

SOLAR ALL-IN-ONE ESS

Solar Energy Storage Off Grid Inverter Mobile Power Station



HUP5.0-8

———— User Manual ————

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Manual Information

Applicable Products

HUP5.0-8 — 5Kw Off Grid Inverter + 8Kwh Battery

Scope of Application

This manual describes the assembly, installation, operation and troubleshooting of this equipment. Please read this manual carefully before installation and operation.

Target Groups

This document is intended for qualified personnel and end users. Tasks that do not require any specific qualifications can also be performed by end users. Qualified personnel must possess the following skills:

- ▶ Learn how an inverter works and operates
- ▶ Training on how to deal with the hazards and risks associated with the installation and use of electrical equipment and devices
- ▶ Training on the installation and commissioning of electrical equipment and devices
- ▶ Understand applicable standards and directives
- ▶ Understand and obey this document and all safety information

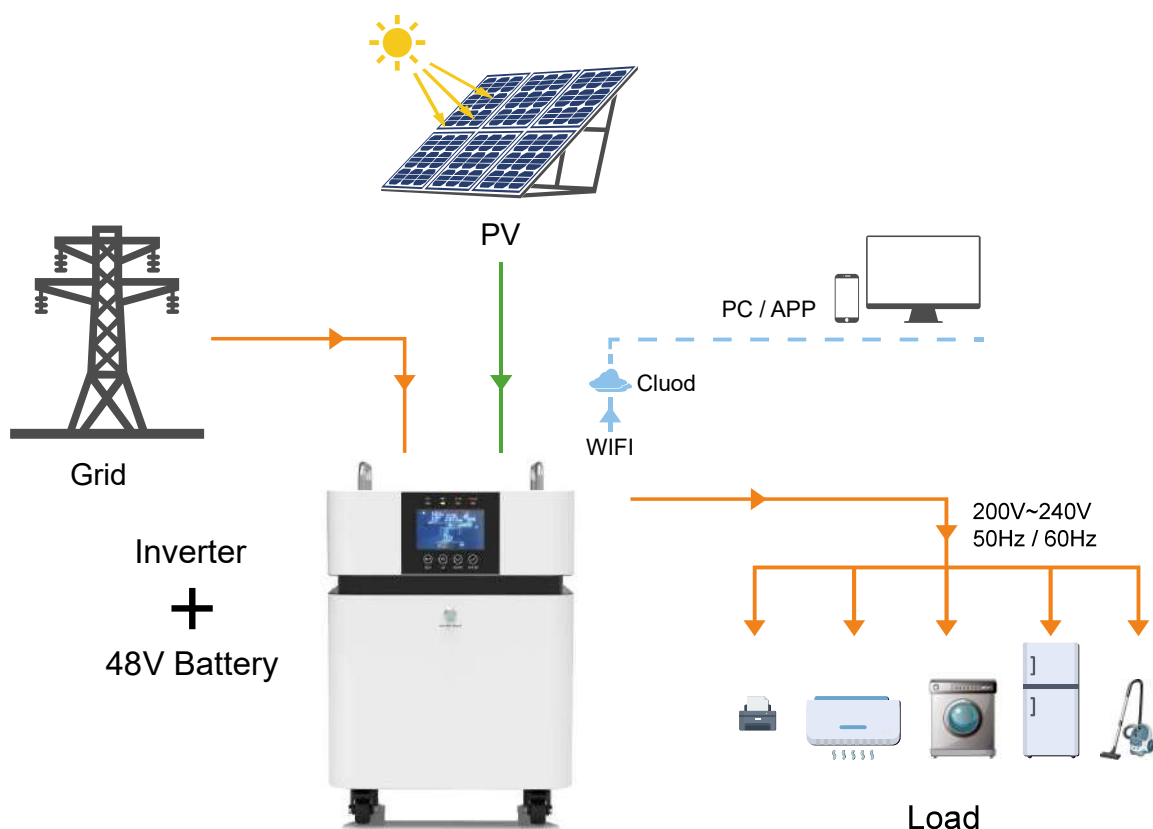
Safety Instructions

WARNING: This chapter contains important safety and operating instructions. Please read and save this manual for future reference.

1. This device is equipped with built-in lithium iron phosphate batteries. Please install it in compliance with the usage specifications and environmental requirements for lithium batteries.
2. Before using the device, read all instructions, warning markings on the device, batteries, and all appropriate sections of this manual. If installation is not carried out in accordance with this manual and equipment damage is caused, the company has the right to void the warranty.
3. All operations and connections must be performed by professional electrical or mechanical engineers.
4. All electrical installations must comply with local electrical safety standards.
5. When installing photovoltaic modules during the day, the installer should cover the PV modules with opaque materials. Otherwise, high module terminal voltage may cause danger in the sun.

6. Do not disassemble the device. When service or repair is required, take it to a qualified service center.
Improper assembly may result in risk of electric shock or fire.
7. To reduce the risk of electric shock, disconnect all electrical cords before attempting any maintenance or cleaning. This risk can be reduced by turning off the device.
8. For optimal operation of this inverter, please select the appropriate cable size according to the required specifications. Proper operation of this inverter is very important.
9. Be very careful when using metal tools on or around batteries. Throwing tools may generate sparks or short-circuit batteries or other parts, and may cause an explosion.
10. When you want to disconnect the AC or DC terminals, please strictly follow the installation procedures. Please refer to the installation section of this manual for details.
11. Grounding Instructions - This inverter should be connected to a permanently grounded wiring system. When installing this inverter, local requirements and regulations must be observed.
12. Do not short-circuit the AC output and DC input. When the DC input terminal is short-circuited, do not connect it to the mains.
13. Before operation, make sure the inverter is fully assembled.

Introduce



All-In-One Energy Storage System

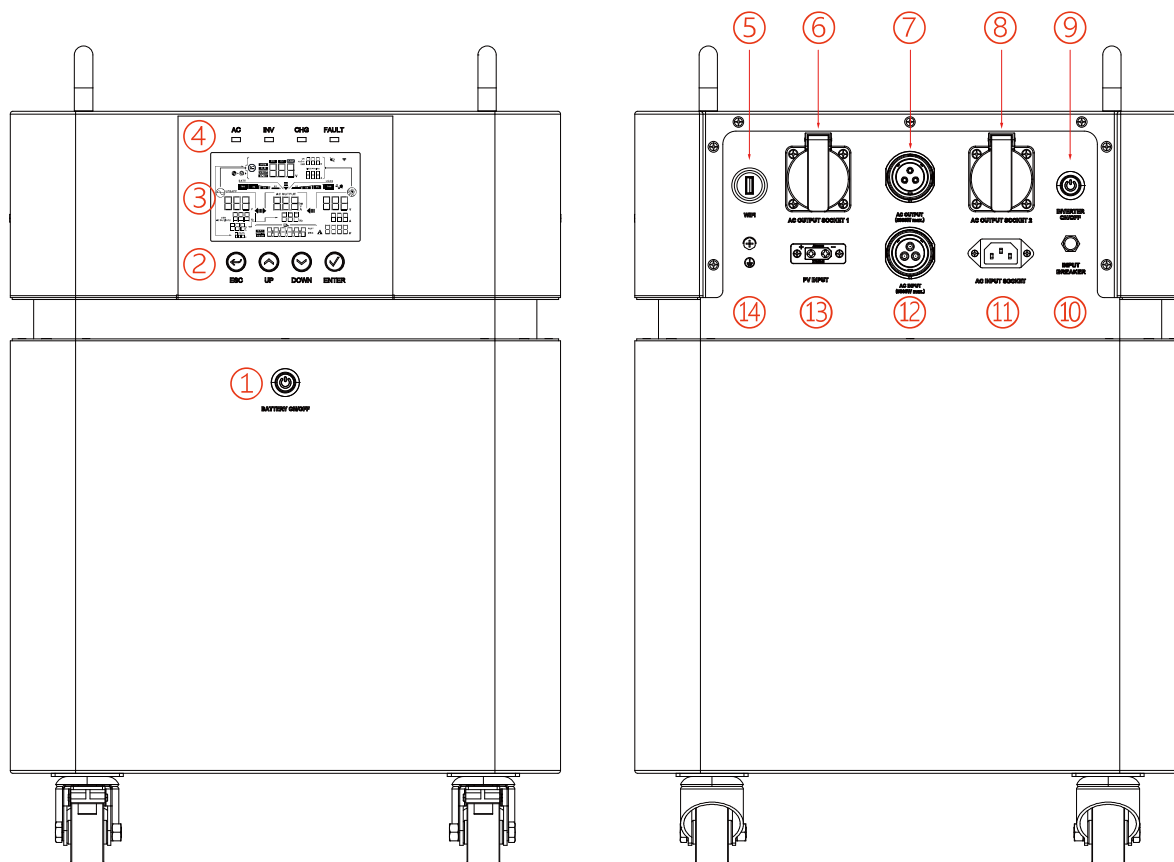
This is a multifunctional off-grid solar inverter + lithium battery home energy storage system; it integrates MPPT solar charge controller, high-frequency pure sine wave inverter and UPS functional module, and is equipped with 24V LiFePO4 Battery's energy storage system is very suitable for off-grid backup power and home power supply.

The device integrates lithium iron phosphate batteries, BMS and inverter systems, supports photovoltaic and AC input to charge the device; supports 5000W AC output. The WiFi/GPRS module is a plug-and-play monitoring device to be installed on the inverter. Using this device, users can monitor the status of the PV system anytime, anywhere via mobile phone or website.

Product Features

- ▶ Rated power 5KW, power factor 1
- ▶ 8kwh LiFePO4 Battery
- ▶ MPPT range 60V~450V, 500VDC
- ▶ Pure sine wave AC output
- ▶ Solar grid and utility grid can power loads simultaneously
- ▶ AC input and output support plug and play
- ▶ WIFI remote monitoring (optional)

Product Description



HUP5.0-8

- | | |
|---|--|
| ① Battery ON/OFF | ⑨ Inverter ON/OFF |
| ② Function Button | ⑩ Input Breaker |
| ③ LCD Display | ⑪ AC input 2 (≤2000W)
— Plug and Play |
| ④ Status Indicator | ⑫ High Power AC Input (5000W max.)
— Connect to AC Distribution box |
| ⑤ WIFI (optional) | ⑬ PV Input (XT90) |
| ⑥ AC Output Socket 1 (≤2000W)
— Plug and Play | ⑭ Ground Wire |
| ⑦ High Power AC Output (5000W max.)
— Connect to AC Distribution box | |
| ⑧ AC Output Socket 2 (≤2000W)
— Plug and Play | |

Installation

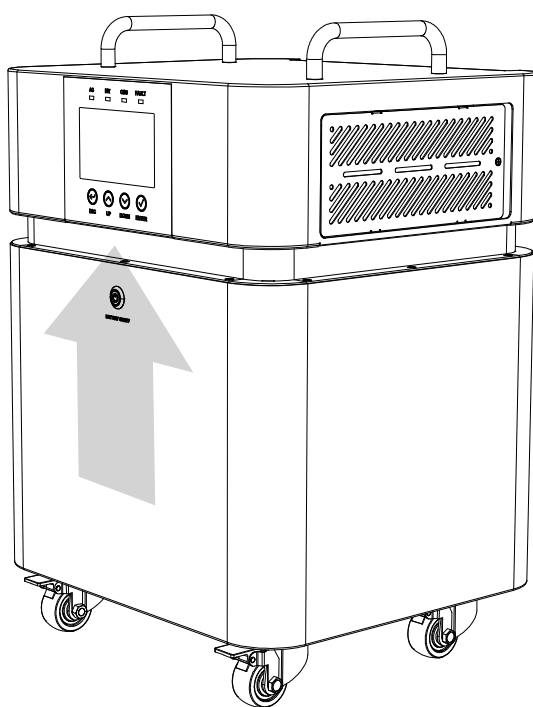
Unpacking Inspection

This manual describes the assembly, installation, operation and troubleshooting of this equipment. Please read this manual carefully before installation and operation.

- ▶ Inverter equipment x1
- ▶ AC input connector x1
- ▶ AC output connector x 1
- ▶ PV input connector x1
- ▶ User manual x1
- ▶ Smart Wifi Stick (optional x 1)

Preparation

After taking the product out of the packaging, place the product upright



Installation Device

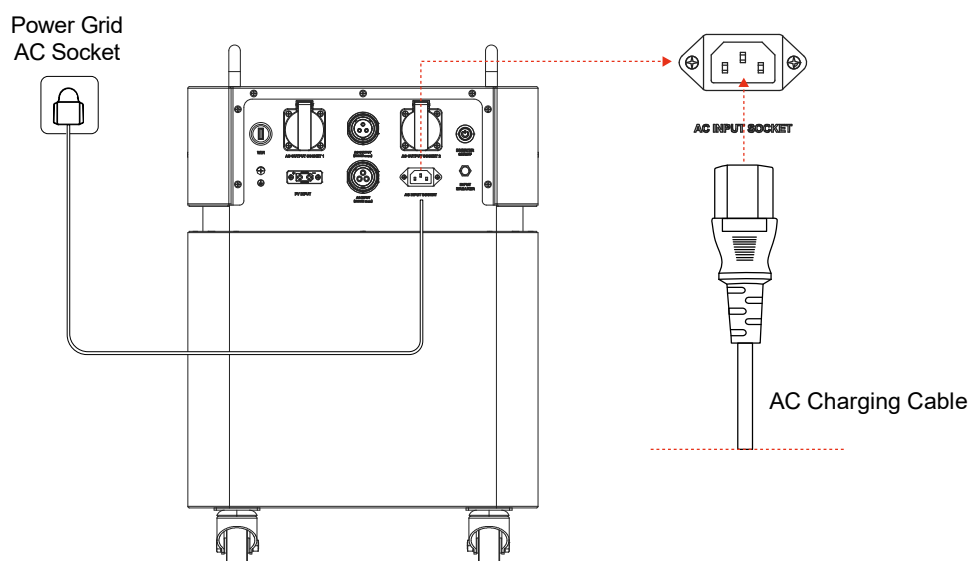
Before choosing where to install, consider the following:

- ▶ Do not install the inverter on flammable building materials.
- ▶ Install on load-bearing wall surface.
- ▶ Mount the display of this inverter at eye level to allow the LCD to be read at all times.
- ▶ Ambient temperature should be between 0°C and 55°C to ensure optimal operation.
- ▶ The recommended installation position should be vertically attached to the wall.
- ▶ Make sure other objects and surfaces are as shown below to ensure adequate heat dissipation and enough space to remove wires.

NOTE: For installation on concrete or other non-combustible surfaces only.

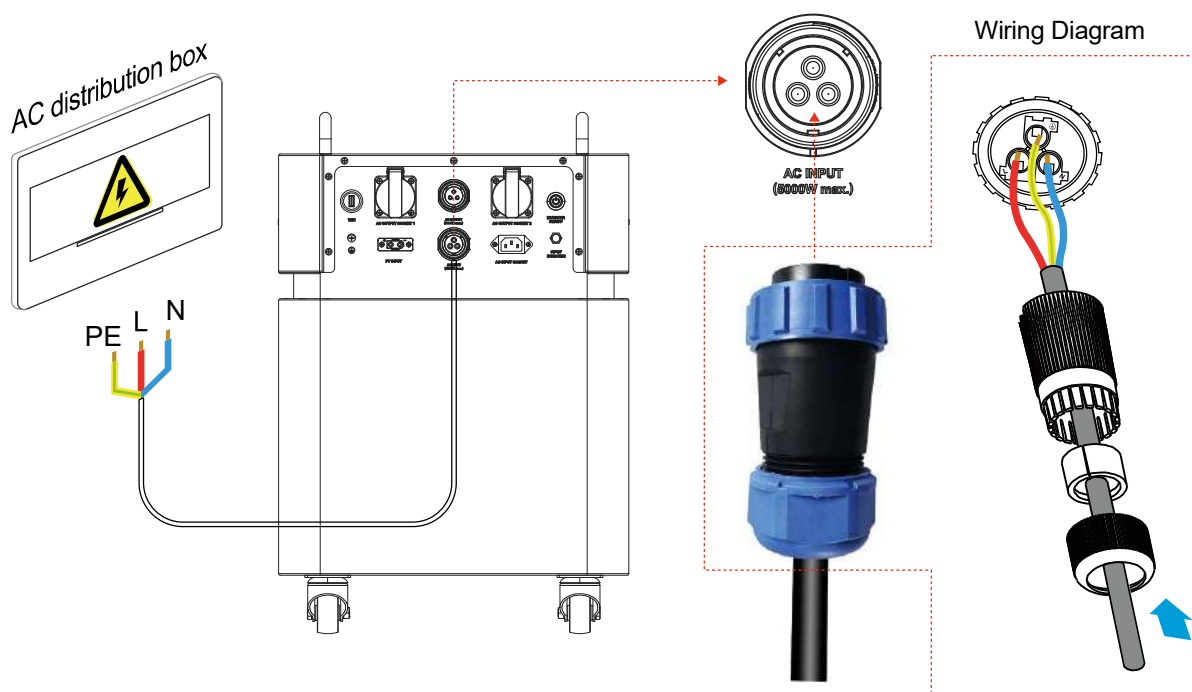
AC Charging

① Charge the device using the AC charging cable



② High Power AC Input Wiring Connection

The high-power input needs to be connected to the household AC distribution box, and the other end needs to be connected to a 3PIN plug, and the L/N/PE wires should correspond to each other.



Connecting the AC distribution box requires the operation of an electrician with relevant qualifications according to local regulations. Non-professionals are prohibited from wiring privately.



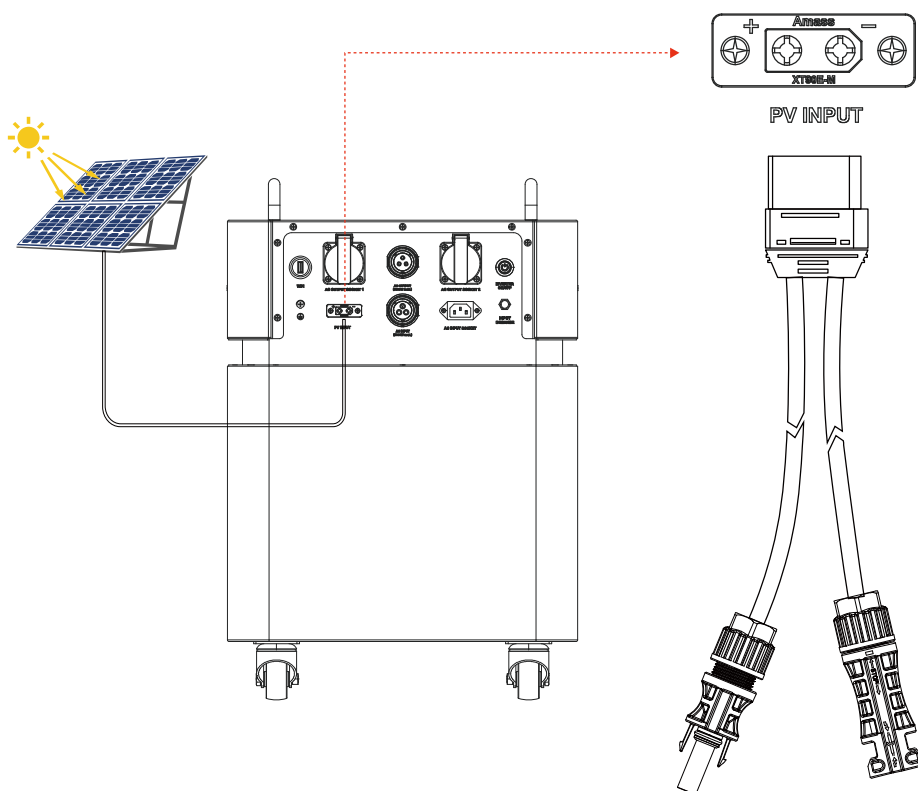
CAUTION!! Before connecting the AC input power, please turn the input circuit breaker to the off state, and then turn it on after connecting the AC input cable. This ensures that the inverter can be safely disconnected during maintenance and completely prevents AC input overcurrent. When the circuit breaker automatically trips, check whether the input load is too large, and note that the total power must be less than 5000W.

CAUTION!! AC charging supports two modes: plug-and-play and high-power input. To avoid damage caused by power overload, do not use the two input modes at the same time.

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

WARNING! Its very important for system safety and efficient operation to use appropriate cable for AC input connection.

PV Charging



Connect the solar panel to charge this product via the XT90 to MC4 conversion cable.

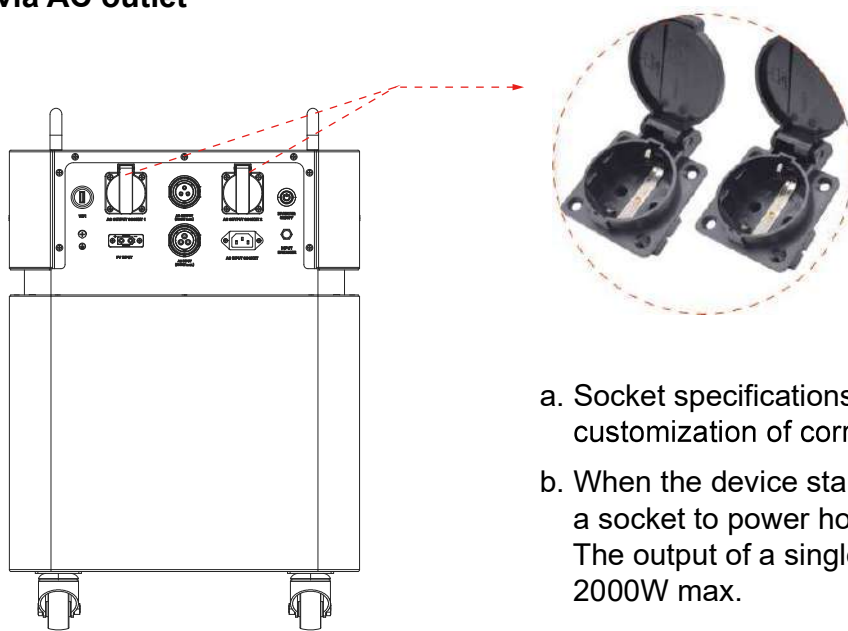


CAUTION!!

The maximum PV input power is 5000W, and the voltage range is 60Vdc~450Vdc. Please note that it cannot be used beyond the power or voltage range.

AC Output

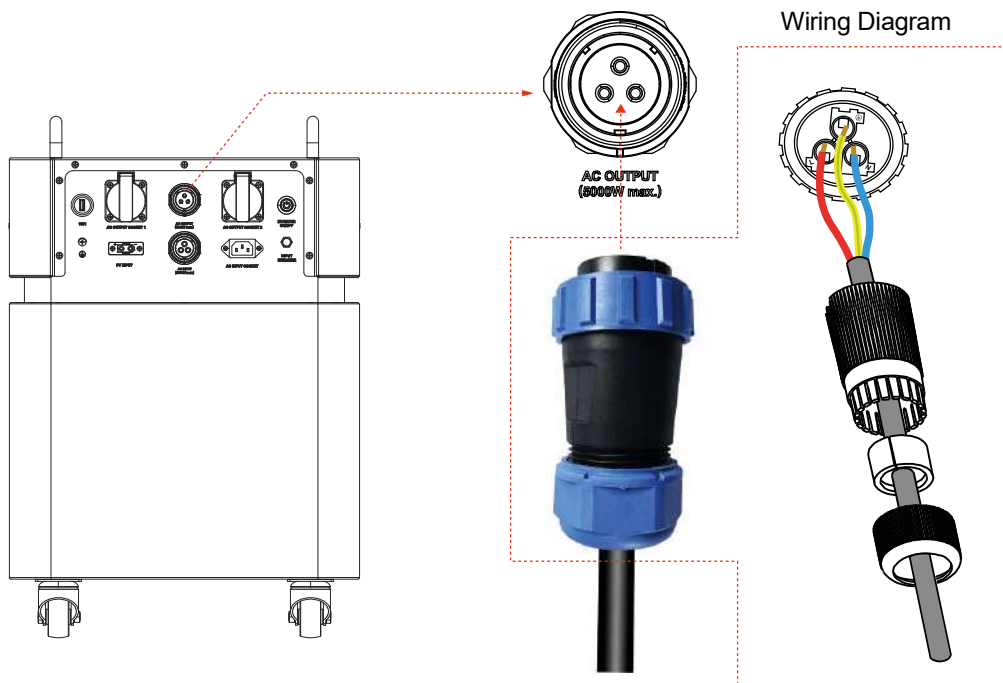
① Output via AC outlet



- a. Socket specifications support factory customization of corresponding standards
- b. When the device starts working, plug it into a socket to power household appliances. The output of a single socket supports 2000W max.

② High power AC output wiring method

This output port supports direct connection to high-power electrical appliances or to the total household load, and uses the matching connector to wire as shown in the figure for output.



Wiring must be done in accordance with specifications to ensure the effectiveness of the product, so a professional electrician must be asked to perform the operation. The total output power must be less than 5000W. If the power is exceeded, the device will be protected and the output will be cut off, which may even cause the device to burn out.

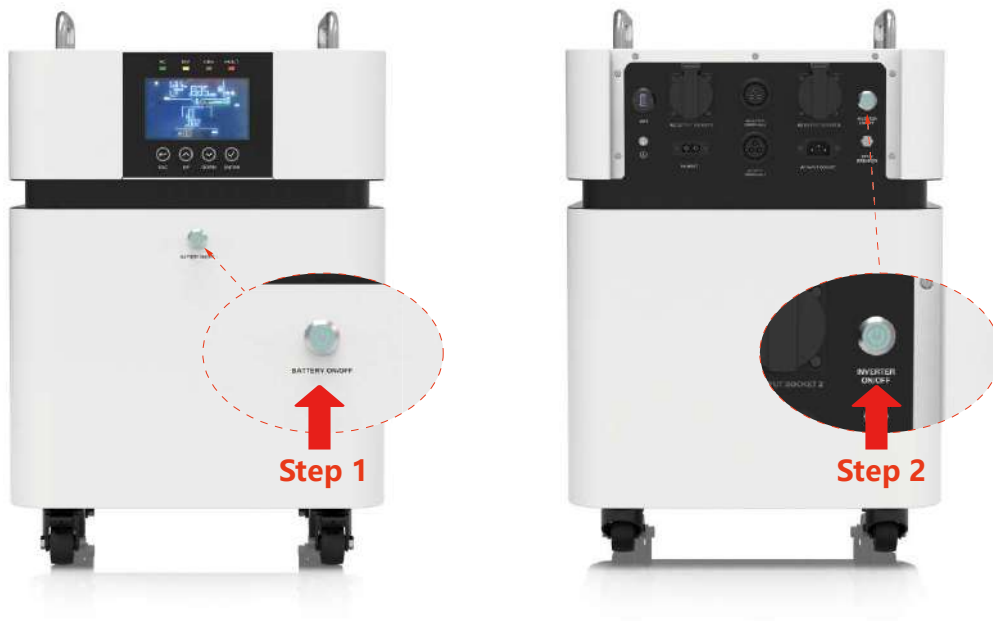
Operation

1. Power ON/OFF

Check that all wiring is properly connected, then start the device following these two steps.

Step 1: Press the “Battery ON/OFF” button on the front of the device. The indicator light on the button will turn on, indicating the battery is activated.

Step 2: Toggle the “Inverter ON/OFF” switch on the rear of the device to start the inverter. The front display screen will light up simultaneously.



2. Operation and Display Panel

The operation and display panel, shown in below chart, is on the front panel of the inverter. It includes four indicators, four function keys and a LCD display, indicating the operating status and input/output power information.



2.1 Function Buttons

LED Indicator			Messages
① AC	Status indicator (Green)	Solid On	The mains power is normal and enters the mains power operation.
		Flashing	The mains power is normal, but it has not entered mains power operation.
		Off	The mains power is abnormal.
② Inverter	Invert indicator (Yellow)	Solid On	Output is powered by battery or PV in battery mode.
		Off	Other states.
③ Charging	Charging indicator (Yellow)	Solid On	The battery is in float charging.
		Flashing	The battery is in constant voltage charging.
		Off	Other states.
④ Fault	Fault indicator (Red)	Solid On	Fault occurs in the inverter.
		Flashing	Warning condition occurs in the inverter.
		Off	The inverter is working properly.



ESC



UP



DOWN

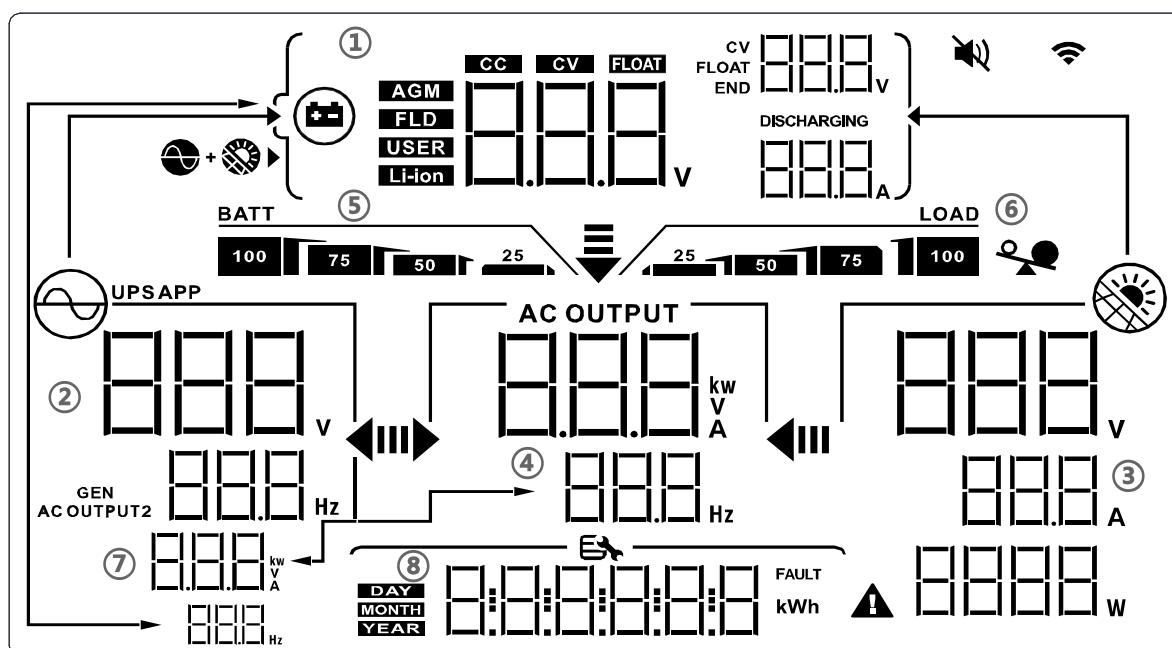


ENTER

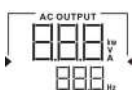
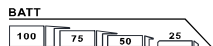
2.2 Function Buttons

Button	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

2.3 LCD Display Icons



Display area	Icon	Description
① Battery Information		Battery icon
		Battery type
		Three charging period. The CC icon is illuminated during the constant current charging stage, the CV icon is illuminated during the constant voltage charging stage, and the FLOAT icon is illuminated during the float charging stage.
		Indicate battery voltage

		During the constant voltage charging stage, the CV voltage is displayed and the CV icon is illuminated. During the float charging stage, the float voltage is displayed and the FLOAT icon is illuminated. During the discharge state, the end discharge voltage is displayed and the END icon is illuminated.
		Battery charging/discharging current
②AC Input Information		AC input icon
	UPS APP	UPS or APP input mode When set to GEN input, it displays as APP
		AC input voltage and frequency
③PV Input Information		PV input icon
		Indicate PV power, PV voltage, PV current, etc.
④Output Information		Indicate output voltage(V), apparent power (VA or kVA), output active power (W or kW) alternately, switching every five seconds Indicate output frequency
⑤Battery Capacity		Indicate battery capacity
⑥Load Capacity		Indicate load capacity
		Over load icon
⑦AC OUTPUT2 information	AC OUTPUT2	Second AC output icon
		Indicate AC output 2 voltage(V)
⑧Parameter Query, Function Setting or Fault/Alarm Information		Indicate system information; Function setting; Indicate Fault/Alarm
Other Information		Mute
		Wifi connected
		If PV + Grid, the left and right icon light at same time; if only PV, the right icon is only light
		If PV first, the left and right icon light at same time.

2.4 LCD Setting

After pressing and holding ENTER button for 2 seconds, the unit will enter setting mode. Press 'UP' or 'DOWN' button to select setting programs. Then press 'ENTER' button to confirm the selection or ESC button to exit.

Program	Description	Setting Option	
01	Output voltage	01 OPV230	
		230V (default) Adjustable/settable value: 208V, 220V, 230V, 240V	
02	Output frequency	02 OPF 50	
		50Hz(default) Adjustable/settable frequency: 50Hz, 60Hz	
03	Output source priority	Grid first (default)	03 OPPGPb
		Grid provides power to the loads as first priority. Solar power will charge the battery. If solar is not sufficient to charge battery, grid will charge the battery at the same time. If grid is not sufficient to power all connected loads, solar energy will supply power to the loads at the same time. If solar energy and grid are not sufficient, battery will supply power to the loads at same time. If solar, grid and battery power is not sufficient to power loads, inverter will go to standby and charge battery.	
		Solar first	03 OPPPGb
		Solar energy provides power to the loads as first priority. If solar energy is sufficient, battery will be charged with solar energy. If solar energy is not sufficient to power all connected loads, Grid will supply power to the loads at the same time. The extra power will charge the battery. If solar energy and grid are not sufficient, battery will supply power to the loads at same time. If solar, grid and battery power is not sufficient to power loads, inverter will go to standby and charge battery.	

03	Output source priority	PBG priority	
		Solar energy provides power to the loads as first priority. If solar energy is sufficient, battery will be charged with solar energy. If solar energy is not sufficient to power all connected loads, battery will supply power to the loads at the same time. If solar energy and battery are not sufficient, grid will supply power to the loads at same time. If solar, grid and battery power is not sufficient to power loads, inverter will go to standby and charge battery.	
		MKS	
		Generator provides power to loads as first priority. When generator, PV, battery all exist, the work mode is as PBG. When generator and battery exist (no PV), the work mode is as GPB. When generator and PV exist (no battery), the work mode is as GPB.	
04	Input mode	APP: Appliance (default)	
		Applied to household appliances Typical switching time is 10ms.	
		UPS	
		Applied to computer and other devices. Typical switching time is 10ms.	
05	Charger source priority	PNG: PV and Grid (default)	
		PV and Grid are charged at the same time.	
		OPV: Only PV	
		Only PV charge.	
		PVF: PV first	
		If both grid and PV are available, PV charge. If only PV is available, PV charge. If only grid is available, grid charge.	

06	Grid charging current	06 ← → ESC 80		The default setting is 80A. Available options are: 2/10/20/30/40/50/60/70/80/90/100/110/120/130/140/150/160A
07	Maximum charging current	07 ← → ESC 120		Set total charging current for solar and grid chargers. The default setting is 120A. Available options are: 2/10/20/30/40/50/60/70/80/90/100/110/120/130/140/150/160A
08	Menu Default	08 ← → ESC ON		Set to ON. If the current page is not on the first page and no operation with 1 minute, the system will return to display the first page. Set to OFF. If the current page is not on the first page and no operation with 1 minute, the system will stay on the current page.
09	Auto restart when overload occurs	ON(default)	09 ← → ESC ON	
10	Auto restart when over temperature occurs	ON(default)	10 ← → ESC ON	
11	Main input cut warning	11 ← → ESC ON		Enable/Disable Grid or PV loss alarm. The default setting is ON. If the grid input detected lost, the buzzer will sound for 5 seconds. when set to OFF, after the grid input is lost, the buzzer will not sound.
12	Energy-saving mode	12 ← → ESC OFF		The default setting is OFF. When set to ON, in battery mode, if the load is lower than 25W, the system will stop output for a period then resume. If the load is still lower than 25W, the system will do the loop stop then resume. If the load is higher than 35W, the system will resume continuous normal output.
13	Overload transfer to bypass	13 ← → ESC OFF		The default setting is OFF. When set to ON, in the case of PBG (PV priority) or MKS (generator priority) mode, if there is an overload, the system will immediately transfer to bypass mode (grid power output, also known as bypass mode).

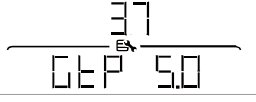
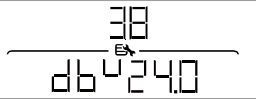
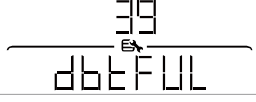
14	Silent mode setting	14 BAE0FF		Enable/disable buzzer sound. The default setting is OFF. When set to ON, in any situation such as alarms or faults, the buzzer will not sound. This setting can be applied to all modes. Button sound is not effected.
15	Battery return to grid voltage point	15 BAE230		When the battery is set to the AGM (Lead Acid Battery Type) or FLD (Flooded Battery Type) mode. The default setting is 23V, and it can be adjusted within a range of [22, 26V].
				When the battery is set to LIB (Ternary lithium battery). The default setting is 23.8V. It can be adjusted within a range of [20, 25V].
				When the battery is set to FEL (Lithium iron battery), the default setting is 24.8V. It can be adjusted within a range of [20, 25V].
				When the battery is set to the CUS (Customer Setting Type) mode. The default setting is 23.8V, and it can be adjusted within a range of [20, 25V].
16	Switching back to battery mode voltage points	16 BAE260		
				When the battery is set to AGM (Absorbent Glass Mat) or FLD (Flooded) mode, The default setting is 26V. It can be adjusted within a range of [24, 29V].
				When the battery is set to LIB (Ternary lithium battery). The default setting is 27.2V. It can be adjusted within a range of [23, 29V].
				When the battery is set to FEL (Lithium iron battery), the default setting is 26.2V. It can be adjusted within a range of [23, 29V].
17	Battery type			When the battery is set to CUS (Customer Set Type) mode, The default setting is 27.2V, The voltage range is [23, 29V].
		AGM(default)	17 BAEAGn	
		Flooded	17 BAEFLd	
		Lithium (Ternary Lithium Battery)	17 BAELI b	
		FEL (Lithium iron)	17 BAEFEL	
		User-Defined	17 BAECUS	

18	Battery low voltage point	
		Battery low voltage alarm setting. When the battery type is set to LIB, the default setting is 23.8V. The adjustable range for the voltage is [20.6, 25V]. Initial settings for CUS are the same as for LIB. When the battery type is set to FEL, the default setting is 24V. The adjustable range for the voltage is [20.6, 25V].
		It is not possible to set the battery definition mode to AGM or FLD mode. The initial default setting is 22V.
19	Battery shutdown voltage point	
		The battery low voltage shutdown point setting function cannot be adjusted when the battery is defined as AGM or FLD mode. The default setting is 21V. When the battery type is set to LIB, the battery shutdown point can be modified. The default setting is 23V, and the adjustable range is [20, 24V]. Initial settings for CUS are the same as for LIB. When the battery type is set to FEL, the battery shutdown point can be modified. The default setting is 21V, and the adjustable range is [20, 24V].
20	Constant voltage mode voltage point setting	
		When the battery is defined in AGM or FLD mode, the voltage set point cannot be configured. The default setting for AGM mode is 28.2V, for FLD mode is 29V. When the battery type is CUS, It can be set within the range of [24, 30V] for the constant voltage charging set point. The default setting is 56.4V. It is important to note that the constant voltage set point voltage needs to be higher than the float charge set point voltage. If the battery type is set to LIB, the default setting is 28.2V, and it can be adjusted within the range of [24, 30V]. If the battery type is set to FEL, the default setting is 27.6V, and it can be adjusted within the range of [24, 30V]. It is important to ensure that the constant voltage set point voltage is higher than the float charge set point voltage.

21	Floating charge mode voltage point setting	21 BFL27.0	If battery type is AGM or FLD mode, the voltage set point cannot be configured. The default setting is 27V. If the battery type is CUS, the default setting is 27.6V. The setting range is [24, 30V]. If the battery type is LIB, the default setting is 27.6V. The setting range is [25, 29V]. If the battery type is FEL, the default setting is 27.2V. The setting range is [25, 29V]. It is important to note that the constant voltage point voltage should always be set higher than the floating charge point voltage.
22	Grid low voltage point setting	22 LLV154	If input mode is APP/GEN, Grid low voltage point can be set within a range of 90V to 154V. The default setting is 154V. If input mode is UPS, Grid low voltage point can be set within a range of 170V to 200V. The default setting is 185V.
23	Grid high voltage point setting	23 LHV264	If input mode is APP/GEN, Grid high voltage point can be set within a range of 264V to 280V. The default setting is 264V. If input mode is UPS, Grid high voltage point is set as 264V.
24	Automatic turn off backlight	24 Atb ON	The default setting is ON. If ON, the backlight will turn off after 1minutes of no button operation.
25	Inverter soft start setting	25 StE OFF	The setting range is OFF. If it set to ON, the inverter output gradually increases from 0 to the target voltage value. If OFF, the inverter output directly increases from 0 to the target voltage value. Setting Condition: It can be set in single-machine operation mode.

26	Reset factory setting	26 SEdOFF	Restore all settings to factory default values. Before the setting, this interface is displayed as OFF. When set to ON, the system will restore to default settings. After the setting is completed, this interface will display OFF again. The setting can be applied immediately in mains and standby modes, but cannot be set in battery mode.
29	Battery Disconnection Alarm	29 5bA0FF	Enable/Disable battery disconnection alarm. The setting range is OFF. When set to OFF, there will be no battery disconnection alarm when the battery is disconnected.
31	Equalization Voltage Point Setting	31 E9029.2	The default setting for FEL battery type is 28V, setting range is [24, 30V]. The default setting for AGM/FLD/LIB/CUS battery type is 29.2V, with a configurable range of [24, 30V].
32	Equalization Charging Time Setting	32 E9E0FF	The function can be set as 'OFF' or active. During the equalization stage, the controller will charge the battery as much as possible until the battery voltage rises to the battery equalization voltage. Then, it will adopt constant voltage regulation to maintain the battery voltage. The battery will remain in the equalization stage until the set battery equalization time is reached. The setting range is [5, 900] with 5 minutes for every step. The default setting is OFF.

33	Equalization Delay Time Setting	33 EQ 120 The function can be set as 'OFF' or active. During the equalization stage, if the battery equalization time expires and the battery voltage has not risen to the battery equalization voltage point, the charging controller will extend the battery equalization time until the battery voltage reaches the battery equalization voltage. When the battery equalization delay setting is completed and the battery voltage is still below the battery equalization voltage, the charging controller will stop equalization and return to the floating stage. The default setting is 120 minutes, with a configurable range of [5, 900], and an increment of 5 minutes for each setting.
34	Equalization Interval Time Setting	34 EQ 30 When the battery connection is detected during the float phase with the equalization mode turned on, the controller will start to enter the equalization phase when the set equalization interval (cell equalization period) is reached. The default setting is 30 days, the settable range is [1, 90], and the increment of each setting is 1 day.
35	Enable Equalization Immediately	35 EQ OFF The default setting is OFF, and the function is not turned on. If it is set to ON, in the float charging stage when the equalization mode is turned on and the battery connection is detected. The equalization charging is activated immediately, and the controller will start to enter the equalization stage.

36	Grid-tie inverter function	
		Set whether the inverter is grid fed or not. If the value is 'INT', the inverter can feed to grid according to different output source priority. In PGB mode when battery level is sufficient, as long as grid is connected, PV can feed energy to grid as much as possible and surplus energy of PV charges the battery. In PGB mode when battery level is NOT sufficient, PV charges battery as much as possible and surplus energy of PV feeds to grid. In GPB mode and PBG mode, as long as grid is connected, PV charges battery as much as possible and surplus energy of PV feeds to grid. In MKS mode, inverter does not feed to grid.
37	Max Grid Tie Power	
		Setting the output power value to grid. The default setting is 5.0kW. The setting range is [0, 5.0]kW. Every setting step is 0.5kW.
38	Battery dual output low voltage shutdown point	
		When enabled, the secondary output of the inverter is enabled by default. In battery mode, when the battery voltage drops below the set point, the secondary output is turned off. When the battery voltage rises above the set value plus 1V per additional battery cell, the secondary output is turned on. The default setting is 24V, with a configurable range of [22, 30]V. When the set point is higher than the constant voltage charging (CV) point - 1V per cell, the recovery voltage is set to the constant voltage charging point.
39	Battery dual output duration	
		When enabled, the secondary output of the inverter is enabled by default. In battery mode, when the battery discharge time reaches the set point, the secondary output is turned off. Default setting is OFF, the function is not enabled. The configurable range is [5,900] in minutes. When set to FUL, the secondary output has unlimited output time.

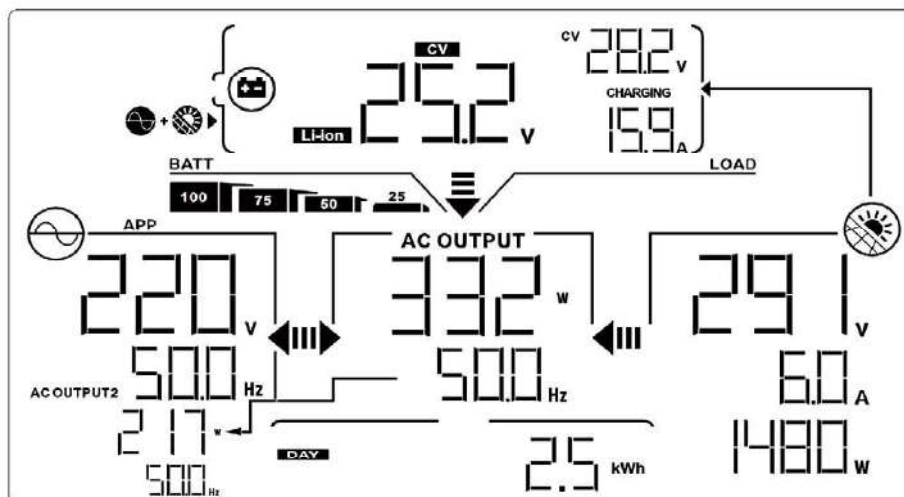
40	Dual output battery mode cut-off SOC	40 db5 20	When enabled, the secondary output of the inverter is enabled by default. In battery mode, when the battery SOC is lower than the set value, the secondary output is turned off. After the battery voltage is 5% higher than set value, the secondary output will turn on. The default setting is 20. The setting range is [5, 90] and OFF.
44	BMS Communication Function	44 bn5OFF	The default setting is OFF, and the function is not enabled. When set to a specific BMS protocol, the inverter communicates with the lithium battery BMS through the centralized control board and obtains battery information. If the communication is abnormal after the function is enabled, alarm 56 is generated, and the inverter does not determine the running logic based on the BMS information. CVT: CVTE protocol (485) PYL: PYLON protocol (485 and CAN) GRO: GROWATT protocol (485 and CAN) VOL: VOLTRONIC protocol (485) IRO: China Tower protocol (485) PAR: PACE RTU protocol (485)
45	BMS ID	45 bn1 AtO	Setting BMS ID number to communication with. The setting value is AtO or numerical value [0, 15]. Among them, A-F represents 10-15 respectively. The default setting is auto (AtO). When set to auto (AtO), system will automatically poll the BMS ID from small to large. When system poll for the first ID with a correct response, it locks the ID and only asks the BMS with that ID.

46	Low SOC Shutdown	Set the inverter to shut down when the State of Charge (SOC) of the battery is low. Default setting is 20, with a configurable range of [5, 50]. When the lithium battery SOC reaches the set value in battery mode, the inverter shuts down and generates alarm 68. The alarm 68 is cleared when the SOC returns to the set value + 5%. In standby mode, the inverter can switch to battery mode only when the SOC reaches the set value + 10%. If it does not reach this threshold, alarm 69 is generated. Once the function is enabled, alarm 69 is triggered when the lithium battery SOC reaches the set value + 5%, and it is cleared when it returns to the set value + 10%. It can be set to OFF, in which case the inverter no longer performs shutdown, startup, or alarm operations based on the SOC condition. Once the function is enabled, if a communication abnormality occurs, the inverter no longer operates based on the SOC information and clears the related alarms.
47	High SOC to Battery	Set the SOC value for the inverter to switch to battery mode. The default setting is 90, with a configurable range of [10, 100]. In PBG priority mode, when the lithium battery SOC reaches the set value in normal grid mode, the inverter switches to battery mode. Once enabled, the inverter will only switch to battery mode when the SOC is above the set point and the battery voltage is higher than the voltage point to switch back to battery mode. It can be set to OFF, in which case the inverter no longer switches from grid mode to battery mode based on the SOC condition. Once the function is enabled, if a communication abnormality occurs, the inverter no longer operates based on the SOC information and clears the related alarms.

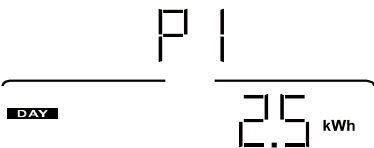
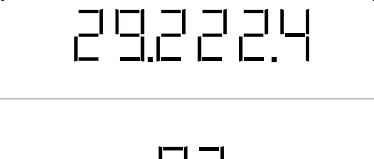
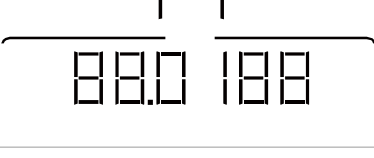
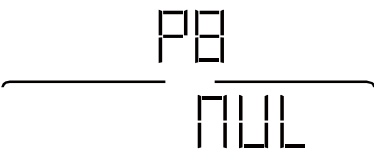
48	Low SOC to Grid	Set the SOC value for the inverter to switch to grid mode. The default setting is 50, with a configurable range of [10, 90]. In PBG priority mode, when the lithium battery SOC reaches the set value in battery mode, the inverter switches to grid mode. Once enabled, the inverter will switch to grid mode when the SOC is below the set point or the battery voltage is lower than the voltage point to switch back to grid mode. It can be set to OFF, in which case the inverter no longer switches from battery mode to grid mode based on the SOC condition. Once the function is enabled, if a communication abnormality occurs, the inverter no longer operates based on the SOC information and clears the related alarms. When this setting is higher than the STB point, STB and STG will no longer take effect after the next activation.
61	Battery Max. Discharge Current	The default setting is 190A. The inverter will not limit the battery discharging current when setting to OFF. When set to a numerical value, it indicates the limitation current value. The setting range is [10, 190A] with a setting step of 5A. If the discharging current is over the limitation, alarm 60 will occur. If the continuous over-current time reaches 5 seconds, fault 14 will occur and inverter goes into fault mode. If the value set to OFF, there are risks of overheating if the current exceeds 190A for a long time.

3. Display Information

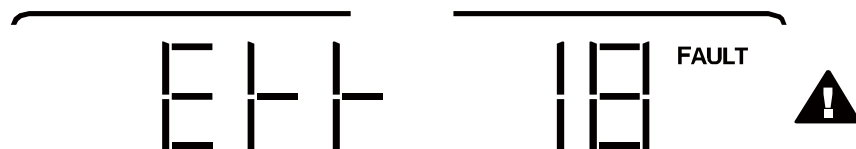
The LCD display information will be switched in turns by pressing 'UP' or 'DOWN' key. If there is no operation for a long time, the daily PV power generation will be displayed at the bottom of the screen. For example the following screen displays 2.5kWh.



The selectable information is switched as below.

LCD display	Information
	Display the daily power generation from solar.
	Display total power generation from solar.
	Display lithium battery voltage and current. Display ERR when BMS communication fails. If BMS function is disabled, the page will not display.
	Display lithium battery temperature and SOC. Display ERR when BMS communication fails. If BMS function is disabled, the page will not display.
	Display lithium battery rated capacity and remaining capacity. Display ERR when BMS communication fails. If BMS function is disabled, the page will not display.
	Display lithium battery maximum charging voltage and minimum discharging voltage. Display ERR when BMS communication fails. If BMS function is disabled, the page will not display.
	Display lithium battery maximum charging current and maximum discharging current. Display ERR when BMS communication fails. If BMS function is disabled, the page will not display.
	Display lithium battery alarm and fault information. Display ERR when BMS communication fails. If BMS function is disabled, the page will not display.
	Display inverter firmware version.

4. Fault Reference Code



Fault display:

Function description: If alarm occurs, Fault indicator flashes and buzzer sounds every one second for 1 minute, then stop. If fault occurs, the fault indicator is always on, the buzzer sounds 10 seconds then stops. System will try restart automatically. If the machine does not work after six times' restart, the machine and LCD display will always in the fault status. You need to completely power off (off the screen) or wait for 30 minutes to restart the machine. The fault LCD display is shown in the figure above. In fault mode fault icon is bright, in alarm state alarm icon is flashing, and contact the manufacturer to troubleshoot the abnormal situation according to the fault information.

Fault: The inverter enters fault mode, with a constant red LED light and LCD displaying a fault code.

Fault code sheet

Fault code	Meaning	Relevant action	Trigger conditions	Resume conditions
1	Bus boost fail	Turn fault mode	Grid soft start process starts but bus voltage does not reach set value	Restore after reaching the set voltage for 15 seconds
2	Bus over voltage	Turn fault mode	Bus voltage is higher than set value	Restore after reaching the set voltage for 15 seconds
3	Bus below voltage	Turn fault mode	Bus voltage is lower than set value	Cannot restore

Fault code	Meaning	Relevant action	Trigger conditions	Resume conditions
4	Battery over current	Turn fault mode	Battery current is higher than set value	Cannot restore
5	System over temperature	Turn fault mode	PFC temperature is higher than set value or fan is not connected	Restore after temperature lower than set value and fan connected for 15 minutes
6	Battery over voltage	Turn fault mode	Battery voltage is higher than set value	Restore after reaching the set voltage for 15 seconds
7	Bus soft start failed	Turn fault mode	Battery soft start process starts but the bus voltage has not reached set value	Restore after reaching the set voltage for 15 seconds
8	Bus short circuit	Turn fault mode	Bus voltage is lower than set value	Cannot restore
9	Inverter soft start failed	Turn fault mode	Inverter soft start process starts but the inverter voltage has not reached set value	Restore after reaching the set voltage for 15 seconds
11	Inverter under voltage	Turn fault mode	The inverter voltage is lower than the set value in battery mode	Restore after reaching the set voltage for 15 seconds

Fault code	Meaning	Relevant action	Trigger conditions	Resume conditions
12	Inverter short circuit	Turn fault mode	Inverter voltage is less than the set value and current is higher than the set value	Restore after reaching the set value for 15 seconds
13	Inverter negative power	Turn fault mode	The inverter power is negative and exceeds the set value for a period of time	Restore after reaching the set value for 15 seconds
14	Over load	Turn fault mode	The load current is higher than the set value	Restore after reaching the set value for 15 seconds
17	Program updating	Turn fault mode	Inverter updating or OTA	Restore after updating
18	PV reverse connection	Turn fault mode	PV reverse connection	Restore after connecting correctly for 15 seconds
26	BMS fault	Turn fault mode	Error code in BMS message.	Restore after BMS fault resolved
29	Inverter load abnormal	Turn fault mode	Abnormal inverter load leads to abnormal voltage	Restore after voltage returning normal for 15 seconds

5. Alarm Reference Code

Alarm: the inverter does not enter the fault mode, LED red light flashing, LCD displays the Alarm code.

The image shows a digital display with the text 'ALA 52' in a large, segmented font. To the right of the text is a small black triangle with a white exclamation mark inside, indicating a warning or alarm. The entire display is enclosed in a rounded rectangular frame.

Alarm code sheet

Alarm code	Meaning	Relevant action	Trigger conditions	Resume conditions
50	Battery open	Alarm	Battery disconnected for no more than 10 minutes	Restore after battery connected and charging for 2 minutes
51	Battery under voltage	Alarm, battery low voltage shutdown or cannot power on	Battery voltage is lower than BAU set value	Restore after the battery voltage exceeding the BAU set value by 2V
52	Battery low voltage	Alarm	Battery voltage is lower than BAL set value	Restore after the battery voltage exceeding the BAL set value by 2V
53	Battery charge short circuit	Alarm, battery does not charge	Battery voltage is less than 12V and the charging current exists.	Restore after a maximum of 1 minute when the short circuit is eliminated.
56	BMS loss	Alarm	Communication failure after BMS communication function is enabled	Restore after communication function disabled or communication success
58	Fan error	Alarm, fan operation in full speed	No fan speed signal detected	Restore after fan speed signal detected

Alarm code	Meaning	Relevant action	Trigger conditions	Resume conditions
59	EEPROM error	Alarm	EEPROM read/write exception	Can not restore
60	Overload	Alarm	The mains current/ battery discharge current/ load power is higher than the rated value.	Restore after the mains current/battery discharge current/load power is less than the rated value.
62	PV energy weak	Alarm, Turn off the PV output to the load, but keep the PV charging the battery	When the battery is not connected, the bus voltage is lower than the set value	Restore after battery connected or grid connected, or 10 minutes later.
68	Battery under SOC shutdown	Alarm, turn to standby mode	BMS reports SOC lower than BSU set value	Restore after meeting one of the following three conditions: 1. Disable low SOC shutdown function 2. Disable BMS communication function 3. SOC is higher than the set value by 5%
69	Battery below SOC warning	Alarm, if it is in standby mode, it will remain in standby mode.	Lithium battery SOC is lower than set value+5% (grid mode or battery mode), lower than set value+10% (standby mode)	Restore after meeting one of the following three conditions: 1. Disable low SOC shutdown function 2. Disable BMS communication function 3. SOC is higher than the set value by 10%
72	Battery can not startup	Alarm	During standby, battery voltage is lower than the allowed startup voltage	Restore after the battery voltage is higher than the allowed startup voltage
77	Grid power is unstable	Alarm	Lost of grid power three times within 5 minutes	Restore after 5 mins

6. Trouble Shooting

Problem	Fault Event	Trigger conditions	What to do
LED screen display fault code 5	Over temperature	1.PFC temperature exceeds the protection threshold for more than 20 seconds. 2.Alarm58 lasts for 5 seconds.	Please check if the fan is not connected or if there are loose wiring issues. If the fan is not connected for more than 5 minutes, the machine will report fault code 5.
LED screen display fault code 12	Inverter short circuit	In battery mode or standby mode, if the inverter voltage is lower than 80V and the inverter current is greater than 30A, it should respond within 100-120ms.	1.Check if there is a short circuit at the output terminals (such as a screw piercing through the locking terminal causing a LN short circuit). 2.Verify if the inverter voltage and inverter current meet the triggering conditions.
LED screen display fault code 58	Fan malfunction	Any of the fans rotating less than 8 times within 2 seconds.	1.Check if the fan is not connected properly or if there are any loose connections. 2.If the fan is properly connected: a) Check if there is any issue with the fan detection circuit, usually caused by excessive soldering underneath the control board socket. b) Check if the fan itself is damaged.
Unable to start	Battery	Due to the need for a voltage of $\geq 11.5V/N$ to start the machine in battery mode, common reasons for failure to start include improper calibration or insufficient battery voltage.	1.Check if the battery voltage sampling is functioning properly and if the battery voltage has been calibrated. 2.Use a multimeter to measure the voltage at the battery terminals (using a DC power supply or a real battery) to see if it reaches the minimum voltage of 11.5V per cell for startup. Note: It is crucial to configure the battery voltage according to the machine model. Connecting the wrong battery voltage can cause capacitor explosion.

Problem	Fault Event	Trigger conditions	What to do
Unable to start	Utility power		1.Check for any short circuits at the mains terminal (such as a screw piercing through and causing a short circuit between the live and neutral terminals). 2.Check if there are any wiring errors, such as mistakenly connecting the mains input to the output terminals.
	PV		1.Check if the PV input voltage is too close to the critical threshold. 2.For low voltage versions of the machine, check if the software version numbers of the main control is compatible. If the software versions differ significantly, the machine may not be activated.
PV not charging			Connecting the wrong battery voltage can result in damage to the auxiliary power supply on the PV side, causing a loss of power and inability to communicate with the main control.

Specifications

Model	HUP5.0-8
Battery Data	
Nominal Voltage(VDC)	25.6V
Nominal Capacity(AH)	280Ah / 314Ah
Energy(WH)	7168Wh / 8038Wh
Battery type	LiFePO4 Battery
AC Input	
Rated Input Voltage (VAC)	208 / 220 / 230 / 240; L + N + PE
Voltage Range (VAC)	90~280±3 (normal mode); 170~280±3 (UPS mode)
Frequency (Hz)	50 / 60 (Auto Adaptive)
AC Output	
Rated Capacity (kW)	5
Surge Power (kVA)	8
Voltage (VAC)	208 / 220 / 230 / 240
Power Factor (PF)	1
Frequency	50/60Hz±0.1%
Switch Time (ms)	10 (normal mode) / 10 (UPS mode)
Wave Form	Pure Sine Wave
Overload Capacity (Battery Mode)	1min@102%-120%load, 10s>120% load
Max. Efficiency (Battery Mode)	93.5%@24VDC
Parallel Quantity	NA
Charger (PV / AC)	
Solar Charger Type	MPPT
Max. PV Input Current / Input Power	27A / 6000W
MPPT Range@Operating Voltage (VDC)	60~450
Max. PV Open Circuit Voltage (VDC)	500
Max. PV Charge Current (A)	120
Max. AC Charge Current (A)	120
Max. Charge Current (PV + AC) (A)	120
Interface	
HMI	LCD
Interface	AC input socket / AC output socket *2 / PV input (XT90)
Monitoring	WiFi (optional)
General Data	
Ingress Protection	IP21
Operating Temperature	0 °C ~ 45 °C
Relative Humidity	5% ~ 92% (Non-condensing)
Storage Temperature	-10 °C ~ 55 °C
Net Weight (kg)	≈74Kg
Dimensions (H*W*D)	420*375*620mm
Max. Operating Altitude	4000m (Derating above 1000m)