Anern ECO 4200W-24V-WiFi

Anern 4200W Hybrid Solar Inverter User Manual

Model: ECO 4200W-24V-WiFi

Brand: Anern

1. Introduction

This manual provides essential information for the safe and efficient operation of your Anern 4200W Hybrid Solar Inverter. This device is designed to convert DC power from solar panels into AC power for household appliances, while also managing battery charging and grid interaction. Please read this manual thoroughly before installation and operation.

Figure 1.1: Anern 4200W Hybrid Solar Inverter with included WiFi module.

2. Safety Information

Important Safety Precautions:

- The starting power of inductive loads must be at least three times the rated power. Excessive inrush current can damage the inverter.
- Connect circuits correctly and install circuit breakers for each circuit.
- **Power-on Sequence:** First, turn on the battery, then start the inverter, and finally turn on the circuit breakers for photovoltaic (PV), grid, and load.
- **Power-off Sequence:** Turn off in the reverse order of power-on.

Integrated Protection Features

The inverter is equipped with multiple protection mechanisms to ensure safe operation:

- Overcurrent Protection

- Undervoltage Protection
- Short Circuit Protection
- Overheating Protection
- Overload Protection
- Backfill Protection
- Overvoltage Protection
- Overcharge Protection

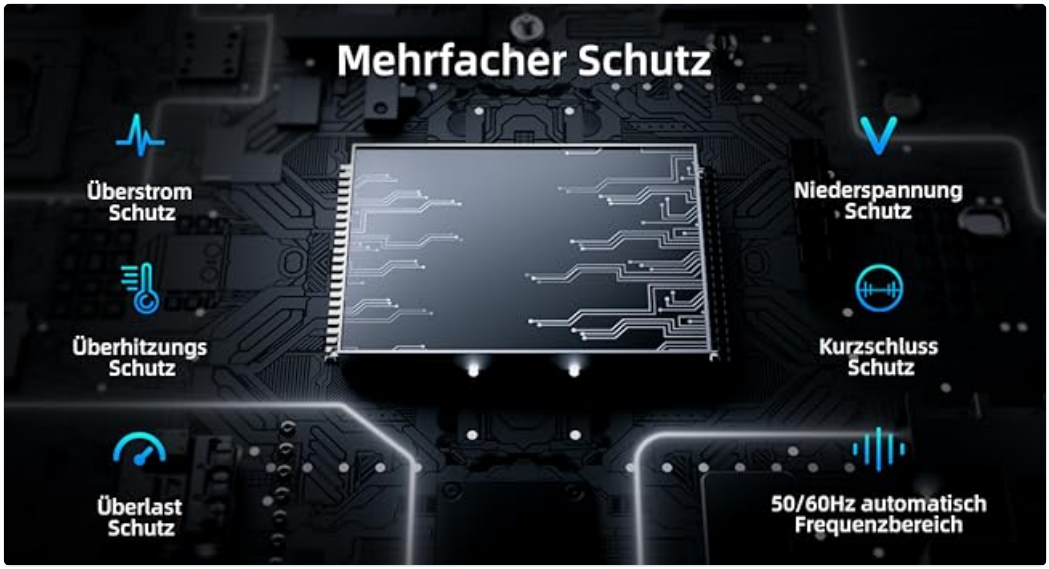


Figure 2.1: Overview of the inverter's comprehensive protection features.

3. Product Features

- **High Power Output:** 4.2kW hybrid solar inverter (3600W rated power) with 24V DC to 220V/230V AC conversion.
- **Advanced MPPT Solar Charger:** Integrated 120A MPPT solar charge controller. Max PV Array Open Circuit Voltage: 500Vdc. PV Array MPPT Voltage Range: 90~450Vdc. Max PV Array Power: 6000W.
- **Energy Saving Mode:** Features a dual-circuit AC output function. The primary and secondary outputs are typically used under normal conditions. If there is no PV or grid input and battery voltage is too low, the primary circuit will shut down, and only the secondary output will remain active to conserve energy.
- **Remote Monitoring:** Supports WIFI/GPRS remote monitoring, allowing access to data and control of the inverter at any time. A WIFI module is included in the package.
- **Multiple Charging Modes:** Three optional charging modes: Solar Only, Solar and Utility, Solar Priority.
- **Multiple Output Modes:** Output modes include Solar Priority, Utility Priority, and SBU Mode. These modes meet various application requirements.
- **Dual AC Outputs:** The inverter features dual AC outputs. The combined power of the primary and secondary outputs should not exceed 3.6 kW.

- **RGB LCD Display:** High-resolution RGB LCD display, readable even in daylight, with RGB indicators for different operating modes.
- **Battery Compatibility:** Supports 24V lead-acid and lithium batteries, including GEL, AGM, FLD, LI, and SLD types. The inverter can operate without batteries. It can only be connected to PACE BMS, not BMS from other manufacturers. When using a lithium battery, select 'User-defined' battery type in program 05.

Figure 3.1: The Anern Hybrid Solar Inverter combines multiple functions into one unit.

Figure 3.2: Dual AC outputs and the high-resolution RGB LCD display.

Figure 3.3: The inverter supports a wide range of 24V battery types.

4. Specifications

Attribute	Value
Model Number	4.2KW avec WIFI
Brand	Anern
Wattage	3600 Watts (Rated)
Product Dimensions	44 x 51 x 21 cm
Item Weight	10 Kilograms
Power Source	Solar Powered
Recommended Applications	Home, Off-grid

Attribute	Value
Color	Orange
Max. PV Array Open Circuit Voltage	500Vdc
PV Array MPPT Voltage Range	90~450Vdc
Max. PV Array Power	6000W
Max. Charging Current	120A (MPPT)
Max. AC Charging Current	100A

5. Setup and Installation

Proper installation is crucial for the safe and efficient operation of your hybrid solar inverter. Refer to the wiring diagram below for connection details.

Wiring Diagram Overview

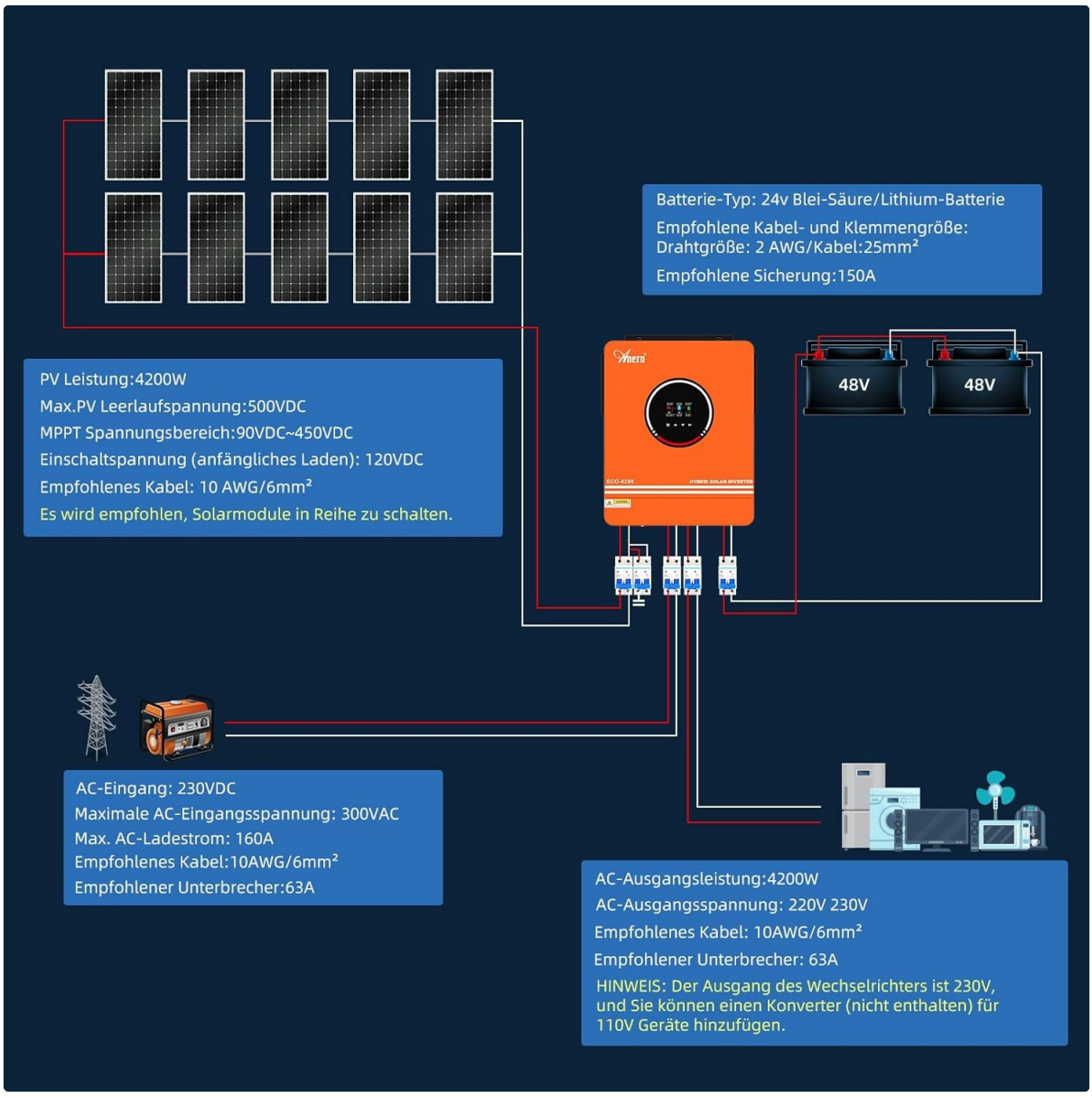


Figure 5.1: Comprehensive wiring diagram for the inverter system.

Connection Guidelines

- **PV Input:**
  - PV Power: 4200W
  - Max. PV Open Circuit Voltage: 500VDC
  - MPPT Voltage Range: 90VDC-450VDC
  - Start-up Voltage (initial charge): 120VDC
  - Recommended Cable: 10 AWG / 6mm²
  - It is recommended to connect solar modules in series.
- **Battery Connection:**
  - Battery Type: 24V Lead-Acid / Lithium Battery
  - Recommended Cable and Terminal Size: 2 AWG / 25mm²
  - Recommended Fuse: 150A
- **AC Input (Grid/Generator):**
  - AC Input: 230VDC

- Maximum AC Input Voltage: 300VAC
- Max. AC Charging Current: 120A
- Recommended Cable: 10 AWG / 6mm²
- Recommended Breaker: 63A

- **AC Output (Load):**
  - AC Output Power: 4200W
  - AC Output Voltage: 220V / 230V
  - Recommended Cable: 10 AWG / 6mm²
  - Recommended Breaker: 63A
  - NOTE: The inverter's output is 230V. You can add a converter (not included) for 110V devices.

Ensure all connections are secure and follow local electrical codes. It is highly recommended to have installation performed by a qualified electrician.

6. Operating Modes

The Anern Hybrid Solar Inverter offers flexible operating modes to suit various energy management needs.

Charging Modes (3 Options)

Figure 6.1: Overview of charging and output modes.

- **Solar Only (CSO):** Solar energy is the primary source for charging the battery. The utility grid charges the battery only when solar energy is unavailable.
- **Solar and Utility (SNU):** Solar energy and the utility grid charge the battery simultaneously.
- **Solar Priority (OSO):** Solar energy is the sole charging source, regardless of its availability.

Output Modes (4 Options)

- **USB - Utility First:** Loads are primarily powered by the utility grid. Solar and battery power are only used if the utility company cannot supply power.
- **SUB - Solar First (Standard):** If solar energy is insufficient to power all connected loads, the grid

supplies the loads simultaneously. The battery powers the loads only in two cases: if solar power is insufficient and grid power is unavailable, or if the grid is unavailable.

- **SUB - Priority:** If solar energy is insufficient to power all connected loads, the battery powers the loads simultaneously. The utility company then supplies the loads with power when the battery voltage drops below the warning value for low values or in program 12.
- **MKS - Priority:** Solar power has priority over loads. If solar power is insufficient, the loads are simultaneously supplied by the grid. The batteries serve as backup power.

RGB Operating Modes

The RGB display automatically changes color based on the inverter's operating status:

Figure 6.2: RGB display colors indicating different operating modes.

- **Stationary Mode:** White Light
- **PV Mode:** Violet Light
- **Battery Mode:** Red Light
- **Utility Mode:** Blue Light

Remote Monitoring

The included WiFi module enables remote monitoring of your inverter. This allows you to retrieve desired data and operate the inverter from a distance using a compatible application.

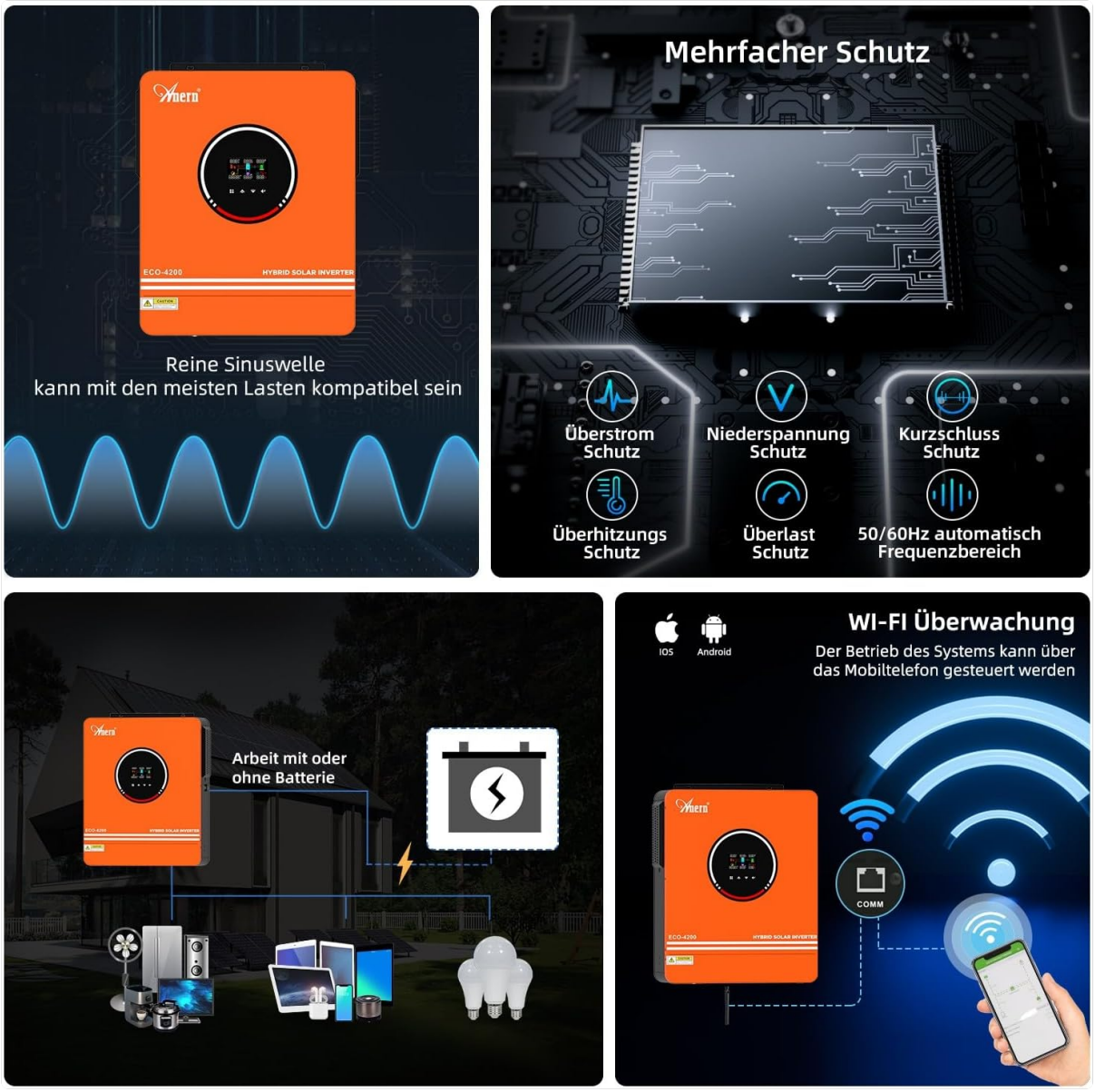


Figure 6.3: WiFi monitoring allows control and data access via mobile devices.

7. Maintenance

To ensure the longevity and optimal performance of your Anern Hybrid Solar Inverter, regular maintenance is recommended.

- **Regular Cleaning:** Keep the inverter's exterior clean and free from dust and debris. Ensure ventilation openings are not blocked.
- **Connection Checks:** Periodically inspect all electrical connections (PV, battery, AC input/output) for tightness and signs of corrosion. Loose connections can lead to overheating and poor performance.
- **Environmental Conditions:** Ensure the inverter is installed in a well-ventilated area, away from direct sunlight, moisture, and extreme temperatures.
- **Firmware Updates:** Check the manufacturer's website or app for any available firmware updates to ensure your inverter has the latest features and bug fixes.

8. Troubleshooting

If you encounter issues with your inverter, consider the following general troubleshooting steps:

- **No Power/Display Off:** Check all power connections, including battery, PV, and AC input. Ensure circuit breakers are in the ON position. Verify battery voltage is within the operating range.
- **No Output Power:** Check the load connections and ensure the inverter is not in an error state (indicated by the display or fault indicator). Verify that the output mode is correctly configured.
- **Low Output Power:** Ensure PV input is sufficient and batteries are adequately charged. Check for any overload conditions.
- **Overload Warning:** Reduce the connected load. Ensure the starting power of inductive loads does not exceed the inverter's capacity.
- **Overheating:** Ensure proper ventilation around the inverter. Clear any obstructions from cooling fans.
- **WiFi Connection Issues:** Ensure the WiFi module is correctly installed and within range of your network. Refer to the WiFi module's specific instructions for setup.

For persistent issues, refer to the detailed troubleshooting section in the complete user manual (if available in PDF format) or contact customer support.

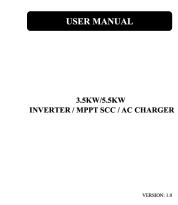
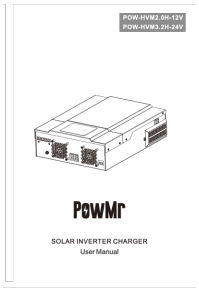
9. Warranty and Support

Anern provides a 1-year warranty for this inverter. For any issues during use, please contact Anern customer support. You may be required to provide a video demonstrating the fault to assist technicians in diagnosing the cause.
For further assistance, please visit the official Anern store on Amazon or contact their customer service directly. Ensure you have your product model and purchase details ready when contacting support.

Visit the Anern Store on Amazon

Related Documents - ECO 4200W-24V-WiFi

	ANENJI ANJ-2000W-12V-WiFi Off Grid Hybrid Inverter Technical Specifications Detailed technical specifications for the ANENJI ANJ-2000W-12V-WiFi Off Grid Hybrid Inverter, including features, input/output parameters, battery specifications, and environmental data.

	PowMr MPS-VII Series Hybrid Solar Inverter - User Manual Detailed information and specifications for the PowMr MPS-VII Series Hybrid Solar Inverter, including features like RS-232 communication, optional WIFI/GPRS, and removable LCD control module. Covers optional accessories and key technical parameters.
	Sumry ECO LV 3.6KW Hybrid Solar Inverter User Manual User manual for the Sumry ECO LV 3.6KW Hybrid Solar Inverter, featuring 110/120V, 24V dual output, MPPT, 120A charge controller, and 60-450V input range. Provides essential information for home solar power systems.
	ECO-WORTHY 3000W 24V All-in-one Solar Inverter Charger User Manual User manual for the ECO-WORTHY 3000W 24V All-in-one Solar Inverter Charger, detailing its advanced features, installation, operation, and technical specifications for efficient solar energy management.
	PowMr POW-HVM3.2H-24V Hybrid Solar Inverter User Manual Comprehensive user manual for the PowMr POW-HVM3.2H-24V hybrid solar inverter, detailing its features, installation, operation, and troubleshooting for off-grid solar energy systems.
	2.0KVA/3.2KVA Inverter MPPT SCC AC Charger User Manual 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.