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PowMr Solar Inverter 5000W

PowMr Solar Inverter 5000W User Manual

Model: Solar Inverter 5000W | Brand: PowMr

1. Introduction

This manual provides essential information for the safe and efficient operation of your PowMr Solar Inverter 5000W. Please read this manual thoroughly before installation and use, and retain it for future reference. This inverter is designed for off-grid solar power systems, converting 48V DC battery power into 120VAC pure sine wave electricity, and includes an integrated MPPT solar charge controller.

Key Features:

- 5000W Pure Sine Wave Inverter with 80A MPPT Controller.
- Compatible with 48V Lead-Acid and Lithium batteries.
- Supports up to 5500W, 22A, 500V solar power input.
- AC input voltage range: 90-140Vac.
- Advanced MPPT technology for 99.9% charging efficiency.
- Multiple charging and output modes for flexible power management.
- LCD screen and LED indicators for real-time system monitoring.
- Intelligent variable speed fan for efficient heat dissipation.



Figure 1: PowMr Solar Inverter 5000W, front view. This image displays the main unit of the solar inverter charger, highlighting its compact design and the central LCD display.

2. Safety Instructions

WARNING: Failure to follow these instructions may result in serious injury or death. Read all safety information carefully before proceeding.

- Installation must be performed by qualified personnel.
- Ensure all wiring complies with local and national electrical codes.
- Always disconnect all power sources (solar, battery, AC utility) before servicing or performing maintenance.
- Do not disassemble the inverter. There are no user-serviceable parts inside.
- Avoid installing the inverter in direct sunlight, high humidity, or dusty environments.
- Ensure proper ventilation around the inverter to prevent overheating.
- Connect the protective earth (PE) conductor ground first.
- Use appropriate circuit breakers and fuses for all connections as specified in the wiring diagram.

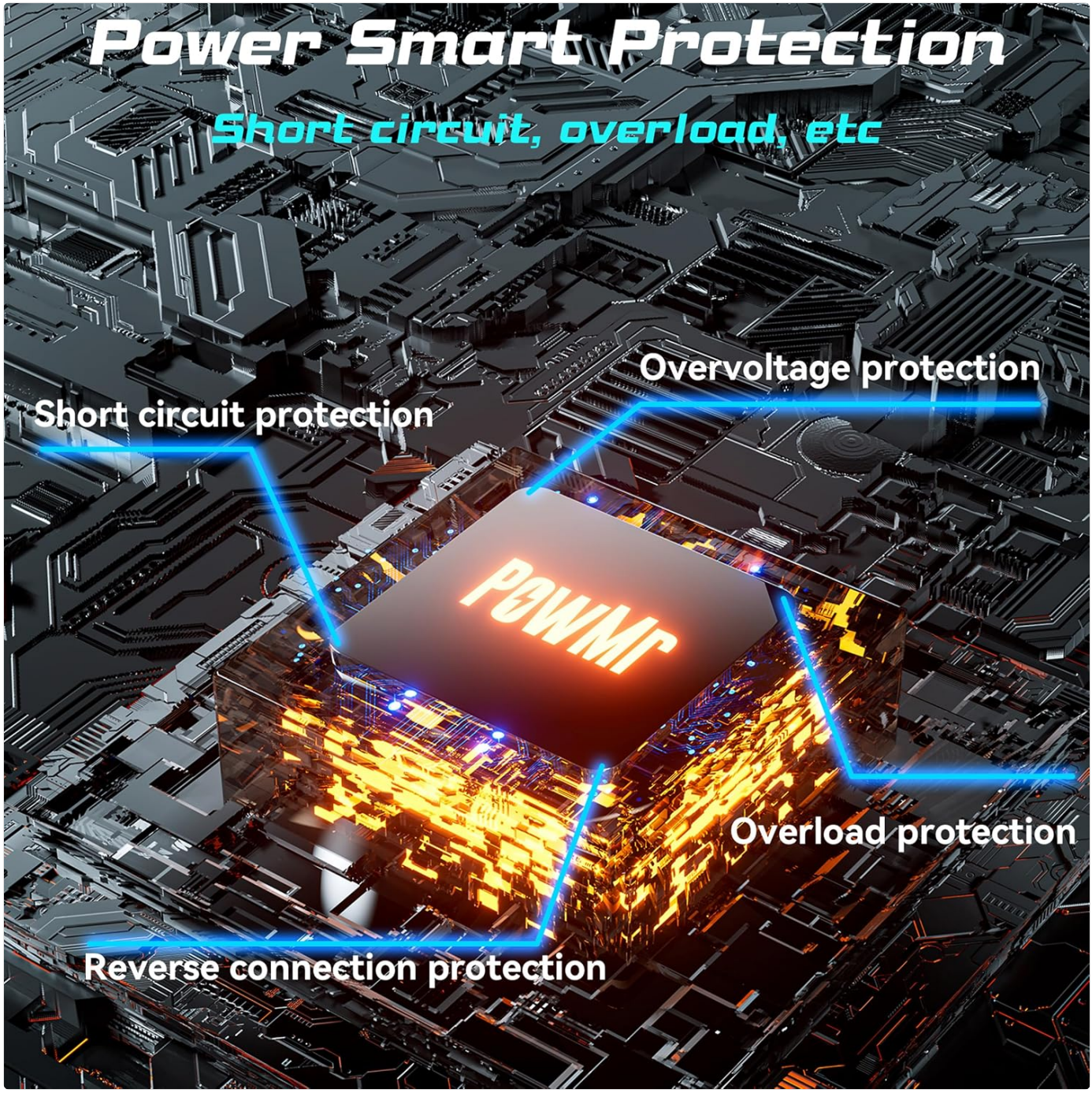


Figure 2: Smart Protection System. This diagram illustrates the various internal protection mechanisms of the PowMr inverter, including short circuit, overvoltage, overload, and reverse connection protection, ensuring safe operation.

3. Product Overview

3.1 Components and Interface

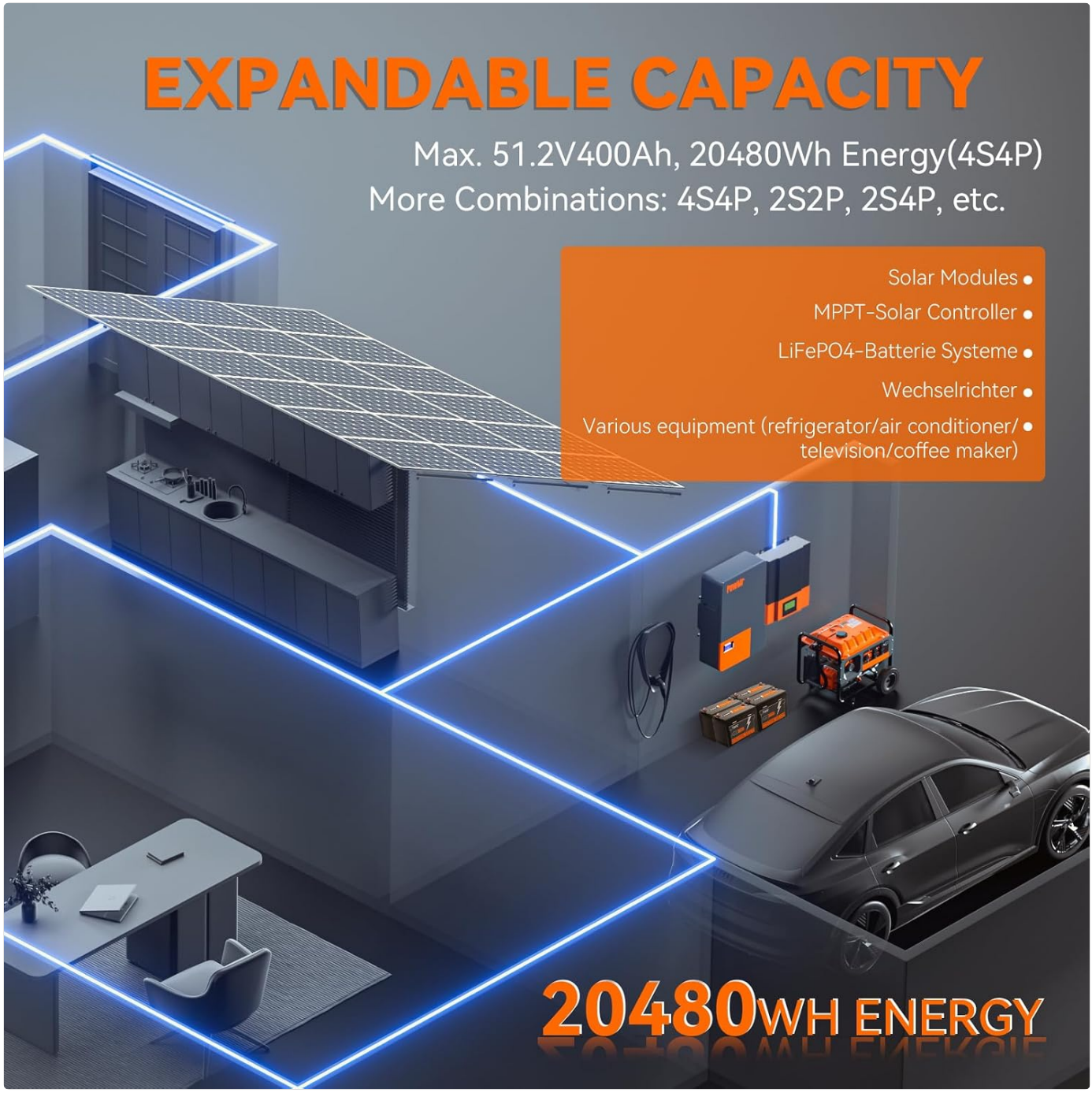


Figure 3: Inverter Components. This image provides a detailed view of the inverter's front panel and bottom connections, with numbered labels indicating the LCD buttons, screen, LED indicators, AC input/output terminals, battery terminals, PV input, cooling fans, and communication ports.

1. **LCD Buttons:** Used for navigation and setting adjustments.
2. **Mounting Holes:** For secure installation of the unit.
3. **LCD Screen:** Displays real-time system data and operating status.
4. **LED Indicators:** Provide quick visual status updates (e.g., AC input, charge, fault).
5. **AC Input Breaker:** Protects the AC input circuit.
6. **Dry Contact Port:** For external control or monitoring.
7. **RS485 Communication Port:** For data communication with external devices.
8. **USB Debugging Port (Internal Use):** For technical diagnostics.
9. **AC Input Terminal:** Connects to utility grid or generator.
10. **AC Output Terminal:** Connects to household loads.

11. **Cooling Fans:** Intelligent variable speed fans for thermal management.
12. **PV Input Terminal:** Connects to solar panel array.
13. **Main On/Off Power Switch:** Controls the main power to the inverter.
14. **Battery Input Terminal:** Connects to the 48V battery bank.
15. **Grounding Lug:** For connecting the protective earth conductor.

3.2 LCD Display and Indicators

The LCD screen provides comprehensive information about the inverter's operation, including input/output voltage, battery status, load percentage, and charging status. The three LED indicators (AC/INV, CHARGE, FAULT) offer quick status checks.



Figure 4: LCD HD Display Screen. This image shows the high-definition LCD screen of the inverter, displaying real-time monitoring data of the photovoltaic system, including input/output parameters and charging status.

4. Setup and Installation

Proper installation is crucial for the safe and efficient operation of your inverter. Refer to the wiring diagram and follow all safety precautions.

4.1 Mounting the Inverter

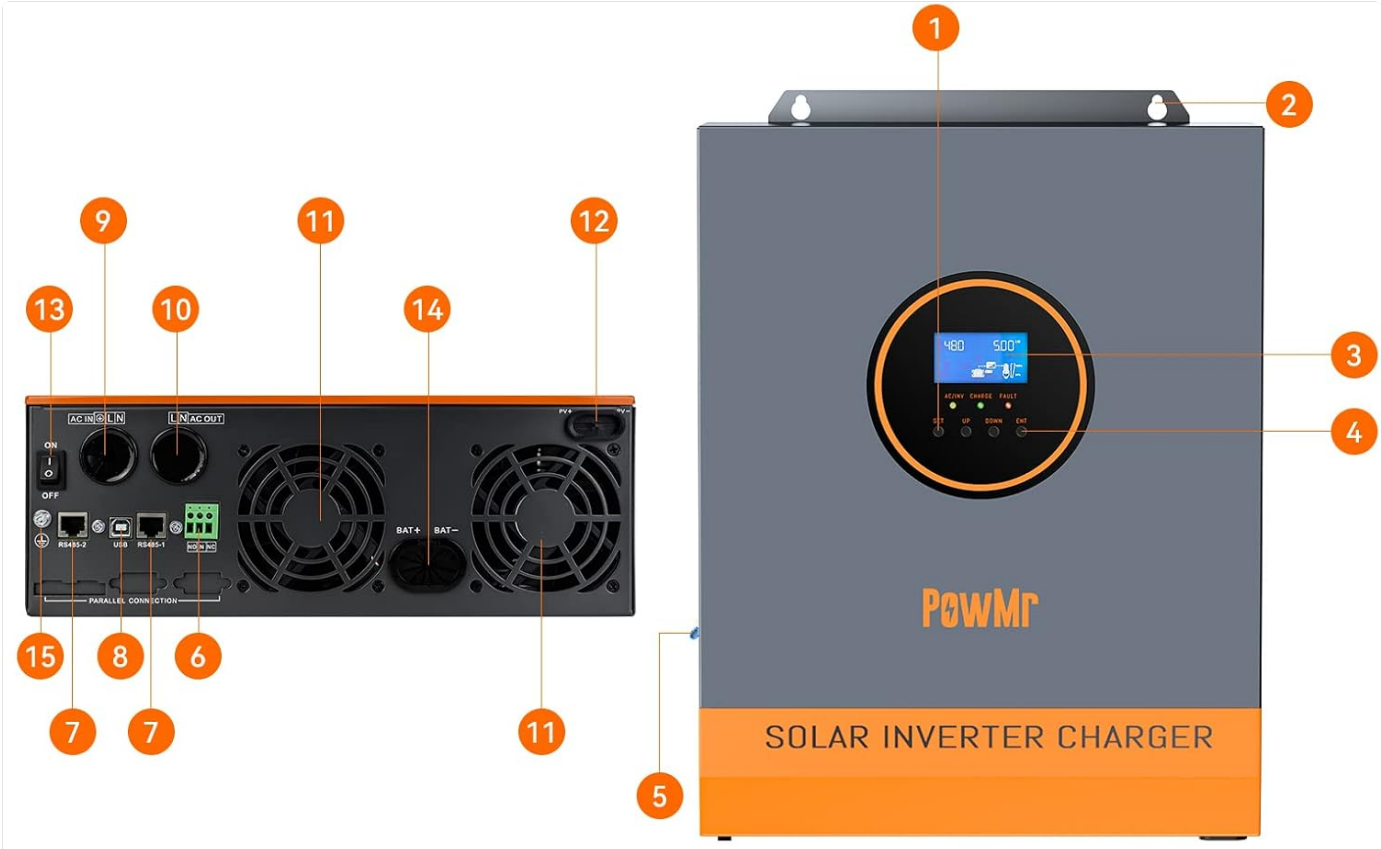
- Choose a dry, well-ventilated area, away from flammable materials.
- Ensure sufficient clearance around the inverter for proper airflow, especially around the cooling fans.
- Mount the inverter vertically using the provided mounting holes.



Figure 5: Intelligent Variable Speed Fan. This image highlights the cooling fans located on the side of the inverter, which adjust their speed based on ambient temperature and operational load to maintain optimal performance and extend system life.

4.2 Wiring Diagram and Connections

Follow the wiring diagram carefully. All connections must be secure and correctly polarized.



1	LCD Buttons	6	Dry Contact Port	11	Cooling Fans
2	Mounting Holes	7	RS485 Communication Port	12	PV Input Terminal
3	LCD Screen	8	USB Debugging Port (Internal Use)	13	Main On/Off Power Switch
4	LED Indicators	9	AC Input Terminal	14	Battery Input Terminal
5	AC Input Breaker	10	AC Output Terminal	15	Grounding Lug

Figure 6: Wiring Diagram. This detailed diagram illustrates the correct connections for the solar panels, battery bank, AC input (utility/generator), and AC output (loads). It also provides key technical specifications for each connection point, including wire gauges and breaker ratings.

4.2.1 Grounding Connection

Connect the grounding lug (15) to a reliable earth ground using appropriate gauge wire. This is a critical safety step.

4.2.2 Battery Connection

- Connect the 48V battery bank to the Battery Input Terminal (14).
- Ensure correct polarity: positive to positive, negative to negative.
- Recommended battery capacity: 200AH. Minimum battery voltage range: 40-60Vdc.
- Use 2AWG wire for battery connections.

4.2.3 Solar Panel (PV) Connection

- Connect the solar panel array to the PV Input Terminal (12).
- Max. PV input power: 5500W. Max. PV input current: 22A.
- Total Open Circuit Voltage (VOC) must be ≤ 500V. Start-up voltage must be greater than 150V.
- Use 10AWG wire for PV connections.
- Ensure all panels are connected in series as indicated in the diagram for optimal performance.

4.2.4 AC Input Connection (Utility/Generator)

- Connect the utility grid or generator to the AC Input Terminal (9).
- AC Input Voltage: 120Vac ±5%. Frequency: 60Hz.
- Max AC Bypass Current: 63A. Max AC Charge Current: 40A.
- Use 7AWG wire for AC input connections.

4.2.5 AC Output Connection (Loads)

- Connect your household loads to the AC Output Terminal (10).
- AC Output Power: ≤ 5000W. Rate Voltage: 120Vac ±5%. Rate Current: 41.7A.

5. Operation

5.1 Powering On/Off

1. Ensure all wiring is correct and secure.
2. Turn on the battery breaker first.
3. Turn on the PV array breaker (if applicable).
4. Turn on the AC input breaker (if applicable).
5. Finally, turn on the Main On/Off Power Switch (13) on the inverter.
6. To power off, reverse the sequence: Inverter switch, AC input, PV array, then battery.

5.2 LCD Display Navigation

Use the LCD Buttons (1) to navigate through the display menus and adjust settings. The manual provides detailed instructions for each menu item, including input/output voltage range, battery charging current, battery type, and charging/discharging priority.

5.3 Charging Modes

The inverter supports four charging modes:

- **Only Solar:** Charges batteries exclusively from solar panels.
- **Mains Priority:** Charges batteries primarily from the utility grid/generator, with solar as a backup.
- **Solar Priority:** Charges batteries primarily from solar panels, with the utility grid/generator as a backup.
- **Mains & Solar Hybrid Charging:** Utilizes both utility/generator and solar power to charge batteries simultaneously.

5.4 Output Load Working Modes

The inverter offers three output load working modes:

- **PV Priority:** Loads are powered primarily by solar, then battery, then utility.
- **Utility Priority:** Loads are powered primarily by utility, then battery, then solar.
- **Inverter Priority:** Loads are powered primarily by the inverter (from battery/solar), with utility as a backup.

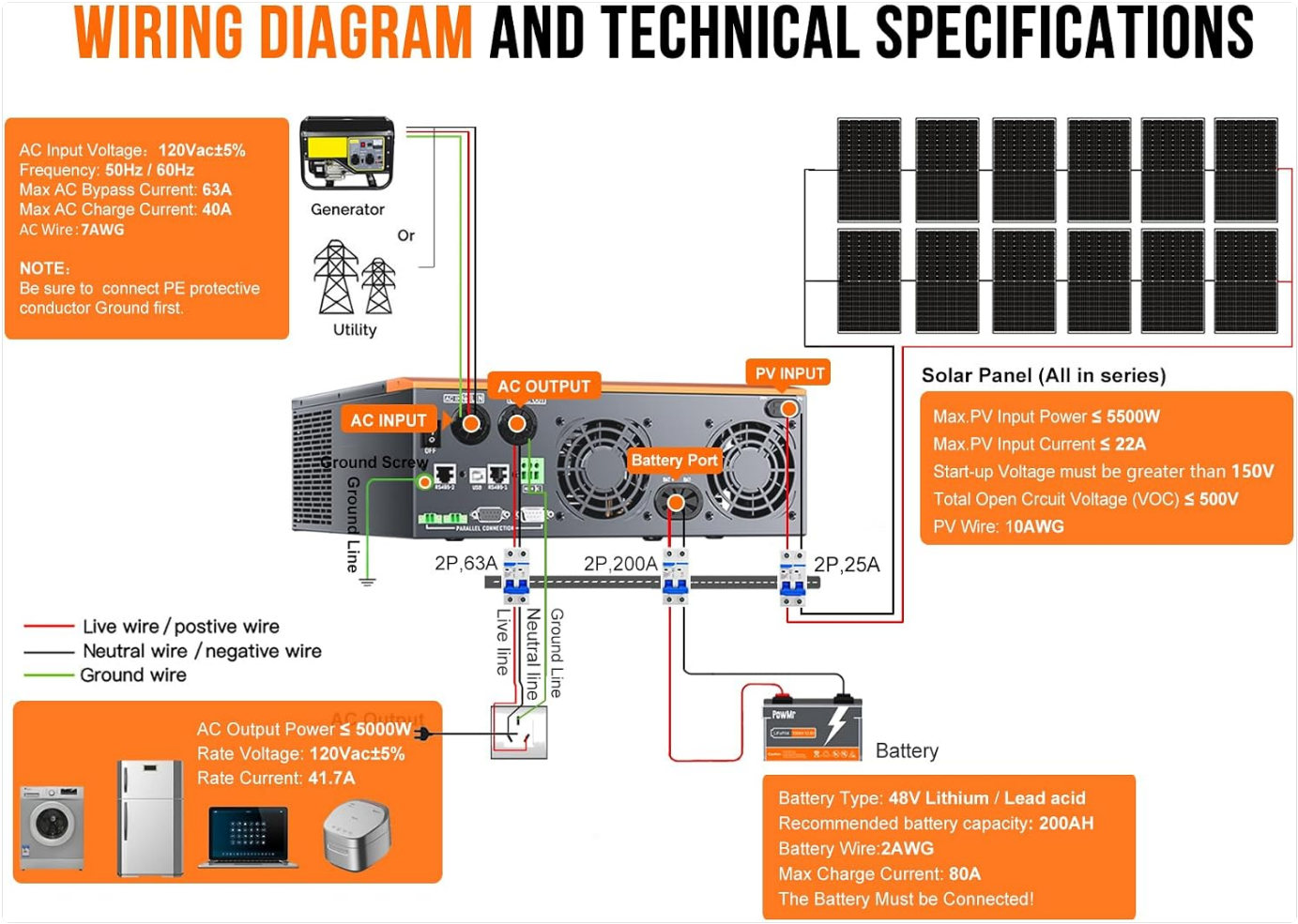


Figure 7: Charging and Output Modes. This diagram visually explains the four safe input charging modes (solar charging, utility charge, solar priority, solar+utility charging) and three output load working modes (PV priority, utility priority, inverter priority) available on the PowMr inverter.

6. Maintenance

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

- **Cleaning:** Periodically clean the exterior of the inverter with a dry cloth. Ensure ventilation openings and cooling fans are free from dust and debris.
- **Connections:** Annually check all electrical connections for tightness and signs of corrosion. Loose connections can cause overheating and damage.
- **Environment:** Ensure the installation environment remains within specified temperature and humidity ranges.
- **Battery Health:** Monitor battery voltage and health according to battery manufacturer guidelines.

- **Firmware:** Check the manufacturer's website for any available firmware updates. (As noted in customer reviews, firmware updates can resolve operational issues).

7. Troubleshooting

This section provides solutions to common issues. For problems not listed here, contact customer support.

Problem	Possible Cause	Solution
Inverter not powering on.	No battery connection or low battery voltage. Main power switch off.	Check battery connections and voltage. Ensure batteries are charged. Turn on the main power switch.
No AC output.	Overload. AC output breaker tripped. Inverter in fault mode.	Reduce load. Reset AC output breaker. Check LCD for fault codes and refer to the manual for specific fault resolutions.
Batteries not charging from solar.	PV input voltage too low/high. PV connections incorrect. Solar priority not selected.	Verify PV array voltage is within specifications (150V-500V). Check PV wiring. Select "Solar Priority" or "Mains & Solar Hybrid" charging mode.
Inverter shuts down under load.	Overload protection activated. Low battery voltage.	Reduce the connected load. Ensure batteries are adequately charged and healthy.
Inverter displays an error code.	Internal fault or specific operational issue.	Refer to the detailed error code list in the full product manual (if available) or contact customer support with the specific code.

8. Specifications

Feature	Specification
Model Name	Solar Inverter 5000W
Rated Power	5000W
Battery Voltage	48VDC
Output Voltage	120VAC ±5%
Output Frequency	60Hz
Waveform	Pure Sine Wave

Feature	Specification
Max. PV Array Power	5500W
Max. PV Array Open Circuit Voltage	500VDC
MPPT Range @ Operating Voltage	150VDC - 450VDC
Max. Solar Charge Current	80A
Max. AC Charge Current	40A
Max. Hybrid Charging Current	80A
AC Input Voltage Range	90-140VAC
Dimensions (L x W x H)	20 x 16.2 x 8 inches
Weight	28.4 pounds
Recommended Uses	Off-Grid, RV, Truck, Home

9. Warranty and Support

For warranty information, technical support, or service inquiries, please contact PowMr customer service. Details regarding warranty coverage and duration are typically provided with your purchase documentation or available on the official PowMr website.

When contacting support, please have your product model name ("Solar Inverter 5000W") and ASIN (B0C5RBNBHM) ready.

You can visit the official PowMr store for more information:PowMr Amazon Store

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