Anern FGI-S6500

Anern FGI-S6500 6500W Hybrid Solar Inverter Instruction Manual

Model: FGI-S6500 | Brand: Anern

1. Introduction

This manual provides essential information for the safe and efficient operation of your Anern FGI-S6500 6500W Hybrid Solar Inverter. This device integrates an inverter, MPPT solar charger, and battery charger into a single unit, designed to provide uninterrupted power for various applications. Please read this manual thoroughly before installation and use.

2. Key Features

- **Pure Sine Wave Output:** Ensures compatibility with sensitive electronics.
- **High Power Output:** 6500W continuous power.
- **Integrated MPPT Solar Charge Controller:** 120A MPPT for efficient solar energy harvesting.
- **Configurable Settings:** Adjustable input voltage range, battery charging current, and AC/Solar charger priority via LCD.
- **Battery Compatibility:** Supports 48V Lithium, Lead-Acid, and Gel batteries.
- **Off-Grid and On-Grid Functionality:** Operates with or without a battery, and can reduce household electricity bills.
- **Comprehensive Protection:** Overload, over temperature, short circuit, under voltage, over current, over charge, and backfill protection.
- **Automatic Restart:** Restarts automatically when AC power is restored.
- **Cold Start Function:** Allows the inverter to start without AC input.

3. Basic System Architecture

The Anern FGI-S6500 Hybrid Solar Inverter is designed for integration into various power systems. A typical setup includes the inverter/charger, a generator or utility power source, and PV modules. For specific system

architectures tailored to your requirements, consult with a qualified system integrator.

Figure 3.1: Overview of the Anern FGI-S6500 Hybrid Solar Inverter highlighting its 6500W max output, 9000W max PV input, 450VDC max PV VOC, and 120A max charging current.

4. Setup and Installation

Proper installation is crucial for the safe and efficient operation of the inverter. It is recommended that installation be performed by a qualified professional.

4.1 Safety Precautions

- Ensure all power sources (AC, DC, PV) are disconnected before installation or maintenance.
- Wear appropriate personal protective equipment (PPE).
- Mount the inverter in a well-ventilated area, away from flammable materials and direct sunlight.
- Ensure proper grounding of the unit.
- This inverter is designed for 220-230VAC output. It is not applicable for 120V systems and does not support parallel or split-phase operation in some regions.

4.2 Wiring Connections

Connect the PV modules, battery bank, AC input (utility or generator), and AC output (loads) according to the wiring diagrams provided in the full installation guide. Ensure all connections are secure and correctly polarized.

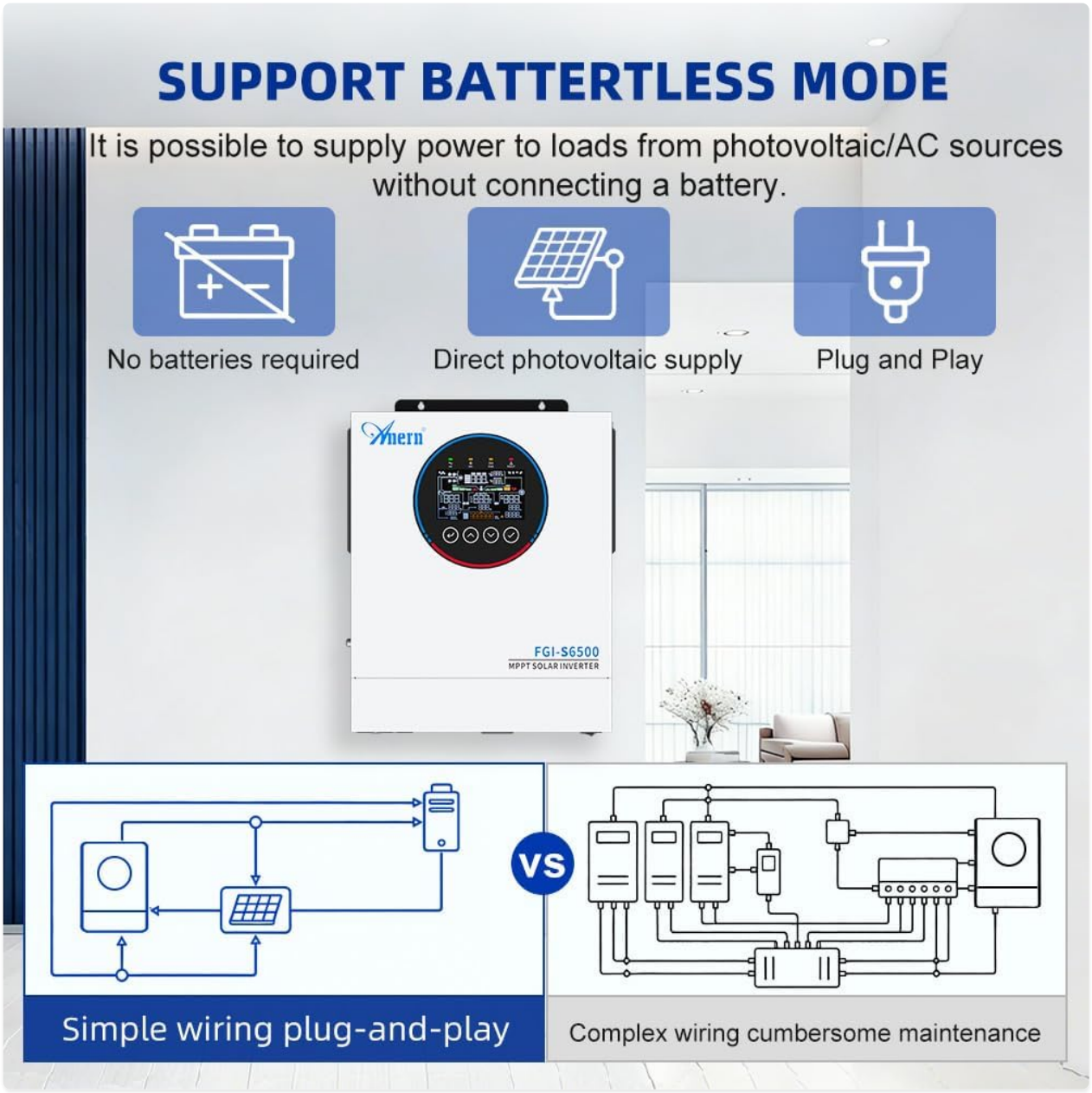

Figure 4.1: The inverter supports batteryless mode, allowing direct power supply to loads from photovoltaic or AC sources without a battery, simplifying wiring.

5. Operating Modes

The Anern FGI-S6500 offers multiple configurable charging and output modes to suit various application requirements.

5.1 Charging Modes

- **Solar Priority:** Solar energy is the primary source for charging the battery. Utility power charges only when solar is unavailable.
- **Solar and Utility:** Both solar energy and utility power charge the battery simultaneously.
- **Utility Only:** Only utility power charges the battery.

- **Solar Only:** Solar energy is the sole charging source, regardless of utility availability.

5.2 Output Modes

- **Solar Priority:** Loads are powered by solar energy first.
- **Utility Priority:** Loads are powered by utility power first.
- **SBU Mode (Solar-Battery-Utility):** Loads are powered by solar, then battery, then utility as a last resort.

Figure 5.1: Different operational scenarios for the hybrid solar inverter, including Solar First, Solar and Utility, and Only Solar Charging modes.

6. Maintenance

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

- **Cleaning:** Keep the inverter's ventilation openings clear of dust and debris. Use a dry cloth for cleaning the exterior.
- **Connections:** Periodically check all wiring connections for tightness and signs of corrosion.
- **Environment:** Ensure the operating environment remains within specified temperature and humidity ranges.

- **Battery Health:** Monitor battery voltage and performance according to battery manufacturer guidelines.

7. Troubleshooting

If the inverter is not functioning as expected, refer to the following common issues and solutions. For complex problems, contact technical support.

7.1 Common Issues

- **No Power Output:** Check AC input, DC input from battery/PV, and circuit breakers.
- **Overload Warning:** Reduce connected load. The inverter has overload protection and will automatically restart after clearing the fault.
- **Over Temperature Warning:** Ensure adequate ventilation. Clean any dust from vents.
- **Battery Not Charging:** Verify PV array connection, solar panel output, and battery connections. Check charging mode settings.

7.2 Protection Features

The inverter is equipped with multiple protection mechanisms:

Figure 7.1: The inverter provides 360° protection against various electrical faults, including short circuit, over current, under voltage, over-temperature, over charge, over voltage, overload, and backfill protection.

8. Specifications

Detailed technical specifications for the Anern FGI-S6500 Hybrid Solar Inverter.

Specification	Value
Model	FGI-S6500
Rated Output Power	6500W
Max PV Input Power	9000W
Max PV Array Open Circuit Voltage	450Vdc
Max PV No-Load Voltage	500Vdc
Maximum PV Charging Current	120Amp
Rated Output Current	44.3Amp
DC Voltage	48V
AC Output Voltage	220-230VAC
Battery Capacity (Recommended)	120 Amp Hours
Package Dimensions	51 x 42.6 x 20.29 cm
Weight	9.5 kg

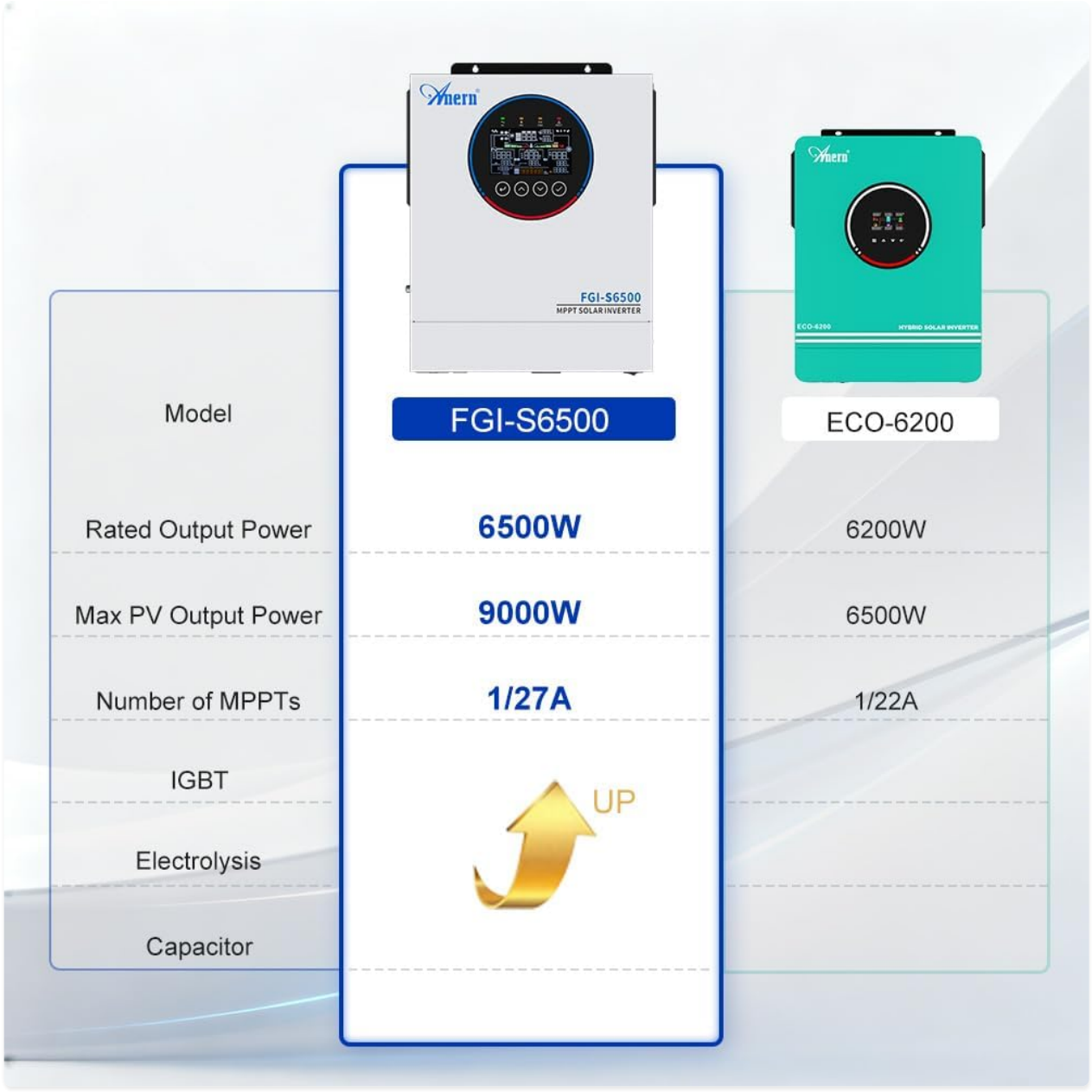

Figure 8.1: Model comparison showing key specifications for FGI-S6500 and ECO-6200 inverters.

9. Application Scenarios

The Anern FGI-S6500 Hybrid Solar Inverter is versatile and suitable for a wide range of applications, both residential and commercial.

Figure 9.1: The inverter can be used for emergency electricity, powering home appliances, on yachts, for photovoltaic rooftops, agricultural electricity, and outdoors camping.

10. Battery Compatibility

The inverter is compatible with various 48V battery types, including Lithium, Lead-Acid, and Gel batteries. It can also operate without batteries.

- The inverter can be used without batteries.
- For Lithium batteries, it can only be connected to PACE BMS, not to BMS from other manufacturers.
- The inverter cannot communicate with other battery brands.
- If using a Lithium battery, select "User defined" in program 05 to configure the battery type.

Figure 10.1: The inverter supports various battery types including AGM, GEL, FLD, SLD, and LiFePO4, with specific considerations for lithium battery management systems.

11. Warranty and Support

For warranty information, technical support, or service inquiries, please refer to the official Anern website or contact your authorized dealer. Keep your purchase receipt as proof of purchase for warranty claims.