PowMr BI-POW-SunSmart 12KP

PowMr Hybrid Solar Inverter 12000W User Manual

Model: BI-POW-SunSmart 12KP

1. Introduction

This manual provides essential information for the safe installation, operation, and maintenance of your PowMr Hybrid Solar Inverter 12000W. Please read this manual thoroughly before installation and operation to ensure optimal performance and safety. Keep this manual for future reference.

2. Safety Information

WARNING: This inverter generates high voltage. Installation and maintenance must be performed by qualified personnel only. Failure to follow these instructions may result in serious injury or death.

- Do not attempt to disassemble or repair the inverter yourself. Contact qualified service personnel.
- Ensure all wiring is correctly sized and installed according to local and national electrical codes.
- Disconnect all power sources (PV, battery, AC input) before performing any maintenance or wiring.
- Install the inverter in a well-ventilated, dry, and cool environment, away from flammable materials.
- Ensure proper grounding of the inverter.

Figure 2.1: The inverter features comprehensive protection against over/under voltage, overload, short circuit, over-temperature, and anti-backfeed.

3. Product Overview

3.1 Key Features

- **Output:** 12000W continuous (24000W peak), 120/240Vac split-phase output.
- **PV Input:** Maximum 6600W PV input power, 500V DC maximum, 22A. PV starting voltage: ≥150V.
- **MPPT Charger:** Dual 100A MPPT chargers, max 200A charge current.
- **Battery Compatibility:** Supports 48V Li-ion, Lead-Acid, and user-defined battery types.
- **Battery-Less Mode:** Capable of powering loads directly from PV/AC without a battery connected.
- **Parallel Operation:** Supports up to 6 units in parallel for increased power output.
- **Monitoring:** Large LCD display, dynamic flow diagrams, and optional WiFi for remote monitoring via mobile app.
- **Communication Ports:** RS485, CAN, USB interfaces for integration with battery BMS, generator ATS,

and smart home systems.

Figure 3.1: Overview of the 12KW Split-Phase Hybrid Solar Inverter's main features and capabilities.

3.2 Product Appearance and Components

Figure 3.2: Front and side view of the inverter with labeled components.

1. LCD Display
2. LED Indicators
3. Touchable Key
4. ON/OFF Rocker Switch
5. PV INPUT (1/1)
6. BAT INPUT (+)
7. BAT INPUT (-)
8. Dry Contact
9. CAN/RS485 Port
10. WIFI Port
11. USB-B Port
12. Grounding Screw
13. AC OUT (L1+L2+N)
14. AC IN (L1+L2+N)
15. AC INPUT Breaker

16. Parallel Communication Port

4. Setup and Installation

4.1 Unpacking and Inspection

Upon receiving the inverter, carefully unpack it and inspect for any shipping damage. Ensure all components listed in the package contents are present:

- Solar inverter unit
- Parallel communication cable
- 2 × battery terminal lugs
- 2 × M5 screws
- User manual

Note: WiFi module, batteries, adapters, solar/battery wires/cables are excluded and require additional purchase if needed.

4.2 Mounting the Inverter

The inverter is designed for indoor (IP20) installation. Choose a mounting location that is:

- Vertical, on a solid surface capable of supporting the inverter's weight (approximately 27kg / 59.5lbs).
- Well-ventilated to allow for heat dissipation.
- Protected from direct sunlight, moisture, and dust.
- Accessible for wiring and maintenance.

4.3 Wiring Connections

All wiring must comply with local electrical codes. Use appropriate wire gauges for all connections.

1. **Grounding:** Connect the grounding screw (12) to a reliable earth ground.
2. **Battery Connection:** Connect the 48V battery bank to the BAT INPUT (+) (6) and BAT INPUT (-) (7) terminals. Ensure correct polarity.
3. **PV Input:** Connect the solar panel array to the PV INPUT (1/1) (5) terminals. Observe correct polarity and ensure PV voltage is within specified limits (Max 500V DC, starting voltage ≥150V). Use 10AWG PV wire.
4. **AC Input:** Connect the utility grid or generator AC input to the AC IN (L1+L2+N) (14) terminals.
5. **AC Output:** Connect your loads to the AC OUT (L1+L2+N) (13) terminals. The inverter provides 120/240Vac split-phase output.
6. **Parallel Communication (Optional):** If installing multiple inverters in parallel, connect the Parallel Communication Port (16) between units using the provided cable.
7. **Other Connections:** Utilize RS485, CAN, USB, and dry contact ports (8, 9, 10, 11) for external communication and control as needed.

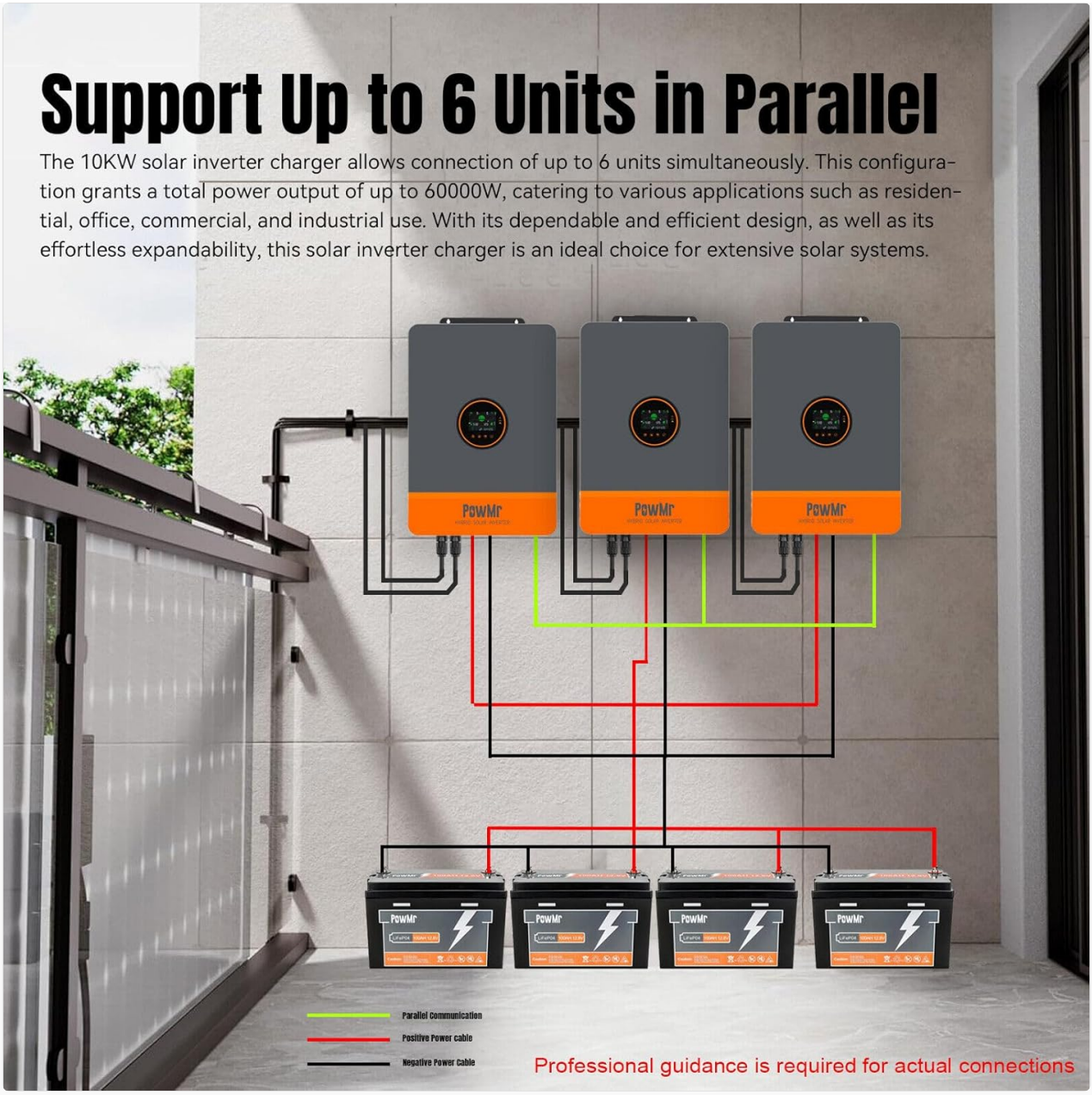

Figure 4.1: Example of multiple inverters connected in parallel. Professional guidance is required for actual connections.

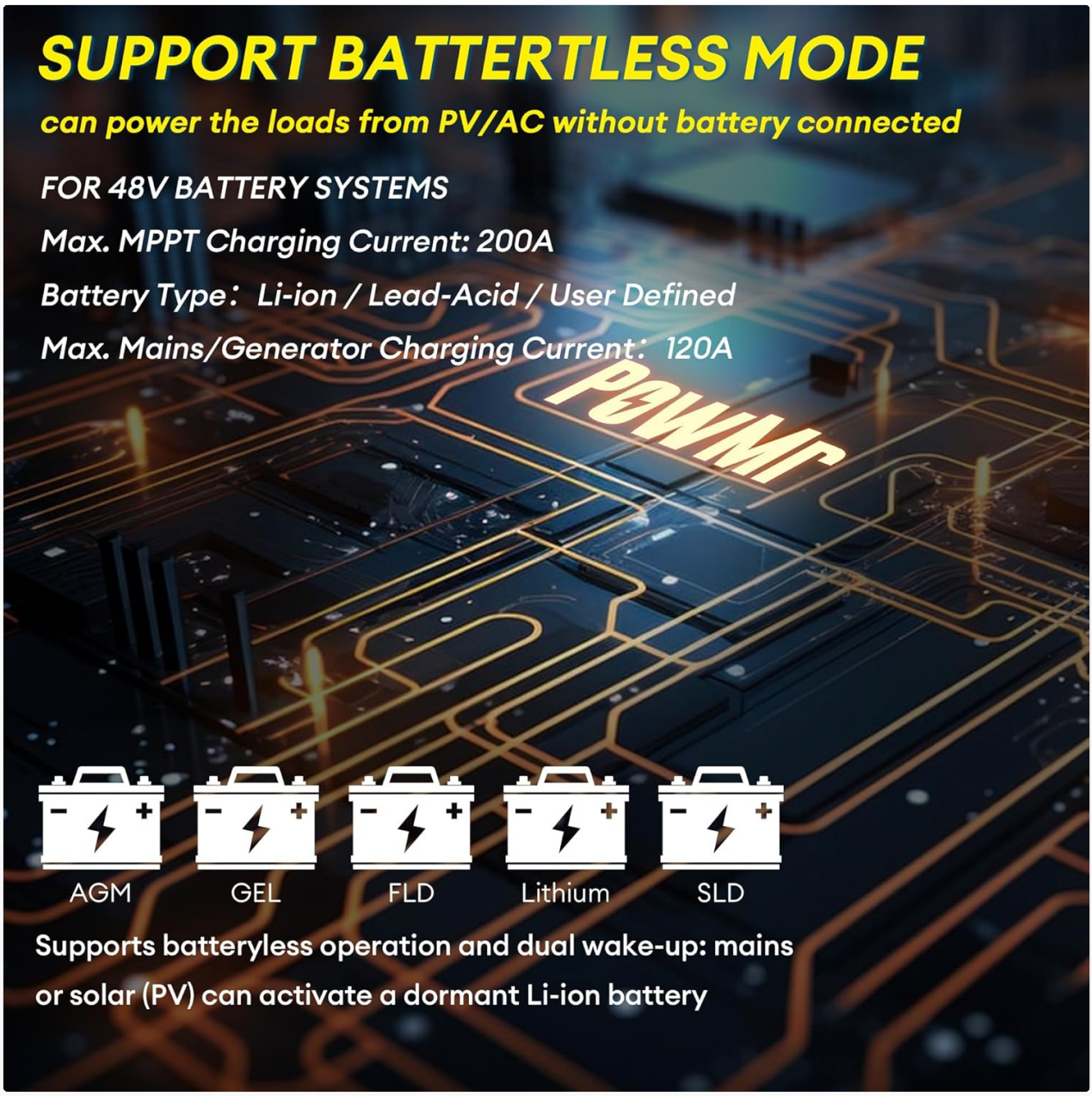

Figure 4.2: The inverter supports various 48V battery systems, including battery-less operation.

5. Operating Instructions

5.1 Powering On/Off

1. Ensure all wiring connections are secure and correct.
2. Switch on the battery breaker, then the PV breaker.
3. Flip the ON/OFF Rocker Switch (4) to the 'ON' position.
4. Switch on the AC INPUT Breaker (15).
5. To power off, reverse the sequence: AC INPUT Breaker off, ON/OFF Rocker Switch off, PV breaker off, battery breaker off.

5.2 LCD Display and Settings

The large LCD display (1) provides real-time energy visualization and system status. Use the touchable keys (3) to navigate menus and adjust settings. Refer to the detailed settings section in the full user manual for

specific parameter configurations, including:

- Battery charging parameters (voltage, current)
- Output voltage and frequency
- Operating modes (e.g., Solar First, Utility First, Battery First)
- Time-of-Use (TOU) control for smart charging/discharging

5.3 Battery-Less Mode

The inverter supports battery-less operation, allowing it to power loads directly from solar PV and/or AC input without a connected battery. This mode is useful for specific applications or during battery maintenance. Ensure proper configuration through the LCD settings.

6. Maintenance

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

- **Cleaning:** Periodically clean the inverter's exterior and ventilation openings to prevent dust buildup, which can impede cooling. Use a dry, soft cloth.
- **Connections:** Annually inspect all electrical connections for tightness and signs of corrosion. Re-tighten if necessary.
- **Environment:** Ensure the installation environment remains within specified temperature and humidity ranges.
- **Firmware:** Check the manufacturer's website for any available firmware updates. Firmware updates can improve performance and address known issues.

WARNING: Always disconnect all power sources before performing any cleaning or inspection.

7. Troubleshooting

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

Problem	Possible Cause	Solution
Inverter does not power on	No battery connection or low battery voltage; DC breaker off; ON/OFF switch off.	Check battery connections and voltage; ensure DC breaker is on; turn ON/OFF switch to 'ON'.
No AC output	Overload; short circuit; AC output breaker tripped; inverter fault.	Reduce load; check for short circuits; reset AC output breaker; check LCD for error codes.
PV input not charging batteries	PV voltage too low or too high; PV polarity reversed; PV breaker off; MPPT fault.	Check PV voltage and polarity; ensure PV breaker is on; check LCD for PV error codes.

Problem	Possible Cause	Solution
Unstable output in parallel mode	Incorrect parallel communication wiring; mismatched firmware versions; incompatible settings.	Ensure only one parallel communication cable is used between units. Verify all inverters have the same, latest firmware version. Check parallel settings on each inverter. Contact support if issues persist.
Inverter displays error code	Internal fault; external condition (e.g., over-temperature, over-voltage).	Refer to the full manual's error code section for specific meanings and solutions. Address environmental conditions if applicable.

8. Specifications

Parameter	Value
Model Name	BI-POW-SunSmart 12KP
Rated Output Power	12000W (12KW)
Peak Power	24000W
Rated Output Voltage	120/240Vac (Split-Phase/Single-Phase)
Battery Voltage	48V
Maximum PV Input Power	6600W
Maximum PV Input Voltage	500V DC
Maximum PV Input Current	22A
PV Starting Voltage	≥150V
MPPT Charge Current	Dual 100A (Max 200A total)
Max. Mains/Generator Charging Current	120A
Communication Ports	RS485, CAN, USB
Dimensions (L×W×H)	24.41 × 17.52 × 5.12 inches (62 × 44.5 × 13 cm)
Weight	59.5 lbs (27 kg)
Protection Rating	IP20 (Indoor use)

9. Warranty and Support

For warranty information, please refer to the documentation provided with your purchase or contact PowMr customer service. For technical support, troubleshooting assistance, or inquiries regarding parts and service, please visit the official PowMr website or contact their customer support channels.

Online Resources:

- PowMr Store on Amazon: Visit PowMr Store