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POWLAND ISolar-SMG-II-3.2KW-24V-Wifi

POWLAND 3200 W Hybrid Inverter 24 V User Manual

Model: ISolar-SMG-II-3.2KW-24V-Wifi
Brand: POWLAND

1. Introduction

This manual provides essential information for the safe and efficient operation of your POWLAND 3200 W Hybrid Inverter 24 V. Please read this manual thoroughly before installation and use, and retain it for future reference. This inverter is designed to convert DC power from batteries and solar panels into AC power for various loads, offering a reliable power solution for off-grid applications.

2. Safety Instructions

WARNING: Failure to follow these instructions may result in serious injury or death, and damage to the inverter or other equipment.

- Installation must be performed by qualified personnel in accordance with all local and national electrical codes.
- Ensure the inverter is disconnected from all power sources (PV, battery, AC input) before performing any maintenance or wiring.
- Do not attempt to disassemble or repair the inverter. There are no user-serviceable parts inside.
- Install the inverter in a well-ventilated area, away from flammable materials, moisture, and direct sunlight.
- Ensure proper grounding of the inverter.
- Use appropriate cables and circuit breakers as recommended in the specifications.
- A 24V battery system must be connected for the inverter to operate.

3. Product Overview

3.1 Key Features

- 3.2 kW rated power output, 230 V AC output.
- Off-grid pure sine wave inverter.
- Built-in 60A MPPT charger.
- Maximum PV open circuit voltage: 500 VDC.
- PV operating voltage range: 30-500 VDC.
- Maximum PV input power: 4000 W.
- Maximum PV input current: 15 A.
- Compatible with 24 V lead-acid (sealed, AGM, gel, flooded) and lithium batteries.
- Includes WiFi module for remote monitoring via app.
- Programmable LCD display for configurable settings.

3.2 Product Components and Dimensions

The POWLAND 3200 W Hybrid Inverter features a robust design with an integrated LCD display for monitoring and configuration. Key connections include PV input, battery terminals, AC input, and AC output.



Figure 1: Front view of the POWLAND 3200 W Hybrid Inverter, showing the LCD display and control buttons.



Figure 2: Detailed view of the inverter's side and bottom, illustrating the RS232 (WiFi Module) port, Power ON/OFF switch, dust-proof grid, grounding terminal, AC input, AC output, battery terminals, and PV input.

4. Setup and Installation

4.1 Site Selection

Choose a mounting location that is:

- Indoors, protected from direct sunlight, rain, and dust.
- Well-ventilated to ensure adequate airflow for cooling.
- Accessible for wiring and maintenance.
- Close to the battery bank to minimize cable length.

4.2 Wiring Connections

All wiring must be performed with the inverter completely powered off and disconnected from all power sources.

1. **Battery Connection:** Connect the 24V battery bank to the inverter's battery terminals. Ensure correct polarity (positive to positive, negative to negative). Recommended cable: 2AWG, with a 100A switch. The inverter requires a 24V battery to function.
2. **PV Input Connection:** Connect the solar panel array to the PV input terminals. Observe correct polarity. Ensure the PV open circuit voltage and current are within the inverter's limits (Max. PV open circuit voltage 500 VDC, PV operating voltage range 30-500 VDC, Max. PV input current 15 A). Recommended cable: 12AWG, with a 15A switch.
3. **AC Input/Output Connection:** Connect the utility grid (if applicable) to the AC input and your loads to the AC output. Recommended cable: 12AWG/4mm², with a 40A switch.
4. **Grounding:** Connect the inverter's grounding terminal to a reliable earth ground.

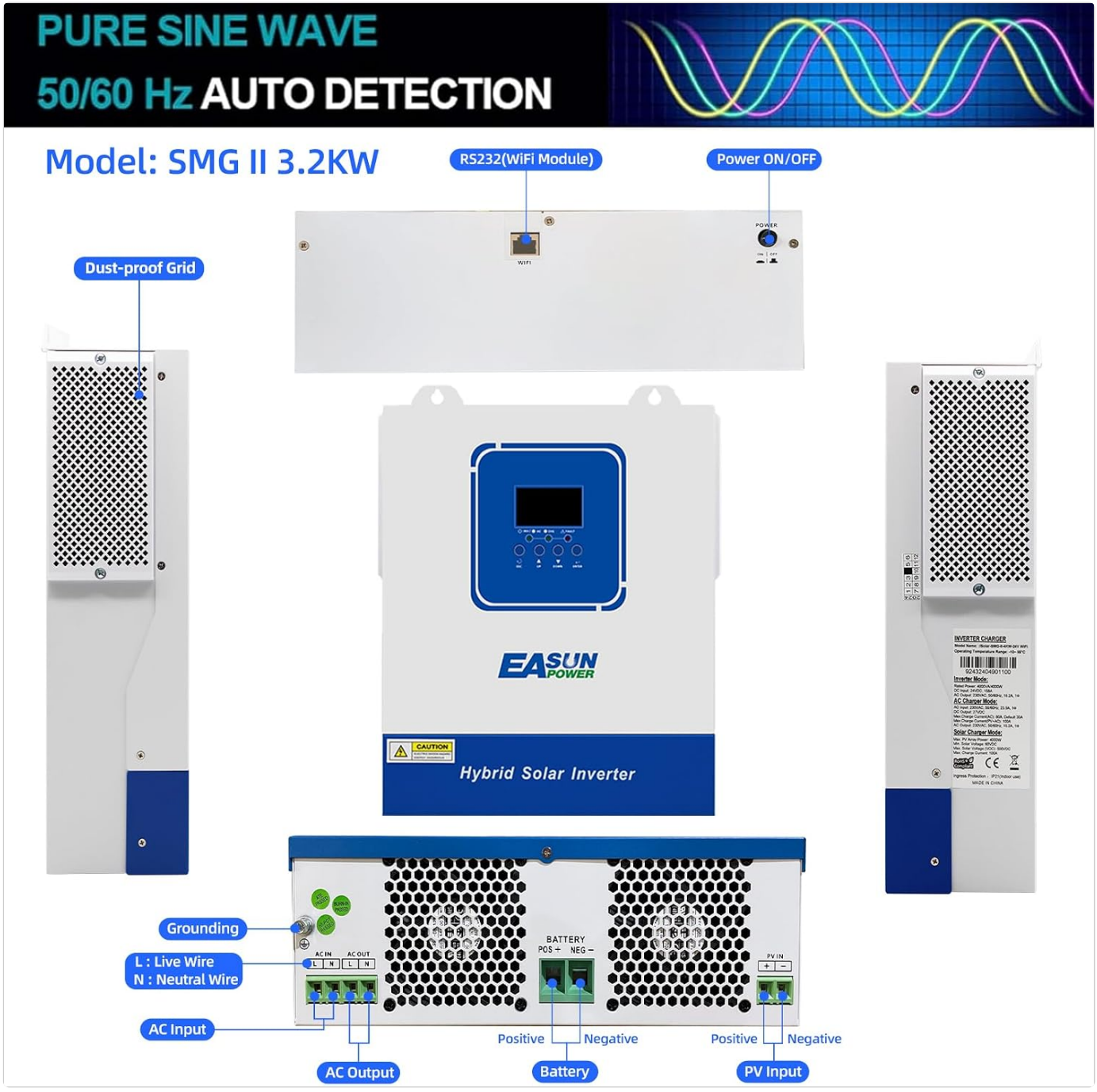

Figure 3: System connection diagram, illustrating solar panels, generator/utility grid, hybrid inverter, 24V battery, and home appliances.

4.3 WiFi Module Installation

The included WiFi module allows for remote monitoring. Connect the WiFi module to the RS232 port on the inverter. Follow the instructions provided with the WiFi module for network configuration and app setup (SmartESS app).



Figure 4: Illustration of the WiFi module, Dessmonitor software, and SmartESS app for real-time data monitoring.

5. Operating Instructions

5.1 Initial Power-Up

1. After all connections are secure, switch on the battery breaker.
2. Switch on the PV breaker.
3. Switch on the AC input breaker (if connected to utility).
4. Finally, switch on the inverter's power button. The LCD display will illuminate.

5.2 LCD Display and Settings

The programmable LCD display allows configuration of various parameters. Use the ESC, UP, DOWN, and ENTER buttons to navigate and adjust settings.



Figure 5: Inverter display highlighting key operational parameters such as AC output, PV input voltage, Max. PV input current, MPPT charging current, and compatible battery types.

5.3 Charging Modes

The inverter supports 4 charging modes, configurable via the LCD settings:

- **Solar (OSO):** Charges battery only from solar power.
- **Utility Priority (CSO):** Charges battery primarily from utility, solar as secondary.
- **Solar Priority (SNU):** Charges battery primarily from solar, utility as secondary.
- **Solar and Mains Hybrid:** Utilizes both solar and utility for charging.

5.4 Output Modes

The inverter offers 4 output modes to prioritize power sources for loads:

- **Solar First (SOL):** Prioritizes solar power for loads.
- **Grid First (UEI - preset setting):** Prioritizes utility grid power for loads.

- **SBU (Solar Battery Utility):** Prioritizes solar, then battery, then utility.
- **SUB (Solar Utility Battery):** Prioritizes solar, then utility, then battery.



Figure 6: Visual representation of the three battery charging modes (PV First, PV and Utility, Only PV) and four AC output modes (PV First, PV>Battery>Utility, PV>Utility>Battery, Utility First).

5.5 Battery Type Configuration

The inverter is compatible with various 24V battery types, including GEL, AGM, FLD (Flooded), LI (Lithium), SLD, and LiFePO4. If using a lithium battery, it is crucial to set parameter 05 to "USE" and then configure parameters 26, 27, and 29 according to your specific lithium battery parameters.

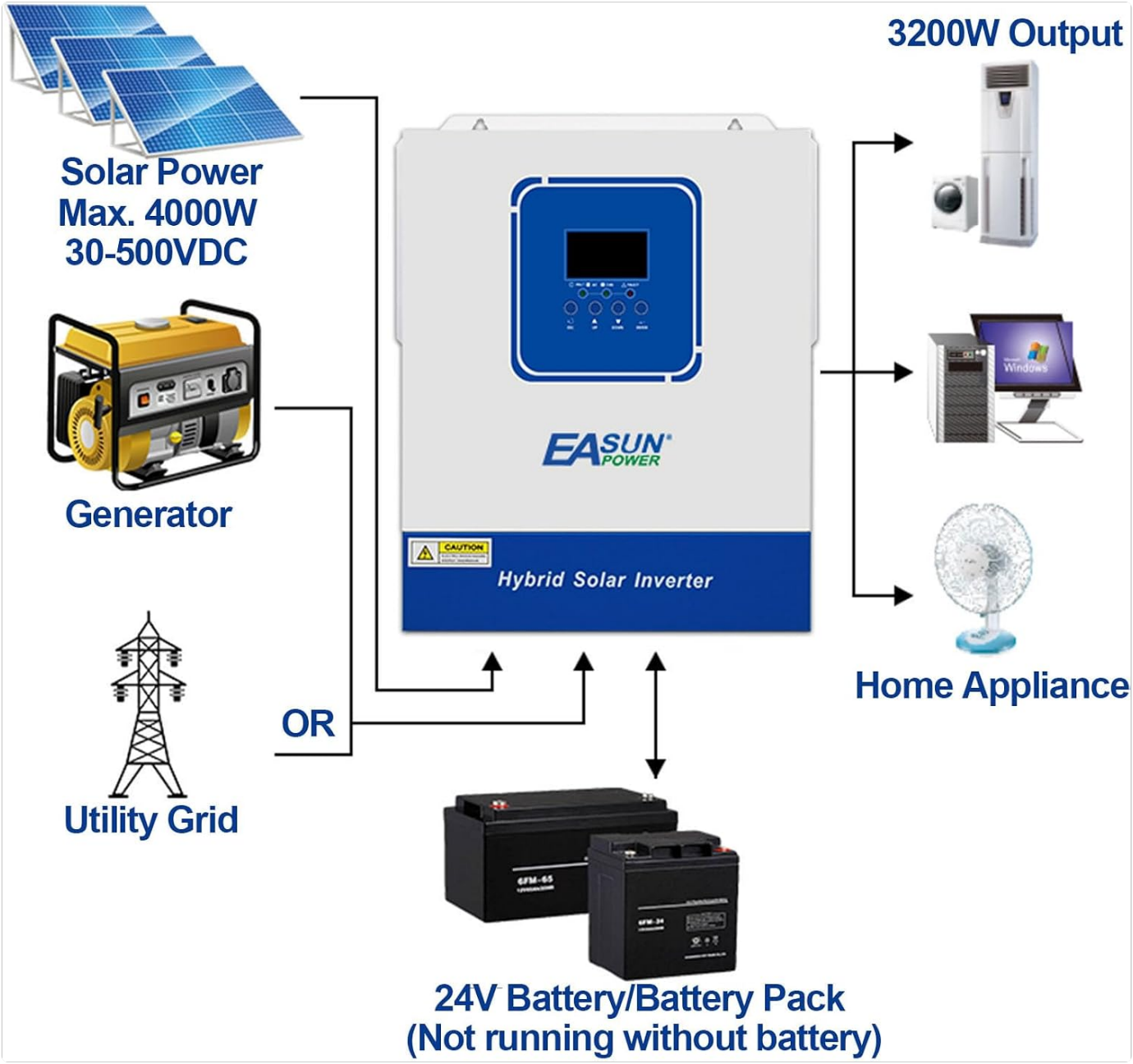

Figure 7: Compatible battery types: GEL, AGM, FLD, LI, SLD, LiFePO4. Note on lithium battery parameter settings.

6. Maintenance

- **Regular Inspection:** Periodically check all wiring connections for tightness and signs of corrosion.
- **Cleaning:** Keep the inverter's ventilation openings clear of dust and debris to ensure proper cooling. Use a dry cloth to clean the exterior.
- **Battery Maintenance:** Follow the battery manufacturer's maintenance guidelines for your specific battery type.
- **Firmware Updates:** Check the manufacturer's website for any available firmware updates for the inverter or WiFi module.

7. Troubleshooting

Problem	Possible Cause	Solution
Inverter does not power on	No 24V battery connected or battery voltage too low. Power switch off.	Ensure a 24V battery is properly connected and charged. Check the inverter's power switch.
No AC output	Overload, short circuit, or over-temperature protection activated. Battery voltage too low.	Reduce load. Check for short circuits in wiring. Allow inverter to cool down. Charge battery.
PV charging not working	PV input voltage out of range. PV polarity reversed. PV breaker off.	Check PV voltage. Verify PV wiring polarity. Ensure PV breaker is on.
WiFi module not connecting	Incorrect network configuration. Module not properly connected.	Refer to the WiFi module's specific instructions for setup. Ensure module is securely plugged into RS232 port.
Inverter making unusual noise	Fan operation (normal). Loose components.	Fans operate to cool the unit; this is normal. If noise is excessive or unusual, contact support.

For issues not listed here, please contact POWLAND technical support.

8. Specifications

Parameter	Value
Model	ISolar-SMG-II-3.2KW-24V-Wifi
Rated Power	3200 W
Battery Voltage	24 V
AC Output Voltage	230 V
AC Output Frequency	50 Hz / 60 Hz (Auto Detection)
Waveform	Pure Sine Wave
Max. PV Array Power	4000 W
MPPT Operating Voltage Range	30 - 500 VDC
Max. PV Open Circuit Voltage	500 VDC
Max. PV Input Current	15 A
Max. Charging Current (PV + AC)	100 A
Display Type	LCD

Parameter	Value
Dimensions (L x W x H)	33 x 27.8 x 9.8 cm
Weight	4 kg
Included Components	Hybrid inverter, WiFi module (data logger), English manual

9. Warranty and Support

POWLAND provides online service support by our professional technical team. For warranty information, technical assistance, or service requests, please refer to the contact details provided in your product packaging or visit the official POWLAND website. Please have your model number (ISolar-SMG-II-3.2KW-24V-Wifi) and purchase date available when contacting support.

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