

Nairtech 5.5H-48V

Nairtech Solar Power Inverter 5.5KW 48V User Manual

Model: 5.5H-48V

1. INTRODUCTION

1.1 Product Overview

The Nairtech 5.5KW 48V Hybrid Solar Power Inverter is an all-in-one pure sine wave inverter designed for efficient energy conversion. It integrates an 80A MPPT solar charge controller and supports various battery types, including 48V Lead Acid and Lithium batteries, or can operate without a battery. This inverter is suitable for both home appliances and personal computers, offering configurable settings for input voltage range, battery charging current, and AC/Solar charger priority.

1.2 Safety Information

Please read this manual thoroughly before installation and operation. Failure to follow instructions may result in electric shock, fire, or serious injury.

- Installation must be performed by qualified personnel.
- Ensure all connections are secure and correct before powering on the unit.
- Do not disassemble the inverter. There are no user-serviceable parts inside.
- Keep the inverter away from flammable materials and ensure adequate ventilation.
- Wear appropriate personal protective equipment (PPE) during installation and maintenance.
- This device contains high voltage. Exercise extreme caution.

2. PRODUCT FEATURES

The Nairtech 5.5KW 48V Hybrid Solar Power Inverter offers a range of advanced features for reliable power management:

- Pure sine wave output for sensitive electronics.
- Ability to operate without a battery.
- Integrated MPPT solar charge controller with 80A maximum charging current.
- Supports 48V Lead Acid and Lithium battery types.
- Configurable input voltage range for home appliances or personal computers via LCD.
- Configurable battery charging current based on application via LCD.
- Configurable AC/Solar charger priority via LCD.
- Compatible with mains voltage or generator power.
- Automatic restart function upon AC recovery.
- Comprehensive protection against overload, over temperature, and short circuit.
- Smart battery charger design for optimized battery performance.
- Cold start function.



Figure 2.1: Front view of the inverter, showing the LCD display, status indicators, and control buttons.



Figure 2.2: Top and side view of the inverter, illustrating the robust casing and ventilation design.

3. INSTALLATION AND SETUP

3.1 Site Selection

Choose a suitable location for the inverter that meets the following criteria:

- **Ventilation:** Ensure adequate airflow around the unit to prevent overheating. Maintain at least 20 cm clearance from other objects.
- **Temperature:** Operate within an ambient temperature range of 0°C to 55°C.
- **Humidity:** Relative humidity should be between 5% and 95% (non-condensing).
- **Mounting:** Mount vertically on a solid, non-flammable surface.
- **Accessibility:** Allow easy access for wiring and maintenance.
- **Protection:** Protect from direct sunlight, rain, and dust.

3.2 Mounting the Inverter

1. Use the inverter as a template to mark the positions for mounting screws on the wall.
2. Drill appropriate holes and insert wall anchors if necessary.
3. Securely mount the inverter to the wall using suitable screws.

3.3 Wiring Connections

All wiring must be performed with the inverter completely disconnected from all power sources (AC, DC, PV). Use appropriate wire gauges and circuit breakers as per local electrical codes.

1. **Battery Connection:** Connect the 48V battery bank to the 'BATTERY POS +' and 'NEG -' terminals. Ensure correct polarity.
2. **PV Input Connection:** Connect the solar panel array to the 'PV IN' terminals. Observe correct polarity (PV+ to PV+, PV- to PV-). Ensure the maximum open circuit voltage of the PV array does not exceed 500VDC.
3. **AC Input Connection:** Connect the AC mains or generator power to the 'AC IN' terminals.
4. **AC Output Connection:** Connect your loads to the 'AC OUT' terminals.
5. **Communication Ports:** If applicable, connect RS232 or USB cables for monitoring.

Compatible with multiple 48V battery



Work with 48V Lead-Acid (Sealed/AGM/Flooded/Gel) Lithium Battery and Without Battery

Figure 3.1: Detailed view of the inverter's connection terminals for AC input/output, PV input, battery, and communication.



Intelligent Protection Systems

Total 15 intelligent protection modes



Figure 3.2: The inverter is compatible with multiple 48V battery types, including Sealed Lead-Acid (AGM, Gel, Flooded) and Lithium batteries.

4. OPERATION

4.1 Initial Startup

1. After all connections are made and verified, switch on the battery breaker (if applicable).
2. Switch on the PV array breaker (if applicable).
3. Switch on the AC input breaker (if applicable).
4. Press and hold the 'POWER' button on the inverter for a few seconds to turn it on.
5. The LCD display will illuminate, and the inverter will begin its startup sequence.

4.2 LCD Display and Buttons

The front panel features an LCD display, status indicators, and control buttons for monitoring and configuration.

- **LCD Display:** Shows real-time operating status, input/output voltages, battery status, and error codes.
- **Indicators:** LEDs for AC input, charge status, and fault warnings.

- **Buttons:** 'UP', 'DOWN', 'ESC', 'ENTER' for navigating menus and adjusting settings. 'POWER' for turning the unit on/off.

4.3 Operating Modes

The inverter can operate in various modes depending on the configuration and available power sources:

- **Line Mode:** Prioritizes AC utility power for charging and supplying loads.
- **Battery Mode:** Inverts DC power from batteries to supply loads when AC utility is unavailable or configured as a backup.
- **Solar Mode:** Utilizes solar power for charging batteries and supplying loads, reducing reliance on AC utility.
- **No Battery Mode:** The inverter can supply loads directly from solar panels or AC utility without a connected battery bank.

5. CONFIGURATION SETTINGS

The inverter's operational parameters can be customized via the LCD display and control buttons. Press 'ENTER' to access the main menu, use 'UP'/'DOWN' to navigate, and 'ESC' to exit.

- **Input Voltage Range:** Configure the acceptable AC input voltage range for different load types (e.g., home appliances vs. personal computers).
- **Battery Charging Current:** Adjust the maximum charging current for the connected battery bank to optimize battery life and charging speed.
- **AC/Solar Charger Priority:** Set the preferred charging source (AC utility or solar) for the batteries.
- **Output Voltage/Frequency:** Adjust output voltage and frequency if required (e.g., 230V, 50/60Hz).
- **Battery Type:** Select the type of battery connected (Lead-Acid, Lithium) for accurate charging algorithms.

6. MAINTENANCE

Regular maintenance ensures optimal performance and longevity of your inverter.

- **Cleaning:** Periodically clean the exterior of the inverter and ventilation openings to prevent dust accumulation. Use a dry, soft cloth.
- **Connections:** Annually check all electrical connections for tightness and corrosion. Re-tighten if necessary.
- **Environment:** Ensure the installation environment remains within specified temperature and humidity ranges.
- **Battery Health:** Monitor battery voltage and performance regularly, especially for lead-acid batteries.

7. TROUBLESHOOTING

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

Problem	Possible Cause	Solution
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Problem	Possible Cause	Solution
Inverter does not power on	No battery power; DC breaker off; loose battery connection	Check battery voltage; ensure DC breaker is on; verify battery connections.
No AC output	Overload; short circuit; inverter fault; AC output breaker off	Reduce load; check for short circuits; restart inverter; check AC output breaker.
Low battery voltage alarm	Insufficient charging; excessive load; battery degradation	Check solar panel input and AC input; reduce load; consider battery replacement.
Overload warning	Connected load exceeds inverter capacity	Disconnect some loads immediately.
Over temperature warning	Insufficient ventilation; high ambient temperature	Ensure clear airflow around the inverter; reduce ambient temperature if possible.

8. TECHNICAL SPECIFICATIONS

Parameter	Specification
Model Number	5.5H-48V
Charging Mode	MPPT
Rated Load Power	5500W
System Voltage	48V
Output Voltage	230V \pm 5%
Battery Type Compatibility	Lead-acid, Lithium, or No Battery Operation
Surge Power	11000VA
Maximum PV Input Voltage	500VDC
Maximum MPPT Charging Current	80A
Maximum PV Input Current	18A
Maximum PV Input Power	6000W
Dimensions (L x W x H)	440 x 300 x 100 mm
Weight	12 kg
Parallel Capability	No

9. WARRANTY AND SUPPORT

Nairtech products are manufactured to high-quality standards and are covered by a limited warranty against defects in materials and workmanship. Please refer to your purchase documentation for specific warranty terms and duration.

For technical support, service, or warranty claims, please contact your authorized Nairtech dealer or visit the official Nairtech website for contact information.