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Y&H VM PLUS-5.5KW-M100A

Y&H VM PLUS-5.5KW-M100A Hybrid Solar Inverter User Manual

Model: VM PLUS-5.5KW-M100A

1. Important Safety Instructions

Please read all instructions and cautionary markings on the unit and all appropriate sections of this manual carefully before installation and operation. This manual contains important instructions for the Y&H VM PLUS-5.5KW-M100A Hybrid Solar Inverter that must be followed during installation and maintenance.

- Installation must be performed by qualified personnel.
- Ensure all wiring is correctly connected and securely fastened to prevent electrical hazards.
- Do not disassemble the inverter. There are no user-serviceable parts inside.
- Disconnect all power sources (PV, battery, utility) before performing any maintenance or wiring.
- Wear appropriate personal protective equipment (PPE) during installation and maintenance.
- This inverter is designed for indoor use. Avoid exposure to rain, snow, or excessive moisture.

2. Product Overview

The Y&H VM PLUS-5.5KW-M100A is a 5500W hybrid solar inverter with an integrated MPPT 100A solar charge controller. It features a 500VDC PV input, 220VAC output, and operates on a 48VDC battery system, providing a pure sine wave output. It also includes WiFi communication capabilities for monitoring.

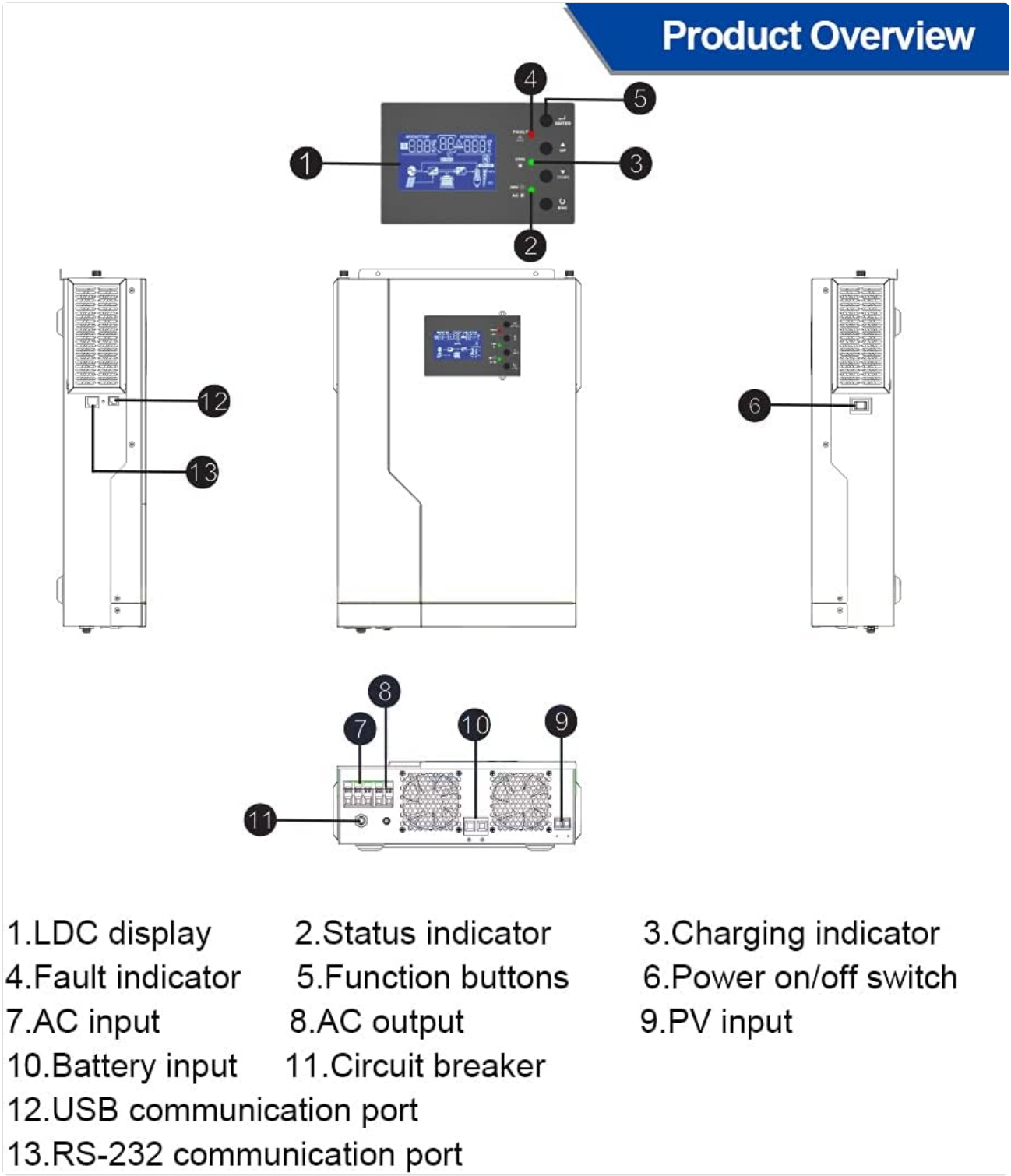


Figure 2.1: Front, side, and bottom views of the Y&H Hybrid Solar Inverter with labeled components.

1. LDC display
2. Status indicator
3. Charging indicator
4. Fault indicator
5. Function buttons
6. Power on/off switch
7. AC input
8. AC output
9. PV input
10. Battery input

11. Circuit breaker
12. USB communication port
13. RS-232 communication port

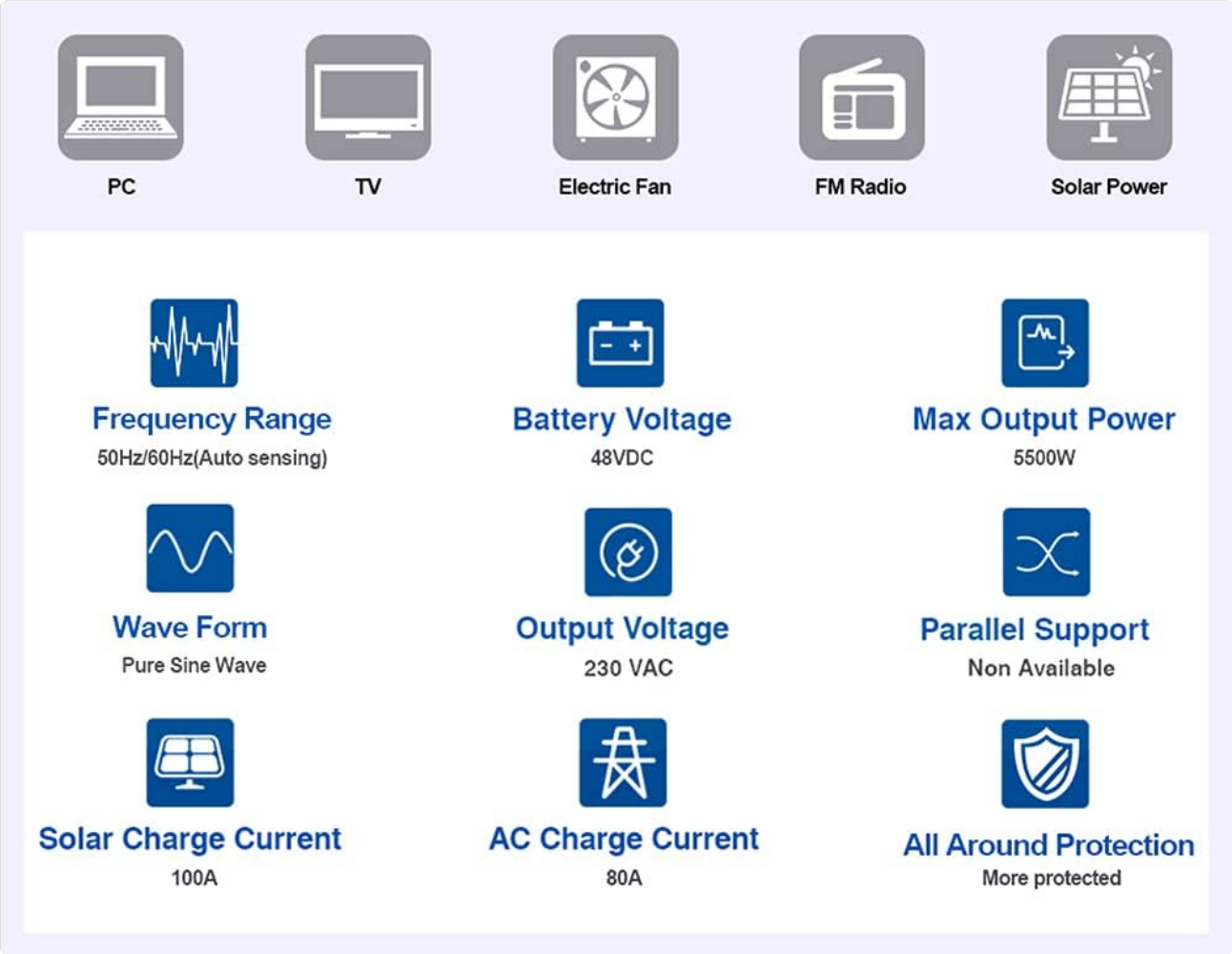


Figure 2.2: Overview of key features including frequency range, battery voltage, max output power, waveform, output voltage, parallel support (non-available), solar charge current, AC charge current, and all-around protection.

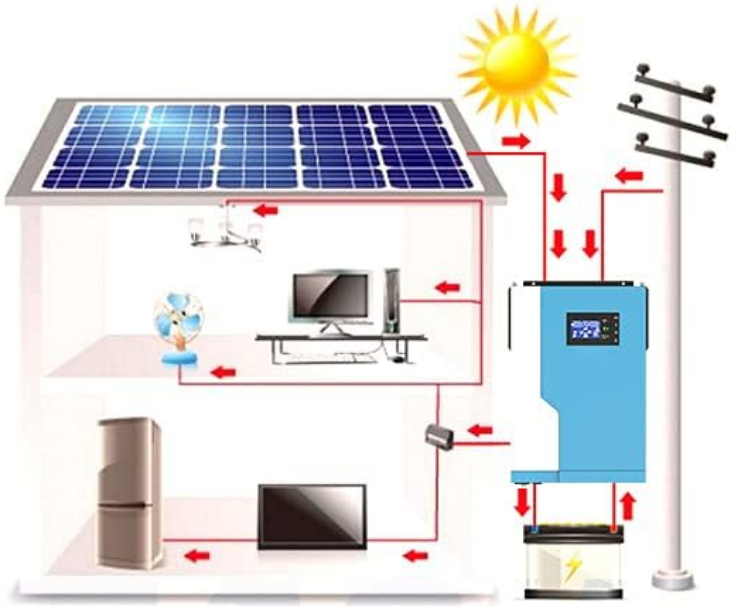


Figure 2.3: Various views of the Y&H 5.5KW Hybrid Solar Inverter.

3. Installation

3.1 System Connection Diagram

PV Connection



CAUTION!! Before connecting to AC input power source, please install a **separate** AC breaker between inverter and AC input power source. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of AC input. The recommended spec of AC breaker is 32A for 3.5KW and 50A for 5.5KW.

CAUTION!! There are two terminal blocks with "IN" and "OUT" markings. Please do NOT mis-connect input and output connectors.

WARNING! All wiring must be performed by a qualified personnel.

WARNING! It's very important for system safety and efficient operation to use appropriate cable for AC input connection. To reduce risk of injury, please use the proper recommended cable size as below.

Suggested cable requirement for AC wires

Model	Gauge	Cable (mm^2)	Torque Value
3.5KW	12 AWG	4	1.2 Nm
5.5KW	10 AWG	6	1.2 Nm

Figure 3.1: This diagram illustrates how the inverter integrates with solar panels, a generator, the utility grid, battery packs, and various home appliances.

The inverter can draw power from solar panels, a generator, or the utility grid to charge battery packs and supply power to home appliances. It is designed to manage these power sources efficiently.

3.2 PV Connection

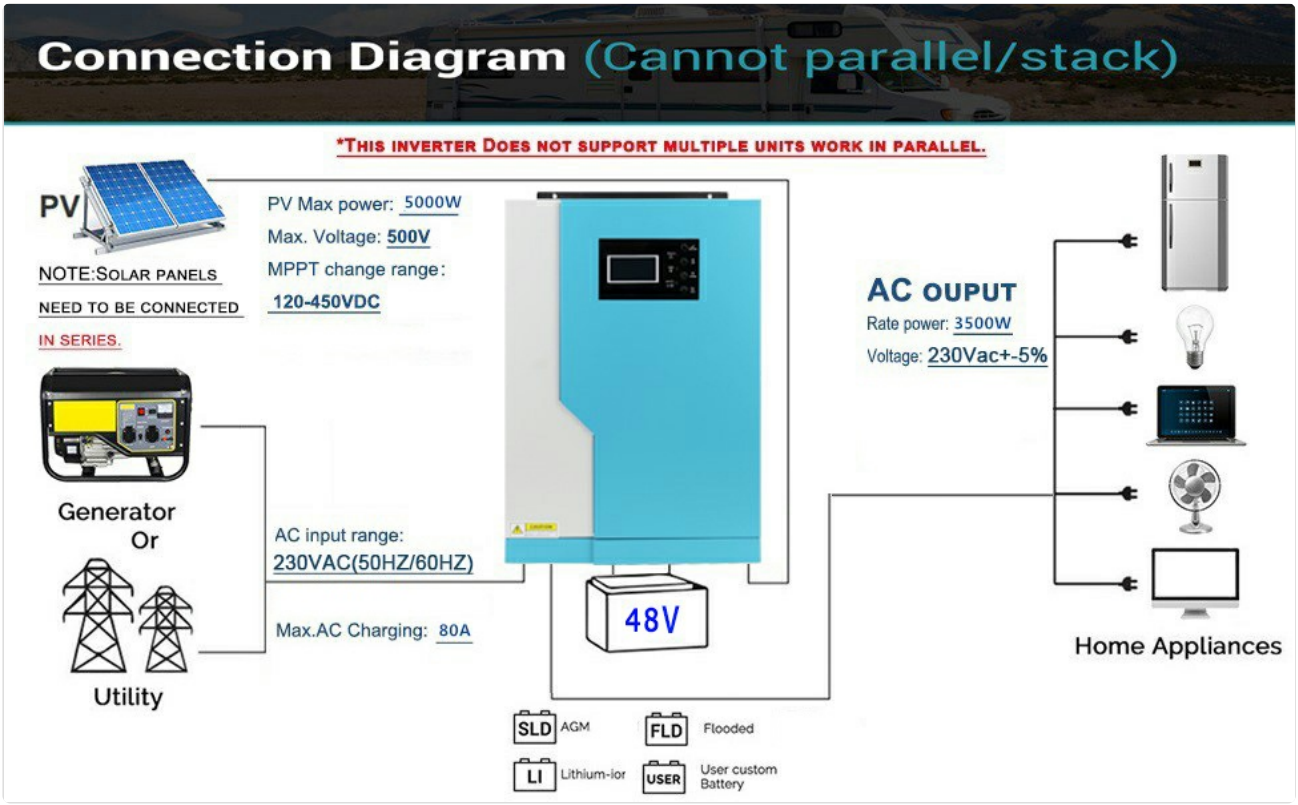


Figure 3.2: Detailed PV connection diagram showing solar panel input to the inverter and a table for PV module selection guidelines.

CAUTION: Before connecting to an AC input power source, install a separate AC breaker between the inverter and the AC input power source. This ensures the inverter can be securely disconnected during maintenance and is protected from overcurrent. The recommended AC breaker specification is 32A for 3.5KW models and 50A for 5.5KW models.

CAUTION: There are two terminal blocks with "IN" and "OUT" markings. Do not mis-connect input and output connectors.

WARNING: All wiring must be performed by a qualified personnel.

WARNING: It is critical for system safety and efficient operation to use appropriate cable for AC input connection. To reduce risk of injury, use the proper recommended cable size as specified below.

Suggested Cable Requirement for AC Wires

Model	Gauge	Cable (mm²)	Torque Value
3.5KW	12 AWG	4	1.2 Nm
5.5KW	10 AWG	6	1.2 Nm

3.3 PV Module Selection

When selecting PV modules, consider the following parameters:

1. Open circuit Voltage (Voc) of PV modules should not exceed the maximum PV array open circuit voltage of the inverter (500Vdc).
2. Open circuit Voltage (Voc) of PV modules should be higher than the minimum battery voltage (48VDC).

INVERTER MODEL	3.5KW	5.5KW

INVERTER MODEL	3.5KW	5.5KW
Max. PV Array Open Circuit Voltage	500Vdc	500Vdc
PV Array MPPT Voltage Range	120Vdc~450Vdc	120Vdc~450Vdc

Example: For a 250W PV module, recommended configurations are:

Solar Panel Spec. (reference)	SOLAR INPUT	Q'ty of panels	Total input power
- 250Wp - Vmp: 30.1Vdc - Imp: 8.3A - Voc: 37.7Vdc - Isc: 8.4A - Cells: 60	Min in serial: 6 pcs, max. in serial: 13 pcs		
	6 pcs in serial	6 pcs	1500W
	8 pcs in serial	8 pcs	2000W
	12 pcs in serial	12 pcs	3000W
	13 pcs in serial	13 pcs	3250W
	8 pieces in serial and 2 sets in parallel	16 pcs	4000W
	10 pieces in serial and 2 sets in parallel	20 pcs	5000W

3.4 General Connection Diagram

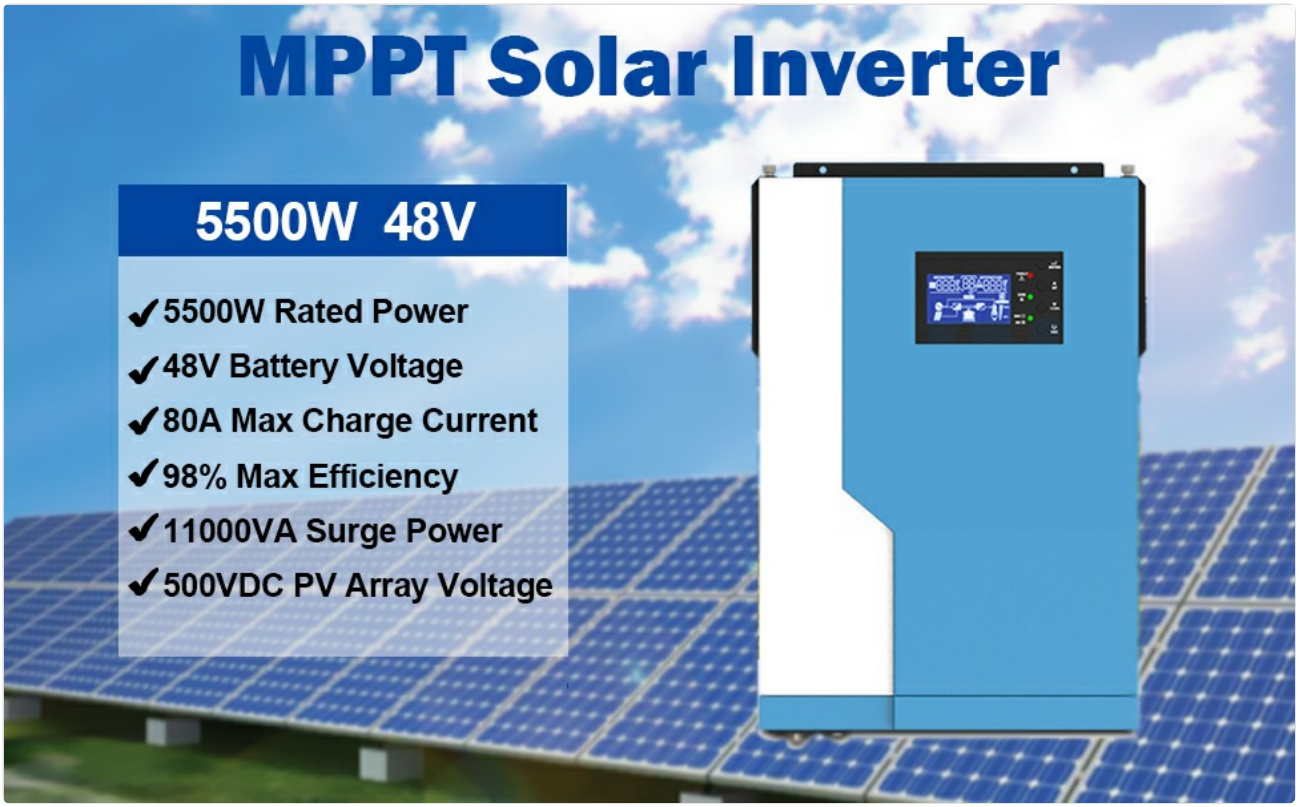
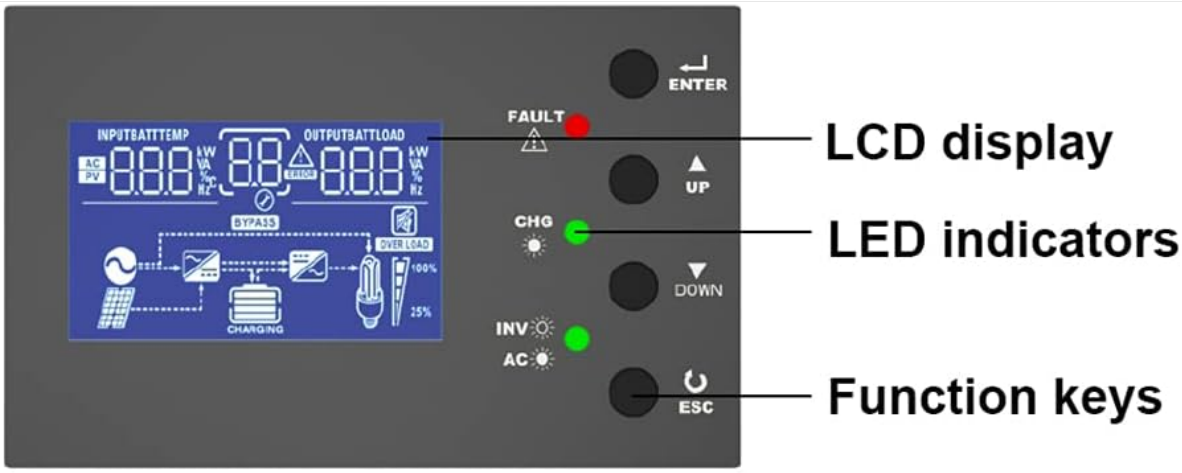


Figure 3.3: General connection diagram. This inverter does not support multiple units working in parallel.

This diagram illustrates the primary connections for the inverter. It shows the PV input (solar panels connected in series), generator or utility grid AC input, 48V battery connection (supporting SLD, AGM, Lithium-ion, FLD, and user custom batteries), and the AC output to home appliances. Note that this inverter is designed for single-unit operation and does not support parallel or stacked configurations.

4. Operating Instructions

4.1 LCD Display and Function Keys



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 4.1: Front panel showing the LCD display, LED indicators, and function keys for inverter control and monitoring.

LED Indicator Messages

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

4.2 Working Modes

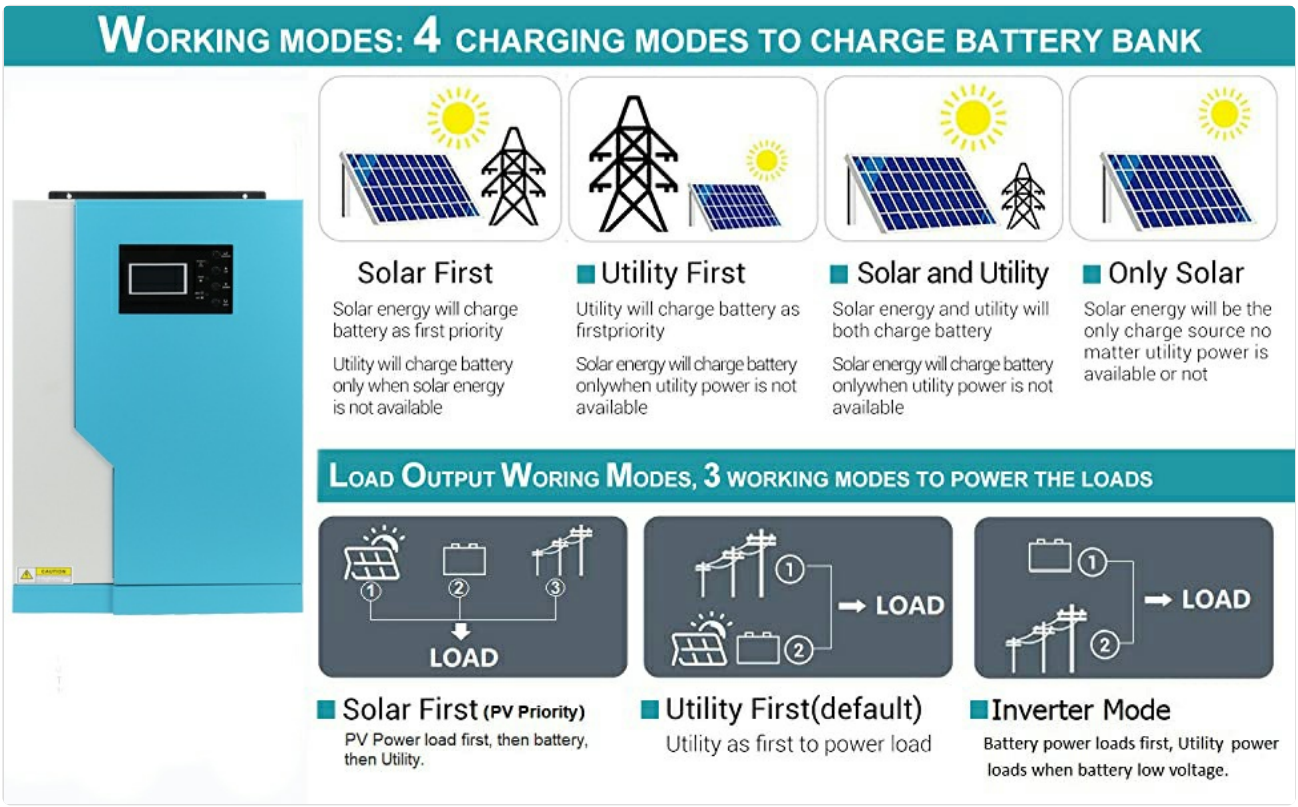


Figure 4.2: Overview of the inverter's charging and load output modes.

4.2.1 Charging Modes (4 Modes to Charge Battery Bank)

- **Solar First:** Solar energy will charge the battery as the primary priority. Utility power will only charge the battery if solar energy is not available.
- **Utility First:** Utility power will charge the battery as the primary priority. Solar energy will only charge the battery when utility power is not available.
- **Solar and Utility:** Both solar energy and utility power will charge the battery simultaneously.
- **Only Solar:** Solar energy will be the only charge source, regardless of utility power availability.

4.2.2 Load Output Working Modes (3 Modes to Power Loads)

- **Solar First (PV Priority):** PV power loads first, then Utility.
- **Utility First (Default):** Utility as first to power load.
- **Inverter Mode:** Battery power loads first, utility power loads when battery low voltage.

4.3 Operation with and without Battery Connected

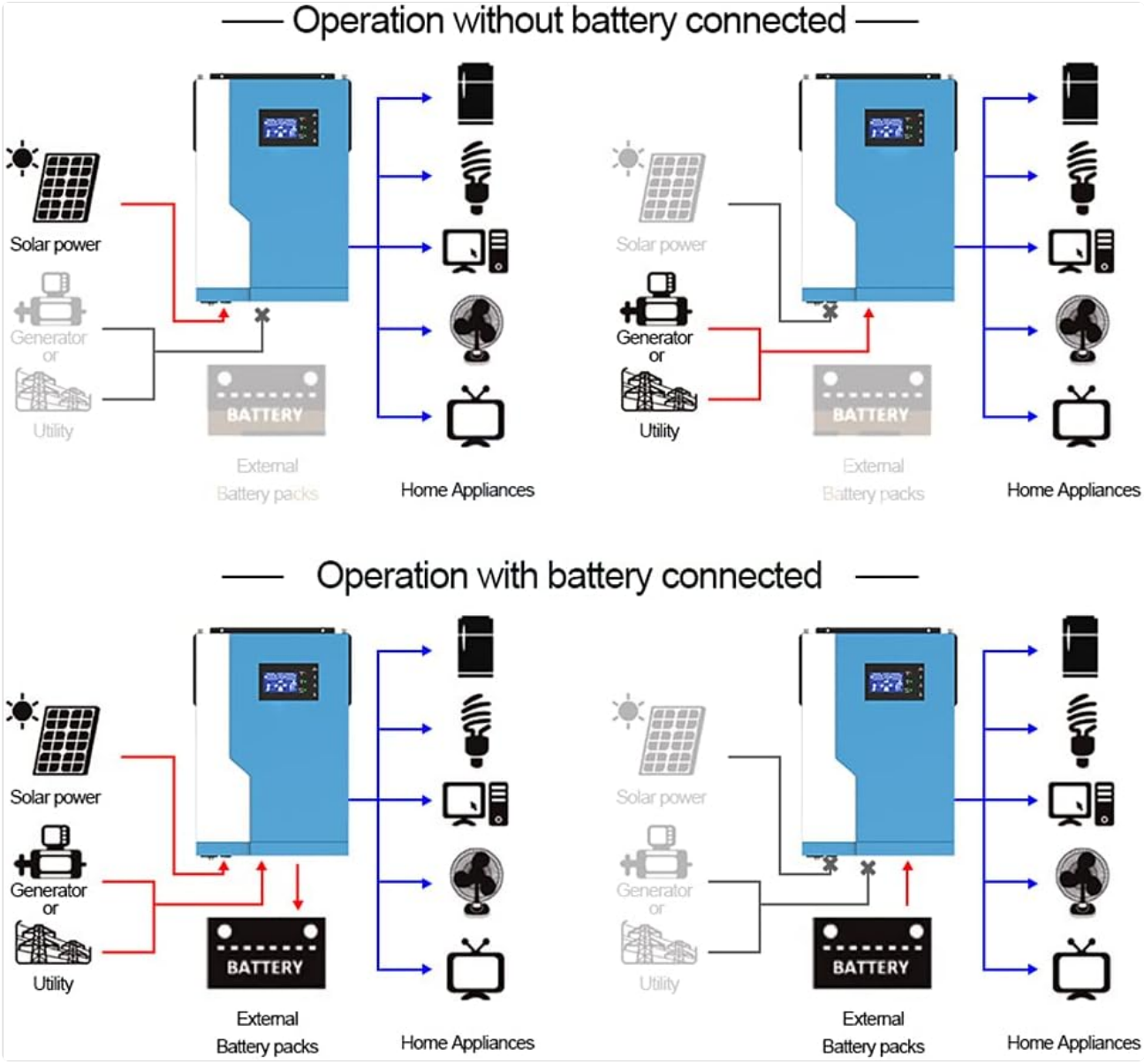


Figure 4.3: Power flow diagrams for inverter operation, distinguishing between systems with and without external battery packs.

The inverter can operate in configurations both with and without external battery packs. The diagrams above illustrate the power flow from solar, generator, or utility to home appliances under these different scenarios. When batteries are connected, they can store excess energy and provide power during outages or when other sources are unavailable. Without batteries, the inverter acts as a direct power manager between sources and loads.

5. Maintenance

Regular maintenance ensures the longevity and optimal performance of your Y&H Hybrid Solar Inverter.

- **Cleaning:** Keep the inverter's ventilation openings clear of dust and debris to ensure proper airflow and prevent overheating. Use a soft, dry cloth for cleaning the exterior.
- **Connections:** Periodically check all electrical connections (PV, battery, AC input/output) for tightness and corrosion. Loose connections can lead to power loss or overheating.
- **Environment:** Ensure the inverter is installed in a cool, dry, and well-ventilated area, away from direct sunlight, heat sources, and flammable materials.
- **Battery Health:** If using lead-acid batteries, regularly check their water levels (if applicable) and ensure terminals are clean and free of corrosion. Follow battery manufacturer's maintenance guidelines.
- **Firmware:** Check the manufacturer's website for any available firmware updates to ensure your inverter has

the latest features and bug fixes.

6. Troubleshooting

This section provides basic troubleshooting steps for common issues. For more complex problems, contact technical support.

- **No Power Output:**
  - Check if the inverter is turned on.
  - Verify battery connections and voltage.
  - Check AC input and output circuit breakers.
  - Ensure PV input is sufficient if operating in solar-priority modes.
- **Fault Indicator On:**
  - Refer to the LED Indicator Messages table (Figure 4.1) for the specific fault code or flashing pattern.
  - Common faults include overload, short circuit, over-temperature, or battery issues.
  - Disconnect loads, allow cooling, or check battery health as appropriate.
- **Battery Not Charging:**
  - Check PV panel connections and ensure sufficient sunlight.
  - Verify AC input connection if charging from utility/generator.
  - Check battery settings on the inverter display.

7. Specifications

Key technical specifications for the Y&H VM PLUS-5.5KW-M100A Hybrid Solar Inverter:

Feature	Specification
Brand	Y&H
Model Number	VM PLUS-5.5KW-M100A
Output Power	5500 watts
Input Voltage	48 volts (DC)
Output Voltage	230 volts (AC)
Max. PV Array Open Circuit Voltage	500Vdc
PV Array MPPT Voltage Range	120Vdc~450Vdc
Max Charge Current (Solar)	100A
Max Charge Current (AC)	80A
Wave Form	Pure Sine Wave
Parallel Support	No
Communication	WiFi, USB, RS-232

Feature	Specification
UPC	746608714474

8. Warranty and Support

For warranty information, please refer to the documentation included with your purchase or visit the official Y&H website. Technical support can be reached through the contact information provided by your retailer or on the Y&H support portal.

Always provide your model number (VM PLUS-5.5KW-M100A) and purchase date when contacting support for efficient service.

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