Y&H 6.2KW 48V AC220V

Y&H 6.2KW Solar Hybrid Inverter User Manual

Model: 6.2KW 48V AC220V

1. Product Overview

The Y&H 6.2KW Solar Hybrid Inverter is an advanced all-in-one solution combining the functions of an inverter, solar charger, and battery charger. It is designed to provide uninterruptible power support for various applications, including home and office loads. This pure sine wave inverter features a built-in 120A MPPT charge controller and supports both on-grid and off-grid working modes, including battery-free operation.
Key features include:

- **Pure Sine Wave Output:** Provides stable and clean power suitable for sensitive electronics.
- **High Power Capacity:** 6200W output with a maximum PV array power of 6500W.
- **Integrated MPPT Charge Controller:** 120A MPPT for efficient solar charging.
- **Dual Load Output:** Features two output ports with intelligent power management based on battery voltage.
- **Flexible Operating Modes:** Supports Utility first, Solar first, Solar&Utility, and Battery & Solar charging modes.
- **One-Click Restore:** Ability to restore default settings to prevent operational errors.
- **Battery Compatibility:** Compatible with Lead-Acid (Seal, Gel, Flooded) and Lithium batteries (user-defined settings available).

Figure 1.1: Front view of the Y&H 6.2KW Solar Hybrid Inverter, showing the LCD display and control buttons.

2. Setup and Installation

2.1 Safety Precautions

- Ensure all connections are secure and correct before powering on the inverter.
- Always disconnect power sources (PV, battery, utility) before performing any maintenance or wiring.
- Install the inverter in a well-ventilated area, away from flammable materials and direct sunlight.
- Ensure proper grounding of the inverter.
- Only qualified personnel should perform installation and wiring.

2.2 Unpacking and Inspection

Carefully unpack the inverter and inspect it for any shipping damage. Report any damage to your dealer immediately. Ensure all components listed in the packing list are present.

2.3 Mounting the Inverter

Mount the inverter vertically on a sturdy wall or surface. Ensure adequate clearance around the unit for proper ventilation. Refer to the dimensions below for planning the installation space.

Figure 2.1: Inverter dimensions and key specifications.

2.4 Wiring Connections

The inverter features multiple connection ports for AC input, PV input, battery input, and two AC outputs (Main Out and Second Out). Follow the wiring diagram carefully.

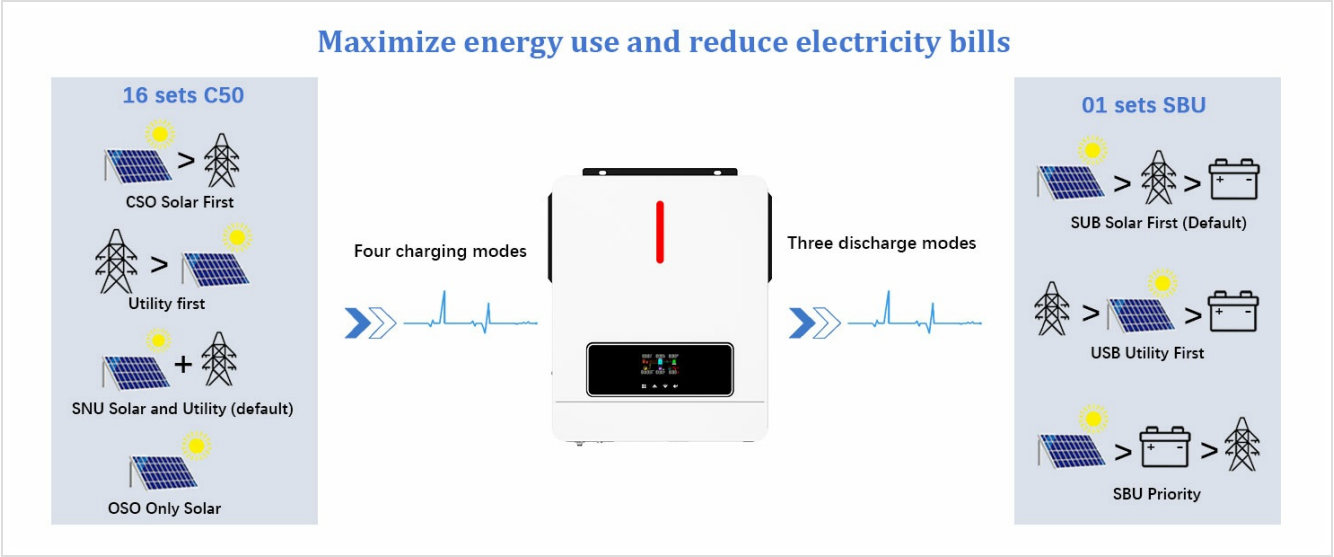


Figure 2.2: Port Introduction and labels.

1. **Battery Connection:** Connect the 48V battery bank to the Battery Input terminals. Ensure correct polarity. Recommended battery cable size for 4.2/6.2KW models is 1x 2AWG (25 mm²). Use a circuit breaker between the battery and the inverter. The inverter supports AGM, GEL, Flooded, and Lithium batteries. For Lithium batteries, BMS communication is required (e.g., PylonTech).
2. **PV Input Connection:** Connect your solar panel array to the PV Input terminals. Ensure the PV array voltage and current are within the inverter's specifications (Max. PV Open Circuit Voltage: 450Vdc; PV Array MPPT Voltage Range: 60~450Vdc). Starting voltage is >90V.
3. **AC Input Connection:** Connect the utility grid or generator to the AC Input terminals.
4. **AC Output Connection:** Connect your loads to the Main Output and Second Output terminals. The inverter provides a single-phase 230VAC output. For 110/120V US appliances, an external step-down transformer (not included) is required.

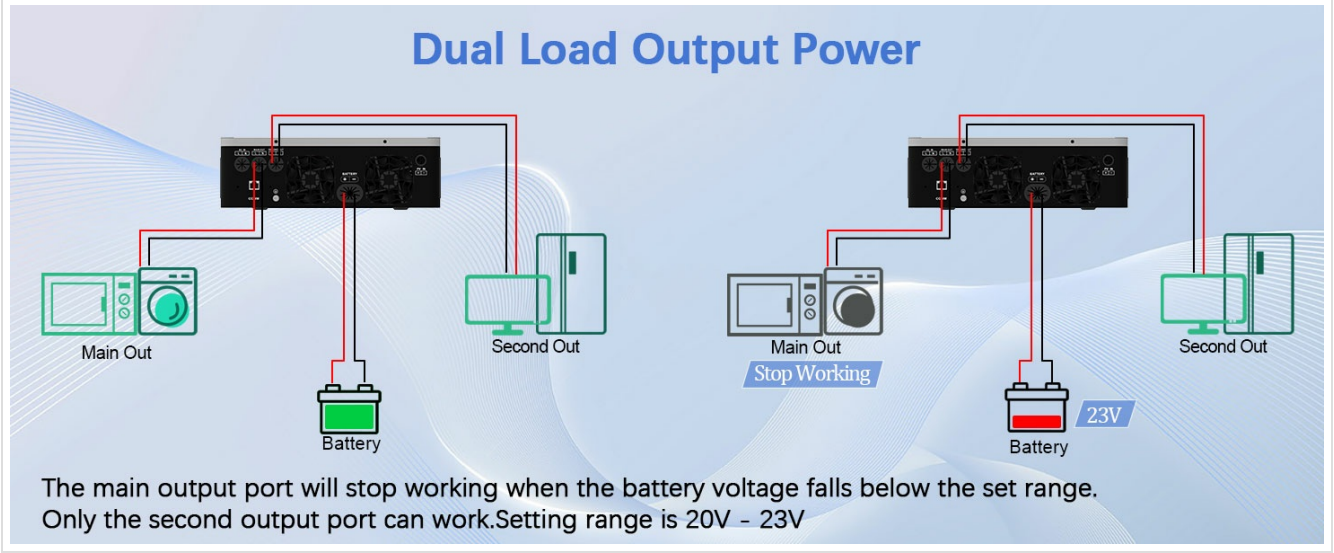
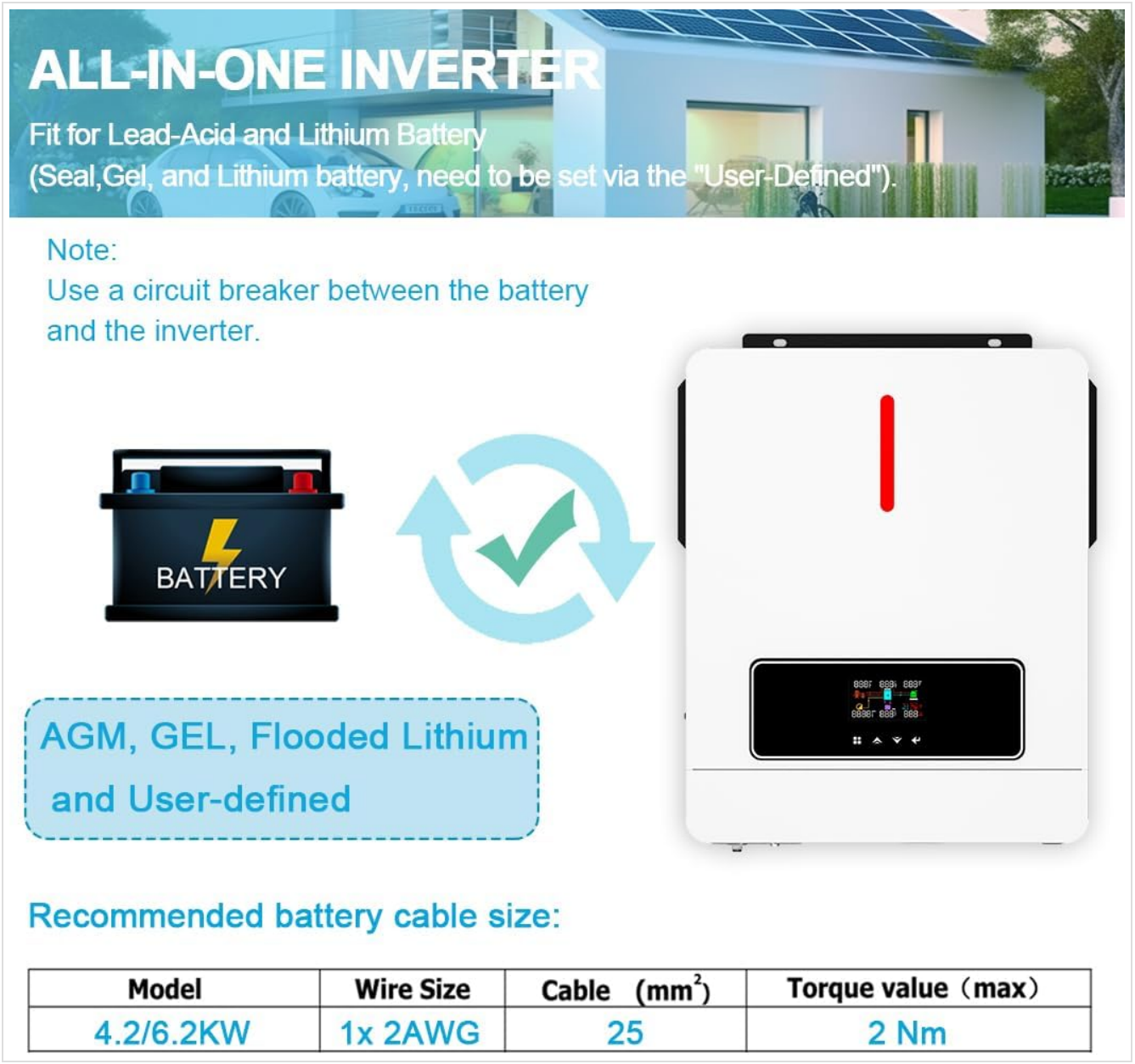


Figure 2.3: Detailed wiring diagram for the hybrid power system.



Model	Wire Size	Cable (mm^2)	Torque value（max）
4.2/6.2KW	1x 2AWG	25	2 Nm

Figure 2.4: Battery types compatible with the inverter, including recommended cable size.

3. Operation

3.1 Initial Power-Up

Once all connections are securely made, turn on the battery breaker, then the AC input breaker (if connected), and finally the PV array breaker. The inverter will initiate its startup sequence and the LCD display will illuminate.

3.2 LCD Display and Control Buttons

The LCD display provides real-time system data and operating status. Use the function buttons below the display to navigate menus and adjust settings.

3.3 Operating Modes

The inverter supports four charging modes and three output modes to optimize energy usage.

Charging Modes:

- **Utility First (CSo):** Prioritizes utility power for charging batteries and supplying loads. Solar acts as a backup.
- **Solar First (CSo):** Prioritizes solar power for charging batteries and supplying loads. Utility acts as a backup.
- **Solar & Utility (SNU):** Uses both solar and utility power for charging.
- **Battery & Solar (OSo):** Charges batteries primarily from solar, with utility as a secondary source if solar is insufficient.

Output Modes:

- **SUB Solar First (Default):** Prioritizes solar power for loads.
- **USB Utility First:** Prioritizes utility power for loads.
- **SBU Priority:** Prioritizes solar, then battery, then utility for loads.

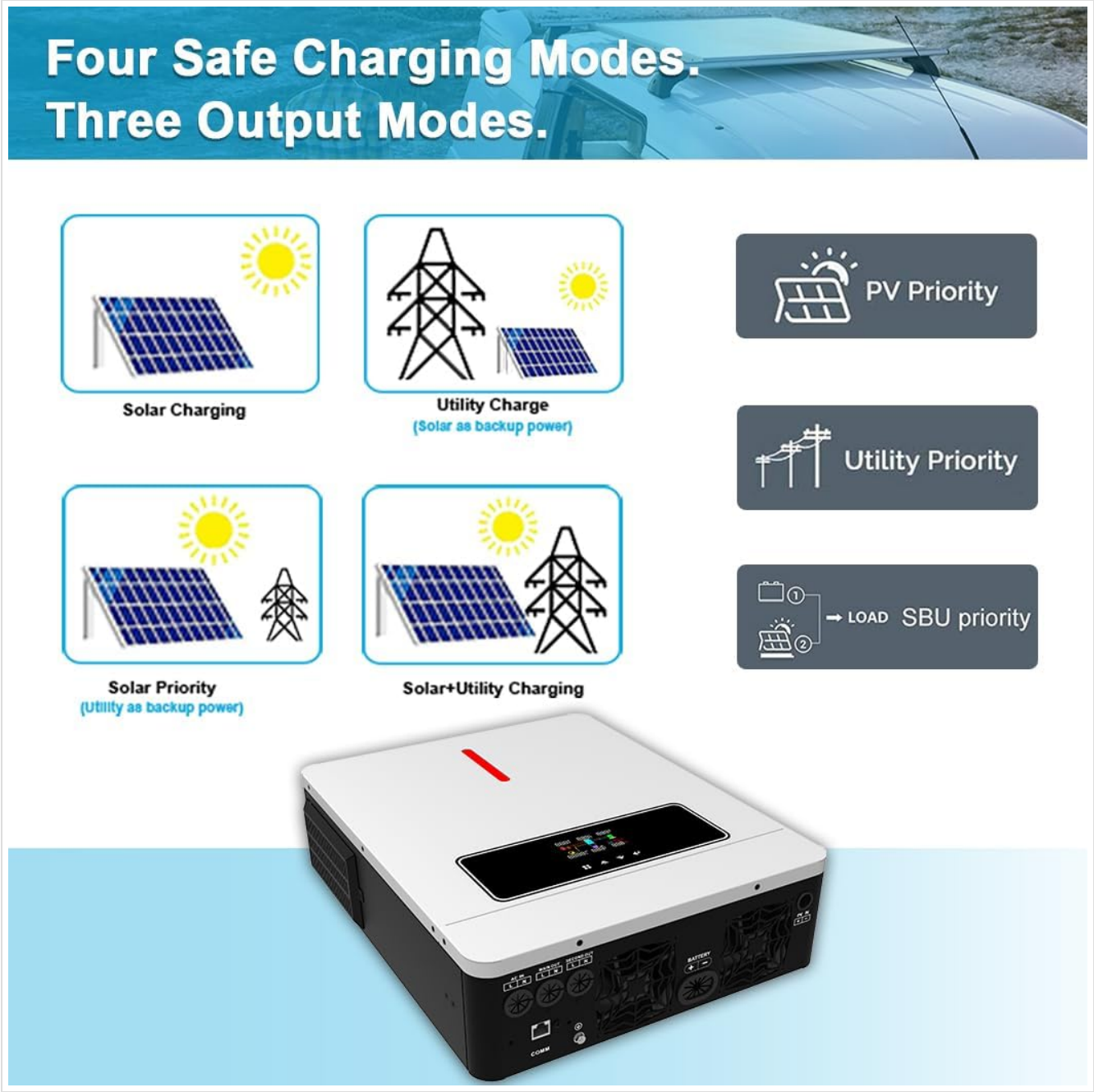


Figure 3.1: Overview of charging and output modes.

Figure 3.2: Visual representation of charging and discharge modes to maximize energy use.

3.4 Dual Load Output Power

The inverter features two load output ports: Main OUT and Second OUT. The Main OUT port's operation is dependent on the battery voltage. For the 6.2KW model, the setting range for this function is 40.0V to 46.0V, with increments of 0.1V.

- If the battery voltage falls below the set range, the Main OUT port will stop working.
- Only the Second OUT port will continue to work in this scenario.
- If the battery voltage is higher than the set threshold (e.g., 46V), the Main OUT port will continue to operate.

This feature allows users to prioritize critical loads on the Second OUT port during low battery conditions, ensuring essential appliances remain powered. For areas with frequent power outages, setting the battery voltage to 46V can help preserve more battery capacity for emergencies.

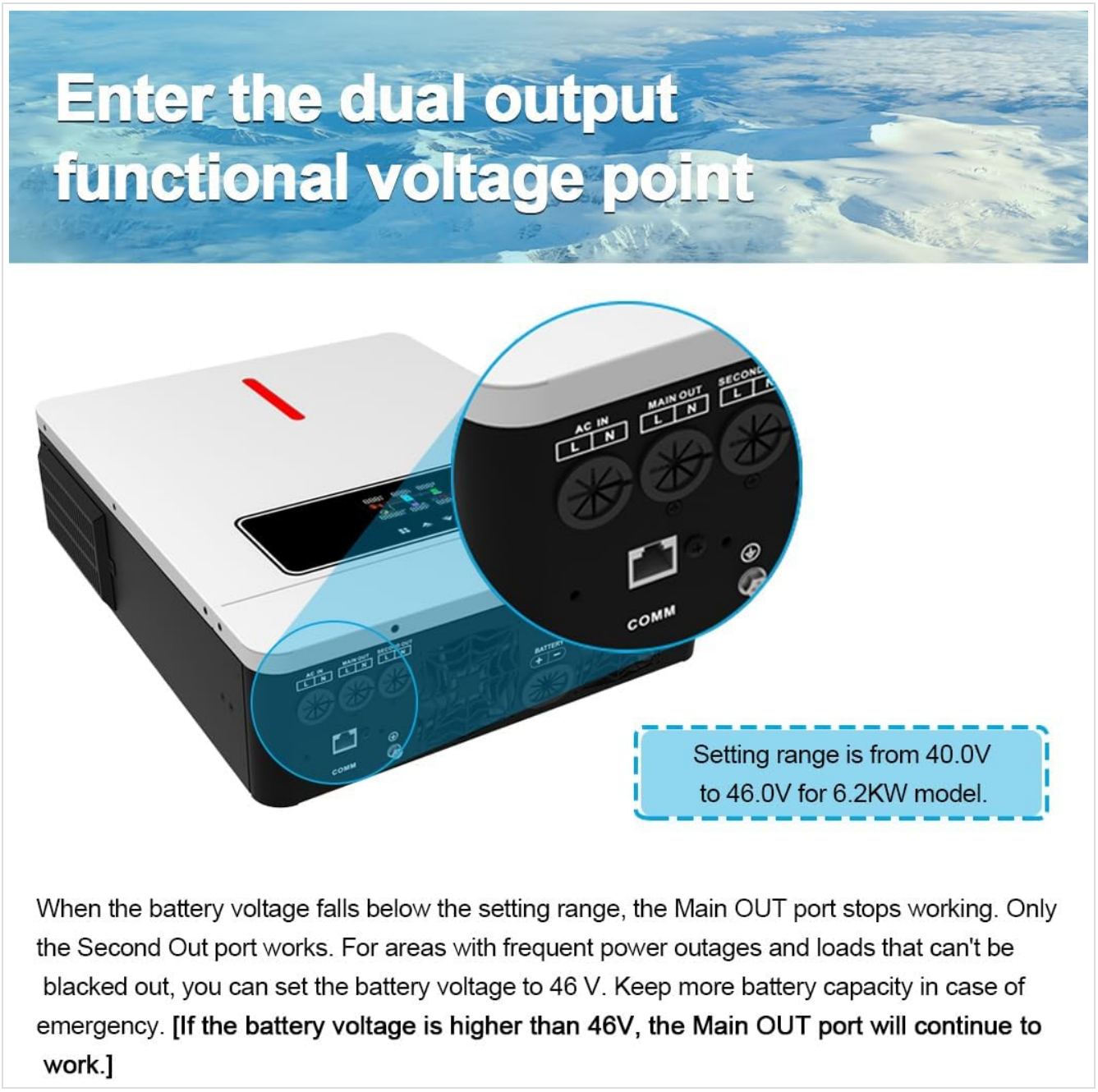


Figure 3.3: Illustration of the dual output functional voltage point and its setting range.

Figure 3.4: Visual explanation of how the main and second output ports behave when battery voltage drops.

3.5 WiFi Communication Function (Optional)

The inverter supports an optional WiFi module (not included in the package) that enables remote monitoring and parameter adjustment via a mobile application. This allows users to check the inverter's working status from anywhere.

Figure 3.5: The optional WiFi module for remote system monitoring and control.

4. Maintenance

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

- **Cleaning:** Periodically clean the inverter's exterior with a dry, soft cloth. Ensure ventilation openings are free from dust and debris. Do not use liquid cleaners.
- **Connection Checks:** Annually inspect all wiring connections (PV, battery, AC input/output) to ensure they are tight and free from corrosion. Loose connections can lead to overheating and poor performance.
- **Ventilation:** Ensure the area around the inverter remains clear to allow for proper airflow and heat dissipation.
- **Battery Maintenance:** Follow the battery manufacturer's guidelines for maintenance. For lead-acid batteries, check electrolyte levels if applicable. For lithium batteries, monitor BMS status.

5. Troubleshooting

This section provides solutions to common issues you might encounter. For problems not listed here, please contact customer support.

5.1 Common Issues and Solutions

Problem	Possible Cause	Solution
Inverter not turning on	No battery connection; Battery voltage too low; DC breaker off	Check battery connections; Charge battery; Turn on DC breaker
No AC output	Overload; Output breaker tripped; Battery voltage too low (Main OUT)	Reduce load; Reset breaker; Check battery voltage and charge
PV charging not active	PV voltage too low/high; PV breaker off; Insufficient sunlight	Check PV array configuration; Turn on PV breaker; Wait for adequate sunlight
Inverter making unusual noise	Overload; Loose components; Internal fault	Reduce load; Check for loose parts; Contact support if persistent

5.2 One-Click Restore Default Settings

If you encounter issues after changing settings, the inverter has a feature to restore all system settings to their factory defaults with one click. This can help resolve configuration errors and prevent potential machine damage.

6. Specifications

Detailed technical specifications for the Y&H 6.2KW Solar Hybrid Inverter.

Parameter	Value
Model Name	Y&H 6.2KW On/Off-Grid Solar Hybrid Inverter
Rated Power	6200W
Max. PV Array Power	6500W
Max. PV Open Circuit Voltage	450Vdc
PV Array MPPT Voltage Range	60~450Vdc
Starting Voltage	>90V
Max. Charging Current	120A (MPPT)
AC Output Voltage	220V/230VAC Single-phase
Output Frequency	50/60Hz Auto Sensing
Nominal DC Input Voltage	48V

Parameter	Value
Cold Start Function	Yes (46V)
Dimensions (L x W x H)	16.5 x 12.2 x 4.33 inches (420mm x 310mm x 110mm)
Item Weight	21.4 pounds
Recommended Uses	Home, Office, Travel, Camping, RV, Boat

7. Warranty and Support

Y&H provides technical support for its products. For any questions, technical assistance, or warranty claims, please contact the manufacturer or your authorized dealer.

You can also refer to the official user guide PDF for more detailed information: Y&H 6.2KW Solar Hybrid Inverter User Guide (PDF)

For further assistance, please visit the Y&H Store on Amazon.