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POWLAND SMR-4KW

POWLAND 4000W 24V Hybrid Inverter User Manual

Model: SMR-4KW

Brand: POWLAND

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the POWLAND 4000W 24V Pure Sine Wave Off-Grid Hybrid Inverter, model SMR-4KW. This device integrates a 4000W power inverter, a 120A MPPT solar charge controller, and a battery charger into one compact unit, designed for off-grid solar power systems.

2. Safety Instructions

Please read all instructions and warnings carefully before installation and operation. Failure to follow these instructions may result in electric shock, fire, or severe injury.

- Ensure all wiring is performed by qualified personnel.
- Do not disassemble the inverter. There are no user-serviceable parts inside.
- Install the inverter in a well-ventilated area, away from flammable materials.
- Disconnect all power sources (AC, DC, and PV) before performing any maintenance or wiring.
- Use appropriate overcurrent protection devices for all circuits.
- This inverter is designed for indoor use only.

3. Product Overview

The POWLAND SMR-4KW hybrid inverter is a versatile solution for managing solar power, utility power, and battery power.

3.1 Key Features

- Pure sine wave output for sensitive electronics.
- Integrated 120A MPPT solar charge controller with 99.9% efficiency.
- Compatible with various battery types: AGM, Gel, Lead-acid, Lithium-ion, LiFePO4.
- Supports battery-less operation.
- Four charging modes: Hybrid Charge, Utility Priority, Solar Priority, Solar Only.
- Four output modes: Utility Priority, Solar & Utility Hybrid, Solar Priority, Inverter Priority.

- Scheduled charging and discharging functions for energy optimization.
- LCD display and LED indicators for real-time system data.
- Intelligent variable speed fan for efficient heat dissipation.
- Comprehensive protection suite: FV input current/power limiting, FV input overvoltage, night reverse current, AC input overvoltage/undervoltage.

3.2 Product Components



Front view of the POWLAND 4000W 24V Hybrid Inverter, showing the main unit with its display and control buttons.

The inverter features a robust casing, an intuitive LCD display, and various connection ports.



Detailed view of the LCD HD Display, showing real-time data such as input/output voltage, frequency, battery status, and power flow diagrams. The display allows users to view system parameters and make settings adjustments.

The high-definition LCD provides real-time system data and allows for parameter settings.

4. Setup and Installation

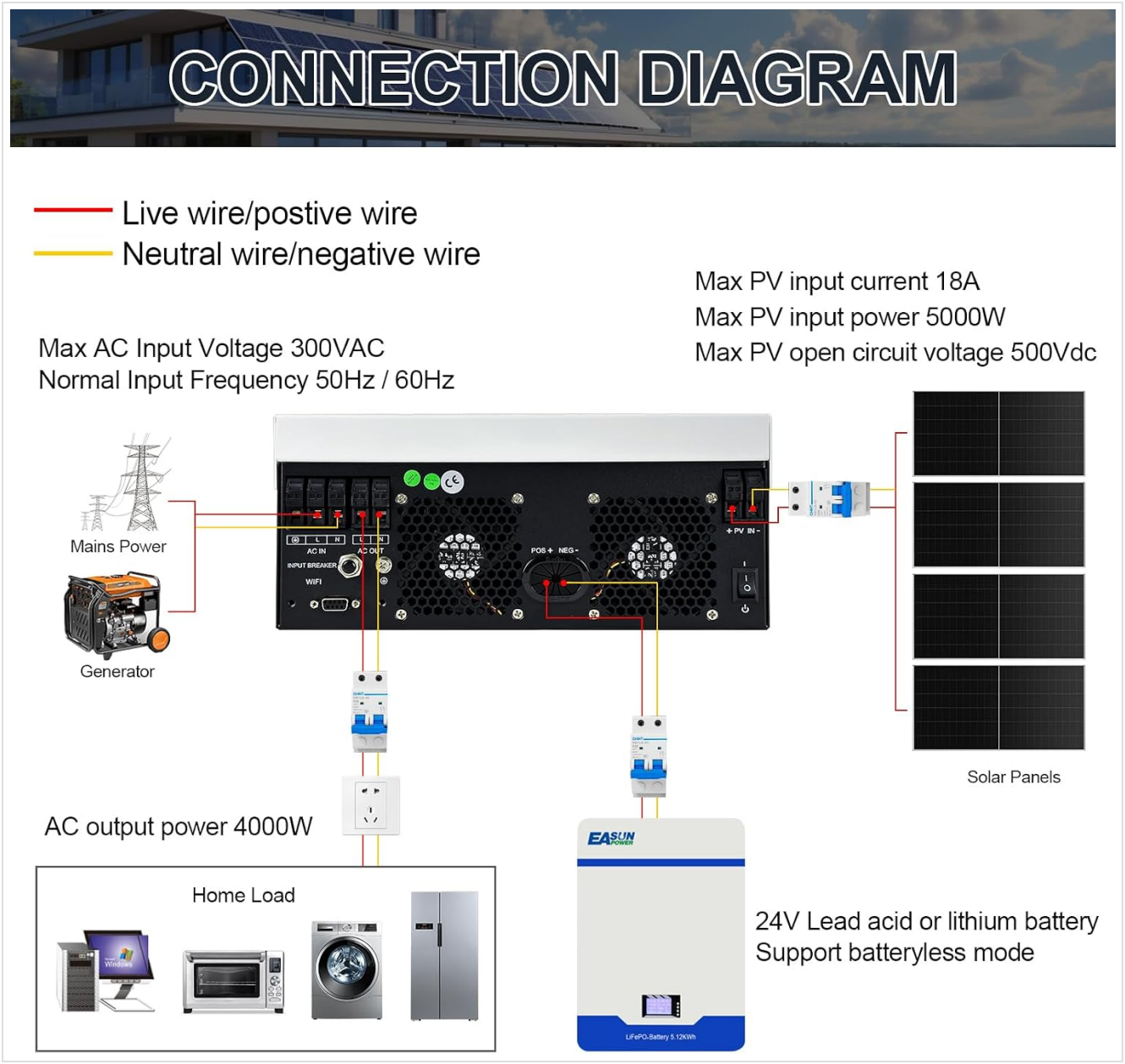
Proper installation is critical for the safe and efficient operation of your hybrid inverter.

4.1 Mounting the Inverter

- Choose a suitable location: vertical wall mount, well-ventilated, dry, and protected from direct sunlight and moisture.
- Ensure sufficient clearance around the inverter for proper airflow.
- Use appropriate mounting hardware to secure the inverter firmly to the wall.

4.2 Wiring Connections

All wiring must comply with local electrical codes and regulations.



A comprehensive connection diagram illustrating how to connect the mains power, generator, solar panels, battery (24V lead-acid or lithium), and home loads to the POWLAND hybrid inverter. It shows the live, neutral, and ground wire connections, input breakers, and output power flow.

1. **Battery Connection:** Connect the 24V battery bank (lead-acid or lithium) to the inverter's battery terminals. Ensure correct polarity. The inverter supports battery-less mode, but a battery is recommended for stable operation and energy storage.
2. **AC Input Connection:** Connect the utility grid or generator to the AC input terminals. The inverter supports 120V/240V AC input.
3. **PV Input Connection:** Connect your solar panel array to the PV input terminals. Ensure the PV array open circuit voltage does not exceed 500VDC and the maximum PV input power is 5000W.
4. **AC Output Connection:** Connect your household loads (e.g., refrigerator, lights, TV) to the AC output terminals. The inverter provides 4000W AC output.
5. **Grounding:** Ensure the inverter is properly grounded to prevent electrical hazards.

5. Operating the Inverter

The inverter offers various modes to optimize energy usage based on your preferences and available power sources.

5.1 Powering On/Off

- To power on: Ensure all connections are secure, then switch on the battery breaker, followed by the AC input breaker (if applicable), and finally the PV input breaker (if applicable). Press the power button on the inverter.
- To power off: Reverse the power-on sequence.

5.2 Charging Modes

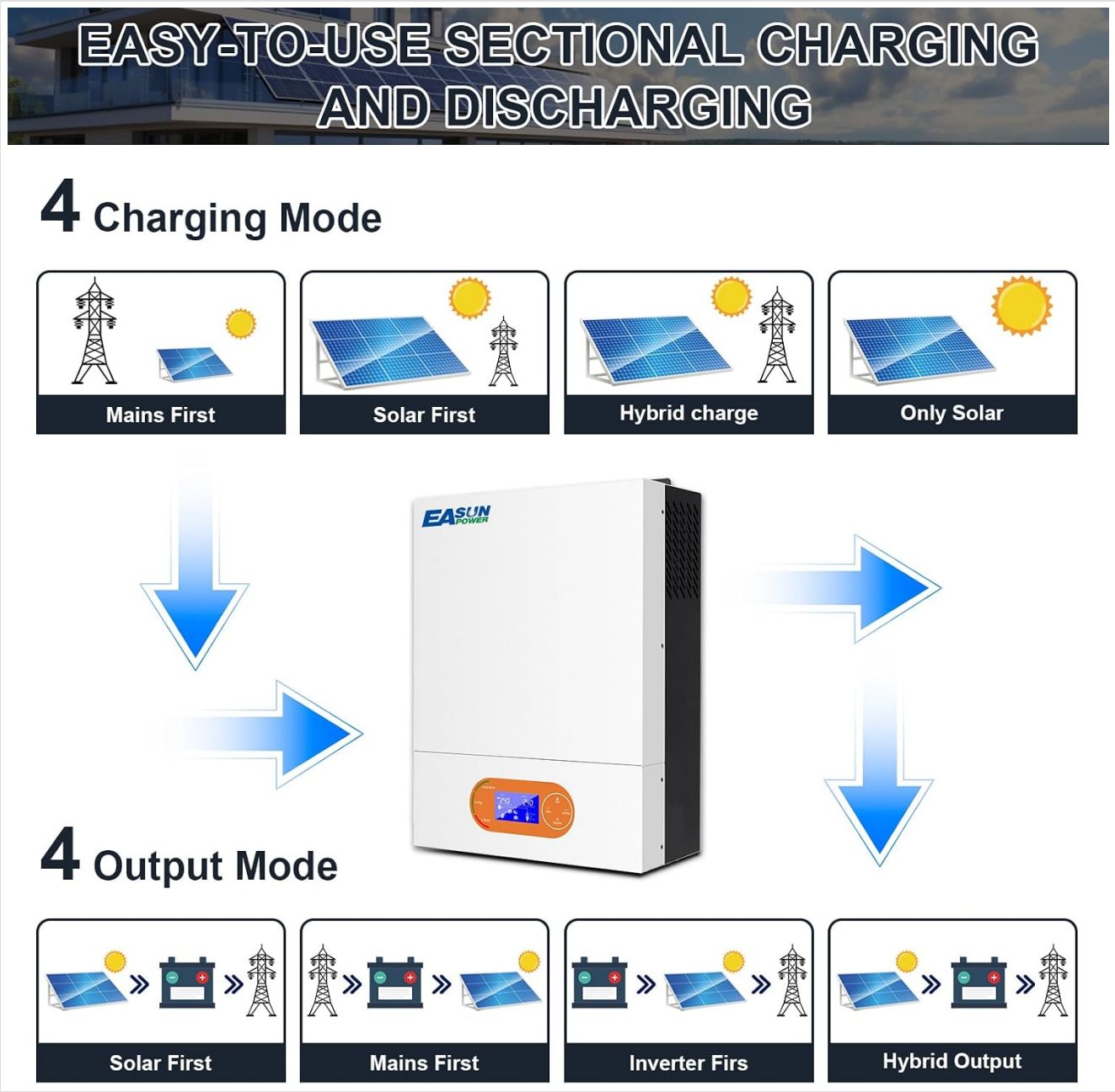


Diagram illustrating the four charging modes (Mains First, Solar First, Hybrid Charge, Only Solar) and four output modes (Solar First, Mains First, Inverter First, Hybrid Output) available on the POWLAND hybrid inverter, showing the flow of power from different sources.

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

5.3 Output Modes

- **Utility Priority:** Loads are powered by utility grid first.
- **Solar & Utility Hybrid:** Loads are powered by solar and utility grid.
- **Solar Priority:** Loads are powered by solar first.

- **Inverter Priority:** Loads are powered by the inverter (from battery/solar) first.

5.4 Battery Compatibility



An image showing the POWLAND hybrid inverter connected to a battery, with icons representing various compatible battery types: SLD, FLD, AGM, GEL, LI (Lithium), and SUER. Text indicates support for battery-less mode and activation functions for dormant lithium batteries via utility or photovoltaic access.

The inverter is compatible with a wide range of 24V battery systems, including:

- AGM
- Gel
- Lead-acid
- Lithium-ion
- LiFePO4

It also features a dual activation function to reactivate inactive lithium-ion batteries using grid or PV power.

5.5 Appliance Compatibility



An image showcasing the POWLAND hybrid inverter's compatibility with various household appliances, including a fan, oven, and blender. The text highlights its 4000W AC output and pure sine wave output, making it suitable for 95% of household appliances.

With its 4000W pure sine wave AC output, the inverter is compatible with a wide range of household and office appliances, including refrigerators, lights, televisions, and other AC loads.

6. Maintenance

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

- Keep the inverter clean and free from dust.
- Ensure ventilation openings are not blocked.
- Periodically check all wiring connections for tightness and signs of corrosion.
- Monitor the LCD display for any error codes or warnings.
- Do not attempt to repair the inverter yourself. Contact qualified service personnel for assistance.

7. Troubleshooting

This section provides solutions to common issues you might encounter.

Common Troubleshooting Guide

Problem	Possible Cause	Solution
Inverter not turning on	No battery connection, low battery voltage, power button not pressed.	Check battery connections, ensure battery voltage is within operating range, press and hold power button.
No AC output	Overload, short circuit, high temperature, battery low.	Reduce load, check for short circuits, allow inverter to cool down, charge battery.
Solar charging not working	PV input voltage too low/high, incorrect PV connection, cloudy weather.	Check PV array voltage, verify PV wiring, wait for better solar conditions.
Error Code on Display	Specific system fault.	Refer to the detailed error code list in the full manual (if available) or contact technical support with the error code.

For more complex issues or error codes not listed, please contact POWLAND customer support.

8. Specifications

Technical specifications for the POWLAND SMR-4KW Hybrid Inverter.

Brand: POWLAND

Model Number: SMR-4KW

Power: 4000 Watts

Voltage: 240 Volts (AC Output)

Battery Capacity (Recommended): 100 Ampere-hours (minimum for optimal performance)

Weight: 9 Kilograms

MPPT Solar Charger: 120 Amps

Max PV Input Power: 5000 Watts

Max PV Array Open Circuit Voltage: 500 VDC

AC Input/Output: 120V/240V (depending on model/region)

Output Waveform: Pure Sine Wave

Cooling: Intelligent Variable Speed Fan

Communication: WiFi/BMS COMM

9. Warranty and Support

For warranty information and technical support, please refer to the official POWLAND website or contact your authorized dealer. Keep your purchase receipt as proof of purchase.
POWLAND is committed to providing reliable products and customer satisfaction.

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