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> [SAKO SUNON V 4.5KVA/4200W/24V Hybrid Solar Inverter User Manual](#)

### sako SUNON V 4.5KVA/4200W

# SAKO SUNON V 4.5KVA/4200W/24V Hybrid Solar Inverter User Manual

Model: SUNON V 4.5KVA/4200W

## 1. INTRODUCTION

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Thank you for choosing the SAKO SUNON V 4.5KVA/4200W/24V Hybrid Solar Inverter. This manual provides essential information for the safe and efficient operation of your inverter. This device is designed to provide reliable power for your home or office, integrating solar power, utility power, and battery power to ensure an uninterrupted power supply. It features a high-frequency design, a built-in MPPT solar charge controller, and smart monitoring capabilities.

Please read this manual thoroughly before installation and operation, and keep it for future reference.

## 2. SAFETY INFORMATION

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Always observe the following safety precautions to reduce the risk of injury or damage to the inverter:

- **Qualified Personnel:** Installation and maintenance should only be performed by qualified personnel.
- **Ventilation:** Ensure adequate ventilation around the inverter. Do not block ventilation openings.
- **Environment:** Install the inverter in a dry, cool, and dust-free environment, away from flammable materials.
- **Electrical Connections:** All wiring must comply with local and national electrical codes. Ensure all connections are tight and secure to prevent loose connections that can cause overheating.
- **Grounding:** The inverter must be properly grounded.
- **Emergency Shutdown:** Know how to quickly disconnect power to the inverter in an emergency.
- **Built-in Protections:** The inverter includes built-in overload protection, short circuit protection, overvoltage protection, undervoltage protection, and overtemperature protection to ensure safe operation.
- **Battery Safety:** When connecting batteries, ensure correct polarity. Batteries can produce explosive gases; ensure proper ventilation in battery areas.

## 3. PRODUCT OVERVIEW

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The SAKO SUNON V Hybrid Solar Inverter is a compact and efficient unit designed for seamless integration into solar energy systems. It features a clear LCD screen for status display and configuration, along with intuitive control buttons.

Front view of the SAKO SUNON V Hybrid Solar Inverter, showcasing its clean design and central LCD display with an illuminated ring.

Angled view of the SAKO SUNON V Hybrid Solar Inverter, showing the side ventilation grilles and the overall compact form factor.

### 3.1. Components and Ports

Detailed diagram of the SAKO SUNON V Inverter, highlighting key components such as the LCD Screen, Radiator, ON/OFF switch, AC Output, AC Input, PV input, and Battery terminals (BAT+ and BAT-).

The inverter features:

- **LCD Screen:** Displays system status, operational parameters, and error codes.
- **Control Buttons:** For navigation and setting adjustments on the LCD.
- **Radiator/Cooling Fins:** For heat dissipation.
- **ON/OFF Switch:** Main power control for the inverter.
- **AC Input:** Connection for utility grid power or generator.
- **AC Output:** Connection for household appliances and loads.
- **PV Input:** Connections for solar panel arrays.
- **Battery Terminals (BAT+, BAT-):** Connections for the battery bank.
- **Communication Ports:** USB, RS485, RS232 for PC monitoring, and Local WiFi for mobile app monitoring.

## 4. SETUP

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Proper setup is crucial for the inverter's performance and safety. Ensure all safety guidelines are followed during installation.

### 4.1. Site Selection

- Install indoors, away from direct sunlight, rain, and moisture.
- Ensure ambient temperature is between -10°C to 50°C.
- Maintain at least 20 cm clearance around the inverter for proper airflow.
- Mount on a solid, non-flammable surface.

### 4.2. Wiring Connections

Refer to the following diagram for a typical solar system connection. All wiring should be done by a qualified electrician.

Diagram illustrating the solar system connection for the SAKO SUNON V inverter, showing connections for

solar panels, utility grid, generator, lithium battery, and home appliances. It highlights day-time charging and night-time discharging paths.

1. **Battery Connection:** Connect the 24V battery bank to the BAT+ and BAT- terminals. Ensure correct polarity. The inverter supports working with or without a battery.
2. **PV Array Connection:** Connect the solar panel array to the PV input terminals. Ensure the PV voltage and current are within the inverter's specifications.
3. **AC Input Connection:** Connect the utility grid power or a compatible generator to the AC INPUT terminals.
4. **AC Output Connection:** Connect your household loads and appliances to the AC OUTPUT terminals.
5. **Grounding:** Connect the inverter's ground terminal to a reliable earth ground.

### 4.3. Initial Power-Up

1. Double-check all wiring connections for tightness and correct polarity.
2. Turn on the battery breaker (if applicable).
3. Turn on the solar array breaker (if applicable).
4. Turn on the AC input breaker (if applicable).
5. Finally, turn on the inverter's ON/OFF switch. The LCD screen should light up, indicating the inverter is starting.

## 5. OPERATING

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The SAKO SUNON V inverter offers user-configurable settings and multiple operating modes to optimize your power supply.

### 5.1. LCD Display and Settings

The LCD screen provides real-time operational data and allows for system configuration. Use the control buttons below the screen to navigate menus and adjust parameters such as DC/AC input priority, battery type, and charging current.

### 5.2. Charging Modes

The inverter supports four distinct charging modes to suit various energy management needs:

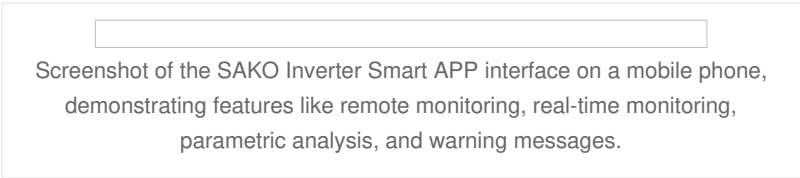
Visual representation of the four charging modes: 1. Solar Charging, 2. Electricity Utility Priority, 3. Solar Priority, and 4. Hybrid Charging, illustrating how the inverter manages power sources.

1. **Solar Charging:** Prioritizes solar power for charging batteries and powering loads.
2. **Electricity Utility Priority:** Prioritizes utility grid power for charging and loads, using solar as a secondary source.
3. **Solar Priority:** Prioritizes solar power for loads, using utility power only when solar is insufficient.
4. **Hybrid Charging:** Combines solar and utility power for optimal charging and load support.

### 5.3. Smart Monitoring

The inverter features built-in WiFi for remote monitoring and control via a mobile application (Android phones only). It also supports USB, RS485, and RS232 communication for connection to a computer, allowing for detailed

parametric analysis and real-time status checks.



Through the app or PC software, users can:

- Monitor system status and energy flow.
- View real-time data and historical performance.
- Receive warning messages and alerts.
- Adjust certain operational parameters remotely.

## 6. MAINTENANCE

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

- **Cleaning:** Periodically clean the inverter's exterior, especially the radiator and ventilation openings, to prevent dust buildup that can hinder cooling. Use a soft, dry cloth. Do not use liquid cleaners.
- **Connections Check:** Annually inspect all electrical connections (PV, battery, AC input/output) for tightness and signs of corrosion. Tighten any loose connections.
- **Environmental Check:** Ensure the installation environment remains within specified temperature and humidity ranges.
- **Battery Inspection:** If using batteries, follow the battery manufacturer's maintenance guidelines. Check battery terminals for corrosion and ensure proper ventilation in the battery area.
- **Firmware Updates:** Check the manufacturer's website for any available firmware updates to ensure your inverter has the latest features and bug fixes.

## 7. TROUBLESHOOTING

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

Problem	Possible Cause	Solution
Inverter does not power on	No battery connection; Battery voltage too low; Inverter switch off; Loose wiring.	Check battery connections and voltage; Ensure inverter switch is ON; Verify all wiring is secure.
No AC output	Overload; Short circuit; Over-temperature; Battery low; AC output breaker tripped.	Reduce load; Check for short circuits; Allow inverter to cool; Charge battery; Reset AC output breaker.
Battery not charging	PV input too low/high; AC input not present; Charging current setting too low; MPPT fault.	Check PV array voltage/current; Verify AC input; Adjust charging current setting; Contact support if MPPT fault.

Problem	Possible Cause	Solution
LCD display shows error code	Specific system fault.	Refer to the inverter's specific error code list (if available in separate documentation) for detailed troubleshooting steps. Generally, power cycle the unit and check connections.

## 8. SPECIFICATIONS

The following table details the technical specifications for the SAKO SUNON V 4.5KVA/4200W/24V Hybrid Solar Inverter.

 Part 1 of the technical specifications table, covering Model, Rated Power, Battery Voltage, Floating Charge Voltage, Overcharge Protection, Input Voltage Range, and Frequency Range.
 Part 2 of the technical specifications table, detailing Surge Power, Efficiency, Transfer Time, Waveform, Solar Charger Type, Maximum PV Array Power, Max. Input Current, MPPT Range, Maximum PV Array Open Circuit Voltage, Maximum Solar Charge Current, Maximum AC Charge Current, and Maximum Charge Current.
 Part 3 of the technical specifications table, providing information on Physical dimensions (Packing Dimension, Net Weight), Communication Interface, and Operating Environment (Humidity, Operating Temperature, Storage Temperature).

Parameter	Value (SUNON V 4.5KVA/24V)
Model Name	SUNON V
Rated Power	4500VA/4200W
Battery Voltage	24 VDC
Floating Charge Voltage	27 VDC
Overcharge Protection	33 VDC
Input Voltage Range	230 VAC (Selectable: 170-280VAC for PC; 90-280VAC for Home Appliances)
Frequency Range	50 Hz/60 Hz (Auto sensing)
AC Voltage Regulation (Batt. Mode)	230 VAC $\pm$ 5%
Surge Power	8400VA
Efficiency (Peak)	90% - 93%
Transfer Time	10 ms (For Personal Computers); 20 ms (For Home Appliances)
Waveform	Pure sine wave
Solar Charger Type	MPPT
Maximum PV Array Power	5000W

Parameter	Value (SUNON V 4.5KVA/24V)
Max. Input Current	27A
MPPT Range @ Operating Voltage	60-450V
Maximum PV Array Open Circuit Voltage	500 VDC
Maximum Solar Charge Current	120 A
Maximum AC Charge Current	100 A
Maximum Charge Current	120 A
Packing Dimension (D x W x H)	583mm*380mm*214mm
Net Weight	9.6 kgs
Communication Interface	USB/RS232/RS485(BMS)/Local WiFi/Dry-contact
Humidity	5% to 95% Relative Humidity (Non-condensing)
Operating Temperature	-10°C to 50°C
Storage Temperature	-15°C to 60°C

## 9. WARRANTY AND SUPPORT

SAKO products are designed for reliability and performance. For warranty information, please refer to the warranty card included with your product or contact your local distributor. Standard warranty terms typically cover manufacturing defects for a specified period from the date of purchase.

Extended warranty options may be available through third-party providers. For example, 1-Year and 2-Year Extended Warranties by Salama Care are offered for this product.

For technical support, troubleshooting assistance, or service inquiries, please contact your authorized SAKO dealer or the customer support team. When contacting support, please have your product model number (SUNON V 4.5KVA/4200W) and purchase date ready.