SGPWATT SPH6548P

SUNGOLDPOWER 6500W 48V Solar Inverter

Model: SPH6548P | Brand: SGPWATT

1. Introduction and Product Overview

The SUNGOLDPOWER 6500W 48V Solar Inverter is a versatile device designed for solar energy storage and utility charging, providing a pure sine wave AC output. It incorporates advanced DSP control for high response speed and reliability, meeting industrial standards. This 48V solar hybrid inverter features communication ports (RS485/CAN/USB/Dry contact/WIFI) for seamless interaction with batteries, computers, generators, and mobile devices. It supports a maximum PV array power of 10000W through its dual MPPTs, making it suitable for expanding or setting up larger solar panel systems.

Image 1.1: Front view of the SUNGOLDPOWER 6500W 48V Solar Inverter, showcasing its blue casing and integrated LCD display.

Key Features:

- UL1741 certified 6.5KW DC 48V Pure Sine Wave Solar Inverter.

- Integrated dual MPPT solar controllers with a maximum 140A battery charging capability.
- Supports a maximum open circuit voltage of 550VDC.
- Configurable for Split phase (120V/240V) or Single phase (120V) AC output.
- Includes a WiFi module for remote monitoring via a mobile application.
- Parallel operation capability for up to 6 units.
- Features smart protection against PV input over-voltage/current, AC input over-voltage, battery over-voltage, and overload.
- Offers two charging modes (Hybrid Charging / Only Solar Charging) and four AC output modes (Utility Priority / Solar and Utility Hybrid / Solar Priority / Inverter Priority).
- Equipped with a time-slot charging/discharging function for optimized energy usage based on tariffs.
- Compatible with various 48V battery types including AGM/Sealed, Gel, Flooded, Lithium, and a User Mode. Supports battery-free operation.

2. Package Contents and Dimensions

Upon unpacking, verify that all components listed below are present and undamaged. If any items are missing or damaged, contact your supplier immediately.

Image 2.1: Diagram illustrating the dimensions of the SUNGOLDPOWER 6500W 48V Solar Inverter and its included accessories.

Included Components:

- 6500W Inverter Unit
- Communication Cable
- Parallel Cable (for multi-unit installations)
- Mounting Screws
- WIFI Module
- User Manual (this document)
- Warranty Card
- Cable Lugs

Product Dimensions:

- Dimensions: Approximately 58.4 cm (L) x 41.1 cm (W) x 13.5 cm (H) / 23.0 in (L) x 16.2 in (W) x 5.3 in (H)
- Net Weight: Approximately 18.01 kg (41 lbs)

3. Setup and Installation

3.1 Safety Guidelines

Before installation, read all instructions carefully. Installation must be performed by qualified personnel in accordance with all local electrical codes. Ensure the inverter is disconnected from all power sources (PV, battery, utility) before performing any wiring or maintenance. Wear appropriate personal protective equipment.

3.2 Mounting the Inverter

Select a suitable mounting location that is dry, well-ventilated, and protected from direct sunlight, rain, and dust. Ensure adequate clearance around the inverter for proper heat dissipation. Use the provided mounting screws to securely fasten the inverter to a sturdy vertical surface.

3.3 Wiring Connections

The inverter supports various battery types and communication protocols. Proper wiring is crucial for safe and efficient operation.

Image 3.1: Illustration showing the inverter's compatibility with various battery types (Flooded, AGM, LiFePO4, GEL, Sealed Lead Acid, User-defined) and its communication ports (USB, CT, WiFi, Dry Contact, RS485, CAN).

Battery Connection:

Connect the 48V battery bank to the designated battery terminals. Ensure correct polarity. The inverter is compatible with AGM/Sealed, Gel, Flooded, and Lithium batteries. A User Mode is available for custom battery settings. The inverter can activate dormant lithium batteries using mains power or photovoltaics. It supports CAN, USB, and RS485 communication with SunGoldPower batteries.

PV Array Connection:

Connect the solar PV array to the MPPT input terminals. Observe the maximum open circuit voltage of 550VDC and ensure the total PV power does not exceed 10000W. The dual MPPTs optimize solar energy harvesting.

AC Input/Output Connection:

The inverter supports AC input/output of 120V/240V (settable) for split-phase systems or 120V for single-phase systems. Connect the utility grid to the AC input and your loads to the AC output terminals. Ensure all connections are secure and properly insulated.

Parallel Connection (Optional):

For increased power capacity, up to 6 units can be connected in parallel. Use the provided parallel cable and follow the specific wiring diagrams for split-phase or three-phase parallel configurations.

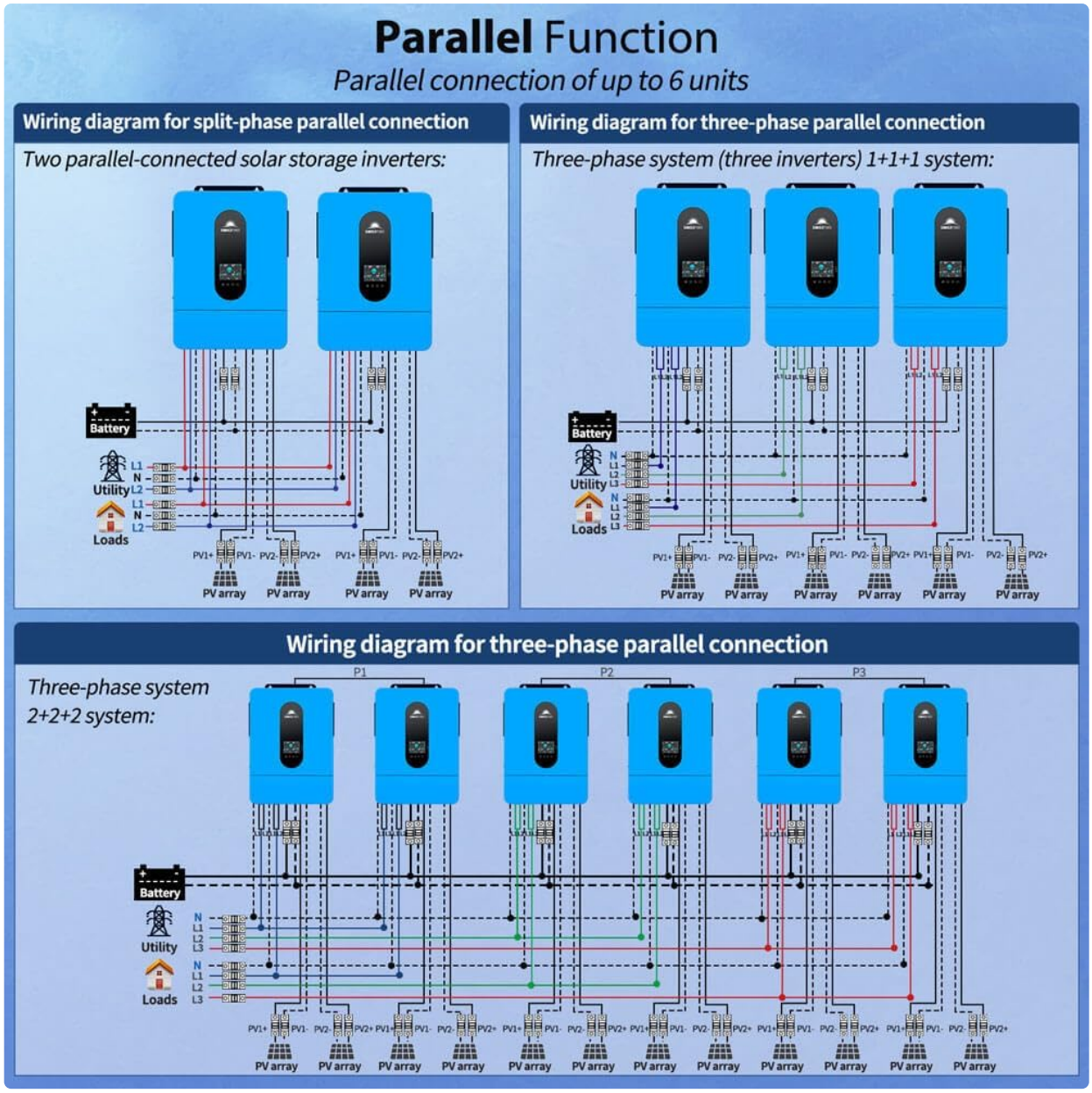

Image 3.2: Wiring diagrams illustrating split-phase and three-phase parallel connections for multiple inverter units.

4. Operating Instructions

4.1 LCD HD Display

The inverter features an LCD HD display that provides real-time operational data and allows for parameter settings. Users can monitor various system statuses, including PV input, battery voltage, AC output, and energy flow.

Image 4.1: Close-up view of the inverter's LCD HD display, showing various real-time data and menu options.

4.2 Working Modes

The inverter offers flexible working modes to suit different energy management strategies.

AC Output Modes:

- **Utility Priority Output:** Mains power is primarily used to supply loads, with solar and battery as backup.
- **Solar and Utility Hybrid Output:** Solar power is prioritized, supplemented by utility power when solar is insufficient.
- **Solar Priority Output:** Solar power is the primary source for loads and battery charging.
- **Inverter Priority Output:** Battery power is prioritized for loads, with utility as backup.

Battery Charging Modes:

- **Hybrid Charging:** Utilizes both solar and utility power for battery charging.
- **Only Solar Charging:** Batteries are charged exclusively by solar power.

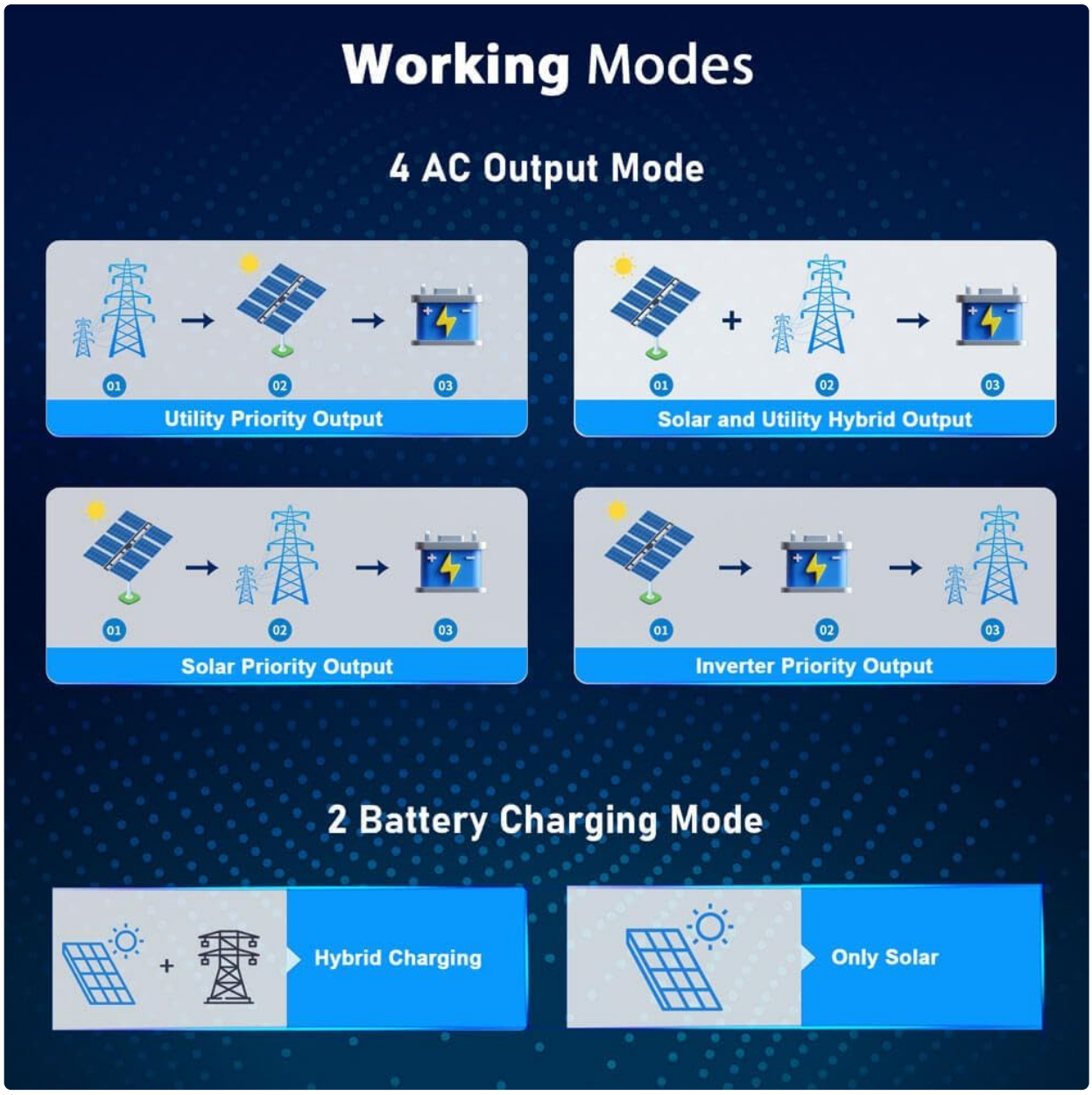

Image 4.2: Visual representation of the inverter's four AC output modes and two battery charging modes.

4.3 Time-Slot Charging/Discharging Function

The SPH series inverter includes a time-slot function, allowing users to define specific periods for charging and discharging based on local peak and valley electricity tariffs. This feature optimizes the use of utility power and PV energy, potentially reducing electricity costs.

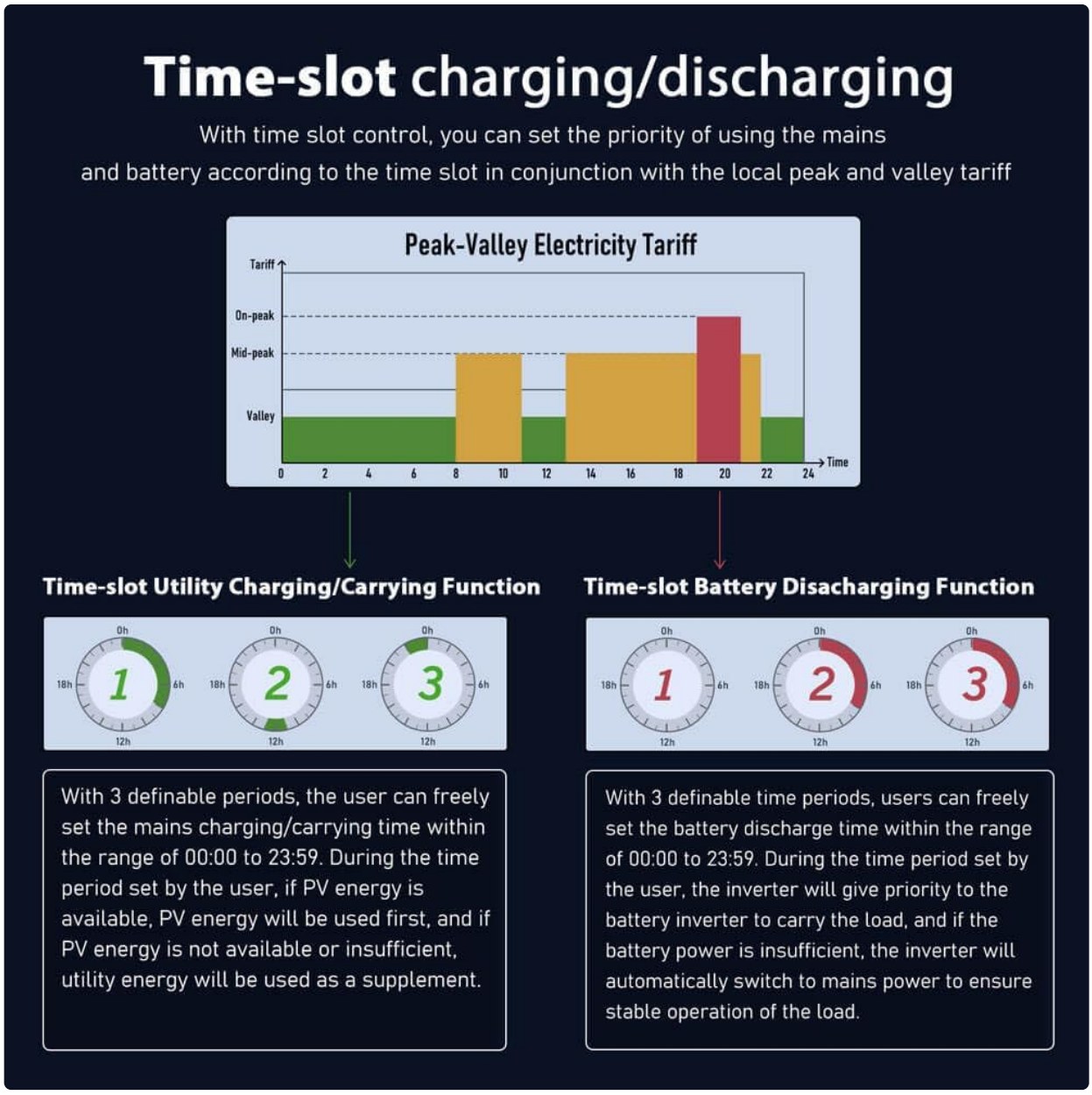

Image 4.3: Graph illustrating peak-valley electricity tariffs and diagrams explaining time-slot utility charging/carrying and battery discharging functions.

4.4 WiFi Module Operation

The included WiFi module enables remote monitoring and control of the inverter via a dedicated mobile application. Install the app on your smartphone and follow the instructions to connect to the inverter's WiFi network. This allows you to view operating status, adjust parameters, and receive alerts from anywhere.

5. Maintenance

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

- **Cleaning:** Periodically clean the exterior of the inverter with a dry, soft cloth. Ensure ventilation openings are free from dust and debris. Do not use liquid cleaners.
- **Connections:** Annually inspect all electrical connections (PV, battery, AC input/output) for tightness and signs of corrosion. Tighten any loose connections.
- **Environment:** Ensure the installation environment remains within the specified temperature and humidity ranges.
- **Battery Health:** If using lead-acid batteries, regularly check electrolyte levels and specific gravity as per

battery manufacturer guidelines. For lithium batteries, monitor BMS data via the communication ports or app.

- **Firmware Updates:** Check the manufacturer's website periodically for any available firmware updates to ensure optimal performance and access to new features.

6. Troubleshooting

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

Common Issues and Solutions:

- **Inverter Not Turning On:** Check battery connections, battery voltage (must be within operating range), and ensure the DC breaker is closed. Verify AC input if utility charging is expected.
- **No AC Output:** Check for overload conditions, short circuits on the AC output, or if the inverter is in a fault state. Verify AC output breaker.
- **Low PV Charging:** Ensure PV array is clean and free of shading. Check PV connections and voltage. Verify MPPT settings are correct for your array.
- **Error Codes on Display:** Refer to the specific error code in the detailed manual (if available) or contact support with the code for diagnosis.
- **WiFi Connection Issues:** Ensure the WiFi module is correctly installed and powered. Check network settings on your mobile device and ensure it's within range of the inverter's WiFi signal.

The inverter includes smart protection features for PV input over-voltage/current, AC input over-voltage, battery over-voltage, and overload. If a protection mechanism is triggered, the inverter may shut down or display an error. Address the underlying cause before restarting.

7. Specifications

Technical specifications for the SUNGOLDPOWER 6500W 48V Solar Inverter (Model SPH6548P).

Image 7.1: Overview of key specifications including Max PV Array Power, Max Open Circuit Voltage, and Max Charge Current.

Feature	Specification
Model	SPH6548P
Rated Output Power	6500W
Max Peak Power	13,000VA
DC Voltage	48 Volts
AC Input/Output	120V/240V (settable), 120V (single phase)
Max PV Array Power	10000W
Max Open Circuit Voltage	550VDC
Max Battery Charging Current	140A
MPPTs	2
Loaded Motor Capacity	4HP
Display Type	LCD
Communication Ports	RS485, CAN, USB, Dry Contact, WIFI
Parallel Capability	Up to 6 units
Battery Compatibility	AGM/Sealed, Gel, Flooded, Lithium, User Mode
Product Dimensions	57.91 x 41.91 x 12.95 cm (23.0 x 16.2 x 5.3 inches)
Item Weight	18.01 kg (41 lbs)
Certifications	UL1741

8. Warranty and Support

8.1 Warranty Information

This product comes with a manufacturer's warranty. Please refer to the included Warranty Card for specific terms, conditions, and duration of the warranty. Retain your proof of purchase for warranty claims.

8.2 Technical Support

For technical assistance, troubleshooting beyond this manual, or warranty inquiries, please contact SGPWATT customer support. Contact details can typically be found on the manufacturer's website or on the Warranty Card provided with your product.

When contacting support, please have your product model (SPH6548P) and serial number ready to facilitate efficient service.