

Manuals+

[Q & A](#) | [Deep Search](#) | [Upload](#)

manuals.plus /

- › [sako](#) /
- › [Sako SUNON-ECO Hybrid Solar Inverter User Manual](#)

sako SUNON-ECO

Sako SUNON-ECO Hybrid Solar Inverter User Manual

Model: SUNON-ECO | Brand: Sako

1. INTRODUCTION AND OVERVIEW

The Sako SUNON-ECO Hybrid Solar Inverter is a versatile power solution designed for both on-grid and off-grid applications. It integrates a pure sine wave inverter, an MPPT solar charge controller, and a battery charger into one compact unit, offering an uninterruptible power supply. This manual provides essential information for the safe and efficient operation of your inverter.



Image: The Sako SUNON-ECO Hybrid Solar Inverter, designed for seamless integration into residential solar power systems.

2. KEY FEATURES

The SUNON-ECO inverter boasts several advanced features for optimal performance and user convenience:

- **High Frequency Dual MPPT:** Built-in 120/160A MPPT controller for up to 95% solar cell module conversion efficiency.
- **Multifunctional Use:** Operates with or without a battery, supporting solar direct load for cost savings. Suitable for high electricity consumption during the day.
- **On/Off Grid Support:** Seamlessly switches between on-grid and off-grid modes.
- **Safety and Compatibility:** Features overload, short circuit, overvoltage, undervoltage, and overtemperature protection. Compatible with AC/DC inputs, including diesel generators.
- **Smart Monitoring:** Built-in WiFi for remote monitoring via mobile app. USB/RS232/GPRS communication ports for computer connection.
- **User-Configurable Settings:** LCD screen allows setting DC/AC input priority, battery type, and charging current.
- **High PV Input Voltage Range:** Supports a wide PV input voltage range of 90-450VDC.
- **Dual AC Output:** Provides two independent AC outputs for flexible load management.

MAIN FEATURES

- Pure sine wave, Hybrid on&off inverter can feed to grid
- Optional Local WIFI&GPRS available for IOS and Andoid
- Inverter running with or without battery
- Build-in Lithium battery automatic activation
- Build-in 120A/160A MPPT solar charge controller
- High PV input voltage rang (90~450VDC)
- Dual output L1/L2
- Battery independent design
- User-friendly LCD operation
- Enhanced charging power

Solar System Connection

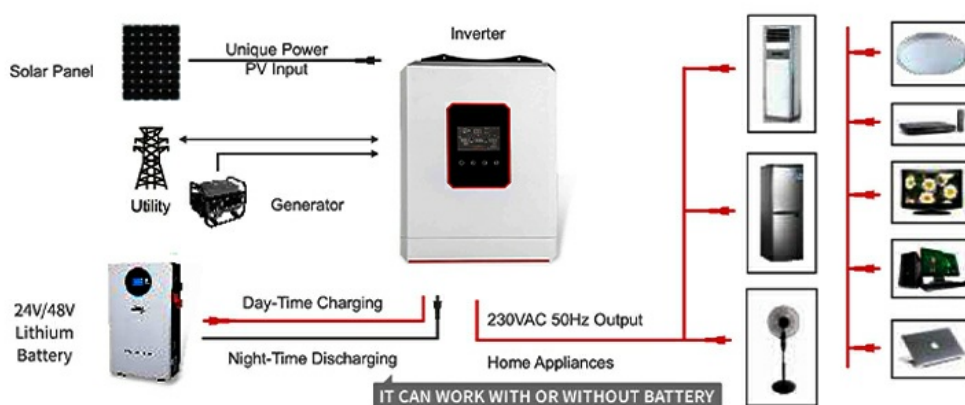


Image: Overview of the inverter's main features and a typical solar system connection diagram.

3. SETUP AND INSTALLATION

Proper installation is crucial for the safe and efficient operation of your Sako SUNON-ECO inverter. Always ensure power is disconnected before making any connections.

3.1 Physical Installation

Mount the inverter in a well-ventilated area, away from direct sunlight, heat sources, and flammable materials. Ensure sufficient clearance around the unit for proper airflow.



Image: Angled view of the inverter, showing its compact design suitable for wall mounting.

3.2 Electrical Connections

Refer to the diagram below for correct electrical connections. Ensure all connections are secure and comply with local electrical codes.

- **AC Input:** Connect the utility grid or generator AC power.
- **AC Output:** Connect your household loads. The inverter supports dual AC outputs.
- **Battery Connection:** Connect the positive and negative terminals of your battery bank (24V or 48V DC, depending on model).
- **PV Input:** Connect your solar panel array to the PV input terminals. Observe the maximum PV input voltage (Max. 500VDC).
- **Grounding:** Always connect the inverter to a proper earth ground.

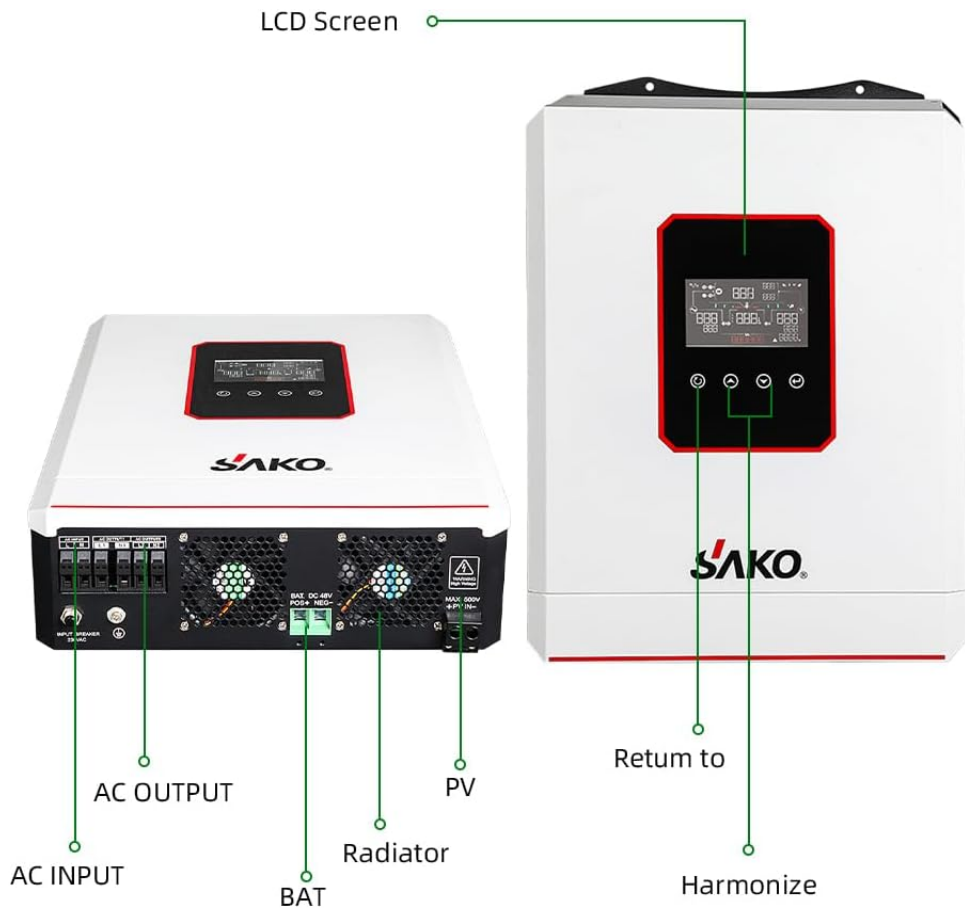


Image: Detailed view of the inverter's rear panel, highlighting AC input, AC output, battery, and PV connection points.

WARNING: High Voltage! Ensure all power sources are disconnected before making or breaking any electrical connections.

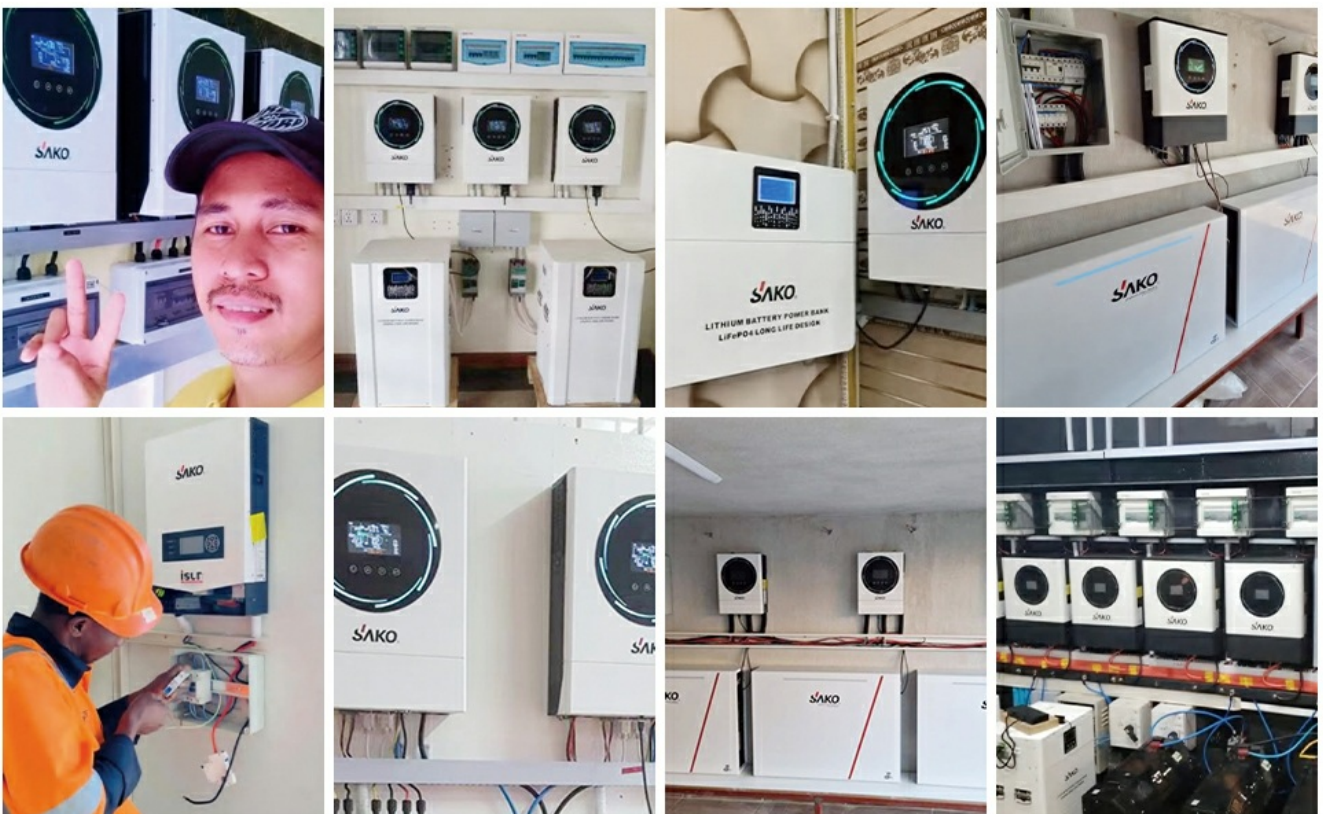


Image: Examples of various installation setups for Sako inverters, demonstrating typical deployment scenarios.

4. OPERATING INSTRUCTIONS

Once installed, the Sako SUNON-ECO inverter offers flexible operating modes to suit your energy needs.

4.1 Powering On/Off

1. Ensure all connections are secure.
2. Turn on the battery breaker (if applicable).
3. Turn on the AC input breaker.
4. Press and hold the power button on the inverter's front panel until the LCD screen illuminates.
5. To power off, reverse the steps, ensuring to turn off the AC input and battery breakers first.

4.2 LCD Display and Settings

The LCD screen provides real-time operational data and allows for configuration of various parameters. Use the navigation buttons to browse menus and adjust settings such as:

- AC/Solar Charging Priority
- Battery Type (GEL, AGM, Lithium)
- Charging Current
- Output Source Priority (Utility, Solar, Battery)

4.3 Charging Modes

The inverter supports four distinct charging modes:

- **Solar Charging:** Prioritizes solar power for charging batteries.
- **Electricity Utility Priority:** Uses utility power as the primary source, with solar as backup.
- **Solar Priority:** Prioritizes solar power for both charging and supplying loads.
- **Hybrid Charging:** Combines solar and utility power for optimal charging.

YOU Hold the Ultimate Control

User-configurable AC/Solar Charging modes and Load Output modes that can turn your system into an uninterruptible power supply.



4 CHARGING MODES



Image: Visual representation of the four user-configurable charging modes, allowing flexible power management.

4.4 Smart Monitoring via App

Monitor and control your inverter remotely using the dedicated mobile application. The app provides real-time monitoring, parametric analysis, and warning messages.

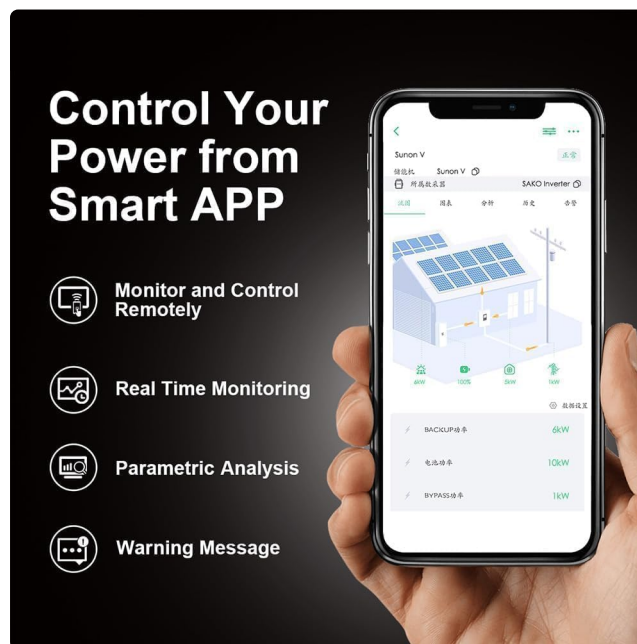


Image: A smartphone screen showing the Sako inverter's smart app, enabling remote monitoring and control.

4.5 Day and Night Operation

The inverter intelligently manages power flow. During the day, solar panels charge batteries and power loads. At night, stored battery power or utility power is used.



Image: Diagram illustrating the inverter's operational cycle, with daytime charging from solar and nighttime discharge to power the home.

4.6 Product Video Overview

Watch this official product video for a visual overview of the Sako SUNON-ECO Hybrid Solar Inverter's features and design.

Video: A comprehensive overview of the Sako SUNON-ECO Hybrid Solar Inverter, showcasing its design and key functionalities.

5. MAINTENANCE

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

- **Cleaning:** Periodically clean the exterior of the inverter with a dry, soft cloth. Ensure ventilation openings are free from dust and debris.
- **Connection Checks:** Annually inspect all electrical connections (AC input/output, battery, PV) for tightness and signs of corrosion.
- **Environmental Check:** Ensure the installation environment remains within specified temperature and humidity ranges.
- **Battery Health:** If using batteries, monitor their health and perform maintenance as recommended by the battery manufacturer.

6. TROUBLESHOOTING

This section provides guidance for common issues. For complex problems, contact qualified service personnel.

Problem	Possible Cause	Solution
Inverter not powering on	No AC input; Battery disconnected/low voltage; Input breaker tripped	Check AC input power; Verify battery connections and voltage; Reset input breaker.
No AC output	Overload; Short circuit; Over-temperature; Output breaker tripped	Reduce load; Check for short circuits; Allow inverter to cool; Reset output breaker.
Battery not charging	PV input too low/disconnected; Charging current setting too low; Battery fault	Check PV connections and sunlight; Adjust charging current via LCD; Inspect battery.
Inverter displaying error code	Internal fault; Specific system issue	Refer to the inverter's LCD display for specific error codes and consult the detailed troubleshooting guide in the full manual (if available) or contact support.

The inverter includes built-in protections against overload, short circuit, overvoltage, undervoltage, and overtemperature to ensure safe operation.

7. SPECIFICATIONS

Detailed technical specifications for the Sako SUNON-ECO Hybrid Solar Inverter (4.2KW/24V model).

7.1 General Specifications

Parameter	Value (4.2KW/24V Model)
Max. PV Power	6200W
Rated Power	4200VA/4200W
Max. Charge Current	120A
Battery Voltage	24VDC
Floating Charge Voltage	27VDC
Overcharge Protection	33VDC
Battery Type Compatibility	GEL, AGM, Lithium Battery
Grid Input Voltage Range	170-280VAC (For Personal Computers); 90-280 VAC (For Home Appliances)
Frequency Range	50 Hz/60 Hz (Auto sensing)
Efficiency (AC Mode)	98%

On&Off Grid MPPT Solar Inverter

TECHNICAL PARAMETER

NEW MODEL	SUNON-ECO 4.2KW/24V	SUNON-ECO 6.2KW/48V	SUNON-ECO 10.2KW/48V
Max.PV Power	6200W	6500W	10200W
Rated Power	4200VA/4200W	6200VA/6200W	10200VA/10200W
Max.Charge Current	120A	120A	160A
BATTERY			
Battery Voltage	24VDC	48VDC	48VDC
Floating Charge Voltage	27VDC	54VDC	54VDC
Overcharge Protection	33VDC	63VDC	63VDC
Battery Type	Compatible with GEL, AGM, Lithium Battery		
GRID INPUT			
Voltage	230 VAC		
Selectable Voltage Range	170-280VAC(For Personal Computers);90-280 VAC (For Home Appliances)		
Frequency Range	50 Hz/60 Hz (Auto sensing)		
Efficiency(AC Mode)	98%		

Image: Technical specifications table covering battery and grid input parameters for different SUNON-ECO models.

7.2 AC Output & Solar Charger Specifications

Parameter	Value (4.2KW/24V Model)
AC Voltage Regulation (Batt. Mode)	230 VAC \pm 5%
Surge Power	8400VA
Efficiency (Peak)	90%–94%
Transfer Time	15 ms (For Personal Computers); 20 ms (For Home Appliances)
Waveform	Pure sine wave
Full Load (Dual Loads AC Output)	4200W
Maximum Main Load	4200W
Maximum Second Load (Battery Mode)	1200W
Solar Charger Type	MPPT
Maximum PV Array Power	6200W
Max. Input Current	27A
MPPT Range @ Operating Voltage	90–450VDC
Maximum PV Array Open Circuit Voltage	500 VDC
Maximum Solar Charge Current	120A
Maximum AC Charge Current	100A

Parameter	Value (4.2KW/24V Model)
Maximum Charge Current	120A

AC OUTPUT			
AC Voltage Regulation (Batt. Mode)	230 VAC \pm 5%		
Surge Power	8400VA	12400VA	20400VA
Efficiency (Peak)	90%~94%		
Transfer Time	15 ms(For Personal Computers);20 ms (For Home Appliances)		
Waveform	Pure sine mave		
DUAL LOADS AC OUTPUT			
Full Load	4200W	6200W	10200W
Maximum Main Load	4200W	6200W	10200W
Maximum Second Load (Battery Mode)	1200W	2100W	3400W
Main Load Cut Off Voltage	22VCD	44VCD	44VCD
Main Load Return Voltage	27VCD	54VCD	54VCD
SOLAR CHARGER & AC CHARGER			
Solar Charger Type	MPPT		
Maximum PV Array Power	6200W	6500W	5100W*2
Max. input Current	27A	27A	27A
MPPT Range @ Operating Voltage	90~450VDC	90~450VDC	90~450VDC
Maximum PV Array Open Circuit Voltage	500 VDC		
Maximum Solar Charge Current	120A	120A	160A
Maximum AC Charge Current	100A	100A	140A
Maximum Charge Current	120A	120A	160A

Image: Technical specifications table detailing AC output and solar charger parameters for the inverter.

7.3 Physical & Environmental Specifications

Parameter	Value (4.2KW/24V Model)
Packing Dimension (DXWXH)	543*394*204 mm
Net Weight	9.8 kgs
Communication Interface	USB/RS232/WiFi/GPRS
Humidity	5% to 95% Relative Humidity (Non-condensing)
Operating Temperature	-10°C to 50°C
Storage Temperature	-15°C to 60°C

PHYSICAL			
Packing Dimension,DXWXH(mm)	543*394*204	543*394*204	700*510*232
Net Weight (kgs)	9.8	10.5	19.1
Communication Interface	USB/RS232/WIFI/GPRS		
OPERATING ENVIRONMENT			
Humidity	5% to 95% Relative Humidity(Non-condensing)		
Operating Temperature	-10°C to 50°C		
Storage Temperature	-15°C to 60°C		
Product specifications are subject to change without further notice.			

Image: Technical specifications table detailing physical dimensions and operating environment conditions.

8. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation provided with your purchase or contact Sako customer service directly. Ensure you have your product model number (SUNON-ECO) and serial number ready when seeking support.

Manufacturer: SAKO

Date First Available: 15 November 2024