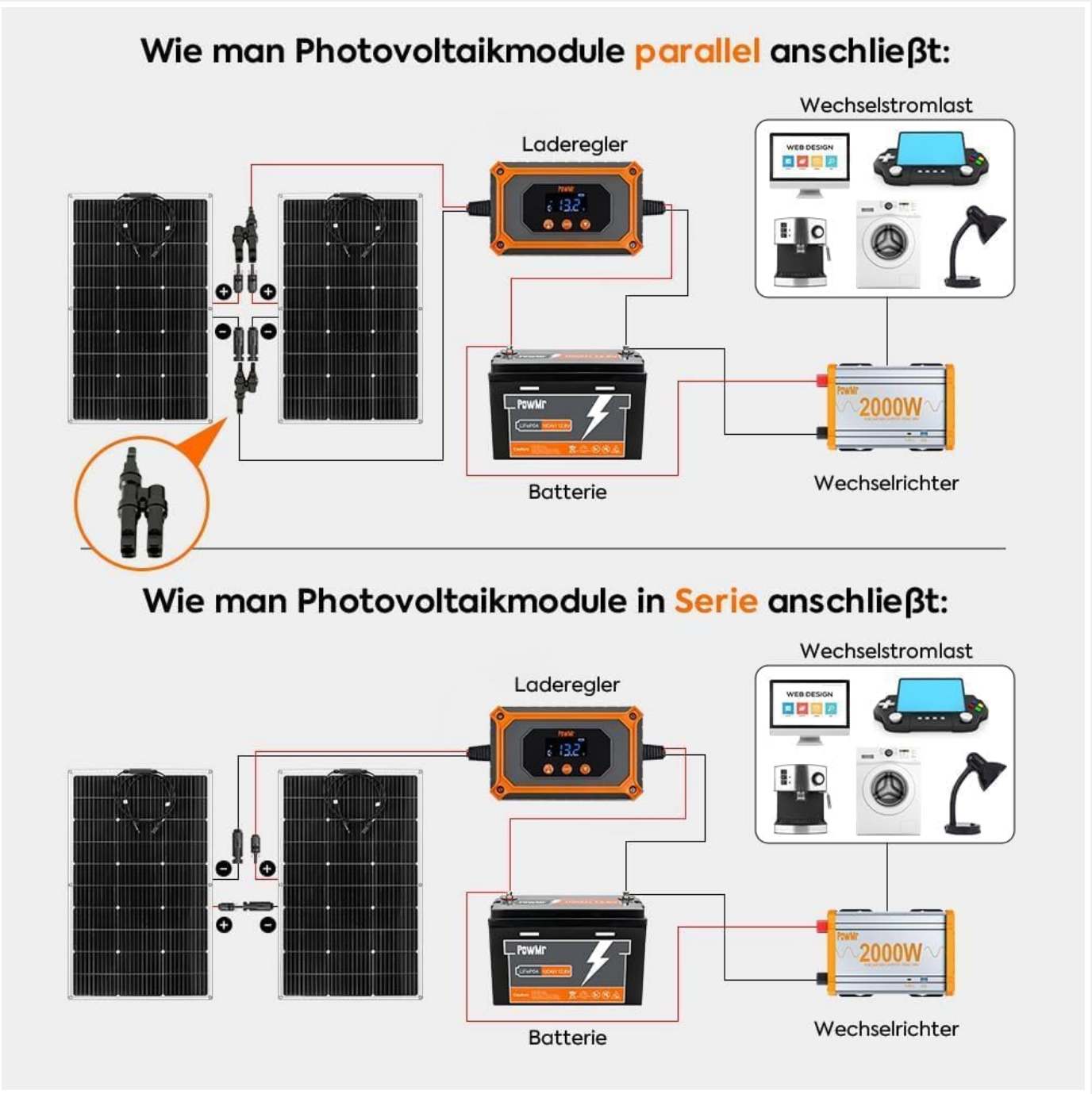

Figure 4.2: Detailed diagrams illustrating parallel and series connection methods for solar panels with the charge controller and battery.

5. Operating Instructions

5.1. LCD Display and Monitoring

The LCD display provides real-time information about your solar charging system. You can view parameters such as battery voltage, charging current, and battery type.

5.2. Setting Battery Type

The controller is compatible with various battery types. It is crucial to select the correct battery type for optimal charging and battery longevity.

Figure 5.1: Battery type selection interface and corresponding charging parameters.

To change the battery type:

1. **Long press the "BAT" button** to enter the battery type selection mode.
2. Use the **Up**/**Down buttons** to cycle through the available battery types:
    - **SEL:** Sealed Lead-Acid Battery
    - **GEL:** Gel Battery
    - **F04:** LiFePO4 Lithium Battery (Note: Some models may show "F04" or "LiFePO4")
3. Once your desired battery type is displayed, **short press the "BAT" button again** to confirm and save the selection. The display will return to the main monitoring screen.

Note: Ensure you select the correct battery type. Incorrect settings can damage your battery. If you are using a LiFePO4 battery and encounter issues changing settings, ensure you are following the long-press procedure correctly. Refer to the specifications table for default charging parameters for each battery type.

6. Maintenance

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

- **Clean the Controller:** Periodically wipe the controller with a dry cloth to remove dust and dirt. Do not use liquid cleaners.
- **Check Connections:** Regularly inspect all wiring connections to ensure they are tight and free from corrosion. Loose connections can lead to power loss or overheating.
- **Inspect for Damage:** Check the controller and cables for any signs of physical damage.
- **Ventilation:** Ensure the area around the controller is well-ventilated and not obstructed to allow for proper heat dissipation.

7. Troubleshooting

Problem	Possible Cause	Solution
Controller display is off / No power	Battery not connected or low voltage; Reverse polarity connection; Loose wiring.	Ensure battery is connected first and has sufficient voltage (min 9V for 12V system); Check battery polarity; Tighten all connections.
Battery not charging	Solar panel not connected or insufficient sunlight; Solar panel reverse polarity; Battery type mismatch; Faulty solar panel or cable.	Check solar panel connection and ensure adequate sunlight; Verify solar panel polarity; Confirm correct battery type is selected (refer to Section 5.2); Test solar panel voltage.
Cannot change battery type or settings	Incorrect button press sequence; Controller locked.	Ensure you are long-pressing the "BAT" button to enter selection mode, then short-pressing to confirm. If issues persist, disconnect and reconnect the battery to reset the controller.
Overcharge/Over-discharge protection active	Battery voltage reached protection threshold.	This is normal operation. The controller protects the battery. Charging will resume when voltage drops, or discharge will resume when voltage rises. Ensure correct battery type is set.

8. Specifications

The following table lists the technical specifications of the PowMr 15A MPPT Solar Charge Controller:

Figure 8.1: Detailed technical parameters of the solar charge controller.

Parameter	Value
No-load Loss	12V: 20mA, 24V: 25mA
Max Solar Input Voltage	12V: 30V, 24V: 60V
Rated Solar Charge Current	15A
Max Solar Input Power	12V: 180W, 24V: 360W
Temperature Compensation	-35°C ~ +75°C (-31°F ~ +167°F)
Operating Temperature	-20°C ~ +45°C (-4°F ~ +113°F)
IP Protection	IP32
Net Weight	237g

Parameter	Value
Operating Altitude	<3000m
Dimensions (excluding built-in wiring)	129x78x30mm

9. Warranty and Support

For warranty information and technical support, please refer to the product packaging or contact the manufacturer directly. Keep your purchase receipt as proof of purchase.

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