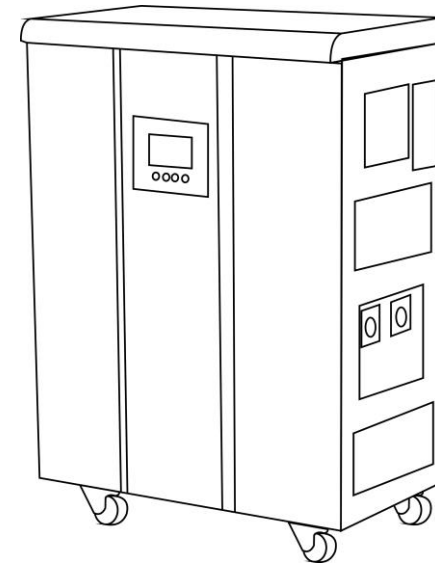


User Manual



MPPT Hybrid solar inverter

Error code and solution

Error code	Faulty	Solution
E01	Overcurrent of MOSFETS board	Kindly contact sales if still having this issue after restarting
E02	Output short circuit	Check whether it's overloaded seriously or shortcircuit inside appliances loaded
E03	Appliance Overloaded	Check whether it's overloaded, and remove some loads not important
E04	Inner Over-temperature	Check whether fan is working well or the air dust for cooling be blocked
E05	Overvoltage of battery	Check whether battery connection and configuration correct
E06	Battery's voltage is lower than shutdown voltage	Make sure battery be fully charged, or replace new battery
E07	Reverse connected cables between transformer with heatsink on power board	Fix the two cables after they are interchanged
E08	Start Protection when low output voltage	Kindly contact sales if still having this issue after restarting
E09	Reserved	-----
E10	Undervoltage of battery	Check the system voltage of inverter and use same data for the battery pack.

8 Technology parameter sheet

Model: NKT-		8KW	10KW
rated power		8000W	10000W
Battery	rated voltage	48VDC	
	Charge Current	30A MAX	
	Battery Type	Can be set	
Input	Voltage Range	170-275VAC	
	frequency	45-65Hz	
Output	Voltage Range	220/230/240VAC; $\pm 5\%$ (Inverter mode)	
	frequency	50/60Hz $\pm 1\%$ (Inverter mode)	
	Output wave	Pure Sine Wave	
	Change time	<10ms(Typical load)	
	Efficiency	>85% (80% Resistive load)	
	overload	110-120%/30S; >160%/300ms;	
	Protection function	Battery over-voltage and low-voltage protection, overload protection, short circuit protection, over-temperature protection	
Solar Controller	MPPT Voltage Range	48VDC:65V~150VDC	
	Max. PV Input Power	4250W	5300W
	Rated charge current	80A(Max)	100A(Max)
	MPPT efficiency	$\geq 99\%$	
	Average charging voltage (lead acid battery)	56.8VDC	
	Floating charge voltage	55.2VDC	
Operating ambient temperature		-15-+50℃	
Storage ambient temperature		-20 - +50℃	
Operating / storage environment		0-90% No Condensation	
Dimensions: W * D * H (mm)		476*319*770	
Packing size: W * D * H (mm)		575*420*950	

Note: Our company has the right of changing this user manual without any information

Dear Customers:

It's very grateful to you for trusting our company and selecting our products!

Before using this product, please read carefully this user manual, including installation, using, failure investigation and other important information and suggestion, we also suggest you keep this manual well!

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1 Product features

- Double CPU intelligent control technology, performance excellence;
- The power mode / battery mode can be set up, Flexible application;
- Smart fan control, safe and reliable;
- The pure sine wave output, can adapt to various types of load;
- Wide input voltage range, high-precision output automatic voltage function.
- The LCD real-time display device parameters, running status at a glance;
- The output overload, short circuit protection, automatic protection and alarm;
- The intelligent MPPT solar controller, overcharge, over discharge protection, current limiting charging, multiple protection;

2 Installation, storage instructions

2.1 Off packet inspection

2.1.1 open the packaging of the equipment, please check the product parts, including: a mainframe, the use of a manual.

2.1.2 check whether the equipment is damaged in transit, such as damage or missing parts, do not boot, inform the carrier and dealer.

2.2 Installation, storage precautions

2.2.1 Installation equipment should be operated by professionals, or assisted by local distributors.

2.2.2 Transport equipment, the need to take appropriate protective measures; equipment from low temperature to high temperature environment, may appear drops, before using, need to be completely dry, to ensure safety.

2.2.3 Don't expose the device in the wet, inflammable, explosive or a lot of dust accumulation in the bad environment; do not cover and block the vents, 10cm above the air circulation space reserved for peripheral equipment; in order to have good heat dissipation;

2.2.4 When the equipment is not in use, it should close all switches;

7 Common faults and troubleshooting methods

WARNING: There's high voltage inside! It may cause electric shock hazard or death! Do not open the cover unless you are the qualified technician.

Failure phenomenon	Possible reason	solution
The machine load time is reduced	The battery is not fully charged	Make sure that the battery is fully charged
	The machine connection is overloaded	Removal of noncritical loads
	Battery aging, can not be sufficient power	Contact your customer service representative to obtain a battery replacement kit
The device can not be turned on	The mains input cable or the battery cable is poorly connected	Check and reconnect
Boot alarm	The battery is low	Make sure that the battery is fully charged
	Load overload	Removal of noncritical loads
The buzzer is called 2 seconds and 1 second	The internal temperature is too high alarm	Check the fan and cooling holes are blocked
The fan is spinning slowly	The fan adjusts according to the temperature	normal phenomenon
The "PV" indicator does not light when there is a sun-lit PV module	PV module array cable open	Please check whether the wiring of the PV array is correct and the contact is reliable

When you contact the service personnel, please provide the following information: Type of machine / date of issue / complete description of the problem (including the relevant indicator display status, battery configuration, connection and other information).

6 Maintenance and maintenance

6.1 This series of products with little maintenance, battery only need to constantly maintain the charge to obtain life expectancy. In the same city electricity connection.

6.2 If you do not use the equipment for a long period of time, it is recommended to charge it every 4-6 months. Under normal circumstances, the battery's life will be 3-5 years, if found in poor condition, you must replace the battery early. When replacing the battery, it must be carried out by qualified personnel. Battery should not be individually replaced, the overall replacement should follow the battery supplier's instructions.

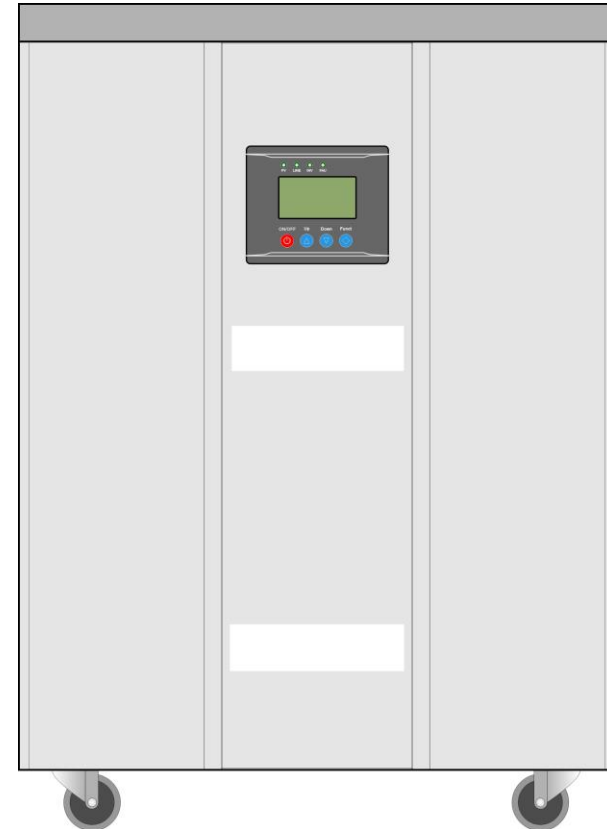
6.3 Normal use, the battery every 4 to 6 months to be charged, discharge time, discharge to the shutdown charge, In the high temperature region, the battery charge every two months, discharge time.

6.4 Before replacing the battery, turn off the device and disconnect it from the mains, and close the battery switch. Take off metal objects such as rings and watches. Use insulated handle and screwdriver, do not put tools or other metal objects on the battery pack.

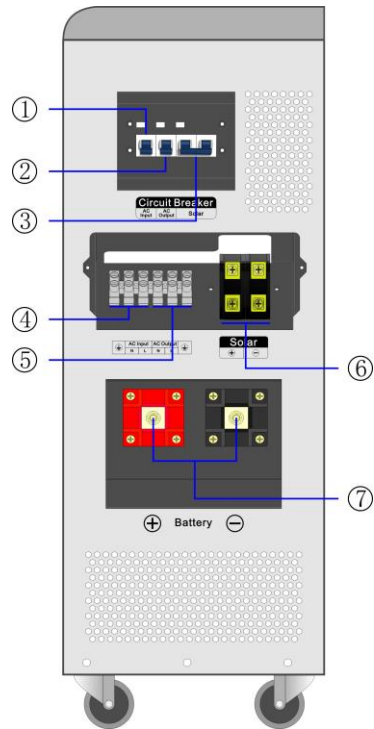
6.5 When connecting the battery cable, it is normal for small sparks to appear in the joint, which will not cause any harm to the personal safety and the equipment. Do not charge the battery positive and negative, very short or reverse connection.

3 Inverter diagram, operation instructions

3.2 Front panel icon



3.3 Inverter appearance view



Guide

- ①-- AC input breaker
- ②-- AC output breaker
- ③-- Solar input breaker
- ④-- AC input port
- ⑤-- AC output port
- ⑥-- Solar input port
- ⑦-- Battery input port

Inverter battery protection voltage parameter table-12V;			
Overvoltage protection	Overvoltage recovery	Undervoltage alarm	Undervoltage protection
67.2	64.0	43.2	42.0
Close the AC output	Restore AC output	Maintain AC output	Utility bypass Mains charge

5.5 Audible alarm reminder instruction

Equipment running normal	Buzzing prohibit	Buzzer is no tweet under default state
	Buzzer starts	Buzzer tweet 4 times every 15s, indicate the equipment operated under battery inverter state
Battery high voltage alarm	Buzzer tweets 4 times per second, alarms high voltage	
Battery low voltage alarm	Buzzer tweets 2 times per second, alarms low voltage	
Over temperature alarm	Buzzer alarm 2 seconds pause 1 second	

5.6 Electric generator connection announcements:

If connect electric generator, it needs operating as below:

- 5.6.1 Start up electric generator and after it running stable, make electric generator output power supply be connected into the equipment input terminal, then make sure the equipment output is no-load, then start up the equipment.
- 5.6.2 After the equipment starting, then connect load one by one
- 5.6.3 We suggest electric generator capacity should be 2~3 times of this equipment

5.2 Photovoltaic controller Charger-Disable

Connect to the photovoltaic module, unplug the solar energy input circuit breaker on the side panel of the equipment to the closed state. When the solar module is exposed to sunlight, the "PV" indicator light on the front panel will light up. At this time, the controller is already in the charging state, and the photovoltaic module will supplement the battery power through the controller;

5.3 Equipment shutdown

Shutdown: Turn off the loads, disconnect AC input, and then press the "power on / off button" for 2 seconds, release after the internal relay action, the device off the AC output and LCD screen is turned off. Switch off all the circuit breakers.

OPERATION PRECAUTIONS: Please follow the following steps to turn on the inverter. First switch on the battery circuit breaker, and then switch on the solar input circuit breaker. To turn off the inverter, switch off the solar input breaker, then switch off the battery circuit breaker;

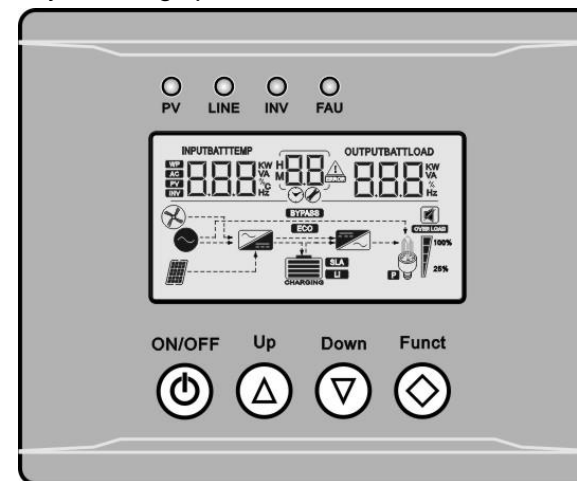
Caution: If the inverter is idle for long time, please turn off the battery breaker to avoid the battery deep discharging. Unless the solar power or AC input is connected to maintain the battery at safety level.

5.4 Battery protection voltage of the inverter Introduction / Parameter table

When the AC output is turned on, the relevant protection or indication will be executed when the battery voltage reaches the value in the table below.

3.4 Front panel instructions

3.4.1 LCD display and function key operation interface, can display the working status of the equipment, such as: Input / output voltage, frequency, mains mode, the inverter mode, battery capacity, charge current, charge the total load capacity, warning tips;



3.4.2 Keys Description

Function keys		Decription
	Power on / off key	Single on / off control
	Page up/set key	Under the main interface, click to view the device parameters and set the increment under the interface
	Scroll down/set key	Under the main interface, click to view the device parameters and set the decrement under the interface
	Function keys	Long press to enter device mode setting /Under the setting interface, short press the button to confirm the parameters and return to the main interface

3.4.3 LED Status Description

LED display			Description
PV	Green	Light	PV start charging
		OFF	PV stop charging
LINE	Green	Light	The AC is connected and the output is bypassed
		OFF	Do not connect AC power or it is in inversion state
INV	yellow	Light	The device is in inversion state
		OFF	The device is not in inversion state
FAU	red	Light	AC output overload or Inverter fault
		OFF	The device work normally

4.3 Photovoltaic module access instructions

After connecting the photovoltaic module with a suitable wire diameter, make sure that the voltage and power are within the rated range, and connect it to the "⑥--Solar input port " on the side panel of the equipment. Pay attention to the polarity error in the connection process of the photovoltaic module, so as not to damage the equipment.

4.4 Mains access instructions

Select the right diameter of the wire to connect the power supply to the side board of the equipment on the "④-- AC input port ";Note that the input ac voltage should be within the input range of the equipment to avoid damage the equipment .

4.5 Notes of output load

The load of 220VAC is connected to the "⑤-- AC output port" terminal The load power is the rated power of inverter with load detection function and load percentage display.

5 Power ON/RUN

Note: Check it the voltage and polarity of battery bank solar inputs make sure they are connected correctly.

5.1 Inverter Power ON/RUN

5.1.1 Battery starting

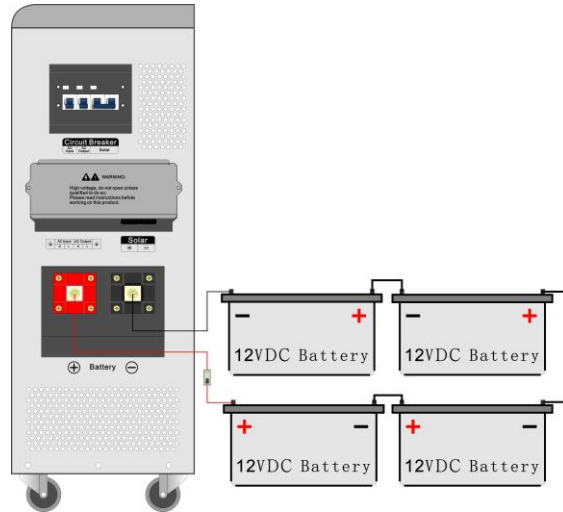
pull the battery breaker on the side panel to the closed state. Long press the "ON / OFF" button on the front panel for 2 seconds, release it after the buzzer beeps once .The "INV" indicator light, automatically open the inverter output.

5.1.2 Mains Input Power-on

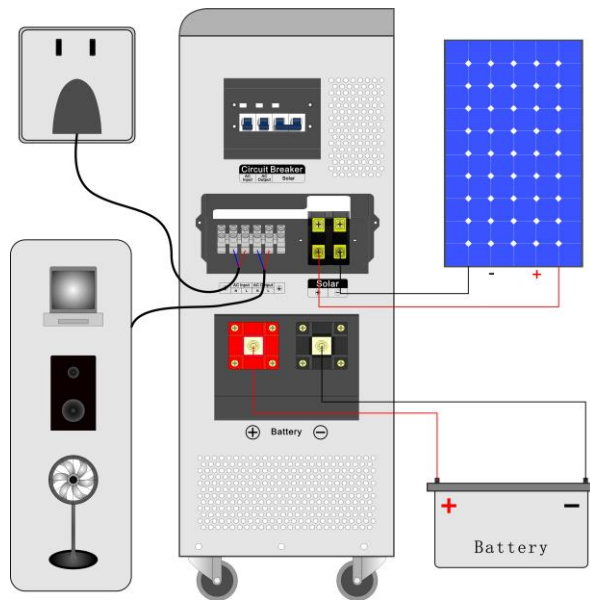
enter appropriate mains power then the side panel input circuit breaker is closed, the front board "LINE" indicator light, the device automatically output

4.2 Battery installation

4.2.1 48VDC series battery wiring graphical representation

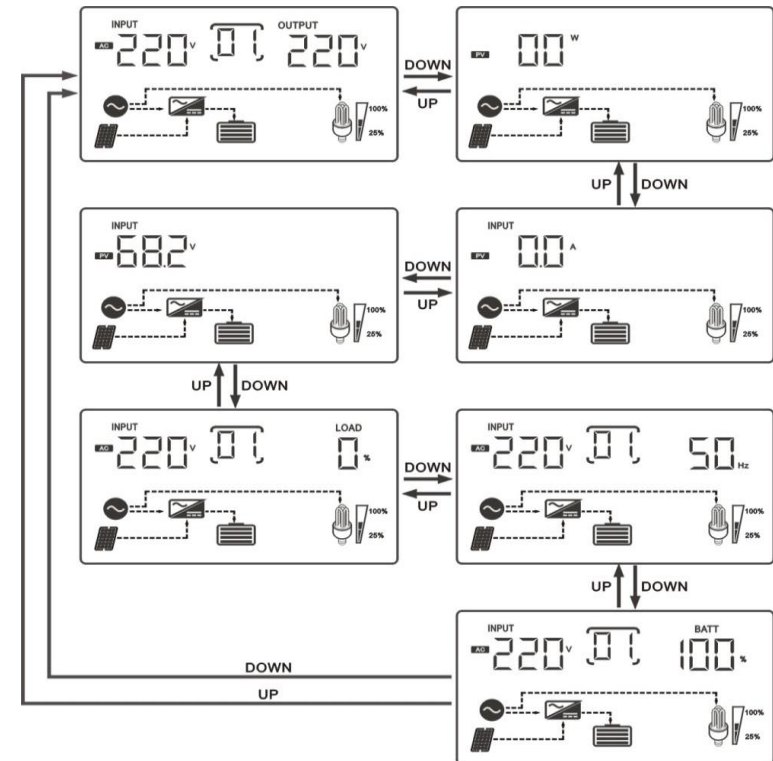


4.2.2 Input/Output wiring diagram

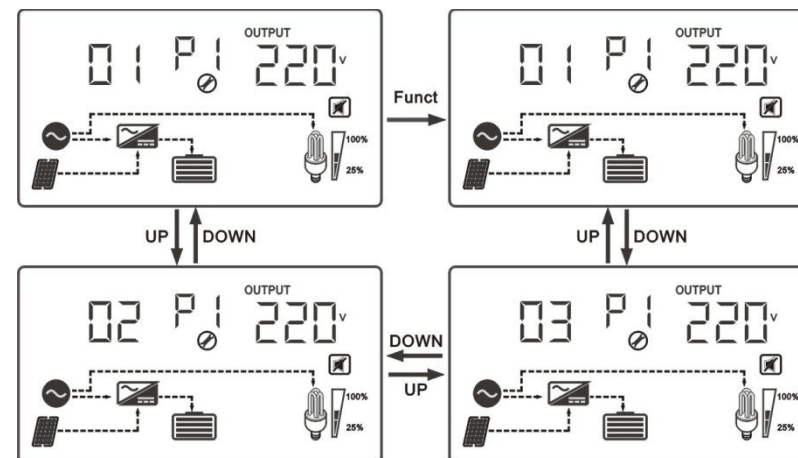


3.4.4 LCD display instruction

3.4.4.1 View the main interface: In the main interface, press DOWN or UP to scroll through the screen .



Main Menu	Functions
P4	Buzzer mode
P3	Inverter charging current
P2	Inverter charging voltage
P1	Inverter operating mode
P0	Save & Exit



4.1 Recommended line diameter

<p>The battery connecting wire diameter = $\frac{\text{Power rating(W)}}{\text{Rated battery voltage(V)} \times 5\text{A/mm}^2}$</p>
<p>AC connection wire diameter = $\frac{\text{Power rating(W)}}{\text{Rated AC voltage} \times 5\text{A/mm}^2}$</p>

<p>The battery connecting wire diameter = $\frac{5000W}{48VDC \cdot 5A/mm^2} \approx 20(mm^2)$</p>
<p>AC connection wire diameter = $\frac{\text{Power rating}(W)}{\text{Rated AC voltage} \cdot 5A/mm^2} \approx 6(mm^2)$</p>

3.4.5.4 Inverter working mode setting

Under the main interface, long press the Funct key for 5 seconds or less to enter the main menu, press the DOWN key to select the inverter work mode information P1, press the Funct key to enter the setting interface, adjust the inverter work mode (01-03) through DOWN or UP key, press the Funct key to save and exit.

con	Working mode	Running state
01	The grid priority mode	Mains priority mode, after the device starts and the grid input under normal operation, the equipment through the grid bypass regulator to supply power to the load, at the same time power battery; When the grid is having too high/low/serious distortion or other abnormal , equipment will make battery energy through internal module transfer into high quality electricity and supply power to load.
03	Battery priority mode	Battery priority mode, When the battery in the external charging device (such as solar charging system) after adequate power charged, equipment will automatically convert to battery energy through internal module into high quality electricity for load; When the battery power drops to a low voltage threshold, the device supplies power to the load through the mains bypass voltage regulation, but does not add power to the battery pack. This mode is mainly designed for new energy power generation systems (such as wind and solar power generation systems)

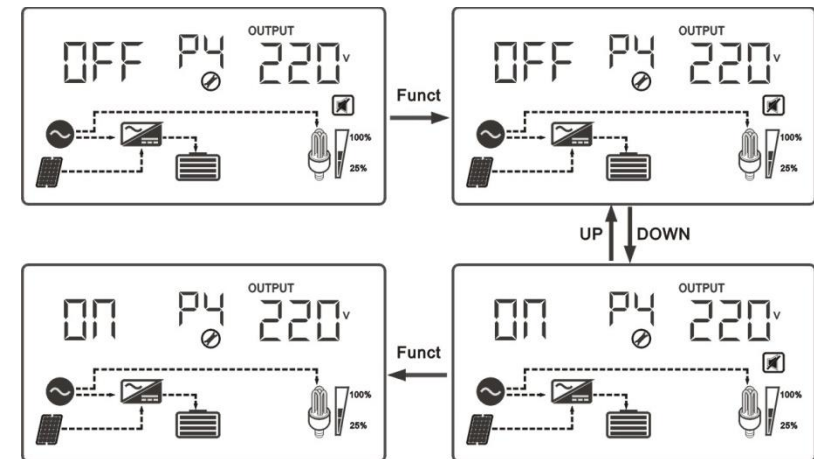
3.4.5 ParametersSetting

3.4.5.1 Buzzer mode Settings

Under the main interface, long press the Funct button for 5 seconds or less to enter the main menu, press the DOWN button to select the buzzer information P4, press the Funct button to enter the setting interface, turn on/off the buzzer state through DOWN or UP key, and press the Funct key to save and exit.

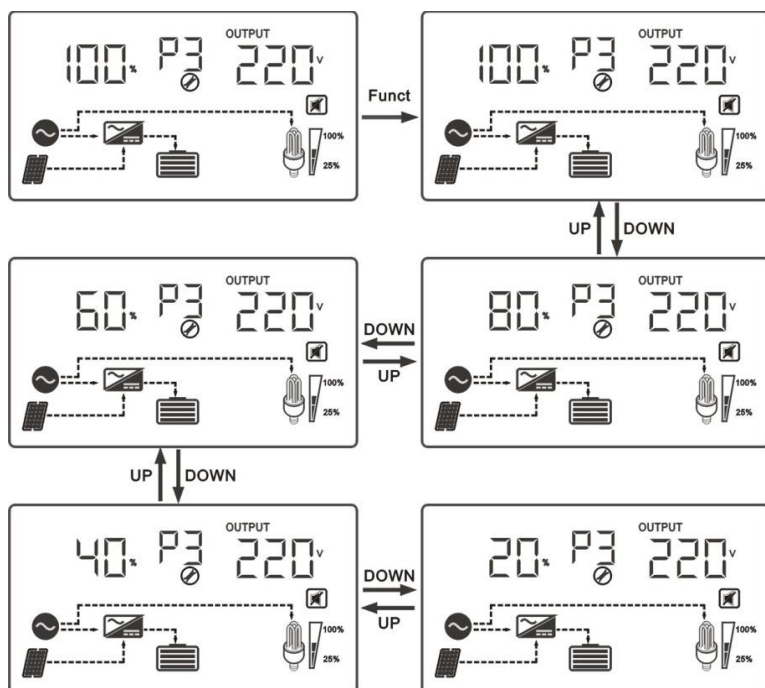
On Indicates that the buzzer is on;

OFF Indicates that the buzzer is off;



3.4.5.2 Inverter charging current setting

Under the main interface, long press the Funct button for 5 seconds or less to enter the main menu. Press the DOWN button to select the inverter charging current information P3. Press the Funct button to enter the setting interface . Through DOWN or UP keys, increase /decrease The charge current of the inverter (100%-80%-60%-40%-20%). Pressed Funct to save and exit.



3.4.5.3 Inverter charging voltage setting

Under the main interface, long press the Funct button for 5 seconds or less to enter the main menu. Press the DOWN button to select the inverter work mode information P2. Press the Funct button to enter the setting interface, Adjust the charging voltage of the inverter by DOWN or UP key, Pressed Funct to save and exit.

Charging voltage value	Voltage type
54.8	Gel U.S.A
53.6	A.G.M.1
54.8	A.G.M.2
55.2	Gel European
55.2	Open lead acid
54.4	Calcium(open)
58.0	De sulphation cycle 15.5 for 4 hrs

