ATENCO POWER TECH CO. LTD

ATENCO PowTerra

1-10KVA Outdoor UPS with air conditioner 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

Chapter 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.**

Chapter 2 Introduction

- The outdoor UPS system has good protection function: such as heat insulation,dust-proof, 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.

- There are four layers inside the system. The first layer is installed with fan modules; the second layer is installed with UPS modules, lightning protection devices, maintenance switches, etc.; the third layer is installed with lightning protection devices, power distribution equipment, etc.; the fourth layer is installed with batteries.

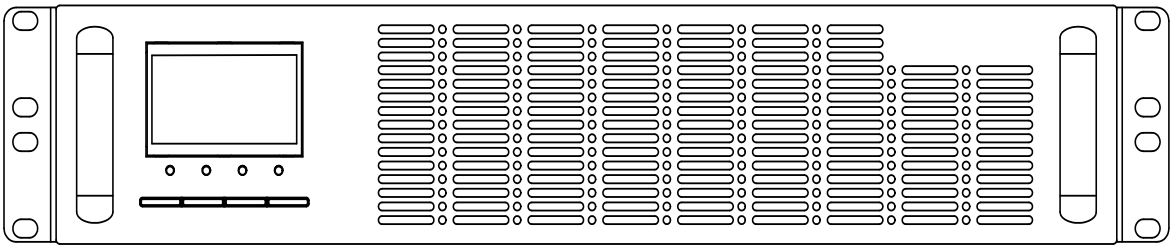
(**Fig 2.1** The inner structure of the front view)

- Intelligence air-cooled module, it is easy to maintain and replace. When the inside environment temperature is below 40℃, fans will stop working, thereby greatly prolong the service life of the fans.

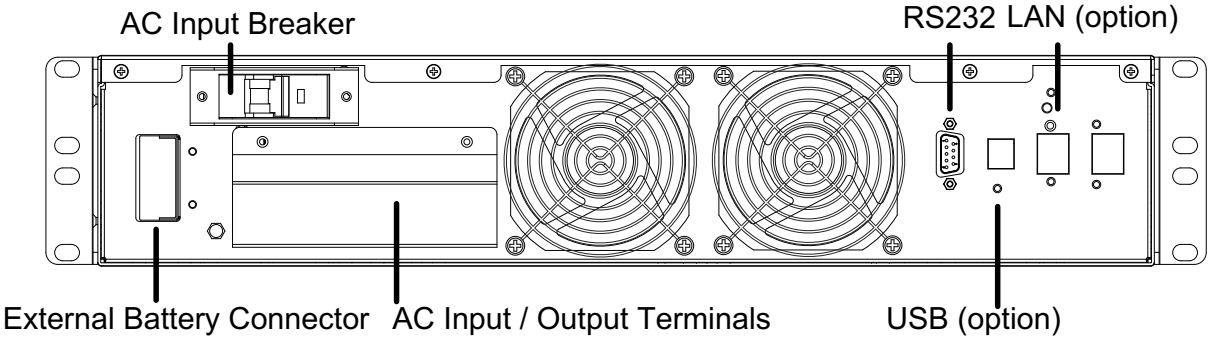
- Intelligence heating module, when internal temperature is below 0℃, it starts heating module.

● Dry contact warning function：① UPS failure ② UPS Overload ③Utility failure ④Battery low Voltage ⑤ Access Control alarm

1K(S)~10K(S) RACK UPS



(**Fig 2.2** UPS module front panel)



(**Fig 2.3** UPS module Rear 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.

Chapter 3 Installation

3.1 Unpacking and Inspection

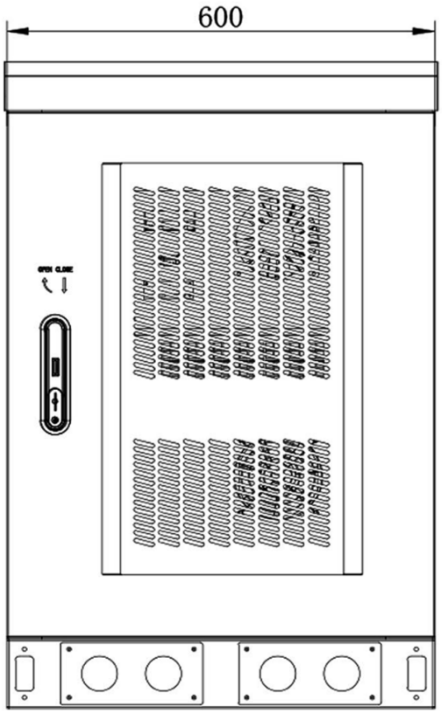
A.When unpacking the UPS,please pay attention to the packing mode and the annex
B.Inspecting your machine to see whether it′s damaged during the transportation. If damaged or some parts missing,please don′t turn on your UPS,inform to the transporter or the franchiser.

3.2 Appearance

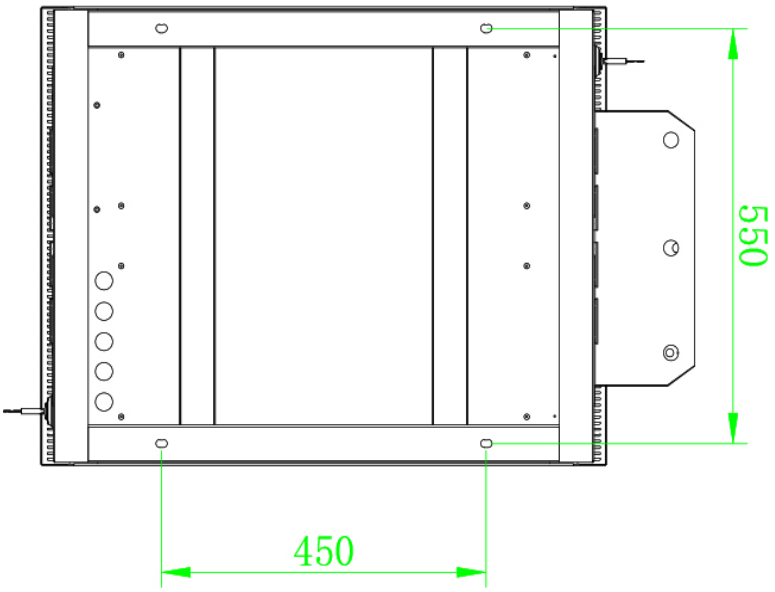
Front one-door structure. Open the waterproof cover on the lock, then put the key inserted hole, and rotates for 180 degrees, the door will be opened. The machine can be used directly fixed platform in the screw M10,the input and output line can be connected through the holes underside the bottom.

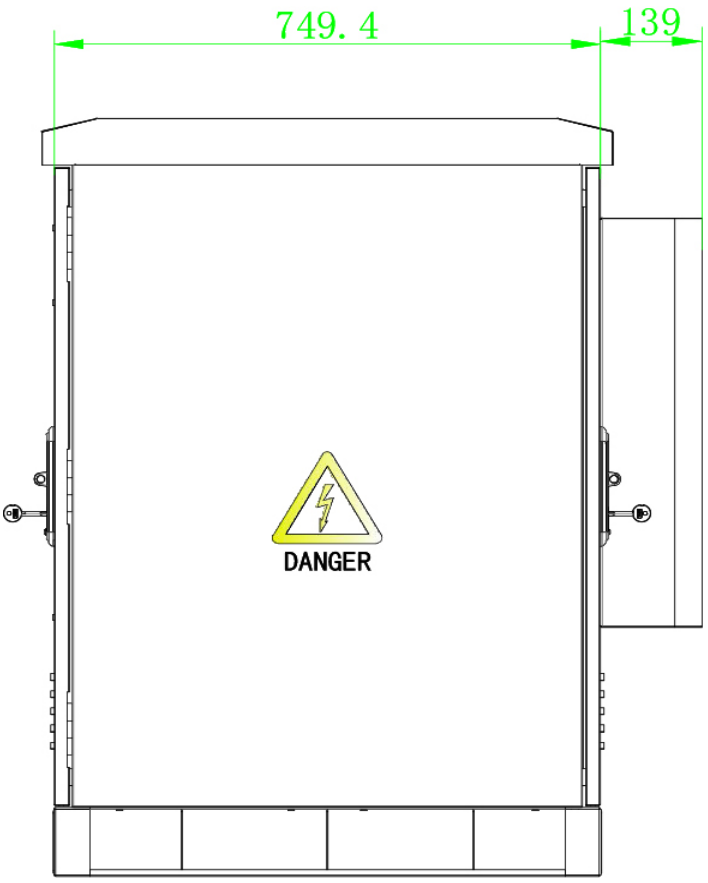
3.3 UPS installation

3.3.1 Base mounting dimensions



Front





3.3.2 Installation

Because of heavy weight, a steady space needed to install the UPS. Cool, good ventilation, less humidity and dust are required for safe and reliable operation of the UPS

3.3.3 Wiring

NOTE:

Do not apply power to the UPS until installation is totally completed.

Do not make unauthorized changes to the UPS; otherwise, damage may occur to your equipment and void your warranty.

① Input Wiring

1-10K model use fixed terminal block for input wiring, a ring terminal is recommended for reliable wiring.

(**Fig 3.1** Outdoor 10K Front/Side Installation Drawings)

Note the voltage and current rating of the product. Refer to below table for input wiring

Model	Nominal Input Voltage	Rated Input Current	Input Cable AWG/Cross-section Area
1K	220V/230V/240V	5.5A	14AWG/2mm^2
2K	220V/230V/240V	11A	14AWG/2mm^2
3K	220V/230V/240V	16A	14AWG/2mm^2
6K	220V/230V/240V	32A	10AWG/6mm^2
10K	220V/230V/240V	55A	8AWG/8mm^2

Even internal over current protection breaker is embedded in the product, external switchable circuit breaker should be installed at upstream of the UPS product for safe installation and maintenance of product.

② Output Wiring

The input of the equipment needs to be protected by UPS should connect to the UPS output

Please find rated output capacity of product , avoid overload and used wire with sufficient current rating, with refer to below table .

Model	Nominal Output Voltage	Rated output Current	Wire for terminal
1K	220V/230V/240V	5A	>14AWG/2mm^2
2K	220V/230V/240V	10A	>14AWG/2mm^2

3K	220V/230V/240V	15A	>14AWG/2mm^2
6K	220V/230V/240V	30A	>10AWG/5mm^2
10K	220V/230V/240V	46A	>8AWG/8mm^2

Procedure for output wiring:

1. Plug the AC input cord of the equipment needs UPS protection to the output socket of the UPS.

2. To connect more equipment than available output socket number, please use extension cord, connect to the output socket or output terminal block, mind the total consumption current must not exceed rated current capacity of the product.

3. The output terminal is protected by a cover, uncover the terminal , use appropriate connecting terminal , prepare well the wire.

4. Fix the prepared wired to the terminal block, find the silkscreen marking for polarity of the wiring.

3.3.4 External Battery Cable

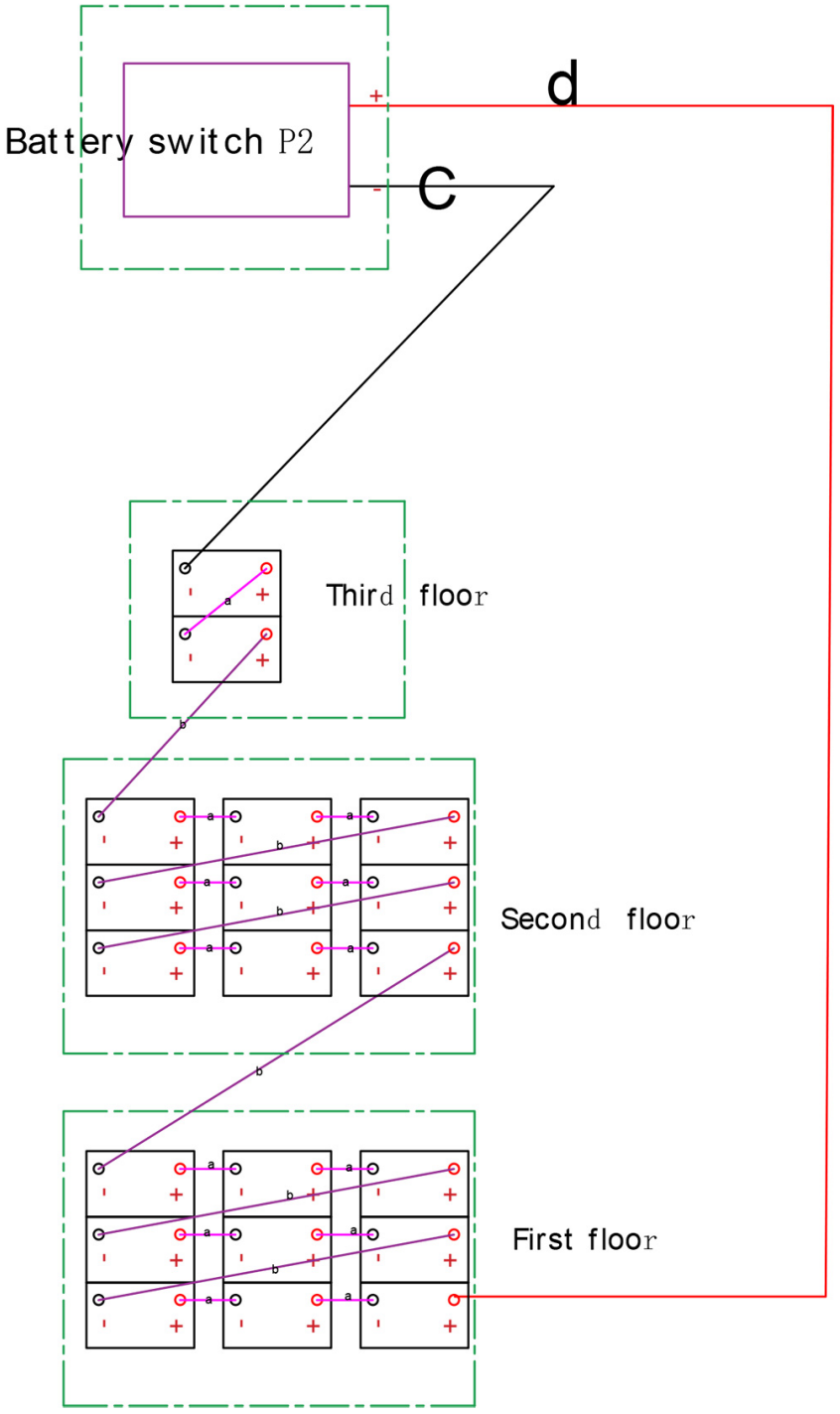
Connection of external battery is **ABSOLUTELY CRITICAL.** Any mistake may result in serious injure of electric shock or fire, damage of product:. below steps must be strictly followed :

- The external battery bank must have a cut-off device, like circuit breaker or switch with fuses.
- **TURN OFF** the cut-off device , make sure no harmful voltage can be touched on the connector.
- Use only battery bank of correct voltage, check the product rating label for correct information.
- Choose Wire with sufficient current rated , prepared well the terminal

- **CHECK THE POLARITY** of battery bank, fix wires of correct polarity to the battery bank with proper color and clear label for distinguish the polarity.
- Securely Plug / Fix the other end of the cable to UPS
- Check the polarity of the wiring and fastness of the connection
- Powered the UPS by turning on the cutoff device device

Model	Nominal Battery Voltage	Rated Battery Current	Connection Wire
1K	36V	30A	>10AWG/5mm^2
2K	72V	30A	>10AWG/5mm^2
3K	96V	30A	>10AWG/5mm^2
6K	192V	40A	>10AWG/5mm^2
10K-192B	192V	60A	> 8AWG/8mm^2
10K-240B	240V	50A	

The connection of Internal Batteries



a:20cm/10mm2 13pcs

Red and black (both ends are M6 round end)

b: 55cm/10mm2 6pcs

Red and black (both ends are M6 round end)

c: 50cm/10mm2 1pcs

Red (one end is M6 round end and the other end is tubular)

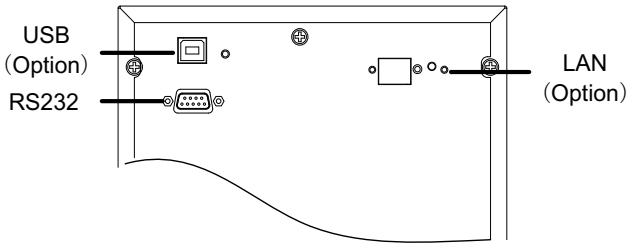
d: 100cm/10mm2 1pcs

Red (one end is tubular and the other end is M6 round end)

(**Fig 3.2** Outdoor 10K 192V 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.

3.3.5 Communication Cable (optional)



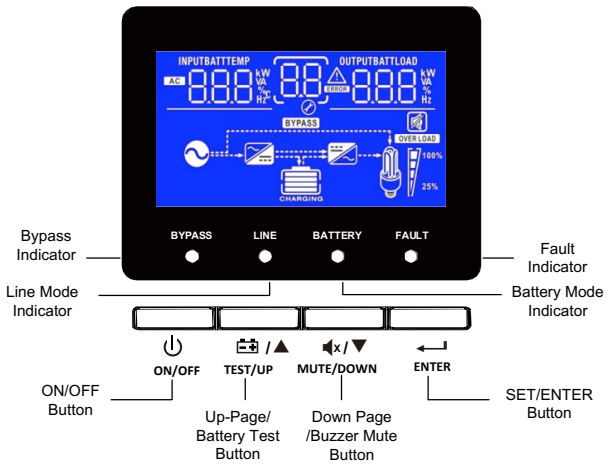
RS232 : Connect UPS computer Interface (RS232) and monitor equipment through communication cable. consult with distributor for communication protocol

Optional LAN port: support monitor the UPS via smart phone APP, PC software, Web-page Browser etc.

The Product also provide optional USB Port, Modbus Port, Relay Dry contact card, refer to optional port user manual for application.

Chapter 4 Panel & Operation Guide

4.1 Front panel



LCD Display Panel

4.1.1 ON/OFF Button

ON/OFF Button is used to turn on/off the UPS

4.1.2 Setting Enter button

Enter button is used to enter setting mode and confirm change of the setting

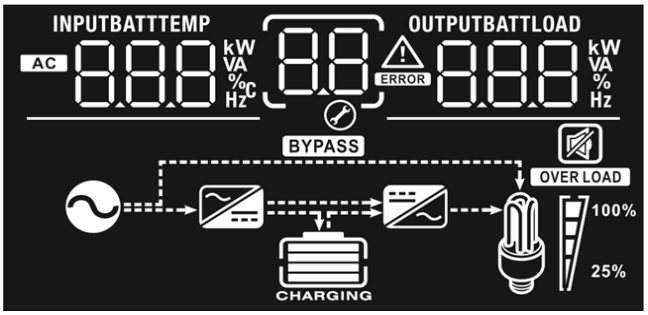
4.1.3 Up Page/ Battery Self-test Button

The Up page Button is used to switch the display the LCD display information, and activate the battery self-test function

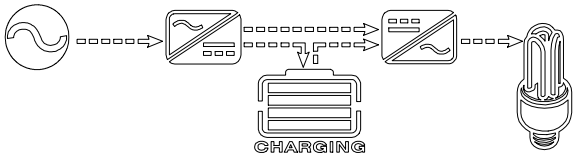
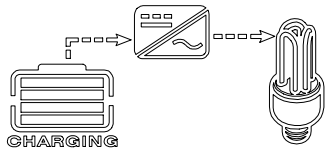
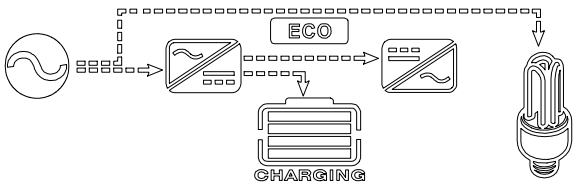
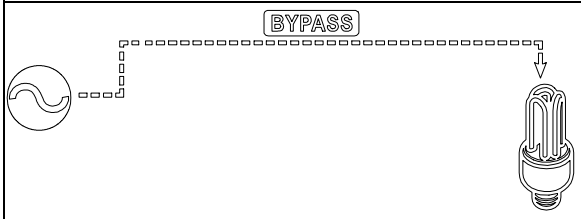
4.1.4 Down Page/Buzzer Muting function

The Down Page Button can also used to switch the display the LCD display information,and muted/recover the buzzer alarm function

4.1.5 LCD Display

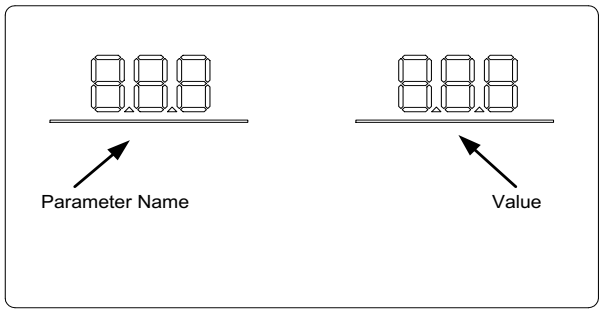


con	Function description
Input Source Information	
AC	Indicates the AC input.
INPUTBATT 888 kW VA %C Hz	Indicate input voltage, input frequency, battery voltage
H M 88	In Battery , the Estimated backup time is shown with an icon of clock, The letter H indicate the unit is Hour, while M indicate the unit is minutes
Fault Information	
88 ERROR	Indicates the warning and fault codes. Warning: 88 flashing with warning code. Fault: 88 ERROR lighting with fault code.
Output Information	
OUTPUTBATTLOAD 888 kW VA % Hz	Indicate output voltage, output frequency, load percent, load in VA, load in Watt, and State Of Charge(SOC) of the battery in percent
Battery Information	
CHARGING	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode.

<table>
<tr><th colspan="5">Load Information</th></tr>
<tr><td></td><td colspan="4">Indicates overload.</td></tr>
<tr><td rowspan="3">  </td><td colspan="4">Indicates the load level by 0-25%, 26-50%, 51-75% and 76-100%.</td></tr>
<tr><td>0%~25%</td><td>26%~50%</td><td>51%~75%</td><td>76%~100%</td></tr>
<tr><td>  </td><td>  </td><td>  </td><td>  </td></tr>
<tr><th colspan="5">Mode Operation Information</th></tr>
<tr><td colspan="3">  </td><td colspan="2">Indicates unit connects to the mains.</td></tr>
<tr><td colspan="3"></td><td colspan="2">Indicates load is supplied by utility power.</td></tr>
<tr><td colspan="3">  </td><td colspan="2">Indicates the AC/DC PFC Rectifier and utility charger circuit is working.</td></tr>
<tr><td colspan="3">  </td><td colspan="2">Indicates the DC/AC Inverter circuit is working.</td></tr>
<tr><td colspan="3">  </td><td colspan="2">On line mode , and charging the battery</td></tr>
<tr><td colspan="3">  </td><td colspan="2">On battery mode, AC Mains is abnormal, Battery supply inverter output ,</td></tr>
<tr><td colspan="3">  </td><td colspan="2">On ECO mode, and charging the battery</td></tr>
<tr><td colspan="3">  </td><td colspan="2">On bypass Mode, the load is not protected by the UPS</td></tr>
<tr><th colspan="5">Mute Operation</th></tr>
<tr><td>  </td><td colspan="4">Indicates buzzer alarm is muted</td></tr>
</table>

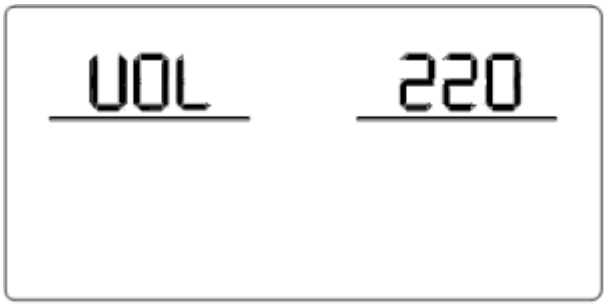
4.1.6 Parameter Setting

On bypass/standby mode , long press the Enter Key for 2 seconds, the UPS Enter Parameter Setting mode , and the LCD display as follow

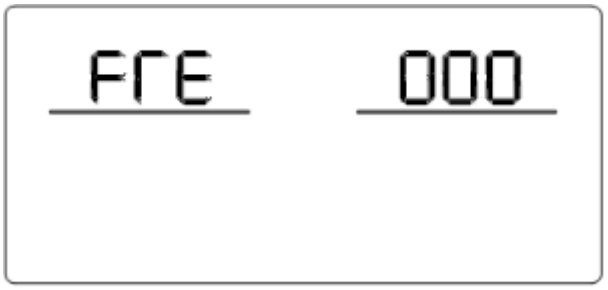
	Parameter name indicate the parameter item to set 。 The value is the target setting value Use “Upward” or “Downward” to choose the item to set and setting value

The Parameter is save only when the UPS is completely shutdown under battery mode. Means that battery need to well connected to complete parameter setting , after finish parameter setting, cut off mains input and wait about 1min until the UPS automatically shutdown and save the change to the memory. New Parameter value will take effect in next turn-on.

- **01:Output Voltage**

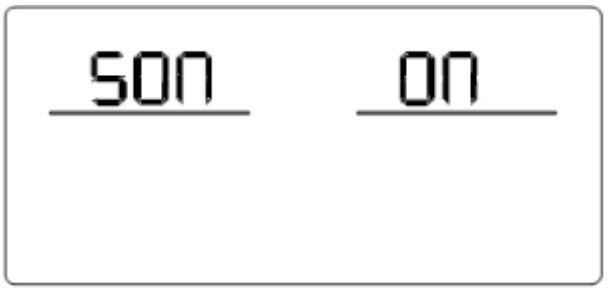
Display	Value
	**Parameter Item: Output Voltage** **200:** means output voltage will be 200Vac **208:** means output voltage will be 208Vac **220:** means output voltage will be 220Vac **230:** means output voltage will be 230Vac **240:** means output voltage will be 240Vac **110:** means output voltage will be 110Vac **120:** means output voltage will be 120Vac

- **02: Output frequency**

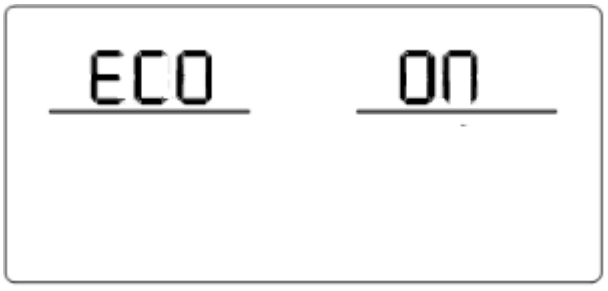
Display	Value
	**Parameter Item: Output frequency** **000:** auto adaptive, the UPS will automatically detect the mains frequency to determined it output frequency when it wake up by mains power on **050:** Fixed 50Hz rated frequency

	**060:** Fixed 60Hz rated frequency

- **03: Auto turn on upon mains power on**

Display	Value
	**ON：** Enable auto turn on function, when the UPS wake by AC mains apply , the UPS will automatically turn on and run in line mode **OFF：** Disable auto turn on function, the UPS will stay on standby mode /bypass mode until manual turn on operation

- **04: ECO MODE**

Display	Value
	**ON: Enable Economy (ECO) mode** **OFF: Disable Economy (ECO) mode**

4.2 UPS Working Mode

4.2.1 Normal mode

Turn on the UPS and close the battery switch at the same time ,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 con diction 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 mute the buzzer beep by the down page(mute) button .

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

Backup function can be tested through battery self test via Up Page (battery test) button

4.2.3 Bypass mode

The ups work on bypass mode when the UPS start up or abnormal situation occurs to the converters and 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.

4.2.4 ECO mode

In ECO mode the loading equipment is powered by the mains directly via bypass, while the UPS keep monitoring the mains condition , when the mains is our of predetermined range, the UPS will automatically switch to line mode or battery in very short time , to protect load. Because in ECO mode , the load is powered directly by the mains , so fluctuation in AC mains will pass through directly to the load equipment , that make it face to risk power quality issue, so ECO mode is recommended to use only in good mains condition

Enable ECO mode reduce energy loss and improve system efficiency by reducing power conversion.

ECO mode default disable.

4.3 Operation

4.3.1 Turn on UPS

Turning on with utility power

Please close the battery switch first and connect the mains input to the UPS, press and hold the ON/OFF button for more than 3 seconds until the buzzer beeps. the UPS begins to conduct self-test, seconds later, utility power icon and the Inverter icon shown and the UPS begins to output supply and 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 3 seconds, the UPS response with a buzzer beep. In the turn on process, the UPS has the same operation as if it is connected to utility power that the utility power icon will not shown, instead the battery icon shown.

4.3.2 Turn off UPS

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

Turn off UPS under the Normal mode

Press and hold the ON/OFF button for more than 3 second to turn off UPS. If bypass mode is enable, 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.

Turn off UPS under the Battery mode

Press and hold the “ON/OFF” for 3second to turn off the UPS. The UPS cut off UPS output supply , and the UPS totally turn off after approximately 1minute .

4.3.3 Enter Setting Mode

When UPS Work on Bypass or Standby Mode, Press the Setting Enter Button for 5 seconds, the UPS enter setting mode, accept setting of output voltage, frequency, battery number, bypass enable/disable, ECO mode enable /disable

Use Up page and down Page to change the setting . and short press the setting for confirm the change

After setting , turn off the mains power supply , wait the UPS turn off under battery mode until display if total off , turn on the UPS again to activate the setting change.

4.3.4 Battery Self-test

In Normal mode, press the Up Page Button for more than 4 seconds until the buzzer beeps. he UPS switch to battery test mode, to check the status of the battery , the UPS exit the battery test mode if the battery abnormal and present alarm with the battery icon flashing. If test mode end up with normal, the UPS switch to normal mode automatically

4.3.5 Buzzer Mute

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 buzzer tone manually.

In the battery and bypass mode, push Down Page button for about 4 seconds until you here a buzzer beep. the buzzer alarm can be muted. Press the button for 4seconds again to recover the buzzer alarm function.

The Buzzer Muting is valid only in battery mode, and invalid for any other UPS alarm.

Chapter 5 Maintenance

5.1 Routine Maintain

To make sure UPS work normal, appropriate maintenance should be schedule periodically, below items should be checked:.

Check UPS running status.

If the utility power is normal, UPS should work in line mode or in battery mode. And there is no warning or fault indication.

Check UPS running mode switch.

Cut off the line input to simulate the utility power interrupt, UPS should transfer to battery mode, and connect the line input, UPS return to line mode again.

Check UPS panel.

Check UPS panel display if it is consistent with UPS running mode.

5.2 Battery Maintain

Typical life span of a lead acid battery is 300 cycle or 2~3years in an environment of 15-25℃ ambient temperature.

Battery is a very important part in the UPS system. The life of battery affected by the environment temperature and cycling use times, high temperature and deep discharge will decrease the battery life.

Battery test can find out battery most problem in battery . for external battery bank, voltage of each battery unit can be a indicator for the battery health status, under not charged condition, battery voltage of in bad unit condition will drop quickly , or significantly stray from that of the rest unit in the same battery bank . Professional battery check is to test battery with battery diagnostic instrument , in which battery impedance is measure,

If UPS is not used, it is suggested to charge the battery once every 6 months.

Normally, the battery should be discharged once every 4 to 6 months.

The battery replacement should be done by qualified technician , please get the advice from local distributor.

Chapter 6 Trouble shooting

When any trouble with UPS, please check the problem refer to the table below first. If the problem cannot be solved, please contact local supplier.

6.1 LCD Warning and Fault Code

Fault code	Description	Possible cause and solution
01	UPS start up not success	Battery Low
		UPS Internal failure， Contact distributor for service
02	Internal DC BUS over-voltage protection	Half-wave rectifier load(hair dryer , half-wave solenoid valve , energy re-generated type load (motor, huge transformer, capacitor with residue charge, remove this kind of load and turn on the UPS again.
		Over mains voltage， turn on the UPS again.
		UPS Internal failure， Contact distributor for service
03	Internal DC BUS under-voltage protection	Battery Low or overload
		UPS Internal failure， Contact distributor for service
10	UPS Output Short-Circuit	Remove short-circuit equipment from UPS
22	UPS Over Load	Reduce loading capacity below UPS rating
23	UPS Over Temperature	Make sure UPS should work in ambient of -10-45°C, if the ambient temperature can't meet this spec. Try reduce loading
		Check ventilation inlet of the UPS ON from panel and outlet on the rear panel is not blocked
		UPS Internal failure， Contact distributor for service
29	UPS Input rectifier protection	Low input voltage and overload
		UPS Internal failure， Contact distributor for service

57	Battery UN-connected	Check battery input wiring and battery cutoff device such as circuit breaker etc.
59	Charger Fail	UPS Internal failure， Contact distributor for service
60	EPO activated	Reset the External EPO switch，if no EPO switch install, turn off EPO function via the operating panel
Battery Icon Flashing		Battery not connected or battery low
		Charger failure, Contact distributor for service
UPS not working normal line mode , With normal mains input		Make sure Input circuit breaker is ON
		Turn on the UPS via ON/OFF button
Backup time is not as long as expected		Battery low, recharge the battery long enough time
		Overload, reduce the loading
		Battery aged, Contact distributor for service
UPS not turn ON after pressing ON/OFF button		Press the ON/OFF button long enough time , 3seconds , and hear a buzzer beep for acknowledging the correct TURN ON operation
		Battery low or not connected
		UPS Internal failure， Contact distributor for service

Chapter 7 Specification

7.1 Single phase specification

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

<table>
<tr><th colspan="2">Model item</th><th>1K</th><th>1KS</th><th>2K</th><th>2KS</th><th>3K</th><th>3KS</th><th>6KS</th><th>10KS</th></tr>
<tr><td colspan="2">Rated power</td><td colspan="2">1000VA/800W</td><td colspan="2">2000VA/1600W</td><td colspan="2">3000VA/2400W</td><td>6kVA/5.4kW</td><td>10kVA/9kW</td></tr>
<tr><td rowspan="7">AC Input</td><td>Input system</td><td colspan="8">Single phase (L/N+PE)</td></tr>
<tr><td>Nominal voltage</td><td colspan="8">HV: 208/220/230/240Vac
LV:100/110/120/127Vac</td></tr>
<tr><td>Frequency</td><td colspan="8">50/60Hz</td></tr>
<tr><td>Voltage range</td><td colspan="8">HV: 90~300VAC±5VAC
LV: 55-145Vac±3VAC</td></tr>
<tr><td>Frequency range</td><td colspan="8">（40~70)±0.5Hz</td></tr>
<tr><td>Input power factor</td><td colspan="8">>0.99</td></tr>
<tr><td>Bypass Voltage Range</td><td colspan="8">HV: 115~285VAC×(1±3%)
LV: 80~140VAC×(1±3%)</td></tr>
<tr><td rowspan="3">Battery Input</td><td>Nominal Voltage</td><td>24V</td><td>36V</td><td>48V</td><td>72V</td><td>48V</td><td>96V</td><td colspan="2">192V/240V</td></tr>
<tr><td>Battery Capacity & Quantity</td><td>12V/7AH x 2pcs</td><td>External</td><td>12V/7AH x 4pcs</td><td>External</td><td>12V/9AH x 4pcs</td><td>External</td><td colspan="2">External</td></tr>
<tr><td>Backup Time</td><td colspan="6">Half loaded≥6minutes,
Full loaded ≥2minutes(standard)</td><td colspan="2">Dependent on the capacity of external batteries</td></tr>
</table>

	Battery charger time	Charger to 90% battery capacity in 5 hours(standard) Dependent on the capacity of external batteries (long backup time)				
AC Output	Output wiring system	Single phase (L/N+PE)				
	Inverter Mode Output voltage	HV:208/220/230/240Vac±2% LV:100/110/120/127Vac±2%				
	Waveform	Sine Wave				
	Harmonic Distortion	THD<2% (linear load) THD<7% (nonlinear load)				
	Output frequency	50/60±4Hz (Sync mode) 50/60Hz±1% (Fix Freq. mode)				
	Overload capability	105 ~ 125%≥ 60s,126 ~ 150%≥30s The recover point is 70%				
	Transfer time	Battery <-> Line Mode :0ms				
Efficiency	Line Mode	HV:86% LV:86%	HV:88% LV:86%	HV:89% LV:87%	HV:92% LV:88%	HV:93% LV:89%
	Battery Mode	HV&LV:85%	HV&LV:86%	HV&LV:87%		
Communications		RS232 RS485(optional), Dry contact(optional), Network Card(Option)				
Alarm Function		AC/DC input under abnormal, overload condition and Inverter problems				
Protection Function		AC input or output above or below the range of voltage, overload, over temperature and short circuit protection				
Noise		<50dB			<55dB	

7.2 Mechanical

Model	W x H x L(mm)	Weight(kg)	Remark
1KS-1U	438x44(1U)×360	7.9	1U RACK
1K	438x87(2U)×360	11.1	Internal 2pcs*12V/7AH Battery
1KS	438x87(2U)×360	6.7	
2K	438x87(2U)×360	15.3	Internal 4pcs*12V/7AH Battery
2KS	438x87(2U)×360	7.3	
3KS	438x87(2U)×360	8.7	
3K-4B	438x87(2U)×500	19.8	Internal 4pcs*12V/9AH Battery
6KS	438x87(2U)x500	10.8	
10KS	438x87(2U)x500	12.6	

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

7.3 Environmental

ITEM	Normal range
Ambient temperature	－10ºC~ +40ºC
Environment humidity	0~97%, no condensing
Altitude	no derating for lower than 1000M: Over 1000m :1% derating for every 100M rise
Storage temperature	-15ºC~+45ºC

7.4 EMC & Safety Regulation

ITEM	Standard	Level
ESD	IEC61000-4-2	LEVEL4
RS	IEC61000-4-3	LEVEL3

EFT	IEC61000-4-4	LEVEL4
SURGE	IEC61000-4-5	LEVEL4
Safety	IEC62040-1	

Warranty

Products to be offered warranty from the date of purchase within the warranty period.

- Serial number of the product or sales contract is credentials to the warranty.
- In case of UPS fault, please contact local service center and dealer. The transportation charges shall be borne by the buyer.

As a user, any problem you have the following service:

- Online Service via email or website
- Local distributor replace or repair service

This limited warranty does not apply to conditions as follows:

- Damage or loss resulted from force majeure or external causes;
- Warranty period expired;
- The product serial number is missed or modified;
- Disassemble or modifications to the product without authorization;
- Man-made damage