Anern SCI02-PLUS

Anern 3500W Solar Hybrid Inverter

Model: SCI02-PLUS

1. Introduction

The Anern SCI02-PLUS 3500W Solar Hybrid Inverter is an advanced power solution integrating a 100A MPPT solar charge controller. It is designed to provide high-quality, stable AC power from 48V DC sources, suitable for various household and office appliances. This inverter supports multiple charging modes and is compatible with lead-acid, gel, and lithium batteries, ensuring optimized battery performance and extended lifespan.

Figure 1: Front view of the Anern 3500W Solar Hybrid Inverter.

2. Safety Information

Please read and understand all safety instructions before installation and operation to prevent damage to the inverter or connected devices.

- The starting power of electrical appliances with inductive loads must be at least three times the rated power of the appliances. If the starting power exceeds the inverter's capacity, the inverter may be damaged. Please select an appropriate model before purchase.
- Connect the circuit according to the instructions and install switches for each circuit.
- **Startup Sequence:** First, turn on the battery switch, then start the inverter, and finally turn on the PV, grid, and load switches.
- **Shutdown Sequence:** Turn off the load, PV, and grid switches, then turn off the inverter, and finally turn off the battery.

3. Product Overview and Features

The Anern SCI02-PLUS inverter is designed for high efficiency and versatility, offering robust power conversion and management capabilities.

Key Features:

- **Pure Sine Wave Output:** Provides high-quality, stable AC power to protect electronic products and extend their lifespan.
- **Integrated MPPT Solar Charge Controller:** Features a 100A MPPT controller for efficient solar energy harvesting.
- **Wide Battery Compatibility:** Suitable for lead-acid, gel, and lithium batteries.
- **Remote Monitoring:** Supports WIFI/GPRS remote monitoring (WIFI module sold separately) for convenient data access and control.
- **Multiple Charging Modes:** Offers four optional charging modes: Solar, Utility Priority, Solar Priority, and Utility/Solar Hybrid charging.
- **Intelligent Battery Charging System:** Optimizes battery performance and extends battery life.
- **Comprehensive Protection:** Includes overload, over-temperature, and short-circuit protection, along with a cold start function.

Figure 2: Overview of the inverter's key features.

Figure 3: Inverter display, LED indicators, and function buttons.

4. Setup and Installation

Proper installation is crucial for the safe and efficient operation of your hybrid inverter. Ensure all connections are secure and follow local electrical codes.

System Architecture:

The inverter can be integrated into a comprehensive solar power system, connecting solar panels, external battery packs, and utility power to supply household appliances.

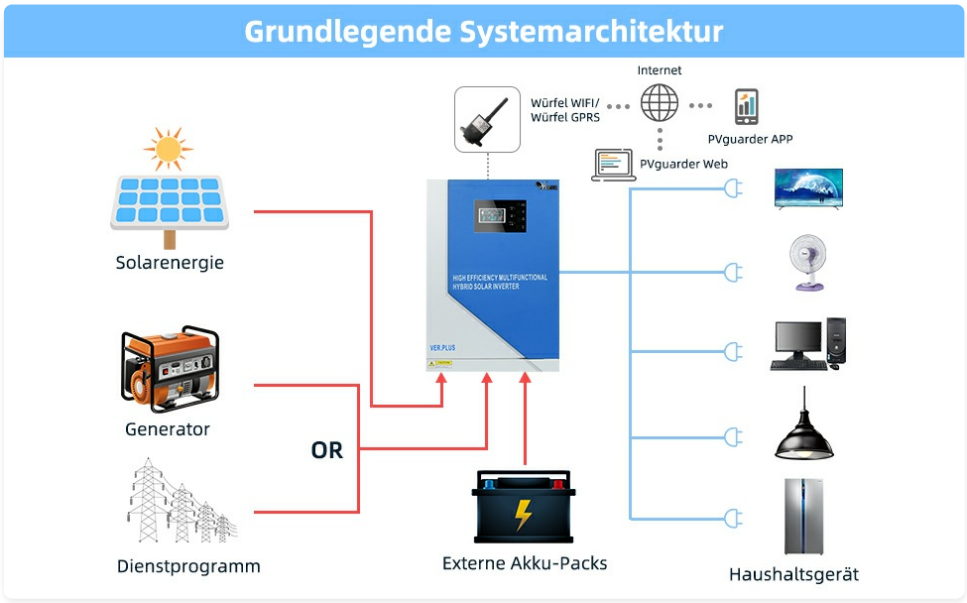

Figure 4: Basic system architecture showing connections for solar, generator/utility, battery, and loads.

Installation Steps:

1. **Mounting:** Securely mount the inverter in a well-ventilated area, away from direct sunlight and moisture.
2. **Battery Connection:** Connect the external battery pack to the inverter. Ensure correct polarity. For 3.5KW models, use a 24V battery; for 5.5KW models, use a 48V battery. The battery capacity should not

be less than 100AH.

3. **Solar Panel Connection:** Connect your solar panels to the PV input. The recommended voltage for normal startup is 300V-400V, not exceeding 500V. For PLUS-3.5KW, the solar panel power should not exceed 5KW.
4. **AC Input (Utility/Generator):** Connect the utility grid or a generator to the AC input terminals.
5. **AC Output (Loads):** Connect your household or office appliances to the AC output terminals.
6. **Grounding:** Ensure the inverter is properly grounded.
7. **Power On:** Follow the startup sequence: Battery switch ON → Inverter ON → PV, Grid, Load switches ON.

Figure 5: Examples of inverter installation in a solar power system.

5. Operating Modes

The inverter offers four distinct charging modes to suit various energy management needs:

- **Solar Charging:** Prioritizes charging from solar panels.
- **Utility Priority Charging:** Prioritizes charging from the utility grid.
- **Solar Priority Charging:** Prioritizes using solar power for loads and charging, switching to utility only when solar is insufficient.
- **Hybrid Charging:** Combines solar and utility charging for optimal efficiency.

Figure 6: Diagram illustrating the four optional charging modes.

Remote Monitoring (Optional):

With an optional WIFI module, you can monitor and control your inverter remotely via a mobile application or web interface, accessing real-time data and adjusting settings.

Figure 7: WIFI monitoring setup for remote access.

6. Maintenance

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

- Keep the inverter clean and free from dust. Use a dry cloth for cleaning.
- Ensure proper ventilation around the unit to prevent overheating.
- Periodically check all electrical connections for tightness and signs of corrosion.
- Monitor the display for any error codes or unusual readings.

- Inspect batteries regularly for any signs of damage or leakage.

7. Troubleshooting

This section addresses common questions and issues you might encounter.

Frequently Asked Questions:

- **Q: How many solar panels should be connected?**
  A: To start the inverter normally, a voltage of 300V-400V is recommended, not exceeding 500V. For PLUS-3.5KW, the solar panel power should not exceed 5KW. For example, 10 pieces of 250W 30V solar panels connected in series.
- **Q: Can inverters be connected in series or parallel?**
  A: No, this model does not support series or parallel connection.
- **Q: Is this a grid-tied inverter? Can it be connected to the power grid?**
  A: No. It can be fed from the grid (utility input), but it cannot feed power back into the grid.
- **Q: Does the inverter need to be connected to a battery?**
  A: The inverter can operate without a battery, but in this case, the solar panel voltage must exceed 360Vdc.
- **Q: What types of batteries can be used?**
  A: Lead-acid batteries, gel batteries, and lithium batteries can be used. A 24V battery is required for the 3.5KW model, and a 48V battery for the 5.5KW model. The battery capacity should not be less than 100AH.

8. Specifications

Detailed technical specifications for the Anern SCI02-PLUS 3500W Solar Hybrid Inverter.

Parameter	Value (SCI02-PLUS-3500)
Rated Power	3500W (3.5KW)
Voltage	230 VAC
Selectable Voltage Range	170-280 VAC (for Personal Computer); 90-280 VAC (for Home Appliances)
Frequency Range	50 Hz/60 Hz (Automatic Sensing)
AC Voltage Regulation (Batt. Mode)	230VAC ± 5%
Waveform	Pure Sine Wave
Battery Voltage	24 VDC
Maximum PV Array Power	5000W

Parameter	Value (SCI02-PLUS-3500)
MPPT PV Array Voltage Range	120 ~ 450 VDC
Maximum PV Array Open Circuit Voltage	500 VDC
Maximum Charge Current	100A
Operating Temperature	-10°C to 50°C
Storage Temperature	-15°C to 60°C
Dimensions (H x W x D)	42 x 22 x 60 cm
Net Weight	13 kg
Material	Metal
Display Type	LCD

Figure 8: Comprehensive technical specifications.

9. Warranty and Support

For warranty information, technical support, or service inquiries, please contact Anern customer service directly. Refer to your purchase documentation for specific warranty terms and contact details.

You can often find support information on the official Anern website or through the retailer where you purchased the product.