POWLAND 6500W-48V

POWLAND 6500W-48V Solar Hybrid Inverter Charger User Manual

Model: 6500W-48V

1. Introduction

This manual provides essential information for the safe and efficient operation of your POWLAND 6500W-48V Solar Hybrid Inverter Charger. This device integrates a solar charge controller, inverter, and battery charger into a single unit, offering a comprehensive solution for off-grid, grid-tied with anti-backflow, and backup power systems. Please read this manual thoroughly before installation and use to ensure proper functionality and longevity of the product.

2. Product Overview

The POWLAND 6500W-48V Solar Hybrid Inverter Charger is designed to convert DC power from solar panels and batteries into stable AC power for various loads. It features a pure sine wave output, ensuring compatibility with sensitive electronics. Key functionalities include:

- **Hybrid Grid-Load with Anti-Backflow Mode:** When connected to the utility grid, the inverter prioritizes powering AC loads, then feeds excess energy into the grid behind an external Current Transformer (CT) sensor to prevent reverse current flow.
- **High Power Output:** Provides 6500W rated output power with 120Vac±5% voltage regulation.
- **Integrated MPPT Charge Controller:** Features a built-in 120A MPPT charge controller with a Max PV Array Open Circuit Voltage of 300VDC and an operating voltage range of 120-300Vdc.
- **Parallel Capability:** Supports parallel operation of up to 6 units for a maximum output of 39kW, configurable for both single-phase (120V) and split-phase (120V/240V) systems.
- **Comprehensive Protection:** Includes overload, over-temperature, short circuit, overcurrent, overvoltage, undervoltage, and reverse charging protection.
- **Intelligent Cooling:** Multi-fan cooling system activates at 104°F (40°C) for efficient heat dissipation.
- **Battery Compatibility:** Works with 48V battery systems, including Lead Acid (SLD, FLD, AGM, GEL) and Lithium (LiFePO4) batteries. Supports batteryless mode and battery activation functions.

- **Monitoring:** Clear LCD displays power flow, battery status, and solar harvest. A WiFi port is available for remote monitoring via an app (requires additional WiFi device).

Front view of the POWLAND 6500W Solar Hybrid Inverter Charger, showing the LCD display and ventilation grilles. A split core CT sensor is visible on the right.

An illustration highlighting the comprehensive protection features of the POWLAND inverter, including safeguards against short circuit, overcurrent, overvoltage, undervoltage, overload, reverse charging, and over-temperature.

The POWLAND 6500W inverter shown alongside common household appliances like a fan, oven, and blender, illustrating its pure sine wave output compatibility with 95% of home devices.

A banner image summarizing key specifications: 6500W, 48V, Pure Sine Wave, built-in 150A MPPT Controller, Max PV Array Input 4500W×2, 300Vdc 22A, compatible with Lithium and Lead-acid batteries, supports charging via solar, utility grid, or generator. Also lists 50Hz/60Hz, 22A Max Input Current, 300Vdc Max Voltage of Open Circuit, 120Vac Rated Output Voltage.

3. Safety Information

Please observe the following safety precautions during installation, operation, and maintenance of the inverter. Failure to comply may result in electric shock, fire, or severe injury.

- **Qualified Personnel:** Installation and wiring must be performed by qualified personnel familiar with electrical systems and safety standards.
- **Disconnect Power:** Always disconnect all power sources (solar, battery, utility, generator) before performing any installation, maintenance, or troubleshooting. Verify zero voltage with a multimeter.
- **Proper Grounding:** Ensure the inverter is properly grounded according to local electrical codes.
- **Ventilation:** Install the inverter in a well-ventilated area, free from flammable materials, and ensure adequate clearance for airflow around the unit.
- **Battery Safety:** Work with batteries carefully. Wear appropriate personal protective equipment (PPE), including eye protection and insulated gloves. Do not short-circuit battery terminals.
- **Environmental Conditions:** Do not expose the inverter to rain, snow, liquids, or excessive dust. Operate within specified temperature and humidity ranges.
- **Overload Protection:** Do not exceed the inverter's rated output power. Overloading can damage the unit and connected appliances.
- **Children and Pets:** Keep the inverter and its connections out of reach of children and pets.

4. Setup and Installation

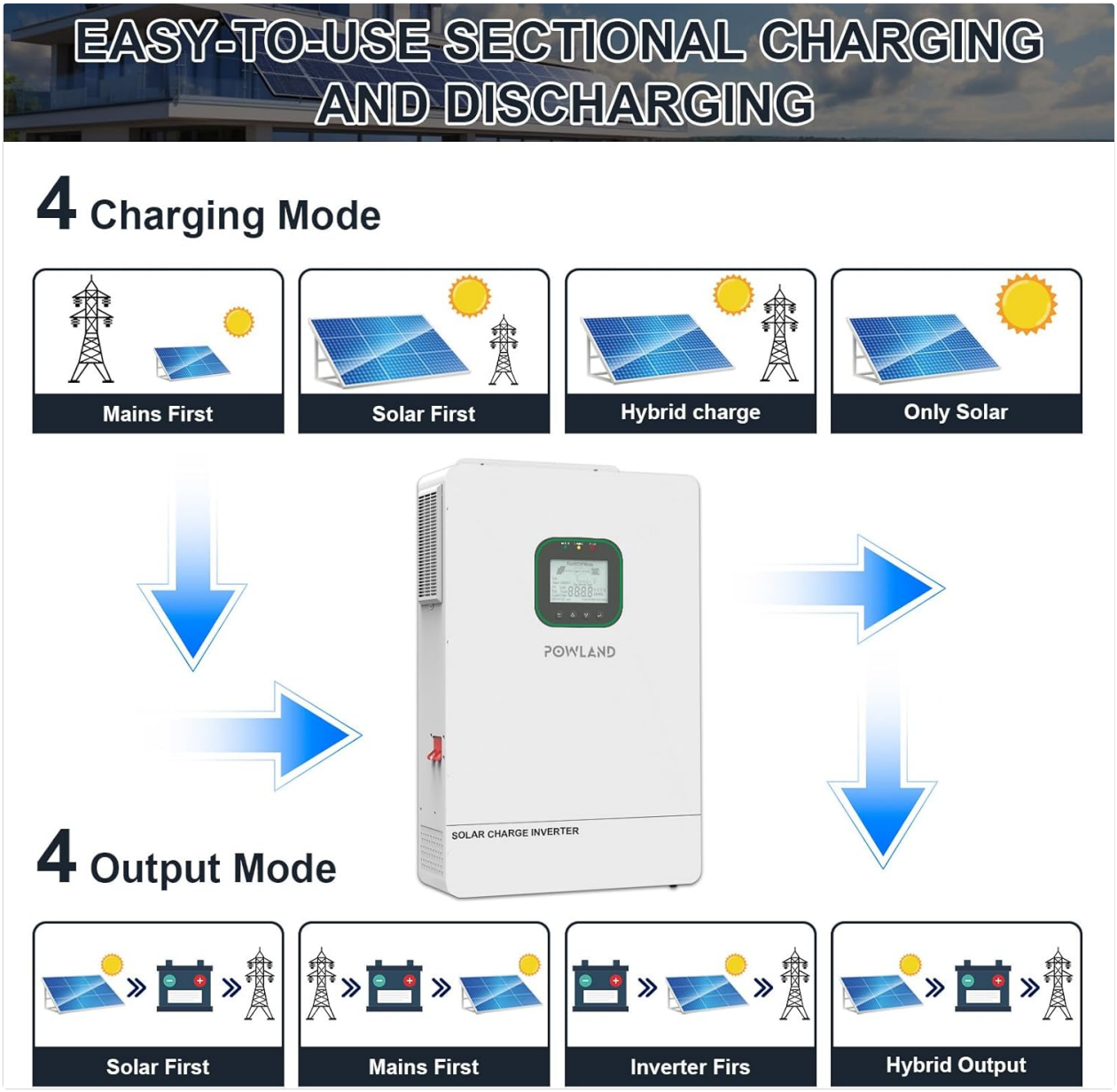
Careful planning and correct installation are crucial for the optimal performance and safety of your inverter system.

4.1 Mounting the Inverter

Mount the inverter vertically on a sturdy, non-flammable surface. Ensure sufficient space around the unit for proper ventilation and access for wiring and maintenance. Avoid direct sunlight, high temperatures, and moisture.

4.2 Wiring Connections

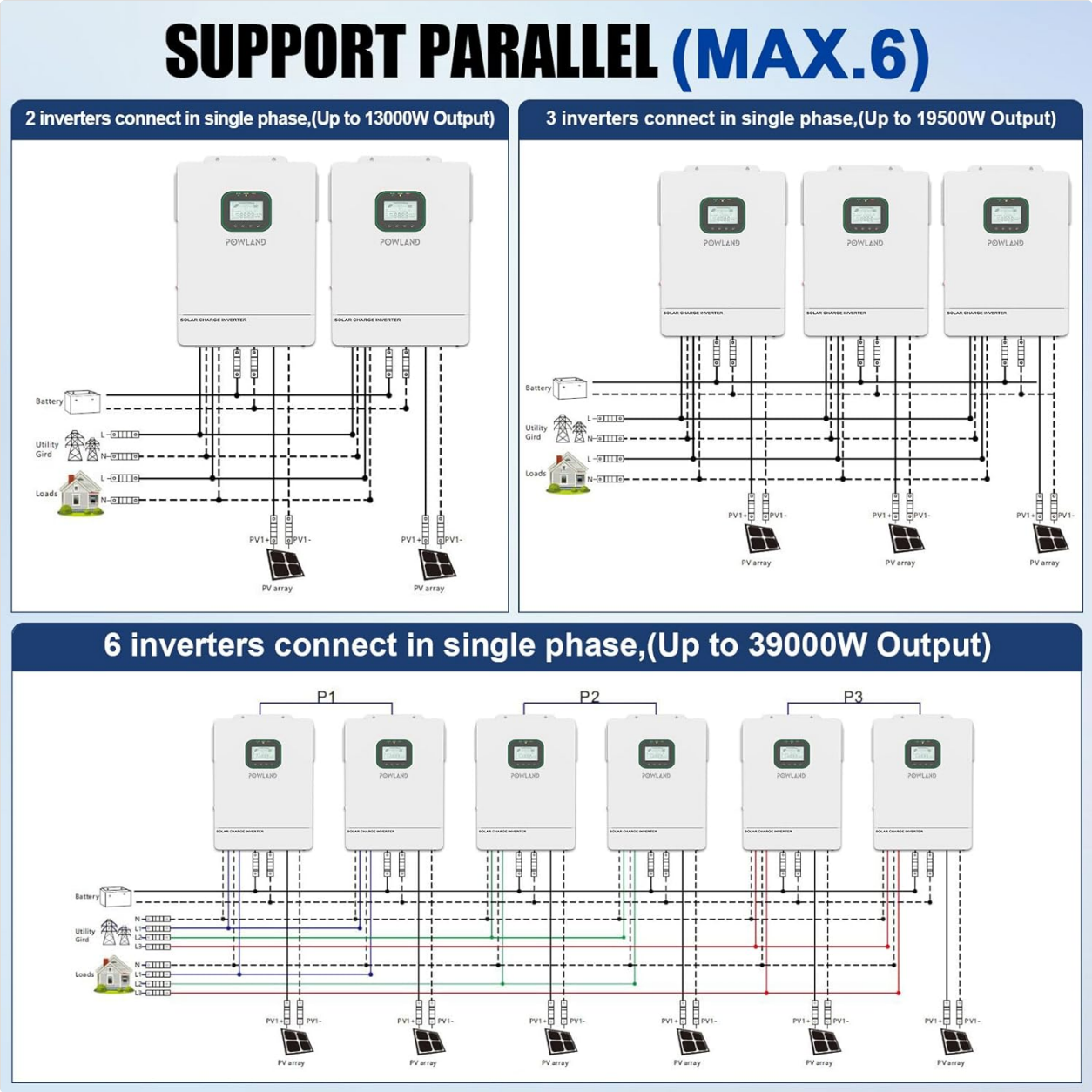
Follow the connection diagram carefully. All wiring must comply with local and national electrical codes. Use appropriately sized cables and circuit breakers for all connections (PV, battery, AC input, AC output).



A detailed wiring diagram showing connections for mains power, generator, solar panels, battery bank (48V Lead Acid or Lithium), and home loads to the POWLAND inverter. It specifies AC output power of 6500W and PV input parameters.

4.2.1 Battery Connection

- Connect the 48V battery bank to the inverter's battery terminals. Ensure correct polarity (positive to positive, negative to negative).
- Install a DC circuit breaker or fuse between the battery bank and the inverter for protection.
- The inverter is compatible with various 48V battery types, including SLD, FLD, AGM, GEL, and Lithium (LiFePO4).



An image depicting the POWLAND inverter connected to a battery bank, with icons indicating compatibility with SLD, FLD, AGM, GEL, LI (Lithium), and SUER battery types. It also supports batteryless mode and battery activation functions.

4.2.2 PV Array Connection

- Connect the solar panel array to the PV input terminals. Observe correct polarity.
- Ensure the PV array's open circuit voltage and current are within the inverter's specifications (Max PV Array Open Circuit Voltage: 300VDC, PV operating voltage range: 120-300Vdc, Max PV input current: 22A).
- Install a DC circuit breaker between the PV array and the inverter.

4.2.3 AC Input (Utility/Generator) Connection

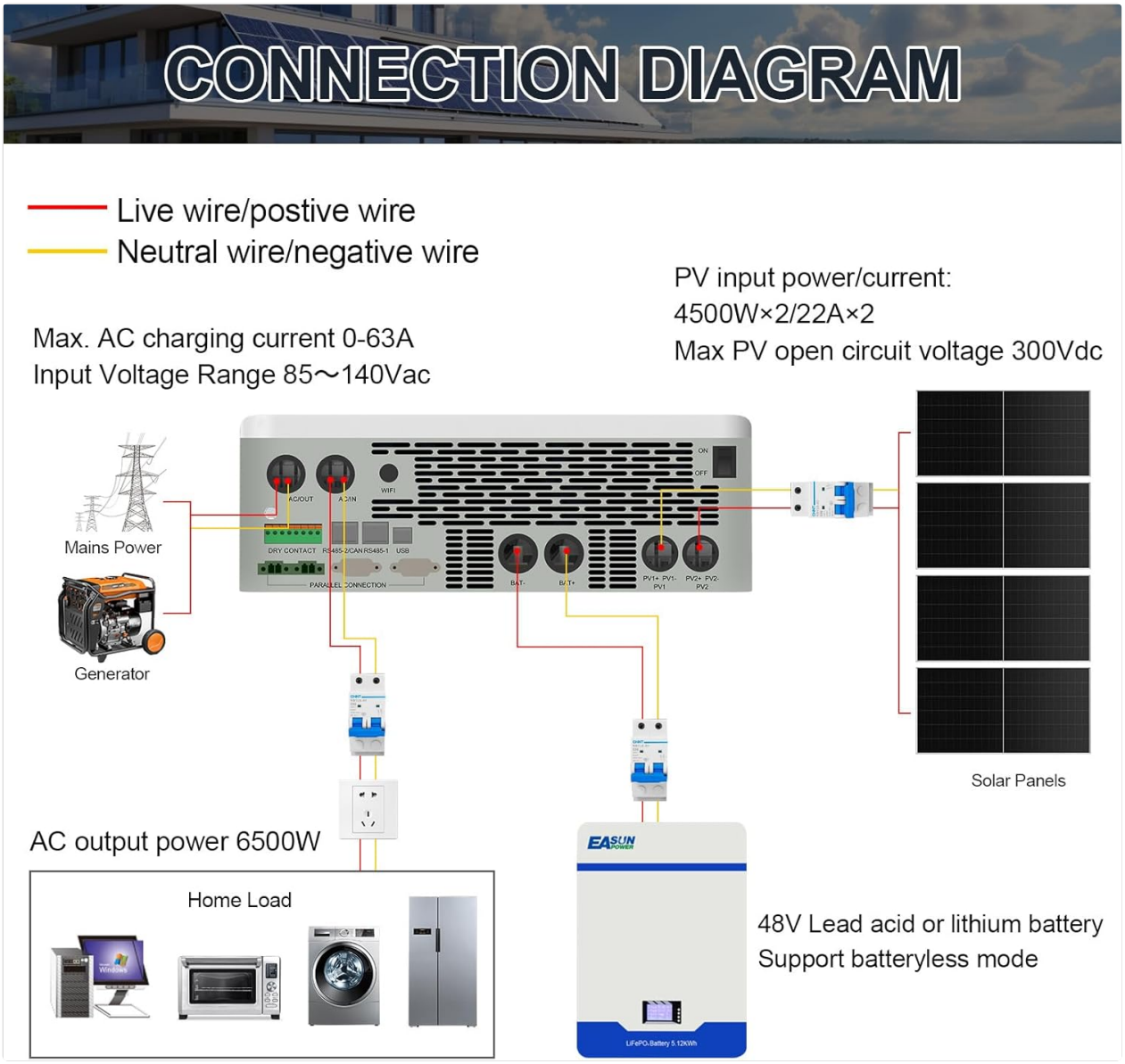
- Connect the utility grid or generator AC output to the inverter's AC input terminals.
- Install an AC circuit breaker for protection.
- Ensure the AC input voltage is within the specified range (Max AC Input Voltage: 140Vac).

4.2.4 AC Output (Load) Connection

- Connect your AC loads to the inverter's AC output terminals.
- Ensure the total load does not exceed the inverter's rated output power of 6500W.

4.3 Parallel Operation

The POWLAND 6500W-48V inverter supports parallel connection of up to 6 units to increase total power output. This allows for configurations up to 39kW in single-phase or split-phase (120V/240V) systems. Refer to the specific parallel installation guide for detailed wiring and configuration instructions.



Illustrations demonstrating how multiple POWLAND inverters can be connected in parallel. Examples show 2 inverters for up to 13000W output, 3 inverters for up to 19500W output, and 6 inverters for up to 39000W output in a single-phase configuration.

5. Operation

Once installed, the inverter can be configured and operated through its LCD display and control buttons. The system offers various charging and output modes to suit different energy management needs.

5.1 LCD Display and Control

The LCD display provides real-time information on system status, including input/output voltage, current, power, battery charge level, and operational mode. Use the control buttons to navigate menus and adjust settings.

5.2 Charging Modes

The inverter supports four distinct charging modes:

1. **Mains First:** Prioritizes charging from the utility grid or generator. Solar power is used if mains power is unavailable.
2. **Solar First:** Prioritizes charging from solar panels. Mains power is used only if solar power is insufficient.
3. **Hybrid Charge:** Utilizes both solar and mains power for charging, optimizing charging efficiency.
4. **Only Solar:** Charges exclusively from solar panels. Mains power is not used for charging.

5.3 Output Modes

The inverter offers four output modes to manage power delivery to your loads:

1. **Solar First:** Prioritizes powering loads from solar energy. If solar is insufficient, it draws from batteries, then from the mains.
2. **Mains First:** Prioritizes powering loads from the utility grid. If mains power is unavailable, it switches to battery power.
3. **Inverter First:** Prioritizes powering loads from the inverter (battery power). If battery voltage is low, it switches to mains power.
4. **Hybrid Output:** Dynamically switches between solar, battery, and mains power to optimize energy usage based on availability and load demand.

A visual guide to the inverter's operational modes, detailing four charging modes (Mains First, Solar First, Hybrid Charge, Only Solar) and four output modes (Solar First, Mains First, Inverter First, Hybrid Output).

6. Maintenance

Regular maintenance ensures the longevity and reliable operation of your POWLAND inverter.

- **Visual Inspection:** Periodically inspect the inverter for any signs of damage, loose connections, or corrosion. Check ventilation openings for dust accumulation.
- **Cleanliness:** Keep the inverter clean and free from dust. Use a dry, soft cloth to wipe the exterior. Do not use liquid cleaners.
- **Ventilation:** Ensure that the cooling fans and ventilation grilles are not obstructed. Clean them gently with compressed air if necessary.
- **Connection Checks:** Annually, or as needed, verify that all electrical connections (PV, battery, AC input/output) are secure and free from corrosion.
- **Battery Health:** Monitor battery voltage and performance regularly. Follow the battery manufacturer's maintenance guidelines for your specific battery type.
- **Firmware Updates:** Check the manufacturer's website for any available firmware updates that may improve performance or add features.

7. Troubleshooting

This section provides guidance for common issues. For problems not listed here or if issues persist, contact technical support.

Problem	Possible Cause	Solution
Inverter not powering on	Low battery voltage; DC breaker tripped; loose battery connection; inverter fault.	Check battery voltage and charge level. Reset DC breaker. Verify battery connections. If problem persists, contact support.
No AC output	Overload; AC output breaker tripped; inverter fault; incorrect output mode setting.	Reduce load. Reset AC output breaker. Check output mode settings on LCD. If problem persists, contact support.
PV Overvoltage error	Solar panel array voltage exceeds inverter's maximum input.	Verify PV array configuration. Reduce the number of series-connected panels or reconfigure the array to stay within the 300VDC limit.
Battery not charging	PV input issue; AC input issue; incorrect charging mode; battery fault.	Check PV connections and solar input. Verify AC input source. Adjust charging mode settings. Inspect battery health.
Inverter making unusual noise	Overload; fan obstruction; internal component issue.	Reduce load. Check for fan obstructions. If noise is persistent or abnormal, contact support.

8. Specifications

Detailed technical specifications for the POWLAND 6500W-48V Solar Hybrid Inverter Charger:

- **Model Name:** 6500W-48V

- **Rated Output Power:** 6500W
- **Output Voltage Regulation:** 120Vac±5%
- **Input Voltage (DC):** 48 Volts
- **Max PV Array Open Circuit Voltage:** 300VDC
- **PV Operating Voltage Range:** 120-300Vdc
- **MPPT Voltage Range:** 90-260Vdc
- **Max PV Input Current:** 22A
- **Max AC Input Voltage:** 140Vac
- **Max AC Charging Current:** 0-63A
- **Rated AC Frequency:** 50Hz/60Hz (Auto sensing)
- **Item Weight:** 46.6 pounds
- **Package Dimensions:** 26.5 x 18.25 x 8.5 inches
- **Power Source:** Solar Powered
- **Recommended Uses:** Boat, Camping, Home, Hurricane, Recreational Vehicle, Workshop

9. Warranty and Support

For warranty information, technical support, or service inquiries, please contact the seller or manufacturer, EASUN POWER. Ensure you have your product model number (6500W-48V) and purchase details available when contacting support.