



USER MANUAL

T 1-3KVA

Outdoor UPS System

Uninterruptible Power System

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.

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1. Safety

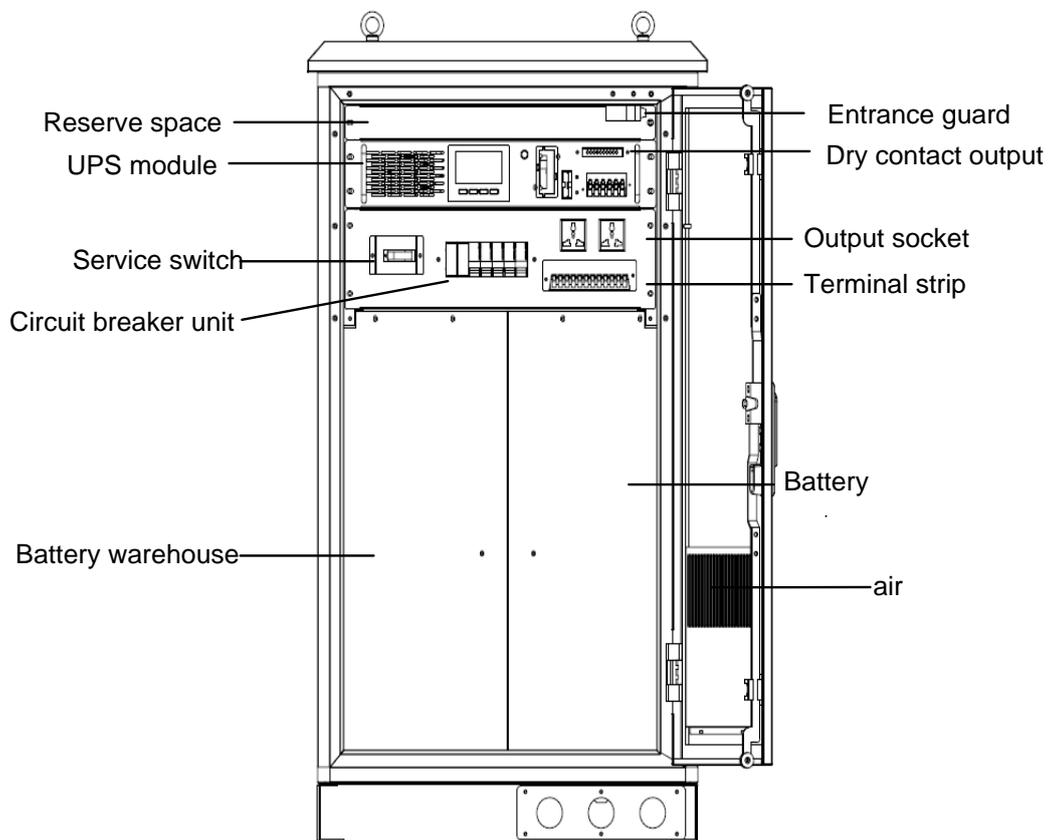
- Even no connection with utility power, 220VAC voltage may still exist at UPS output.
- If battery cables or power cables need to be replaced, please contact our service stations for staff to avoid fire disaster caused by insufficient capacity of cables.
- Don't open or damage the battery, for the liquid 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

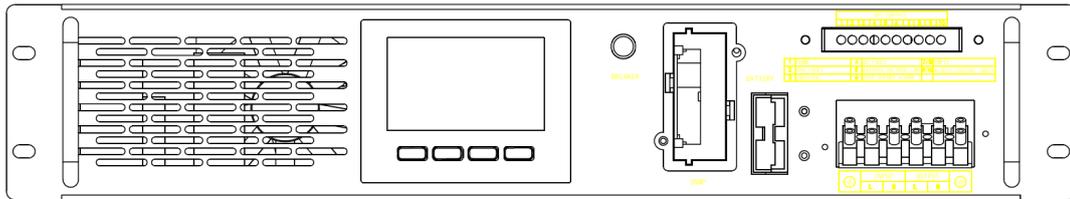
- The outdoor UPS system has good protection function: such as heat insulation, dustproof, damp proof, waterproof etc.
- Double conversion on line technology, which enables the UPS to provide a pure sine wave voltage, with constant frequency, constant voltage, low noise and no interruption, no matter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



(Fig 2.1 The inner structure of the rear panel)

- Lightning protection device, Surge protection device, according to conditions of outdoor UPS, it can effectively eliminate lightning.
- Intelligence air-cooled module, it is easy to maintain and replace. When the inside environment temperature is below 40°C, fans will stop working, thereby greatly prolong the service life of the fans.

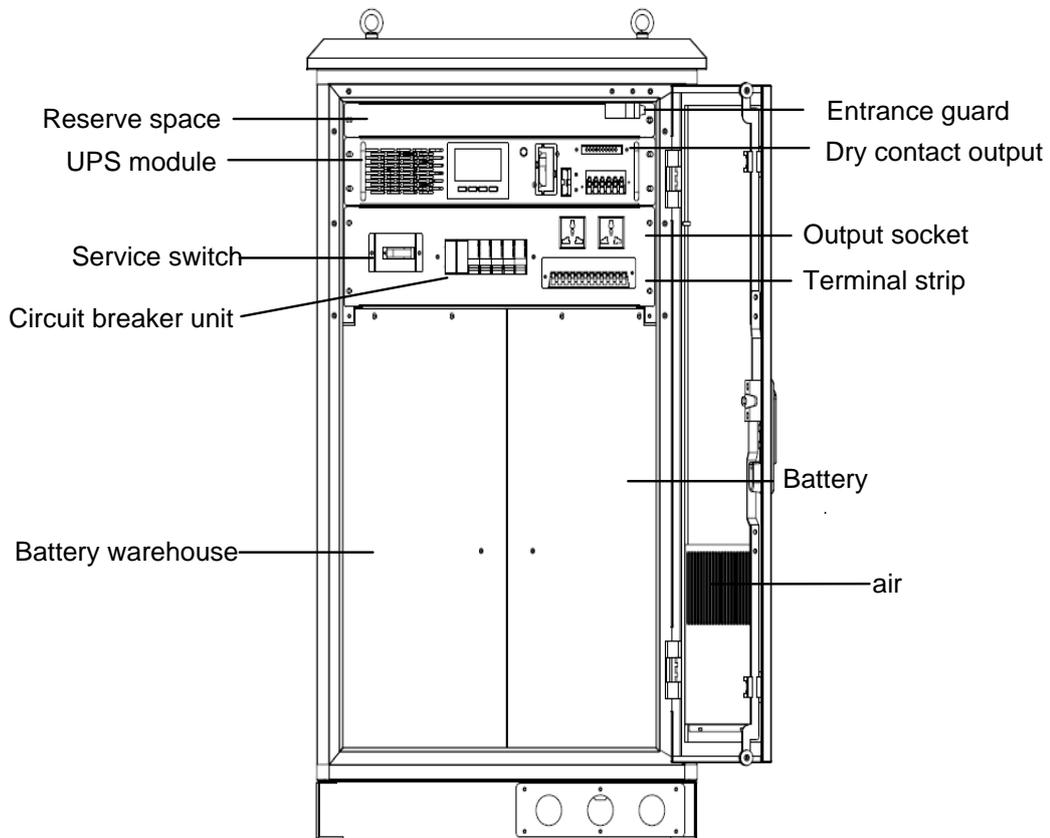
- Intelligence heating module, when internal temperature is below 0°C, it starts heating module.
- Dry contact warning function: ① UPS failure UPS inverter ③ Utility failure
 Battery low Voltage Access Control alarm



(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 300VAC, using batteries less, enhancing the adaptability against the bad power condition.
- Advanced wide input frequency technique, makes the input frequency range from 40Hz to 70Hz, 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.



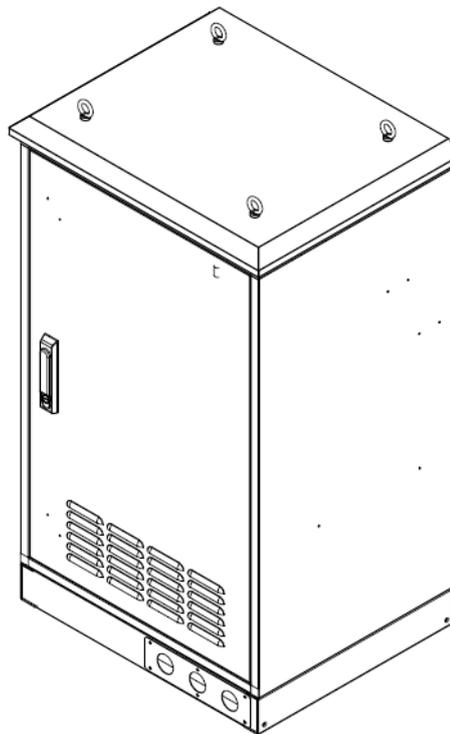
(Fig 2.3 Outdoor 2K/3K internal structure)

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



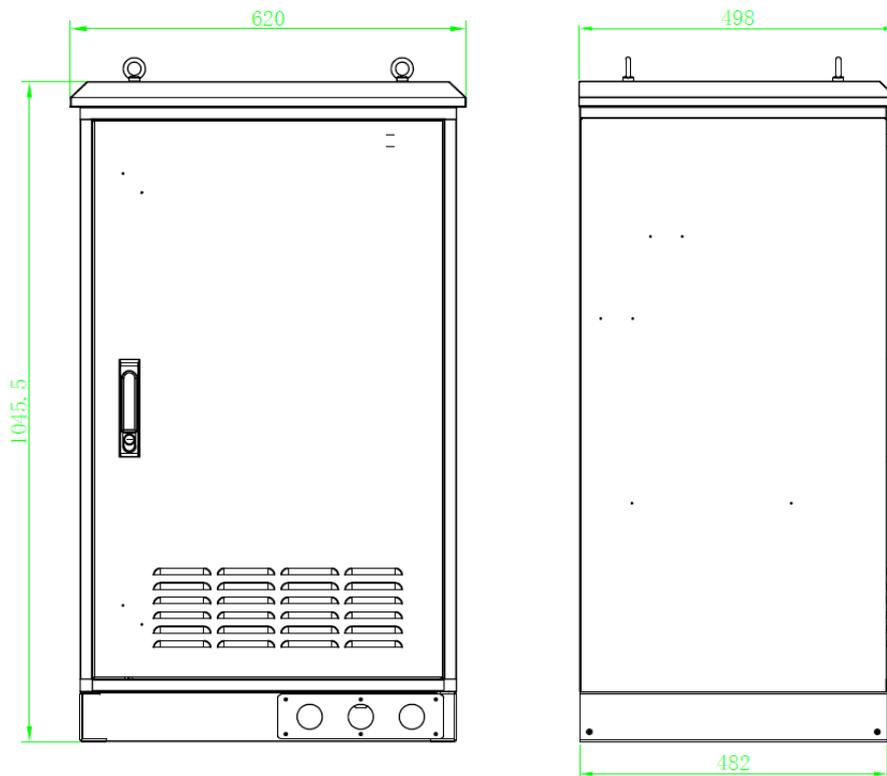
(Fig 3.1 outside Appearance)

Front and back two-door structure. Open the waterproof cover on the lock, then put the key inserted hole, and rotate for 180 degrees, the door will be opened.

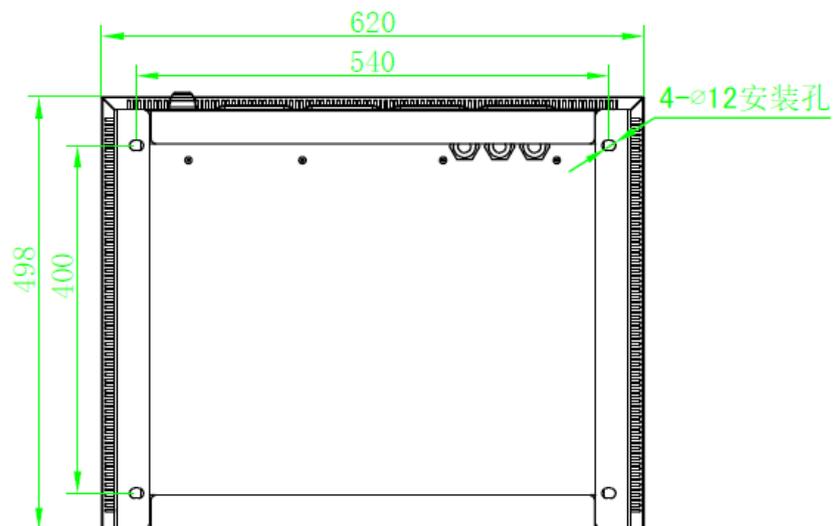
The machine can be used directly fixed platform in the screw M10, the input and output line can be connected through the holes underside the bottom.

3.3 UPS install

3.3.1 Base mounting dimensions



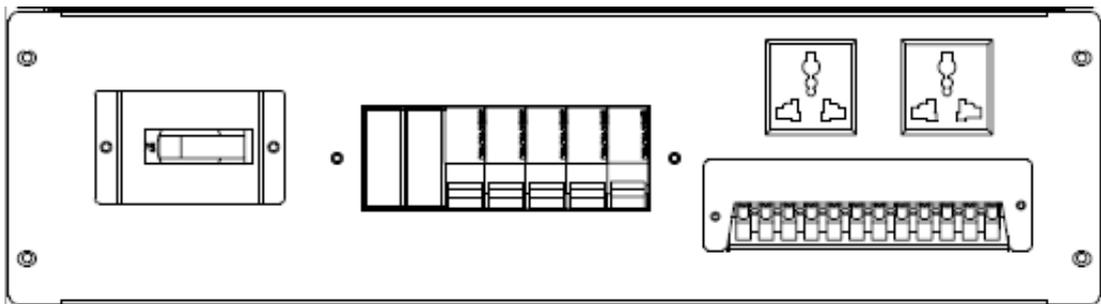
(Fig 3.2 Indoor 1/3K back the installation drawing)



(Fig 3.3 Outdoor 1/3K bottom install orientation)

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 connect on the input grounding terminal block



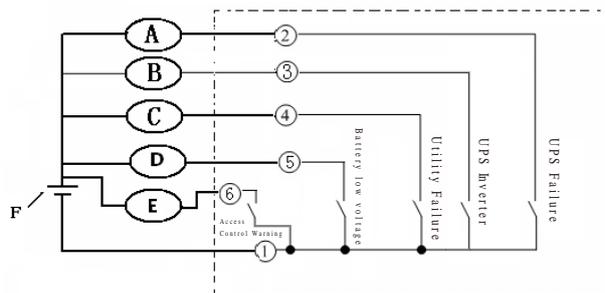
(Fig 3.4 Indoor 1-3K distribution schemes)

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 connect on the input grounding terminal block

3.3.2.3 Dry contact connection

Dry contact output warning					Access Control Input
UPS Failure	UPS Inverter	Utility Failure	Battery low Voltage	Access Control	

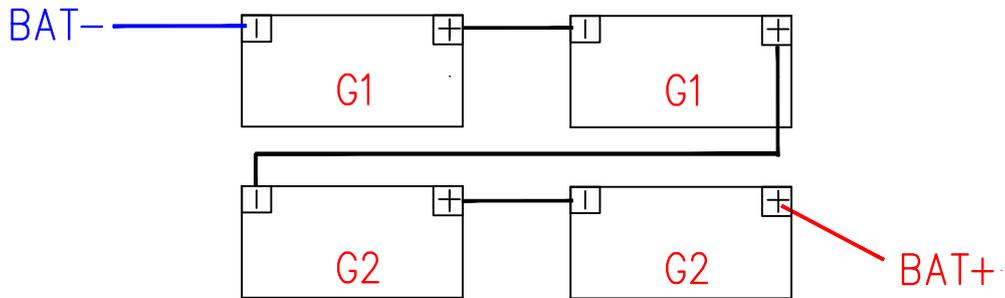
(Fig 3.13 Dry contact pin diagram)



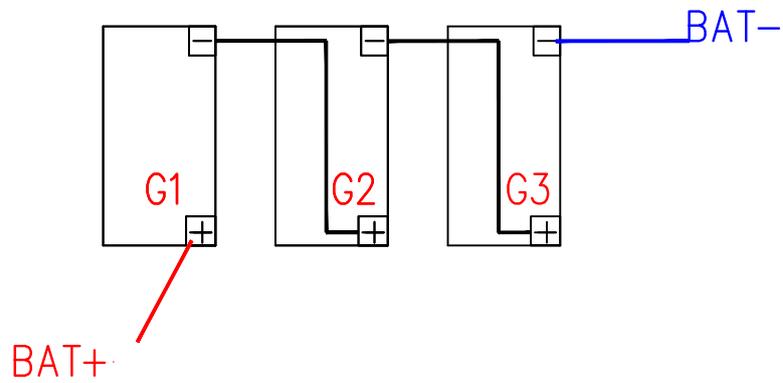
A、 B、 C、 D、 E: warning indicator
 F : External Power (AC and DC Option)

(Fig 3.14 Dry contact wiring diagram)

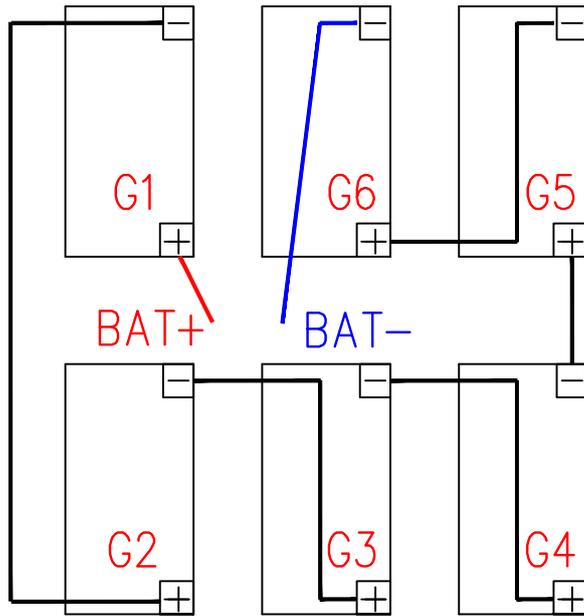
3.3.3 The connection of Internal Batteries



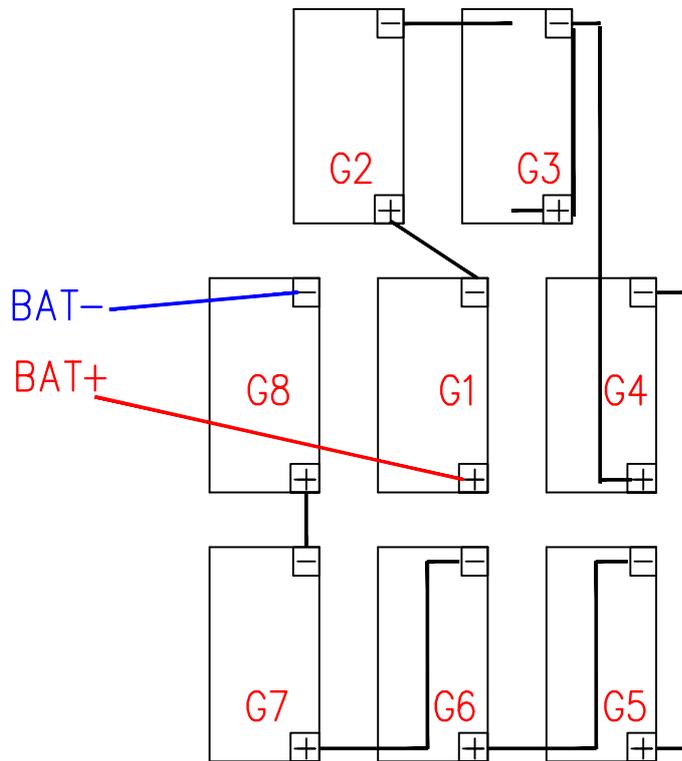
(Fig 3.15 Indoor 1K battery connection method)



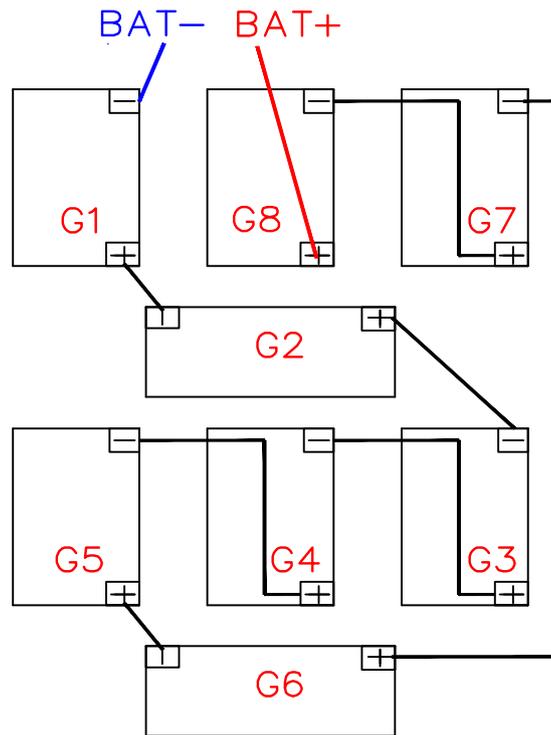
(Fig 3.16 Outdoor 1K battery connection method)



(Fig 3.17 Outdoor 2K 72V battery connection method)



(Fig 3.18 Indoor 3K battery connection method)

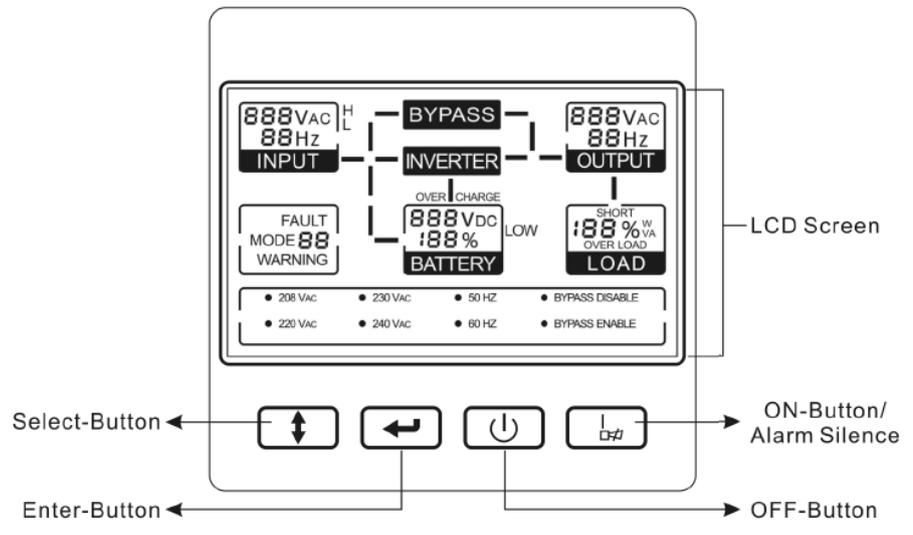


(Fig 3.19 Outdoor 3K 96V battery connection method)

- 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.

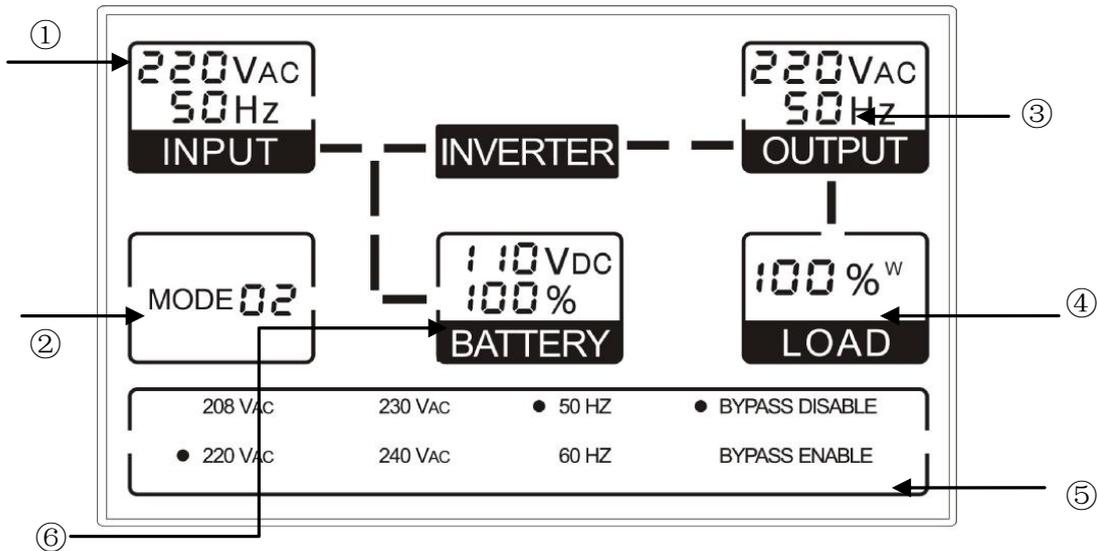
4. Operation

4.1 Display panel and indicator



The alarm silence of the function button is valid only in battery mode and bypass mode. It cannot silence other fault warning alarms of the UPS system.

4.2 LCD display



The LCD has five parts following:

- ① Input display icon: show the input voltage, frequency.
- ② Mode display icon: show the work mode of UPS, alarming information and fault code .
- ③ Output display icon: show the output voltage, frequency.
- ④ Load capacity icon: show the percentage of the load.
- ⑤ Function setting icon: set output voltage, frequency and bypass function.
- ⑥ Battery display icon: show battery voltage, the percentage of battery.

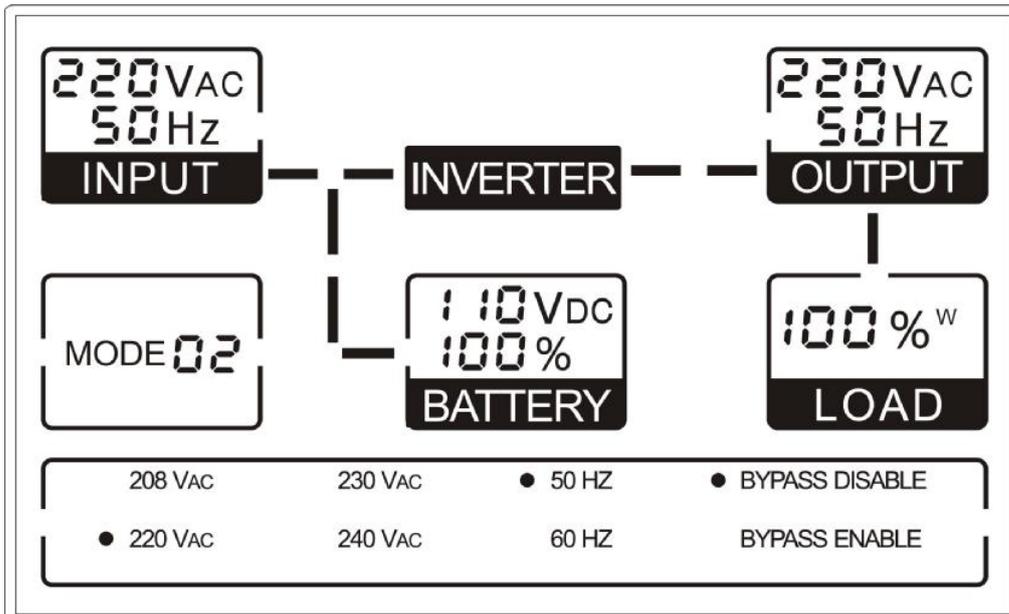
4.3 Start up

Start with the utility power

- ◆ Power on the UPS, the Utility Power LCD light then press down the “ON” button to start the UPS.

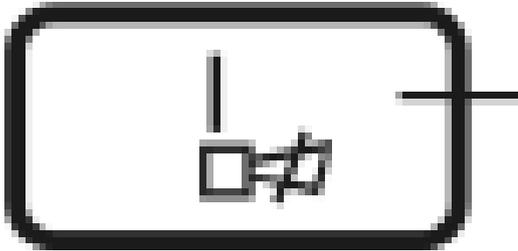


- ◆ After few minutes, normal operation will begin, the LCD show the main menu under normal mode.

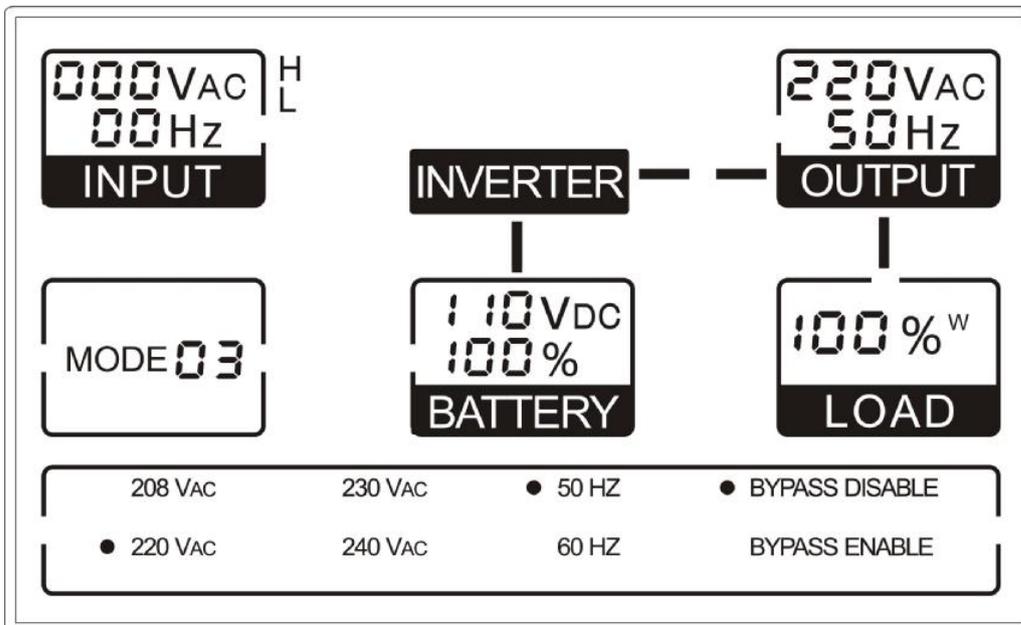


Startup without the utility power

- ◆ Press down the “ON” button to start the UPS (connect the external battery first).



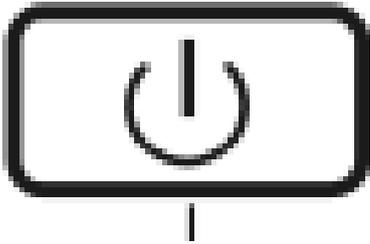
- ◆ UPS start up on battery mode, the LCD show the main menu under battery mode.



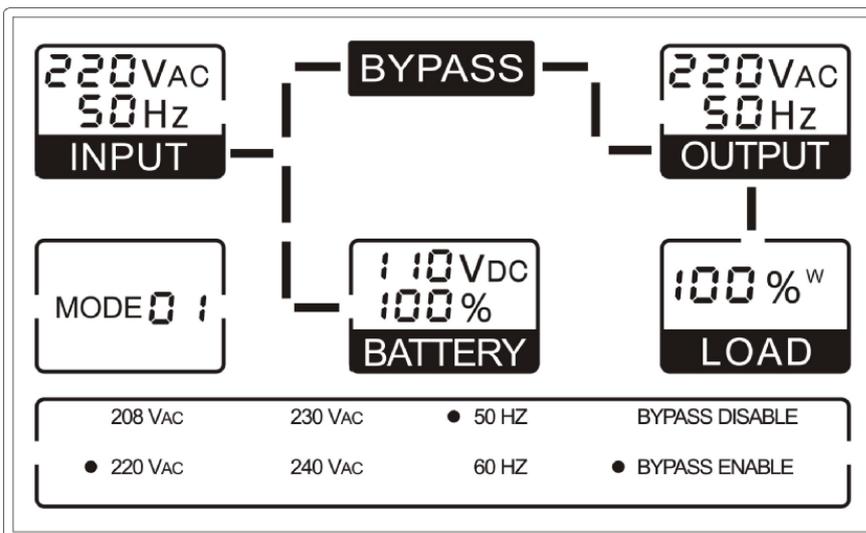
- ◆ Buzzer beeps once ever 4 seconds, indicate the UPS run under battery mode. Press the “Function” for more than 2 seconds can silence the buzzer.

4.4 Shut down

- ◆ Press down the “OFF” button for several minutes, the UPS begin to turn off.



- ◆ The UPS will cut off the output (default), if set the UPS transfer to work in bypass mode after turn off from the normal mode, the utility power LED and the bypass LED are on, the LCD show the main menu under bypass mode.



- ◆ In bypass mode the buzzer beeps once ever 2 minutes, indicate the UPS run under bypass mode. Press the “On” button for 1 second can silence the buzzer.
- ◆ Disconnect UPS from the utility power then the UPS no output voltage.

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 fingerring, 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. Troubleshooting

The following messages that users would be found on UPS when the UPS has problem, according to such messages, users can know where the problem is and how to deal with such problem.

- Fault indicator on, indicates UPS has detected some fault
- Buzzer beeps, indicates UPS need to be paid attention to
- Several fault indicators and status indicators on, is to help the user to diagnose fault

When you contact with the service personnel, following messages are required.

- UPS MODEL NO. and SERIAL NO.
- Date of fault happened
- The whole statement of fault (include indicator statements on panel)

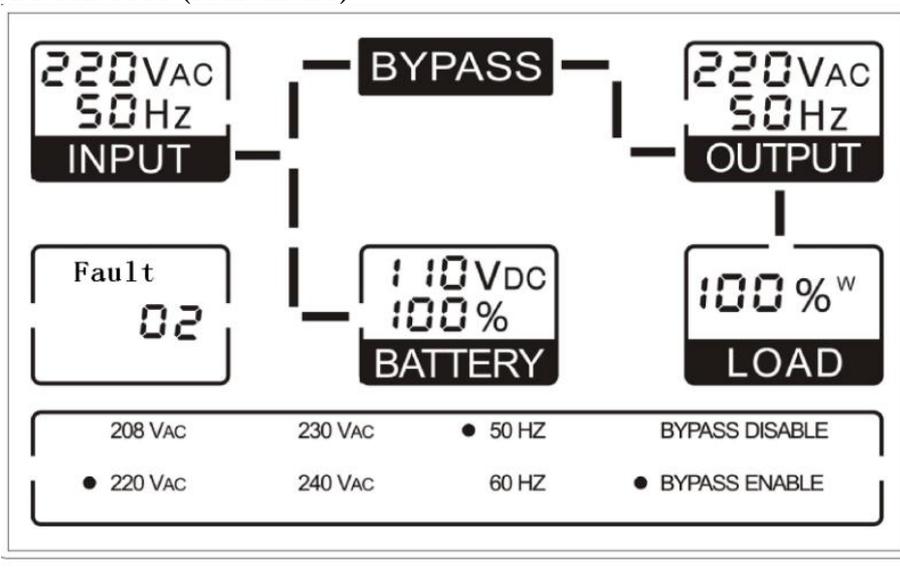
7. Trouble Shooting Table

Abnormal code	Signification	Correction methods
00	No output mode	Please press “ON” button.
01	Bypass mode	Please press “ON” button.
02	AC mode	UPS is normal .
03	DC mode	UPS is normal, please check AC input.
04	Automatic detection the battery	UPS is normal .
alarm code	Signification	Correction methods
09	Zero firewire connect	Rotate mains power socket by 180°
10	Fans fault	Please contact the distributor
11	Battery over-charge	UPS is normal.
12	Battery voltage is low	Please use it after charging. If the battery is damaged or aged, please contact the distribution.

If the Alarm icon is on, buzzer call and the LCD shows fault code, it indicate that the operation is abnormal. Please followed the “troubleshooting table” to eliminate the trouble. If there still are some problems, please contact with service personnel.

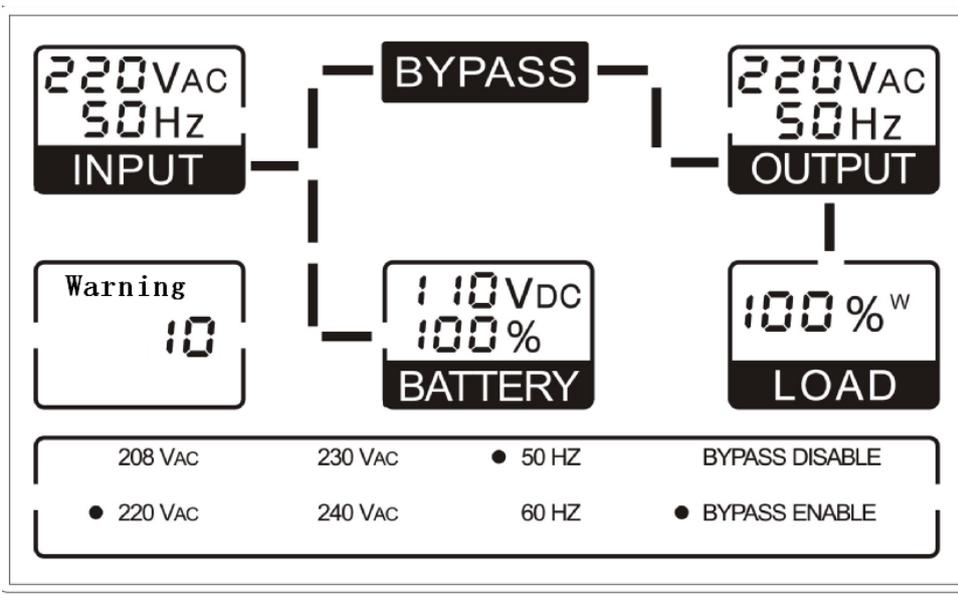
Troubleshooting code contains fault code and alarm code.

A. Fault code (fault menu)



Output voltage and frequency, input voltage and frequency, load level and battery capacity are display by the LCD via press the function button. The fault menu is main menu.

B. Alarm code (alarm menu)



The parameter for output, input, load level and voltage and frequency, load level and battery capacity are display by the LCD via press the function button. The alarm menu is main menu.

8. Technical specifications

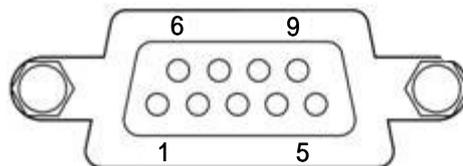
Item	Specification		
Mode	1K	2K	3K
Rated Power	1KVA/900W	2KVA/ 1800W	3KVA/2700W
Rated Voltage	220Vac		
Rated Frequency	50/60 Hz		
AC Power Input			
Input Voltage Range	115-300V		
Input Frequency Range	45Hz to 55Hz		
Frequency Following Speed	1Hz/s		
Input Power Factor	>0.95(Full load)		
DC Power Input			
DC Voltage	36VDC/48VDC	48VDC/72VDC	96VDC
Battery Capacity	12V/38AH、 12V/65AH、 12V/80AH、 12V/100AH etc. (option)		
Charger	Ex-chager (option)		
Charge Current	4A/8A(option)	4A/8A(option)	4A/8A(option)
AC power output			
Output Voltage Tolerance	220Vac \pm 2%		
Output Frequency Tolerance	50 Hz \pm 0.1HZ		
Output Waveform	Sine Wave		
Efficiency	\geq 88%		
THD	Linear load <3%;; Non-linear load <7%		
Crest Factor	3:1 (Max.)		
Overload	Load \geq 105% \pm 5% turn to bypass after 25s-47s with alarm Load \geq 150% \pm 5% turn to bypass after \leq 25s with alarm Load \geq 200% \pm 5% turn to bypass after \leq 300 ms with alarm		
Transfer time	0ms: Utility Mode To Battery Mode <4ms: Invert Mode To Bypass Mode(standard value is 2.4ms)		
Surge protection degree	C CLASS		
Environment			
Work Temperature	-20 to 55°C (Battery heater option)		
Store Temperature	-20 to 55°C		

Relative Humidity	0~95% (non-condensing)
Altitude	< 2000m
Protection	
Protection function	Input/Output High Voltage, Over Load, Output Short, Over temprature, Battery Low, Over Charge、 Surge Protection
Dry Contact	(Option)
Type	relay
Function	①UPS failure ②Utility failure ③Door Opened
Other	
Noise	< 50db (A)
Maintenance switch	Manual Maintenance Bypass Switch
Communication	RS232, SNMP Card (option) ,Winpower software

9. Communication Interface

RS232 Communication Interface

High frequency series UPS provides a standard DB9 communication interface on its rear panel, the definition of the pins is as following:



pin	Definition
1、 4、 6	NO use
2	Transmit
3	Receipt
5	GND
7	NO use
8	NO use
9	Remote wake up