



# Outdoor UPS

**User Manual**

Please comply with all warnings and operating instructions in this manual and on the unit strictly. Save this manual properly. Do not operate this unit before reading through all safety information and operating instructions carefully.

## Contents

1. Safety .....	4
2. Introduction .....	5
3. Installation .....	6
3.1 Unpacking and Inspection .....	7
3.2 Appearance .....	8
3.3 UPS install .....	8
4. Panel & Operation Guide .....	9
4.1.1 Panel display .....	9
4.1.2 Function of button .....	10
4.1.3 LED Indicator .....	11
4.1.4 Audible Alarm .....	11
4.1.5 UPS working status table of LCD display .....	12
4.1.6 Parameter query .....	13
4.1.7 Function setting .....	14
4.2 UPS Working Mode .....	17
4.2.1 Normal mode .....	17
4.2.2 Battery mode .....	17
4.2.3 Bypass mode .....	17
4.3 Operation .....	18
4.3.1 Turn on UPS .....	18
4.3.2 Turn off UPS .....	18
4.3.3 Battery self-test .....	18
4.3.4 Buzzer Mute Operation .....	19
5. Maintenance .....	19
5.1. Battery Maintenance .....	20
5.2. UPS Module Replacing .....	20
6. Trouble shooting .....	21
6.1 Fault code and solution .....	21
6.2 Common faults and trouble shooting .....	23
7. Specification of UPS module .....	25

# 1. Safety

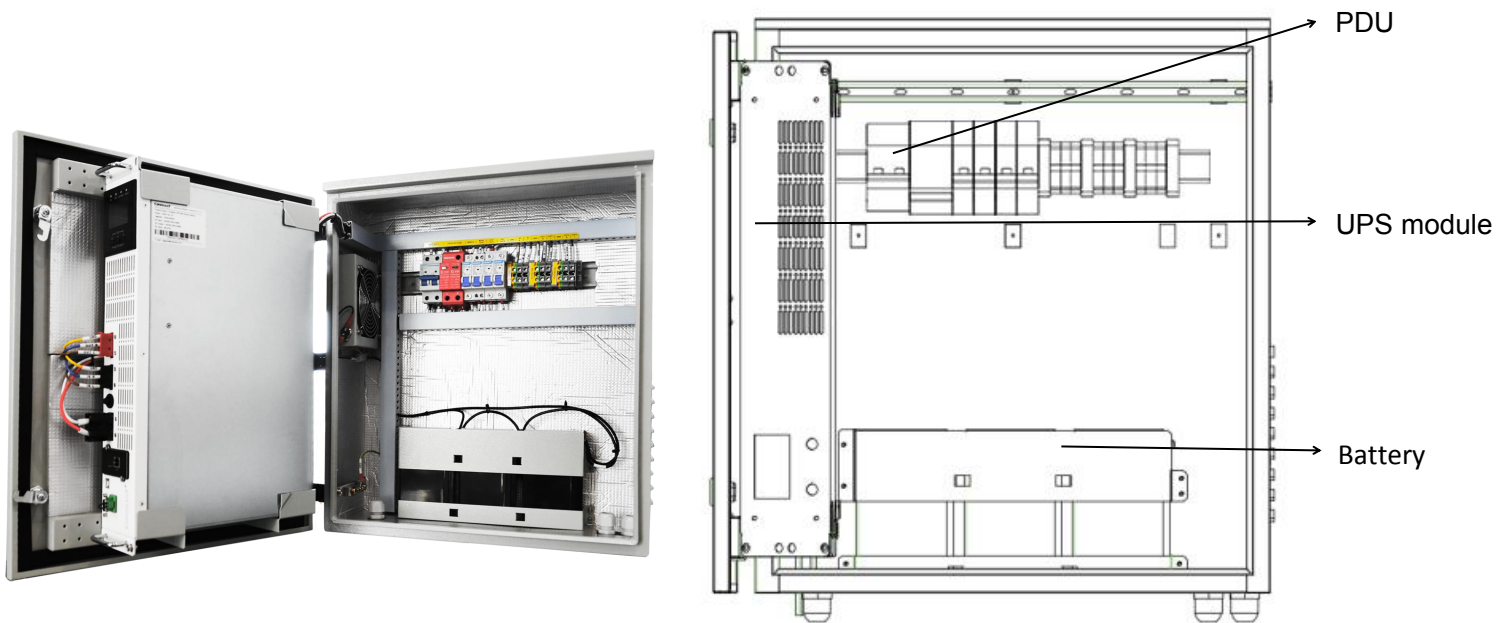
- Even no connection with utility power, 220VAC voltage may still exist at UPS output.
- If battery cables or power cables need to be replaced, please contact our service stations for stuff to avoid fire disaster caused by insufficient capacity of cables.
- Don't open or damage the battery, for the liquid spilled from battery is strongly poisonous and do harmful to body.
- Please avoid short circuit between anode and cathode of battery, for it will cause spark or fire.
- Don't disassemble the UPS cover, or there may be an electric shock.
- Don't connect with the electric equipment such as blower, heater, drill etc. they would damage the UPS.

## Note

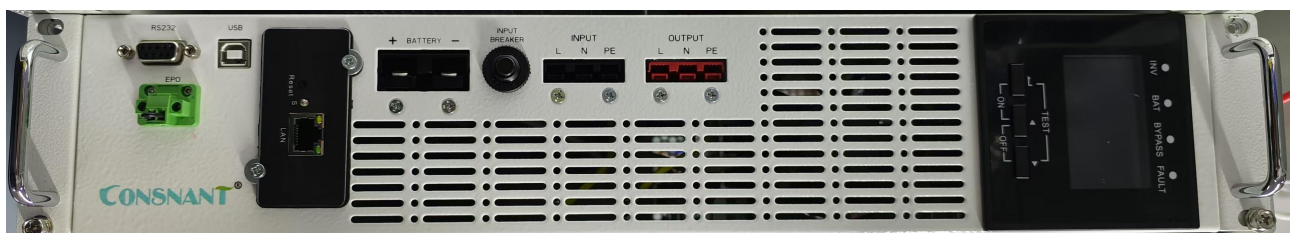
- 1. There is high voltage inside the UPS. If there is any problem, please contact the service center; don't attempt to repair the equipment under any circumstance.**
- 2. The maintenance switch is operated by maintenance engineer only, before you operate the maintenance switch, please make sure the UPS is shut down. Otherwise, it will damage UPS.**

## 2. Introduction

- The outdoor UPS system has good protection function: such as heat insulation, dustproof, damp proof, waterproof etc.
- Double conversion on line technology, which enables the UPS to provide a pure sine wave voltage, with constant frequency, constant voltage, low noise and no interruption, no matter the utility power fluctuation. It protects the user's equipment ideally all the time.
- The system has one door; you can open the front door to operate the system. There are two layers inside the system, the first layer is used to hold batteries; The second floor installation lightning protection device, power distribution equipment etc. The UPS module is hanged on the door.



(Fig 2.1 The inner structure of the front view)



(Fig 2.2 UPS module front panel)

- This UPS is a precision piece of equipment with 16 bit microprocessor and advanced software programming technology. High frequency SPWM is created to control the inverter of UPS. The simplified control circuit, enhances the stability of UPS and real-time performance. That makes UPS respond the variety of external environment rapidly and ensures the control is compact and reliable.
- Advanced voltage compensation technique, makes the input voltage range from 115VAC to 295VAC, using batteries less, enhancing the adaptability against the bad power condition.
- Advanced wide input frequency technique, makes the input frequency range from 45Hz to 55Hz, compatible with generator under variable circumstance.
- The advanced PFC technology, improves the input power factor close to utility, raises the power efficiency, removes the harmonic noise from UPS to utility, lowers UPS operational cost, it's really a good environmental protection power supply.
- Standard bypass function, when the UPS faults, it can transfer to bypass mode and provide alarm signal.
- Smart management function. If main power blackout, ups will transfer to backup mode to supply loads. When battery voltage is low, ups would protect itself and shuts down. When the main power recovers, the UPS would check the main power itself, if the main power is also normal, ups would turn on automatically to supply loads; if main power is abnormal, UPS would just turn on charger to charge the battery until the main power is normal.
- DC start function, when there is no main power; UPS can be turned on by battery, to meet the user's emergency needs. The cold start function is quite strong. UPS can be cold started on full load situation.

### 3. Installation

#### 3.1 Unpacking and Inspection

A. When unpacking the UPS, please pay attention to the packing mode and the annex

B. Inspecting your machine to see whether it's damaged during the transportation. If damaged or some parts missing, please don't turn on your UPS, inform to the transporter or the franchiser.

#### 3.2 Appearance

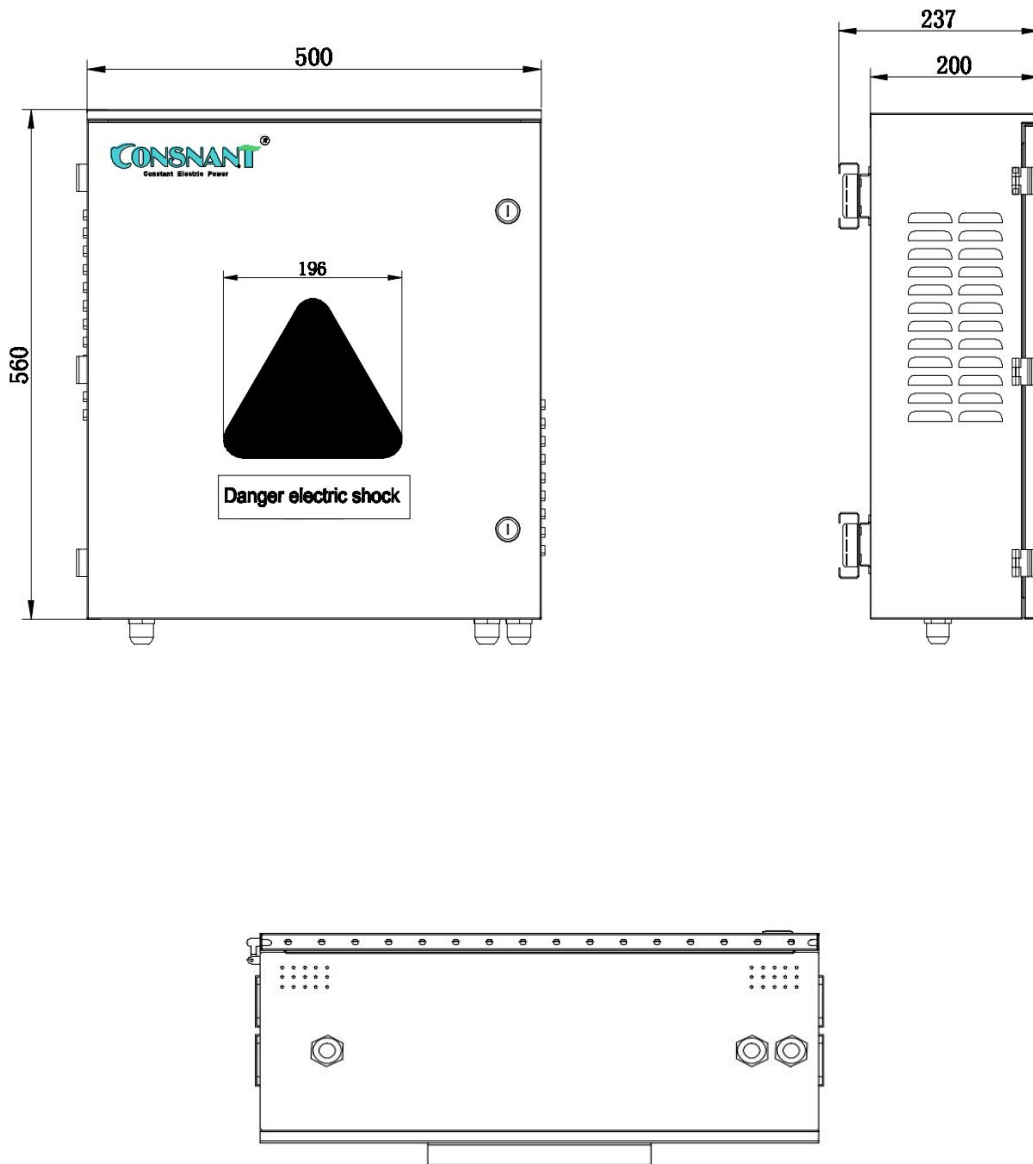


(Fig 3.2 outside Appearance)

Front one-door structure. Open the waterproof cover on the lock, then put the key inserted hole, and rotates for 180 degrees, the door will be opened. The machine can be used directly fixed platform in the screw M10,the input and output line can be connected through the holes underside the bottom.

### 3.3 UPS install

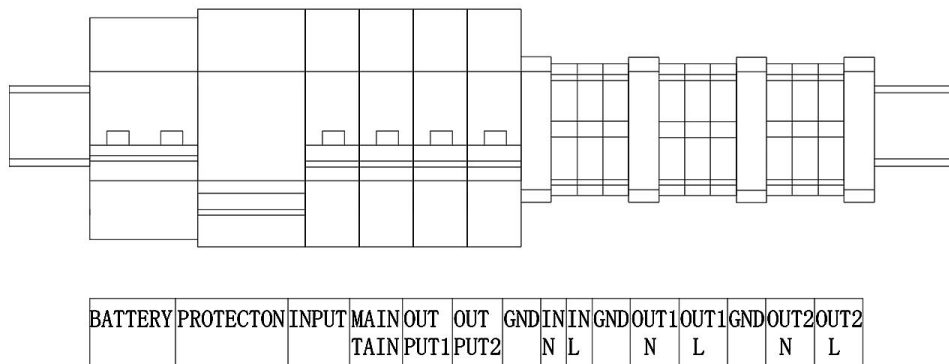
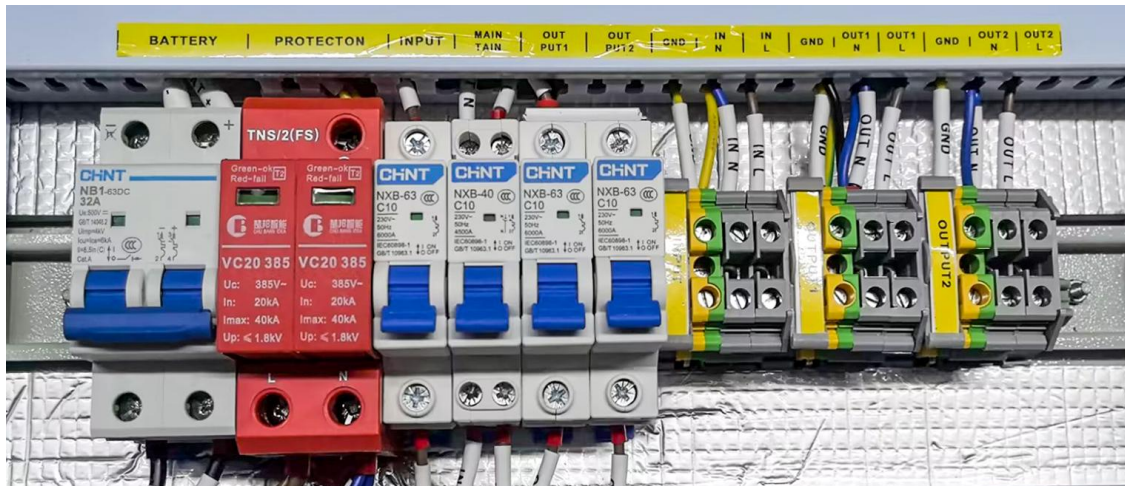
#### 3.3.1 Base mounting dimensions



(Fig 3.3.1 Outdoor 1K Front/Side Installation Drawings)

### 3.3.2 The connection of AC input, output and the dry contact signal cable

3.3.2.1 AC input power connection: According to the install environment, cut suitable length output power cable. on the outside of power cable, put the same length corrugated tubes, one terminal of the cable is connected to the outside power system, the other terminal is connected on the corresponding terminal block on UPS through the waterproof holes, the live wire is connected on the breaker which marked as INPUT (L), the neutral wire is connected on the breaker which marked as INPUT (N), the ground wire connection the input grounding terminal block

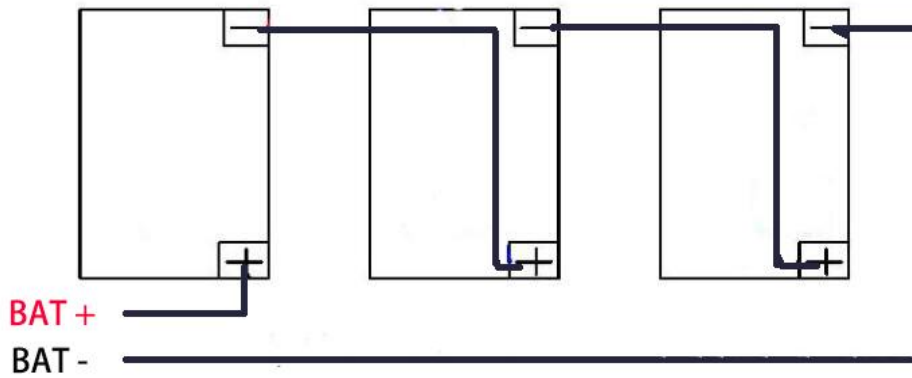


( Fig 3.3.2.1 Outdoor 1K double utility power distribution schemes)

3.3.2.2 AC output power connection: According to the install environment, cut suitable length output power cable. on the outside of power cable, put the same length corrugated tubes, one terminal of the cable is connected to the input of load, the other terminal is connected on the corresponding terminal block on UPS through the waterproof holes, the live wire is connected on the breaker which marked as OUTPUT (L), the neutral wire is connected on the breaker which marked as OUTPUT (N), the ground wire connects on the input grounding terminal block

### 3.3.3 The connection of Internal Batteries



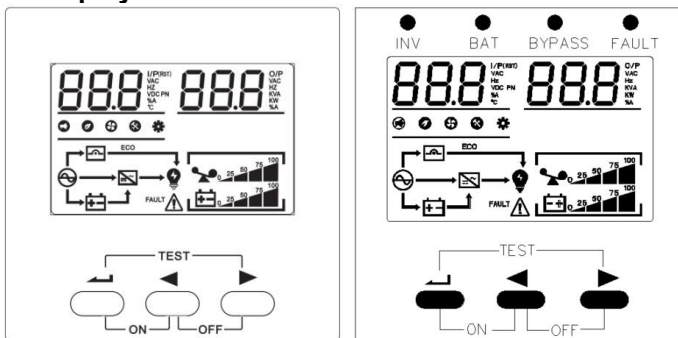


( Fig 3.3.3 Outdoor 1K 36V battery connection method)














- Before connecting the wires, ensure that all the breakers are open!
- Before replacing batteries, firstly please break off the utility switch and turn off the UPS, and remove all your metallic adornment such as finger ring, watch and so on.
- Please use the screwdriver with insulating handle. Do not lay the tools or other metallic goods on the battery.
- No reversing or short circuit between the battery anode and cathode.

## 4. Panel & Operation Guide

### 4.1.1 Panel display
















Display	Function
Error message	
<b>FAULT</b>	Failure occurred
⚠	Warnings
88	Fault code
Mute	

	Mute function
Input and output voltage, DC voltage, UPS internal temperature	
	VAC: input and output voltage; VDC: DC voltage °C: UPS internal temperature; Hz: Frequency
Load information	
	The load volume(0-25%, 26%-50%, 51%-75%, 76%-100%) is shown here, and the overload icon flashes when the battery is low or not connected
Battery information	
	The battery capacity(0-25%, 26%-50%, 51%-75%, 76%-100%) is displayed separately, and the battery icon flashes when the battery is low or not connected
Other information	
	AC
	Battery
	Bypass
	Inverter
	Output working
	Fan status: LED will always be on when the fan is normal, and flashes when the fan fails
	Setting icon: when entering the setting menu, the icon will light up, and the icon is not shown in the other cases
	ECO function: the icon light up when ECO function is used, otherwise the icon is not displayed
	Maintenance icon: when the maintenance switch is turned on, the icon lights up, in the other cases, the icon is not displayed

#### 4.1.2 Function of button

Button	Functional Description
Combo key for <b>turning on</b> the UPS	<p><b>AC Mode:</b> press the two buttons at the same time for 1 second above to start UPS.</p> <p><b>Battery Mode:</b> please press (↵) confirmation button first, after turning on the screen, please press the two buttons at the same time for 1</p>

(  +  )	second above to start UPS.
Combo key for <b>turning off</b> the UPS  (  +  )	<b>AC Mode:</b> press the two buttons at the same time for 1 second above to turn off the inverter, the system will turn to Bypass Mode.  <b>Battery Mode:</b> press the two buttons at the same time for 1 second above to turn off the inverter, and after 1 minute, the system will shut down, and the screen will turn off.
Combo key for self-checking and mute function  (  +  )	<b>Testing:</b> in AC Mode, press the two buttons at the same time for 2 seconds above to test the battery.  <b>Mute:</b> in Battery Mode/Alarm/Testing Mode, press two buttons at the same time for 2 seconds above to erase alarms, press two buttons again for 2 seconds above to recover alarms.
Function setting/confirmation key  (  )	<b>Function setting:</b> press the key more than 2 seconds to enter the function setting page, after completing the setting, press the key more than 2 seconds again to return to the main page.  <b>Confirmation:</b> in the function setting page, press the confirmation key 1 to 2 seconds to confirm the setting options.
Page turning/query key  (  ,  )	<b>Page turning:</b> press  or  key 1 to 2 seconds to turn to left or right page.  <b>Polling Mode:</b> press the  key more than 2 seconds to enter Polling Mode, circularly display each page content for 2 seconds, press  more than 2 seconds again to return to the main page.




#### 4.1.3 LED Indicator

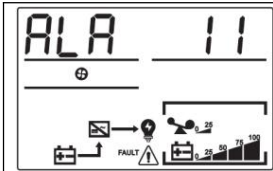
Indicator	Colour	Instruction
INV	Green	<b>ON:</b> UPS working in Line Mode  <b>OFF:</b> UPS not working in Line Mode
BAT	Yellow	<b>ON:</b> UPS working in Battery Mode  <b>OFF:</b> UPS not working in Battery Mode  <b>Flickering:</b> Battery voltage low
BYPASS	Yellow	<b>ON:</b> UPS working in Bypass Mode  <b>OFF:</b> UPS not working in Bypass Mode  <b>Flickering:</b> Bypass abnormal
FAULT	Red	<b>ON:</b> fault; <b>OFF:</b> Normal; <b>Flickering:</b> Alarm

#### 4.1.4 Audible Alarm

Buzzer alarms	Description
Continuous beeping	Fault
Sounding every one second	Battery voltage low
	Overload
Sounding every two minutes	Bypass mode
Sounding every four seconds	Other alarms except the above

#### 4.1.5 UPS working status table of LCD display

AC Mode	
LCD display content	Instruction
	<p>UPS can provide stable AC output when AC input in the permissible range. In AC Mode, batteries will also be charged by the UPS.</p>
Battery Mode	
LCD display content	Instruction
	<p>When the AC input is out of limited range or shut off, the UPS will turn to Battery Mode. The batteries supply the inverter and have beep every 4 seconds.</p>
Bypass Mode	
LCD display content	Instruction
	<p>When the AC input keeps normal, start the bypass mode and close the UPS on the panel. The UPS will turn to Bypass Mode, and have beep every 2 minutes.</p>
Error Condition	
LCD display content	Instruction



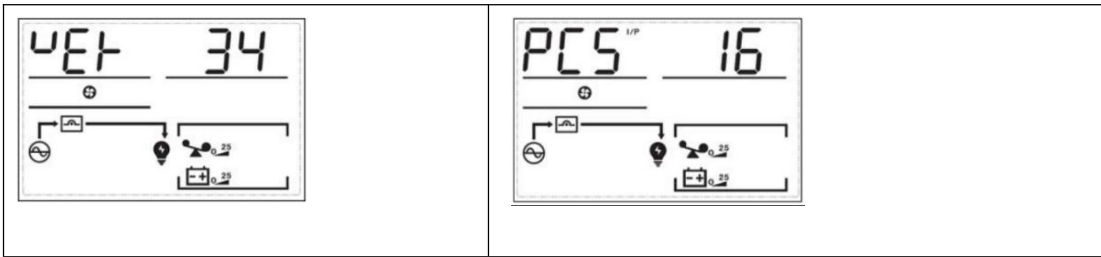
When the UPS has faults or alarms, LCD display will show the information.

#### 4.1.6 Parameter query

Normally the LCD display can show 8 pages totally. Pressing the query button ◀ or ▶ for 0.1-2 sec can enter into the different pages which show all information, such as input, battery, output, load, software version, temperature, and etc. If alarms occur, the display will add one more page to show the alarm information. If the UPS has faults, the default display will turn to the Fault code page automatically, the home page will show the fault or alarm information by default. When UPS keeps normal working, the home page default display will show the output voltage and frequency information.

Press ▶ (right button) more than 2 sec, LCD will turn to the polling mode. Every 2 sec the shown display will turn pages.  
 Press ▶ long time, LCD will exit the polling mode.


LCD Display 1: UPS input & output voltage	LCD Display 2: UPS input & output frequency
LCD Display 3: Battery voltage and capacity	LCD Display 4: Output voltage and output active power
LCD Display 5: Output voltage and output apparent power	LCD Display 6: Output voltage and load percentage
LCD Display 7: UPS system software version	LCD Display 8: connected battery quantity



#### 4.1.7 Function setting



**Note:** Before setting, must transfer the UPS to internal bypass, so the setting would be available.

##### 01: Output voltage



LCD Display	Setting
	<ol style="list-style-type: none"> <li>1. Press the function setting button (↵) over 2 sec, then go to the setting page. Press the page turning buttons till the setting page of output voltage, and the word "OPU" flashing.</li> <li>2. Press confirmation button (↵) 0.5-2 sec, then go to the setting page of output voltage <b>OPU</b>. The "OPU" words light on, and the numbers by left side of <b>OPU</b> keeps flashing. Press page turning buttons (◀) or (▶) 0.5-2sec to choose different output voltage value, the optional voltage values are 208V, 220V, 230V and 240V. The default output voltage is 220V. Please save after setting.</li> <li>3. Turn to the voltage value which you need, and press confirmation button (↵) 0.5-2sec, then finish the <b>OPU</b> setting. The number by left side of <b>OPU</b> will keep lighting on, no flashing.</li> <li>4. Press functional setting button (↵) over 2 sec, quit the setting page and back to the home page.( Or no operation, waiting more than 30 sec, the page will come back to home page automatically).</li> </ol> <p>Note: When the output voltage setting with 208V, the output needs to decrease to 90% of rated power.</p>

## 02: Other functional setting

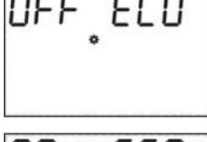
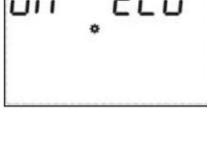
### 02-1: Expert Mode(EP)

LCD Display	Setting
 	<p>The expert mode setting with ON, then go to the functional setting page again. The functional setting will show battery QTY(PCS), EPO, charging current and other items can be selected. When the expert mode setting with OFF, functional setting page will show only the general options.</p> <p>Note: The expert mode default to OFF. When setting as ON then re-connected the AC power, the <b>EP</b> can be recovered as OFF.</p>



### 02-2 Battery low voltage shutdown point/End of discharge voltage(EOD)

LCD Display	Setting
 	<p>The options of EOD setting are <b>dEF</b>, 9.8V, 9.9V, 10V, 10.2V, 10.5V.</p> <p>By default, the EOD is <b>dEF</b></p> <p>(The EOD will be changed according to loading condition. 10.5V@load &lt; 25%, 10.2V@25%&lt;load&lt;50%, 10V@load&gt;50%).</p>

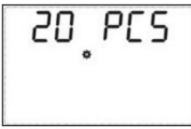
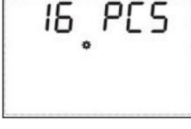
### 02-3: Economic Operation Mode

LCD Display	Setting
 	<p>ECO is OFF by default, can be set as <b>ON</b> to improve the efficiency of system operation.</p> <p>Note: For the models with PF &lt; 1, <b>OFF</b> by default, and unable to set.</p>

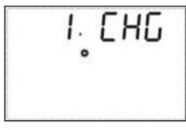
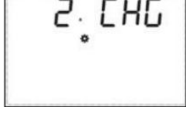
**02-4: Emergency shut down(EPO)**

LCD Display	Setting
 	<p>When <b>EP</b> is set to ON, the <b>EPO</b> option appears on the function setting page. Emergency shutdown can be set as closed or open to trigger, the default is open to trigger.</p> <p>Note: After EPO action, emergency shutdown, close all outputs immediately.</p>

**02-5: Battery quantity(PCS)**



LCD Display	Setting
 	<p>When EP is set to ON, the <b>PCS</b> option appears on the function setting page, will enter the password page, enter the password (the general password is 135), you can set the number of batteries. The default battery number is 16pcs, which can be set to 16/18/20pcs.</p>

**02-6: Charger Current(CHG)**

LCD Display	Setting
 	<p>When EP is set to ON, the <b>CHG</b> option appears on the functional setting page, the charging current can be set, 1-12A optional, default 1A. Noted: if UPS built-in batteries, the charger current default 1A, and cannot be changed.</p>



## 02-7: Input Neutral and Live cable reverse alarm function

LCD Display	Setting
 	<p>The input neutral and live cable reverse alarm mode is closed by default, can choose to open to improve the safety of the system.</p> <p>Note: Factory settings default closed, please open if you need.</p>

## 4.2 UPS Working Mode

### 4.2.1 Normal mode

Turn on the UPS, if the mains supply is normal, UPS will work in Normal mode (Line mode) and converse and filter the mains input for clean and stable AC output. The indicators display will show the operating mode. .

If loading level is over 100% rated capacity, the buzzer beeps to remind you overloaded that you must reduce unnecessary load until the UPS loading level is less than 100%.

If the battery indicator blinks cyclically, it shows the UPS disconnect from battery or the battery condition is abnormal. Please check the battery connection and battery condition for prevent UPS output unexpected interruption upon mains supply power losses.

### 4.2.2 Battery mode

When mains utility power is abnormal condition, such as blackout or fluctuation in voltage , frequency as well as waveform , UPS will automatically switch to run in battery mode, in which the battery work as energy source, and maintain the stable AC power supply at the output side of the UPS product.

In the Battery mode, UPS will beep once every 4s. the user can silence the beep by the function key. Please see the silence function.

If the battery capacity is very low, the UPS will beep once every 1S. It tells the user should take off the load as soon as possible.

If the line LED blink, it means the utility power voltage or frequency is out of range, or the L, N is reversed or the Earth cable is not connected.

The user can test the backup function through cutoff the utility power input.

### 4.2.3 Bypass mode

The ups work on bypass mode when the UPS start up or abnormal condition in which the converters can not work properly. The mains power is fed to the load through the bypass circuit in such mode without protection. Please note that when UPS running in bypass mode, UPS has no backup function either, because load power is supplied by the utility power directly.

Through the software we can set the UPS working in bypass mode or not.

## 4.3 Operation

### 4.3.1 Turn on UPS

Note: Although the battery has been fully charged in factory, it is suggested to turn on the UPS with utility power, refer to following contents, to charge the battery for the first time use to ensure enough back up time.

The operation of turning on the UPS contains: turning on with utility power and turn on without utility power

#### Turning on with utility power

Connect the mains input to the UPS, press and hold the ON/OFF button for more than 2 seconds until the buzzer beeps. At this point, the UPS begins to conduct self-test, with the load /battery capacity indicators on the front panel turned on and then off one after another. Seconds later, the Inverter indicator, the utility power indicator will turn on , meanwhile the UPS begins to operate under the Normal mode .If the utility power is abnormal, the UPS will work under the Battery mode.

#### Turning on without utility power

With no mains input to feed the UPS, press and hold the ON/OFF for than 2 seconds, the UPS response with a buzzer beeps. In the power on process, the UPS has the same operation as if it is connected to utility power that the utility power indicator will not on, instead the battery indicator will on

### 4.3.2 Turn off UPS

The operation of powering down contains: Power down under Normal mode and Battery mode

#### Power down UPS under the Normal mode.

Press and hold the ON/OFF button persistently for more than one second to power off UPS. If it is set up to work in bypass mode by monitoring software, the bypass indicator will be turned on to indicate that UPS is working in bypass mode. In order to cut off the output of the UPS, simply cut off the utility power. Finally, not any display is shown on the front panel and no output is available from the UPS outlets.

#### Power down UPS under the Battery mode.

Press and hold the “ON/OFF” for more than one second to power down the UPS. At this point, UPS will start self-test and all the load /battery capacity indicators will be turned on and off one after another. Meanwhile no display is shown on the front panel and no voltage output is available from the UPS.

### **4.3.3 Battery self-test**

In UPS operation, user can manually initiate the battery self-test to check the battery condition. There are two methods to initiate the battery self-test.

#### **Through the function button**

In Normal mode, press the function button for more than 2 seconds until the buzzer beeps. At this point, the 7#~10# indicator blink cyclically, indicating that

UPS has transferred to battery mode and the battery has started self-test. The battery self-test will last for 10 seconds (it can also be set up by monitoring software). In the event of battery fault, UPS will transfer to Normal mode automatically.

#### **Through the monitoring software**

user can start battery self-test through monitoring software, refer to monitoring software for details.

### **4.3.4 Buzzer Mute Operation**

When UPS is on battery or bypass mode, UPS will warn with warning tone (Battery mode four seconds one tone; Bypass mode two minutes). You can disable or enable the warning tone manually.

Notes: Battery mode, only the four second once tone could be muted. Two ways to realize the function.

#### **By function key**

In the battery and bypass mode, push function key for about 2 seconds until you hear a tone. If there is a warning tone, it will disable or enable the warning tone;

#### **Through the Software**

The user can use the software to configure this function.

## 5. Maintenance

The system would adsorb dust while working in outdoor condition, so users must clean it termly.

### 5.1. Battery Maintenance

- a. When UPS does not use or works on utility mode chronically, you need let UPS transfers to backup mode to discharge until shut down by itself, then charge the battery till full capacity every 3 or 4 months.
- b. The battery must be charged and discharged once every two months in high temperature area. The charging time of standard unit must be more than twelve hours.
- c. Normally the battery life is 5 years, and the battery must be replaced once there is any abnormal status. The replacement must be operated by qualified personnel.
- d. It is inadvisable to replace a single battery. Operator should obey the instruction of battery distributor when replacing all batteries.

#### Note:

- Before replacing batteries, firstly please break off the utility switch and turn off the UPS, and remove all your metallic adornment such as fingering, watch and so on.
- Please use the screwdriver with insulating handle. Do not lay the tools or other metallic goods on the battery.
- No converting or short circuit between the battery anode and cathode forever.

### 5.2. UPS Module Replacing

When replacing UPS module, please follow the below process:

- a. First make sure UPS module turned off and battery breaker is turned off. UPS will go to bypass mode. Then turn the maintenance switch to BPS status from UPS.
- b. Turn off output breaker, and then pull out all wires connected to the UPS module.  
Do to make marks for reinstalling.
- c. Fixing new module to the place, connecting wires as marks, plug in plug, and lock it with screws.
- d. Turn on the input and battery breakers, UPS module will go to bypass mode. Then turn on the UPS, if the new UPS module runs normally, turn off the UPS module and let it run in bypass mode. Turn on the output breaker first, then turn the maintenance switch to UPS status and start UPS again. The UPS module will supply power for load.
- e. Send back the faulty UPS module to the service center.

#### Note:

The maintenance switch is only used by maintenance man! Before operating the maintenance switch, make sure UPS is turned off, otherwise the UPS would be damaged badly.

## 6. Trouble shooting

When the "△" symbol on the UPS LCD flashes, the UPS is in alarm state. Press the page turning key to the error state page(refer to 3.5), observe the alarm code and make appropriate processing according to the table below.

### 6.1 Fault code and solution



When the "FAULT" is long bright, and "△" symbol on the UPS LCD flashes, the UPS is in fault state. UPS automatically switches to the error status page (refer to 3.5) to observe the fault code and make appropriate processing according to the following table.

Fault code	Meaning	Possible reasons	Solutions
1	Bus boosting soft- starting fail	<ol style="list-style-type: none"> <li>1. AC abnormal</li> <li>2. Abnormal soft-starting circuit of bus</li> </ol>	Check the mains, if all normal, please contact the supplier.
2	Bus over voltage	<ol style="list-style-type: none"> <li>1. AC abnormal</li> <li>2. Software processing error</li> <li>3. Bus capacitor failure</li> </ol>	Check the mains, if all normal, please contact the supplier.
3	Bus under voltage	<ol style="list-style-type: none"> <li>1. City electricity is too low.</li> <li>2. Software processing errors</li> <li>3. Bus capacitor failure</li> </ol>	<ol style="list-style-type: none"> <li>1. Please check the rectifier fan.</li> <li>2. Clean the obstacles on the air duct of the rear panel of the UPS.</li> <li>3. Check the loads.</li> <li>4. If all of above do not work, please contact the supplier.</li> </ol>
4	DC/DC circuit fault	<ol style="list-style-type: none"> <li>1. Some hardware of the DC/DC circuit is damaged;</li> <li>2. The control panel fails.</li> </ol>	Please contact the supplier.
7	Over temperature	<ol style="list-style-type: none"> <li>1. Fan failure</li> <li>2. The air duct on the rear panel of the UPS is blocked;</li> <li>3. Overload</li> <li>4. NTC sensor abnormality or abnormal wiring</li> <li>5. Power component IGBT is damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Please check the rectifier fan;</li> <li>2. Clean the obstacles on the air duct of the rear panel of the UPS;</li> <li>3. Check the loads;</li> <li>4. If all of above do not work, please contact the supplier.</li> </ol>
8	Battery relay short circuit	Relay RL1/RL3 hardware damaged	Please contact the supplier

9	Bus relay soft-starting fail	<ol style="list-style-type: none"> <li>1. City electricity abnormal</li> <li>2. Bus soft-starting circuit abnormal</li> </ol>	Please check the city electricity power, if no abnormal, please contact the supplier.
17	Inv soft-starting fail	<ol style="list-style-type: none"> <li>1. Some hardware of the inverter is damaged;</li> <li>2. The control panel fails.</li> </ol>	Please contact the supplier.
18	Inv output over voltage	<ol style="list-style-type: none"> <li>1. Some hardware of the inverter is damaged;</li> <li>2. The control panel fail.</li> </ol>	Please contact the supplier.
19	Inv output under voltage	<ol style="list-style-type: none"> <li>1. Some hardware of the inverter is damaged;</li> <li>2. The control panel fails.</li> </ol>	Please contact the supplier.
20	Inv short circuit	<ol style="list-style-type: none"> <li>1. Some hardware of the inverter is damaged.</li> <li>2. Output short circuit</li> </ol>	Check if the short circuit exists on the output of UPS, if no abnormal, please contact the supplier.
26	Negative power protection(output with AC input fail)	<ol style="list-style-type: none"> <li>1. Bypass reverses to the inverter.</li> <li>2. load abnormal</li> </ol>	Check the loads and if no abnormal, please contact the supplier.
33	Inv relay or SCR open circuit	Relay RL8 is damaged.	Please contact the supplier.
34	Inv relay or SCR short circuit		
35	Bypass relay or SCR open circuit	Relay RL4/RL6 is damaged.	Please contact the supplier.
36	Bypass relay or SCR short circuit		
37	I/O connection reversed	Reverse wiring on input and output.	Please check the wiring harness of input and output.
39	Charger short circuit	<ol style="list-style-type: none"> <li>1. Output of charger short circuit</li> <li>2. Charger hardware abnormal</li> </ol>	Please contact the supplier.
66	Over load fault	<ol style="list-style-type: none"> <li>1. Overload too much</li> <li>2. The voltage reduction causes the system rated power to decrease.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check if the load is within the specified range;</li> <li>2. Check if the voltage has been reduced.</li> </ol>

67	Charging over voltage or battery connection reversed	1. Hardware error 2. Number of battery wrong; 3. Wiring wrong.	1. Check whether the battery wiring or battery number meets the requirements. 2. If no any abnormal, please contact the supplier.
68	Unknown machine model	Software version error	Restart the UPS, if no any abnormal, please contact the supplier.
72	Charger over current	1. Hardware error; 2. Battery abnormal.	Check whether the battery wiring or battery number meets the requirements, if no any abnormal, please contact the supplier.
73	No bootstrap	Software version error	Restart the UPS, if no any abnormal, please contact the supplier.
81	Unknown battery QTY setting	Number of battery wrong	1. Check whether the battery number meets the requirement;
82	Battery QTY setting matching error	Number of battery setting wrong and can not be matched with software setting.	2. Check if the configuration of the battery jumper cap is the same as the software setting.

## 6.2 Common faults and trouble shooting

Number	Phenomenal description	Reasons	Solutions
1	Connect to city electricity, and no display on LCD display panel	No input power	Check if the input wiring harness of UPS is in well connection.
		Input voltage under voltage or overload	Use voltage meter to check the input voltage if in normal or meets the requirement.
2	City electricity in normal, no AC input indication, UPS is still working in battery mode	UPS power switch is still off	Press UPS city electricity power button on
		The wiring harness is loosen or in poor connection.	Check the input wiring harness whether in normal.
3	UPS not display error, but no output voltage	The wiring harness is loosen or in poor connection	Make sure the wiring harness in well connection.
4	Press  button, UPS doesn't start	Press button too shortly	Press  over 5 seconds, hear "Di" sound
		Overload	Remove all loads and restart the machine.
5	With city electricity, but no city electricity indication	Mains voltage or frequency over UPS	Use a multi-meter to check whether the input voltage and the input frequency meets the requirements.

		input range	
6	The battery discharge time is lower than the standard time	The power of batteries has been used.	Change new battery
		The batteries were not be charged fully.	Charge the batteries more than 8 hours under normal city electricity, then retest it.
7	Abnormal sound or smell come out from the inside of UPS	Inner of UPS may be damaged	Please immediately turn off the UPS, cut off the power input and contact the customer service center for technical support.
8	Battery mode display yellow light, long buzzer sounds, battery capacity is insufficient, ready to shut down	The power of battery is low, UPS is ready to shut down, and the loads will be cut off.	<ol style="list-style-type: none"> <li>1. Save the data on the loads immediately and complete shutdown the important loads to avoid data loss or damage.</li> <li>2. Immediately connect the UPS input terminal to the standby AC power supply.</li> </ol>



## 7. Specification of UPS module

Model	1K	
Capacity	1kVA/0.8kW	
Input		
Nominal Voltage	208/220/230/240VAC, L+N+PE	
Voltage Range	100-300VAC	
Frequency	40-70Hz	
Power Factor	> 0.99	
THDi	≤4% (linear load); ≤5% (non-linear load)	
Output		
Nominal Voltage	208/220/230/240VAC, L+N+PE	
Voltage Regulation	±1%	
Frequency	50/60Hz±0.1%	
Crest Ratio	3:1	
THDu	≤2% (linear load); ≤5% ( non-linear load )	
Transfer Time	Line mode to battery mode,0ms; inverter to bypass ,4ms (typical)	
Waveform	Pure sine wave	
Overload Time	<p>Line mode:</p> <p>30min@102%-110% load</p> <p>10 min@110-130% load</p> <p>30s@130%-150% load</p> <p>200ms@ &gt; 150% load</p>	<p>Battery mode:</p> <p>1min@102%-110% load</p> <p>10s@110-130% load</p> <p>3s@130%-150% load</p> <p>200ms@ &gt; 150% load</p>
Efficiency		
Line Mode	94.5%	
Battery Mode	88.5%(36VDC)	

ECO Mode	98%
Battery	
Type	Lithium-ion battery
Voltage	36VDC
Battery Number	8Ah*3pcs External
Charging Current	4A
Charging Mode	Two/Three-period charging
Management	
Intelligent Port	RS232/USB port/SNMP card (optional)/Dry contact kit (optional)
Environment	
Operation Temperature	0-40°C
Relative Humidity	0-95%(non-condensing)
Noise	< 50dB@1 meter
Altitude	Up to1000m without derating

**Note : Subject to change according to order, check the product name plate for specified battery voltage information.**





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