

Anern AN-FGI-S5000

Anern 5000W 24V Hybrid Solar Inverter Instruction Manual

Model: AN-FGI-S5000

Brand: Anern

1. INTRODUCTION

This manual provides essential information for the safe and efficient operation of your Anern 5000W 24V Hybrid Solar Inverter, Model AN-FGI-S5000. This all-in-one solar inverter integrates a 5000W pure sine wave inverter, a 160A MPPT solar charge controller, and a battery charger function into a single unit. It is designed for off-grid solar applications, converting 24V DC battery power to 220-240V AC for various loads. Please read this manual thoroughly before installation and use.

APPLICATION RANGE



Emergency Electricity



Home Appliance Electricity



Yacht



Photovoltaic Rooftop



Agricultural Electricity



Outdoors Camping

Image 1.1: Application Range. This image illustrates various applications for the Anern Hybrid Solar Inverter, including emergency electricity, home appliance power, yacht power, photovoltaic rooftop systems, agricultural electricity, and outdoor camping.

2. SAFETY INSTRUCTIONS

- Read all instructions and warnings in this manual before installation and operation.
- Installation must be performed by qualified personnel in accordance with all local electrical codes.
- Do not disassemble the inverter. There are no user-serviceable parts inside. Refer servicing to qualified personnel.
- Ensure proper ventilation around the inverter to prevent overheating.
- Connect the inverter only to a battery bank with the specified voltage (24V DC).
- Always disconnect all power sources (PV, AC grid, battery) before performing any maintenance or wiring.
- Wear appropriate personal protective equipment (PPE), including insulated gloves and eye protection, during installation and maintenance.
- Keep children away from the inverter and its connections.

3. PRODUCT OVERVIEW

3.1 Key Features

- **All-in-One Design:** Combines a 5000W pure sine wave inverter, 160A MPPT solar charge controller, and battery charger.
- **Voltage Compatibility:** 24V DC input to 220-240V AC output, compatible with 50Hz/60Hz.
- **High PV Input:** Maximum PV input power of 9000W, with an operating PV voltage range of 60V DC to 450V DC.
- **Dual AC Output:** Features primary and secondary AC outputs for optimized energy management.
- **Batteryless Operation:** Capable of powering loads directly from PV/AC without a connected battery.
- **Battery Compatibility:** Supports various battery types, including lithium and lead-acid (recommended capacity $\geq 200\text{Ah}$).
- **Configurable Settings:** LCD display allows configuration of input voltage range, battery charge current, and AC/solar charge priority.
- **Comprehensive Protection:** Includes overload, over-temperature, short-circuit, over-voltage, under-voltage, over-current, and backfill protection.
- **Automatic Restart:** Automatically restarts when AC grid power is restored.

5000W SOLAR INVERTER

OFF-GRID

- 24V DC to 220/230/240VAC
- Pure Sine Wave Inverter built in 160A MPPT Controller
- Max PV Array Power 9000W, 450V, 27A
- Compatible with 24V Lead-acid, Lithium Batteries, etc
- Supports Solar, Utility, or Generator Power to Charge the Battery

5000W

Max Output Power

9000W

Max PV Input Power

450VDC

Max PV VOC

160A

Max Charging Current



Image 3.1: Inverter Overview. This image highlights the key specifications and features of the Anern 5000W Off-Grid Solar Inverter, including its 24V DC to 220/230/240V AC conversion, pure sine wave output, 160A MPPT controller, 9000W max PV input, 450VDC max PV VOC, and 160A max charging current.

3.2 LCD Display and RGB Indicators

The hybrid inverter is equipped with an LCD screen that displays real-time system data and operational status. An RGB light indicator provides visual feedback on the inverter's current mode:

- **White:** Standby Mode
- **Red:** Battery Mode (operating from battery power)
- **Blue:** City Electric Mode (operating from grid power)
- **Range 0:** Photovoltaic Mode (operating from solar power)

4. SETUP AND INSTALLATION

4.1 Wiring Specifications

Ensure all wiring is correctly sized and installed according to local electrical codes. The following cable sizes are recommended:

- **Battery Cable:** 2 AWG / 25 mm²
- **AC Output Cable:** 12 AWG / 4 mm²
- **AC Input Cable:** 10 AWG / 5.26 mm²
- **Photovoltaic (PV) Cable:** 10 AWG / 5.26 mm²

4.2 Battery Compatibility

The inverter is compatible with various 24V battery types. A minimum battery capacity of 200 Amp-hours is recommended for optimal performance.



Image 4.1: Battery Compatibility. This image shows the Anern Solar Inverter's compatibility with multiple battery types, including AGM, GEL, FLD, SLD, and LiFePO4 batteries.

4.3 Dual AC Output Configuration

The inverter features two AC output terminals: a primary output and a secondary output. Under normal operating conditions, both outputs are active. In scenarios where there is no PV or grid power, and the battery voltage is low, the primary output will shut down, and only the secondary output will remain active to conserve energy. The

secondary output can be configured based on voltage, output duration, and battery State of Charge (SOC).



Image 4.2: Single PV Input Dual AC Output. This diagram illustrates the inverter's capability to provide dual AC outputs from a single PV input. It shows how the primary output can power larger appliances like an air conditioner and refrigerator, while the secondary output can power smaller devices like a laptop, especially when the battery is low.

4.4 Example Installation Scenario

APPLICATION SCENARIOS



Image 4.3: Application Scenarios. This image displays an example installation of multiple Anern inverters and battery units in a wall-mounted setup, demonstrating a typical application scenario for the hybrid solar inverter system.

5. OPERATING INSTRUCTIONS

5.1 Startup Sequence

Follow these steps to safely start the inverter system:

1. Turn on the battery switch.
2. Start the inverter.
3. Turn on the photovoltaic (PV) switch.
4. Turn on the AC grid switch (if connected).
5. Turn on the load switches.

Note: For electrical appliances with inductive loads (e.g., motors, refrigerators), the startup power requirement can be at least three times their nominal power. Ensure the inverter's capacity can handle these surge loads.

5.2 Shutdown Sequence

To safely shut down the inverter system, follow the startup sequence in reverse order:

1. Turn off the load switches.
2. Turn off the AC grid switch (if connected).
3. Turn off the photovoltaic (PV) switch.
4. Shut down the inverter.
5. Turn off the battery switch.

5.3 Configurable Settings

The inverter's LCD display allows configuration of various parameters to optimize performance for specific applications:

- **Input Voltage Range:** Configurable for home appliances or personal computers.
- **Battery Charge Current:** Adjustable based on battery type and capacity.
- **AC/Solar Charge Priority:** Configurable to prioritize charging from solar or AC grid.

5.4 Operating Modes for Charging

The inverter supports different charging priority modes to maximize energy efficiency:

- **Solar First:** Solar energy is the primary source for charging the battery. Utility power will only charge the battery if solar energy is unavailable.
- **Solar and Utility:** Both solar energy and utility power will charge the battery simultaneously.
- **Only Solar Charging:** Solar energy will be the sole charging source, regardless of utility availability.

MAKE EVERY KILOWATT-HOUR MORE COST-EFFICIENT



Image 5.1: Cost-Efficient Energy Management. This image illustrates three operational modes for the inverter: 'Solar First' (solar energy prioritised for charging), 'Solar and Utility' (both sources charge simultaneously), and 'Only Solar Charging' (solar is the exclusive charging source).

5.5 Batteryless Mode

The inverter can operate in a batteryless mode, directly powering loads from photovoltaic (PV) or AC sources without requiring a connected battery. This feature simplifies installation and offers flexibility in certain applications.

SUPPORT BATTERYLESS MODE

Can power the loads from PV/AC without battery connected



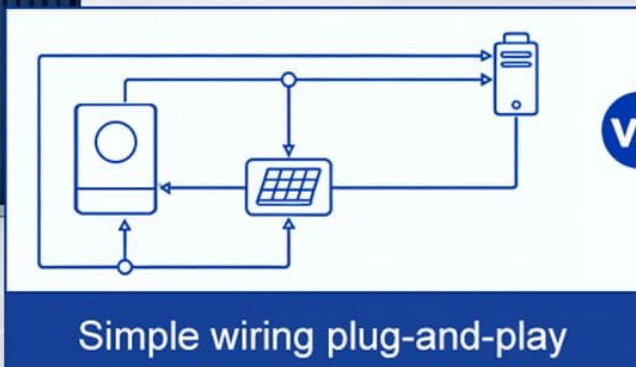
No batteries required



Direct photovoltaic supply

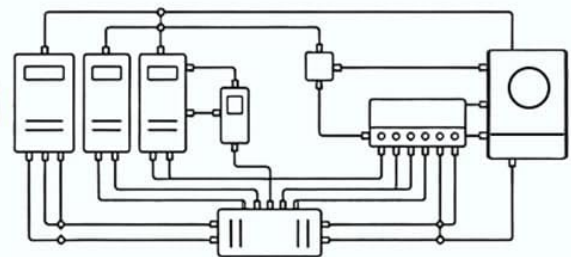


Plug and Play



Simple wiring plug-and-play

VS



Complex wiring cumbersome maintenance

Image 5.2: Support Batteryless Mode. This image explains that the inverter can power loads directly from PV or AC sources without a battery, highlighting 'No batteries required', 'Direct photovoltaic supply', and 'Plug and Play' benefits. It also contrasts simple plug-and-play wiring with complex, cumbersome maintenance wiring.

6. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your inverter. Always disconnect all power sources before performing any maintenance.

- **Cleaning:** Periodically clean the inverter's exterior with a dry, soft cloth. Ensure ventilation openings are free from dust and debris.
- **Connections:** Check all electrical connections regularly for tightness and signs of corrosion. Tighten any loose connections.
- **Environment:** Ensure the inverter is operating within its specified temperature and humidity ranges. Avoid exposure to direct sunlight, moisture, and corrosive substances.
- **Battery Inspection:** If using batteries, regularly inspect them for any signs of damage, leakage, or swelling. Follow battery manufacturer's maintenance guidelines.

7. TROUBLESHOOTING

The inverter is equipped with multi-layered protection features to ensure safe operation. If an issue occurs, the LCD display may show an error code or the RGB indicator may signal a specific status. Refer to the following for common issues:



Image 7.1: Multi-layered Protection. This image highlights the comprehensive 360° protection features of the inverter, including short circuit, overload, under voltage, over voltage, over current, over temperature, backfill, and over charge protection.

Problem	Possible Cause	Solution
No output power	Inverter off, low battery, overload, short circuit	Check power switch, battery voltage, reduce load, check for short circuits.
Overload warning/shutdown	Connected load exceeds inverter capacity	Reduce the connected load. Ensure inductive loads do not exceed surge capacity.

Problem	Possible Cause	Solution
Over-temperature warning	Insufficient ventilation, high ambient temperature	Ensure proper airflow, clear obstructions, move to a cooler environment if necessary.
Battery not charging	PV input issue, AC input issue, battery fault, incorrect settings	Check PV connections, AC input, battery health, and charging priority settings on LCD.
Inverter not turning on	No battery connection, battery voltage too low, internal fault	Check battery connections, ensure battery is charged, contact support if issue persists.

8. SPECIFICATIONS

Parameter	Value
Brand	Anern
Model Number	AN-FGI-S5000
Rated Power	5000 W
Peak Output Power	12000 W
DC Input Voltage	24 V
AC Output Voltage	220-240 V
Output Waveform	Pure Sine Wave
Output Frequency	50 Hz / 60 Hz (configurable)
MPPT Charge Controller Current	160 A
Max PV Input Power	9000 W
PV Operating Voltage Range	60-450 V DC
Max No-Load PV Voltage	500 V DC
Recommended Battery Capacity	≥ 200 Ah (24V)
Recommended Uses	Office, Home, Vehicle
Country of Origin	China

9. WARRANTY AND SUPPORT

Information regarding specific warranty terms and conditions for the Anern 5000W 24V Hybrid Solar Inverter is not available in the provided product details. For warranty claims, technical support, or service inquiries, please contact the seller or manufacturer directly through their official channels. Ensure you have your product model number (AN-FGI-S5000) and purchase details ready when contacting support.

10. OFFICIAL PRODUCT VIDEOS

No official seller videos were provided in the product data for this model. Please refer to the manufacturer's website or official channels for any available video resources.