

POWLAND MLV-3K

POWLAND 3000W Solar Inverter User Manual

Model: MLV-3K

1. INTRODUCTION

This manual provides essential information for the safe and efficient operation of your POWLAND 3000W Solar Inverter. This pure sine wave inverter, equipped with a built-in 60A MPPT controller, is designed for off-grid solar systems, suitable for homes, RVs, and compatible with various battery types including Lithium, Lead-Acid, AGM, Gel, and Flooded batteries. Please read this manual thoroughly before installation and use, and retain 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.
- Disconnect all power sources (solar panels, battery, AC input) before performing any maintenance or wiring.
- Do not operate the inverter if it is damaged or appears to be malfunctioning.
- Keep the inverter away from flammable materials, moisture, and direct sunlight.
- Ensure adequate ventilation around the inverter to prevent overheating.
- The inverter can only work when the solar panel and the battery are connected at the same time.

3. PRODUCT OVERVIEW

The POWLAND 3000W Solar Inverter is an all-in-one unit integrating a pure sine wave inverter, a 60A MPPT solar charge controller, and a battery charger. It features an LCD screen and three LED indicators for dynamic display of system data and operating status.



Front view of the POWLAND 3000W Solar Inverter, showing the LCD display and control buttons.

3KW SOLAR INVERTER

- ▶ Pure sine wave inverter with built-in MPPT
- ▶ Photovoltaic array power 3KW, 100V VOC, 60A
- ▶ Compatible with lead-acid and lithium batteries
- ▶ Supports solar, utility or generator power to charge battery

60A

Max Solar Charge Current

3000W

Rated Power

100VDC

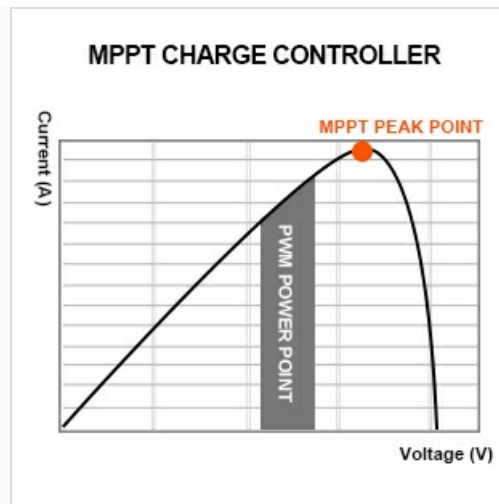
Max PV Voltage



Key features of the 3KW Solar Inverter, highlighting 60A Max Solar Charge Current, 3000W Rated Power, and 100VDC Max PV Voltage.

3.1. MPPT Charge Controller

The inverter utilizes advanced Maximum Power Point Tracking (MPPT) technology to optimize power extraction from the solar photovoltaic (PV) array. This ensures maximum efficiency, up to 99%, by tracking the peak power point of the PV array in varying environmental conditions.



Graph illustrating the MPPT Peak Point versus PWM Power Point for solar charge controllers.

4. SETUP AND INSTALLATION

Proper installation is crucial for the safe and efficient operation of your inverter. Follow these steps carefully:

4.1. Site Selection

- Install the inverter indoors, in a cool, dry, and well-ventilated area.
- Avoid direct sunlight, high temperatures, and high humidity.
- Ensure sufficient clearance around the inverter for proper airflow.

4.2. Wiring Connections

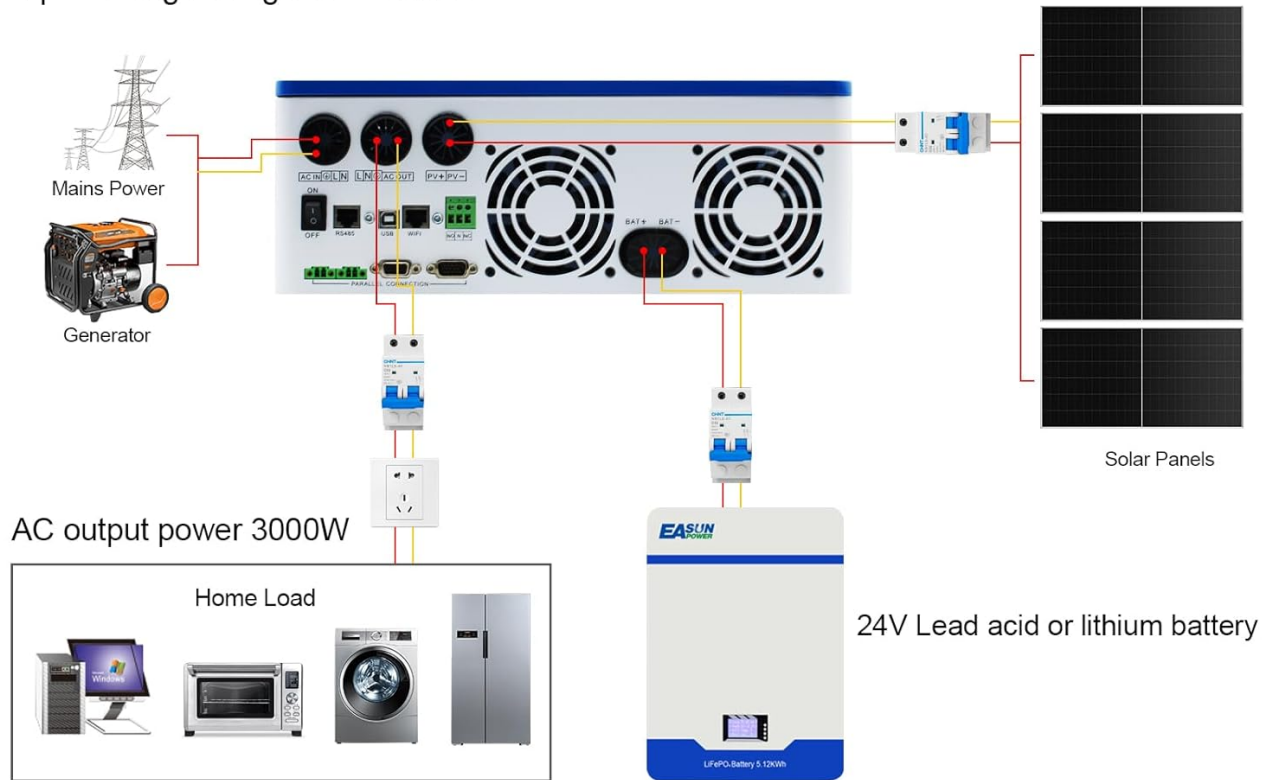
Refer to the connection diagram below for proper wiring. Ensure all connections are secure and polarity is correct.

CONNECTION DIAGRAM

- Live wire/postive wire
- Neutral wire/negative wire

Max. AC charging current 0-40A
Input Voltage Range 90~140Vac

Max PV input current 40A
Max PV input power 1600W
Max PV open circuit voltage 108Vdc



Detailed connection diagram for the POWLAND Solar Inverter, showing connections for solar panels, battery, mains power/generator, and home loads.

1. **Battery Connection:** Connect the 24V battery bank to the inverter's battery terminals. Ensure correct polarity (positive to positive, negative to negative). The inverter supports 24V Lead-Acid (seal, AGM, Gel, Flooded) and Lithium batteries.
2. **Solar Panel Connection:** Connect your solar panel array to the PV input terminals. Ensure the PV open circuit voltage does not exceed 100 Vdc and the operating voltage range is 30-100 Vdc. Max 1600W input.
3. **AC Input Connection:** Connect the mains power or generator to the AC input terminals. Input Voltage Range: 90~140Vac.
4. **AC Output Connection:** Connect your household appliances or home loads to the AC output terminals. The inverter provides 110V-120V AC, 50Hz/60Hz frequency (auto detection), with a maximum output of 3000W.

Note: The off-grid inverter requires both solar panels and a battery connected simultaneously to function.

Compatible with Multiple Battery Types

Lithium Batteries Activation,
Works with 24V battery system



FLD SLD AMG GEL LI SUER

- ✓ Activation function when the battery is dormant
- ✓ Utility/Photovoltaic access triggers battery activation

The inverter is compatible with various battery types including FLD (Flooded), SLD (Sealed Lead-Acid), AMG (AGM), GEL, and LI (Lithium) batteries, working with 24V battery systems.

5. OPERATING INSTRUCTIONS

The inverter offers multiple working modes and output options to suit various power needs.

5.1. 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, with solar as a secondary source.
- **Solar Priority:** Charges batteries primarily from solar panels, with the utility grid as a secondary source.
- **Mains & Solar Hybrid Charging:** Utilizes both mains and solar power for battery charging.

5.2. Output Modes

The inverter provides two output modes:

- **Mains Bypass:** AC loads are powered directly from the utility grid.
- **Inverter Output:** AC loads are powered by the inverter from the battery bank.

5.3. LCD Display and Indicators

The LCD screen displays real-time system data, while three LED indicators provide quick status updates:

- **AC/INV:** Indicates AC input or inverter output status.
- **CHARGE:** Indicates battery charging status.
- **FAULT:** Indicates system fault or error.

5.4. Appliance Compatibility

The pure sine wave output ensures compatibility with a wide range of household appliances, power tools, industrial equipment, and electronic audio/video equipment.

**COMPATIBLE WITH 95%
HOUSEHOLD APPLIANCES**

Pure Sine Wave Output

AC Output **3000W**

**EASUN
POWER**

Hybrid Solar Inverter

The advertisement features a large white and blue Hybrid Solar Inverter on the right. To its left, a collection of household appliances is displayed, including a microwave, a blender with orange juice, a washing machine, a refrigerator, and a stove. A blue banner at the top left of the appliance stack reads 'AC Output 3000W'. The inverter has a blue control panel with an LCD screen and several indicator lights and buttons. The EASUN POWER logo is prominently displayed on the front of the inverter.

The inverter is compatible with common household appliances such as microwaves, blenders, electric kettles, refrigerators, and air conditioners.

6. MAINTENANCE

Regular maintenance helps ensure the longevity and optimal performance of your inverter.

- **Cleaning:** Keep the inverter clean and free from dust. Use a dry cloth to wipe the exterior. Do not use liquid cleaners.
- **Ventilation:** Ensure ventilation openings are clear and not obstructed. Periodically check for dust buildup in the vents.
- **Connections:** Periodically check all wiring connections for tightness and signs of corrosion. Re-tighten if necessary.
- **Battery Health:** Monitor battery voltage and health according to battery manufacturer guidelines.
- **Environmental Check:** Ensure the operating environment remains within specified temperature and humidity ranges.

7. TROUBLESHOOTING

This section addresses common issues you might encounter with your inverter.

Problem	Possible Cause	Solution
Inverter does not power on	Low battery charge; Battery not connected; Solar panels not connected; Main power switch off.	Charge batteries; Ensure battery and solar panel connections are secure; Turn on main power switch.
No AC output	Overload; Short circuit; Over-temperature; Battery voltage too low/high; Inverter fault.	Reduce load; Check for short circuits; Allow inverter to cool down; Check battery voltage; Consult support if fault persists.
PV Overvoltage error	Solar panel array voltage exceeds inverter's maximum PV input voltage (100Vdc).	Reconfigure solar panel array to reduce voltage (e.g., fewer panels in series); Ensure correct panel selection.
Inverter randomly stops supplying AC power	Intermittent connection; Internal fault; Battery management system (BMS) triggering shutdown.	Check all connections; Monitor system logs if available; Perform a factory reset if possible; Consult technical support.

For issues not listed here or if problems persist, please contact customer support.

8. SPECIFICATIONS

Feature	Specification
Model	MLV-3K
Rated Power	3000W
Battery Voltage	24VDC
AC Output Voltage	110V/120V AC
AC Output Frequency	50Hz/60Hz (Auto detection)

Feature	Specification
Waveform	Pure Sine Wave
Max PV Open Circuit Voltage	100 Vdc
PV Operating Voltage Range	30-100 Vdc
MPPT Voltage Range	30-85Vdc
Max PV Input Power	1600W
Max Solar Charge Current	60A
Product Dimensions	17.1 x 14.1 x 7.4 inches
Item Weight	18.04 pounds

For detailed PV module selection, refer to the table below:

INVERTER MODEL	iSolar MLV 3KW-U
Maximum output power	1600W
Maximum PV open circuit voltage	100VDC
Maximum charge current	60A
Maximum Power (Pmax)	250W
Max.Power Voltage Vmpp(V)	36V
Max.Power Current Impp(A)	8.3A
Open Circuit Voltage Voc(V)	40V
Short Circuit Current Isc(A)	8.9A

When selecting proper PV modules, ensure the Open Circuit Voltage (Voc) of PV modules does not exceed the max. PV array open circuit voltage of the inverter (100Vdc). The PV operating voltage (Vmpp) should be higher than the minimum battery voltage.

9. WARRANTY AND SUPPORT

POWLAND products are designed for reliability and performance. For specific warranty terms and conditions, please refer to the warranty card included with your product or contact the manufacturer directly. Keep your purchase receipt as proof of purchase.

9.1. Technical Support

If you encounter any issues or have technical questions regarding your POWLAND 3000W Solar Inverter, please reach out to our customer support team. Provide your product model and a detailed description of the issue for prompt assistance.

For the latest support information and resources, please visit the official POWLAND website or contact your authorized dealer.

