Litime 3000W Solar Inverter Charger

LiTime 24V 3000W All-in-One Solar Inverter Charger User Manual

Model: 3000W Solar Inverter Charger

1. Introduction

The LiTime 24V 3000W All-in-One Solar Inverter Charger is an integrated power solution designed for home energy storage and off-grid solar systems. This unit combines an MPPT solar charge controller, a pure sine wave inverter, and a battery charger into a single, compact device. It provides stable and efficient energy conversion, ensuring a reliable power supply for various applications.

This manual provides detailed instructions for the safe and efficient operation, installation, and maintenance of your LiTime solar inverter charger. Please read this manual thoroughly before installation and use, and keep it for future reference.

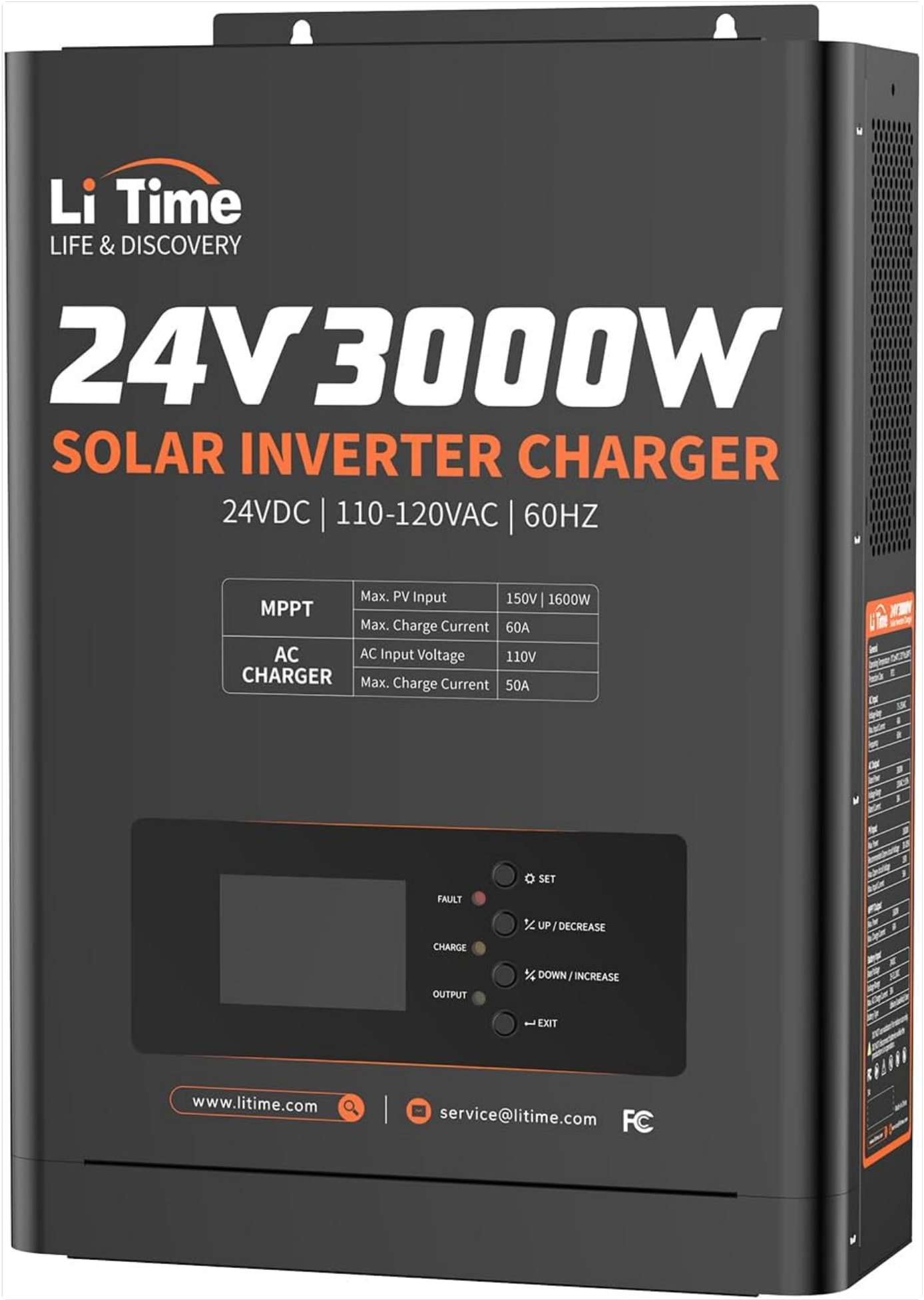

Figure 1.1: Front view of the LiTime 24V 3000W All-in-One Solar Inverter Charger.

2. Product Features

- **Integrated Design:** Combines MPPT solar controller, pure sine wave inverter, and battery charger into one unit, simplifying installation and operation.
- **High Performance:** Provides 3000W continuous power output with a 9000W surge capability, ensuring stable and efficient energy conversion.
- **Uninterrupted Power Supply (UPS):** Features multiple output modes (MPPT First, Grid First, Inverter First) for enhanced energy stability and reduced reliance on traditional energy sources.
- **Smart Charging Capabilities:** Offers three charge modes (MPPT First, MPPT and Grid, Only MPPT) for flexible energy scenarios.
- **Battery Compatibility:** Supports various 24V battery bank configurations, including lead-acid, lithium batteries, and user-defined modes. Includes lithium battery activation function.
- **Advanced Monitoring:** Integrated LCD screen and LED indicators provide real-time system data, including battery status, MPPT performance, AC input/output, and alarm/error status.
- **RS485 Communication:** Supports RS485 communication protocol for comprehensive battery monitoring and energy management.
- **Comprehensive Protection:** Equipped with intelligent adjustable speed fans and multiple protection features, including load output short circuit, over-temperature, overload, battery undervoltage, overvoltage, and reverse protection.

Figure 2.1: The 3-in-1 integrated functionality of the inverter charger.

Figure 2.2: Overview of the strong and comprehensive protection features.

3. Package Contents

Upon opening the package, please verify that all the following items are included and undamaged:

- LiTime 24V 3000W All-in-One Solar Inverter Charger Unit
- Copper Wire Connectors (x8)
- 150A Spare Fuse (x1)
- Battery Wire Connectors (x2)
- MC4 Connectors (x2)
- Expansion Screws for Wall Mount (x2)
- Parker Screws for Panel Mount (x2)
- Heat Shrink Tubing for PV&AC (x8)
- Heat Shrink Tubing for Battery (x2)

- User Manual (this document)

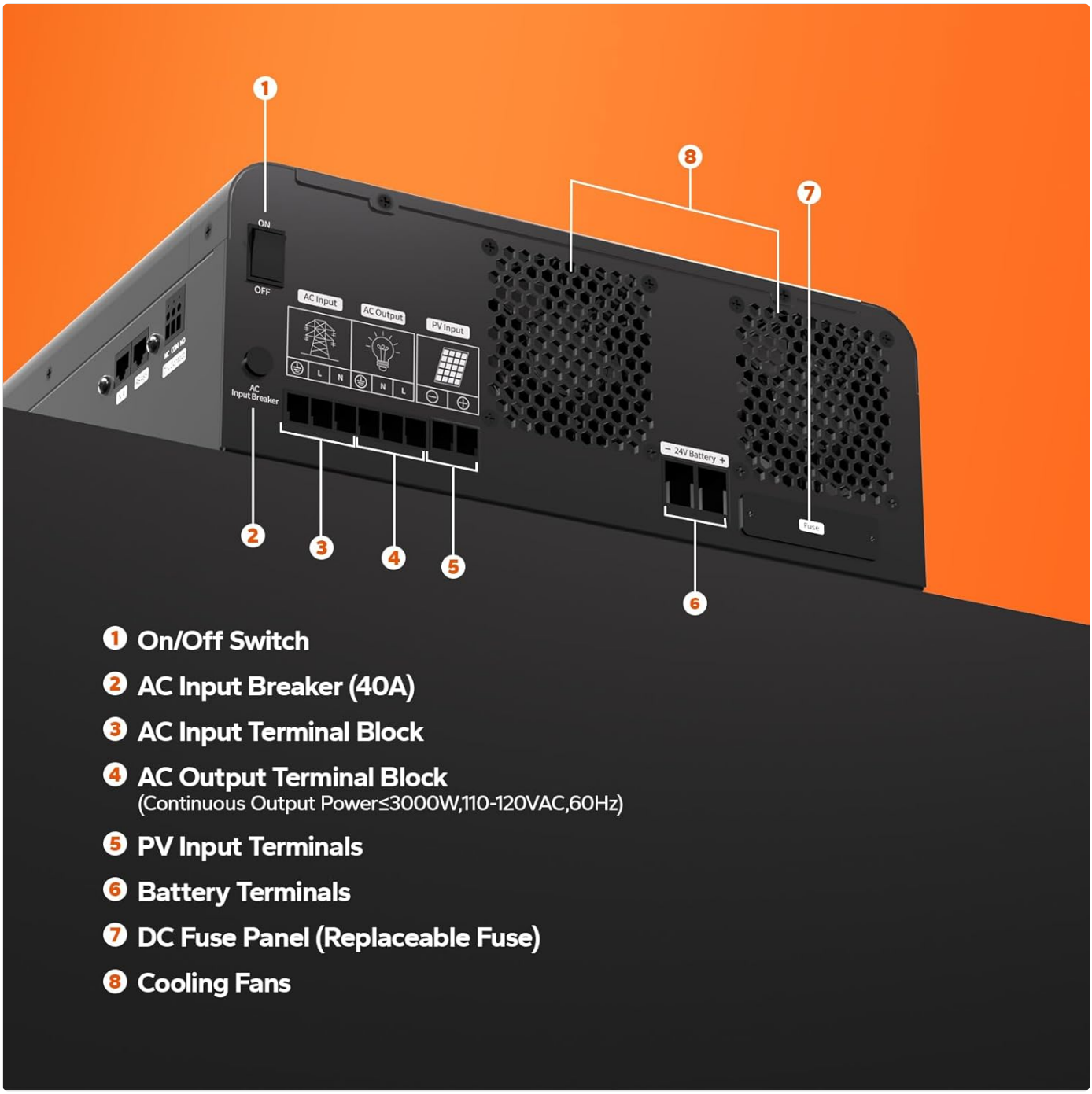

Figure 3.1: Additional components included in the package.

4. Product Overview

4.1 Physical Components

Familiarize yourself with the various parts of the inverter charger:

Figure 4.1: Physical components of the inverter charger.

1. **On/Off Switch:** Main power switch for the unit.
2. **AC Input Breaker (40A):** Circuit breaker for the AC input.
3. **AC Input Terminal Block:** Connection point for grid or generator AC input.
4. **AC Output Terminal Block:** Connection point for AC loads (Continuous Output Power: 3000W, 110-120VAC, 60Hz).
5. **PV Input Terminals:** Connection points for solar panel input.
6. **Battery Terminals:** Connection points for the 24V battery bank.
7. **DC Fuse Panel (Replaceable Fuse):** Access for replacing the DC fuse.
8. **Cooling Fans:** Intelligent adjustable speed fans for heat dissipation.

4.2 Control Panel and Display

The control panel provides real-time monitoring and allows for system configuration.

Figure 4.2: Detailed view of the LCD screen, LED indicators, and operation buttons.

- **LCD Screen:** Displays various system parameters and settings.
- **LED Indicators:** Provide quick status updates (e.g., Fault, Charge, Output).
- **Operation Buttons:** Used for navigation and setting adjustments (SET, UP/DECREASE, DOWN/INCREASE, EXIT).
- **RS485 Port:** For communication with external monitoring devices or systems.
- **Dry Contact Ports:** For external control or signaling.

5. Setup and Installation

Proper installation is crucial for the safe and efficient operation of your inverter charger. Please follow these steps carefully.

5.1 Site Selection

- Install the unit in a cool, dry, and well-ventilated area.
- Avoid direct sunlight, high temperatures, and humidity.
- Ensure sufficient clearance around the unit for proper airflow, especially around the cooling fans.
- Mount the unit vertically on a sturdy surface.

5.2 Wiring Connections

Refer to the system diagram and cable sizing recommendations for correct wiring.

Figure 5.1: Typical system connection diagram for the LiTime Solar Inverter Charger.

Important Safety Note: The utility power (grid AC) and generator AC cannot be used simultaneously as input sources. Ensure only one AC source is connected at a time.

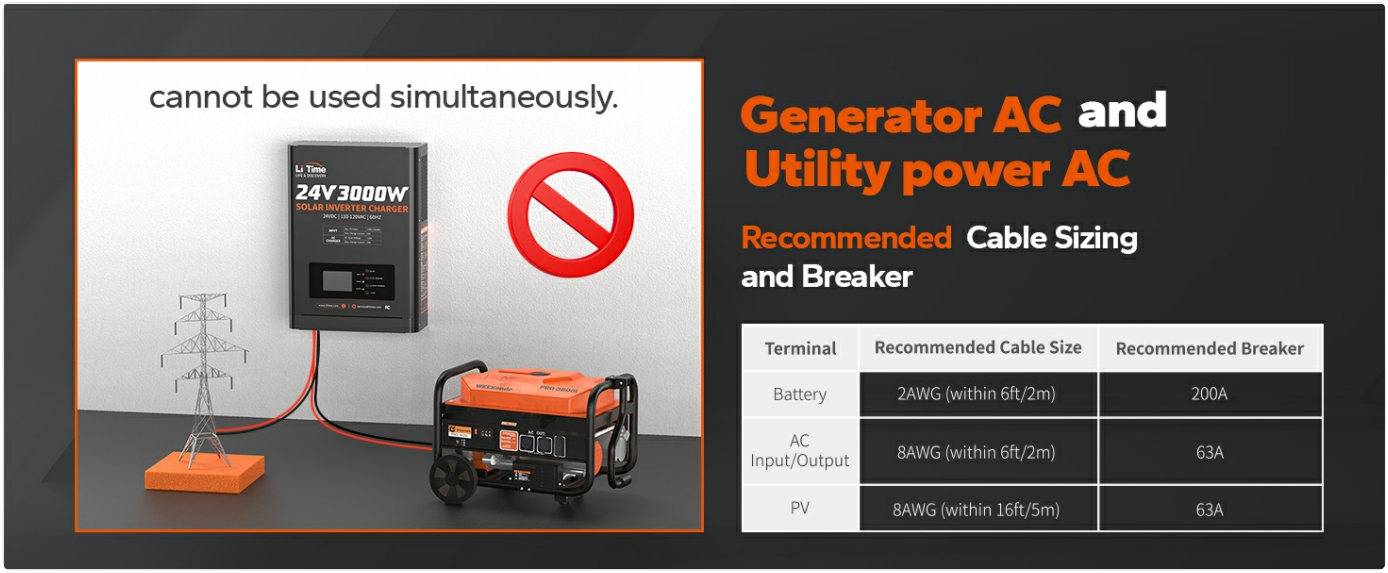

Figure 5.2: Warning regarding simultaneous AC input sources and recommended cable sizing.

5.2.1 Battery Connection

- Connect the 24V battery bank to the Battery Terminals (6). Ensure correct polarity (+ to + and - to -).
- Use the provided Battery Wire Connectors and Heat Shrink Tubing for secure connections.
- Recommended Cable Size: 2AWG (within 6ft/2m) with a 200A breaker.

5.2.2 Solar Panel (PV) Connection

- Connect your solar panels to the PV Input Terminals (5).
- Ensure the PV input voltage and current are within the specified limits (Max. PV Input: 150V, Max. Power: 1600W).
- Use MC4 Connectors and Heat Shrink Tubing for PV connections.
- Recommended Cable Size: 8AWG (within 16ft/5m) with a 63A breaker.

5.2.3 AC Input Connection (Grid/Generator)

- Connect your AC input source (grid or generator) to the AC Input Terminal Block (3).
- Ensure the AC input voltage is within the specified range (110-120VAC, 60Hz).
- Recommended Cable Size: 8AWG (within 6ft/2m) with a 63A breaker.
- Ensure the AC Input Breaker (2) is in the OFF position before connecting.

5.2.4 AC Output Connection (Loads)

- Connect your AC loads to the AC Output Terminal Block (4).
- Ensure the total load does not exceed the continuous output power of 3000W.

5.3 Powering On

1. Double-check all wiring connections for correctness and security.
2. Ensure the AC Input Breaker (2) is OFF.
3. Turn on the main On/Off Switch (1) on the inverter charger.
4. Observe the LCD screen and LED indicators for initial status.
5. If using AC input, turn on the AC Input Breaker (2).

6. Operating Modes

The LiTime inverter charger offers flexible charging and output modes to adapt to various energy scenarios.

6.1 Charging Modes

You can select one of three charging modes:

1. **MPPT First:** Prioritizes solar power for charging the battery. If solar power is insufficient, it will not use grid power.
2. **MPPT and Grid:** Uses solar power as the primary charging source. If solar power is insufficient, it supplements with grid power to charge the battery.
3. **Only MPPT:** Charges the battery exclusively from solar power. Grid power is not used for charging.

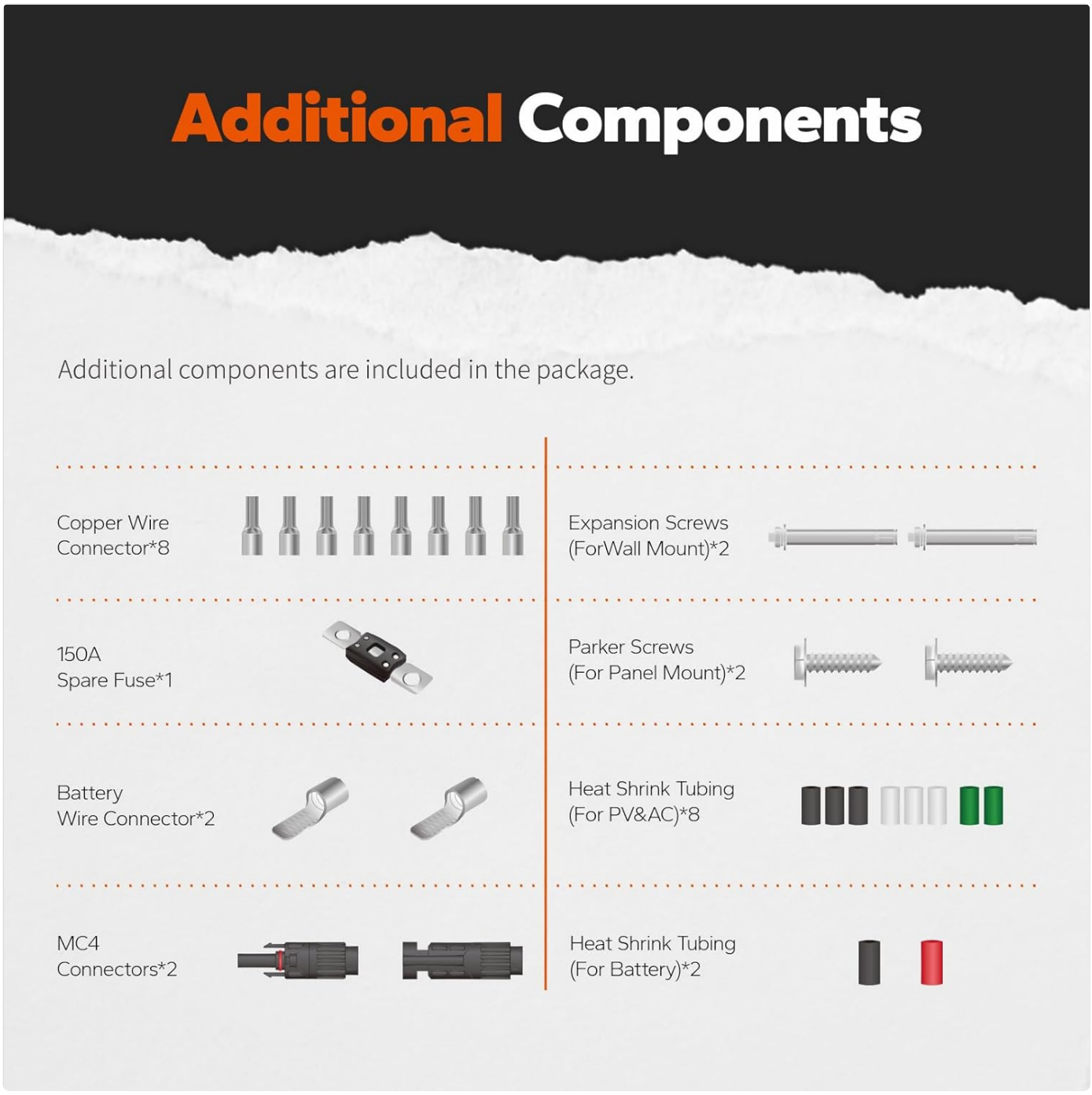

Figure 6.1: Visual representation of the three charging modes.

6.2 Output Modes

You can select one of three output modes for powering your loads:

1. **MPPT First:** Prioritizes solar power to supply loads. If solar power is insufficient, it will draw from the battery. If both are insufficient, it will switch to grid power.
2. **Grid First:** Prioritizes grid power to supply loads. If grid power is unavailable, it will switch to inverter (battery) power.

3. **Inverter First:** Prioritizes inverter (battery) power to supply loads. If battery power is low, it will switch to grid power.

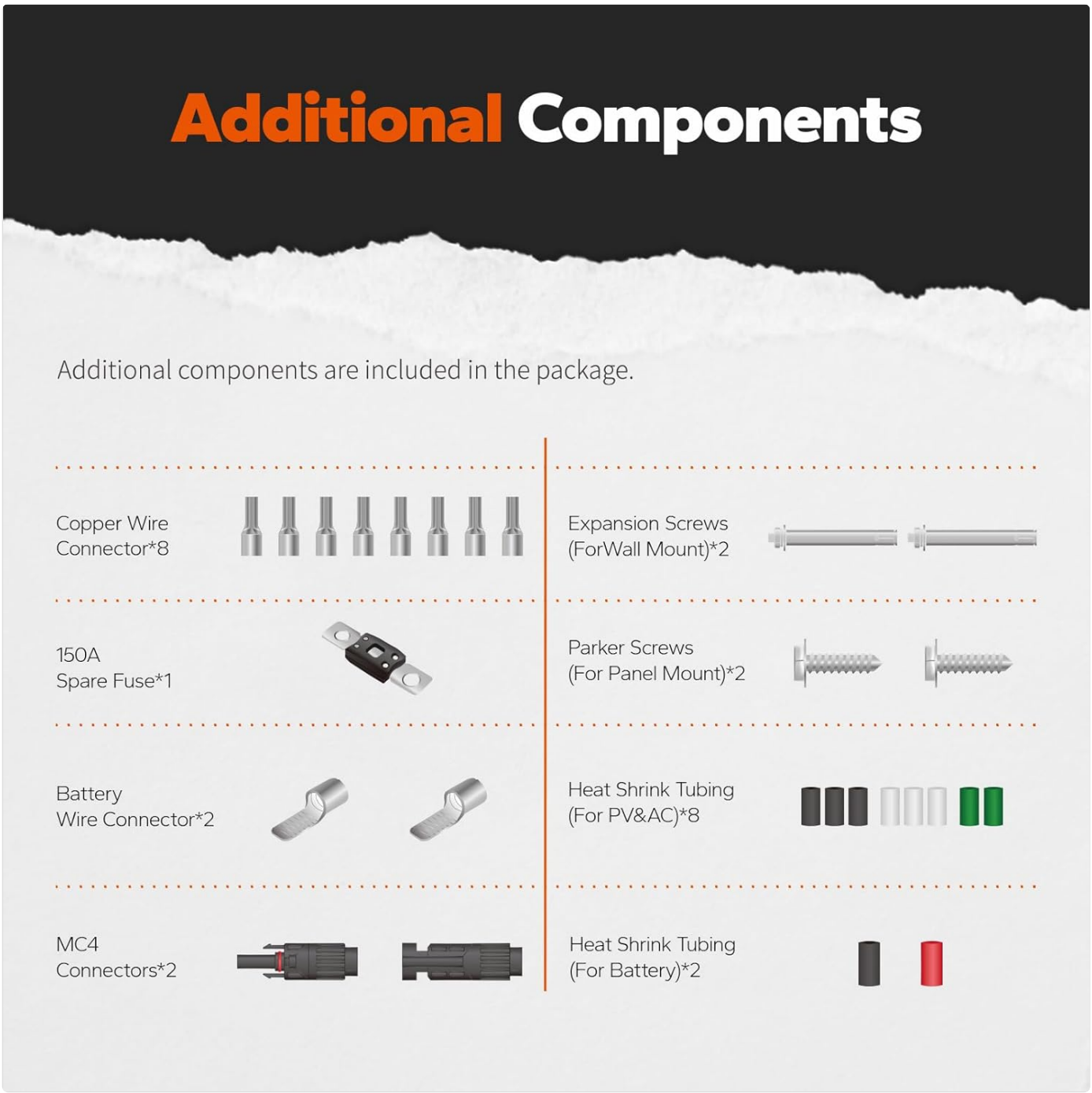

Figure 6.2: Visual representation of the three output modes.

7. Monitoring and Display

The LCD screen and LED indicators provide comprehensive real-time data and status information.

Figure 7.1: Detailed view of the real-time monitor display.

- **Code:** Displays specific error or status codes.
- **Input Information:** Shows details about AC input (voltage, frequency) and PV input (voltage, power).
- **Mode Operation/Battery/Load Information:** Indicates the current operating mode, battery voltage, state of charge (SOC), and load percentage.
- **Alarm/Error Status:** Alerts for system faults or warnings.

- **Output Information:** Displays AC output voltage, frequency, and power.

Use the operation buttons (SET, UP/DECREASE, DOWN/INCREASE, EXIT) to navigate through the display menus and adjust settings as needed.

8. Safety Information

Please observe the following safety precautions to prevent injury and damage to the unit:

- **Electrical Safety:** All electrical installations must be performed by qualified personnel and comply with local electrical codes.
- **Disconnect Power:** Always disconnect all power sources (solar, battery, AC input) before performing any maintenance or wiring.
- **Proper Grounding:** Ensure the unit is properly grounded to prevent electric shock.
- **Ventilation:** Do not block the cooling fans or ventilation openings. Adequate airflow is essential to prevent overheating.
- **Battery Safety:** Work with batteries carefully. Wear eye protection and avoid contact with battery acid. Ensure proper battery ventilation.
- **No Simultaneous AC Inputs:** Never connect both grid AC and generator AC to the inverter's input simultaneously.
- **Indoor Use Only:** This unit is designed for indoor use in a dry environment. Do not expose it to rain, snow, or liquids.
- **Children and Pets:** Keep the unit out of reach of children and pets.

9. Maintenance

Regular maintenance helps ensure the longevity and optimal performance of your inverter charger.

- **Cleaning:** Periodically clean the exterior of the unit with a dry, soft cloth. Do not use liquid cleaners or solvents.
- **Ventilation Check:** Ensure the cooling fans and ventilation openings are free from dust and obstructions. Clean them gently if necessary.
- **Connection Check:** Annually inspect all electrical connections (battery, solar, AC input/output) for tightness and signs of corrosion. Tighten any loose connections.
- **Battery Inspection:** Regularly check your battery bank according to the battery manufacturer's guidelines.
- **Firmware Updates:** Check the LiTime official website for any available firmware updates that may improve performance or add features.

10. Troubleshooting

This section provides solutions to common issues you might encounter.

Problem	Possible Cause	Solution
Inverter not turning on	Battery voltage too low; Loose battery connections; Main switch off; Blown fuse.	Check battery voltage and charge if necessary; Secure battery connections; Turn on main switch; Check and replace fuse if blown.
No AC output	Overload; Over-temperature; Short circuit; AC output breaker tripped.	Reduce load; Allow unit to cool down; Check for short circuits in wiring; Reset AC output breaker.

Problem	Possible Cause	Solution
Battery not charging from solar	Insufficient solar input; PV connections loose/incorrect; MPPT controller fault; Shading on panels.	Check solar panel voltage/current; Verify PV wiring; Check MPPT settings; Clear any shading.
Battery not charging from AC (grid/generator)	AC input not present; AC input breaker tripped; Charger setting incorrect.	Verify AC input power; Reset AC input breaker; Check charging mode settings.
Fan noise is excessive	High internal temperature; Heavy load.	Ensure adequate ventilation; Reduce load if possible. Fan speed adjusts based on temperature.

If the problem persists after attempting these solutions, please contact LiTime customer support.

11. Specifications

Parameter	Value
Model Name	3000W All-in-One Solar Inverter Charger
Rated Power	3000W
Surge Power	9000W
System Voltage	24VDC
AC Output Voltage	110-120VAC, 60Hz (Pure Sine Wave)
Max. PV Input Voltage	150V
Max. PV Input Power	1600W
Max. MPPT Charge Current	60A
Max. AC Charge Current	50A
Product Dimensions (L x W x H)	12.2 x 5.31 x 18.31 inches
Item Weight	45.5 pounds
Operating Temperature	Refer to product label/manual for exact range
Communication Port	RS485

Note: Specifications are subject to change without prior notice. For the most up-to-date information, please refer to the official LiTime website or contact customer support.

12. Warranty and Support

12.1 Warranty Information

LiTime products are backed by a manufacturer's warranty. Please refer to your purchase documentation or the official LiTime website for specific warranty terms and conditions, including duration and coverage details. Keep your proof of purchase for warranty claims.

12.2 Customer Support

For technical assistance, troubleshooting, or warranty inquiries, please contact LiTime customer support through the following channels:

- **Email:** service@litime.com
- **Website:** Visit the official LiTime website (www.litime.com) for FAQs, product registration, and additional resources.
- **Online Store:** You can also find support information on the LiTime store page on Amazon:LiTime Amazon Store

When contacting support, please have your product model number (3000W Solar Inverter Charger) and purchase date ready.