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PowMr POW-LVM2.4K-24V

PowMr 2400W Solar Inverter User Manual

Model: POW-LVM2.4K-24V
Brand: PowMr

1. Introduction

This manual provides essential information for the safe and efficient operation of your PowMr 2400Watt Solar Inverter. This pure sine wave inverter converts 24V DC to 110V/120V AC and integrates a 50A PWM charge controller, making it a versatile hybrid inverter solution for homes, RVs, and off-grid systems. It is compatible with 24V lead-acid batteries, including sealed, AGM, and Gel types.

Please read this manual thoroughly before installation and use, and keep it for future reference.

2. Safety Information

Always observe the following safety precautions to reduce the risk of electric shock, fire, or injury:

- Installation must be performed by qualified personnel.
- Ensure all wiring is correctly sized and properly insulated.
- Do not expose the inverter to rain, snow, spray, or any liquids.
- Do not disassemble the inverter. There are no user-serviceable parts inside.
- Ensure proper ventilation around the inverter to prevent overheating.
- Disconnect all power sources (PV, battery, AC utility) before performing any maintenance or wiring.
- Wear appropriate personal protective equipment (PPE) during installation and maintenance.
- Keep children away from the inverter and battery system.

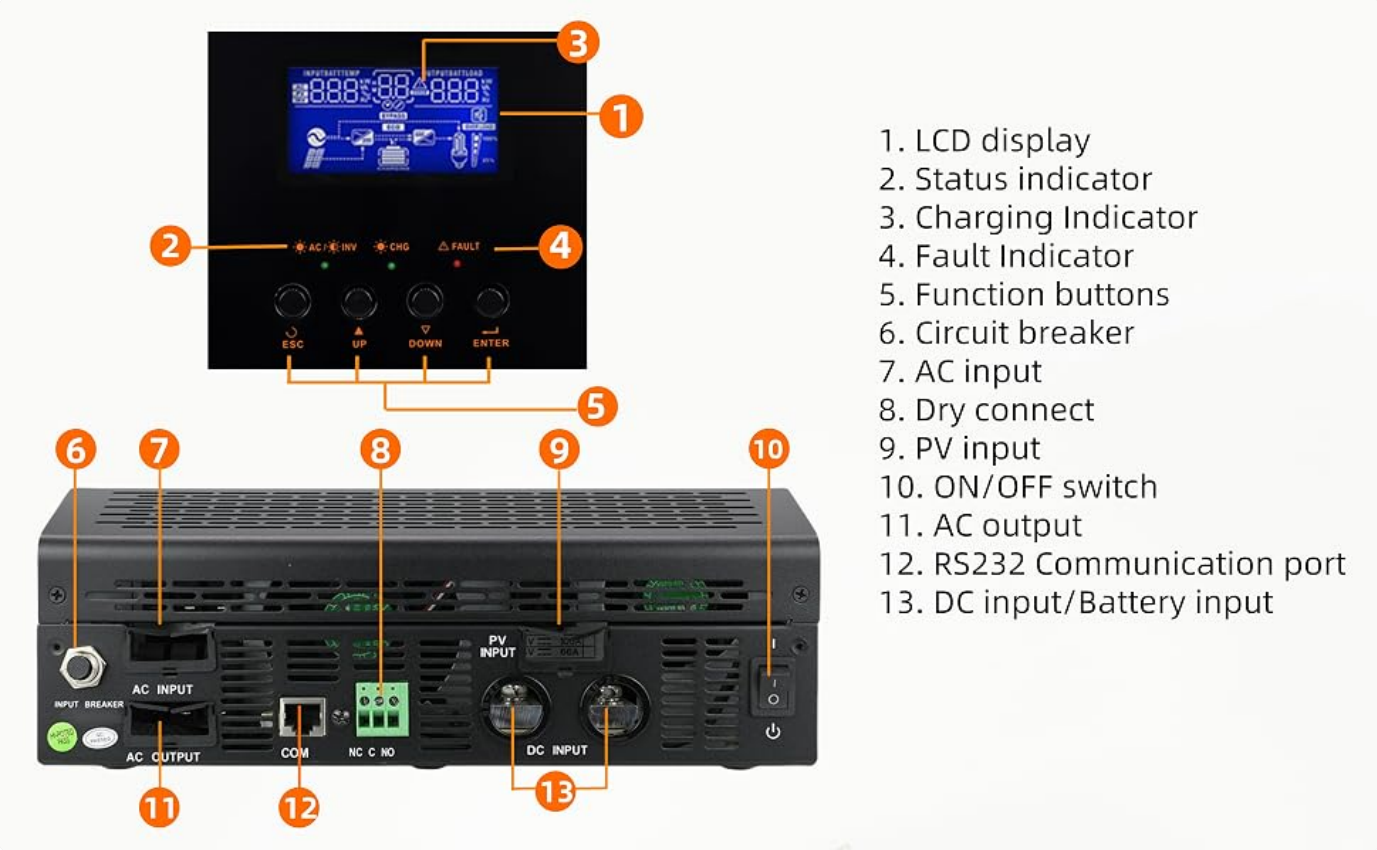


Figure 2.1: Multi-Protections of the PowMr Inverter

The inverter features comprehensive protection functions including short circuit protection, over-voltage and under-voltage protection, overload protection, and reverse polarity protection to ensure system safety.

3. Product Overview

The PowMr 2400W Solar Inverter is an all-in-one unit designed for efficient power conversion and management in off-grid and hybrid solar systems. It combines an inverter, solar charger, and battery charger into one compact unit.

3.1 Key Features

- 2400W Pure Sine Wave Output (110V/120V AC)
- Integrated 50A PWM Solar Charge Controller
- Advanced SPWM technology for high efficiency (up to 95%)
- Compatible with 24V Lead-Acid (sealed, AGM, Gel, Flooded) batteries
- Multiple charging and output modes for versatile application
- Comprehensive protection functions (short circuit, over/under voltage, overload, reverse polarity)

3.2 Components and Interface



Figure 3.1: Inverter Components and Interface

This image displays the front panel and rear connections of the PowMr inverter, highlighting key components such as the LCD display, status indicators, function buttons, and various input/output ports including AC input/output, PV input, and battery connections.

1. **LCD Display:** Shows system status and operating parameters.
2. **Status Indicator:** LED indicating operational status.
3. **Charging Indicator:** LED indicating battery charging status.
4. **Fault Indicator:** LED indicating system faults.
5. **Function Buttons:** ESC, UP, DOWN, ENTER for navigation and settings.
6. **Circuit Breaker:** Overcurrent protection for AC input.
7. **AC Input:** Connection for utility grid or generator.
8. **Dry Connect:** For external control or monitoring.
9. **PV Input:** Connection for solar panel array.
10. **ON/OFF Switch:** Main power switch for the inverter.
11. **AC Output:** Connection for household appliances.

12. **RS232 Communication Port:** For PC monitoring and configuration.
13. **DC Input/Battery Input:** Connection for battery bank.

4. Setup and Installation

Before installation, ensure the mounting surface is strong enough to support the inverter's weight and that there is adequate ventilation space around the unit. Refer to the specifications for dimensions and weight.



Figure 4.1: Inverter Dimensions and Key Specifications

This image provides a visual representation of the inverter's physical dimensions and highlights critical electrical specifications for installation planning.

4.1 Mounting the Inverter

- Choose a dry, cool, and well-ventilated area, away from direct sunlight and heat sources.
- Mount the inverter vertically on a sturdy wall or surface.
- Ensure at least 20 cm (8 inches) of clearance on all sides for proper airflow.

4.2 Wiring Connections

Follow the wiring sequence carefully to avoid damage to the unit or injury.

1. **Battery Connection:** Connect the 24V battery bank to the DC Input/Battery Input terminals. Ensure correct polarity (+ to + and - to -). The inverter is compatible with Flooded, AGM, Gel, and Sealed Lead-Acid batteries.
2. **PV Array Connection:** Connect the solar panel array to the PV Input terminals. Observe correct polarity and ensure the open circuit voltage does not exceed 80Vdc.
3. **AC Input Connection (Optional):** If using utility power or a generator, connect the AC source to the AC Input terminals.
4. **AC Output Connection:** Connect your AC loads (appliances) to the AC Output terminals.
5. **Grounding:** Connect the inverter's ground terminal to a reliable earth ground.



Figure 4.2: Multiple Battery Compatibility

The inverter supports various 24V lead-acid battery types, offering flexibility for different system configurations.

4.3 Initial Power-Up

1. Double-check all connections for tightness and correct polarity.
2. Turn on the battery breaker (if installed).
3. Turn on the PV array breaker (if installed).
4. Turn on the AC input breaker (if connected).
5. Finally, turn on the ON/OFF switch on the inverter.
6. Observe the LCD display for system status and any error messages.

5. Operating the Inverter

The inverter features an LCD display and function buttons for monitoring and configuring operational parameters.

5.1 LCD Display and Settings

The LCD provides real-time information on battery voltage, PV input, AC output, charging current, and fault codes. Use the ESC, UP, DOWN, and ENTER buttons to navigate through menus and adjust settings.

5.2 Charging Modes

The inverter offers four selectable charging modes:

- **Solar First:** Prioritizes solar power for charging batteries.
- **Utility First:** Prioritizes utility grid power for charging batteries.
- **Solar and Utility:** Uses both solar and utility power for charging.
- **Only Solar:** Charges batteries exclusively from solar power.

5.3 Output Modes

Users can choose from three output modes to prioritize power sources for connected loads:

- **PV Priority:** Prioritizes solar power for loads.
- **Utility Priority:** Prioritizes utility grid power for loads.
- **Inverter Priority (SBU First):** Prioritizes battery power (via inverter) for loads, then switches to utility if battery is low, and then to solar if available.



Figure 5.1: Charging and Output Modes

This image visually explains the different charging and output priority settings available on the inverter, allowing users to optimize power flow based on their specific needs.



Figure 5.2: Typical System Application

This diagram illustrates how the PowMr inverter integrates into a complete power system, drawing from solar, generator, and utility sources to power various home appliances.

6. Maintenance

Regular maintenance ensures the longevity and optimal performance of your PowMr inverter.

- **Cleaning:** Periodically clean the inverter's exterior with a dry cloth. Ensure ventilation openings are free from dust and debris.
- **Connection Check:** Annually inspect all wiring connections for tightness and signs of corrosion. Re-tighten if necessary.
- **Battery Inspection:** For lead-acid batteries, check electrolyte levels (if applicable) and terminal cleanliness regularly.
- **Environmental Check:** Ensure the installation environment remains within specified temperature and humidity ranges.

- **Firmware Updates:** Check the PowMr official website for any available firmware updates for improved performance or new features.

7. Troubleshooting

This section provides solutions for common issues you might encounter. For problems not listed here, contact customer support.

Problem	Possible Cause	Solution
Inverter not turning on	Battery voltage too low; ON/OFF switch off; Loose battery connection.	Check battery voltage and charge if necessary; Ensure ON/OFF switch is in the 'ON' position; Check battery cable connections.
No AC output	Overload; Over-temperature; Battery low; AC output breaker tripped.	Reduce load; Allow inverter to cool down; Charge battery; Reset AC output breaker.
Battery not charging from PV	PV voltage too low; PV polarity reversed; Faulty PV connection; Solar First mode not selected.	Check PV array voltage; Verify PV wiring polarity; Inspect PV connections; Select appropriate charging mode.
Error code on LCD	Specific system fault (e.g., over-voltage, short circuit).	Refer to the inverter's specific error code list in the full manual (if available) or contact support with the code.

8. Specifications

Detailed technical specifications for the PowMr 2400W Solar Inverter (Model: POW-LVM2.4K-24V).

Parameter	Value
Rated Output Power	2400 Watt / 3KVA
Nominal DC Input	24V
Rated Output Voltage	110Vac ±10% / 120Vac ±10%
Output Waveform	Pure Sine Wave
Max. PV Current	50A
Max. PV Array Open Circuit Voltage	80Vdc
Operating Voltage Range	30-32Vdc
Hybrid Charging Max Charger Current	80A (default 50A)
Battery Compatibility	24V Lead-Acid (Sealed, AGM, Gel, Flooded)
Product Dimensions	3.94 x 10.7 x 13.98 inches
Item Weight	16.07 pounds
Manufacturer	PowMr

Parameter	Value
Country of Origin	China

Figure 8.1: Comprehensive Specifications

This image provides a visual summary of the inverter's electrical and battery specifications.

9. Warranty and Support

For warranty information, please refer to the warranty card included with your product or visit the official PowMr website. Keep your purchase receipt as proof of purchase.

For technical support, troubleshooting assistance, or spare parts, please contact PowMr customer service through their official channels. Provide your product model number (POW-LVM2.4K-24V) and a detailed description of the issue for faster service.

You can find more information and support resources on thePowMr Store on Amazon.

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