

Anern ECO-4200

Anern ECO-4200 4200W 24V Hybrid Solar Inverter User Manual

1. INTRODUCTION

This manual provides comprehensive instructions for the safe and efficient operation of your Anern ECO-4200 4200W 24V Hybrid Solar Inverter. This all-in-one unit combines the functions of an inverter, solar charger, and battery charger to provide uninterrupted power support. Please read this manual thoroughly before installation and use, and retain it for future reference.

2. SAFETY INFORMATION

WARNING: Failure to follow these safety instructions may result in electric shock, fire, or serious injury.

- Installation must be performed by qualified personnel.
- Ensure all wiring complies with local and national electrical codes.
- Do not disassemble the inverter. There are no user-serviceable parts inside.
- Disconnect all power sources (PV array, battery, utility) before performing any maintenance or wiring.
- This inverter is designed for 220V/230V AC output. It does not support 110V/120V AC output directly or parallel operation. For 110V/120V appliances, an external step-down converter (not included) is required.
- Ensure proper ventilation around the inverter to prevent overheating.
- Avoid installing the inverter in direct sunlight, high humidity, or dusty environments.

3. PRODUCT FEATURES

The Anern ECO-4200 Hybrid Solar Inverter offers advanced functionalities for reliable power management:

- **Pure Sine Wave Output:** Provides high-quality AC power suitable for sensitive electronics.
- **Integrated MPPT Charge Controller:** Features a 120A Maximum Power Point Tracking (MPPT) solar charge controller for efficient solar energy harvesting.
- **Configurable Settings:** LCD display allows configuration of input voltage range for home appliances

or personal computers, battery charging current, and AC/solar charger priority.

- **Versatile Power Source Compatibility:** Compatible with utility grid or generator power.
- **Automatic Restart:** Automatically restarts when AC power is restored.
- **Comprehensive Protection:** Includes overload, over-temperature, and short-circuit protection.
- **Smart Battery Charger:** Designed to optimize battery performance and extend lifespan.
- **Cold Start Function:** Enables the inverter to start without an AC input.
- **Dual AC Output:** Features a primary output of 4200W and a secondary output of 1400W. The secondary output can maintain power during low battery or no mains conditions to save energy.
- **Battery Compatibility:** Supports various battery types including GEL, FLD, Li-on (Lithium), and AGM.
- **Wi-Fi Monitoring:** Allows control and monitoring of the system via a mobile application.



Image: Overview of the Anern ECO-4200 inverter highlighting multiple protection features, Wi-Fi monitoring capability, and its ability to operate with or without a battery.

4. INSTALLATION

This section outlines the basic system architecture and wiring for the Anern ECO-4200 Hybrid Solar Inverter. Consult a qualified system integrator for specific requirements.

4.1 Basic System Architecture

The inverter/charger forms the core of your solar power system. A complete operational system typically includes:

- The Anern ECO-4200 Hybrid Solar Inverter
- PV Modules (Solar Panels)
- Battery Bank (e.g., 48V lead-acid or lithium battery)
- Utility Grid or Generator (as an optional AC input source)

4.2 Wiring Diagram

Refer to the diagram below for a typical wiring configuration. Ensure all connections are secure and correctly polarized.

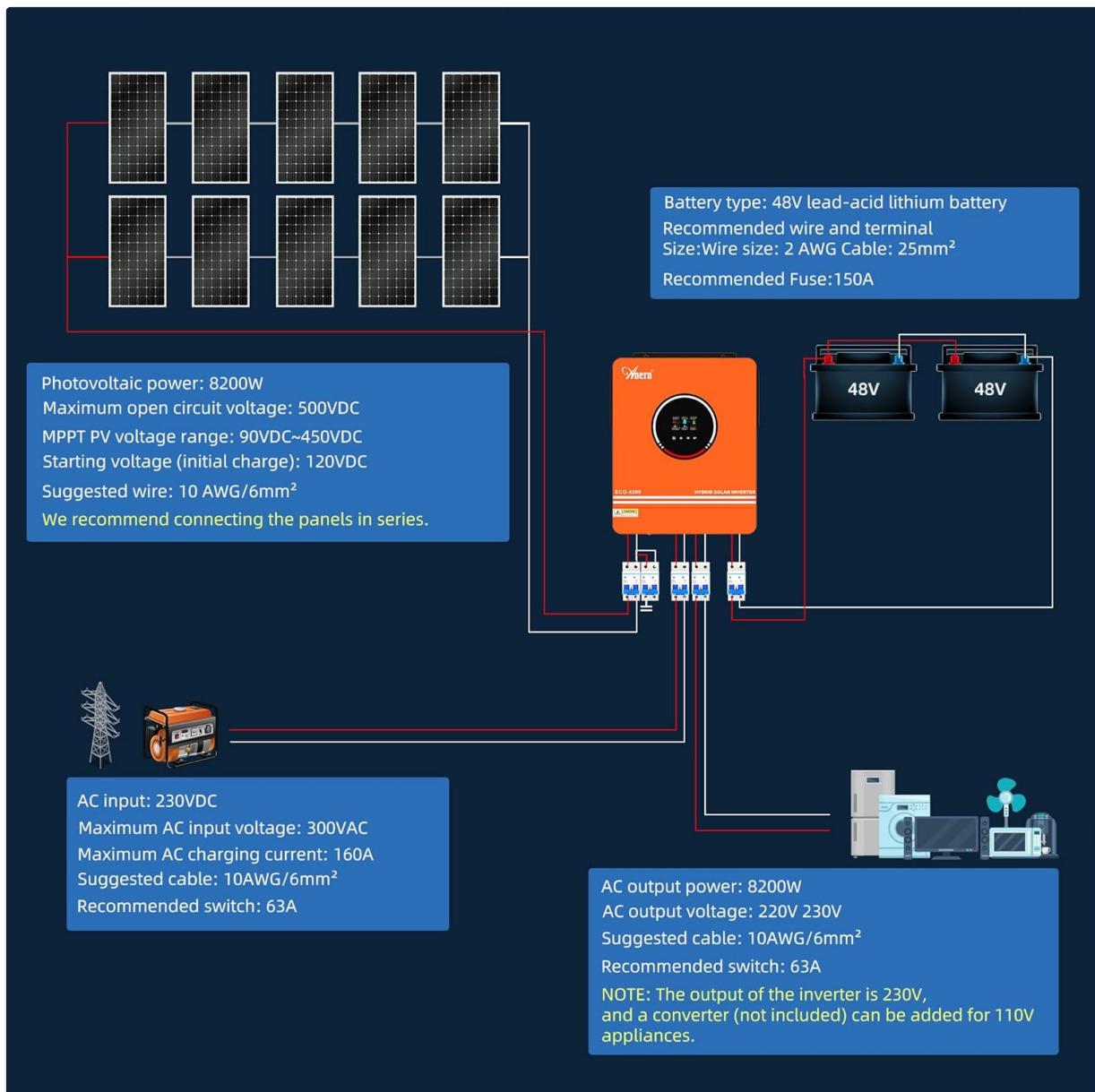


Image: Detailed wiring diagram illustrating connections for photovoltaic panels, battery bank, AC input from utility or generator, and AC output to household loads. Recommended wire gauges and fuse sizes are indicated.

Key Wiring Recommendations:

- **Photovoltaic (PV) Input:** Max open circuit voltage 500VDC. MPPT PV voltage range 90VDC-450VDC. Suggested wire: 10 AWG/6mm². Connect panels in series.

- **Battery Connection:** For a 48V battery system, use 2 AWG cable (25mm²) and a 150A fuse.
- **AC Input:** Max AC input voltage 300VAC. Max AC charging current 160A. Suggested cable: 10 AWG/6mm². Recommended switch: 63A.
- **AC Output:** Rated output 220V/230V. Suggested cable: 10 AWG/6mm². Recommended switch: 63A.

Important Note: The inverter output is 230V. A separate converter (not included) is required for 110V appliances.

5. OPERATING INSTRUCTIONS

The inverter features an LCD display for monitoring and configuring operational parameters.

5.1 Configurable Settings via LCD

You can adjust various settings to suit your application requirements:

- **Input Voltage Range:** Select between appliance mode or personal computer mode.
- **Battery Charging Current:** Adjust the charging current based on your battery specifications.
- **Charger Priority:** Set the priority for AC charger or solar charger.

5.2 Charge Modes

The inverter supports four distinct charge modes:

1. **Solar First:** Prioritizes solar power for charging.
2. **Utility First:** Prioritizes utility power for charging.
3. **Solar and Utility:** Uses both solar and utility power for charging.
4. **Battery and Solar:** Charges from both battery and solar (specific to certain configurations).

5.3 Output Modes

Three output modes are available to manage power distribution:

1. **Solar Priority:** Prioritizes solar power for loads.
2. **Utility Priority:** Prioritizes utility power for loads.
3. **SBU Mode (Solar-Battery-Utility):** Prioritizes solar, then battery, then utility for loads.

The inverter can power various household and office appliances, including refrigerators, lamps, fans, and air conditioners.

COMPATIBLE WITH 95 % OF HOUSEHOLD AND OFFICE APPLIANCES

This inverter can supply power to various electrical appliances in the home or office, including electrical appliances such as lamps, fans, refrigerators, air conditioners, coffee machines, etc.



Image: The Anern ECO-4200 inverter demonstrating compatibility with a wide range of household and office appliances, including coffee makers, toasters, and kettles.

6. MAINTENANCE

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

- **Cleaning:** Keep the inverter's exterior clean and free from dust. Use a dry cloth. Do not use liquid cleaners.
- **Ventilation:** Ensure ventilation openings are clear and unobstructed. The intelligent variable speed fan helps dissipate heat efficiently.
- **Connections:** Periodically check all electrical connections for tightness and signs of corrosion.
- **Environment:** Maintain the inverter in a cool, dry, and well-ventilated area.

7. TROUBLESHOOTING

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

- **Inverter Not Turning On:** Check battery connections, battery voltage, and AC input (if applicable).

Ensure the power switch is in the 'ON' position.

- **No AC Output:** Verify input power sources (PV, battery, utility). Check for overload or short-circuit conditions. The inverter has built-in protection that may temporarily shut down output.
- **Low Battery Performance:** Ensure correct battery type settings are configured. Check battery health and charging current settings.
- **Overload Warning:** Reduce the connected load. The inverter will automatically attempt to restart after an overload event.
- **Over-temperature Warning:** Ensure adequate ventilation. Clear any obstructions from the fan or vents.

8. SPECIFICATIONS

Detailed technical specifications for the Anern ECO-4200 4200W 24V Hybrid Solar Inverter.

4200W HYBRID SOLAR INVERTER 24VDC

OFF GRID SOLAR INVERTER

4200W	Max.AC Output
120A	Max.MPPT PV Charging Current
120V	Minimum voltage for solar modules
500V	Max.PV Array Oper Circuit Voltage

★ The ECO 4.2KW inverter is equipped with two AC outputs. This inverter is a single-phase inverter that does not support multi-phase or three-phase connections or parallel connections.

Image: Summary of key technical specifications for the Anern 4200W Hybrid Solar Inverter, including Max. AC Output, Max. MPPT PV Charging Current, Minimum voltage for solar modules, and Max. PV Array Open Circuit Voltage.

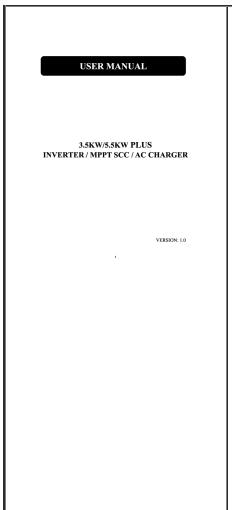
Specification	Value
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Specification	Value
Brand	Anern
Model Number	ECO-4200
Power	4200 Watts
Voltage	24 Volts (DC Input)
Output Voltage	220-230 VAC (Single Phase)
Max. PV Array Power	6500 W
Max. PV Array Open Circuit Voltage	500 VDC
MPPT PV Voltage Range	90-450 VDC
Max. PV Charge Current	120 A
Nominal Output Current	44.3 A
Battery Capacity (Charge Controller)	120 Amp-hours (Max. charging current)
Recommended Use	Home
Power Source	Solar Powered
Color	Orange

9. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation included with your product or visit the official Anern website. Keep your purchase receipt for warranty claims.

Related Documents - ECO-4200

 <p>USER MANUAL 3.5KW/5.5KW PLUS INVERTER/MPPT SCC/AC CHARGER VERSION 1.0</p>	<p>Anern Pure Sine Wave Hybrid Inverter User Manual: Installation, Safety, and Operation Guide</p> <p>This user manual provides comprehensive safety, installation, and operation guidelines for the Anern Pure Sine Wave Hybrid Inverter. It covers essential information on tools, wiring, and system setup for reliable power solutions.</p>
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 2.0KVA/3.2KVA INVERTER / MPPT SCC/AC CHARGER <small>VERSION 1.0</small>	<p>2.0KVA/3.2KVA Inverter MPPT SCC AC Charger User Manual</p> <p>Comprehensive user manual for the 2.0KVA/3.2KVA Inverter with MPPT SCC and AC Charger. Covers installation, operation, features, specifications, and troubleshooting. Includes safety instructions, system architecture, and detailed settings for optimal performance.</p>
 HYBRID INVERTER 3.6KW/4.2KW/6.2KW <small>VERSION 1.0</small>	<p>Anern Hybrid Inverter User Manual: 3.6KW, 4.2KW, 6.2KW - Installation & Operation Guide</p> <p>Comprehensive user manual for the Anern Hybrid Inverter models 3.6KW, 4.2KW, and 6.2KW. Learn about installation, operation, specifications, and troubleshooting for reliable power solutions.</p>
 User Manual <small>AN-MPSG</small>	<p>MPPT Hybrid Solar Inverter User Manual</p> <p>This user manual provides detailed information on the features, installation, operation, and maintenance of the MPPT Hybrid Solar Inverter. It covers technical specifications, troubleshooting, and safety precautions for the AN-MPSG model.</p>
 HYBRID INVERTER AN-SCI-EVO-3600 AN-SCI-EVO-4200 AN-SCI-EVO-6200 <small>VERSION 1.0</small>	<p>Anern AN-SCI-EVO Series Hybrid Inverter User Manual</p> <p>User manual for the Anern AN-SCI-EVO series hybrid inverters, including models AN-SCI-EVO-4200 and AN-SCI-EVO-6200. Provides information on installation, operation, and specifications for powering home and office appliances.</p>
 ПІБРИДІ <small>REPCIN</small>	<p>Посібник користувача гібридного інвертора Anern AN-SCI-EVO</p> <p>Офіційний посібник користувача для гібридних інверторів Anern AN-SCI-EVO серії 3600, 4200 та 6200. Детальний опис встановлення, експлуатації та усунення несправностей для систем сонячної та акумуляторної енергії.</p>