Y&H MPS-VX 4KW-24V-110V-JP

Y&H 4000W Hybrid Solar Inverter User Manual

Model: MPS-VX 4KW-24V-110V-JP

1. Introduction

This manual provides comprehensive instructions for the safe and efficient operation of your Y&H 4000W Hybrid Solar Inverter. Please read this manual thoroughly before installation and use to ensure proper functionality and to prevent damage to the unit or connected equipment. This inverter is designed to convert DC power from solar panels and/or batteries into AC power for various household and industrial applications.

2. Safety Information

- **Electrical Safety:** Installation and maintenance should only be performed by qualified personnel. Ensure all power sources are disconnected before working on the inverter.
- **Ventilation:** Install the inverter in a well-ventilated area to prevent overheating. Maintain adequate clearance around the unit for airflow.
- **Environment:** Avoid exposure to water, high humidity, direct sunlight, and corrosive substances. Do not operate in environments with flammable gases.
- **Grounding:** The inverter must be properly grounded to prevent electrical shock.
- **Battery Handling:** Exercise caution when working with batteries. Wear protective eyewear and clothing. Do not short-circuit battery terminals.

3. Product Overview

The Y&H 4000W Hybrid Solar Inverter is an all-in-one unit featuring a pure sine wave inverter, an MPPT solar charger, and a battery charger. It is equipped with a reinforced glass top cover and touch functionality for ease of use. A key feature is its battery-free start design, significantly reducing initial system costs. The unit also includes a built-in BMS (Battery Management System) function for lithium battery activation and enhanced cooling with three fans for improved efficiency and extended lifespan.

Key Features:

- 4000W Pure Sine Wave Inverter with 8000W surge capacity.

- DC24V input, 120VAC output.
- Integrated MPPT 140A Solar Charger.
- Battery-free start-up capability.
- 6.25-inch LCD screen with touch buttons for easy configuration.
- Multiple charging and output modes.
- Compatible with 24V lead-acid (sealed, AGM, gel, flooded) and lithium batteries.
- Built-in BMS function for lithium battery activation.
- Enhanced cooling system with three fans for improved performance and durability.

Image: Y&H 4000W 110V Hybrid Solar Inverter highlighting rated power, peak power, battery voltage, starting voltage, and MPPT charging current.

4. Setup and Installation

4.1 Unpacking and Inspection

Upon receiving the inverter, carefully unpack it and inspect for any shipping damage. Ensure all components listed in the packing list are present. If any damage or missing parts are found, contact your dealer immediately.

4.2 Mounting the Inverter

Choose a suitable location for mounting the inverter. It should be indoors, dry, well-ventilated, and away from direct sunlight, heat sources, and flammable materials. Mount the inverter vertically on a sturdy surface, ensuring adequate clearance for cooling fans.

4.3 Wiring Connections

All wiring must comply with local and national electrical codes. Use appropriate wire gauges for all connections to prevent overheating and ensure safe operation.

- **Battery Connection:** Connect the 24V battery bank (lead-acid or lithium) to the inverter's battery terminals. Ensure correct polarity (+ to + and - to -). Recommended wire size: 2AWG, Cable: 35mm².
- **Solar Panel Connection:** Connect your solar panels to the PV input terminals. Ensure the PV input voltage (55-350Vdc) and power (max 5600W) are within the inverter's specifications. Recommended wire size: 12AWG. It is recommended to connect solar panels in series.
- **AC Input Connection (Mains/Generator):** Connect the AC input from your utility grid or generator to the AC input terminals. Max AC input voltage: 150Vac. Suggested cable: 8AWG, Recommended breaker: 40A.
- **AC Output Connection (Load):** Connect your AC loads to the AC output terminals. Output power: 4000W, Output voltage: 120Vac. Suggested cable: 8AWG, Recommended breaker: 40A.
- **Grounding:** Connect the inverter's ground terminal to a reliable earth ground.

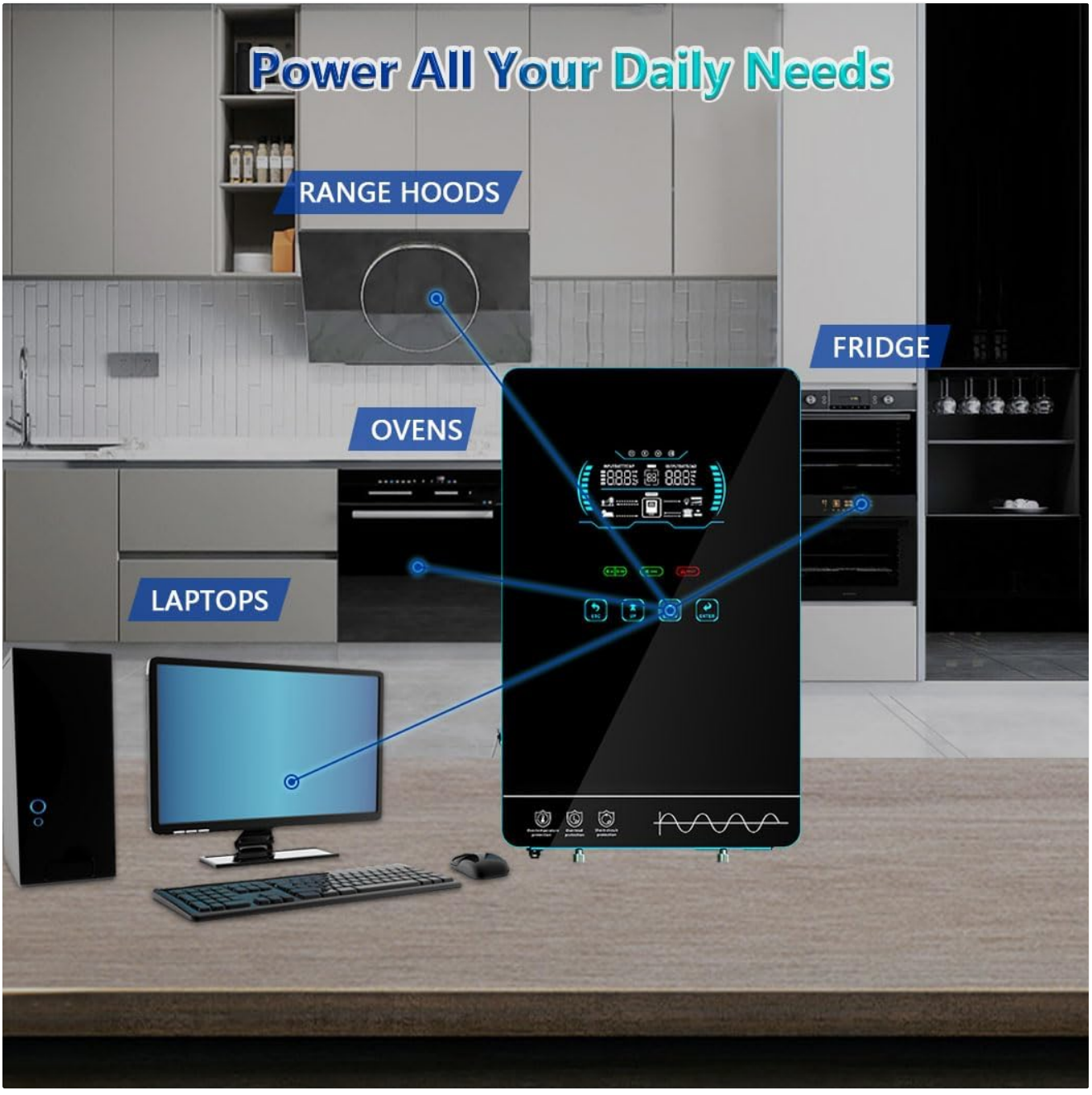

Image: Detailed wiring diagram illustrating connections for the Y&H 4000W Hybrid Solar Inverter, including battery, solar panels, AC input, and AC load.

4.4 Battery Compatibility

The inverter is compatible with various 24V battery types, including Sealed Lead-Acid, AGM, Gel, Flooded, and Lithium batteries. It features a built-in function to activate dormant lithium batteries.

Image: Illustration showing the Y&H Hybrid Solar Inverter's compatibility with different 24V battery types: AGM, USE (User-defined), FLD (Flooded), and LI (Lithium).

5. Operating Instructions

5.1 Initial Power-Up

After all connections are securely made, switch on the DC breaker for the battery, then the AC input breaker (if connected), and finally the solar PV breaker (if connected). The inverter will perform a self-test and the LCD screen will illuminate.

5.2 LCD Display and Touch Buttons

The 6.25-inch LCD screen displays real-time operating status, input/output voltages, battery status, and error codes. The touch buttons allow navigation through menus and parameter settings. A one-button reset to default settings is available.

5.3 Charging Modes

The inverter offers four selectable charging modes to optimize battery charging based on available power sources:

1. **Solar Only:** Charges the battery exclusively from solar power.
2. **Mains Priority:** Charges the battery primarily from the utility grid (mains), with solar as a secondary source.
3. **Solar Priority:** Charges the battery primarily from solar power, with the utility grid as a secondary source.
4. **Mains & Solar Hybrid:** Utilizes both mains and solar power for charging, prioritizing solar when available.

5.4 Output Modes

The inverter provides three output modes to ensure an uninterrupted power supply for your loads:

1. **Solar Priority (SOL):** Prioritizes solar power for loads. If solar power is insufficient, it switches to battery, then to mains.
2. **Mains Priority (UTI):** Prioritizes utility grid power for loads. If mains power fails, it switches to battery, then to solar.
3. **SBU Priority (SBU):** Prioritizes solar power, then battery power. If both are unavailable or battery voltage is low, it switches to utility grid power.

5.5 Wi-Fi Monitoring (Optional)

The inverter supports optional Wi-Fi monitoring via a dedicated module (purchased separately). This allows you to monitor and control the inverter's performance using a smartphone app (SmartESS App, available on Google Play and App Store).

Image: The Y&H Hybrid Solar Inverter with an optional Wi-Fi/GPRS data acquisition module, demonstrating remote monitoring via a smartphone application.

6. Maintenance

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

- **Cleaning:** Periodically clean the inverter's exterior and ventilation openings to prevent dust buildup, which can hinder cooling. Use a dry, soft cloth.
- **Connections:** Regularly check all electrical connections for tightness and signs of corrosion. Loose connections can cause overheating and poor performance.
- **Battery Inspection:** If using lead-acid batteries, check electrolyte levels and terminal conditions as per battery manufacturer guidelines.
- **Environment:** Ensure the installation environment remains within specified temperature and humidity ranges.

7. Troubleshooting

If the inverter is not functioning correctly, refer to the following common issues and solutions. For problems not listed here, contact technical support.

Problem	Possible Cause	Solution
Inverter does not turn on	No battery connection, low battery voltage, DC breaker off	Check battery connections, ensure battery voltage is sufficient, turn on DC breaker.
No AC output	Overload, short circuit, output breaker off	Reduce load, check for short circuits, turn on AC output breaker.
Solar panels not charging	PV input voltage too low/high, incorrect PV connection, shading	Check PV voltage, verify connections, clear any shading.
Over-temperature warning	Poor ventilation, blocked fans, excessive ambient temperature	Ensure adequate ventilation, clean fan vents, move to a cooler location.

Comprehensive Protection:

The inverter is equipped with multiple protection features to ensure safe and reliable operation:

- Short Circuit Protection
- Over-Load Protection
- Over Current Protection
- Backfill Protection
- Over Voltage Protection
- Over-Temperature Protection
- Under Voltage Protection
- Over Charge Protection

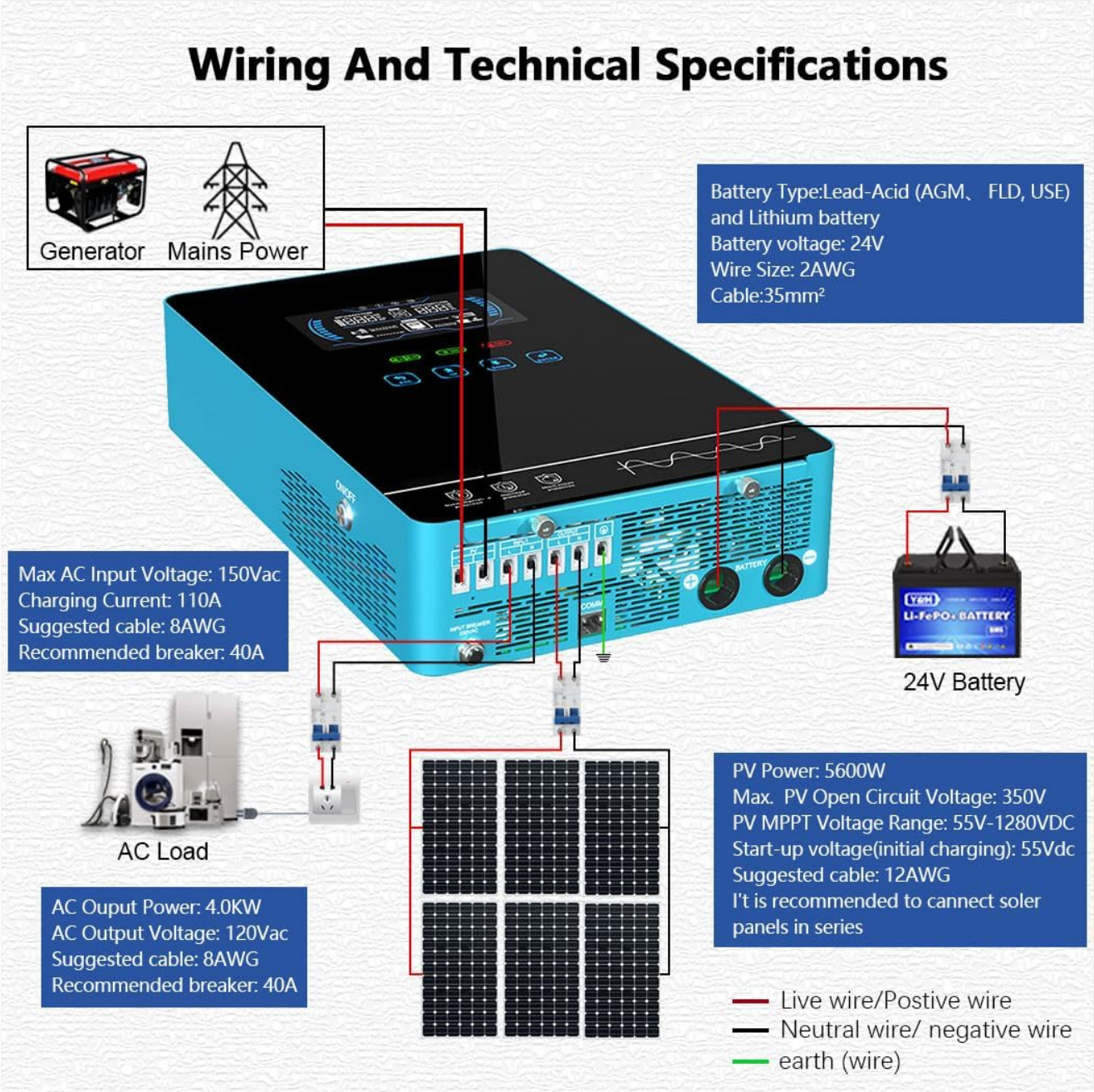

Image: Visual representation of the inverter's comprehensive 360-degree protection mechanisms, ensuring device and system safety.

8. Specifications

Feature	Specification
Model Number	MPS-VX 4KW-24V-110V-JP
Rated Output Power	4000W
Surge Capacity	8000W
DC Input Voltage	24V
AC Output Voltage	120V AC
AC Output Frequency	50/60Hz (Auto Sensing)

Feature	Specification
Waveform	Pure Sine Wave
Max PV Input Power	5600W
PV Input Voltage Range	55-350Vdc
Max PV Input VOC	350V DC
Start-up Voltage	>90Vdc
Optimal Operating Voltage	55-280Vdc
Max Charge Current	140A (MPPT Solar Charger)
Battery Compatibility	24V Lead-Acid (Sealed, AGM, Gel, Flooded), Lithium
Display	6.25-inch LCD with Touch Buttons
Dimensions (L x W x H)	46.8 x 31.8 x 15.9 cm
Weight	8.5 kg

9. Warranty and Support

For warranty information, please refer to the documentation provided with your purchase or contact your vendor. Y&H is committed to providing reliable solar power solutions. For technical support, troubleshooting assistance, or inquiries regarding your product, please contact the seller or visit the official Y&H website for contact details. When contacting support, please have your product model number (MPS-VX 4KW-24V-110V-JP) and purchase date available.