PowMr POW-SunSmart 10KP

PowMr 10000W Split Phase Solar Inverter User Manual

Model: POW-SunSmart 10KP

1. Introduction

This manual provides essential information for the safe and efficient operation of your PowMr 10000W Split Phase 48V to 120/240V AC Solar Inverter. Please read this manual thoroughly before installation and use. Retain this manual for future reference.

The PowMr POW-SunSmart 10KP is a high-performance hybrid solar inverter designed for both split-phase and single-phase pure sine wave output. It integrates a 10KW inverter with a 200Amp MPPT charge controller, supporting 48V battery systems (lead-acid and lithium) and batteryless operation. It also features parallel operation capability for system expansion.

Figure 1: Front view of the PowMr 10000W Split Phase Solar Inverter.

2. Safety Instructions

Important Safety Precautions:

- Installation and maintenance must be performed by qualified personnel.
- Ensure all wiring complies with local and national electrical codes.
- Disconnect all power sources (PV, battery, utility) before performing any service or maintenance.
- Do not disassemble the inverter. There are no user-serviceable parts inside.
- Avoid exposure to rain, snow, or liquids.
- Ensure proper ventilation around the inverter to prevent overheating.
- Use appropriate overcurrent protection for all circuits.

3. Product Features

- **10KW Continuous Output:** Provides 10000W continuous power with a surge capacity up to 20000W.
- **Split-Phase & Single-Phase Output:** Supports both 120V and 240V AC output simultaneously.
- **Dual MPPT Charge Controller:** Integrated dual 100A MPPT controllers with 99.9% tracking efficiency, supporting up to 11KW PV input (5500W per MPPT).
- **Wide PV Input Range:** Maximum PV input voltage of 500V DC, with a starting voltage of ≥150V.
- **Battery Compatibility:** Works with 48V lead-acid (Seal, AGM, Gel, Flooded) and lithium batteries. Supports batteryless operation.
- **Parallel Operation:** Expandable up to 6 units for a total capacity of 60kW.
- **Multiple Operating Modes:**
  - **4 Charging Modes:** Solar-only, Utility-first, Solar-first, Hybrid (Solar+Utility).
  - **4 Output Modes:** PV-first, Utility-first, Inverter-first, Hybrid (PV+Utility).
- **Communication Interfaces:** Equipped with CAN, USB, and RS485 ports for monitoring and configuration.
- **Comprehensive Protection:** Includes short-circuit, overload, over-voltage, under-voltage, and backfeed protection.

Figure 2: Overview of key technical specifications and features.

4. Product Overview and Components

Familiarize yourself with the inverter's external components and connection points.

1	LCD screen	6	BAT INPUT (+)	11	USB-B port
2	LED Indicators	7	BAT INPUT (-)	12	Grounding Screw
3	Touchable key	8	Dry contact	13	AC OUT (L+L+N)
4	ON/OFF Rocker Switch	9	CAN/RS485-2 port	14	AC IN (L+L+N)
5	PV INPUT (1/1)	10	RS485-1 port	15	AC INPUT breaker
16	Parallel Communication Port				

Figure 3: Labeled diagram of the inverter's external features.

Table 1: Component Description

No.	Component	Description
1	LCD screen	Displays operational status and settings.
2	LED Indicators	Indicate system status (e.g., fault, charging, AC output).
3	Touchable key	For navigating menus and adjusting settings.
4	ON/OFF Rocker Switch	Main power switch for the inverter.
5	PV INPUT (1/1)	Photovoltaic input terminals for solar array 1.
6	BAT INPUT (+)	Positive battery input terminal.
7	BAT INPUT (-)	Negative battery input terminal.

No.	Component	Description
8	Dry contact	Remote switch on/off, switching signal output, battery temperature sampling, generator remote start/stop.
9	CAN/RS485-2 port	Connects to the BMS of Li-ion battery.
10	RS485-1 port	Connects to Wi-Fi/GPRS data acquisition module.
11	USB-B port	Read and modify device parameters.
12	Grounding Screw	For system grounding.
13	AC OUT (L+L+N)	AC output terminals for connecting loads.
14	AC IN (L+L+N)	AC input terminals for utility grid or generator.
15	AC INPUT breaker	Circuit breaker for AC input protection.
16	Parallel Communication Port	For connecting multiple inverters in parallel.

5. Installation and Wiring

5.1 Site Selection

- Install the inverter indoors, away from direct sunlight, rain, and dust.
- Ensure adequate clearance around the inverter for proper airflow and cooling.
- Mount on a non-flammable surface.

5.2 Wiring Connections

All wiring must be performed by a qualified electrician. Ensure all power sources are disconnected before making any 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. Observe correct polarity.
3. **PV Input Connection:** Connect your solar array to the PV INPUT (1/1) (5) terminals. Ensure PV voltage and current are within the inverter's specifications. Use 10AWG PV wire.
4. **AC Input Connection (Utility/Generator):** Connect the utility grid or generator to the AC IN (L+L+N) (14) terminals.
5. **AC Output Connection (Loads):** Connect your loads to the AC OUT (L+L+N) (13) terminals.

5.3 Wiring Diagrams

The inverter supports both single-phase and split-phase configurations. Refer to the diagrams below for proper wiring.

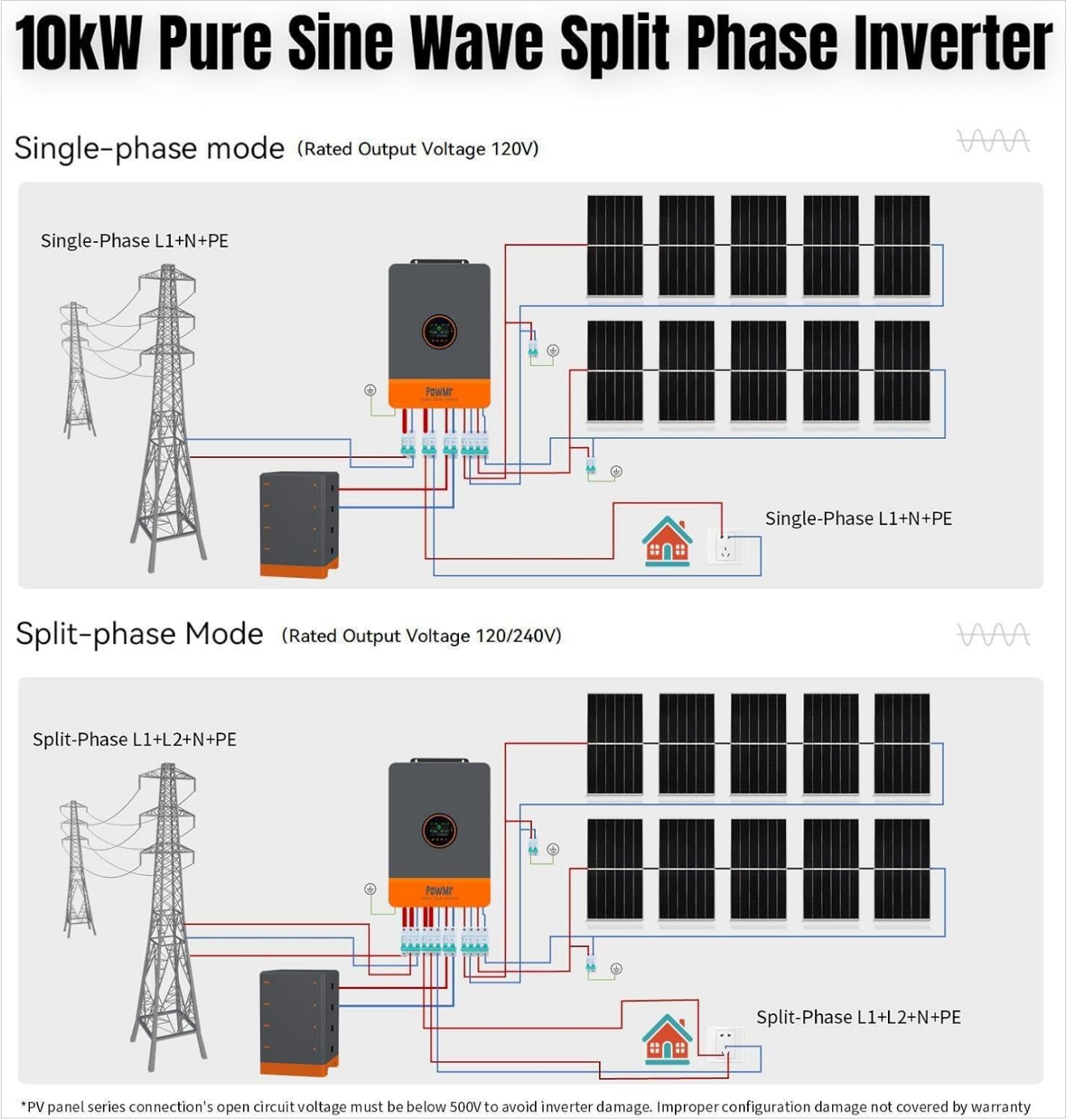

Figure 4: Top diagram shows single-phase L1+N+PE wiring (120V output). Bottom diagram shows split-phase L1+L2+N+PE wiring (120V/240V output). Ensure PV panel series connection's open circuit voltage is below 500V to avoid inverter damage.

6. Operating Instructions

6.1 Initial Startup

1. After all connections are secure, switch on the battery breaker.
2. Switch on the PV array breaker (if applicable).
3. Switch on the AC INPUT breaker (15) (if applicable).
4. Turn on the ON/OFF Rocker Switch (4) on the inverter.
5. The LCD screen (1) will illuminate, and the inverter will begin its startup sequence.

6.2 LCD Display and Settings

The LCD screen provides real-time system status, including input/output voltage, current, power, battery status, and operating mode. Use the touchable keys (3) to navigate through menus and adjust parameters.

6.3 Operating Modes

The inverter offers various configurable charging and output modes to suit different energy management strategies:

- **Charging Modes:**
  - **Solar-only:** Charges batteries only from solar power.
  - **Utility-first:** Prioritizes utility power for charging, uses solar if utility is unavailable.
  - **Solar-first:** Prioritizes solar power for charging, uses utility if solar is insufficient.
  - **Hybrid (Solar+Utility):** Uses both solar and utility to charge batteries.
- **Output Modes:**
  - **PV-first:** Prioritizes solar power for loads, uses battery/utility if solar is insufficient.
  - **Utility-first:** Prioritizes utility power for loads, uses inverter (battery/solar) if utility is unavailable.
  - **Inverter-first:** Prioritizes battery/solar power for loads, uses utility if battery is low.
  - **Hybrid (PV+Utility):** Uses a combination of PV and utility for loads based on configuration.

Refer to the detailed settings menu in the full user manual for specific parameter adjustments.

7. Parallel Operation

The PowMr 10KW inverter supports parallel operation, allowing up to 6 units to be connected for increased power output, reaching a maximum of 60kW. This feature is ideal for larger residential, commercial, or industrial applications.

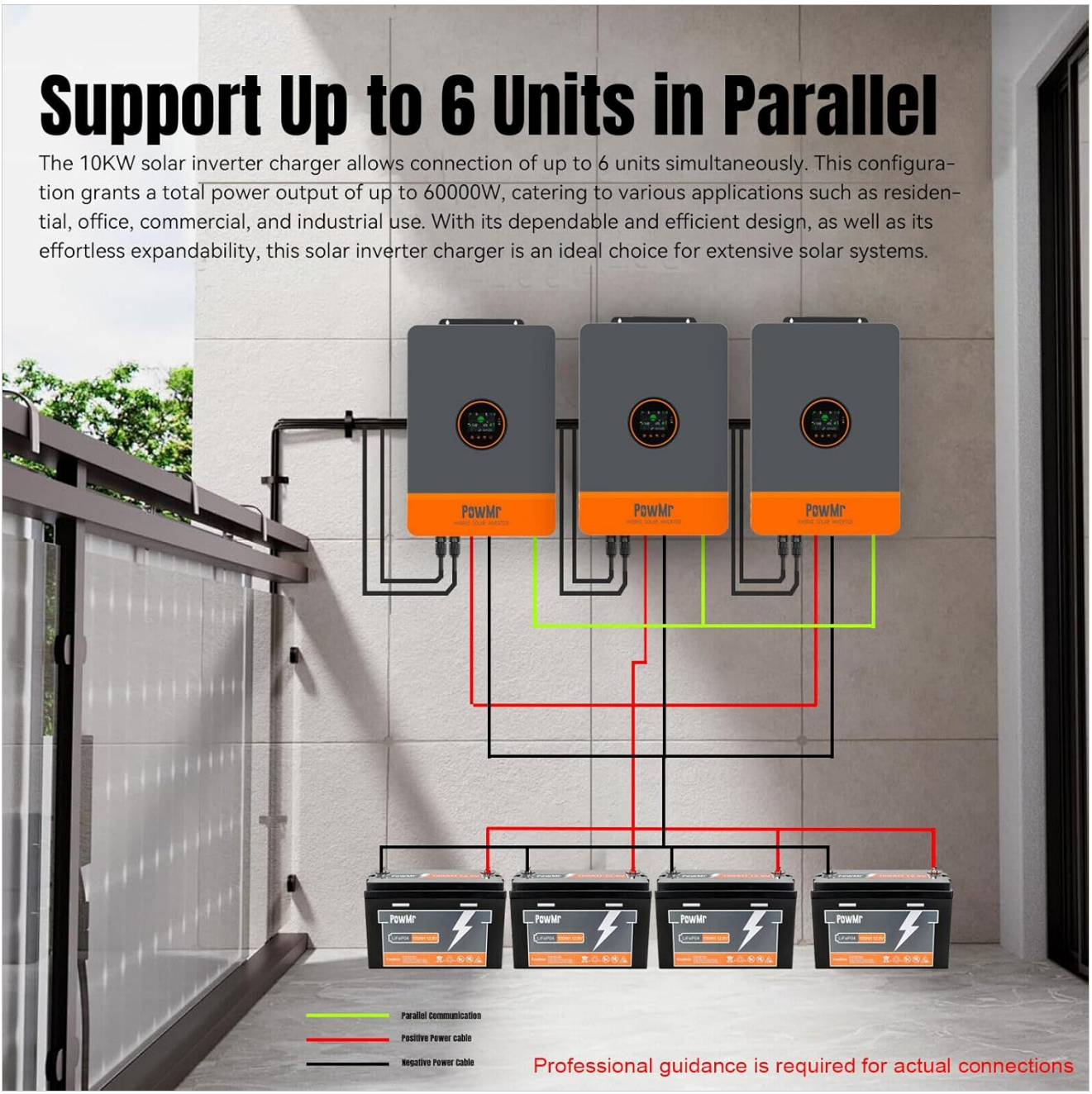

Figure 5: Example of multiple inverters connected in a parallel configuration. Professional guidance is required for actual connections.

For detailed instructions on parallel installation and configuration, consult the dedicated section in the comprehensive user manual or contact PowMr technical support.

8. Communication Interfaces

The inverter is equipped with various communication ports for monitoring, data acquisition, and battery management system (BMS) integration.

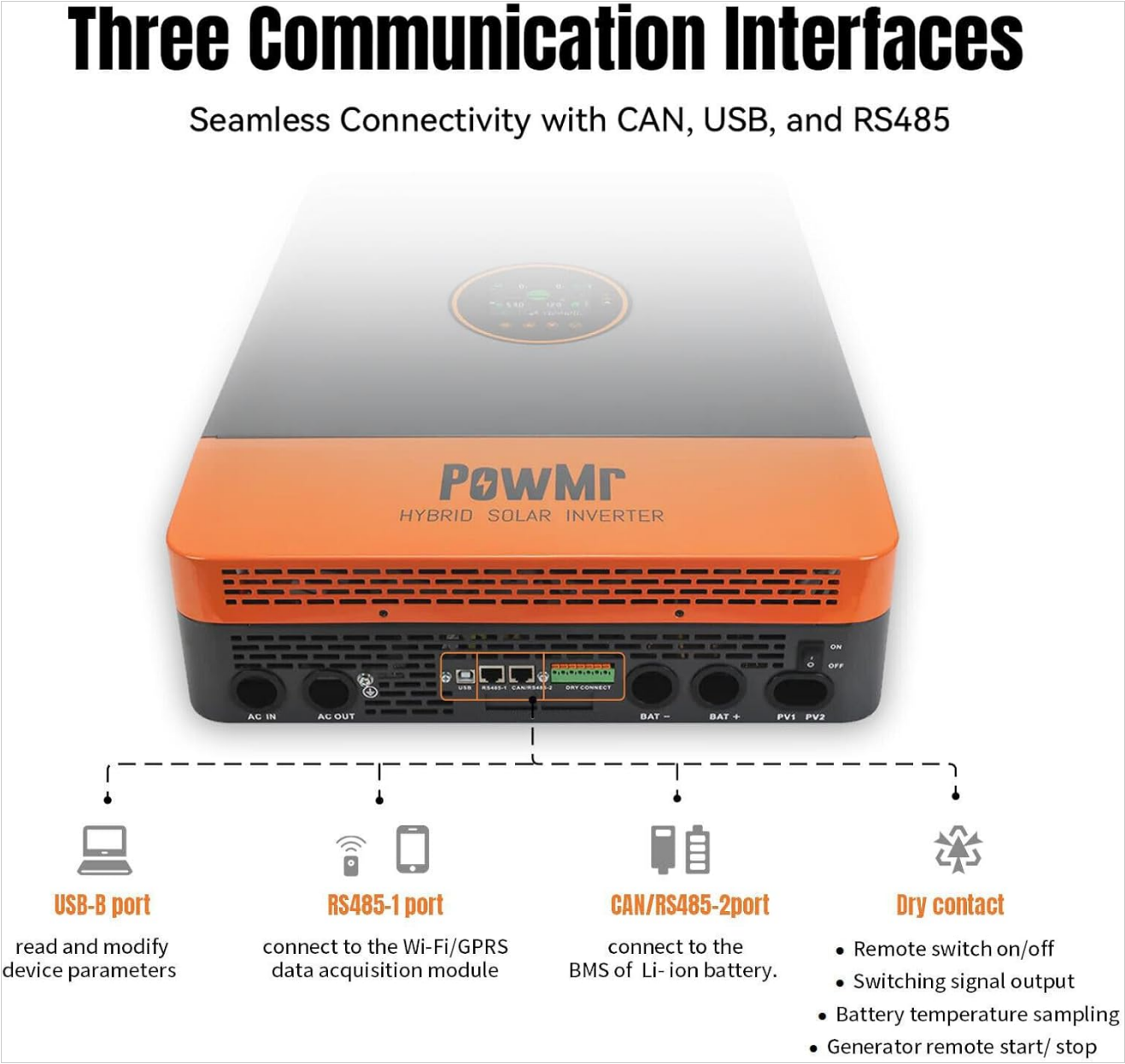

Figure 6: Overview of the inverter's communication ports.

- **USB-B Port (11):** Used for connecting to a computer to read and modify device parameters via dedicated software.
- **RS485-1 Port (10):** Connects to Wi-Fi or GPRS data acquisition modules for remote monitoring.
- **CAN/RS485-2 Port (9):** Primarily used for communication with the Battery Management System (BMS) of compatible lithium batteries.
- **Dry Contact (8):** Provides functionality for remote switch on/off, switching signal output, battery temperature sampling, and generator remote start/stop.

9. Maintenance

Regular maintenance ensures optimal performance and longevity of your inverter.

- **Cleaning:** Periodically clean the inverter's exterior and ventilation openings to prevent dust accumulation. Use a dry cloth.
- **Connections:** Annually inspect all electrical connections for tightness and corrosion. Re-tighten if necessary.
- **Environment:** Ensure the installation environment remains within specified temperature and humidity ranges.
- **Battery Inspection:** If using lead-acid batteries, check electrolyte levels and terminal condition as per battery

manufacturer guidelines.

- **Firmware Updates:** Check the PowMr website for any available firmware updates to improve performance or add features.

Always disconnect all power sources before performing any maintenance.

10. Troubleshooting

This section provides guidance for common issues. For complex problems, contact technical support.

Table 2: Common Troubleshooting Guide

Problem	Possible Cause	Solution
Inverter not turning on	No battery power; DC breaker off; ON/OFF switch off.	Check battery connections and voltage; ensure DC breaker is on; turn on inverter switch.
No AC output	Overload; short circuit; inverter fault; AC output breaker off.	Reduce load; check for short circuits; check error codes on LCD; turn on AC output breaker.
Batteries not charging	PV input too low; PV connections incorrect; charging mode incorrect; battery fault.	Check PV voltage/current; verify PV wiring; select appropriate charging mode; inspect batteries.
Error code on LCD	Specific system fault.	Refer to the full manual's error code section for detailed explanations and solutions.

11. Specifications

Below are the key technical specifications for the PowMr POW-SunSmart 10KP inverter.

Table 3: Technical Specifications

Parameter	Value
Model Name	POW-SunSmart 10KP
Rated Output Power	10000W (continuous)
Surge Power	20000W
Rated Output Voltage	120/240Vac (Split-phase/Single-phase)
Battery Voltage	48Vdc
Max PV Input Power	11KW (5500W per MPPT input)
Max PV Input Voltage	500Vdc
PV Starting Voltage	≥150V
Max MPPT Current	22A per circuit
Max Hybrid Charging Current	200A

Parameter	Value
Communication Ports	CAN, USB, RS485
Dimensions (L x W x H)	21 x 5 x 15 inches
Weight	59 pounds

Figure 7: The inverter is designed to be compatible with a wide range of household appliances, providing 10000W AC output.

12. Warranty and Support

For warranty information, technical support, or service inquiries, please refer to the official PowMr website or contact their customer service department. Keep your purchase receipt as proof of purchase.
For further assistance, please visit the PowMr Store on Amazon.