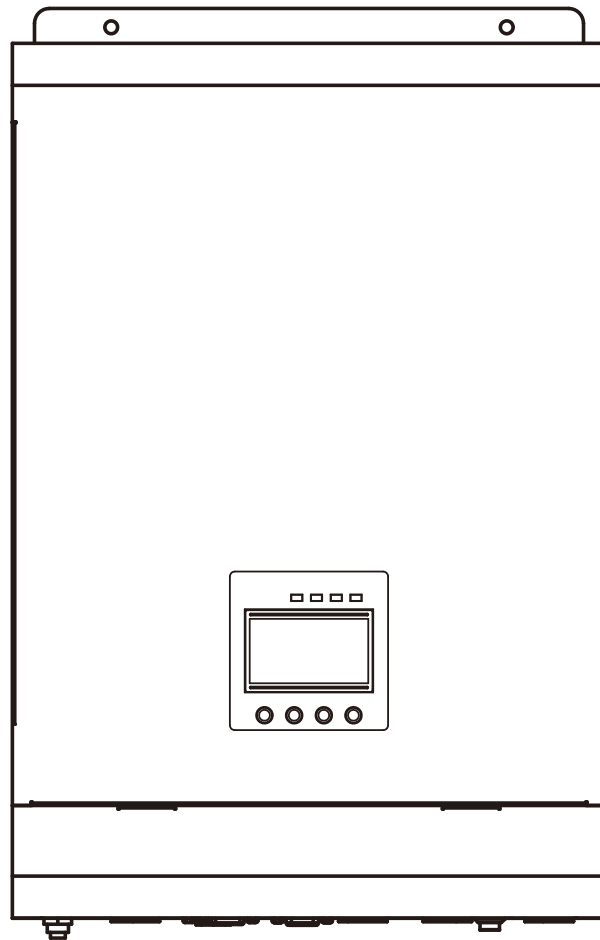


BELTTT[®]

BAH3KB(3KVA)

BAH5KD(5KVA)

SOLAR INVERTER



USER MANUAL

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1 ABOUT THIS MANUAL

1.1 Purpose

In order to ensure reliable and better service, please pay special attention to the warnings and warning instructions in this manual before installation and use. There are cautious statement reminder for certain conditions of use and practices that may lead to damage to this product or personal injury. Please read all the tips before using this inverter.

Please read this manual carefully for proper use. Especially the details of the "Safety Instructions" before use for safe usage. After reading the user manual, please keep it properly for future reference.

1.2 Scope

This manual is intended to help you to use the product properly and does not represent any description of the hardware or software configuration of product. For the configuration, please refer to the contract related to the product (if any) or consult the sellers. The pictures in this manual are for reference only, if any individual picture does not match the actual product, please refer to the actual product.

2. SAFETY INSTRUCTIONS



Warning: Please read carefully warnings may cause personal injury as below



Flammable gas: there may be sparks when connecting load equipment, please be sure that there is no flammable gas in the surrounding area before connecting. And please keep good ventilation;



Prohibit parallel connection with mains electricity: output in parallel with mains electricity will damage the inverter and cause risk of electric shock;



Prohibit minors from using: can not be used by minors. This product has high voltage output and may lead to risk of electric shock



Do not disassemble or modify this product without authorization: unauthorized disassembly or modification of this product may lead to safety accidents such as failure, fire or electric shock;



No stick objects touch: do not place sticks or metal objects at the socket. This may cause electric shock and product damage by touching internal parts;



Do not touch with wet hands: do not touch the body and plug with wet hands, it may cause electric shock and personal safety;



Keep away from flames and high temperature area: fire and explosion of this product and battery can occur when operating in flame and high temperature area.



No falling and colliding: falling and colliding the product will cause damage and other safety hazards;



Medical equipment banned: this product has not been tested and cannot be used in medical equipment;



Please ground wire: for electricity safety, please ground wire or it may cause safety accidents;



Moisture-proof and waterproof: please pay attention to moisture-proof and waterproof. This product may cause short circuits, fires, and electric shock accidents due to moisture or water ingress;

3 INTRODUCTION

This product combines the functions of inverter, solar charger and battery charger, Provide you with uninterrupted power supply support Its comprehensive LCD display provides configurable and easy accessible button operations to users, such as battery charging, current, AC/solar charger priority and acceptable input voltage based on different application.

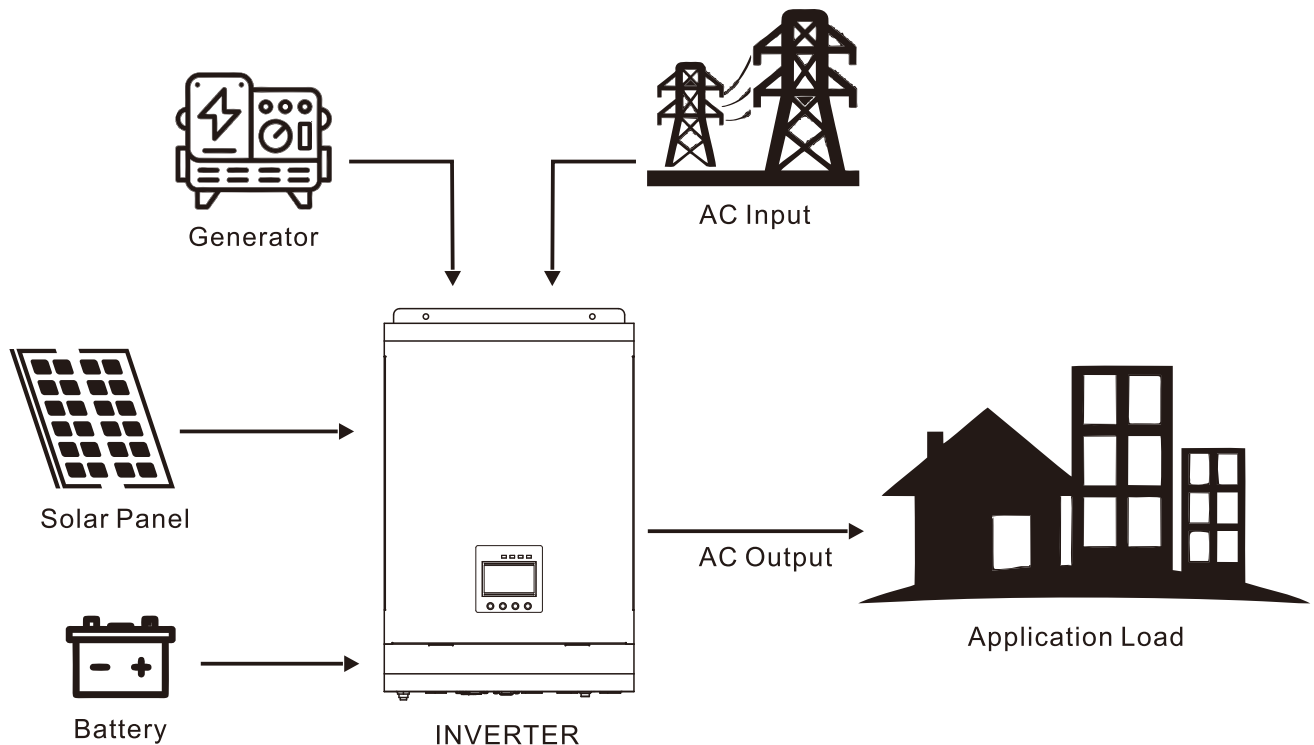
3.1 Features

1. Pure sine wave solar inverter
2. The product adopts new digital circuit, the conversion efficiency is higher than 94%
3. AC input voltage can be set, input voltage range 90V~280V
4. The output voltage and frequency are adjustable, and a variety of output modes such as AC bypass, photovoltaic, and battery are provided to meet the needs of customers from different regions
5. Intelligent battery charger design, optimize battery performance and set battery charger current. Providing two-stage, three-stage, photovoltaic charging mode
6. Alarm and error code LCD display, clear to users when there is alarm or error, beep alarm can be turned off by itself;
7. All functions can be set through the LCD operation panel
8. Providing overload, over temperature, short circuit and other protection functions
9. 5KVA products can be operated in parallel, the maximum number is 9, and the total output power can be up to 45KW to meet the needs of high power loads.

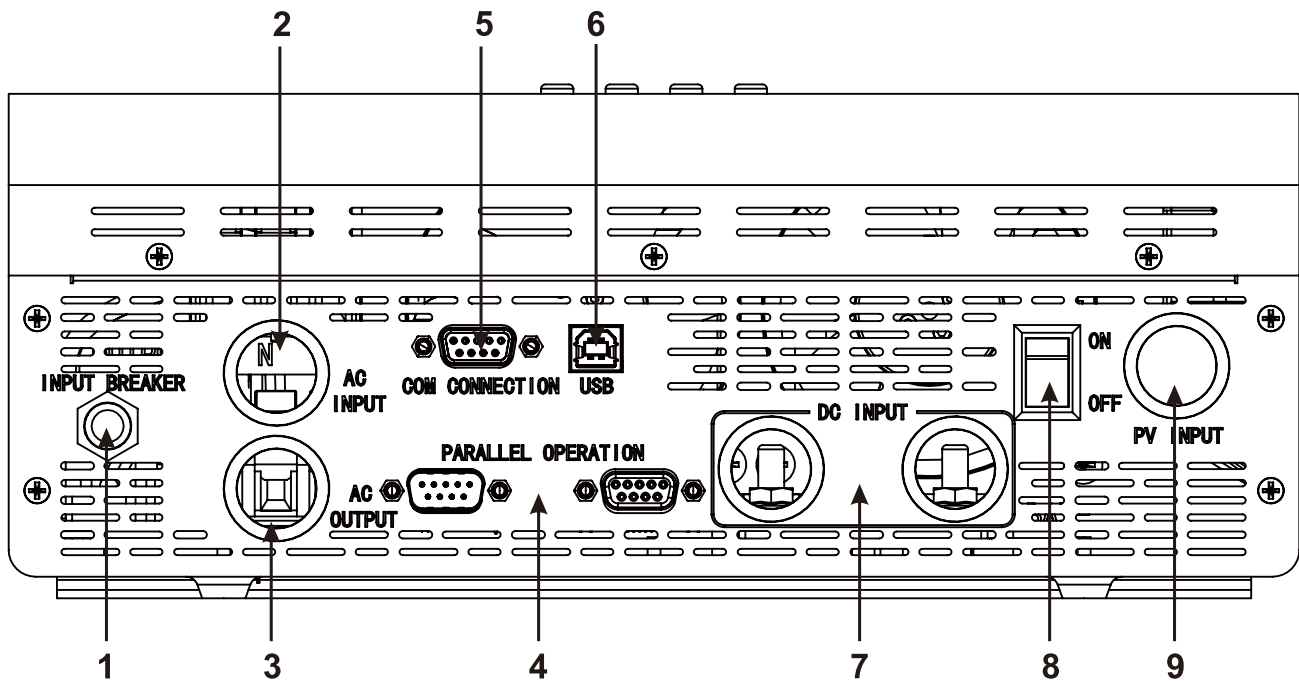
3.2 Basic System Architecture

The following illustration shows basic application for this inverter/charger.

SYSTEM APPLICATION EXAMPLE



3.3 Product Overview



- | | | |
|----------------------------------|---------------------------|-------------------|
| 1、Input circuit breaker | 2、AC input | 3、AC output |
| 4、Parallel operation port (5KVA) | 5、RS232 serial port (DB9) | 6、USB serial port |
| 7、Battery input | 8、Power switch | 9、PV input |

4. INSTALLATION

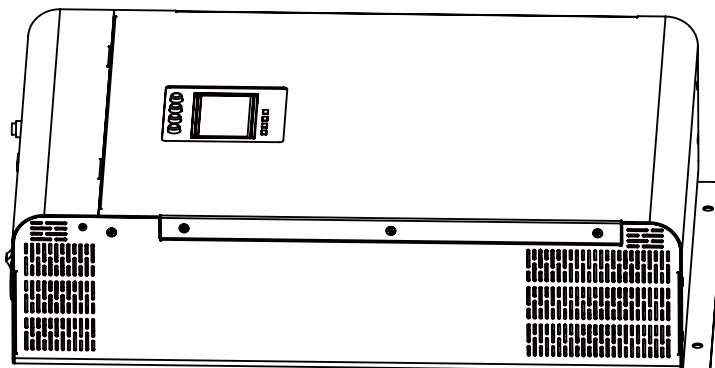
4.1 Unpacking and Inspection

Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside of package:

- 1.The unit x 1
- 2.User manual x 1
- 3.Communication cable(DB9) x 1 (5KVA)
- 4.Short-circuit cap (5KVA)

4.2 Preparation

Before connecting all wiring, remove the two screws and remove the upper and lower covers as shown below.

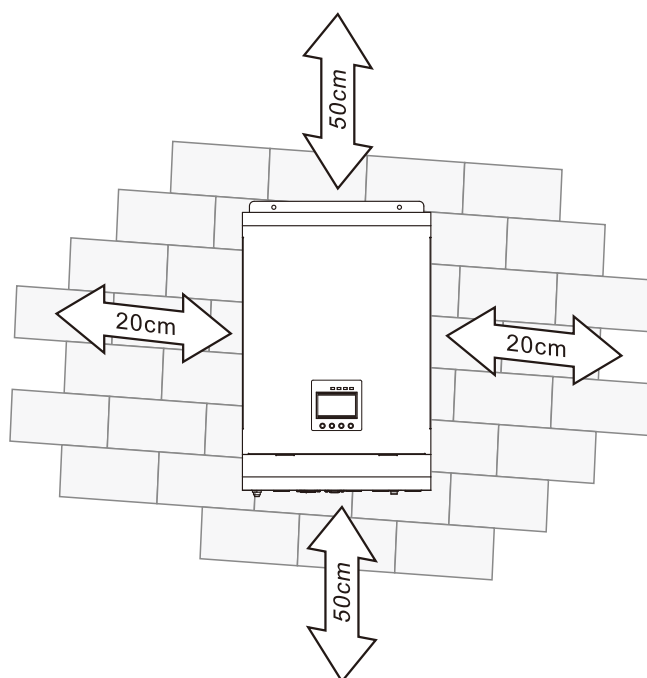


4.3 Mounting the Unit

Consider the following points before selecting where to install:

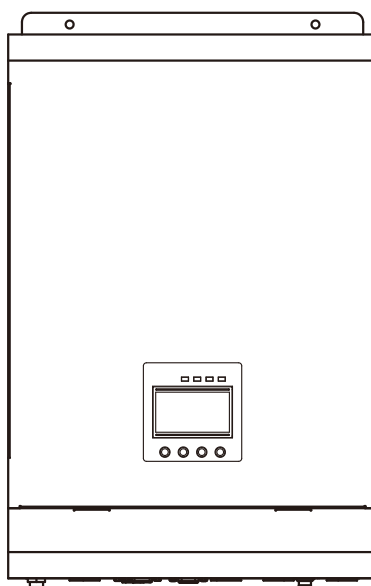
- 1、 Do not mount the inverter on flammable construction materials. Mount on a solid surface and Install this inverter at eye level in order to allow the LCD display to be read at all times.
- 2、 For proper air circulation to dissipate heat, allow a clearance of approx. 20 cm to the side and approx. 50 cm above and below the unit.
- 3、 The ambient temperature should be between 0°C and 55°C to ensure optimal operation.
- 4、 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



4.4 Final Assembly

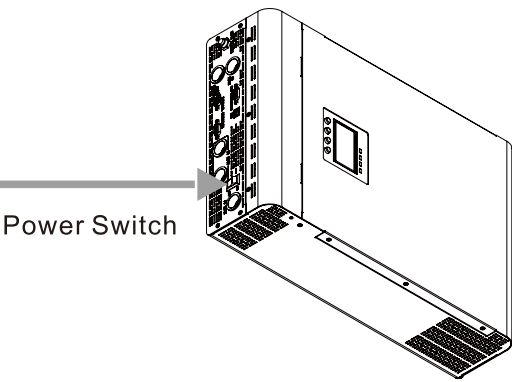
After connecting all wirings, please put bottom cover back by screwing two screws as shown below.



5. OPERATION

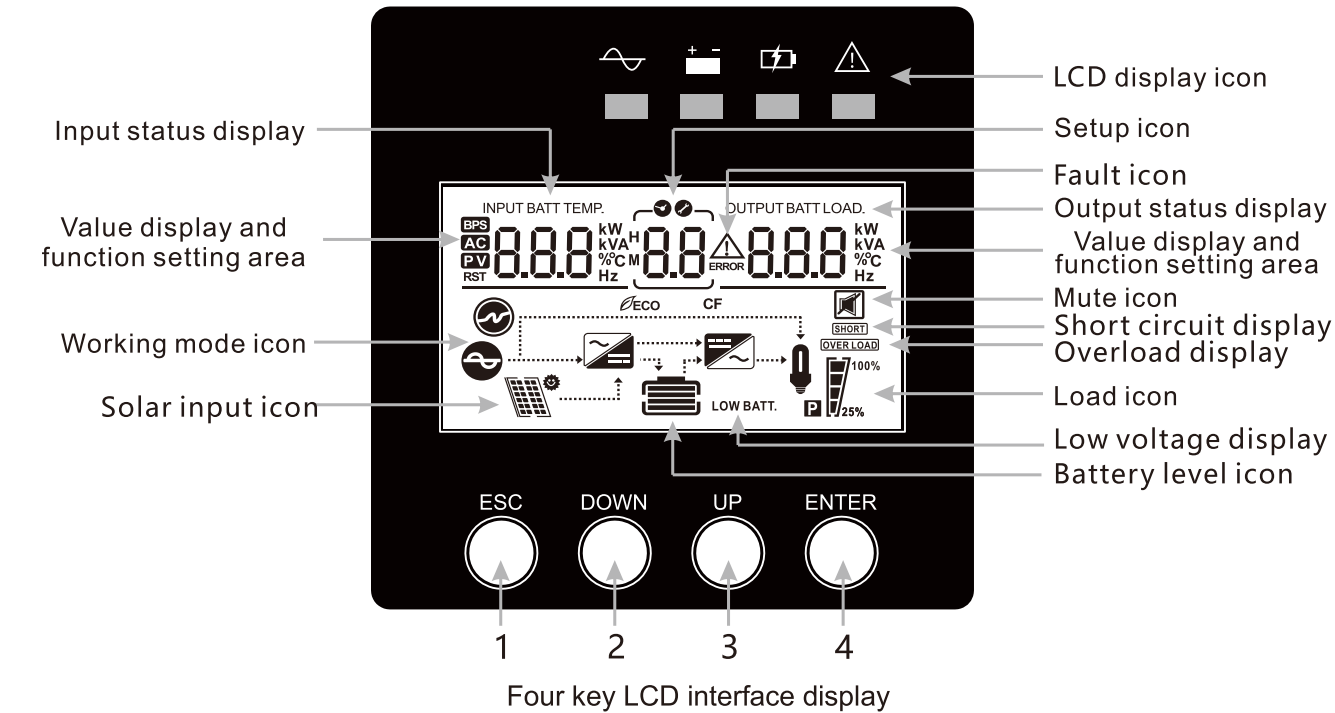
5.1 Power ON/OFF

Once the unit has been properly installed and the batteries are connected well, simply press On/Off switch (located on the button of the case) to turn on the unit.



5.2 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.







Four button function

Key	Function description
Function setting / OK key	Function setting: press key 4 of function setting on the display page for more than 2 seconds to enter the function setting page. After entering the setting interface, press key 2 or 3 to turn the page up and down to select the interface to be set; OK: on the function setting page, press key 1 for 0.1 to 2 seconds to determine the set options
Page turning / query key	Page turning: press key 2 or 3 on any page for more than 0.1 seconds to turn left or right

LED Indicator function



indicator light	name	Explain
	Input light (green)	On: the mains power is normal and enters the mains power for operation Flash: the mains power is normal, but it does not enter the mains power operation Off: abnormal mains supply
	Inverter light (yellow)	On: the machine operates in battery mode and outputs Off: Other States
	Battery light (yellow)	On: the battery is floating charging Flash: the battery is charged at constant voltage Off: Other States
	Warning light (red)	On: inverter fault Flash: inverter has alarm Off: the inverter is normal

LCD Function display

LCD display can be divided into: icon display, value display, function setting area and working mode display area.

Icon display:

- The load and battery graphics represent the load and battery capacity, and each square represents 25% of the capacity. When the inverter is overloaded, the load icon will flash, and when the battery capacity is too low or the battery is not connected, the battery icon will flash.
- The buzzer icon shows whether the buzzer is silent. Under normal circumstances, the icon does not display; In any mode, the background software sets mute on , the inverter enters the mute state, and the buzzer prohibition icon will be displayed.
- When entering the setting menu, the setting icon will light up, and the icon will not be displayed in other cases.
- The fault icon is only displayed in the fault mode, and it is not displayed in other cases.

Value display and function setting area:

- In the non function setting mode, this area displays the relevant information of the inverter. The normal mode displays the output information. Operate the up and down query key to display the input voltage and output voltage, input frequency and output frequency, battery voltage and current, PV voltage and current, PV voltage and power, output power and output voltage, output apparent power and output voltage, load percentage and output voltage, software version and other relevant information. The fault mode displays the fault code.
- on the function setting page, you can set the output voltage (OPU), battery low voltage shutdown point (EOD), etc. by operating the function setting key and the up and down query keys.

Working mode display area:

- 4S after startup, this display area mainly displays the working mode of the inverter. Such as standby mode, mains mode, battery mode and fault mode.

5.3 working state table of inverter corresponding to buzzer

Buzzer alarm	describe
Keep ringing for ten seconds and then stop	Failure mode
Stop after three seconds	Loss or recovery of PV voltage / input voltage
	The main switch of power on is closed or disconnected
One sound per second and stop after one minute	All other alarms (low battery voltage alarm will sound only in battery mode)

5.4 Daily startup and shutdown

Please refer to this manual for on-off operation.

Startup steps

When connecting qualified batteries (the battery voltage needs to be greater than 11.5V per section) or mains power (the mains power needs to confirm the reasonable input range according to the output mode), the startup operation can be carried out.

mains power on

Connect the normal mains power, press the switch and turn it to the on state, and the system will start up. If it is set to mains power output priority, wait for a period of time, and the panel displays mains power mode, indicating that the power on is completed and enter the mains power mode.

Battery startup

Connect the normal battery and press the switch to establish the working power supply of the inverter. The system will start up automatically. After waiting for a period of time, the panel displays battery mode, indicating that the startup is completed and enters battery mode.

Shutdown procedure

When the system outputs in battery mode or mains mode, press the switch again and turn it to off state, and the system will shut down.

Mute operation

When the inverter is in any mode, mute / unmute the inverter by setting mute on or off.

Operation in alarm state

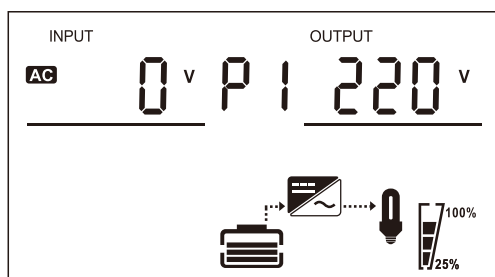
When the inverter has an alarm sound and the LED fault light flashes, it indicates that the inverter is working in the alarm state. You can check the cause of the alarm according to the alarm information or contact the supplier.

Operation in failure mode

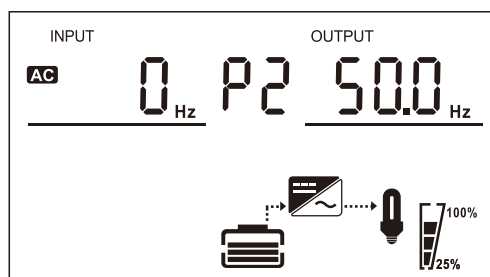
When the inverter buzzer keeps ringing and the LED fault light keeps on, it indicates that the inverter is working in fault mode. Contact the supplier or maintenance personnel to provide information related to fault alarm and assist in troubleshooting.

5.5 Parameters Query operation

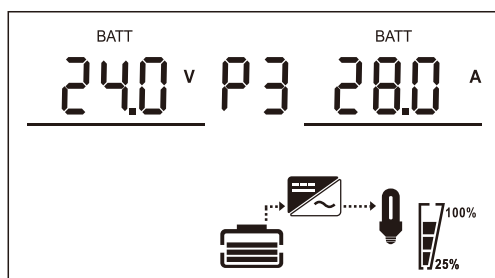
Normally, there are ten pages on the display page. Press the query key No. 2 or 3 for 0.2 to 1 seconds to turn over the display page and display the input and output voltage, input and output frequency, battery, PV voltage and current, load, software version, etc. If there is an alarm, a page of alarm information will be added. If the inverter fails, the fault code page will be displayed by default. The main page displays fault or alarm information by default. When the inverter has no fault or alarm, the main page displays output voltage and frequency information by default.



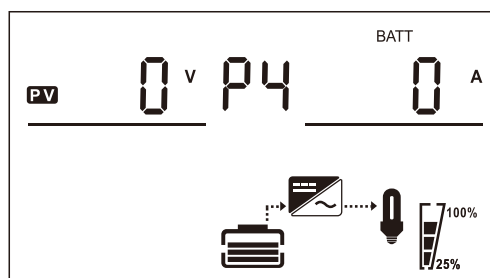
Main display page 1:
display the input and output voltage
of the inverter



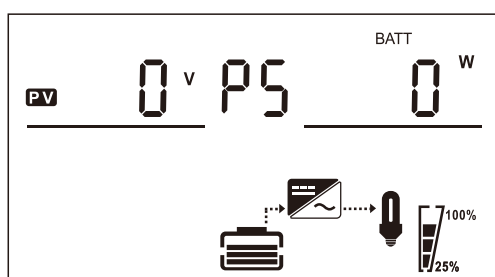
Main display page 2:
display the input and output
frequencies of the inverter



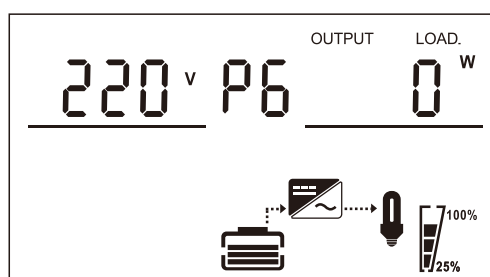
Main display page 3:
battery information, displaying
battery voltage and charging current



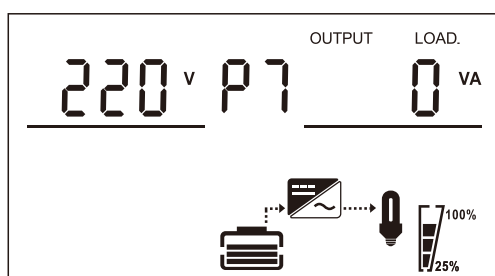
Main display page 4:
PV information, displaying PV voltage
and PV charging current



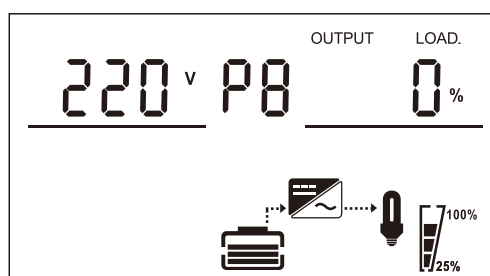
Main display page 5:
PV information, displaying PV voltage
and PV charging power



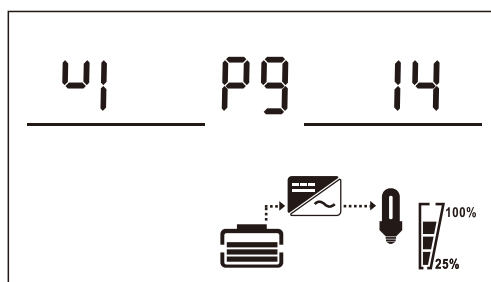
Main display page 6:
output information, display output voltage
and output active power



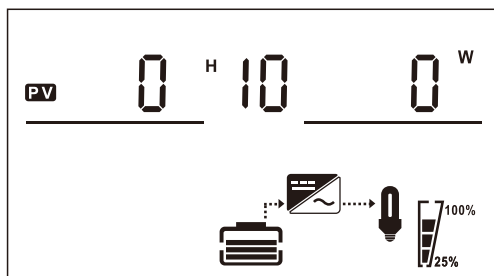
Main display page 7:
output information, display output voltage
and output complex power



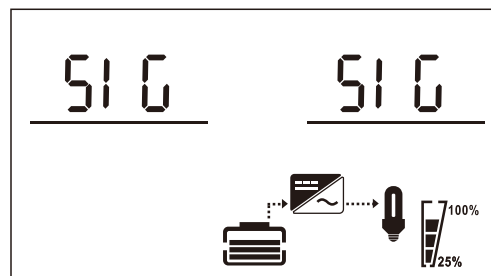
Main display page 8:
output information, display output voltage
and load percentage



Main display page 9: software version, which displays the software version of inverter system



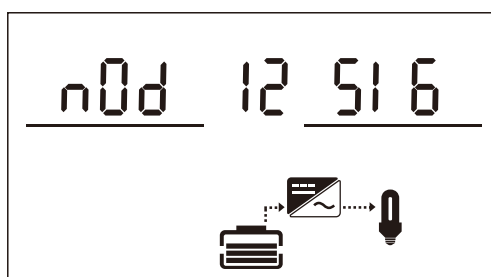
Main display page 10:
which displays the software version
of MPPT system (3KVA)



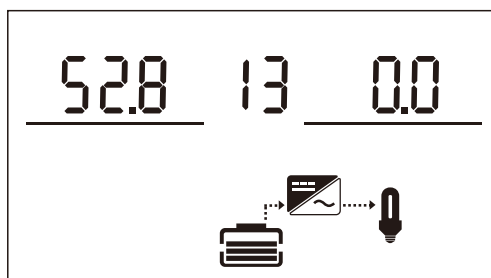
Main display page 10:
shows photovoltaic power
generating capacity (5KVA)



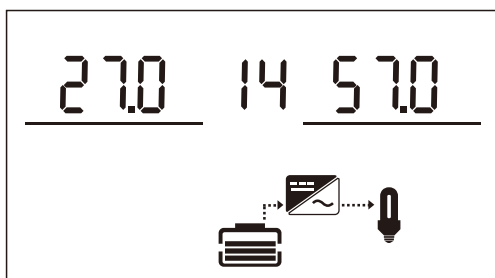
Main display page 11: Parallel connection state 3KVA does not have this page, suitable for 5KVA only



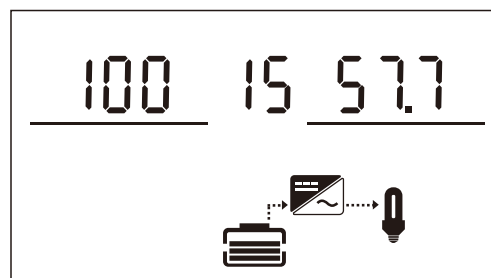
Main display page 12: Li-ion battery network status; when the upper right display is SIG constant, the battery pack is single group operation; when the display is PAR constant, the battery pack is multi-group series-parallel operation; when the display is PAR flashing, the battery pack is establishing multi-group series-parallel status.



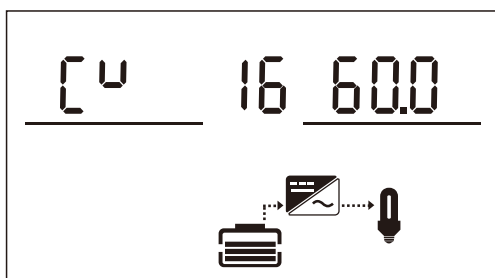
Main display page 13: Li-ion battery voltage and current information; the upper left display is BMS battery voltage information; the upper right display is BMS battery current information. when BMS communication fails, the upper left and right are displayed as flashing ERR.



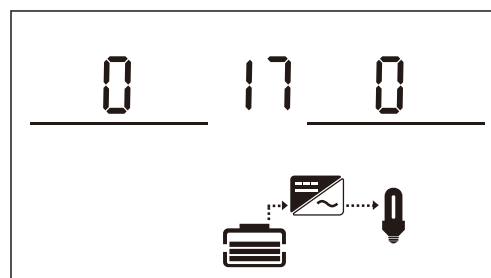
Main display page 14: Li-ion battery temperature and SOC; the upper left display is BMS temperature information; the upper right display is BMS SOC information. when the BMS communication fails, the upper left and right both display a flashing ERR.



Main display page 15: Li-ion battery capacity; top left shows rated capacity; top right shows current capacity. top left and top right both show flashing ERR when BMS communication fails.



Main display page 16: Li-ion battery constant voltage point; the upper left display is fixed letter CV; the upper right display is BMS constant voltage charging point. when BMS communication fails, both upper right display is flashing ERR.



Main display page 17:
Li-ion battery fault alarm message

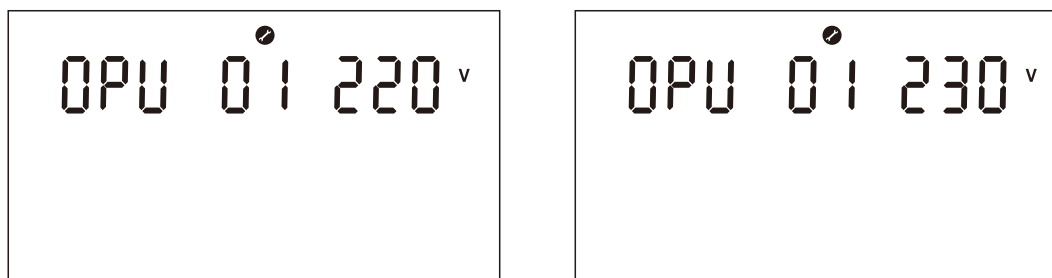
5.6 function setting operation

function setting and operation of inverter:

Enter the exit function setting page and function setting. The specific operations are as follows:

- Press the function setting key NO. 4 for more than 2 seconds to enter the function setting page. Press the query key No. 2 or NO. 3 for 0.1 to 2 seconds to select the function. After turning the page to the required function setting page, the words of the corresponding function flash.
- Press the confirmation key and key 4 for 0.1 to 2 seconds to enter the setting page of the selected function. At this time, the words of the selected function are on for a long time, and the value flashes to the left of the words of the selected function. Press the query key NO. 2 or no. 3 for 0.1 to 2 seconds to select the value of the required functional parameters.
- After turning the page to the function parameters to be selected, press the confirmation key and the No. 4 key for 0.1 to 2 seconds, and the function setting is completed. At this time, the value of the function parameters will be on for a long time and no longer flash.
- Press the No. 1 key for more than 0.1 to 2 seconds before the function can be set successfully. At the same time, exit the function setting page and return to the main display page (or do not operate. Wait for up to 30s and automatically jump back to the main display page).

Output voltage (OPU)



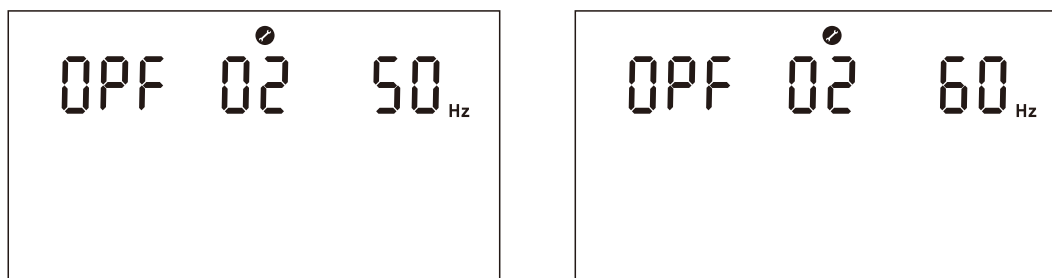
Settings page 1: output voltage setting

- The default value of output voltage is 230V, 208v, 220V, 230V and 240V. All working conditions can be set and take effect immediately.
- Press the function setting key 4 for more than 2 seconds to enter the function setting page. Press the query key 2 or 3 for 0.1 to 2 seconds to select the function. After turning the page to the output voltage OPU setting page, the word OPU flashes.
- Press the confirmation key and key 4 for 0.1 to 2 seconds to enter the setting page of output voltage OPU. At this time, the word OPU is on for a long time, and the value flashes to the right of the word OPU. Press the query key NO. 2 or NO. 3 key for 0.1 to 2 seconds to select different output voltage values. The voltage values available for selection are 208v, 220V, 230V and 240V. By default, the output voltage is 230V, and the settings are saved in real time.
- After turning the page to the output voltage value to be selected, press the confirmation key and NO. 4 key for 0.1 to 2 seconds, and the output voltage OPU setting is completed. At this time, the value on the right side of OPU is on for a long time and no longer flashes.
- Press the NO. 1 key for more than 0.1 to 2 seconds before the function setting is successful. Exit the function setting page and return to the main display page (or do not operate, and automatically jump back to the main display page after waiting for up to 30s).

be careful: When the output voltage is set to 208v, the output needs to be derated to 90%.

Output frequency (OPF)

Output frequency setting, default 50Hz

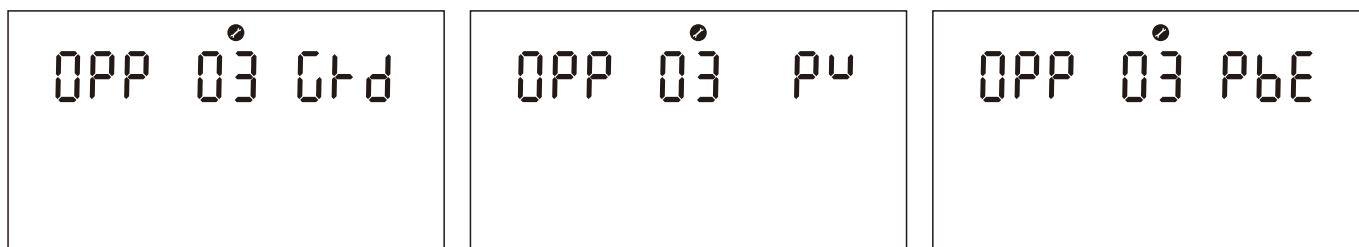


Settings page 2: output frequency setting

Function Description: set the inverter output frequency, 50Hz and 60Hz can be set, and the default is 50Hz.

Setting conditions: all States can be set, and the setting will take effect when the machine is restarted next time in battery mode; The mains mode takes effect immediately. After setting, the frequency will change slowly after switching back to battery mode.

Output priority setting (OPP)



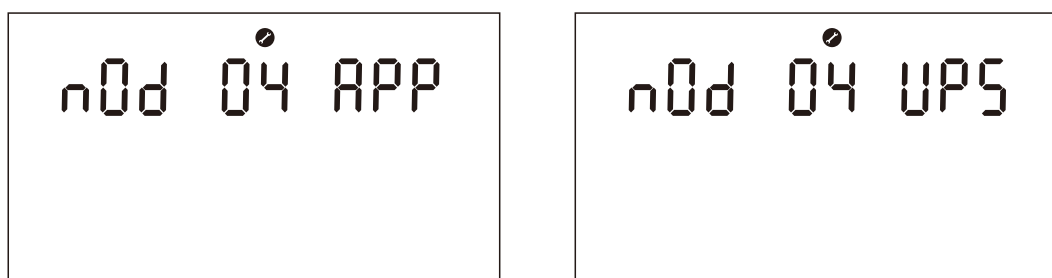
Settings page 3: output priority setting

Function Description: set inverter output priority

Setting conditions: all states can be set and take effect immediately after setting

be careful: There are three options for output priority. The default is GRD: mains power output priority; The second is pu (PV): photovoltaic output takes precedence; The third is PBG: photovoltaic cell mains power output;

Output mode (MOD)



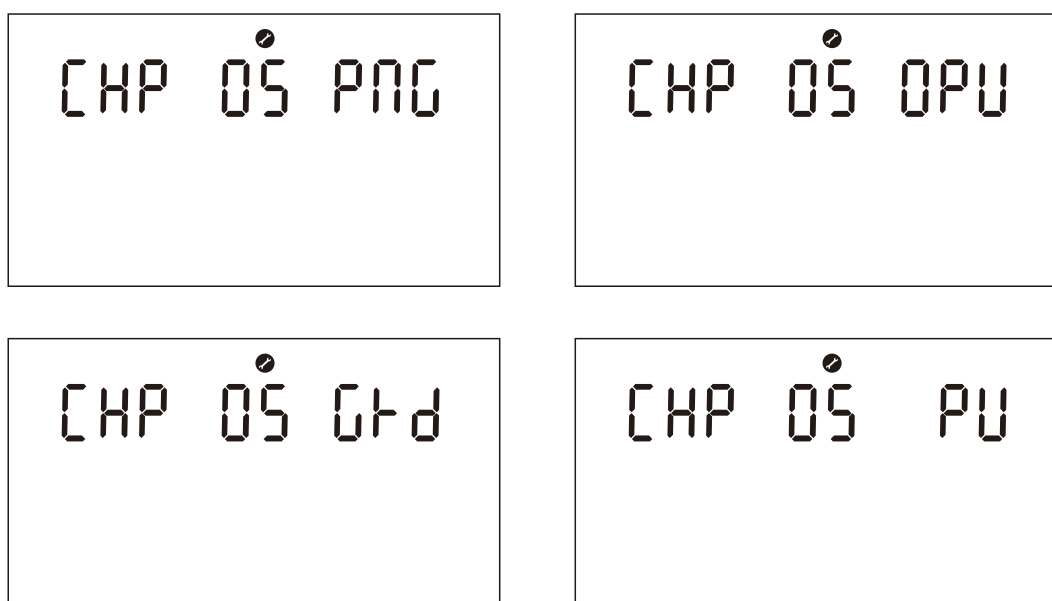
Settings page 4: output mode setting page

Function Description: set the inverter output mode.

Setting conditions: all states can be set and take effect immediately.

Description: There are two options for AC output mode. The default is app: appliance, which is used for home appliances; The second is ups mode, which is used for computers and other equipment. The typical switching time is 10ms.

Charging priority (CHP)



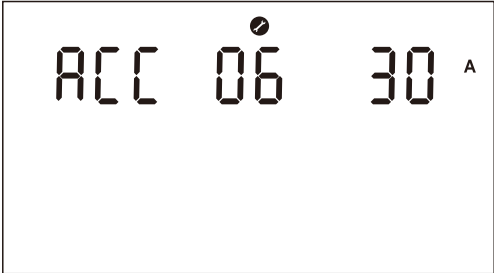
Settings page 5: charging priority setting

Function Description: set the charging priority of inverter.

Setting conditions: all states can be set and take effect immediately.

Description: There are four options for charging priority. The default is PNG (PV and grid): PV and grid are charged at the same time; The second is OPV (only PV): only PV charging; The third is GRD (grid): municipal power charging is preferred; The fourth is PV: PV gives priority to charging

Mains charging current (ACC)



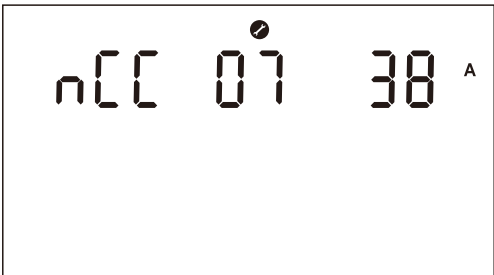
Settings page 6: maximum charging setting page of mains power

Function Description: set the maximum rechargeable current of the inverter.

Setting conditions: all states can be set.

Description: **ACC:** Grid Charge Current, the maximum charging current of mains power is set to 40A(3KVA-24V) / 30A(5KVA-48V)by default, and the setting range is 1-60A (3KVA-24V) / 1-80A (5KVA-48V)

Mains charging current (MCC)



Settings page 7: maximum charging current setting

Function Description: set the maximum charging current of the inverter.

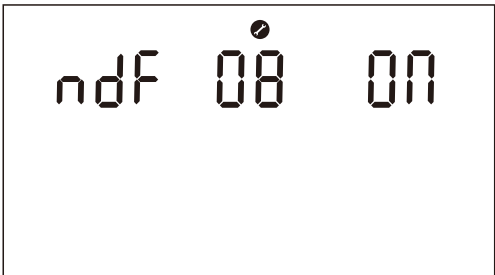
Setting conditions: all states can be set.

Description: **MCC:** Maximum Charge Current, the maximum charging current refers to the maximum value of PV and mains charging current.

3KVA-24V version is 2 / 10 / 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100 / 110 / 120a optional;

5KVA-48V version is optional for 2 / 10 / 20 / 30 / 40 / 50 / 60 / 70 / 80A;

Menu Default (MDF)



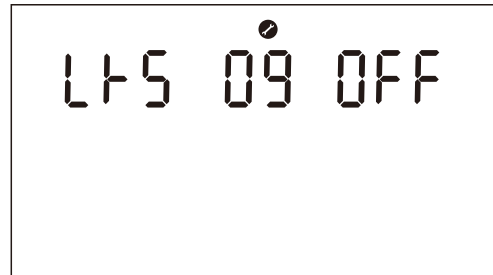
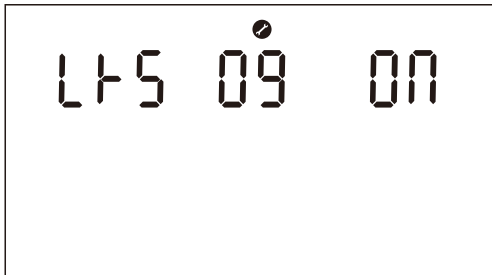
Settings page 8: return to the main page setting

Function Description: return to the main interface settings.

Setting conditions: all states can be set.

Description: The default setting is on. When the function setting operation is set to on, if the page is not in the first interface (P1), return to the first interface after 1min; If it is set to off, if the page is not in the first interface (P1), the LCD will remain in this interface all the time.

Overload restart (LrS)



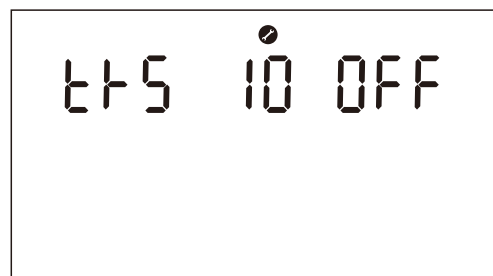
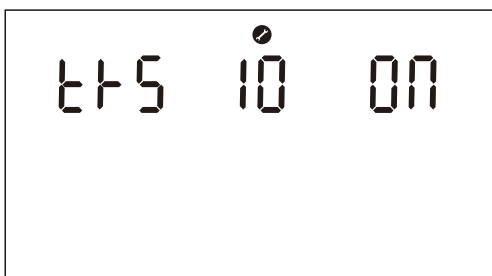
Settings page 9: overload restart setting

Function Description: overload restart setting.

Setting conditions: all states can be set.

Description: Overload restart is set to on by default.

Over temperature restart (TrS)



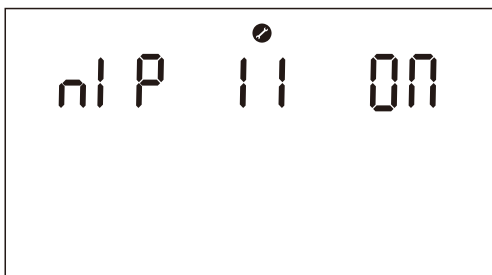
Settings page 10: over temperature restart setting

Function Description: over temperature restart setting.

Setting conditions: all states can be set.

Description: The default setting for over temperature restart is on.

Main input power failure alarm (MIP)



Settings page 11: main input power failure alarm setting

Function Description: setting of constant alarm for loss of mains power or PV.

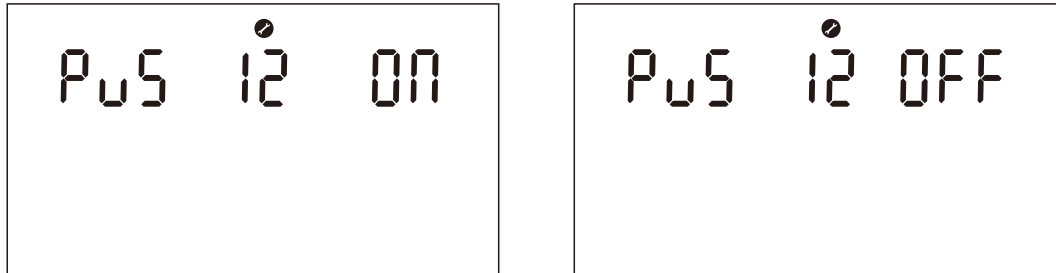
Setting conditions: all states can be set. The default is on. The alarm of mains power or PV loss will sound for a long time. Can be set to off.

(all modes can be set)

Description: MIP:Main Input cut warning

The default setting is on. After the main input detection is lost, the buzzer will sound for 3S; When set to off, the buzzer will not sound normally after the main input is lost.

Power saving mode (PWS)



Settings page 12: energy saving mode setting

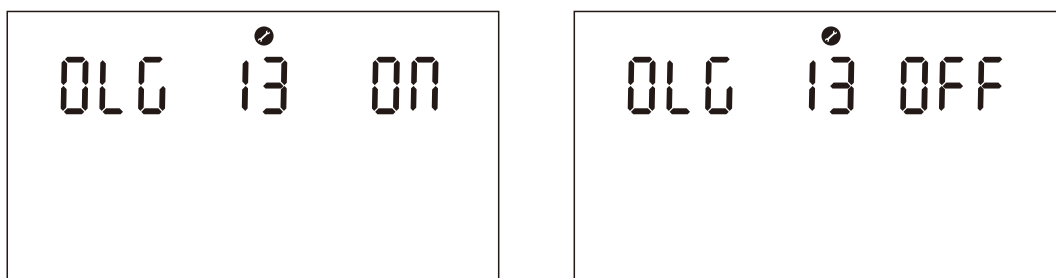
Function Description: set whether the inverter enables low power consumption mode (energy saving mode).

Setting conditions: all states can be set.

Description: PWS:Power Saving

The default setting is off, and the function is not turned on; When set to on, in battery mode, if the load is lower than 25W, the system will stop output briefly and then continue to output. If the load is higher than 35W, the system will resume continuous normal output.

Overload to bypass (OLG)



Settings page 13: overload to bypass setting

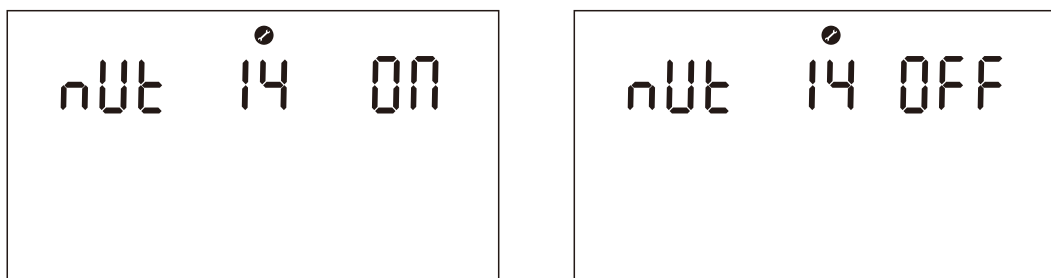
Function Description: when the battery mode is overloaded, set whether to switch to the mains mode immediately (that is, the so-called bypass mode).

Setting conditions: all states can be set.

Description: OLG:Overload to Bypass

The default setting is off, and the function is not turned on; When set to on, when the PV priority output is loaded, if it is overloaded, the system will immediately switch to bypass (mains power output, that is, the so-called bypass mode).

Mute setting (MUT)



Settings page 14: mute setting page

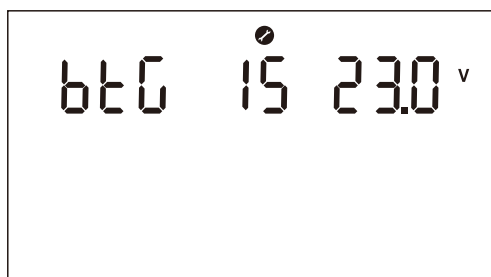
Function Description: set whether the buzzer sounds.

Setting conditions: all states can be set.

Description: MUT:Mute

The default setting is off, and the function is not turned on; When set to on, the buzzer will not sound in any case, alarm, fault and other states. All modes can be set and function normally. Pictures cannot be displayed.

Battery back to mains voltage point (BTG)



Settings page 15: setting page of battery switching back to mains voltage point

Function Description: when the battery mains power exists at the same time, the battery will be transferred to mains power when discharged to a certain voltage to ensure that the battery will not be empty:

Setting conditions: all states can be set, and the output priority should be set in PV and PBG modes.

Description: BTG:Back To Grid

The initial default setting of 3KVA-24V is 23v

The initial default setting of 5KVA-48V is 46v

When the battery definition mode is CUS (customer setting type) mode:

3KVA-24V can be set to [22,26]

5KVA-48V can be set to [44,52]

When the battery definition mode is AGM (lead-acid battery type) and FLD (water injection battery type):

3KVA-24V is set to 23v by default and can be set to [22,26]

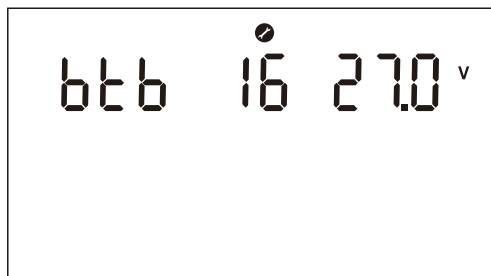
5KVA-48V is set to 46v by default and can be set to [44,52]

When the battery definition mode is LIB (lithium battery type) mode:

3KVA-24V is set to 23.8v by default and can be set to [20,25]

The default setting of 5KVA-48V is 47.6v, and the range can be set to [40,50]

Switch back to battery mode voltage point (BTB)



Settings page 16: battery voltage point setting page of mains power switching back to battery mode

Function Description: after the battery is powered off at low voltage, it needs to reach a certain battery voltage value to restart the battery mode.

Setting conditions: all states can be set.

Description: **BTB:**Back To Battery

The initial default setting of 3KVA-24V is 26V

The initial default setting of 5KVA-48V is 52V

When the battery definition mode is CUS (customer setting type) mode:

3KVA-24V can be set to [24,29] (when the setting value vbtb > tcfv-1v, the voltage point of switching back to battery mode remains tcfv-1v). When the output priority is set to photovoltaic (PV) priority output or photovoltaic battery mains (PBG) output, if it is not in battery mode at this time, if the battery voltage is higher than tcfv-1v, the system will switch back to battery mode.

5KVA-48V can be set to [48,58] (the logic is the same as above)

When the battery definition mode is AGM (lead-acid battery type) and FLD (water injection battery type):

3KVA-24V is set to 26V by default and can be set to [24,29] (the logic is the same as above)

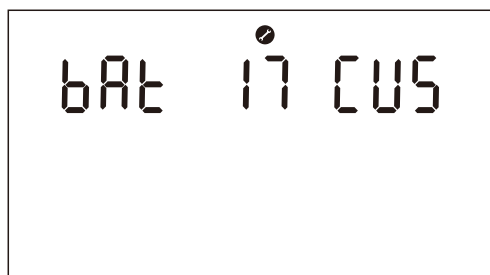
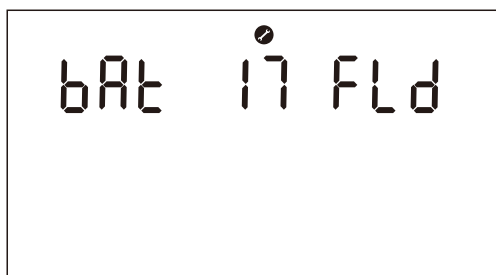
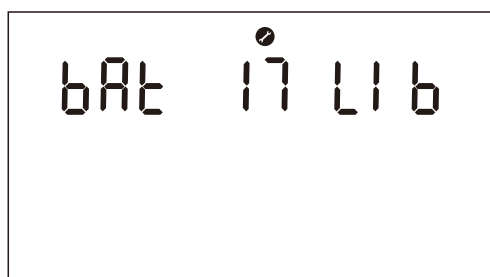
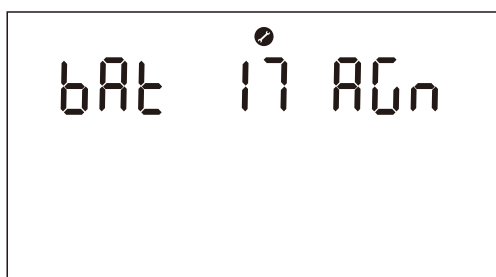
5KVA-48V is set to 52V by default and can be set to [48,58] (the logic is the same as above)

When the battery definition mode is LIB (lithium battery type) mode:

3KVA-24V is set to 27.2v by default and can be set to [23,29] (the logic is the same as above)

5KVA-48V is set to 54.4v by default and can be set to [46,58] (the logic is the same as above)

Battery type (BAT)



Settings page 17: battery type setting

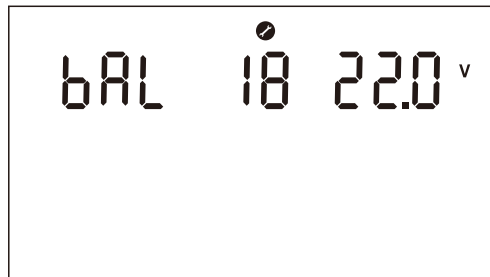
Function Description: battery type setting function.

Setting conditions: all states can be set.

Description: BAT:Battery Type

Four battery type settings: AGM (lead-acid battery) is the default setting; The second is FLD (water injection battery); The third is lib (lithium battery); The fourth is cus (customer setting type)

Battery low voltage point (bAL)



Settings page 17: battery low voltage point setting

Function Description: low voltage alarm point setting.

Setting conditions: all states can be set.

Description: bAL:Battery Low

It cannot be set when the battery definition mode is AGM (lead-acid battery type) or FLD (water injection battery type).

The initial default setting of 3KVA-24V is 21.6v

5KVA-48V is initially set to 44V by default

When the battery type is set to CUS (customer setting type), the low voltage point of the battery can be modified.

3KVA-24V, settable range [21,27]

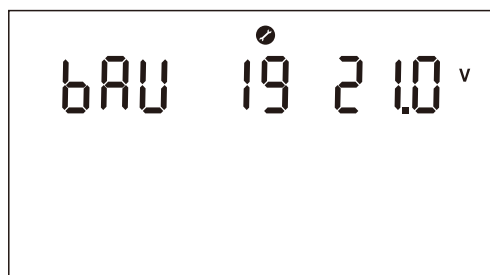
5KVA-48V, settable range [42,54]

When the battery type is set to LIB (lithium battery type), the low voltage point of the battery can be modified.

The default setting of 3KVA-24V is 23.8v, and the settable range is [20.6,25.0]

The default setting of 5KVA-48V is 47.6v, and the settable range is [41.2,50.0]

Battery shutdown point (bAU)



Settings page 17: battery shutdown point setting

Function Description: battery low voltage shutdown point setting function.

Setting conditions: all states can be set.

Description: bAU: Battery Under

It cannot be set when the battery definition mode is AGM (lead-acid battery type) or FLD (water injection battery type).

The initial default setting of 3KVA-24V is 21V

The initial default setting of 5KVA-48V is 42V

When the battery type is set to CUS (customer setting type), the battery shutdown point can be modified.

3KVA-24V can be set to [20,24]

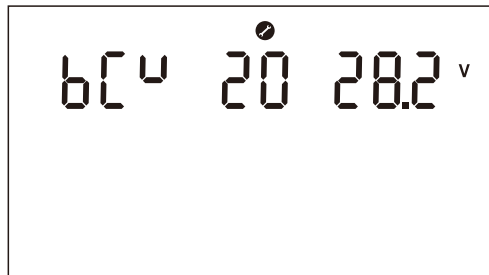
5KVA-48V settable range is [40,48]

When the battery type is set to LIB (lithium battery type), the battery shutdown point can be modified.

3KVA-24V is set to 23v by default, and the settable range is [20,24]

5KVA-48V is set to 46v by default, and the settable range is [40,48]

Constant voltage mode voltage point setting (bCV)



Settings page 20: constant voltage mode settings

Function Description: constant voltage point setting function.

Setting conditions: all states can be set.

Description: bCV: Battery Constant Voltage

It cannot be set when the battery definition mode is AGM (lead-acid battery type) or FLD (water injection battery type).

The initial default settings of 3KVA-24V are 28.2v (AGM) and 29V (FLD)

The initial default settings of 5KVA-48V are 56.4v (AGM) and 58V (FLD)

When the battery type is set to CUS (customer setting type), the constant voltage charging point can be modified.

3KVA-24V can be set to [24,29]. The voltage at the constant voltage point needs to be greater than the voltage at the floating charge point.

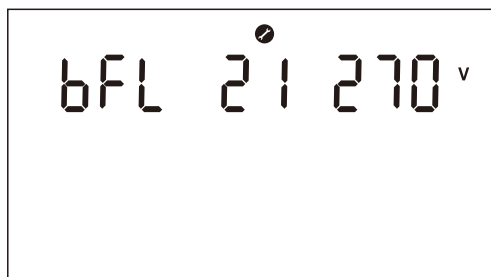
5KVA-48V can be set to [48,60]. The voltage at the constant voltage point needs to be greater than the voltage at the floating charge point.

When the battery type is set to LIB (lithium battery type), the constant voltage charging point can be modified.

The default setting of 3KVA-24V is 28.2, and the settable range is [25,29]. The voltage at the constant voltage point needs to be greater than the voltage at the floating charge point.

The default setting of 5KVA-48V is 56.4, and the settable range is [48,60]. The voltage at the constant voltage point needs to be greater than the voltage at the floating charge point.

Floating charge mode voltage point setting (bFL)



Settings page 21: floating charge mode voltage point setting

Function Description: floating charge voltage point setting function.

Setting conditions: all states can be set.

Description: bFL:Battery Float

It cannot be set when the battery definition mode is AGM (lead-acid battery type) or FLD (water injection battery type)

The initial default setting of 3KVA-24V is 27V

The initial default setting of 5KVA-48V is 54V

Setting the battery type to CUS (customer setting type) can modify the battery floating charge point.

3KVA-24V can be set to [26.6,27.8]. The voltage at the constant voltage point needs to be greater than the voltage at the floating charge point.

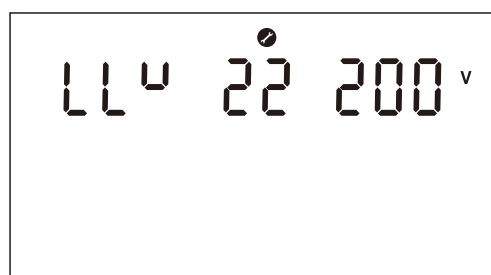
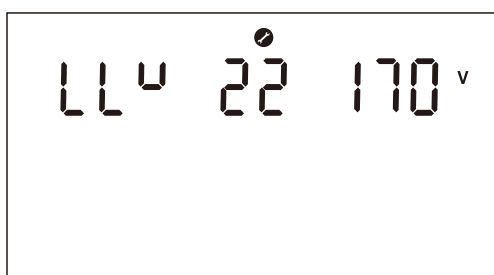
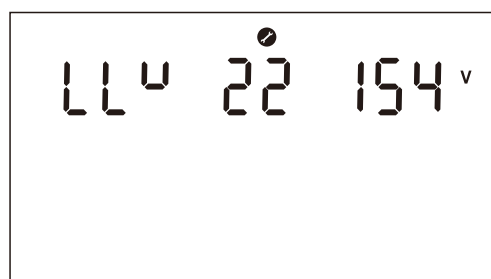
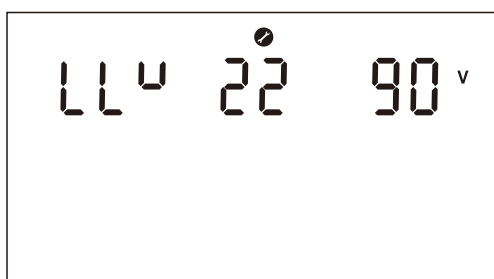
5KVA-48V can be set to [48,60]. The voltage at the constant voltage point needs to be greater than the voltage at the floating charge point.

When the battery type is set to LIB (lithium battery type), the constant voltage charging point can be modified.

The default setting of 3KVA-24V is 27.6v, and the settable range is [24,28]. The voltage at the constant voltage point needs to be greater than the voltage at the floating charge point.

The default setting of 5KVA-48V is 55.2v, and the settable range is [50,58]. The voltage at the constant voltage point needs to be greater than the voltage at the floating charge point.

Setting of mains low voltage point (LLV)



Settings page 22: setting page of mains low voltage point in inverter mode

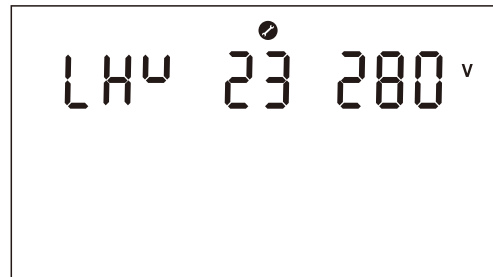
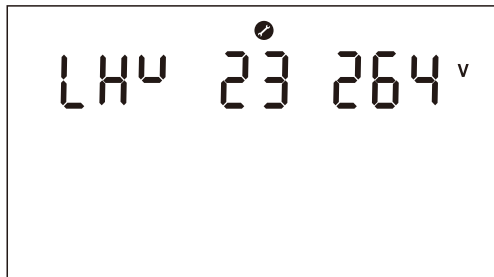
Function Description: set the low-voltage protection point of mains power.

Setting conditions: the inverter is in app and UPS mode, and all states can be set.

Description: LLV:Line Low Voltage

In inverter mode (output mode: Mod needs to be set to APP), the low-voltage point of mains power is set, the default setting is 154v, and the settable range is [90,154]. (output mode: Mod needs to be set as UPS), the low-voltage point of mains power is set, the default setting is 185v, and the settable range is [170,200].

Setting of mains high voltage point (LHV)



Settings page 23: setting page of mains high voltage point in inverter mode

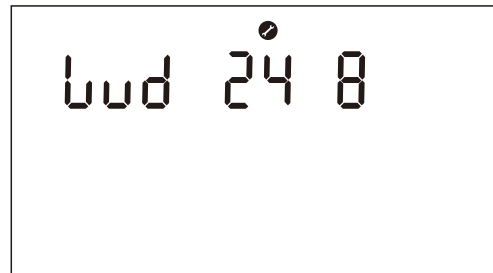
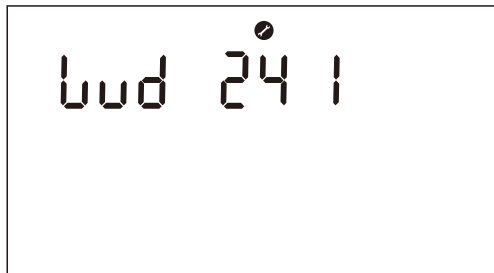
Function Description: set the high-voltage protection point of mains power.

Setting conditions: the inverter is in app mode, and all states can be set.

Description: LHV:Line High Voltage

In inverter mode (output mode: Mod needs to be set as app), the high voltage point of mains power is set. The default setting is 264v, and the settable range is [264,280].

Low power discharge time setting (LWD)



Settings page 24: low power discharge time setting

Function Description: low power discharge protection function. When the battery is in a low load mode, unlimited discharge will empty the battery and affect the battery life. When the inverter is in the low power discharge setting time, the low voltage shutdown point of 3KVA-24V battery will be increased to 22V. The low-voltage shutdown point of 5KVA-48V battery will be increased to 44V.

Setting conditions: the inverter is set in app mode, and all states can be set.

Description: LWD: Low Watt Discharge

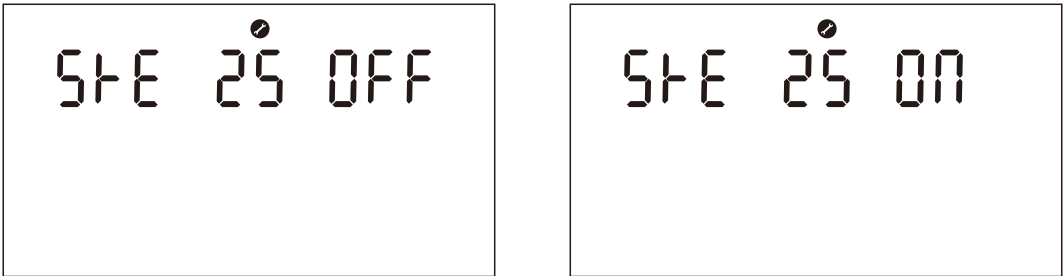
In inverter mode, the setting of low power discharge time is 8 (8 hours) by default, and the range can be set [1, 8].

In battery mode, if the battery shutdown point is not reached after continuous discharge for more than 8 hours, the battery voltage shutdown point will be modified to 11V * number of battery cells. When the battery is discharged to 11V

* number of battery cells, the system will alarm for 1 minute and then shut down.

When the battery voltage exceeds 13.2v * the number of battery cells exceeds 30s, the battery discharge time will be reset.

Inverter soft start setting (SRE)



Settings page 25: inverter soft start setting

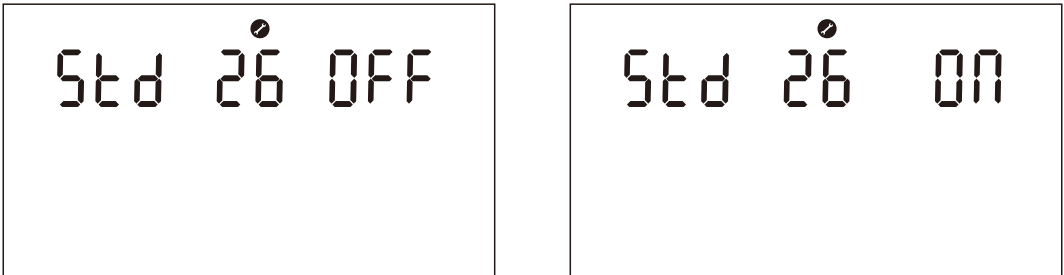
Function Description: when the interface is on, the inverter output gradually increases from 0 to the target voltage value. When the interface is off, the inverter output directly increases from 0 to the target voltage value.

Setting conditions: all states can be set.

Description: SRE:Soft Relay Enable

The default setting is off, and the output switch will not be closed until the inverter voltage rises to the rated output. If it is set to on, the output switch will be closed before the inverter starts boosting.

Default settings (STD)



Settings page 26: default value setting

Function Description: restore all settings to the default value.

Setting conditions: it can be set in mains mode and standby (standby: no output but bright screen state). It cannot be set in battery mode.

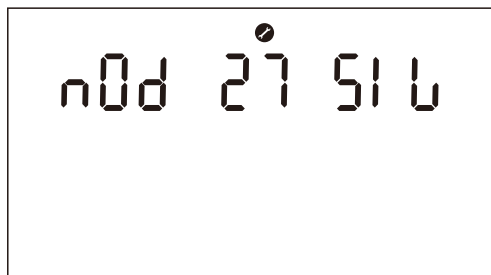
Description: STD:Set Default

Before setting, this interface is displayed as off. When it is set as on, the system will restore the default setting. After setting, this interface will display off again.

Mains and standby modes can be set and take effect immediately. They cannot be set in battery mode and cannot be displayed in pictures.

Please note: the display pages of 3KVA and 5KVA are different, starting from setting page 27th

Parallel Operation Mode Setting (PAM)



Settings page 27: parallel operation mode setting(5KVA)

Function description: parallel mode setting.

Setting conditions: 5KVA-48V in mains and standby mode (StandBy: LCD is on without output) , can not be set in battery mode. Not available in other models.

Description: PAM:Parallel operation mode.

The default setting is SIG (single mode), can be set to PAR (parallel mode) single phase parallel mode, 3P1 (R phase mode), 3P2 (S phase mode), 3P3 (T phase mode)

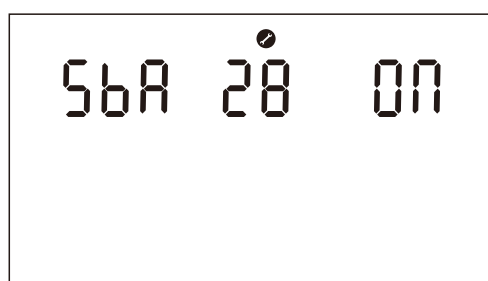
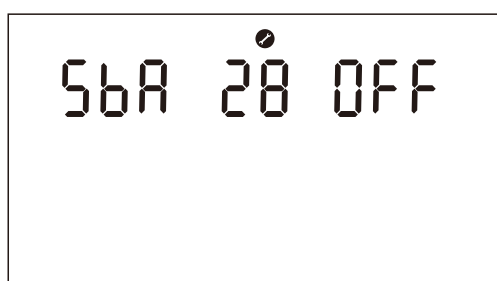
When using the parallel function, connect the parallel system firstly and set the parallel mode of each machine correctly. If any machine with SIG setting in the parallel system, it will indicate error 24.

If any machines with setting 3P1, 3P2, 3P3, all the machines must be set to one of these three modes, and each mode should be set in one machine at least, otherwise, all the machines with setting these 3 modes will indicate error 24.

It can be set and take effect immediately in mains electricity and standby modes, not available in battery mode.

Note: for detailed parallel operation, please refer to page 36 in this manual(Parallel Operation Guide)

Set Battery Alarm Setting (SBA)



Settings page 28: Battery not connected alarm setting(5KVA)

Function description: enable the setting of battery disconnected alarm

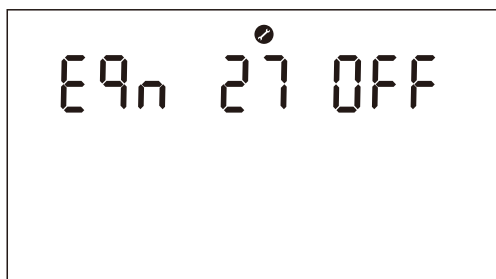
Setting conditions: can be set in all the states.

Description: SBA:Set Battery Alarm.

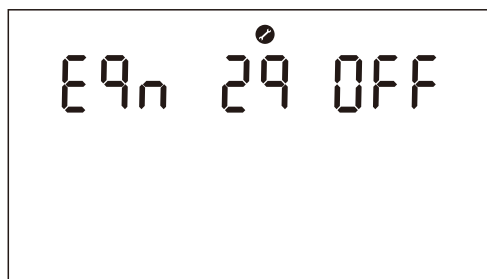
The default setting is "OFF".

In setting OFF, no alarm of battery disconnected and battery low voltage in case of no battery connection 5KVA-48 can be set in single mode, not available in other models.

Equalization Mode Setting (EQM)



Settings page 27: Equalization mode setting(3KVA)



Settings page 29: Equalization mode setting(5KVA)

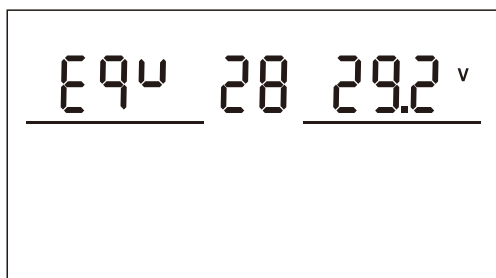
Function description: setting the inverter to enable the equalization mode

Setting conditions: can be set in all the states

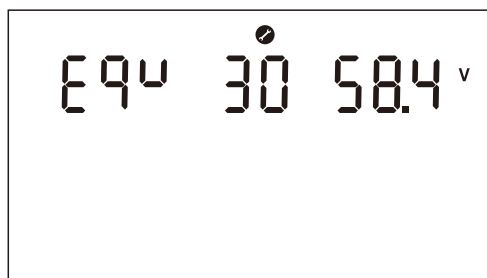
Description: EQM:Equalization Mode

The default setting is OFF, the function is not enable; In setting ON, the controller will enter the equalization phase when it reaches the equalization interval setting (battery equalization cycle) during the float charging phase or the equalization is activated immediately.

Equalization Voltage Setting (EQV)



Settings page 28: Equalization voltage setting(3KVA)



Settings page 30: Equalization voltage setting(5KVA)

Function description: equalization voltage setting function.

Setting conditions: can be set in all the states.

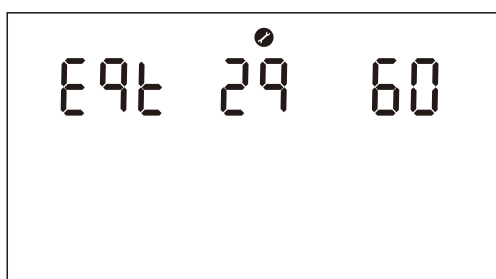
Description: EQV:Equalization Voltage

Can be set in all modes.

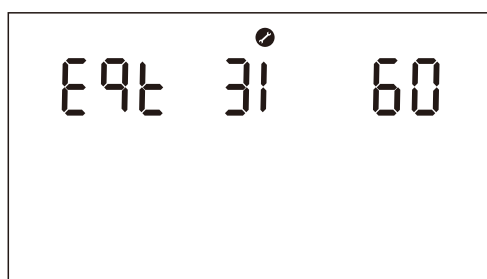
3KVA-24V default setting is 29.2, setting range [25,31.5].

5KVA-48V default setting is 58.4, setting range [48,60].

Equalization Time Setting (EQT)



Settings page 29: Equalization time setting(3KVA)



Settings page 31: Equalization time setting(5KVA)

Function description: Equalizing charging time setting

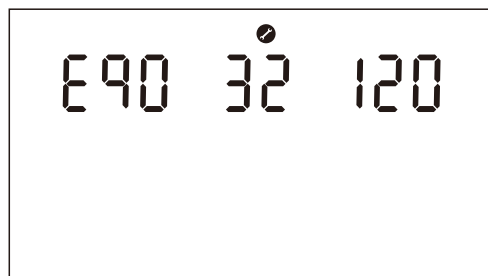
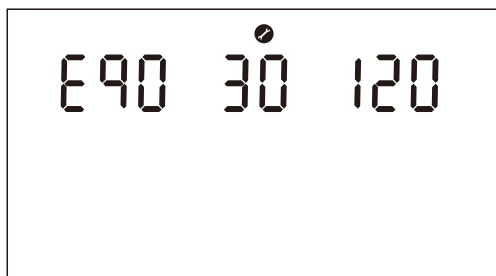
Setting conditions: can be set in all states

Description: EQT:Equalization Time

During the equalization phase, the controller recharges the batteries as more as possible until the battery voltage rises to the battery equalization voltage. Then controller keeps the battery voltage by constant voltage adjustment. Eventually the battery will remain in the equalization phase until the end of setting the battery equalization time.

The default setting is 60 minutes, setting range [5,900], setting increments is 5 minutes each time.

Equalization Timeout Setting (EQO)



Settings page 30: Equalization timeout setting(3KVA)

Settings page 32: Equalization timeout setting(5KVA)

Function description: Equalization timeout setting

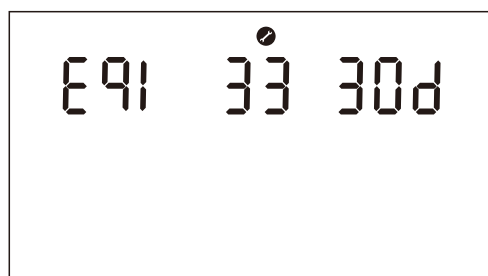
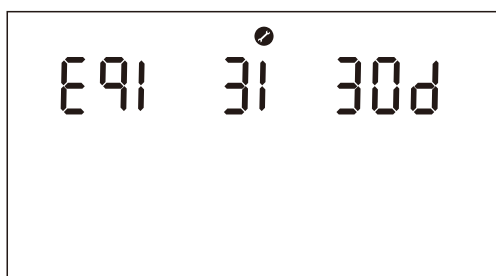
Setting conditions: can be set in all states

Description: EQO:Equalization Timeout

In the equalization stage, if the battery equalization time expires and the battery voltage has not equalized to the battery voltage, the charging controller will extend the battery equalization time until the battery voltage reaches the battery equalization voltage. If the battery voltage is still lower than the battery equalization voltage when the battery equalization delay setting ends, the charging controller will stop equalization and return to the floating charging stage.

The default setting is 120 minutes, setting range [5900], setting increments is 5 minutes each time.

Equalization Interval Setting (EQI)



Settings page 31: Equalization interval setting(3KVA)

Settings page 33: Equalization interval setting(5KVA)

Function description: Equalization charging interval time setting

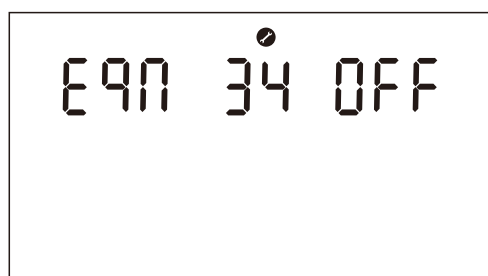
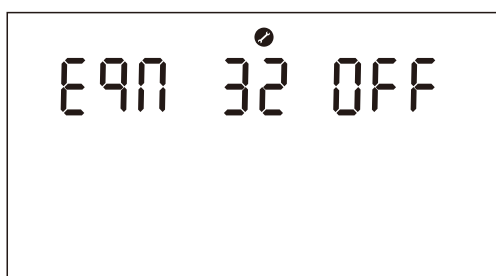
Setting conditions: can be set in all states

Description: EQI:Equalization Interval

When battery is detected during the floating phase while the equalization mode is on, the controller will start the equalization phase when it reached the equalization interval (battery equalization cycle).

The default setting is 30 days, setting range [1,90], setting increments is 1 day each time.

Equalization Now Setting (EQN)



Settings page 32: Equalization now setting(3KVA)

Settings page 34: Equalization now setting(3KVA)

Function description: Setting the inverter to turn on/off the equalization mode immediately

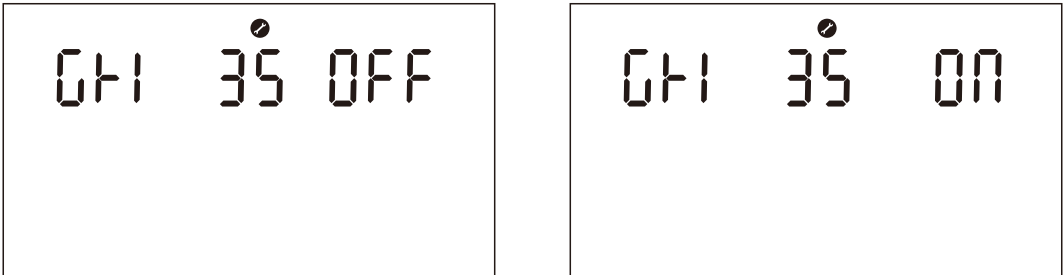
Setting conditions: can be set in all states

Description: EQN:Equalization Now

The default setting is OFF, function is off; When setting is ON, the battery is detected during the float charging stage while the equalization mode is on, equalization charging is activated immediately, and the controller will enter

the equalization stage.

Grid Tie Invert Setting (GTI)



Settings page 35: Grid tie invert function setting(5KVA)

Function description: Setting the inverter if to supply the power to grid in PV priority mains electricity mode or PBG mains electricity mode

Setting conditions: can be set in all states

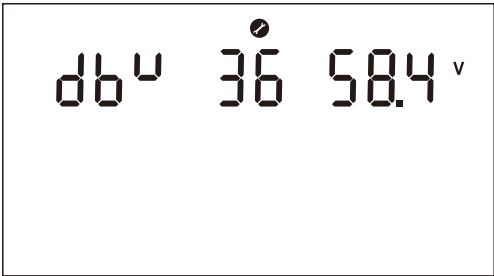
Description: GTI:Grid Tie Invert

The default setting is OFF, function is off; When setting is ON, the inverter will feed the surplus energy to the mains electricity by tracking maximum power point.

After the function is on, if communication abnormalities occur, alarm 56 will show on screen, and the inverter will not determine the operation logic based on BMS information any longer.

*This function needs to be used in conjunction with the central control board.

Dual Output Battery Mode cut-off Voltage Setting (DBV)



Settings page 36: Dual output battery mode cut-off voltage(5KVA)

Function description: the inverter secondary output is on by default when the function is on. In the battery mode, the secondary output will turn off if the battery voltage is lower than the setting value. The secondary output will turn on if the battery voltage is higher than the setting value +1V/Cell again.

Setting conditions: can be set in all states

Description: DBV:Dual Output Battery Mode Cut-off Voltage

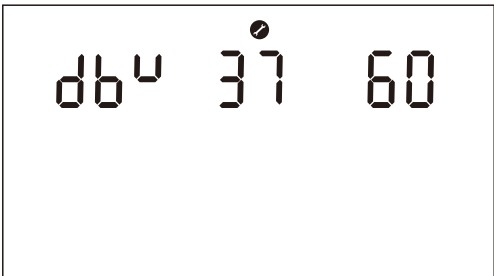
3KVA-24V default setting is 24V, setting range [22,32]。

5KVA-48V default setting is 48V, setting range [44,60]。

When the setting value is higher than the constant voltage charging (CV) value -1V/Cell, the recovery voltage is the same as constant voltage charging point.

*This function needs to be used in conjunction with the central control board.

Dual Output Battery Mode cut-of Time Setting (DBT)



Settings page 37: Dual output battery mode cut-off time(5KVA)

Function description: the inverter secondary output is on by default when the function is on. In the battery mode, the secondary output will turn off when the battery recharge time reaches the setting point.

Setting conditions: can be set in all states

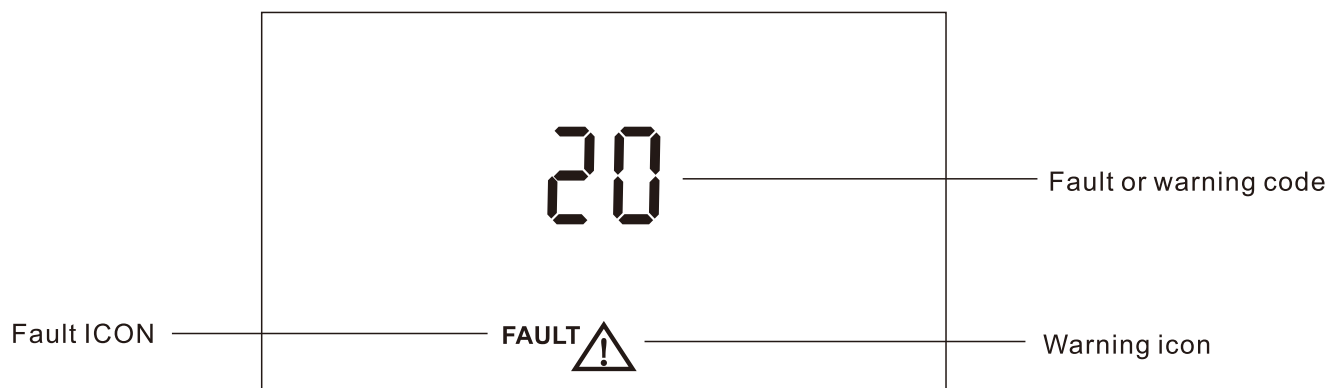
Description: DBT:Dual Output Battery Mode Cut-off Time

The default setting is OFF, function is off, setting range [5,890], measured in minute.

When setting FUL, the time of secondary output is not limited.

*This function needs to be used in conjunction with the dual output auxiliary board.

5.7 fault and alarm description



fault and alarm icons

Function Description: the alarm code ala flashes and the buzzer rings for 1s and stops for 1 minute. The fault indicator code is always on. The buzzer stops after ringing for 10s. After stopping, the fault is eliminated. Try to restart the machine. If it fails to restart for three times, it will continue in the fault state. The machine can be restarted only after the power is completely off (screen).

The fault and alarm LCD display is shown in the figure above. The fault icon of the fault mode is on for a long time, and the alarm icon of the alarm status flashes. Contact the manufacturer to eliminate the abnormal conditions according to the fault information.

Fault description

fault: the inverter enters the fault mode, the LED red light is always on, and the LCD displays the fault code.

Fault code table

Fault code	English meaning	Related actions	Triggering conditions	Recovery condition	Fault alarm
1	Bus soft start fail	Fault mode	When the bus is soft, it cannot reach the set voltage	Cannot recover	Fault
2	Bus high	Fault mode	The bus is higher than the set value	Cannot recover	Fault
3	Bus low	Fault mode	The bus is lower than the set value	Cannot recover	Fault
4	Battery over current	Fault mode	The instant value of the battery current exceeds 580A, and immediately protects	Cannot recover	Fault
5	Over temperature	Fault mode	The temperature sensor of PFC or INV is higher than the set value of over -temperature settings	After restarting enable, the failure restarts cannot be recovered after three failures	Fault

6	Battery high	Fault mode	The battery voltage is higher than the set value	Recovery	Fault
7	Bus soft fault	Fault mode	DC soft -up voltage with DC does not meet the set value	Cannot recover	Fault
8	Bus short fault	Fault mode	When working normally, the bus is instantly lower than the set value	Cannot recover	Fault
9	INV soft fault	Fault mode	After a period of time, the inverted softening starts for a period of time, it still cannot reach the rated output voltage	Cannot recover	Fault
10	INV over voltage	Fault mode	In the battery mode, the inverter voltage is higher than the set value	Cannot recover	Fault
11	INV under voltage	Fault mode	In the battery mode, the inverter voltage is lower than the set value	Cannot recover	Fault
12	INV short	Fault mode	The inverter voltage is instantly less than the set value, and the current is greater than the set value	After the failure restarts three failures, it cannot be restored	Fault
13	Negative power	Fault mode	The inverse power is less than the set value for a period of time	Cannot recover	Fault
14	overload fault	Fault mode	The load is exceeded of the specification	After restarting enable, the failure restarts cannot be recovered after three failures	Fault
15	Model fault	Fault mode	Software recognition machine model is not matched with hardware detection	Cannot recover	Fault
16	No boot loader	Fault mode	No guidance program	Cannot recover	Fault
17	Panel flash fault	Fault mode	VML model is burning the PV control program	Recovery after the burning recording	Fault
19	Same serial	Fault mode	In the parallel machine mode, the machine with the same sequence number is detected	Cannot recover	Fault
20	CAN fault	Fault mode	In the parallel mode, the CAN bus communication is abnormal	Cannot recover	Fault
21	BAT volt different	Fault mode	In the parallel mode, the battery pressure difference between different machines is too large	Cannot recover	Fault
22	Line volt different	Fault mode	In the parallel mode, the input pressure difference between different machines is too large	Cannot recover	Fault
23	Line freq different	Fault mode	In the parallel mode, the frequency of different machines input voltage difference is too large	Cannot recover	Fault
24	Output config different	Fault mode	In the three -phase merger mode, there is a lack of phase settings in different machine parallel mode settings	Set as a single machine run or meet the three -phase operation setting conditions.	Fault
25	Output syn loss	Fault mode	In parallel mode, the output voltage detection is lost synchronization	Cannot recover	Fault

Warning

alarm: the inverter does not enter the fault mode, the LED red light flashes, and the LCD displays the alarm code

Alarm code table

Alarm code	English meaning	Related actions	Trigger condition	Recovery conditions	Fault alarm
50	Battery open	Alarm, battery does not charge	The battery voltage is lower than 8V / section	Recoverable (10V / section)	give an alarm
51	Battery under	Alarm, battery low voltage shutdown or no startup	Battery voltage is lower than 10.5v/section (default)	Recoverable (10V / cell + 0.2 * n (number of battery cells))	give an alarm
52	Battery low	give an alarm	Depending on BAL setting	Recoverable (action point + 0.2v/section)	give an alarm
53	Battery charge short	Alarm, battery does not charge	The battery voltage is less than 5V and the charging current is greater than 4a	Unrecoverable	give an alarm
55	Over charge	Alarm, battery does not charge	The battery voltage is higher than the set value	recoverable	give an alarm
57	Over temperature	Alarm, battery does not charge	The temperature sensor of PFC or inv is higher than the set value	The temperature sensor of PFC or inv is lower than the set value	give an alarm
58	fan lock	Alarm. If one fan fails, the other fan will run at full speed	No fan speed signal detected	recoverable	give an alarm
59	EEPROM fail	give an alarm	EEPROM read / write failed	Unrecoverable	give an alarm
60	Overload warning	Alarm, battery does not charge	Load > 102%	Recoverable (load < 97%)	give an alarm
61	Abnormal generator waveform	Alarm, continuous operation in battery mode	Abnormal generator waveform detection	recoverable	give an alarm
62	PV Energy weak	Turn off PV output and charge	When the battery is not connected, the bus voltage is lower than the set value	Recover after 10mins	give an alarm
63	Synchronization signal fail	Alarm, switch to standby mode	Parallel board card disconnection failure	Switch to standalone mode or Troubleshoot the disconnection of wire	give an alarm
64	Parallel configuration incompatible	Alarm, switch to standby mode	During three-phase parallel operation, there is a phase loss setting	Resume when the three-phase setting is correct	give an alarm
65	Parallel version incompatible	Alarm, switch to standby mode	Incompatible version exist in parallel systems	Resume when all machine versions in a parallel system are compatible with each other	give an alarm
66	Parallel communication fault	Alarm, switch to standby mode	Slave machine cannot be detected under parallel system	Resume when slave machine access is detected in parallel system or set to standalone mode	give an alarm
67	Parallel line differ	give an alarm	Large error in AC input voltage or frequency of each machine after parallel operation	Resume when the AC input voltage and frequency of each machine are detected to be within a reasonable range	give an alarm
68	SOC under	Alarm, switch to standby mode	Lithium battery SOC is below the set value	Resumes when SOC,BMS is turned off or battery SOC is restored to the set value + 5%	give an alarm
69	SOC low	Alarm, no power on if in standby mode	Li-ion battery SOC below set value + 5% (mains mode or battery mode), below set value + 10% (standby mode)	Resumes when SOC,BMS is turned off, or SOC is restored to the set value + 10%	give an alarm

6. ELECTRICAL CHARACTERISTICS

6.1 Inverter parameters

MODEL		3KVA	5KVA
Complete Machine	Capacity Power	3000W	5000W
	Product Size	469×300×119.4 L×W×H（mm）	
	Net Weight	7.8Kg	9Kg
Input	Main Topology	L+N+PE	
	Nominal Voltage	208/220/230/240VAC	
	Input Voltage Range	90 ~ 280v (household appliances) 170 ~ 280v (computer equipment)	
	Frequency Range	40~70Hz, Default	
Output	Main Topology	L+N+PE	
	Output Voltage	208/220/230/240VAC	
	Frequency Range	Line Mode: Synchronized range, Battery Mode: 50/60Hz±0.1%	
	Overlord Capacity Battery Mode	1min@102%~110% Load 10s@110%~130% Load 3s@130%~150% Load 0.2s@>150% Load	
Efficiency	Battery Mode	93.5%24VDC	94%@48VDC
Battery	Numbers	2	4
	Charging Mode	Two stage / three stage charging / PV charging	
	Charging Current	10~120A Adjustable	2~80A Adjustable
	Ambient Temperature	0~40℃	
Environment	Humidity	20%~95% (No condensing)	
	Storage Temperature	-15~60℃ (Battery: 0~40℃)	
	Altitude	The altitude should not exceed 1000m, and the height above 1000m should be reduced to a maximum of 4000m. Refer to IEC62040	
	Noise	≤50db	
Communication	RS232 Port	5pin / pitch2.0mm, baud rate 2400	
	Parallel Port	No	DB9, parallel card

6.2 Output

MODEL		3KVA	5KVA
Output Power Rating	Output Topology	L + N + PE	
	Output Power	3000W	5000W
Output Voltage	Nominal Voltage	208/220/230/240 Vac (Default 220V , Manual set by RS232 or LCD)	
	Waveform	Pure sine wave	

6.3 Battery

* N= battery pieces

MODEL		3KVA	5KVA
Battery Information	Battery Pieces	2PCS (12V/PCS)	4PCS (12V/PCS)
	Auto Restart Function	Yes	
	Battery Test Function	No	
	Battery Type	VRLA(Leadacid) / LI	
	Nominal Battery Voltage	24Vdc	48Vdc
	Battery Management	Yes	
Battery Protection	Battery Over Voltage	31Vdc	61Vdc
	Battery Under Voltage	10.5V*N(Settable:10*N~11*N)	
	Battery Low Voltage alarm	10.8V*N(Settable:10.3*N~11.3*N)	
	Over Current Protection	Fuse(Fast acting)	

6.4 Charger

MODEL		3KVA	5KVA
Charger (line mode)	Charging Voltage	FV MODE : 27V (Settable:26.6~27.8)	FV MODE : 54V (Settable:53.2~55.6V)
		CV MODE :28.2V (Settable:28~29V)	CV MODE : 56.4V (Settable:56~58V)
	Temperature Compensation	No	
	Charging Current	1~60A (Settable)	1~80A (Settable)
	Default Charging Current	40A	30A
	Charging Mode	Two/Three/Auto Settable (Three states:CC/CV/Float Two states:CC/Float)	
Charger (PV)	PV Charging Mode	MPPT	
	PV Maximum Input Power	1500W	5500W
	PV Voltage Accuracy	30~115Vdc	120-430Vdc
	Max PV Voltage	145Vdc	450Vdc
	Max PV Current	60A	80A
Max Charging Current (mains + PV)		120A (Settable)	80A (Settable)

7. Appendix : Approximate Back-up Time Table

Model	Load (W)	Backup Time @ 24Vdc 100Ah (min)	Backup Time @ 24Vdc 200Ah (min)
3KVA	300	449	1100
	600	222	525
	900	124	303
	1200	95	227
	1500	68	164
	1800	56	126
	2100	48	108
	2400	35	94
	2700	31	74
	3200	28	67

Model	Load (W)	Backup Time @ 48Vdc 100Ah (min)	Backup Time @ 48Vdc 200Ah (min)
5KVA	500	613	1288
	1000	268	613
	1500	158	402
	2000	111	271
	2500	90	215
	3200	76	182
	3500	65	141
	4000	50	112
	4500	44	100
	5000	40	90

Note : Backup time depends on the quality of the battery , age of battery and type of battery Specifications of batteries may vary depending on different manufacturers.

8. TROUBLE SHOOTING

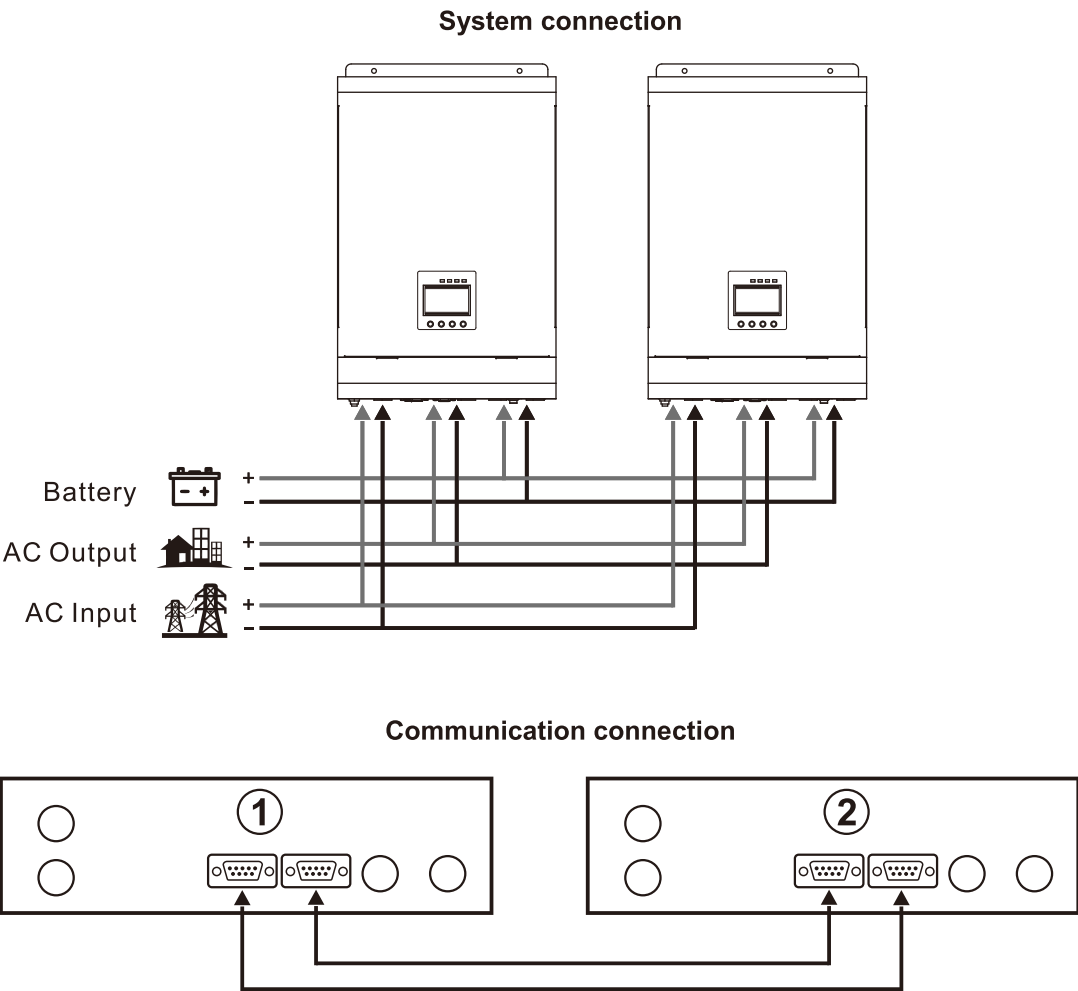
Problem	LCD/LED/Buzzer	Explanation / Possible cause	What to do
Unit shuts down automatically during startup process.	LCD/LEDs and buzzer will be active for 3 seconds and then complete off.	The battery voltage is too low (<1.91V/Cell)	1. Re-charge battery. 2. Replace battery.
No response after power on.	No indication.	1. The battery voltage is far too low. (<1.4V/Cell) 2. Internal fuse tripped.	1. Contact repair center for replacing the fuse. 2. Re-charge battery. 3. Replace battery.
Mains exist but the unit works in battery mode.	Input voltage is displayed as 0 on the LCD and green LED is flashing.	Input protector is tripped	Check if AC breaker is tripped and AC wiring is connected well.
	Green LED is flashing.	Insufficient quality of AC power. (Shore or Generator)	1. Check if AC wires are too thin and/or too long. 2. Check if generator (if applied) is working well or if input voltage range setting is correct. (UPStf>Appliance)
	Green LED is flashing.	Set "Solar First" as the priority of output source.	Change output source priority to Utility first.
When the unit is turned on, internal relay is switched on and off repeatedly.	LCD display and LEDs are flashing	Battery is disconnected.	Check if battery wires are connected well.
Buzzer beeps continuously and red LED is on.	Fault code 07	Overload error. The inverter is overload 110% and time is up.	Reduce the connected load by switching off some equipment.
	Fault code 05	Output short circuited.	Check if wiring is connected well and remove abnormal
		Temperature of internal converter component is over 120℃.	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
	Fault code 02	Internal temperature of inverter component is over 100℃.	
	Fault code 03	Battery is over-charged.	Return to repair center.
		The battery voltage is too high.	Check if spec and quantity of batteries are meet requirements.
	Fault code 01	Fan fault	Replace the fan.
	Fault code 06/58	Output abnormal (Inverter voltage below than 190Vac or is higher than 260Vac)	1. Reduce the connected load. 2. Return to repair center
	Fault code 08/09/53/57	Internal components failed.	Return to repair center.
	Fault code 51	Over current or surge.	Restart the unit, if the error happens again, please return to repair center.
	Fault code 52	Bus voltage is too low.	
	Fault code 55	Output voltage is unbalanced.	

9. Parallel Connection Operation Guide

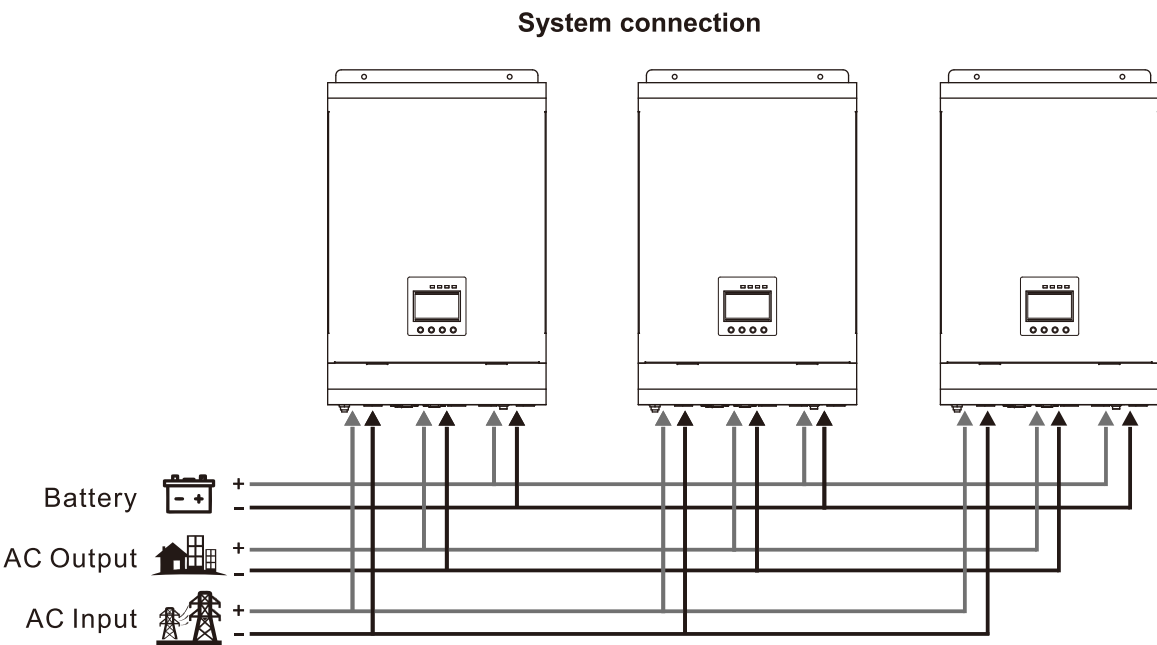
9.1 Single-Phase Parallel Connection Operation

Note: Parallel connection is applicable for 5KVA inverter only, each machine in parallel connection can be connected to the same battery only.

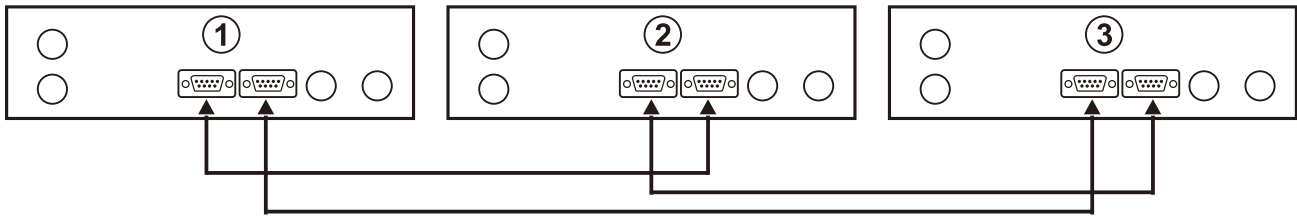
inverters in parallel connection:



3 inverters in parallel connection:



Communication connection



Multiple single-phase parallel systems can follow the extended instruction of two single-phase parallel connection to three single-phase parallel connection, Max No. of in parallel connection: 9

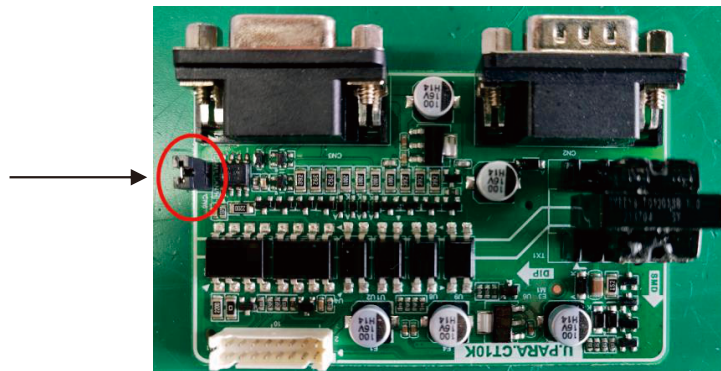
9.2 Connection attention

PV connection

Note: Each inverter is connected to solar panel separately and cannot be connected to PV!!!

Parallel board connection

Note: In each parallel system, select the two sets of machines in farthest distance and short-circuit the position of the parallel board as diagram with wire jumper



9.3 Setting and display

Refer to setting 27

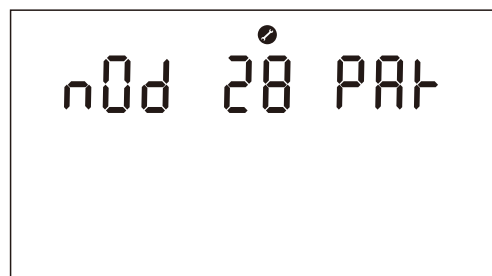
Single-Phase Parallel Connection

1st Step: please check the following requirements before debugging, if the wiring is correct

Make sure that all circuit breakers in the load connection are disconnected and every neutral wire of the inverter is connected together

2nd Step: Wake up the inverter and set "PAR" in program 27th on LCD. Then turn off all inverters

Note: When setting the LCD program, the power switch must be off. Otherwise, it cannot be set



LCD setting interface single-phase parallel connection interface display

Note: Master-slave devices are the result of competition in the system.

3rd Step: Close the AC circuit breaker of all lines in the AC input, keep the power switch unclosed and wake up the parallel system, as shown in diagram All inverters must be connected to the mains electricity at the same time. If not, it will show the fault "22" or "23".

4th Step: The parallel system is completely installed if no more fault alarms and the indication interface is normal.

5th Step: Close the circuit breaker of the loads and turn on the system to power the loads.



Interface of successful parallel connection setting and communication



Interface of successful parallel connection setting and unsuccessful communication



Interface of unsuccessful parallel connection setting

The pictures or diagrams mentioned in this manual are for reference only, please refer to the actual product, content maybe revised without prior notice



Guangzhou Poojin Electronic Co., Ltd.

TEL: +86-20-38087392 FAX: 020-80720953

Add.: NO.138, Pacific Industrial Zone, Guangshen Road, Xintang Town,
Zengcheng District, Guangzhou City, Guangdong Province, China

WEB: <http://www.belttt.com>