Temank POW-SunSmart 10KP-F

Temank PowMr 10000W Split-Phase Solar Inverter (Model POW-SunSmart 10KP-F) User Manual

Model: POW-SunSmart 10KP-F | Brand: Temank

1. Introduction and Product Overview

This manual provides essential information for the safe and efficient operation of your Temank PowMr 10000W Split-Phase Solar Inverter, Model POW-SunSmart 10KP-F. This advanced solar energy storage inverter integrates solar energy storage, utility charging, and AC sine wave output capabilities. It features dual MPPT controllers for high efficiency and supports various battery types, including LiFePO4, Lead-Acid, and batteryless operation.
Key features include:

- Split-phase and single-phase pure sine wave output (120V/240V).
- Parallel operation support for up to 6 units, expanding capacity to 60kW.
- Built-in dual 200A MPPT controller with 99.9% efficiency.
- Compatibility with AGM, Gel, Lead Acid, Lithium-ion, and LiFePO4 batteries, and batteryless operation.
- Four charging modes and two output modes with uninterrupted power supply.
- Comprehensive 360° protection against short circuit, over-current, over/under voltage, overload, and more.

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

The inverter is designed for various off-grid backup and self-use applications, suitable for homes, cabins, RVs, trailers, and boats.

2. Safety Information

Please read and understand all safety instructions before installation and operation. Failure to follow these instructions may result in electric shock, fire, or severe injury. Keep this manual for future reference.

- **Qualified Personnel:** Installation and maintenance must be performed by qualified personnel.
- **Disconnect Power:** Always disconnect all power sources (PV, battery, utility) before performing any maintenance or wiring.
- **Proper Grounding:** Ensure the inverter is properly grounded to prevent electric shock.
- **Correct Polarity:** Observe correct polarity for all DC connections (battery, PV) to avoid damage.
- **Ventilation:** Ensure adequate ventilation around the inverter to prevent overheating.
- **Environmental Conditions:** Do not expose the inverter to rain, snow, liquids, or excessive dust.
- **Internal Components:** Do not attempt to open or repair the inverter. Refer to authorized service personnel.

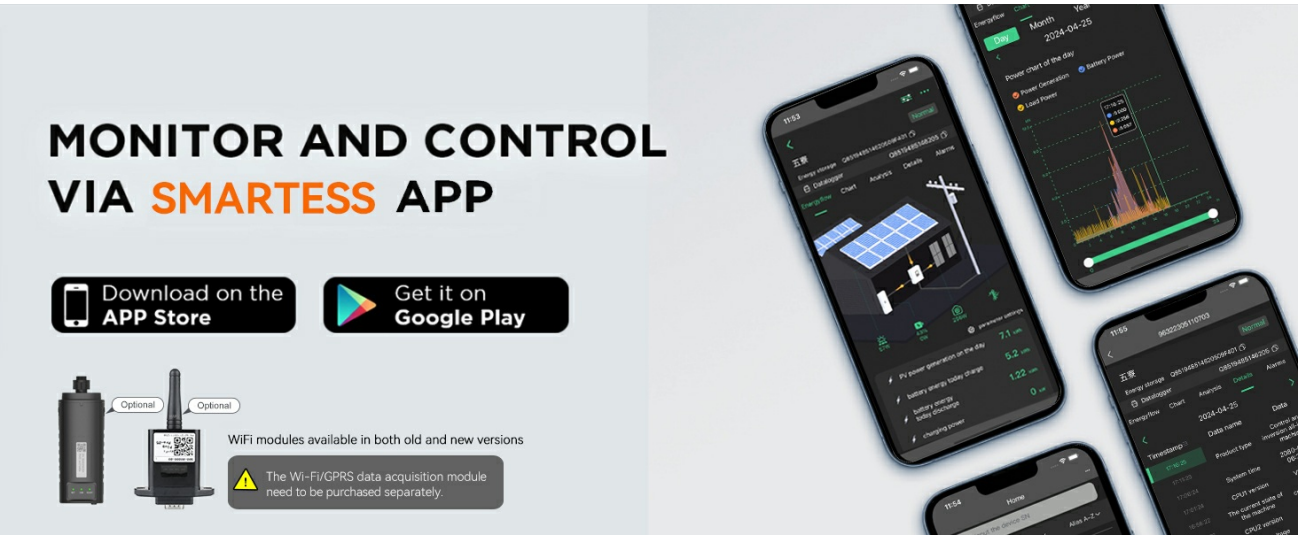

Figure 2: The inverter includes multiple protection features such as short circuit, over-current, over/under voltage, overload, backfill, and over-temperature protection.

3. Product Components and What's in the Box

The PowMr 10000W Split-Phase Solar Inverter is a robust unit designed for reliable performance. Below is an overview of its main components and the contents of the packaging.

Figure 3: Production Overview showing the LCD screen, LED indicators, touchable keys, ON/OFF rocker switch, PV input, BAT input, Dry contact, CAN/RS485-2 port, RS485-1 port, USB-B port, Grounding Screw, AC OUT, AC IN, AC INPUT breaker, and Parallel Communication Port.

Package Contents:

- 1 x 10000W solar inverter
- 1 x Parallel communication cable
- 2 x Battery Terminal Lugs
- 2 x M5 screws
- 1 x Instruction Manual (this document)

4. Setup and Installation

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

4.1 Mounting the Inverter

Mount the inverter on a sturdy, non-flammable surface in a well-ventilated area, away from direct sunlight, heat sources, and moisture. Ensure sufficient clearance around the unit for airflow.

Figure 4: The inverter should be securely mounted on a vertical surface, ensuring proper ventilation.

4.2 Wiring Connections

Before making any electrical connections, ensure all circuit breakers are in the OFF position. Observe correct polarity for all connections.

4.2.1 Battery Connections

Connect the positive and negative terminals of your 48V battery bank to the corresponding battery input terminals on the inverter. Use appropriate gauge wiring and ensure secure connections. The inverter supports various battery types, including LiFePO4 and Lead-Acid batteries.

[redacted]

Video 1: This video demonstrates the wiring process for the POW-SunSmart 10K inverter, including battery connections. Ensure all circuit breakers are in the OFF position before wiring.

Figure 5: Close-up of the battery connection terminals on the inverter, showing positive and negative inputs.

4.2.2 PV Input Connections

The inverter features dual MPPT inputs. Connect your solar panel arrays to the PV1 and PV2 input terminals. Each input supports up to 5500W, with a maximum PV input voltage of 500Vdc and current of 22A. Ensure PV starting voltage is greater than 150V.

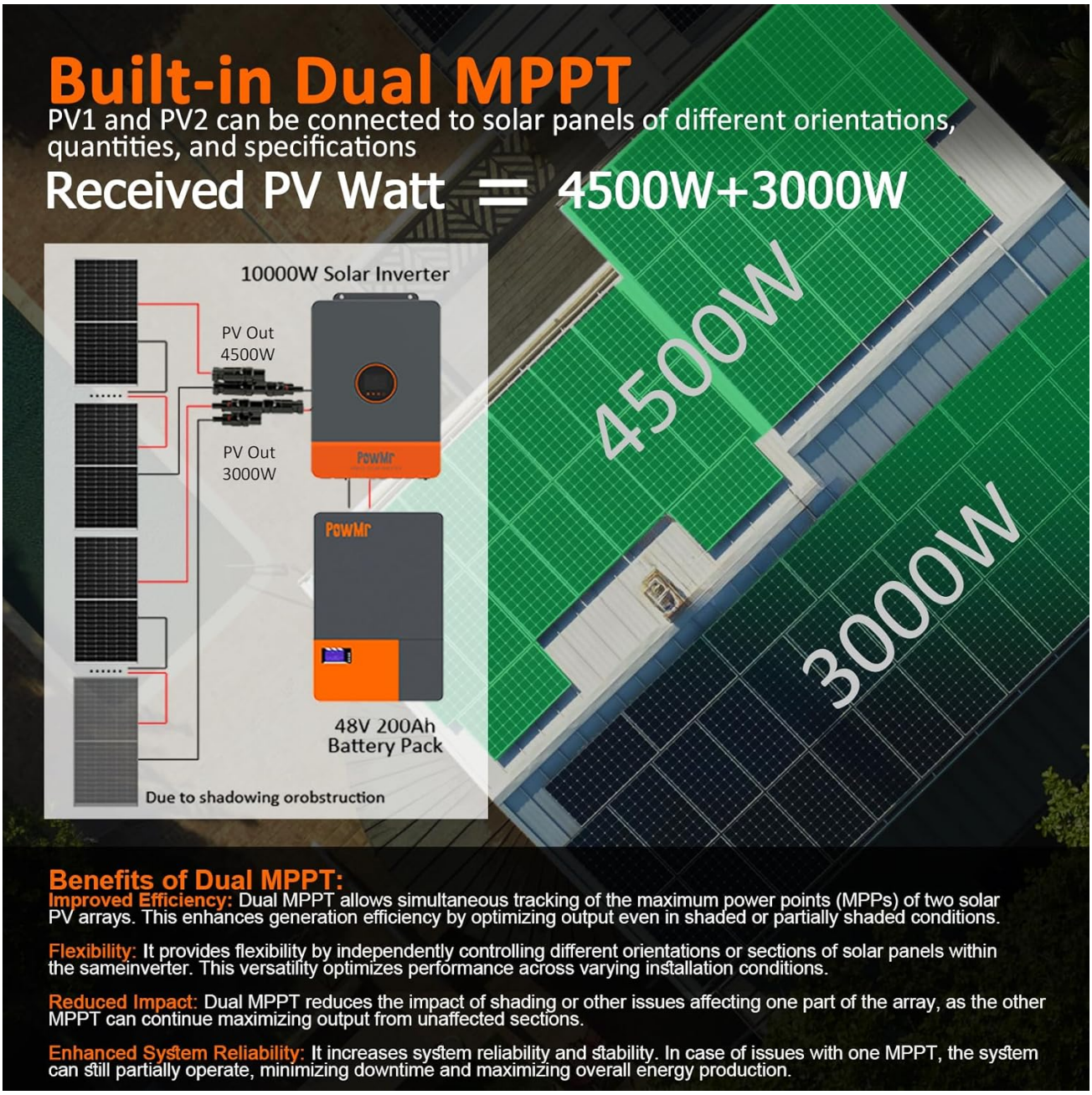

Figure 6: Diagram illustrating the dual MPPT PV inputs, allowing connection of solar panels with different specifications and quantities for optimized energy harvesting.

[redacted]

Video 2: This video provides a wiring guide for the POW-SunSmart 10K inverter, including detailed steps for connecting PV inputs to the distribution box.

4.2.3 AC Input and Output Connections

Connect the utility grid or generator to the AC input terminals. The inverter supports 120/240Vac split-phase/single-phase output. Connect your loads to the AC output terminals. Ensure all AC wiring adheres to local electrical codes and safety standards.

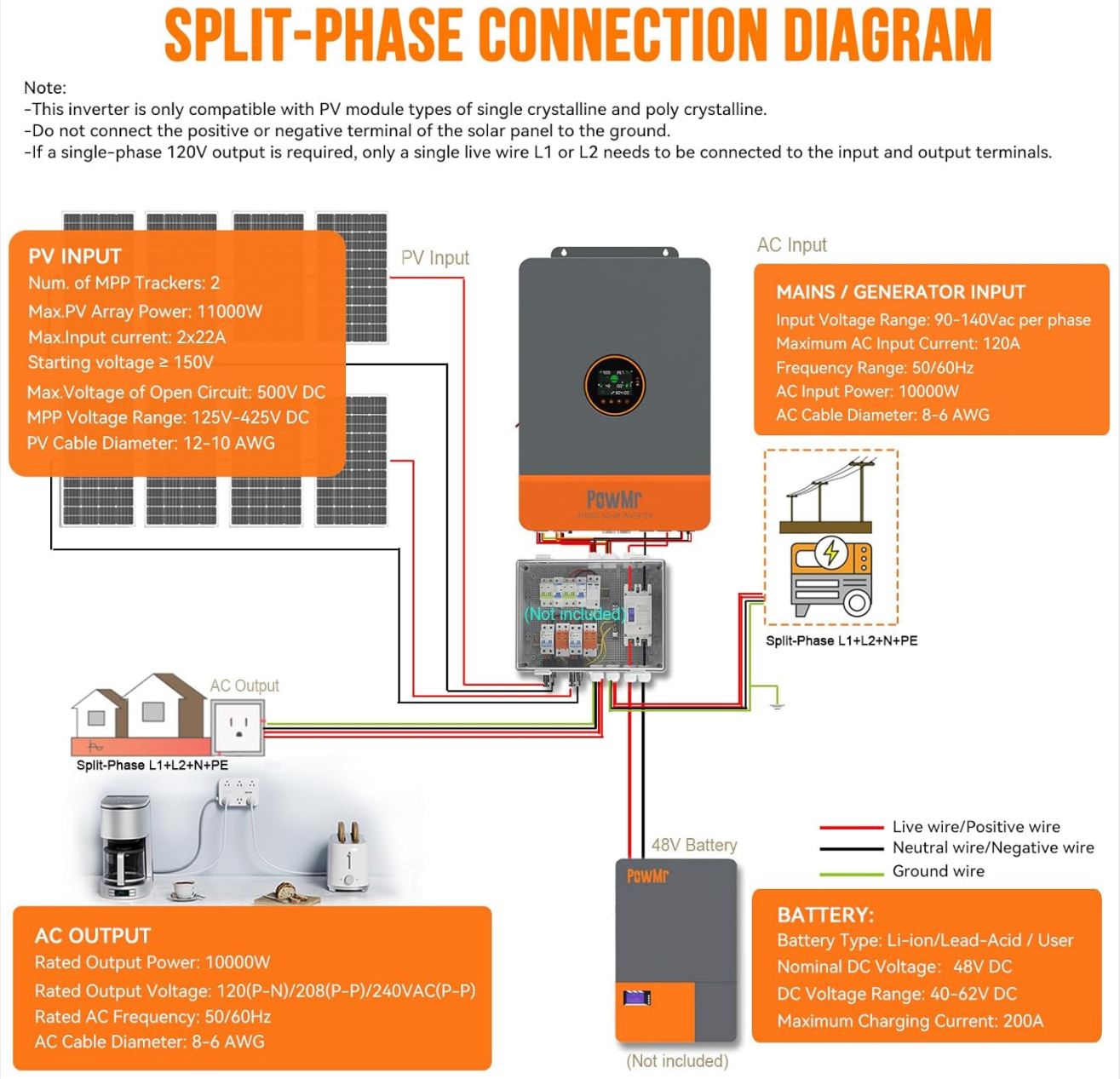

Figure 7: A detailed diagram showing the split-phase connection for the inverter, including PV input, AC input (mains/generator), battery, and AC output to loads. Note the specific wiring for L1, L2, N, and PE (ground).

[redacted]

Video 3: This video explains three different wiring methods for the POW-SunSmart 10K solar inverter, focusing on AC output configurations for various load requirements.

4.2.4 Grounding

Proper grounding is essential for safety. Connect the inverter's grounding terminal to a reliable earth ground. Refer to local electrical codes for grounding requirements.

4.2.5 Parallel Communication (Optional)

For parallel operation of multiple inverters (up to 6 units), connect the parallel communication cables between the inverters. This allows for capacity expansion up to 60kW.

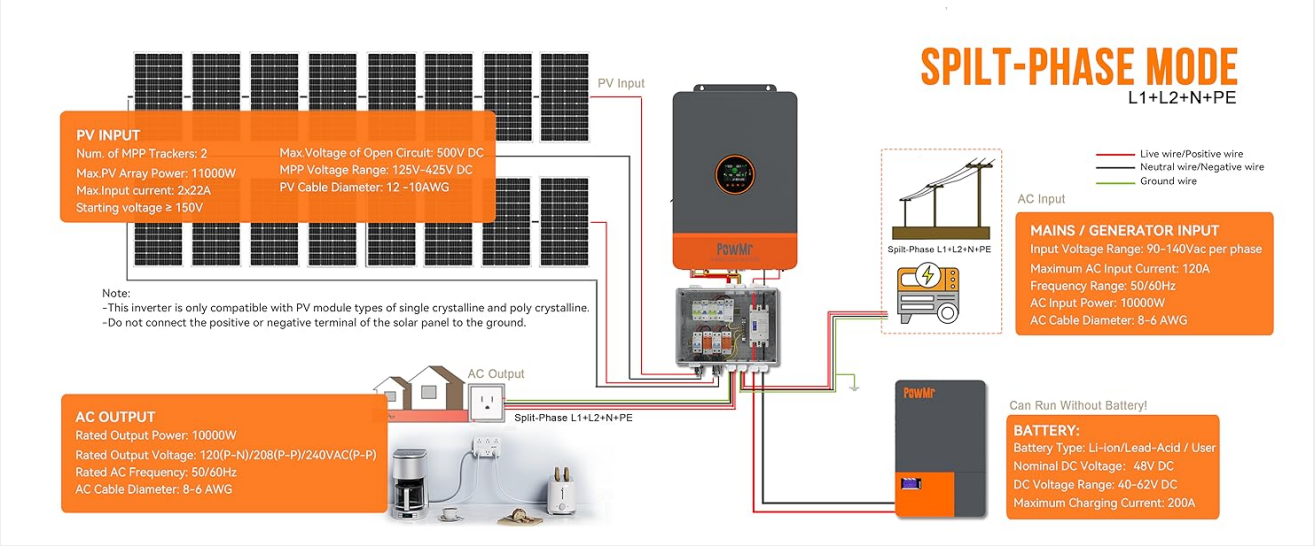

Figure 8: Diagram illustrating parallel connection configurations for two, three, and six inverters to achieve higher power output and different phase systems.

[redacted]

Video 4: This video provides a detailed guide for parallel operation of three POW-SunSmart 10KP inverters, covering wiring and configuration steps.

5. Operating Instructions

Once the inverter is installed and wired correctly, you can proceed with its operation.

5.1 Initial Power-Up

After all connections are secure and verified, turn on the battery circuit breaker, then the PV input breakers, and finally the AC input breaker. The inverter's LCD display will light up, indicating its operational status.

[redacted]

Video 5: This video demonstrates BMS communication protocol settings for the inverter and battery, including initial power-up and display verification.

5.2 LCD Display and Settings

The LCD display provides real-time monitoring of photovoltaic system operating data. Use the touchable keys to navigate through menus and configure settings.

Figure 9: The LCD HD display screen provides real-time monitoring of photovoltaic system operating data, including battery voltage, output voltage, and power flow.

5.3 Charging Modes

The inverter offers four charging modes:

- **Solar Only:** Charges battery exclusively from solar power.
- **Mains Priority:** Prioritizes utility power for charging, using solar as a supplement.
- **Solar Priority:** Prioritizes solar power for charging, using utility as a supplement.
- **Mixed Mains/PV Charging:** Utilizes both utility and PV for charging.

5.4 Time-Slot Charging/Discharging Function

The POW-SunSmart series is equipped with a time-slot charging and discharging function, allowing users to set different charging and discharging periods according to local peak and valley tariffs. This optimizes utility power and PV energy usage, potentially saving electricity costs.

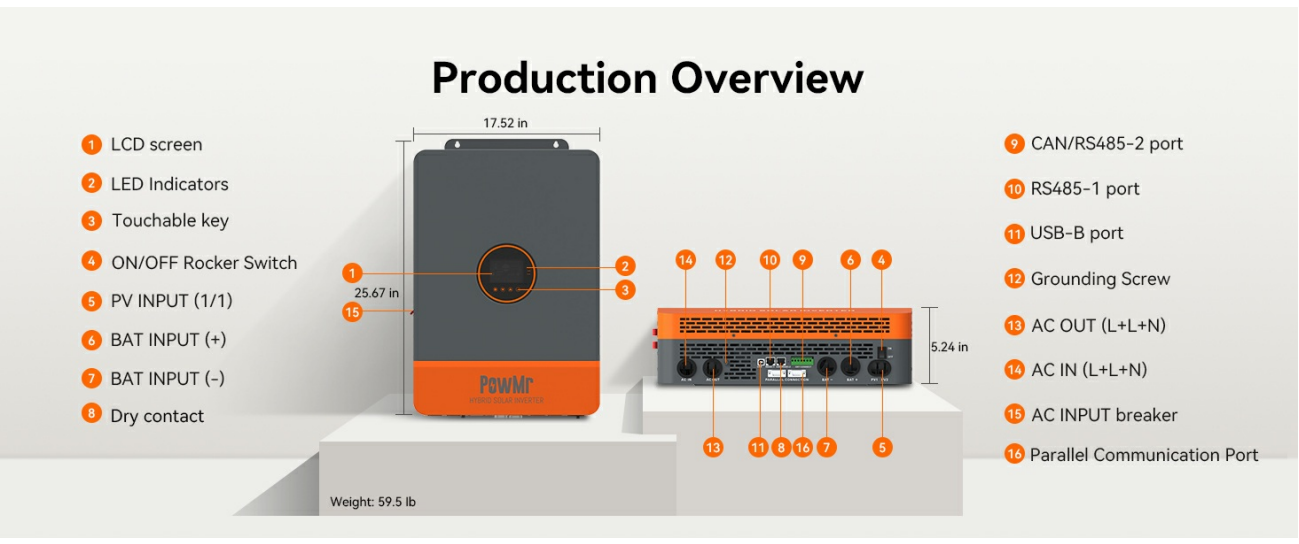

Figure 10: Diagram explaining the time-slot charging and discharging function, which allows users to optimize energy usage based on electricity tariffs.

5.5 Power Saving Mode

Enable power saving mode to conserve energy. When the load power drops below 50W, the inverter will switch off after a 5-minute delay. It will automatically restart when the load exceeds 50W.

Figure 11: Illustration of the power saving mode, which automatically turns off the inverter for low loads and restarts for higher loads.

5.6 Monitoring and Control via App

The inverter supports CAN, USB, and RS485 communication. Optional WiFi/GPRS data acquisition modules (purchased separately) allow for remote monitoring and control via the SMARTESS App, available on the App Store and Google Play.

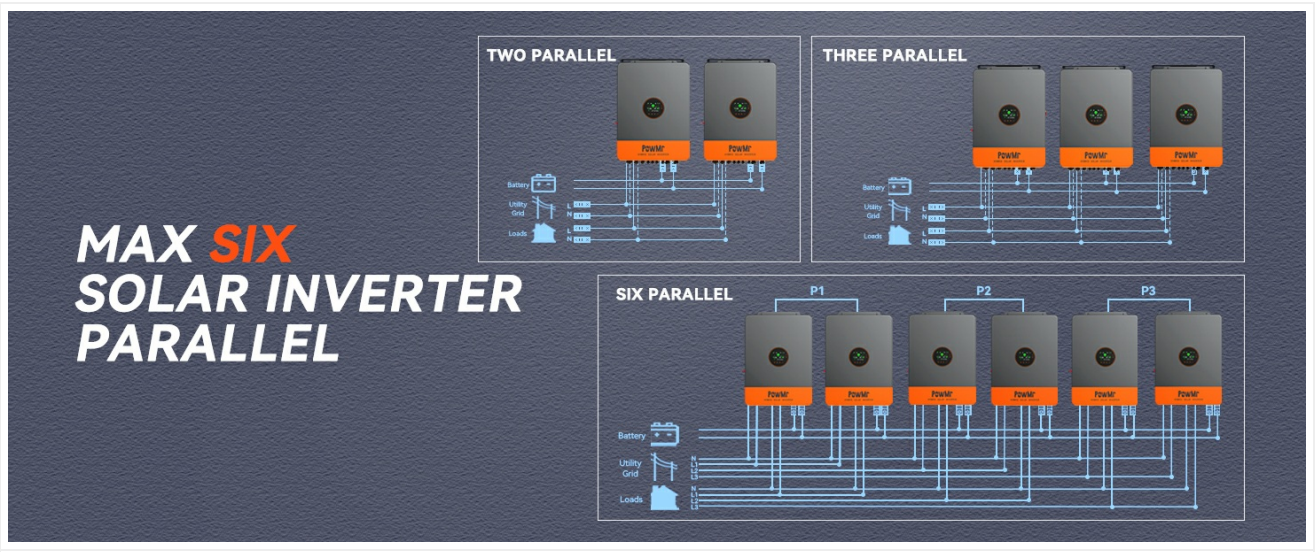

Figure 12: The SMARTESS App allows users to monitor and control the solar inverter system remotely, providing real-time data and settings adjustments.

6. Maintenance

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

- **Cleaning:** Periodically clean the exterior of the inverter and ensure the detachable insect-proof screen is free from debris to maintain proper airflow.
- **Connections:** Regularly check all electrical connections for tightness and signs of corrosion.
- **Ventilation:** Ensure the cooling fans are operating correctly and are not obstructed. The inverter is equipped with four cooling fans for efficient heat dissipation.
- **Inspection:** Inspect the unit for any visible damage or unusual noises.

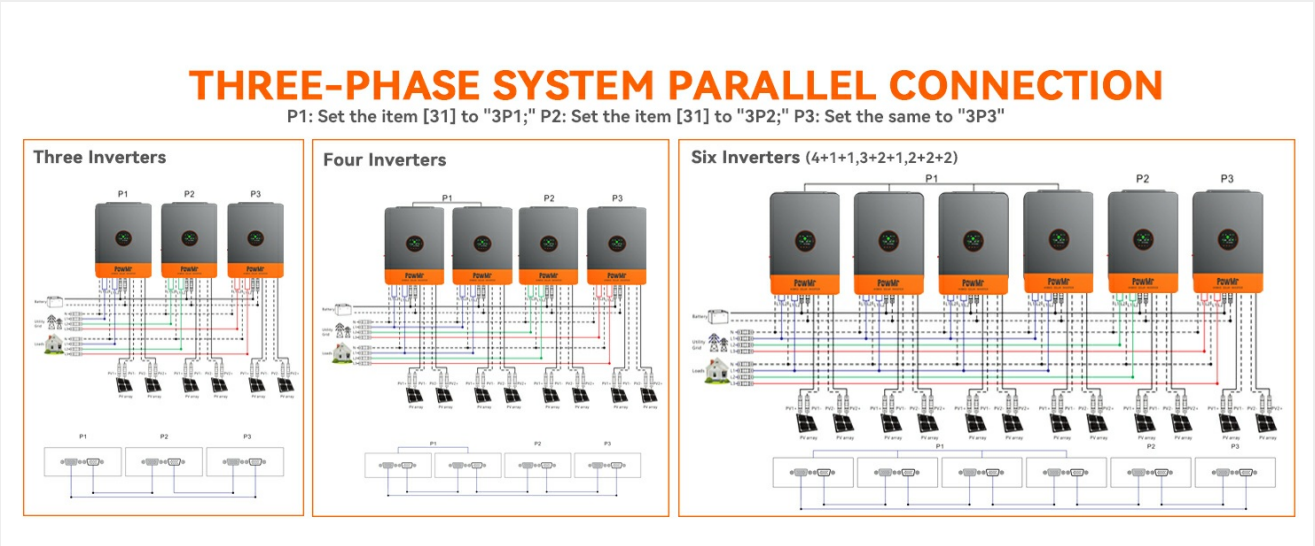

Figure 13: The inverter features a detachable insect-proof screen for easy cleaning and intelligent cooling fans to prevent overheating.

7. Troubleshooting

If you encounter issues with your inverter, refer to the following general troubleshooting steps. For complex problems, contact customer support.

- **No Power:** Check all circuit breakers (battery, PV, AC input) to ensure they are in the ON position. Verify battery connections and voltage.
- **No AC Output:** Check AC output circuit breakers. Ensure loads are within the inverter's rated capacity.
- **Fault Indicators:** If a fault indicator is lit on the LCD, refer to the inverter's display for specific fault codes and consult the full manual for detailed explanations and solutions.
- **Overload Protection:** If the inverter shuts down due to overload, reduce the connected load and restart the unit.

8. Technical Specifications

Feature	Specification
Rated Output Power	10000W (continuous), 20000W (surge)
Rated Output Voltage	120/240Vac (split phase/single phase)
Battery Voltage	48Vdc (40-60Vdc range)
Max. PV Input Power	11KW (5500W * 2)
Max. PV Input Voltage	500Vdc
Max. PV Input Current	22A
MPPT Voltage Range	125-425Vdc
Max. MPPT Charging Current	200A (2 * 100A)
AC Input Voltage Range	90-140Vac per phase
Switch Time	10ms
Communication	CAN, USB, RS485
Item Weight	59.5 pounds
Package Dimensions	31 x 23 x 10 inches

9. Warranty and Support

For warranty information and technical support, please refer to the documentation included with your product or visit the official Temank website. Keep your purchase receipt as proof of purchase for warranty claims.
For further assistance, you may contact the seller Y-SOLAR directly via Amazon's messaging system or refer to the contact information provided in your product packaging.