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User Manual

Alternating current power supply



ECHO-8

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1 Instruction Guide

Thank you for choosing our energy storage system, Please read and understand all of the contents of this manual carefully before installing and using this product. If you have any suggestions foruse, please feel free to give us your feedback.

1.1 Applicant Product

To use of this product should be in accordance with local standards, laws, and regulations, as any noncompliance may result in injury or property damage .
The drawings provided in this manual are used to explain concepts related to the product ,including product information, installation instructions, electrical connections, system commissioning ,safety information, common problems, and maintenance.
The internal parameters of this product have been adjusted before shipment. Do not change any internal parameters without permission.
Any unauthorized changes to the settings will void the warranty, and the company will not be liable for any damages resulting therefrom.

1.2 Icon Definition

Please read the following icon definition descriptions carefully.

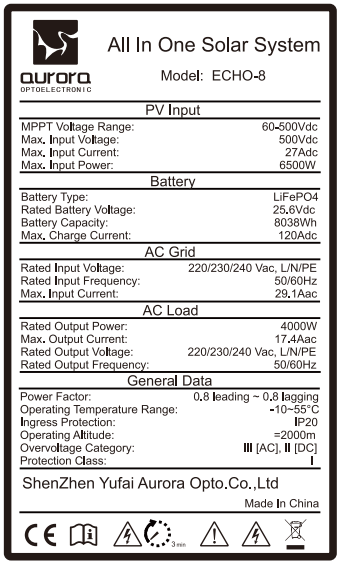
Icon	Description
	High risk! If not avoided, death or serious injury will result.
	Medium risk! If not avoided, it can occur resulting in death or serious injury.
	Low Risk! May result in minor or moderate injuries if not avoided.
	Warning information about the safety of the device or environment. If not avoided, equipment damage, data loss, performance degradation, orother may result in battery damage.No personal injury was involved.

2 Safety Precautions

2.1 Warning Labels

Symbols	Description
	Do not dispose in trash
	Before use, please refer to the instruction manual.
	Certification in European union area
	Electric shock hazard
	Warning
	Wait for three minutes after power-off before touching





2.2 Risks

2.2.1 Important Tips

Read this manual and all safety precautions in this manual before installing, operating, maintaining the equipment.
The items indicated in this manual as "DANGER," "WARNING,""CAUTION," and "NOTICE"do not represent all safety items to be observed, but are only supplementary to all safety precautions.
The items listed as "DANGER," "WARNING," "CAUTION," and "NOTICE" in this manual do not represent the full range of safety items that need to be observed, but rather supplement all safety precautions. The Company shall not be liable for any violation of the general requirements for safe operation or of the safety standards for the design, manufacture, and use of the equipment. The equipment must be used in an environment that complies with the design specifications. Failure to do so may result in equipment malfunction, and the equipment warranty does not cover abnormal equipment function or component damage, personal safety accidents, or property damage resulting therefrom. Observe local laws, regulations and codes when installing, operating and maintaining the equipment. The safety precautions in this manual are only supplementary to local laws, regulations and codes. The Company shall not be liable for any of the following.

1. This equipment cannot be operated under the operating conditions described in this manual.
2. The installation and operating environment exceeds the requirements of relevant international or national standards.
3. The product has been disassembled or altered, or the software code has been modified without authorization.
4. Operating instructions and safety warnings related to products and files are not observed.
5. Damage to equipment is caused by abnormal natural circumstances (act of God, such as earthquake ,fire and storm).
6. Transportation damage is caused during the customer's own transportation.
7. Damage caused by storage conditions that do not comply with the requirements of the relevant file for the product.

2.2.2 Operational Risk Tips

Icon	Description
	It is strictly prohibited to install the system with power on.
	Installation, use and operation of any outdoor equipment or cables (including but not limited to transportation equipment, operating equipment and cables ,plugging and unplugging signal ports connected to outdoor, working at altitude and outdoor installation) are strictly prohibited in bad weather, such as thunder, rain, snow and force 6 wind.
	In case of fire, evacuate the building or system area immediately and press the fire alarm bell or call the fire alarm number. Re-entering a burning building is strictly prohibited under any circumstances.
	Under no circumstances shall the structure and installation sequence of the system be altered without the permission of the manufacturer.
	The system cannot be hoisted during transportation.
	It is strictly prohibited to alter, damage or cover the signs and nameplates on the system.
	Before installation, the composition and working principle of the entire system should be fully understood, as well as the relevant standards of the country/regionwhere the project is located.
	Empty packing materials such as cardboard boxes, Styrofoam, plastic and cable ties should be removed from the system area after the system has been installed.

2.2.3 Safety

1. Wear appropriate personal protective equipment when operating the device. If you notice any malfunction that may cause injury or system damage, immediately stop operation, report it to the responsible person, and take effective protective measures.
2. Before using any tools, learn the proper way to use them to avoid injury and damage to the device.
3. If the temperature of the housing becomes too high while the system is operating, it may cause burns. Therefore, do not touch the case.
4. To ensure personal safety and normal use, ground the unit reliably before use.
5. Do not open or damage the battery. The released electrolytes are harmful to the skin and eyes, avoid contact.
6. Do not place unrelated objects on top of the system or insert them into any part of the system.

7. Do not place flammable items around the system.
8. Do not place the system in the fire to avoid explosion and endanger personal safety.
9. Do not place battery components in water or other liquids.
10. Do not short-circuit the battery terminal, as short-circuiting the battery may cause combustion.
11. The battery may cause an electric shock.
12. When using the system, the following precautions should be taken:
    A. Remove watches, rings, and other metal accessories.
    B. Use tools with insulated handles.
    C. Wear rubber gloves and rubber shoes.
    D. Do not touch the system while charging.

2.3 Staffing requirements

1. The personnel responsible for installation and maintenance must receive strict training, understand all safety precautions, and master the correct operation method.
2. Only qualified and specialized or trained personnel are permitted to install, operate and maintain the system.
3. The personnel who operate the system, including the operators, trained personnel, and professional personnel, must have special operation qualifications such as high-pressure operation .high-altitude operation, and special equipment operation qualifications specified by the local country.
4. Replacement of equipment or parts (including software) must be done by a professional or authorized person.

2.4 Electricity safety

2.4.1 General requirements

Icon	Description
	Before making electrical connections, ensure that the system is not damaged,otherwise electric shock or fire may occur.
	Do not install or remove any cables while the power is on. When a cable comes into contact with a conductor, an electric arc or fire may be created, which may cause fire or injury.

1. All electrical connections must comply with the electrical standards of the country in which the project is located.
2. If cables made by the user should comply with local laws and regulations. Special insulation should be used for high voltage work.
3. Before connecting the power cord, make sure that the labeling on the power cord is correct.
4. Operation of the unit is permitted only after the system has been completely turned off for 5 minutes.
5. When cables are used in high-temperature environments, the insulation of the cables may become dull or damaged. Therefore, the distance between the cable and the heat source must be at least 30 mm.
6. Cables of the same type should be bundled together, and cables of different types should bebundled and routed at least 30 mm apart and not wrapped together or crossed.

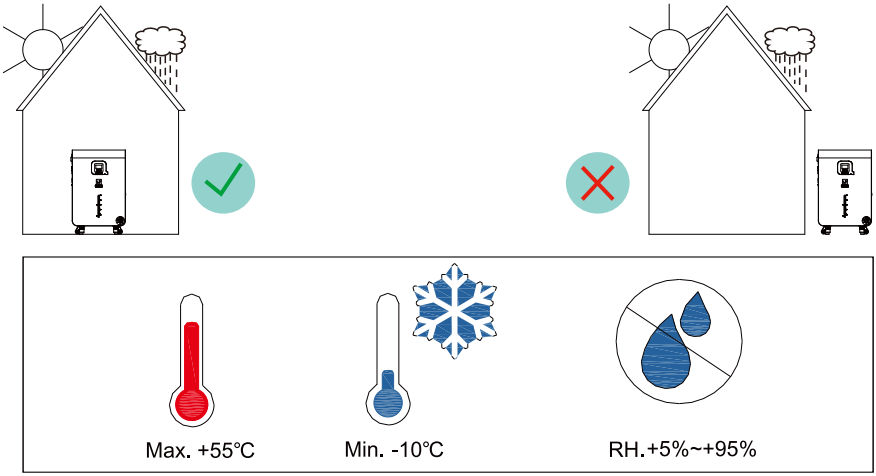
2.4.2 Grounding requirements

1. Before installing a grounding device, install a protection grounding cable. When removing the device, remove the protective grounding cable at the end.
2. Do not damage the grounding conductor.
3. Do not operate the system without a grounding conductor.
4. The equipment should be permanently connected to a protective ground wire. Before operating the equipment, the electrical connections to the equipment should be checked to ensure that the equipment is reliably grounded.

2.5 Installation Environmental Requirements

1. This product is for indoor use only. Outdoor use is strictly prohibited.
2. Do not install or use this product in an environment where the temperature is below -10 °C or above 55 °C.
3. Install in a dry and well-ventilated environment to ensure good heat dissipation.
4. The product can be installed at altitudes up to 2000 meters.
5. Installation should be located away from fire sources.
6. The product should be installed and used away from children and animals.
7. Installation should be away from sources of water, such as water taps, sewage pipes and sprinklers, to avoid entering the water.
8. The device shall be placed on a solid, flat supporting surface.
9. Do not place any flammable or explosive items around the equipment.
10. Do not block ventilation outlets or heat dissipation systems while the equipment is in operation to prevent high temperatures from causing fires.

Icon	Description
	The operation and service life of the energy storage system are relate to the operating temperature. Please note the temperature range.



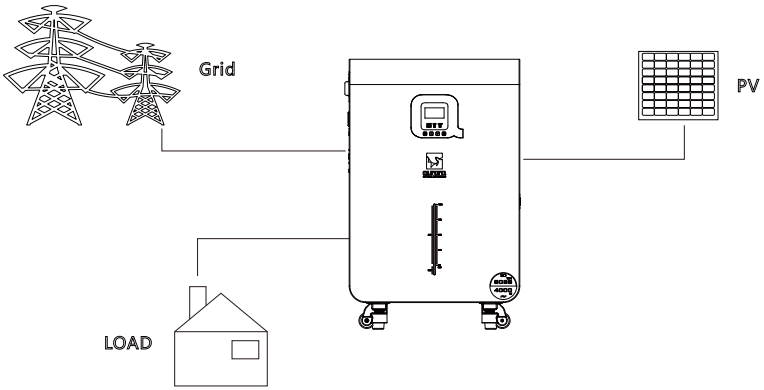
3 Product Parameters

Model		ECHO-8
System Specification		
Nominal Output Power		4000w
AC Output Frequency and Voltage		50/60Hz;L+N+PE;220/230Vac
Grid Type		Single-phase
Energy Range		8kWh
Maximum AC charging current		100 A
Maximum PV charging current		120A
Battery Operating Voltage		22.4-28 V
Battery Type		LiFePO4
Altitude		≤2000m
Protection Level		IP20
Installation		Floor Mounting
Warranty Period		Two years(0.5C charge/Discharge @25℃, 80% DOD)
Inverter Technical Specification		
Max. PV Input Power		6500w
Max. PV Input Current		27A
Max. PV Charge Current		120A
Rated PV input Voltage		60-500VDC
MPPT Voltage Range		60-500VDC
No. of MPP Tracker		1
Battery Technical Specification		
Nominal Capacity		314Ah
Nominal Voltage		25.6V
Recommend Charge/Discharge current		100A
Max. continuous charge/Discharge current		200A
Peak Charge/Discharge current(@10s)		210A
Other		
Working Temperature Range	Charge	0 ~ +55℃
	Discharge	- 10℃ ~ +50℃
Storge Temperature Range	One month	- 10℃ ~ +45℃
	Six months	- 10℃ ~ +35℃
Cycle Life (@25℃)		≥8000 Cycles
Display		LCD+LED
Protection		Built-in smart BMS
Certification		UN38.3
Product Dimension		540*270*770mm±5mm
Package Dimension		650*320*920mm±5mm
Product Weight Approximate		72.5±1Kg
Package Weight Approximate		82.5±1Kg

4. Packing list

No.	Description	Quantity
1	User Manual	1
2	Warranty card	1
3	Certification	1
4	Tubular terminal	8

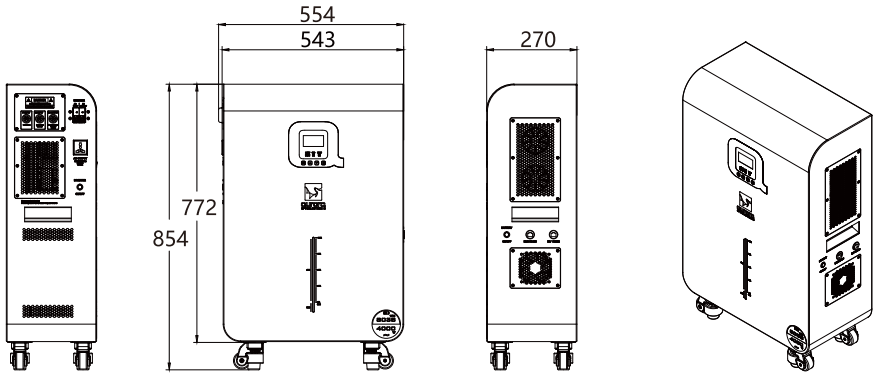
5. Basic System Architecture



6. Product Overview

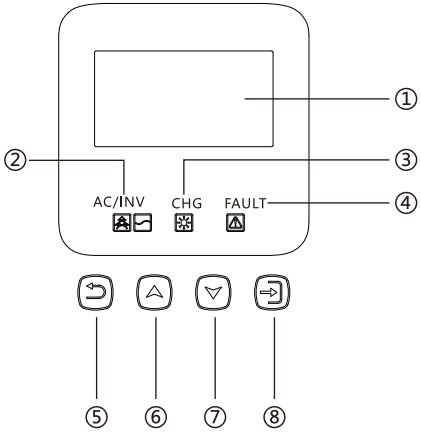
6.1 Dimension drawing

Product dimension:(L*W*H):550*270*772mm±10mm



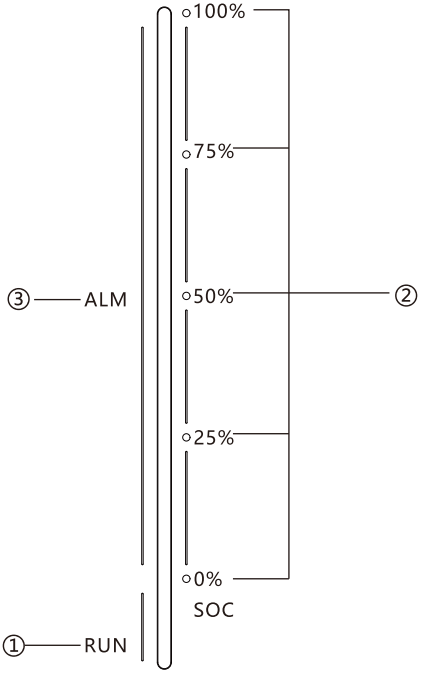
6.2 Product appearance introduction

6.2.1 Inverter LCD display



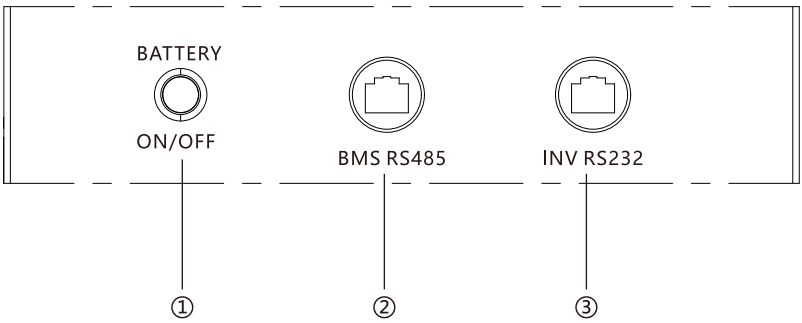
① : LCD display
② : Status indicator
③ : Charging indicator
④ : Fault indicator
⑤ : ESC
⑥ : UP
⑦ : DOWN
⑧ : ENTER

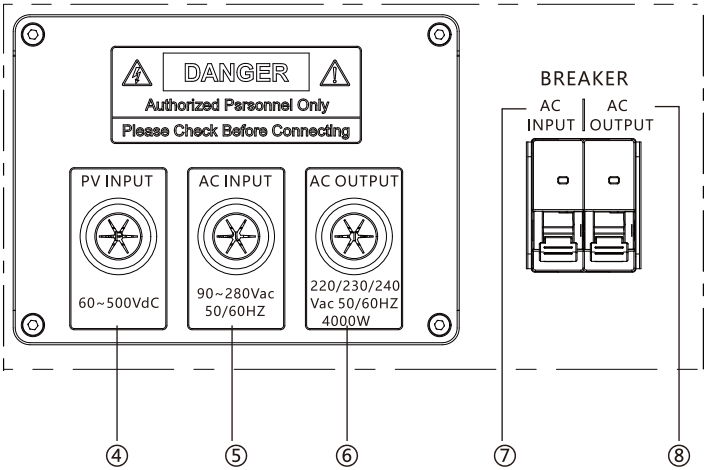
6.2.2 Battery indicator

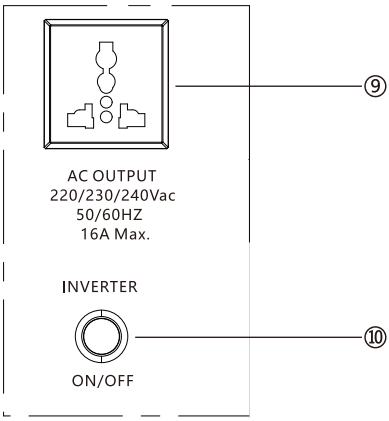


① : RUN indicator
② : SOC indicator
③ : ALM indicator

6.2.3 Terminal introduction







① : Battery switch
② : Battery host computer
③ : WIFI/Inverter host computer
④ : PV INPUT
⑤ : AC INPUT
⑥ : AC OUTPUT
⑦ : AC INPUT Breaker
⑧ : AC OUTPUT Breaker
⑨ : AC OUTPUT fast interface
⑩ : Inverter switch

7 System Installation

7.1 Pre-installation inspection

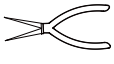
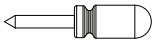
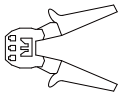
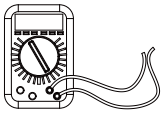
Packaging Inspection:

Before opening the outer package of system, check the outer package for obvious damage, such as holes, cracks or other possible signs of internal damage, and check the type of system, If there is any abnormality or inconsistency in the system package or model, please do not open it and contact us as soon as possible.

Inside Inspection:

After opening the outer packaging, check whether the product is complete and whether there is any obvious external damage. If any items are lost or damaged, please contact us.

7.2 List of installation tools

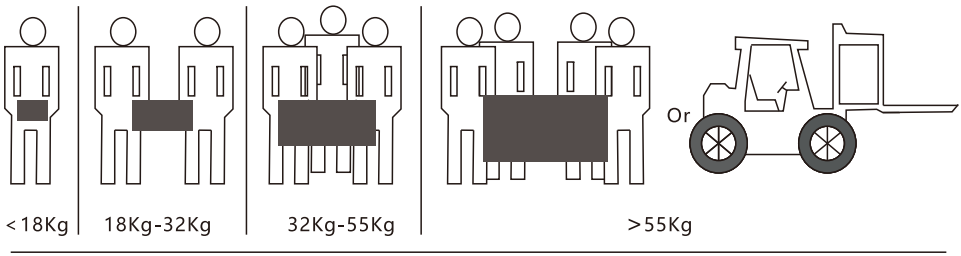
<table>
<tr><th>Item</th><th colspan="4">Tools</th></tr>
<tr><td rowspan="4">Tools</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Diagonal plier</td><td>Tape measure</td><td>Screwdriver</td><td>Crimping pliers</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2">Nylon tie</td><td colspan="2">Multimeter</td></tr>
<tr><td rowspan="2">Personal protective measures</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2">Safety gloves</td><td colspan="2">Safety shoes</td></tr>
</table>

7.3 Install position selection

7.3.1 Basic requirements

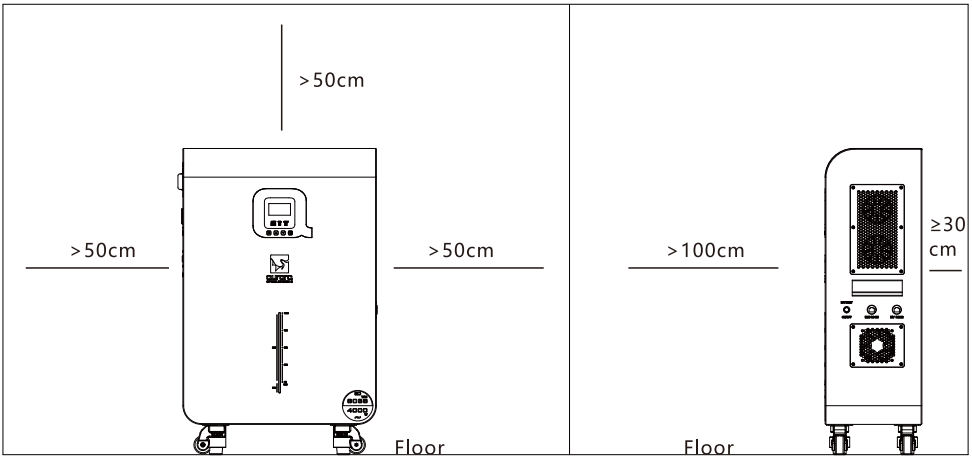
1. When the system is running, the temperature of the box and the radiator will be very high. Therefore, do not install them in an easily accessible place.
2. Do not install in places where flammable and explosive materials are stored.
3. Do not install it where children can touch it.
4. The system cannot be installed front, horizontal, reverse, back or side.

5. When handling any heavy object, you should be prepared to carry the weight to avoid being crushed or sprained.



7.3.2 Installation space requirements

The system should be placed in the correct position, the installation site should be smooth, Installation space is reserved as shown in the figure below..



8 Electrical connection

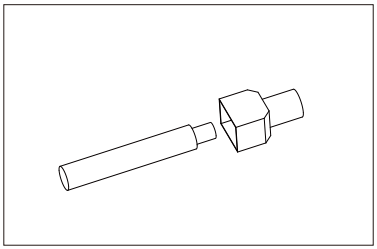
USER READING	
DANGER!	Before making an electrical connection, ensure that the system switch is in the"Off" state. Otherwise, the high voltage of the device may result in electric shock.
CAUTION!	Operations related to electrical connections must be carried out by professional electrical technicians. Operators must wear personal protective equipment when making electrical connections.

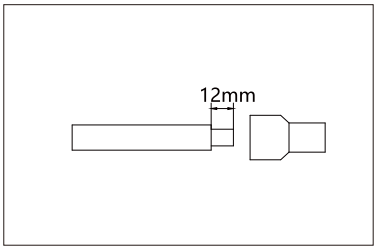
8.1 Required cables

NO.	Wire	Description	Recommend Spec	Remark
1	PV input wire	Connect PV and inverters	Diameter 4 mm2 (Copper core)	Prepared by user
			Diameter 6 mm2 (Aluminum core)	
2	AC input wire	Connect Grid and AC INPUT circuit breakers	Diameter 4 mm2 (Copper core)	Prepared by user
			Diameter 6 mm2 (Aluminum core)	
3	AC output wire	Connect household loads and output circuit breakers	Diameter 4 mm2 (Copper core)	Prepared by user
			Diameter 6 mm2 (Aluminum core)	

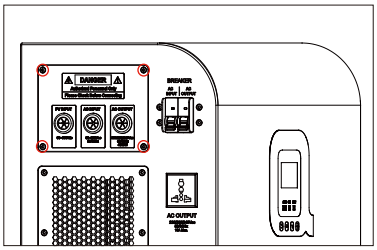
8.2 Connection

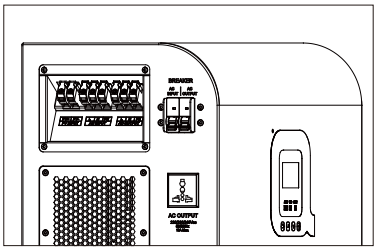
1. Use the tubular terminals in the accessories to make the wire.





2. Remove the baffle using an screwdriver.



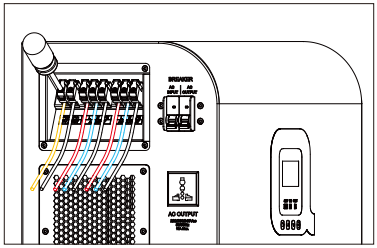


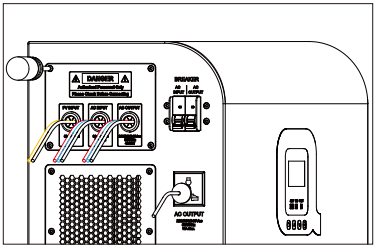
3. Connect the PV/AC cables.

USER READING	
CAUTION!	Before connecting to PV modules, please install separately a DC circuit breaker between inverter and PV modules. The recommended spec of breaker is 32A.And Before making PV connection be sure to open DC protector or disconnector first.

CAUTION!	When choosing the right PV module, be sure to first consider the following requirements :The open circuit voltage (Voc) of the PV modules does not exceed the maximum PV array open circuit voltage of the inverter. The maximum supply voltage of the PV modules should be close to the optimal PV access voltage range of the inverter for best performance. If one PV module cannot meet this requirement, it is necessary to connect multiple PV modules in series.
CAUTION!	Before making AC input/output connection be sure to disconnect the AC circuit breaker. There are two terminal blocks with " iN " and " OUT" markings. Please do not mis-connect input and output connectors. Insert AC input wires according to polarities indicated on terminal block . First, ensure that the PE (protective earth) connection is properly made.

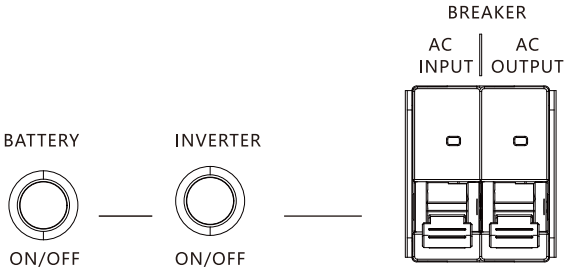
Pass the wire through the cover plate, connect it to the terminal, and then use a screwdriver to secure the cover plate.





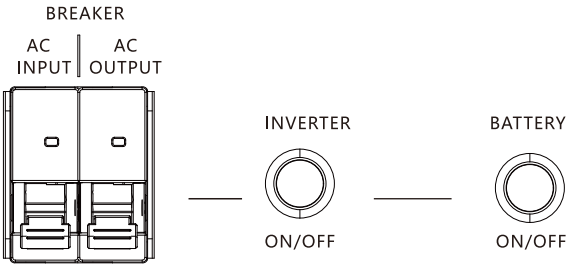
9 Operation

9.1 System power on



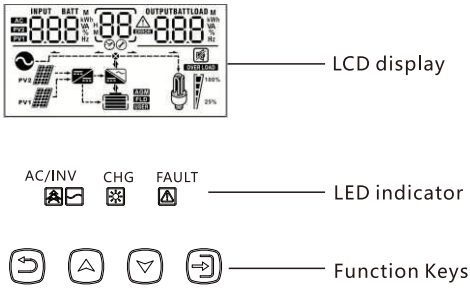
Open the battery switch - inverter switch - AC INPUT circuit breaker-PV circuit breaker - AC OUTPUT circuit breaker.

9.2 System power off



OFF AC OUTPUT circuit breaker-AC INPUT circuit breaker-PV circuit breaker -inverter switch-the battery switch.

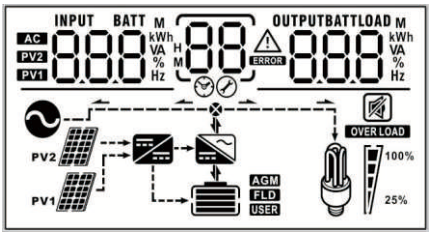
9.3 Inverter operation and Display Panel



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

Function Key	Description
ESC	To exit setting mode
UP	To go to previous selection
DOWN	To go to next selection
ENTER	To confirm the selection in setting mode or enter setting mode

LCD Display Icons



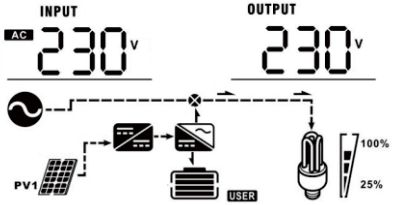
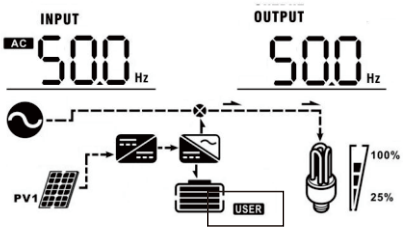
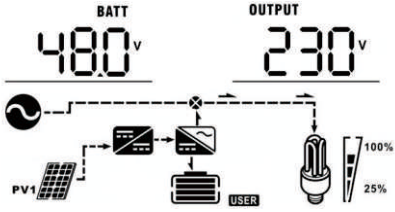
Icon	Function
Input source information	
AC	Indicates the AC input
PV1	Indicates the 1st PV panel input
PV2	Indicates the 2nd PV panel input
Left digital display information	
	Indicate input voltage, input frequency, battery voltage, V1 voltage, PV2 voltage, charger current
Middle digital display information	
	Indicates the setting programs.
	Indicates the warning and fault codes. Warning: Flashing  with warning code Fault: display  with fault code
Right digital display information	
	Indicate the output voltage, output frequency, load percent, load VA, load W, PV1 charger power, PV2 charger power, DC discharging current.
Battery information	
	Indicates battery level by 0-24%,25-49%,50-74% and 75-100% and charging status.
AGM FLD USER	Indicates the battery type: AGM, Flooded or User-defined battery.
Load information	
OVER LOAD	Indicates overload.
	Indicates the load level by 0-24%,25-50%,50-74%,and 75-100%.

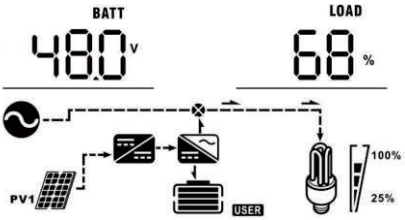
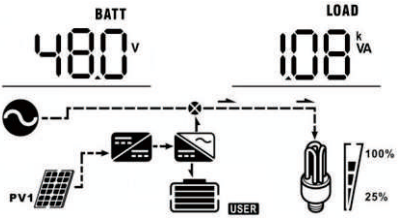
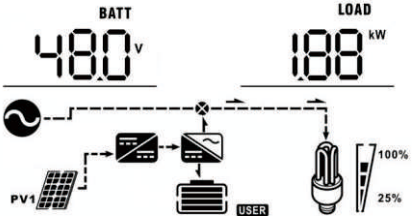
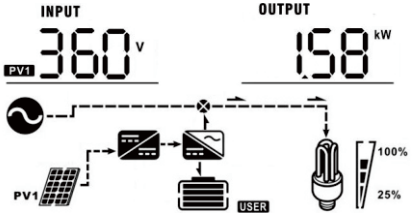
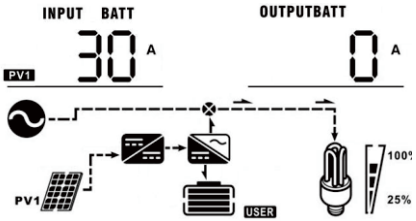
0%~25%	25%~50%	50%~75%	75%~100%
			

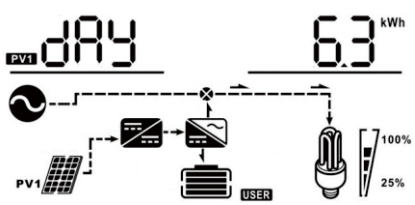
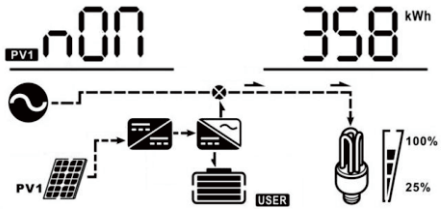
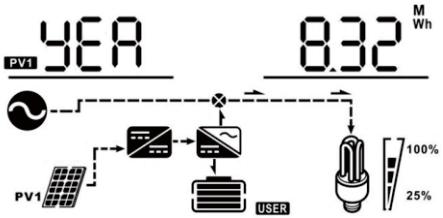
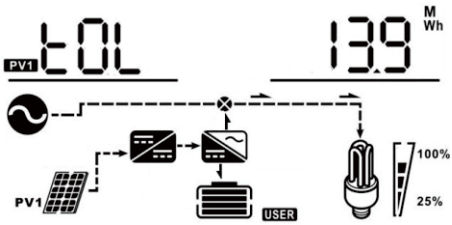
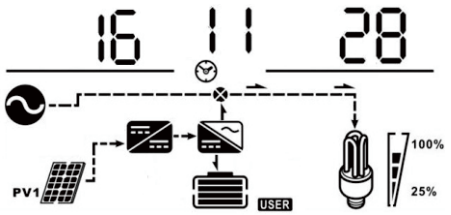
Mode operation information	
	Indicates unit connects to the mains.
PV1	Indicates unit connects to the 1st PV panel
	Indicates the solar charger is working
	Indicates the DC/AC inverter circuit is working.
Mute operation	
	Indicates unit alarm is disabled.

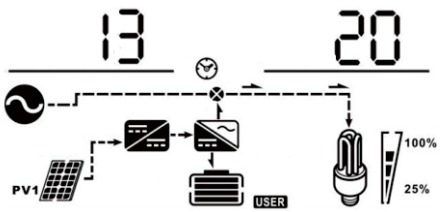
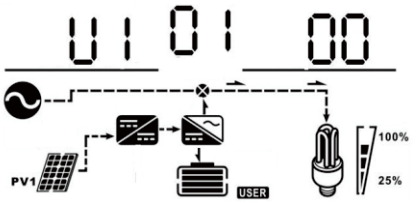
Display Setting

The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The selectableinformation is switched as below order: input voltage, input frequency, PV voltage, charging current.battery voltage, output voltage, output frequency, load percentage, load in Watt, load in VA, load inWatt, DC discharging current, main board firmware version and $CC firmware version.

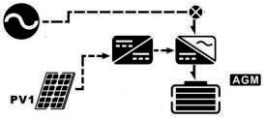
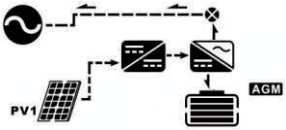
Select item	LCD display
Input voltage and output voltage (Default Display Screen)	Input Voltage=230V, output voltage=230V 
Input frequency and output frequency	Input frequency=50.0Hz, output frequency=50.0Hz 
Battery voltage and output voltage	Battery Voltage=48.0V,output voltage=230V 

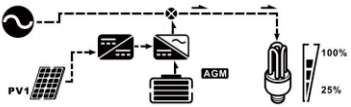
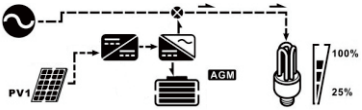
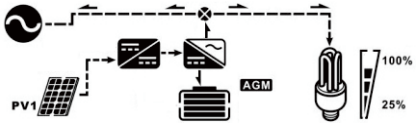
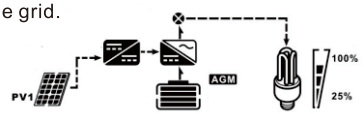
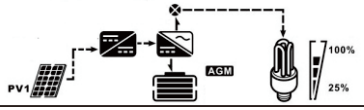
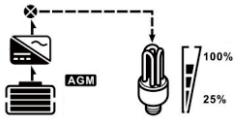
Battery voltage and load percentage	Battery Voltage=48.0V,load percentage 68% 
Battery voltage and load in VA	Battery Voltage=48.0V, load in VA=1.08kVA 
Battery voltage and load in Watt	Battery Voltage=48.0V, load in Watt=1.88kW 
PV1 voltage and PV1 charger power	PV1 Voltage=360V, charging power=1.58kW 
Charger current and DC discharging current	Charging current=30A, discharging current=0A 

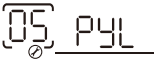
PV energy generated today	Today energy = 6.3kWh 
PV energy generated this month	This month energy = 358kWh. 
PV energy generated this year	This year energy = 8.32MWh 
PV energy generated totally	Total energy = 13.9MWh 
Real date	Real date Nov 28, 2016. 

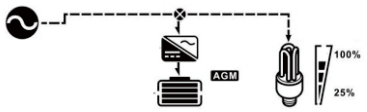
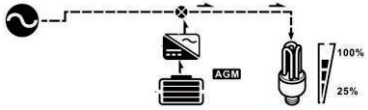
Real time	Real time 13: 20. 
Main board firmware version	Version 00001.00 

Operating Mode Description

Operating mode	Behaviors	LCD display
Standby mode Note: *Standby mode: The inverter is not turned on yet but at this time, the inverter can charge battery without AC output. *Power swing mode: If enabled, the output of inverter will be off when connected load is pretty low or not detected.	No output power, solar or utility charger available	Battery is charged by utility. 
		Battery is charged by PV energy. 
		Battery is charged by utility and PV energy. 
		Battery is charged by PV energy and feed PV energy grid. 
		No charging. 

Line mode	Output power from utility. Charger available	PV energy, battery power and utility provide power to load. 
	Output power from utility. Charger available	PV energy and utility charge battery, and utility provides power to load. 
		PV energy charges battery, utility and PV energy provide power to the load. 
		PV energy charges battery, PV energy provides power to the load and feeds remaining energy to the grid. 
Battery mode	Output power from battery or PV	PV energy charges battery, PV energy provides power to the load and feeds remaining energy to the grid. 
		PV energy and battery energy supply power to the load. 
		Battery provides power to the load. 
Only PV mode	Output power from PV	PV provides power to the load. 

03	AC input voltage range	Appliances (default) 	If selected, acceptable AC input voltage range will be within 90-280VAC.
		UPS 	If selected, acceptable AC input voltage range will be within 170-280VAC.
05	Battery type	AGM (default) 	Flooded 
		User-Defined 	If "User-Defined" is selected, battery charge voltage, low DC cut-off voltage and dual cut -off voltage can be set up in program 24,26,27,29 and 61.
		LIA-protocol compatible battery 	If selected,programs of 24,26,27 and 29 will be automatically set up. No need for further setting.
		Pylontech battery 	
		Techfine battery 	
		Growatt battery 	
		LIB-protocol compatible battery 	Select “LIB if using Lithium battery compatible to Lib protocol. If selected, programs of 26,27 and 29 will be automatically se up. No meed for further setting.
		3 rd party lithium battery 	If selected, programs of 26,27 and 29 will be automatically set up. No need for further setting. Please contact the battery supplier for installation procedure.

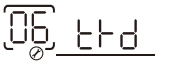
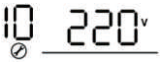
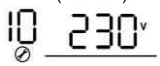
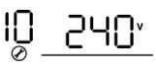
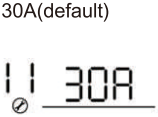
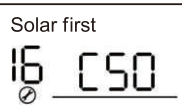
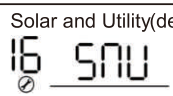
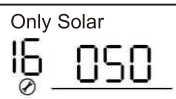
Line mode	Output power from utility. Charger available	Utility charges battery and provides power to load.  Utility and battery power provide power to load. 

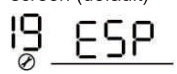
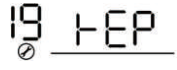
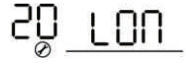
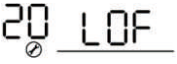
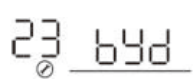
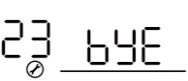
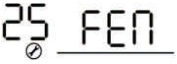
LCD Setting

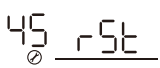
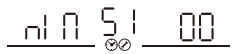
After pressing and holding ENTER button for 3 seconds, the unit will enter setting mode. Press"UP" or "DOWN" button to select setting programs. And then, press "ENTER" button to confirm the selection or ESC button exit.

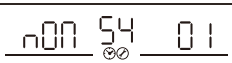
Setting Programs:

Program	Description	Selectable option	
00	Exit setting mode	Escape 	
01	Output source priority selection		Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, Utility energy will supply power to the loads at the same time.
			Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, battery energy will supply power to the loads at the same time. Utility provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program 12 or solar and battery is not sufficient.
02	Maximum charging current: To configure total charging current for solar and utility chargers. (Max. charging current = utility charging current + solar charging current)	60A(default) 	Setting range is from 10A to maximum charging current. Increment of each click is 10A.

06	Auto restart when overload occurs	Restart disable(default) 	Restart enable 
07	Auto restart when over temperature occurs	Restart disable (default) 	Restart enable 
08	ECO function: System will temporarily stop when the load is low in battery mode.	disable (default) 	
		enable 	
09	Output frequency	50Hz(default) 	60Hz 
10	Output voltage	220V 	230V (default) 
		240V 	
11	Maximum utility charging current Note: If setting value in program 02 is smaller than that in program in 11, the inverter will apply charging current from program 02 for utility charger.	30A(default) 	Setting range is 2A, then from 10A to max.AC charging current. Increment of each click is 10A.
16	Charger source priorit: To configure charger source priority	If this inverter/charger is working in Line, Standby or Fault mode,charger source can be programmed as below:	
		Solar first 	Solar energy will charge battery as first priority. Utility will charge battery only when solar energy is not available.
		Solar and Utility(default) 	Solar energy and utility will charge battery at the same time.
		Only Solar 	Solar energy will be the only charger source no matter utility is available or not.
		If this inverter/charger is working in Battery mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient.	

<table>
<tr><td>18</td><td>Alarm control</td><td>Alarm on (default)
</td><td>Alarm off
</td></tr>
<tr><td rowspan="2">19</td><td rowspan="2">Auto return to default display screen</td><td>Return to default display screen (default)
</td><td>If selected, no matter how users switch display screen, it wil automatically return to defaultl display screen (Input voltage /output voltage) after no button is pressed for 1 minute.</td></tr>
<tr><td>Stay at latest screen
</td><td>If selected, the display screen will stay at latest screen user finally switches.</td></tr>
<tr><td>20</td><td>Backlight control</td><td>Backlight on (default)
</td><td>Backlight off
</td></tr>
<tr><td>22</td><td>Beeps while primary source is interrupted</td><td>Alarm on (default)
</td><td>Alarm off
</td></tr>
<tr><td>23</td><td>Overload bypass:
When enabled, the unit will transfer to line mode if overload occurs in battery mode.</td><td>Bypass disable (default)
</td><td>Bypass enable
</td></tr>
<tr><td>25</td><td>Record fault code</td><td>Record enable (default)
</td><td>Record disable
</td></tr>
<tr><td rowspan="2">28</td><td rowspan="2">Reset factory setting</td><td colspan="2">default:
</td></tr>
<tr><td colspan="2">48V system default setting:54.0V
</td></tr>
<tr><td rowspan="2">37</td><td rowspan="2">BMS Function Switch</td><td>off(default)
</td><td rowspan="2">Whether to enable the BMS communication function</td></tr>
<tr><td></td></tr>
<tr><td>38</td><td>Bat Soc Under Lock</td><td></td><td>If any type of lithium battery is selected in program 5.
BMS low voltage SOC value, if the BMS SOC value is lower than the set value, the inverter will shut down to protect the battery.</td></tr>
</table>

39	Bat Soc Turn To Ac		If any type of lithium battery is selected in program 5. When the working mode of the inverter is set to the battery priority mode, the inverter will be forced to enter the mains charging when the SOC of the BMS is lower than the set value.
40	Bat Soc Turn To Dc		If any type of lithium battery is selected in program 5. When the working mode of the inverter is set to the battery priority mode, the inverter resumes the DC working mode when the SOC of the BMS is higher than the set value.
41	Bat Restart Soc		If any type of lithium battery is selected in program 5. When the inverter is turned on, the SOC must be higher than the set value to work normally.
43	Solar supply priority		Solar energy provides power to charge battery as first priority.
			Solar energy provides power to the loads as first priority.
45	Reset PV energy storage	Notre set (Default) 	Reset 
50	Set country customized regulations	Mode 1 	If selected, acceptable feed-in grid voltage range will be 195.5-253VAC. Acceptable feed-in grid frequency range will be 49-51Hz.
		Mode 2 	If selected, acceptable feed-in grid voltage range will be 184-264.5VAC. Acceptable feed-in grid frequency range will be 47.5-51.5Hz.
		Mode 3 	If selected, acceptable feed-in grid voltage range will be 184-264.5VAC. Acceptable feed-in grid frequency range will be 57-62Hz.
		Mode 4(Default) 	If selected, acceptable feed-in grid voltage range will be 170-264.5VAC. Acceptable feed-in grid frequency range will be 47.5-51.5Hz.
51	Time setting-Minute	 For minute setting, the range is from 00 to 59.	

52	Time setting-Hour	 For hour setting, the range is from 00 to 23.
53	Time setting-Day	 For day setting, the range is from 00 to 31.
54	Time setting-Month	 For month setting, the range is from 1 to 12
55	Time setting-Year	 For year setting, the range is from 16 to 99.

9.4 Inverter fault and alarm description

9.4.1 Fault description

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

Fault Reference Code

Fault Code	Fault Event	Icon on
01	Fan is locked when inverter is off.	
02	Over temperature or NTC is not connected well.	
03	Battery voltage is too high.	
04	Battery voltage is too low.	
05	Output short circuited or over temperature is detected by internal converter components.	
06	Output voltage is too high.	
07	Over load time out.	
08	Bus voltage is too high	
09	Bus soft start failed	
51	Over currents or urge	
52	Bus voltage is too low	
53	Inverter soft start failed	
55	Over DC voltage in AC output	
57	Current sensor failed	
58	Output voltage is too low	
59	PV voltage is over limitation	

9.4.2 Alarm description

Alarm: The red LED flashes, and the LCD displays an alarm code, the inverter does not enter the failure mode.

Alarm indicator

Alarm Code	Alarm Event	Audible Alarm	Icon flashing
01	Fan is locked when inverter is on.	Beep three times every second	
02	Over temperature	None	
03	Batery is over-charged	Beep once every second	
04	Low battery	Beep once every second	
07	Overload	Beep once every 0.5 second	
10	Output power derating	Beep twice every 3 seconds	
15	PV energy is low.	Beep twice every 3 seconds	
16	High AC input (>280VAC) during BUS soft start	None	
E9	Battery equalization	None	
bP	Battery is not connected	None	

9.4.3 Code Reference

Related information code will be displayed on LCD screen, Please check inverter LCD screen for the operation.

Code	Description
60 ⚠	If battery status is not allowed to charge and discharge after the communication between the inverter and battery is successful, it will show code 60 to stop charging and discharging battery.
61 ⚠	Communication lost • After battery is connected, communication signal is not detected for 1 minutes, buzzer will beep. • Communication lost occurs after the inverter and battery is connected successfully, buzzer beeps immediately.
69 ⚠	If battery status is not allowed to charge after the communication between the inverter and battery is successful, it will show code 69 to stop charging battery.
70 ⚠	If battery status must to charge after the communication between the inverter and battery is successful, it will show code 70 to charge battery.
71 ⚠	If battery status is not allowed to discharge after the communication between the inverter and battery is successful, it will show code 71 to stop discharge battery.

9.5 Battery LED indicator

9.5.1 Capacity indicator

Status		Charge				Discharge			
Capacity indicator		25%	50%	75%	100%	100%	75%	50%	25%
Remaining capacity	0~25%	Flashing	Off	Off	Off	Off	Off	Off	Solid On
	25%~50%	Solid On	Flashing	Off	Off	Off	Off	Solid On	Solid On
	50%~75%	Solid On	Solid On	Flashing	Off	Off	Solid On	Solid On	Solid On
	75%~100%	Solid On	Solid On	Solid On	Flashing	Solid On	Solid On	Solid On	Solid On
RUN indicator		Solid On				Flashing			

9.5.2 Flashing explanation

Flashing Status	Solid On	Off
Flashing 1	0.25s	3.75s
Flashing 2	0.5s	0.5s
Flashing 3	0.5s	1.5s

9.5.3 Status indicator

Battery status	Run status	LED					
		RUN	ALM	25%	50%	75%	100%
Power off	Hibernation	Off	Off	Off	Off	Off	Off
Standby	Normal	Flashing 1	Off	Off	Off	Off	Off
Charge	Normal	Solid On	Off	Based on the remaining capacity indication			
	Overcurrent alarm	Solid On	Flashing 2	Based on the remaining capacity indication			
	Overvoltage protection	Flashing 1	Off	Off	Off	Off	Off
	Temperature protection/ Overcurrent protection	Flashing 1	Flashing 1	Off	Off	Off	Off
Discharge	Normal	Flashing 3	Off	Based on the remaining capacity indication			
	Alarm	Flashing 3	Flashing 3	Based on the remaining capacity indication			
	Temperature protection/ Overcurrent protection/ Short-circuit protection etc.	Off	Solid On	Off	Off	Off	Off
	Under-voltage protection	Off	Off	Off	Off	Off	Off

10 Trouble removeal

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.(UP-->sppliance)
	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 105% and time is up.	Reduce the connected load by switching off some equipment.
		If PV input voltage is higher than specification, the output power will be derated.At this time, if connected loads is higher than derated output power, it will cause overload.	Reduce the number of PV modules in series or the connected load.
	Fault code 05	Output short circuited.	Check if wiring is connected well and remove abnormal load.
		Temperature internal converter component is over 120°C.	Check whether the air flow of the unit is blocked or whether the ambient tem perature is too high.
	Fault code 02	Internal temperature of inverter component is over 100°C	
	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.	
	Fault code 59	PV input voltage is beyond the specification.	Reduce the number of PV modules in series.