UBird-XN-30U Series

Portable Suitcase Energy Storage System

User Manual

Upower Electric Co.,Ltd

EN Version：V2.0

Content

1 Notes on this Manual

1.1 Scope

This manual is an integral part of UBird-XN.

Portable Suitcase Energy Storage System
UBird-XN-30U

This manual describes the assembly, installation, commissioning, maintenance and failure of the product. Please read it carefully before operating. The manual is only for this batch of shipment.

1.2 Target Group

This manual is for qualified electricians. The tasks described in this manual only can be performed by qualified personnel.

1.3 Symbols Used

The following types of safety instructions and general information appear in this document as described below:

 Danger	**Danger!** "Danger" indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 Warning	**Warning!** "Warning" indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 Caution	**Caution!** "Caution" indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	**Note!** "Note" provides tips that are valuable for the optimal operation of our product.

2 Safety

2.1 Important Safety Instructions

Danger!

- Electric shock and high voltage.
- Do not expose the system to temperatures in excess of 45°C.
- Do not subject the system to any strong force.
- Do not touch uninsulated cable termination.
- Do not soak the system in water or expose it to moisture environment.
- Do not touch the case of the system when it is wet in case of electric shock.
- Do not dispose of batteries in fire. The batteries may explode!
- Do not place the system near a heat source, such as direct sunlight, a fireplace.
- Keep inflammable and explosive dangerous items or flames away from the system.
- Do not charge or discharge damaged system.
- Before performing any work on the system, please disconnect the system from all voltage sources as described in this document.

Warning!

- Installation, repair, recycling, and disposal of system must be performed by qualified personnel in accordance with national and local standards and regulations.
- Risks of chemical burn electrolyte or toxic gases.
- Do not place heavy objects on the top of the system.
- If the moisture penetrates the system (e.g., due to casing damage), please do not install or operate the system.
- Do not use wet hands to touch the system.
- Any behavior to change the functionality of the product without permission will cause fatal injury to the operator, third parties, and equipment. UBird-XN is not responsible for these losses and warranty claims.
- To ensure property and personal safety, the UBird-XN shall be well grounded.

 Caution	**Caution!** • Do not modify or tamper with system and other components of the system. • Risk of injury by hoisting or falling system. • UBird-XN is heavy and personal injury can be caused if the UBird-XN is improperly lifted or dropped during transport or improper operation when attached or removed from walls. Lifting and moved the products shall be conducted by more than two people.
	**Note!** • Do not reverse output of these two AC terminals of the UBird-XN.

2.2 Explanation of Symbols

This section explains all the symbols shown on the UBird-XN and on the type label.

	**CE mark.** The system complies with the requirements of the applicable CE guild lines.
	**Dangerous electrical voltage** The device is directly connected to public grid, thus all work to the system shall only be carried out by qualified personnel. Do not touch any internal parts of the UBird-XN being disconnected from the mains, battery and PV input for 5 minutes.
	**Danger of hot surface** The components inside the device will release a lot of heat during operation. Do not touch metal plate housing of the UBird-XN during operating.
	**Danger.** Risk of electric shock!
	**An error occurred** Read the usage manual to troubleshoot problems
	**Recyclable**

2.3 Emergency situation

Despite of its careful and professional protection design against any hazard results, damage of the battery may still occur. If a small amount of battery electrolyte is released due to a serious damage of the outer casing; or if the battery explodes due to not being treated timely after a fire breaks out nearby, and leaks out poisonous gases such as carbon monoxide, carbon dioxide etc., the following actions are recommended:

1) Eye contact: Rinse eyes with a large amount of running water and seek medical advice.
2) Contact with skin: Wash the contacted area with soap thoroughly and seek medical advice.
3) Inhalation: If you feel discomfort, dizziness or vomiting, seek medical advice immediately.
4) Use a FM-200 or Carbon Dioxide (CO_2) fire extinguishers to extinguish the fire if there is a fire in the area where the battery pack is installed. Wear a gas mask and avoid inhaling toxic gases and harmful substances produced by the fire.
5) Use an ABC fire extinguisher, if the fire is not caused by battery and not spread to it yet.

Warning!

- If a fire has just occurred, try to disconnect the battery circuit breaker and cut off the power supply first, but only if you can do so without endangering yourself.
- If the battery is on fire, do not attempt to extinguish the fire and evacuate the crowd immediately.

Potential danger of damaged battery:

Chemical Hazard: Despite of its careful and professional protection design against any hazard results, rupture of battery shall still occur due to mechanical damage, internal pressure etc., and may result in a leakage of battery electrolyte. The electrolyte is corrosive and flammable. When there is fire, the toxic gases produced will cause skin and eyes irritation, and discomfort after inhalation. Therefore:

1) Do not open damaged batteries.
2) Do not damage the battery again (shock, fall, trample, etc.).
3) Keep damaged batteries away from water (except to prevent an energy system from catching fire).
4) Do not expose the damaged battery to the sun to prevent internal heating of the battery.

Electrical hazard: The reason of fire and explosion accidents in lithium batteries is battery explosion. Here are the main factors of battery explosion:

1) Short circuit of battery. Short circuit will generate high heat inside battery, resulting in partial electrolyte gasification, which will stretch the battery shell. The temperature reaching ignition point of internal material will lead to explosive combustion.
2) Overcharge of battery. Overcharge of battery may precipitate lithium metal. If the shell is broken, it will come into direct contact with the air, resulting in combustion. The electrolyte will be ignited at the same time, resulting in strong flame, rapid expansion of gas and explosion.

3 Introduction

3.1 Scope of application

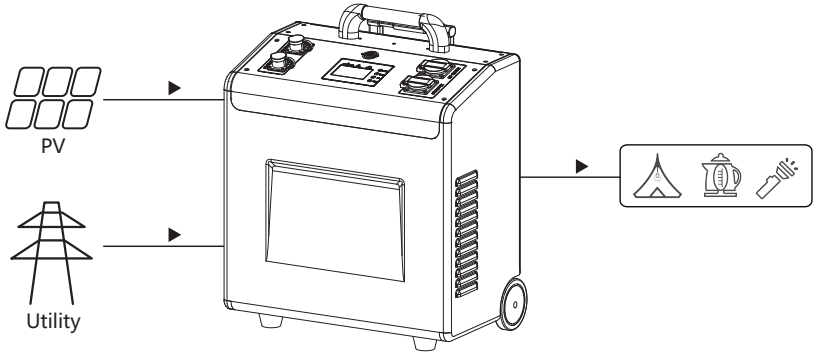


Figure 1 UBird-XN-30U Working Diagram

In daytime, solar power supports the loads first while the surplus power will be stored by system, to improve self-consumption rate.
In peak power price hours, power from system supports the loads; while in valley power price hours, system is charged by the grid. Finally, a balance could be realized.

In case of grid fault, system will make sure no outage in the loads, achieving UPS function.

3.2 Product Model Description

UBird-XN	-	30	U
①		②	③

① UBird-XN is the name of Portable Suitcase Energy Storage System.
② 30 indicates the rated power of the system, such as 30 for 3kW.
③ U indicates that the system conforms to American standards.

3.3 Datasheet

Model	UBird-XN-30U
Battery	
Rated Voltage	51.2V
Voltage Range	44.8~57.6V
Capacity	5.12kWh
Depth Of Discharge [DOD]	95%
Max. Discharge Current	100A
Max. Charge Current (AC+PV)	80A
Max. Charge Current (AC)	30A(10~40A Adjustable)
Battery Type	Li-ion (LFP)
AC Output (Backup)	
Rated Power	3000W
Output Voltage	100/110/120Vac ± 5%
Output Frequency	50/60Hz ± 1%
Max Output Current	30A
Rated Current	27.2A
Output Wave	Pure Sine Wave
Peak Efficiency (Battery Mode)	＞90%
Transfer Time	20ms
Output type	Multi-purpose AC Outlet (10A) X 2
AC Input	
Input Sources	L+N+PE
AC Input Voltage Range	65~140Vac
Rated Input Voltage	110Vac
AC input frequency	50/60Hz
PV Input	
Max PV Input Power	4000W
Max. PV Input Voltage	250Vdc
Start-up Voltage	150Vdc±10Vdc
MPPT Voltage Range	120~250Vdc
Max. DC Input Current	16A
Max. DC Short Circuit Current	18A
General Data	
Range of working temperature	Charge: 0℃~50℃/Discharge: -10℃~55℃
Optimal working temperature range	20℃~30℃
Storage temperature	-15℃~60℃
Humidity	20-95% non-condensing
Cooling strategy	Fan
Weight	68kg
Dimension [W x H x D]	500*540*308mm
Enclosure protection rating	IP30
Certificate	CE, UN38.3, TUV mark

4 Installation Instructions

4.1 Safety Tips

Danger!

- Potential fires and electric shocks that are life threatening.
- Do not place any flammable or explosive materials beside system.
- Equipment connected to high-voltage power generation equipment must be performed by qualified personnel in compliance with national and local standards and regulations.

Note!

- Inappropriate or inconsistent installation environment can shorten the life of system.
- Do not install UBird-XN directly by exposing it under strong sunlight.
- Please do not install in damp places.
- The installation location must be well ventilated.

4.2 Packing List

UBird-XN-30U

			
UBird-XN-30U Portable Suitcase energy storage system X 1 pcs	AC input cable X 1 pcs	PV input cable X 1 pcs	Hexagonal wrench, D-1.5mm: L type X 1 pcs
			
User manual X 1 pcs	Packing List X 1 pcs	Qualified Certificate X 1 pcs	

4.3 Determine the installation method and location

UBird-XN-30U dimension（mm）：

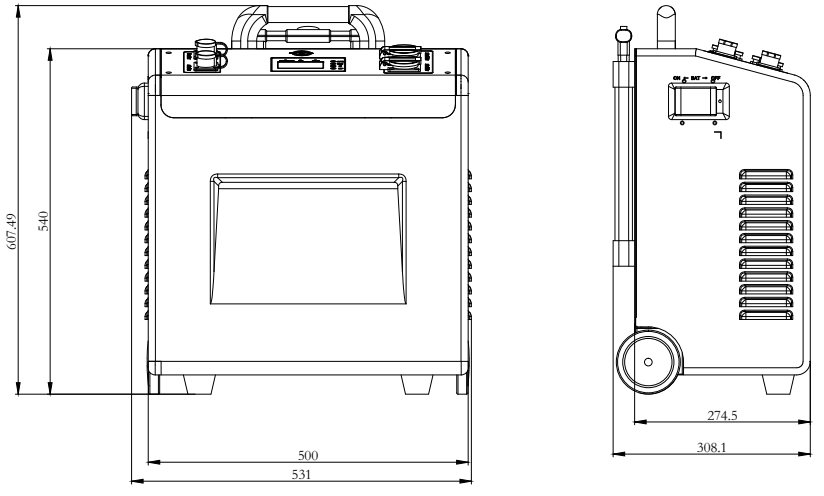
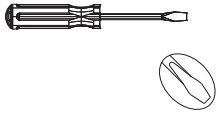
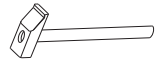


Figure 2 UBird-XN-30U Dimension

4.4 Unboxing

	
One-piece screwdriver	Hammer

Step 1: Place the wooden box on a flat ground. Pry open the buckle of the wooden box, remove the top plate of the wooden box, and take out the accessory.

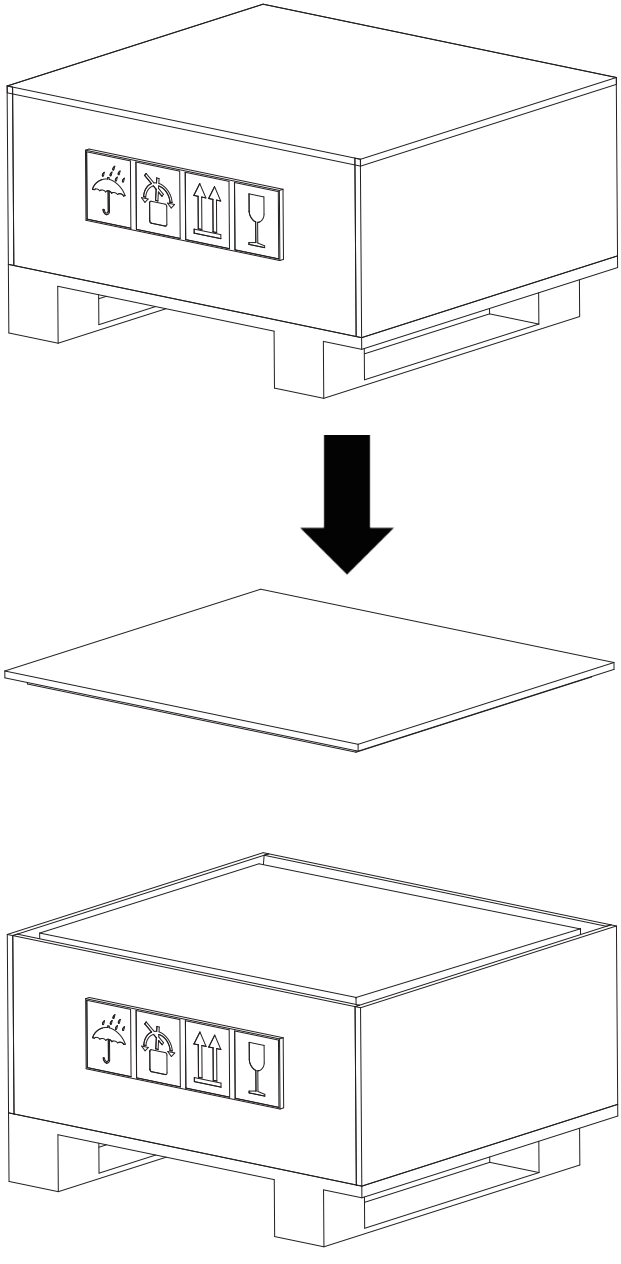


Figure 3

Step 2: Remove the side boards one by one.

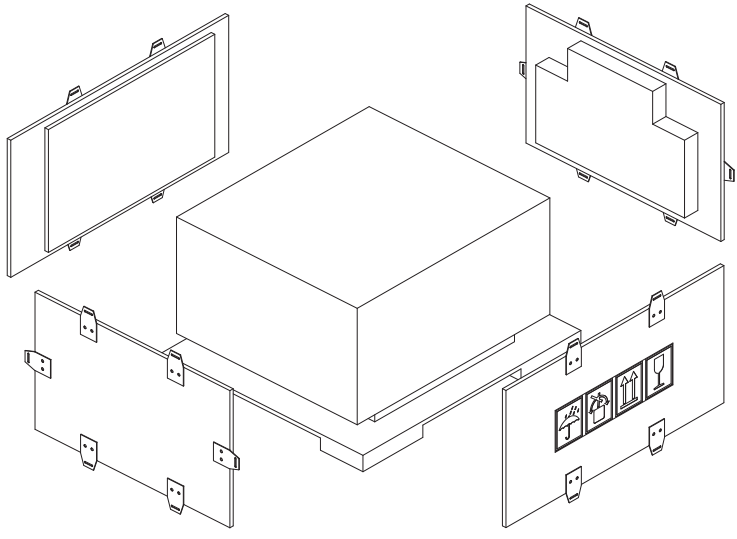


Figure 4

Step 3: Two or more people lift the UBird-XN and remove it from the crate and place it on the ground.

4.5 Installation

The UBird-XN is a mobile storage system with no fixed mounting location.
Notice：Although the UBird-XN has a high IP protection rating, care should be taken not to use it in extreme environments for long periods of time for the longevity of the machine.

5 Electrical Connections

5.1 Electrical Interface Description

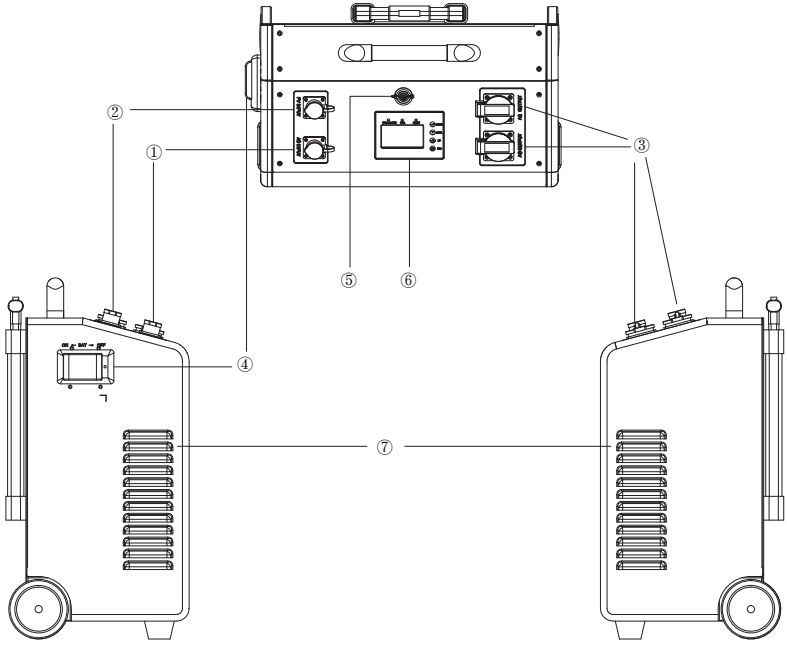


Figure 5 UBird-XN-30U Overview

Object	Description	Object	Description
1	AC Input	5	Inverter Button
2	PV Input	6	LCD Screen
3	AC Output	7	Heat dissipation hole
4	Battery Breaker	/	/

5.2 System Wiring Schematic

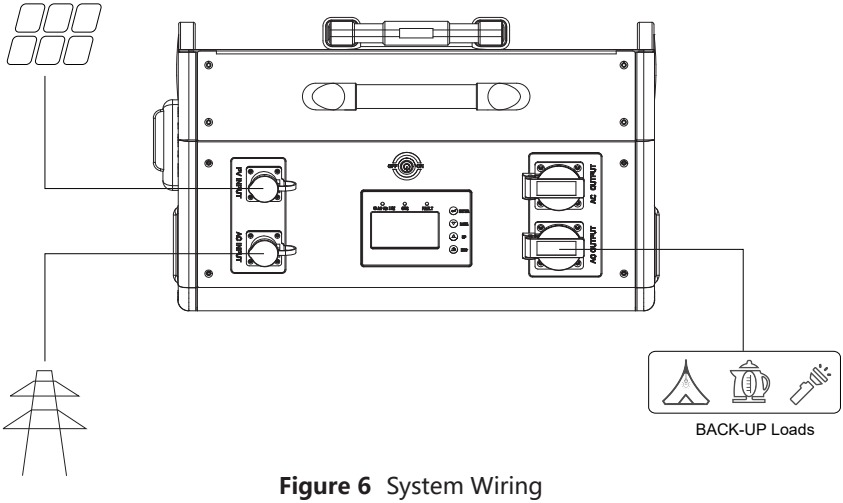
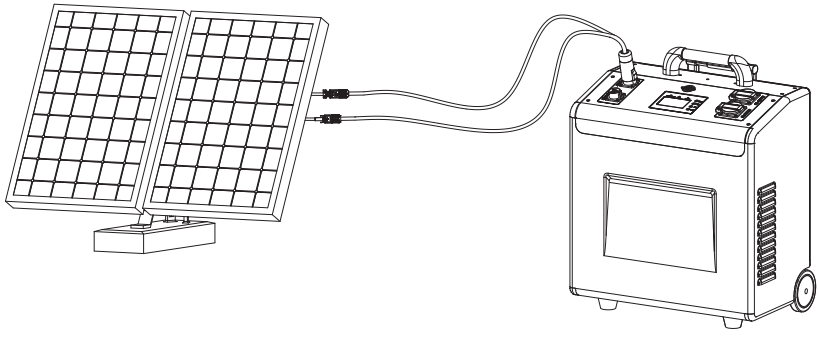


Figure 6 System Wiring

5.3 PV Input Wiring

The PV input of UBird-XN adopts a quick-plug terminal, which can be directly connected to use, and the other side can be connected to the MC4 terminal of the photovoltaic panel.



	Note! ● Make sure that the DC voltage of each PV string is less than 250V and the polarity of PV cables are correct. ● Ensure wiring is not energized.

5.4 AC in/AC out Wiring

	Warning! ● Turn off the Battery Breaker and external AC breaker after unpacking in any cases before and during wiring in case of electric shock.

The AC inputs/outputs of the UBird-XN have quick-connect terminals for direct connection .

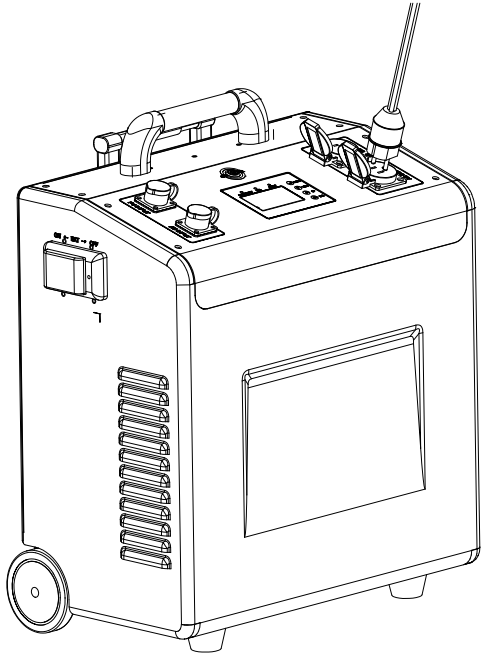


Figure 7 UBird-XN-30U AC Output

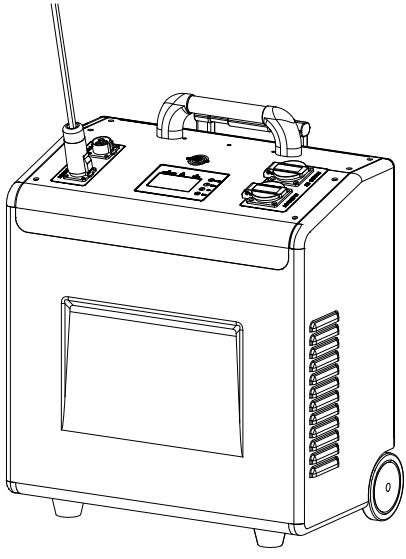


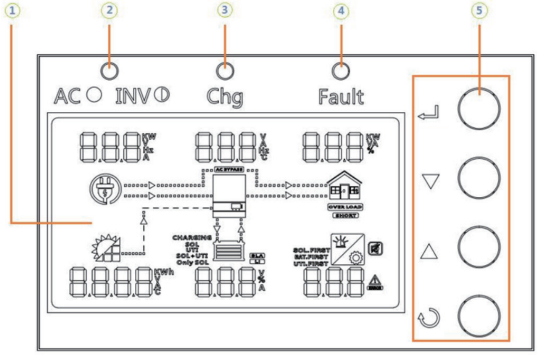
Figure 8 UBird-XN-30U AC Input Wiring

	Note! A multi-purpose socket can only carry a 2000W load!

6 Local Configuration

6.1 Local Interface Introduction

The UBird-XN has an LED screen on the front. It includes three indicators, four function button and a LCD screen, indicates the operating status and input/output power information.



① LCD Display
② Status Indicator
③ Charging Indicator
④ Fault Indicator
⑤ Function Buttons

Figure 9 LED Display

Table 1 LED Indicator

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

Table 2 Function Button

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

6.2 LCD Display Icons

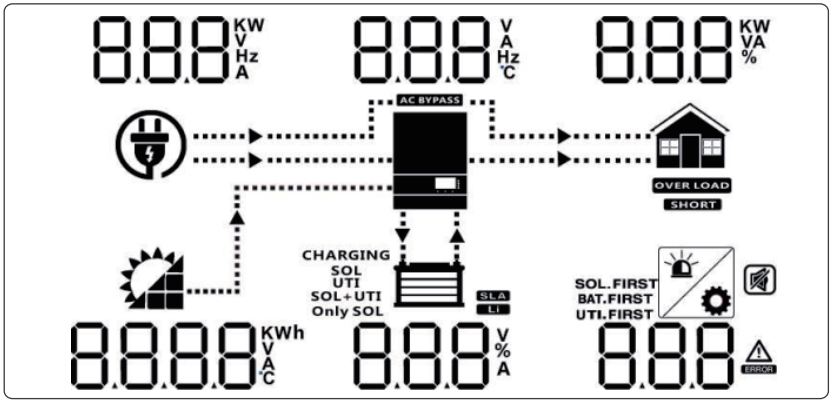


Figure 10 Display Icons

Table 2 Icon Information

Icon	Description
AC Input Information	
	AC input icon
	Indicates AC input power, AC input voltage, AC input frequency, AC input current.
AC BYPASS	Indicates AC power loads by bypass.

Icon	Description
PV Input Information	
	PV input icon
	Indicate PV input power, voltage, current, etc.
Output Information	
	Inverter Icon
	Indicate output voltage, current, frequency, Inverter temperature.
Load Information	
	Load Icon
	Indicates power of load, power percentage of load.
	Indicates overload happened.
	Indicates short circuit happened.
Battery Information	
	Battery Icon
	Indicates battery voltage, energy percentage, battery current.
	Indicates SLA battery
	Indicates Lithium battery
	Indicates charging source priority: Solar first, Utility first, solar and utility, or only solar

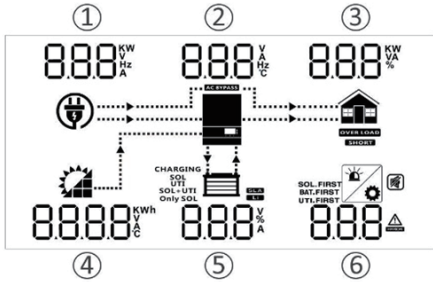
Icon	Description
Other Information	
SOL.FIRST BAT.FIRST UTI.FIRST	Indicates output source priority: Solar first, Utility first, SBU mode or SUB mode.
	Indicates warning code or fault code.
	Indicates a warning or a fault is happening.
	Indicates it is during setting values.
	Indicates the alarm is disabled.

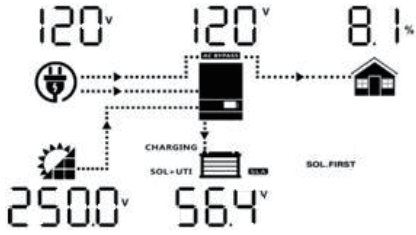
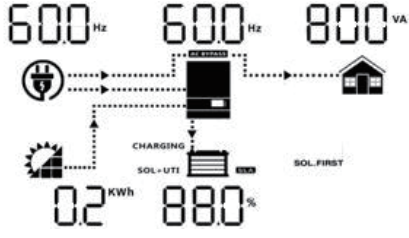
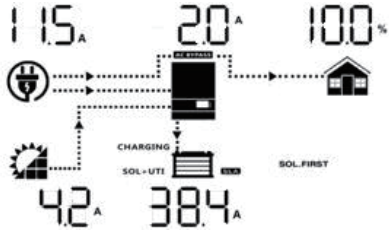
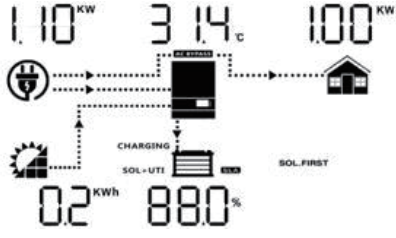
Table 6 Battery information

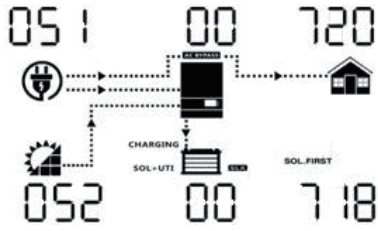
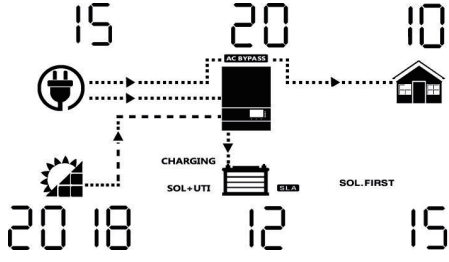
In AC mode, battery icon will present battery capacity		
Battery Status		< 25% SOC
		25%~50% SOC
		50%~75% SOC
		75%~100% SOC

6.3 Display Information

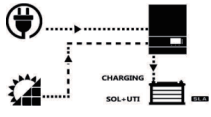
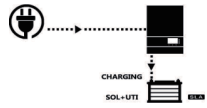
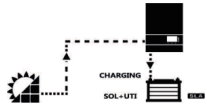
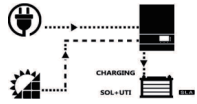
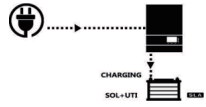
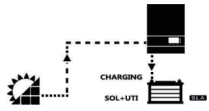
The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The selectable information is switched as below order: voltage, frequency, current, power, firmware version.

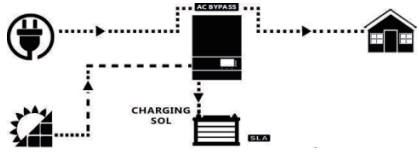
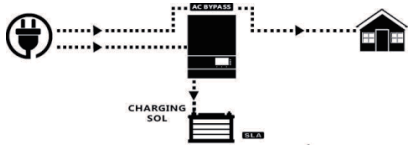
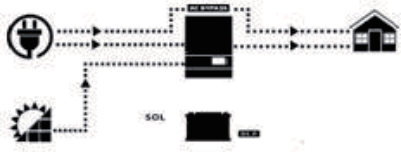
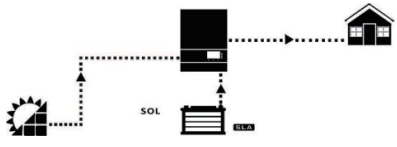
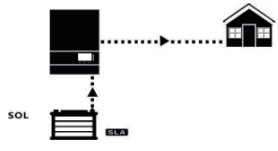


Setting Information	LCD display
① AC input voltage ② Output Voltage ③ Load Percentage ④ PV input voltage ⑤ Battery voltage ⑥ Warning or Fault code (Default display on screen)	
① AC input Frequency ② Output Frequency ③ Load power in VA ④ PV energy sum in KWH ⑤ Battery percentage ⑥ Warning or Fault code	
① AC input current ② Output Current ③ Load Percentage ④ PV input current ⑤ Battery charging current ⑥ Warning or Fault code	
① AC input power in watts ② Inverter temperature ③ Load power in watts ④ PV energy sum in KWH ⑤ Battery percentage ⑥ Warning or Fault code	

Setting Information	LCD display
Firmware version (CPU1: 040-00-b21; CPU2:041-00-b21)	
Time (15:20:10, December 15, 2018)	

6.4 Operating Mode Description

<table>
<tr><th>Operation mode</th><th>Description</th><th colspan="2">LCD display</th></tr>
<tr><td rowspan="2">Standby Mode / Power Saving Mode
Note:
*Standby mode: The inverter is not turned on yet but at this time, the inverter can charge battery without AC output.
*Power saving mode: If enabled, the output of inverter will be off when connected load.</td><td rowspan="2">No output is supplied by the unit but it still can charge batteries.</td><td>Charge by utility and PV energy
  </td><td>Charging by utility
  </td></tr>
<tr><td>Charging by PV energy
  </td><td>No charging
  </td></tr>
<tr><td rowspan="2">Fault Mode
Note:
* Fault mode: Errors are caused by inside circuit or external reasons such as over tempera-ture, output short circuit and so on.</td><td rowspan="2">PV energy and utility can charge batteries</td><td>Charge by utility and PV energy
  </td><td>Charging by utility grid
  </td></tr>
<tr><td>Charging by PV energy
  </td><td>No charging
  </td></tr>
</table>

Operation mode	Description	LCD display
Line Mode	The unit will provide output power from the mains. It can also charge the battery at line mode.	Charging by PV energy 
		Charging by utility 
		No battery connected 
Battery Mode	The unit will provide output power from battery and PV power.	Power from battery and PV energy 
		Power from battery only 

6.5 LCD Setting

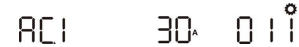
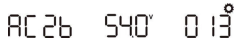
After pressing and holding ENTER button for 3 seconds, the unit will enter setting mode. Press "UP" or "DOWN" button to select setting programs. And then, press "ENTER" button to confirm the selection or "ESC" button to exit.

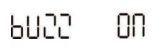
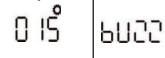
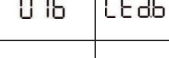
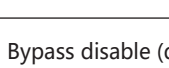
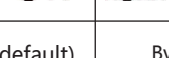
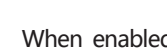
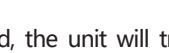
<table>
<tr><th>Program</th><th>Description</th><th colspan="2">Setting Option</th></tr>
<tr><td rowspan="6">01</td><td rowspan="6">Output source priority selection:
To configure load power source priority</td><td>Solar First</td><td>  </td></tr>
<tr><td colspan="2">Solar energy provides power to the 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 grid provides power to the loads only when any below one condition happens:
-Solar energy is not available
-Battery voltage drops to low-level warning voltage or the setting point in program 12.</td></tr>
<tr><td>Utility First</td><td>  </td></tr>
<tr><td colspan="2">Utility gird will provide power to the loads as first priority.
Solar and battery energy will provide power to the loads only when utility power is not available.</td></tr>
<tr><td>SBU Priority (Default)</td><td>  </td></tr>
<tr><td colspan="2">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 grid provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program 12.</td></tr>
</table>

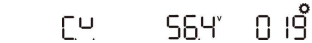
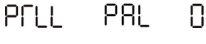
Program	Description	Setting Option	
		SUB Priority	
		Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, solar and utility gird will supply power to the loads at the same time. Battery provides power to the loads only when solar energy is not sufficient and there is no utility.	
02	**Maximum charging current:** set total charging current for solar and utility chargers. (Max charging current = utility charging current + solar charging current)	 Default 60A, 10A~80A Settable (If LI is selected in Program 5, this program can't be set up)	
03	**AC input voltage range**	**Appliances (default)**	
		If selected, acceptable AC input voltage range will be within 65~140VAC	
		UPS	
		If selected, acceptable AC input voltage range will be within 95~140VAC	
		Generator	
		If selected, acceptable AC input voltage range will be within 65~140VAC In this mode, the MAX. charging current is 30A	

Program	Description	Setting Option	
04	**Power saving mode enable/disable**	**Disable (default)**	SAVE dIS 004
		If disabled, no matter connected load is low or high, the on/off status of inverter output will not be effected.	
		Enable	SAVE ENA 004
		If enabled,the inverter output will be off when connected load is pretty low or not detected.	
05	**Battery type**	**AGM**	bATT AGM 005
		Flooded	bATT FLd 005
		Lithium (Default)	bATT LI 005
		Only suitable when communicated with BMS	
		User-defined	bATT USE 005
		If "User-Defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 19, 20 and 21.	
		User-defined 2	bATT US2 005
		Suitable when lithium battery without BMS communication If "User-defined 2" is selected, battery charge voltage and low DC cut-off voltage can be set up in program19, 20 and 21. It is recommended to set to the same voltage in program 19 and 20(full charging voltage point of lithium battery). The inverter will stop charging when the battery voltage reaches this setting.	

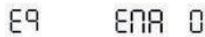
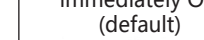
Program	Description	Setting Option	
36	**RS485 communication protocol**	**Protocol 1**	PtC 36 L01
		Protocol 2	PtC 36 L02
		⋮	⋮
		Protocol 50	PtC 36 L50
	CAN communication protocol	**Protocol 51**	PtC 36 L51
		Protocol 52	PtC 36 L52
		⋮	⋮
		Protocol 99	PtC 36 L99
06	Auto restart when overload occurs	Restart Disable (Default) LdrS dIS 006	Restart Enable LdrS ENA 006
07	Auto restart when over temperature occurs	Restart Disable (Default) trrS dIS 007	Restart Enable trrS ENA 007
08	Output voltage	120V(Default) OUt.U 120 008	220V OUt.U 110 008
		100V OUt.U 100 008	
09	Output frequency	50Hz OUtF 50 009	60Hz(default) OUtF 60 009
10	Number of series batteries connected	bAtn 4 010 (e.g. Showing batteries are connected in 4 series)	

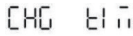
Program	Description	Setting Option	
11	Maximum utility charging current Note: If setting value in Program 02 is smaller than that in Program 11, the inverter will apply charging current from Program 02 for utility charger	 Default 30A, 10A~40A Settable	
12	Setting voltage point back to utility source when selecting "SBU priority" or "Solar first" in program 01		Default 44.0V, 44.0V~51.2V Settable
13	Setting voltage point back to battery mode when selecting "SBU priority" or "Solar first" in program 01		Default 44.0V, 44.0V~51.2V Settable
When the battery type set to Li, the setting option 12, 13 will change to display percent.			
12	Setting SOC point back to utility source when selecting "SBU priority" or "Solar first" in program 01		Default 30%, 10%~50% Settable
13	Setting SOC point back to battery mode when selecting "SBU priority" or "Solar first" in program 01		Default 65%, 30%~100% Settable

<table>
<tr><th>Program</th><th>Description</th><th colspan="2">Setting Option</th></tr>
<tr><td rowspan="5">14</td><td rowspan="5">Charger source priority: To configure charger source priority</td><td colspan="2">If this off grid solar inverter is working in Line, Standby or Fault mode, charger source can be programmed as below:</td></tr>
<tr><td>Solar first
  </td><td>Solar energy will charge battery as first priority. Utility will charge battery only when solar energy is not available.</td></tr>
<tr><td>Solar and Utility(default)
  </td><td>Solar energy and utility will both charge battery.</td></tr>
<tr><td>Only Solar
  </td><td>Solar energy will be the only charger source no matter utility is available or not.</td></tr>
<tr><td colspan="2">If this off grid solar inverter is working in Battery mode or Power saving mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient.</td></tr>
<tr><td>15</td><td>Alarm Control</td><td>Alarm on (default)
  </td><td>Alarm off
  </td></tr>
<tr><td>16</td><td>Backlight control</td><td>Backlight on(default)
  </td><td>Backlight off
  </td></tr>
<tr><td>17</td><td>Beeps while primary source is interrupted</td><td>Alarm on (default)
  </td><td>Alarm off
  </td></tr>
<tr><td rowspan="2">18</td><td rowspan="2">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 colspan="2">When enabled, the unit will transfer to line mode if overload occurs in battery mode.</td></tr>
</table>

Program	Description	Setting Option	
19	C.V. charging voltage. If self-defined is selected In program 5, this program can be set up	 Default 56.4V, 48.0V~58.4V Settable	
20	Floating charging voltage If self-defined is selected in program 5, this program can be set up	 Default 54.0V, 48.0V~58.4V Settable	
21	Low DC cut-off voltage. If self-defined is selected in program 5, this program can be set up. Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected.	 Default 42.0V, 40.0V~48.0V Settable	
		Low DC cut-off voltage. If self-defined is selected in program 5, this program can be set up. Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected. Default 42.0V, 40.0V~48.0V Settable If battery power is only power source available, inverter will shut down. If PV energy and battery power are available, inverter will charge battery without AC output. If PV energy, battery power and utility are all available, inverter will transfer to line mode and provide output power to loads, and charge the battery at the same time.	
When the battery type set to Li, the setting option 21 will change to display percent.			
21	Low DC Cut-off SOC.	 Default 20%, 5%~30% Settable	
23	AC output mode *This setting is only available when the inverter is in standby mode (Switch off). Power saving function will be automatically disabled when in parallel operation	Single mode(Default) 	When not in parallel operation
		Single phase 	When the units are used in parallel with single phase

Program	Description	Setting Option	
		Three phase: 3P1, 3P2, 3P2 PrLL 3P1 023 PrLL 3P2 023 PrLL 3P3 023 It requires at least 3 inverters to support three-phase equipment, 1 inverter in each phase. Please select "3P1" for the inverters connected to L1 phase, "3P2" for the inverters connected to L2 phase and "3P3" for the inverters connected to L3 phase. Do NOT connect share current cable between units on different phases.	
		Split phase: L1 phase: 2P0 PrLL 2P0 023 Split phase: L2 phase: 2P1/2P2 PrLL 2P1 023 PrLL 2P2 023 Select "2P0" for the inverters connected to L1 phase; If connected split phase 120V/208V, select "2P1" for inverters connected to L2 phase; If connected split phase 120V/240V, select "2P2" for inverters connceted to L2 phase; Be sure to connect share current cable to units which are on the same phase. Do Not connect share current cable between units on different phases. Besides, power saving function will be automatically disabled.	
28	Address setting (for expansion)	Addr 1 028 Default 1, 1~255 Settable	
37	Real time setting---Year	2018 037	Range 2018~2099
38	Real time setting---Month	Mon 12 038	Range 01~12
39	Real time setting---Date	dAY 13 039	Range 01~31
40	Real time setting---Hour	HOUr 13 040	Range 00~23

Program	Description	Setting Option	
41	Real time setting---Minute		Range 00~59
42	Real time setting---Second		Range 00~59
43	Battery equalization	Battery equalization enable 	Battery equalization disable (default) 
		If "flooded" or "user-Defined" is selected in program 05, this program cannot be set up.	
44	Battery equalization voltage		Default 58.4V, 48.0V~58.4V Settable 24V
45	Battery equalized time		Default 60min, 5min~900min Settable
46	Battery equalized timeout		Default 120min, 5min~900min Settable
47	Equalization interval		Default 30days, 1 days~90 days Settable
48	Equalization activated immediately	Equalization activated immediately ON 	Equalization activated immediately OFF (default) 
		If equalization function is enabled in program 43, this program can be setup. If " ON" is selected in this program, it' s to activate battery equalization immediately and LCD main page will shows "E9" . If" OFF "is selected, it will cancel equalization function until next activated equalization time arrives based on program 47 setting. At this time, "E9"will not be show in LCD main page.	

Program	Description	Setting option	
49	Utility charging time	0000(default) Allow utility to charge the battery all day run.  	The time allows utility to charge the battery. Use 4 digits to represent the time period, the upper two digits represent the time when utility start to charge the battery, setting range from 00 to 23, and the lower two digits represent the time when utility end to charge the battery, setting range from 00 to 23. (eg: 2320 represents the time allows utility to charge the battery is from 23:00 to the next day 20:59, and the utility charging is prohibited outside of this period)
50	AC output time	0000(default) Allow inverter to power the load all day run.  	The time allows inverter to power the load. Use 4 digits to represent the time period, the upper two digits represent the time when inverter start to power the load, setting range from 00 to 23, and the lower two digits represent the time when inverter end to power the load, setting range from 00 to 23. (eg: 2320 represents the time allows inverter to power the load is from 23:00 to the next day 20:59, and the inverter AC output power is prohibited outside of this period)

6.6 Start up the System

The system shall be turned on in the correct sequence as follows:

1) Turn on the BAT Breaker.

2) Press Inverter button.

3) Wait for 30s and observe the LCD to check the running status.

4) If the system is running normal, please do commission configuration. If the system is not work normally, please re-check the wiring and setting until the system runs normal.

5) Set the details on the local screen.

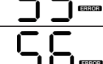
6.7 Shut Down the System

System shall be turned OFF in the correct sequence as follows:

1) Press Inverter button.

2) Turn off the BAT Breaker.

7 Fault Codes

Fault Code	Fault Event	Icon on
01	Fan is locked	
02	Over temperature	
03	Battery voltage is too high	
04	Battery voltage is too low	
05	Output short circuited	
06	Output voltage is too high	
07	Overload time out	
08	Bus voltage is too high	
09	Bus soft start failed	
51	Over current or surge	
52	Bus voltage is too low	
53	Inverter soft start failed	
55	Over DC voltage in AC output	
56	Battery connection is open	
57	Current sensor failed	
58	Output voltage is too low	
60	Negative power fault	
61	PV voltage is too high	
62	Internal communication error	
80	CAN fault	
81	Host loss	

Warning Code	Warning Event	Audible Alarm	Icon flashing
01	Fan locked when inverter is on	Beep 3 times every second	
02	Over temperature	Beep once every second	
03	Battery 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 once every 3 second	
12	Solar charger stop due to low battery	Beep once every second	
13	Solar charger stop due to high PV voltage	Beep once every second	
14	Solar charger stop due to overload	Beep once every second	
15	Parallel input utility grid different	Beep once every second	
16	Parallel input phase error	Beep once every second	
17	Parallel output phase loss	Beep once every second	
18	Buck over current	Beep once every second	
19	Battery disconnect	No beep	
20	BMS communication error	Beep once every second	
21	PV power insufficient	Beep once every second	
22	Parallel forbidden without battery	Beep once every second	
25	Parallel inverters' capacity different	Beep once every second	
33	BMS communication loss	Beep once every second	
34	Cell over voltage	Beep once every second	

Warning Code	Warning Event	Audible Alarm	Icon flashing
35	Cell under voltage	Beep once every second	
36	Total over voltage	Beep once every second	
37	Total under voltage	Beep once every second	
38	Discharge over voltage	Beep once every second	
39	Charge over voltage	Beep once every second	
40	Discharge over temperature	Beep once every second	
41	Charge over temperature	Beep once every second	
42	Mosfet over temperature	Beep once every second	
43	Battery over temperature	Beep once every second	
44	Battery under temperature	Beep once every second	
45	System shut down	Beep once every second	

8 System Maintenance

8.1 Transportation

Lithium batteries are dangerous goods. Passed the test of UN38.3, this product meets the transportation requirements for dangerous goods for lithium batteries. After the installation of the battery on site, the original packaging (contains the lithium battery identification) should be kept. When the battery needs to be returned to the factory for repair, please pack the battery with the original packaging to reduce unnecessary trouble.

8.2 Storage

After purchasing the system, please store it with following instructions:
1) Please store it in a dry and ventilated environment, keep it away from heat sources.
2) Please keep it in an environment with storage temperature as -20 °C ~ 50 °C, humidity <85% RH.
3) For long-term storage (>3 months), please put it in an environment with a temperature of 18 °C to 28 °C and a humidity of < 85% RH.
4) The system should be stored in accordance with the storage requirements mentioned above, and the system should be installed within 6 months since delivered from the factory.

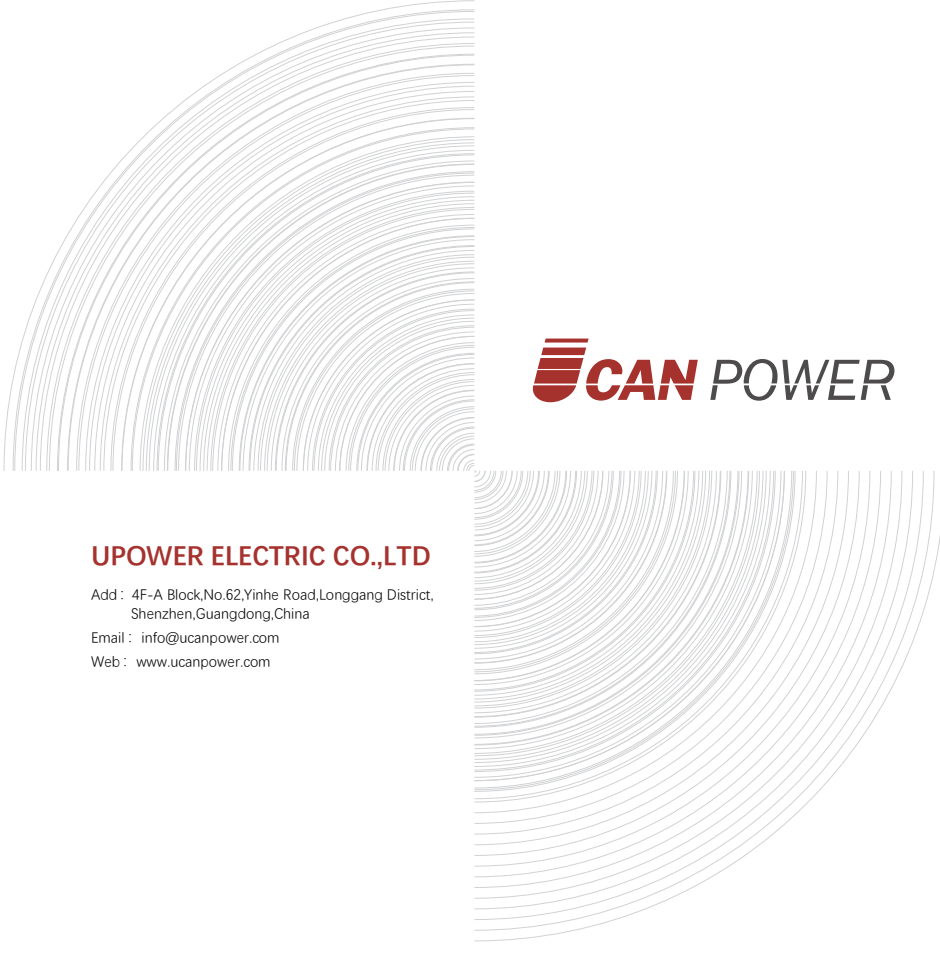
Note!

- The battery remains 30% power when it is sent from the factory.
- The longer the battery is stored, the DOD value is getting bigger. When the battery remaining voltage fails to reach the startup voltage requirement, the battery may be damaged.

The battery cannot be disposed of as household refuse. When the service life of the battery reaches to the limit, it is not required to return it to the dealer, but it must be recycled to the special waste lithium battery recycling station in the area.

8.3 Cleanliness

Clean the enclosure lid, LCD of the inverter with moistened cloth with clear water only. Do not use any cleaning agents as it may damage the components.



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