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menglanchang HPS-3K-24V

menglanchang HPS-3K-24V Hybrid Solar Inverter User Manual

Model: HPS-3K-24V

1. Introduction

This manual provides essential information for the safe and efficient operation of your menglanchang HPS-3K-24V Hybrid Solar Inverter. This device integrates an inverter, solar charger, and battery charger into a single unit, designed to provide uninterruptible power support for various applications, including home solar systems, RVs, and off-grid setups. Please read this manual thoroughly before installation and use, and retain it for future reference.

2. Safety Instructions

WARNING: This inverter generates high voltage. Improper installation or operation can result in serious injury or death. All electrical work should be performed by qualified personnel.

- Ensure the unit is installed in a well-ventilated area, away from flammable materials.
- Do not mount the inverter on flammable construction materials.
- Mount the unit on a solid, non-combustible surface only.
- Maintain adequate clearance around the inverter for proper air circulation (e.g., 20 cm to the sides, 50 cm above and below).
- Ensure all wiring connections are secure and correctly polarized.
- Do not attempt to disassemble or repair the inverter yourself. Contact qualified service personnel.
- Always disconnect all power sources (AC, DC, and PV) before performing any maintenance or wiring.
- Use only sealed lead-acid or sealed GEL/AGM lead-acid batteries with this system.

3. Product Overview

The menglanchang HPS-3K-24V Hybrid Solar Inverter is a versatile power solution. It features a comprehensive LCD display for monitoring and configuration, along with various input/output ports.

3.1 System Diagram

The inverter integrates solar power, utility power, and battery power to supply connected loads. It can draw power from solar panels, a generator, or the main utility grid, store energy in batteries, and then convert it to AC power for your appliances.

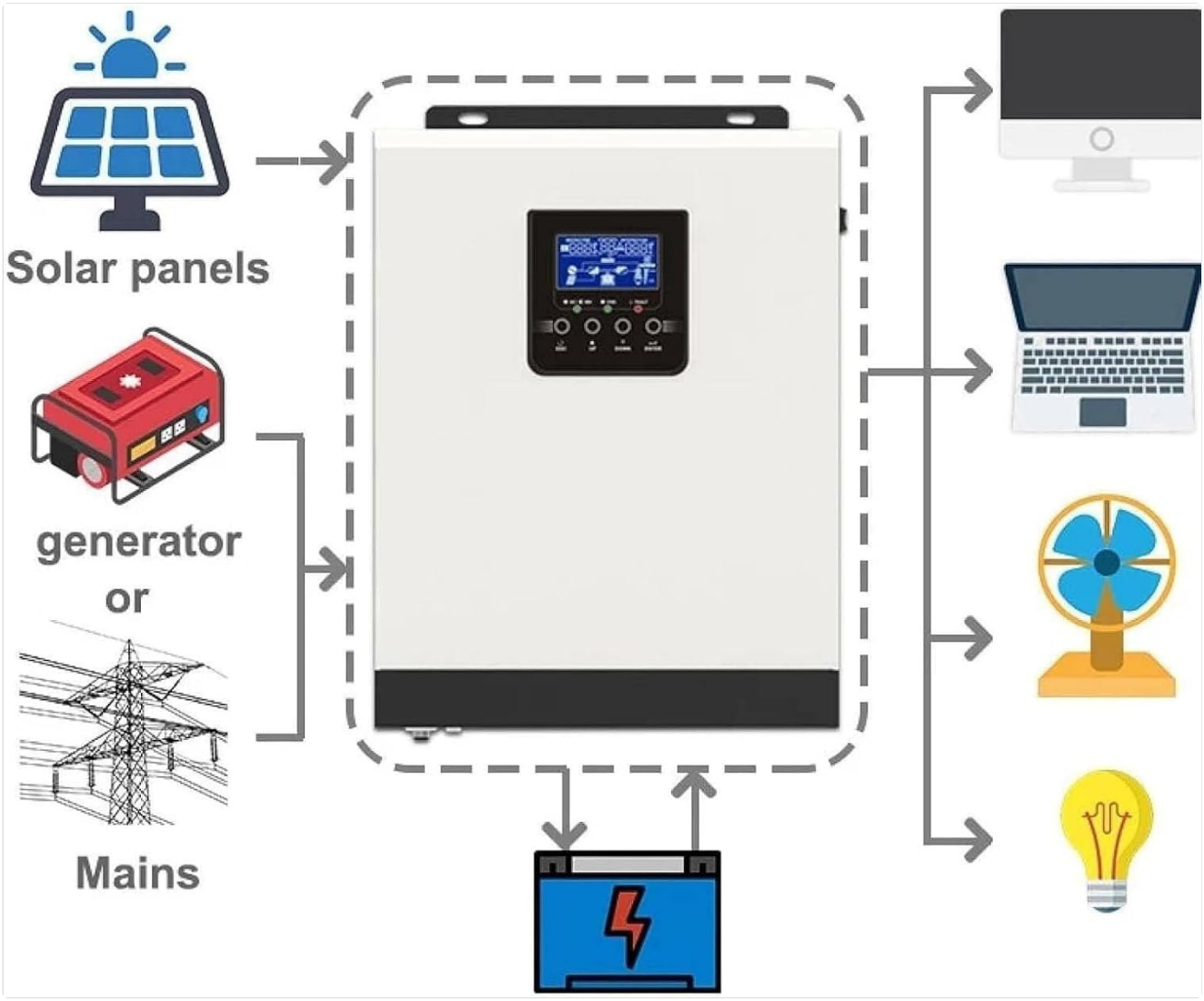
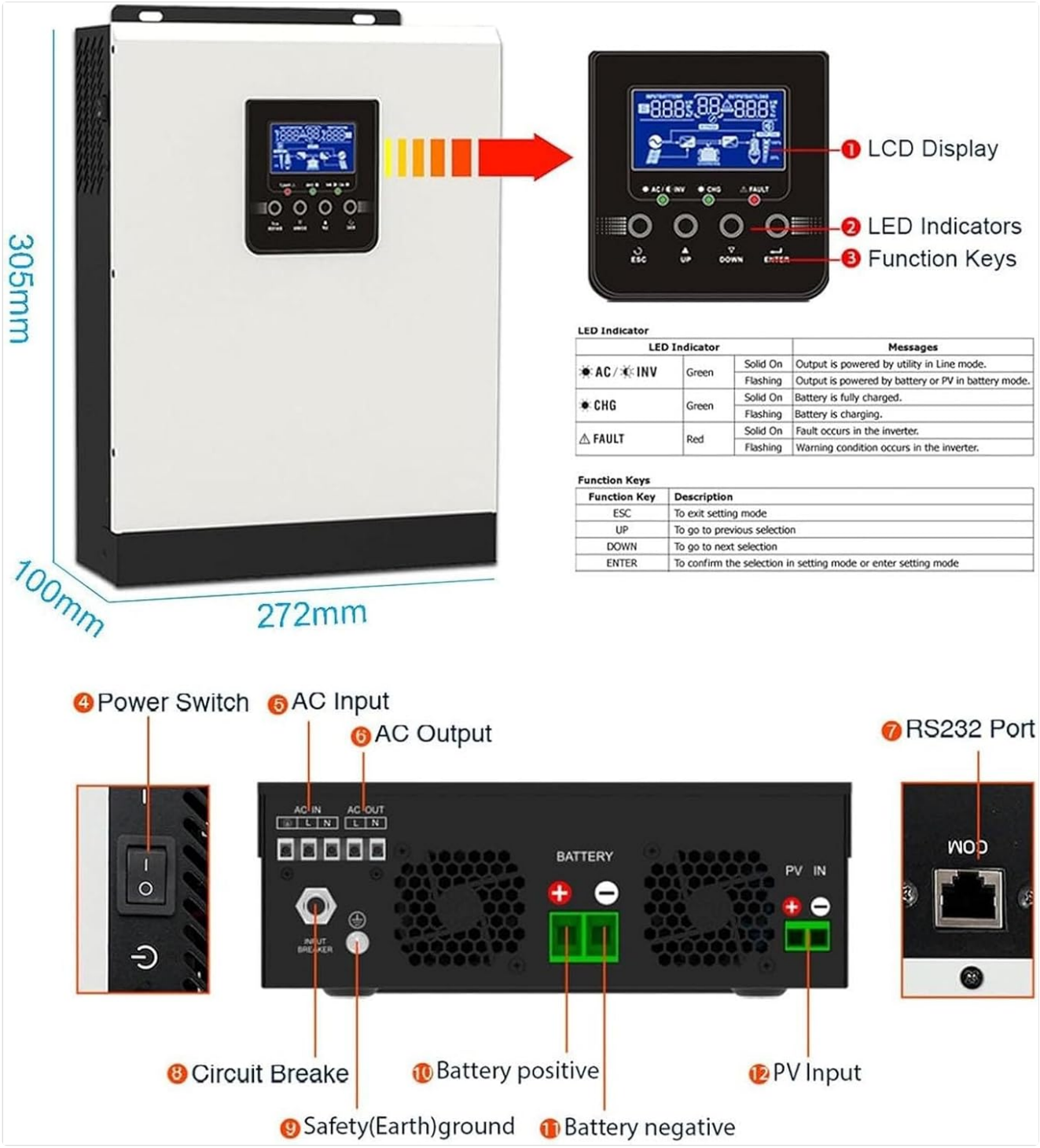


Figure 3.1: Overview of the Hybrid Solar Inverter system, illustrating how solar panels, a generator or mains power, and a battery interact with the inverter to supply various household loads.

3.2 Inverter Components and Connections

Familiarize yourself with the physical components and connection points of the inverter.



LED Indicator

LED Indicator			Messages
☀ AC / ☀ INV	Green	Solid On	Output is powered by utility in Line mode.
		Flashing	Output is powered by battery or PV in battery mode.
☀ CHG	Green	Solid On	Battery is fully charged.
		Flashing	Battery is charging.
⚠ FAULT	Red	Solid On	Fault occurs in the inverter.
		Flashing	Warning condition occurs in the inverter.

Function Keys

Function Key	Description
ESC	To exit setting mode
UP	To go to previous selection
DOWN	To go to next selection
ENTER	To confirm the selection in setting mode or enter setting mode

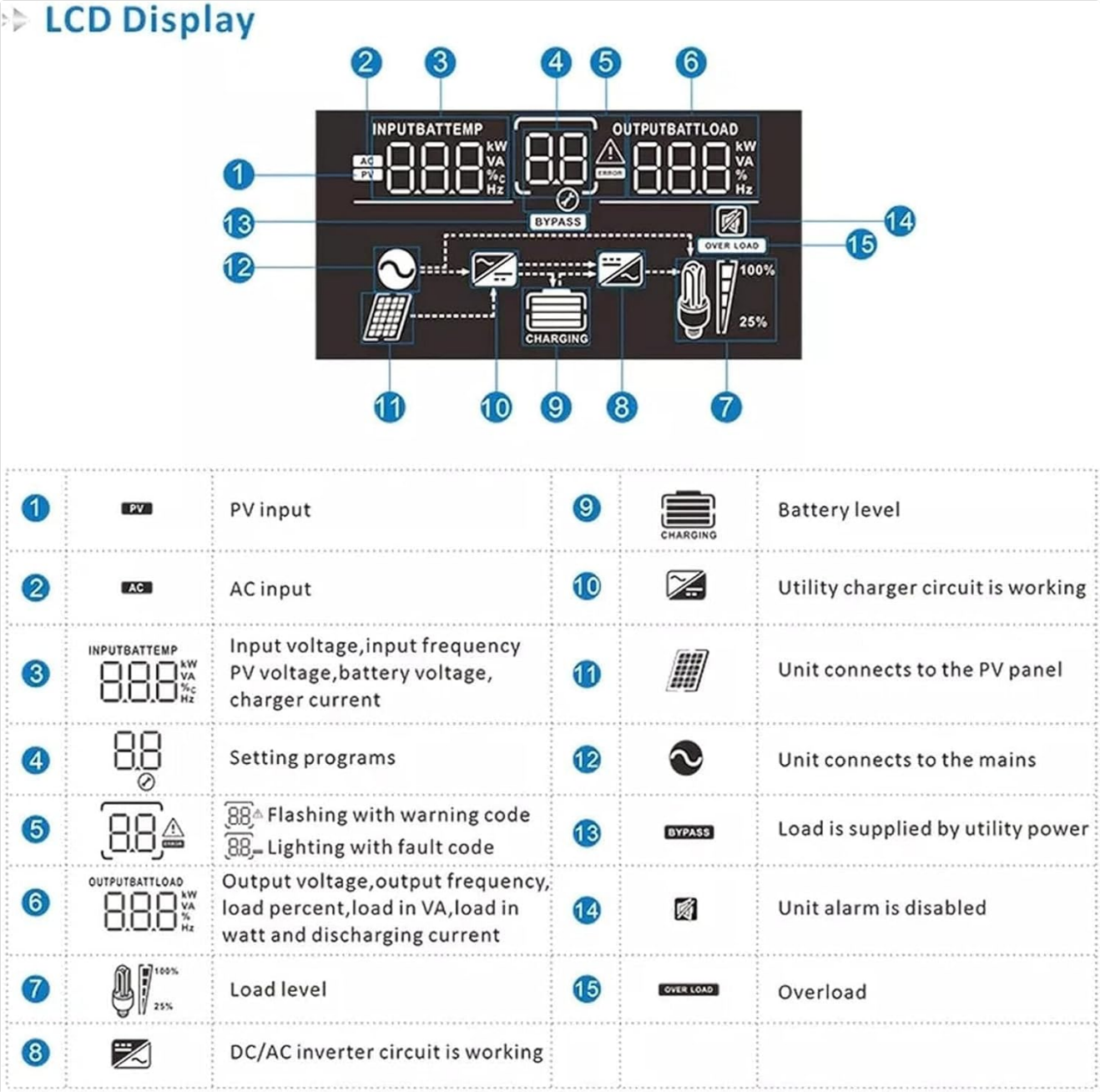
Figure 3.2: Front and rear panel layout of the HPS-3K-24V Inverter. The front panel includes the LCD display, LED indicators, and function keys for user interaction. The rear panel provides all necessary connection terminals for AC input/output, battery, and PV input, along with a circuit breaker and RS232 communication port.

1. **LCD Display:** Shows real-time operating status and configurable settings.
2. **LED Indicators:** Provide quick visual status (AC/INV, CHG, FAULT).
3. **Function Keys:** Buttons for navigating menus and adjusting settings.
4. **Power Switch:** Main power control for the inverter.
5. **AC Input:** Connection for utility grid or generator AC power.
6. **AC Output:** Connection for household appliances and loads.
7. **RS232 Port:** For communication with a computer or monitoring system.
8. **Circuit Breaker:** Overcurrent protection for the AC input.
9. **Safety (Earth) Ground:** Essential safety ground connection.
10. **Battery Positive (+):** Positive terminal for battery connection.

11. **Battery Negative (-):** Negative terminal for battery connection.
12. **PV Input:** Terminals for connecting solar panel arrays.

3.3 LCD Display Icons

The LCD provides detailed information about the inverter's status. Understanding these icons is crucial for monitoring and troubleshooting.



1	PV	PV input	9	CHARGING	Battery level
2	AC	AC input	10		Utility charger circuit is working
3	INPUTBATTEMP	Input voltage,input frequency PV voltage,battery voltage, charger current	11		Unit connects to the PV panel
4		Setting programs	12		Unit connects to the mains
5		Flashing with warning code Lighting with fault code	13	BYPASS	Load is supplied by utility power
6	OUTPUTBATTLOAD	Output voltage,output frequency, load percent,load in VA,load in watt and discharging current	14		Unit alarm is disabled
7	100% 25%	Load level	15	OVER LOAD	Overload
8		DC/AC inverter circuit is working			

Figure 3.3: Explanation of LCD display icons. Each numbered icon represents a specific status or measurement, including PV input, AC input, input/output voltage and frequency, setting programs, fault codes, load levels, battery status, and charging indicators.

1. PV input
2. AC input
3. Input voltage, input frequency, PV voltage, battery voltage, charger current
4. Setting programs
5. Flashing with warning code
6. Output voltage, output frequency, load percent, load in VA, load in watt and discharging current
7. Load level

8. DC/AC inverter circuit is working
9. Battery level
10. Utility charger circuit is working
11. Unit connects to the PV panel
12. Unit connects to the mains
13. Load is supplied by utility power (Bypass)
14. Unit alarm is disabled
15. Overload

4. Installation

Careful installation is critical for the safety and performance of your inverter. Follow these guidelines.

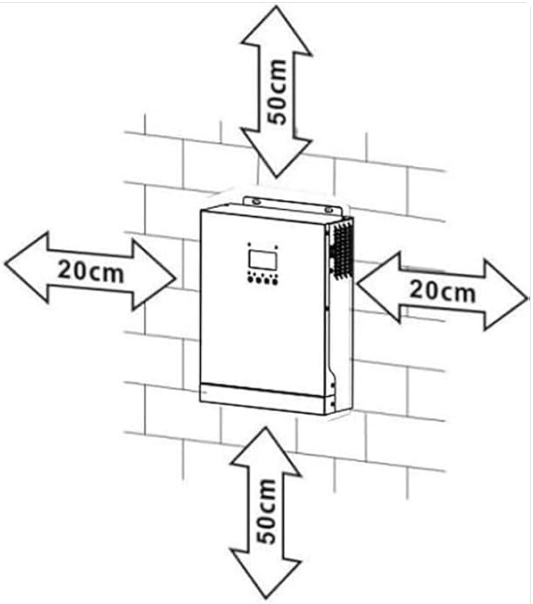
4.1 Mounting the Unit

Select an appropriate location for mounting the inverter, considering environmental factors and accessibility.

Mounting the Unit

Consider the following points before selecting where to install:

- Do not mount the inverter on flammable construction materials.
- Mount on a solid surface
- Install this inverter at eye level in order to allow the LCD display to be read at all times.
- For proper air circulation to dissipate heat, allow a clearance of approx. 20 cm to the side and approx. 50 cm above and below the unit.
- The ambient temperature should be between 0°C and 55°C to ensure optimal operation.
- The recommended installation position is to be adhered to the wall vertically.
- Be sure to keep other objects and surfaces as shown in the diagram to guarantee sufficient heat dissipation and to have enough space for removing wires.



SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY.

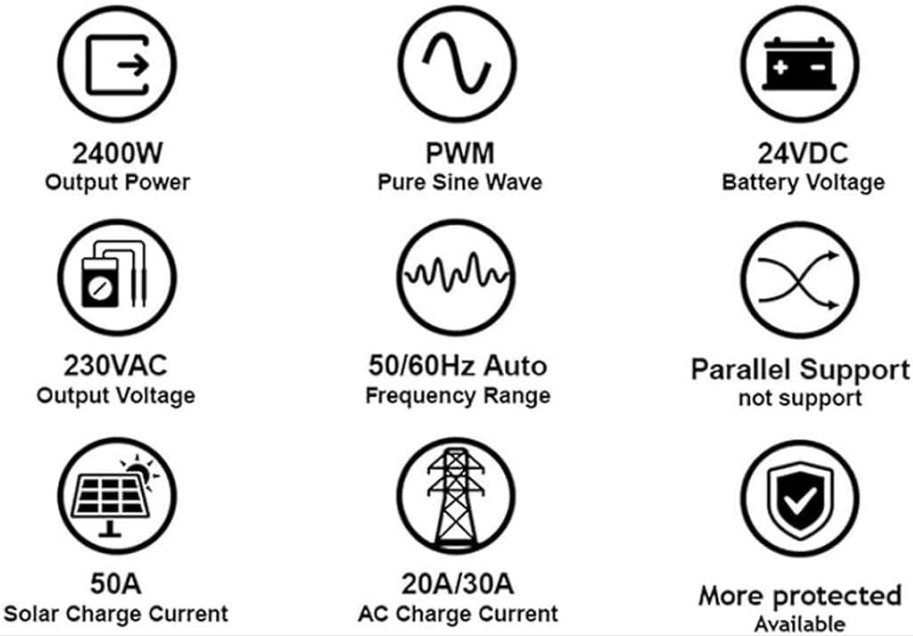


Figure 4.1: Mounting guidelines for the inverter. It should be mounted vertically on a solid, non-combustible surface, ensuring a minimum clearance of 20cm on the sides and 50cm above and below for adequate heat dissipation and access.

- Mount the inverter on a solid, non-combustible surface only.
- Install the inverter at eye level to ensure the LCD display is easily readable.
- Allow a clearance of approximately 20 cm to the sides and 50 cm above and below the unit for proper air circulation and heat dissipation.
- The ambient temperature should be between 0°C and 55°C for optimal operation.
- Ensure the recommended installation position is adhered to, with the unit mounted vertically.
- Keep other objects and surfaces clear to guarantee sufficient heat dissipation and space for wiring.

4.2 PV Module Connection

Connect your solar panels to the inverter's PV input terminals. Ensure correct polarity and voltage.

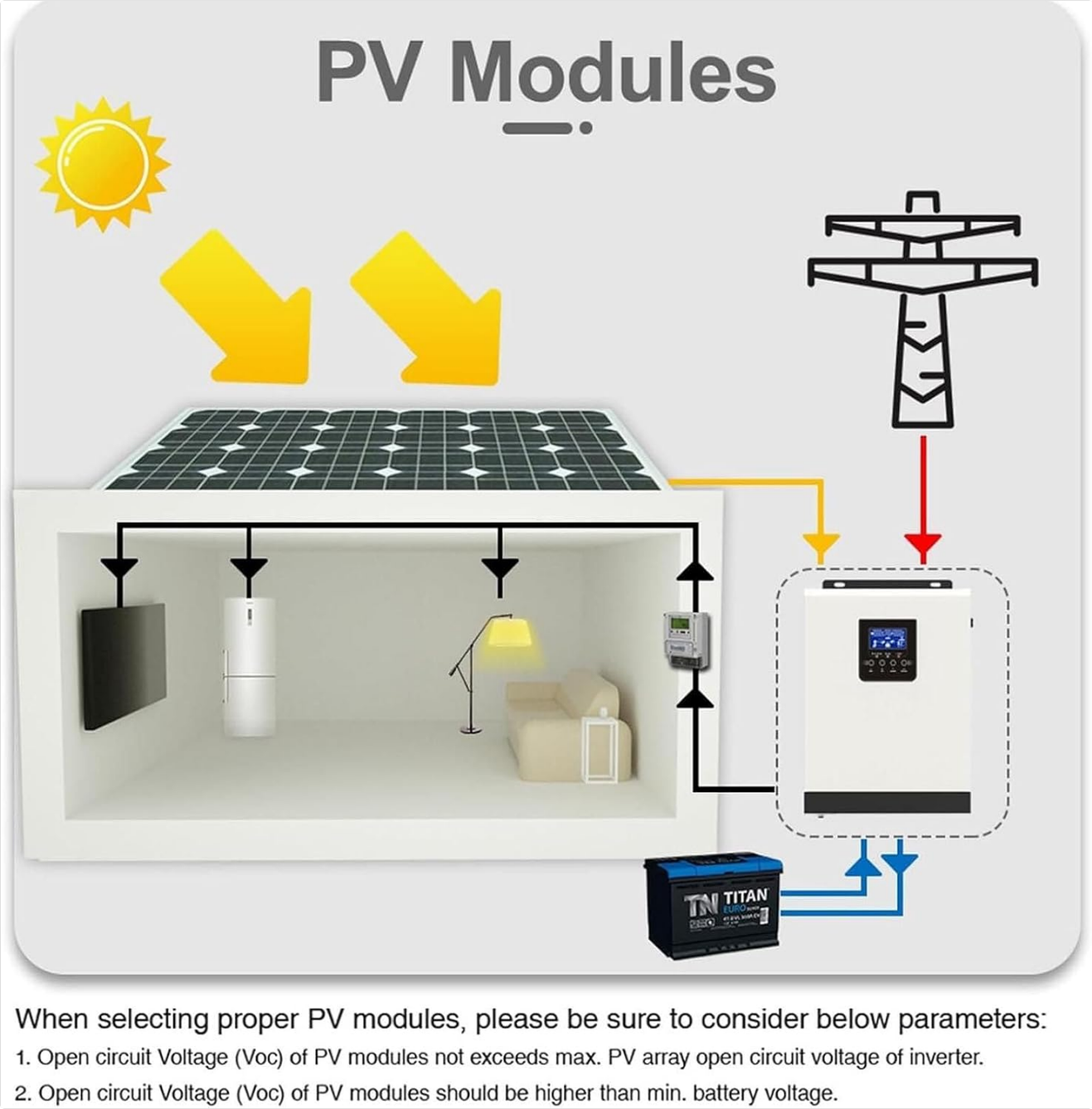


Figure 4.2: PV module connection diagram. Solar panels are connected to the inverter, which then integrates with the home's electrical system. Important parameters for PV module selection are listed below the image.

When selecting PV modules, consider the following parameters:

1. The open circuit voltage (Voc) of the PV modules must not exceed the maximum PV array open circuit voltage of the inverter (80VDC).
2. The open circuit voltage (Voc) of the PV modules should be higher than the minimum battery voltage.

4.3 Battery Connection

Connect the battery bank to the inverter's battery terminals. Ensure correct polarity.

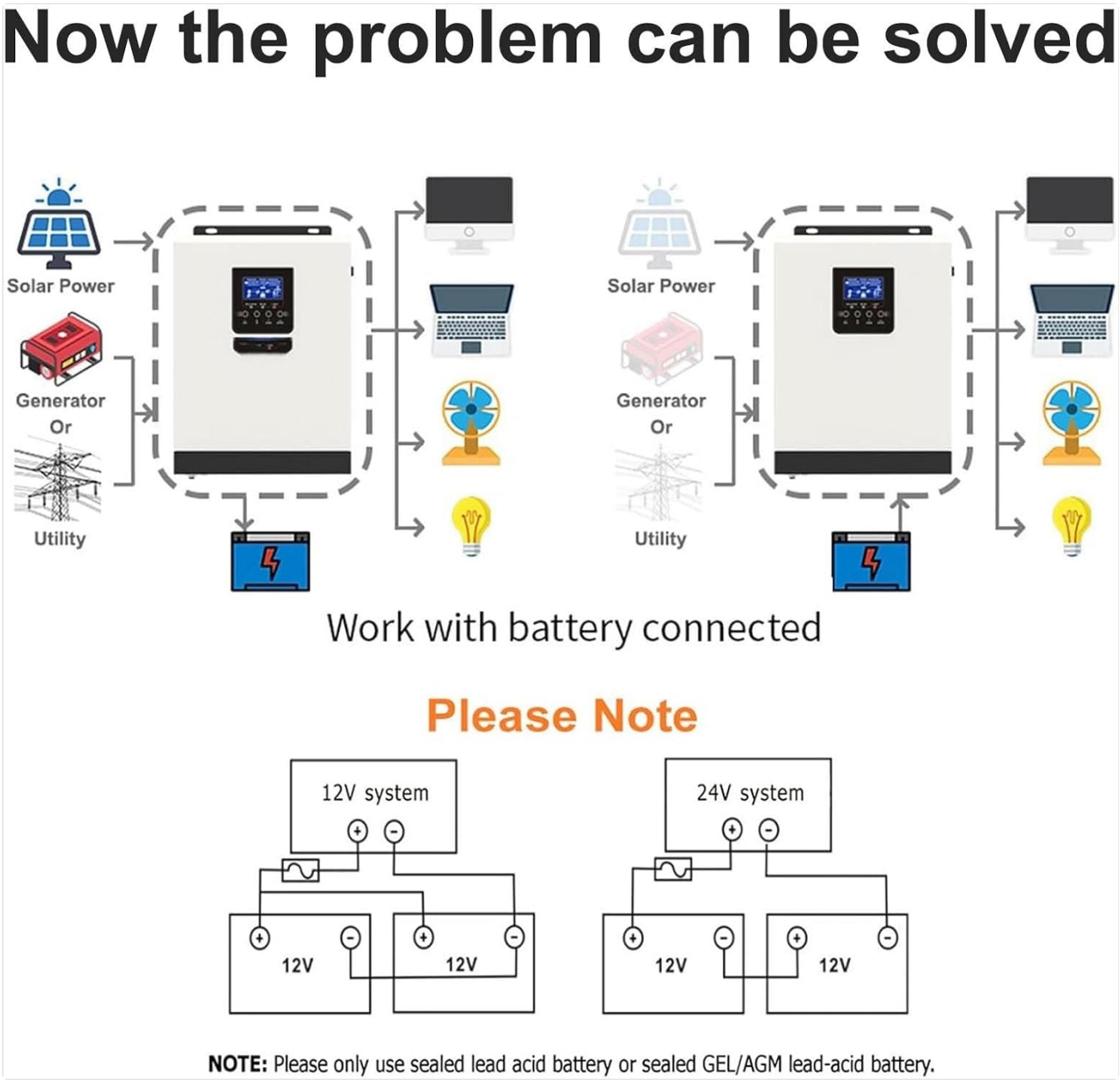


Figure 4.3: Battery connection configurations for 12V and 24V systems. It is crucial to use only sealed lead-acid or sealed GEL/AGM lead-acid batteries with this inverter.

NOTE: Please use only sealed lead-acid battery or sealed GEL/AGM lead-acid battery.

5. Operating Instructions

Once installed, the inverter can be configured and monitored via its LCD display and function keys.

5.1 Powering On/Off

1. Ensure all connections (AC, DC, PV) are secure.

2. Turn on the battery breaker (if applicable).
3. Press the Power Switch on the inverter to turn it on.
4. The LCD display will illuminate, and the inverter will begin its startup sequence.
5. To power off, reverse the sequence: turn off the inverter via the Power Switch, then disconnect AC, DC, and PV sources.

5.2 LCD Display and Settings

The comprehensive LCD display allows users to monitor the system status and configure various parameters. Use the function keys (UP, DOWN, ESC, ENTER) to navigate through the menus.

- **Monitoring:** The display shows real-time data such as input/output voltage, frequency, battery capacity, load level, and charging status.
- **Configuration:** Users can adjust settings like charge current, output voltage range, and priority of grid/solar mode. Refer to the detailed LCD icon descriptions in Section 3.3 for understanding the displayed information.

6. Maintenance

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

- **Cleaning:** Periodically clean the inverter's exterior with a dry cloth. Ensure ventilation openings are free from dust and debris.
- **Connections:** Annually check all electrical connections (battery, PV, AC) for tightness and corrosion. Loose connections can cause overheating and damage.
- **Battery Inspection:** If using lead-acid batteries, check electrolyte levels and terminal condition as per battery manufacturer guidelines.
- **Environment:** Ensure the operating environment remains within specified temperature and humidity ranges.

7. Troubleshooting

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

Problem	Possible Cause	Solution
Inverter not turning on	No battery power; loose connections; power switch off	Check battery voltage; verify all connections; ensure power switch is ON.
No AC output	Overload; battery low; fault code displayed	Reduce load; check battery charge; refer to LCD fault codes (Section 3.3).
Solar charging not working	PV input voltage too low/high; PV connections incorrect; shading	Check PV array voltage; verify PV wiring polarity; clear any shading.
Overload warning/shutdown	Connected load exceeds inverter capacity	Disconnect some loads; ensure total load is within 2400W continuous rating.

If a fault code is displayed on the LCD, refer to the detailed explanation in Section 3.3 to understand the issue and take appropriate action.

8. Specifications

Technical specifications for the menglanchang HPS-3K-24V Hybrid Solar Inverter.

Parameter	Value
Model	HPS-3K-24V
Rated Power	3000VA / 2400W
Input Voltage (AC)	230VAC
Selectable Voltage Range (PC)	170-280VAC
Selectable Voltage Range (Appliances)	90-280VAC
Frequency Range	50Hz/60Hz (Auto-detection)
AC Voltage Regulation (Batt. Mode)	230VAC ±5%
Surge Power	6000VA
Efficiency (Peak)	93%
Transfer Time (PC)	10ms
Transfer Time (Appliances)	20ms
Waveform	Pure Sine Wave
Battery Voltage	24VDC
Float Charge Voltage	27VDC
Overload Protection (DC)	30VDC
Max Open Circuit Voltage of PV Array	80VDC
PV Range @ Operating Voltage	30-40VDC
Max Solar Charging Current	50A
Max AC Charging Current	20A/30A
Max Charging Current (Total)	80A
Standby Power Consumption	2W
Dimensions (D*W*H)	305*272*100mm
Net Weight	5.5KG
Operating Humidity	5% to 95% relative humidity (non-condensing)
Operating Temperature	-15℃ to 60℃

9. Warranty and Support

For warranty information and technical support, please refer to the product packaging or contact your retailer. Keep your purchase receipt as proof of purchase for any warranty claims.

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