Foreword

Thanks for purchasing our UPS, it is designed for years of troubles free service, so only minimum maintenance is required

This manual contains instructions concerning the installation and putting into operation of the UPS. It also contains essential information on the usage of the equipment, it must be kept in a safe place and

Note: As our products are subject to change through continuous improvements, the products may vary slightly with the contents included in this manual. You can contact our local office to get the information.

Content

1. Summary

This chapter mainly introduce the UPS safety marks and notes, read this chapter carefully before operating the equipment.

1.1 Safety instruction

There is dangerous voltage and high temperature inside the UPS. During the installation, operation and maintenance, please abide the local safety instructions and relative laws, otherwise you will have the risk of harm to body safety or damage the equipments. Safety instructions in this manual act as a supplementary for the local safety instructions.

Our company will not assume the liability that caused by disobey of safety instructions. Please note the following:

1. The output may be energized even when the UPS is not connected to the main AC.

2. If it is necessary to replace the battery wire or power cord, please buy them from our service station, otherwise the capacity may not be enough and will heat up the wires or even catch them on fire.

3. Do not dispose the batteries with fire, or the battery will be exploded. Do not open or damage the batteries, the electrolyte that spilled out from the battery is poisonous and harmful to body safety.

4. Never short the battery anode and cathode, otherwise you will receive an electric shock or the batteries will catch on fire.

5. Do not open the UPS, there is risk of an electric shock.

6. Pay attention to the high voltage that may exist on the

1.2 Symbols indication

The following symbols have been placed through out this manual, where these symbols appear, use extra care and attention.

Safety Symbol	Indication
	Attention
	Static discharge sensitive
	Dangerous Voltage

There are three levers of safety grade: Dangerous, Warning and Attention. The remark is on the right side of the safety symbol, the detailed comments is behind, shown as following:

 Dangerous

Indicate risk of injury or death or seriously damage the machine .

 Warning

Indicate risk of injury or damage the equipments.

 Attention

Indicates important installation, operation or maintenance instructions. Always follow these instructions closely.

1.3 System illumination

This series of UPS is an advanced on line sine wave output power system, with maintenance bypass switch provided. It is a reliable and excellent AC power supply for your precious equipments. It is widely applicable, from computers, communication systems to industry automatic control systems. Because of its on line design, it keeps on adjusting and filtering the AC input, when the main AC fail, UPS would goes over to battery mode in 0s to support the load continuously, when there is an overload or inverter failure situation, UPS would go over to bypass mode, and auto start

2. Installation

2.1 Unpack

1.Unpack unit, kindly check that the following items are included: UPS and user manual one each.

3. Check for any transit damage on the unit. Save the packing and in case of transit damage contact the insurance company and the common carriers. Proceed further once it is confirmed that the UPS is not damaged.

2.2 Safety notice

1. UPS should be placed in a sufficiently ventilated area, keep it far away from water, flammable gas and corrosive.
2. Do not lay the UPS on side, make sure the ventilation hole on the front bottom and the cooling fan on the rear panel are not blocked.

3. The ambient temperature should be between 0~40°C.

4. There is a phenomena of condensing when the UPS is installed under low temperature. Make sure the UPS is completely dry before installing, otherwise you would receive an electrical shock.

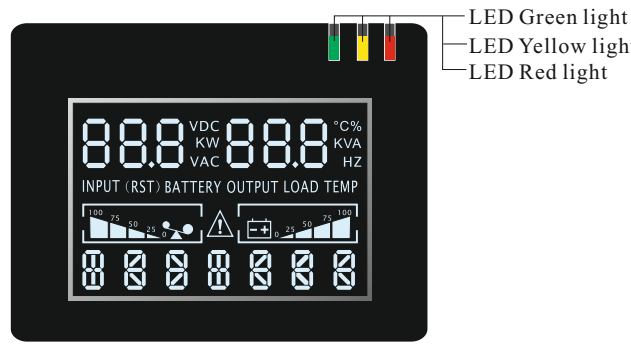
NOTE:

★ Do not connect inductance load such as fluorescent lamp, copy cat and generator to the UPS outlet.
★ Plug-in the UPS input cord to a 3-pin wall socket with current limit protection and a reliable low impedance earth connection.

★ The output may be energized even when the UPS is not connected to the main AC. To make the UPS output no energy, Please first switch off the switch, then cancel the main AC.

★ To connect the UPS with laser printer, please select the UPS rating according to the UPS start power.

2.3 Front panel display and indicators and buttons instruction



Front panel and LCD UPS display

LCD PART

- The first line is the digital section, and is consisted of two small digital sections and the related unit section on the right side. It is used to display the numerical value of the certain item on the second line.
- The second line is the item section which include input, battery, output, load and temperature, etc.
- The third line is the graphic section which has the load capactiy (left) and battery capacity (right) displayed in graphics. The fault icon will be displayed when there is a fault.
- The fourth line is the status section, and is the area of machine status in English. The utility mode is displayed as“on line”. The battery mode is displayed as “on batt”. The bypass mode is

LED PART

- Red LED is on: UPS is fault and has no output. For example: Overload beyond the allowed time, inverter fault, BUS fault, over temperature fault etc.

- Yellow LED is on: UPS is alarming. For example: With utility in but not turn on the UPS, Bypass mode, batteries are over charged, charger fault, fan stop working, batteries are discharged to battery low voltage when UPS works on battery mode.
- Green LED is on: UPS is normally powered by utility or battery inverter mode.

Description of the Buttons

BUTTONS PART

- ON/OFF button

  Press and hold for some time to turn on/off the UPS.

- FUNCTION button

  Press and hold for some time on utility mode: UPS runs a self-test function.

  Press and hold for some time on battery mode: Mute function.

- INQUIRING button

  Press for short time: Indicate the items of the second line item section orderly. Press and hold for some time: Circularly and orderly display the items from "INPUT, BATTERY, OUTPUT, LOAD, TEMPERATURE" every 2 seconds. When you press and hold the button for some time again, it will turn to static output status.

2.4 Installation

The installation must only be performed by qualified personnel and abide to the electrical law. To ensure the safety, please cut off the AC input before performing the installation. If your model is long backup type, you should also cut off the battery breaker.

1. Open the cover of the terminal block on UPS rear panel.
2. Refer to the following to select the UPS input/output wire:

5-7.5KVA Powerpack HF	UL1015 10AWG (6mm^2)
10-12.5KVA Powerpack HF	UL1015 8AWG (10mm^2)
15-20KVA Powerpack HF	UL1015 6AWG (25mm^2)

Note:

***The rating of the wall socket should be bigger than the UPS rating, otherwise it will get burned.**

3. Refer to the below figure, connect the input/output cords to the terminal block.

Note:

***Make sure the terminals are properly tightened.**

4. Refer to the following table to select the earthing wires.

5-7.5KVA Powerpack HF	UL1015 10AWG (6mm^2)
10-12.5KVA Powerpack HF	UL1015 8AWG (10mm^2)
15-20KVA Powerpack HF	UL1015 6AWG (25mm^2)

5. After the installation is completed, please double check if the connection is right and properly tightened.

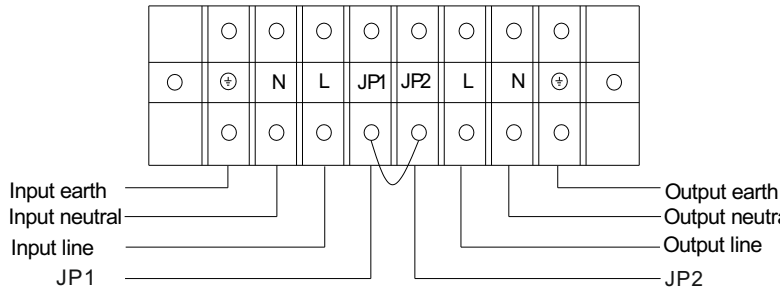
6. If you want to install the leak current protection switch, please connect it to the UPS output end.

7. To connect the loads with UPS, please turn off the loads first, then connect the wires, turn on the loads one by one at last.

8. The output may be energized even when the input is not connected to the main AC. Just by shut down the UPS can not ensure that the UPS internal is safe. If you want the UPS have no output, please turn off the UPS and then cut off the AC input.

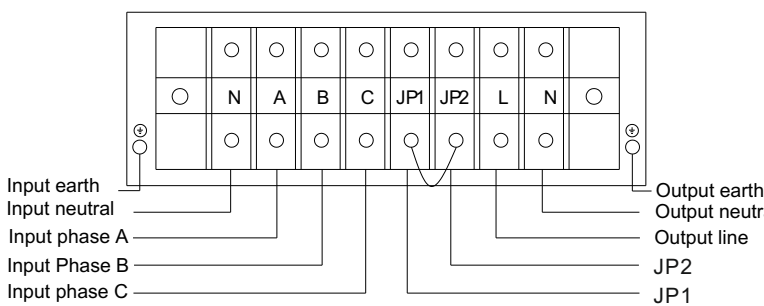
9. It is advisable to charge the batteries for 8 hours before using. After all the connections are done, as long as the UPS input breaker is placed to ON, the battery would get charged.

10. To connect inductance load like the generator, monitor and laser printer to UPS outlet, the UPS rating should be of two to four times of the loads power, as the starting power of these loads would be much bigger then usual.



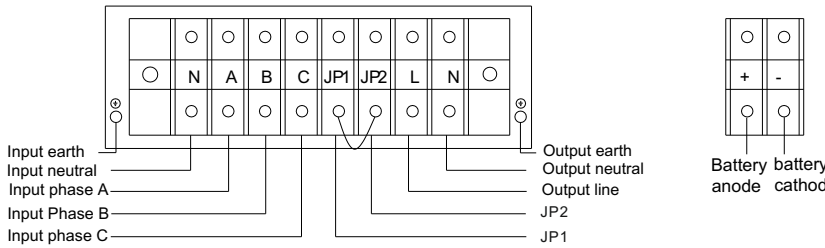
5-12.5KVA Powerpack HF 1/1 Phase
Input, output terminal block connection

Note: If the UPS is used in single machine, then JP1 and JP2 should be shorted with wire, for 5-7.5KVA Powerpack HF the wire should beat least 12AWG, for 10-12.5KVA Powerpack HF, the wire should be at least 10AWG.
If the UPS is used in parallel, please remove the wire that be tween the JP1 and JP2.



10-12.5KVA Powerpack HF 3/1 Phase
Input、output terminal block connection

Note: If the UPS is used in single machine, then Jp1 and Jp2 should be shorted with wire, the wire should be at least 10A WG.



15-20KVA Powerpack HF 3/1 phase
Input, output terminal block connection diagram

Note: If the UPS is used in single machine, then JP1 and JP2 should be shorted with sheet copper that provided with the UPS,
If the UPS is used in parallel, please remove the sheet copper that connected between the JP1 and JP2.

2.5 External battery connection

1. The DC voltage of this UPS is 240VDC, when you are connecting the external batteries, please connect 20pcs of 12VDC batteries in series(in one string), and you can connect any strings in parallel. The batteries in every string should be 20pcs, should not be more connected or less connected.

2. For 5-12.5KVA Powerpack HF, connect one end of the battery cable to the UPS, the other end is open two cables used to connect the batteries. The 15-20KVA Powerpack HF use the terminal block. The procedure is very important, please follow the steps, otherwise you will receive an electrical shock.

- There should be a DC breaker between the battery and UPS,

Model	DC voltage	Battery current
5-7.5KVA Powerpack HF	240VDC	24Amax
10-12.5KVA Powerpack HF	240VDC	40Amax
15KVA Powerpack HF	240VDC	60Amax
20KVA Powerpack HF	240VDC	80Amax

²Place the battery breaker to OFF, connect the 20pcs of batteries in series.

²First connect the battery cable to battery, (do not connect the cable to UPS first, there is a risk of electric shock), connect red cable to battery anode, connect the black cable to battery cathode.

²The battery cable for 15-20KVA Powerpack HF should be Ul1015 6AWG(25mm^2), the yellow wire should connect toUPS earth and battery cabinet.

²Connect the battery cable to UPS battery socket, then the connection is completed. Now do not connect any load to the UPS. First connect the input power cord, then place the input switch to ON position, and the battery breaker to ON, the UPS would start charging the batteries.

NOTE: Do not invert the battery connection, otherwise the UPS would be damaged.

2.6 Parallel

1.Parallel Redundant

N+X is now the most stable structure of power supply, N standfor the basic UPS quantity demanded for the loads, X stand for the redundant UPS quantity. The reliability increase as the X goes up. Only with the parallel wire, you will have max. 3pcs of UPS connected in parallel.

2. Installation

²User provide the standard 25pin parallel cable (25pin, shielded), the length should be no more than 3m.

²The requirments, please refer to the single unit installation.

²Connect the output of each UPS to a socket board, then connect loads to the switch board.

²The jumper or copper sheet between the JP1 and JP2 should be removed.

²Every single UPS should connect with its own battery pack.

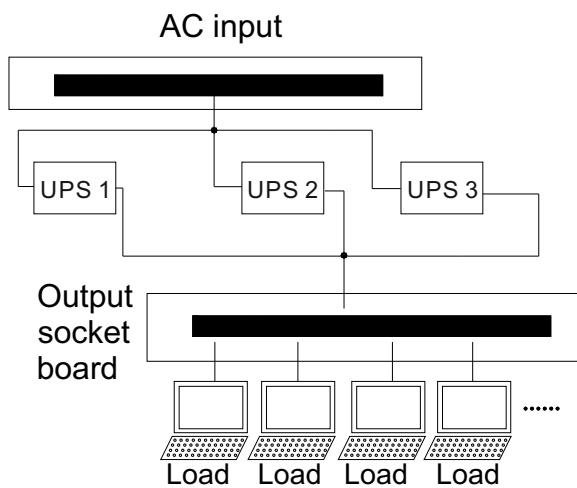
²Refer to the figure to connect the units. Pay attention to the

Model	The rating of the breaker
5-7.5KVA Powerpack HF	≥40A/250VAC
10-12.5KVA Powerpack HF	≥60A/250VAC
15-20KVA Powerpack HF	≥100A/250VAC

The length of the wires should be:

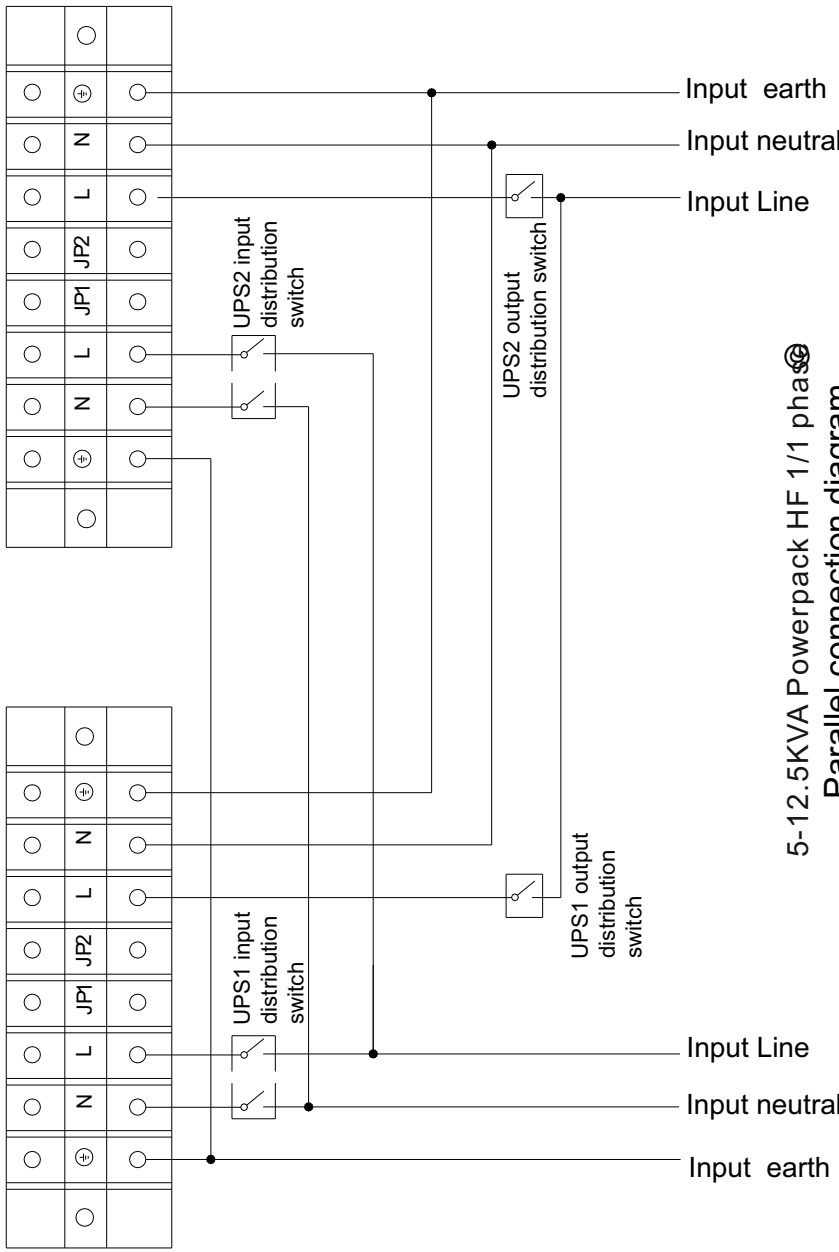
If the distance between the loads and UPS is less than 20m the difference of every wire length should be less than 20%, If the

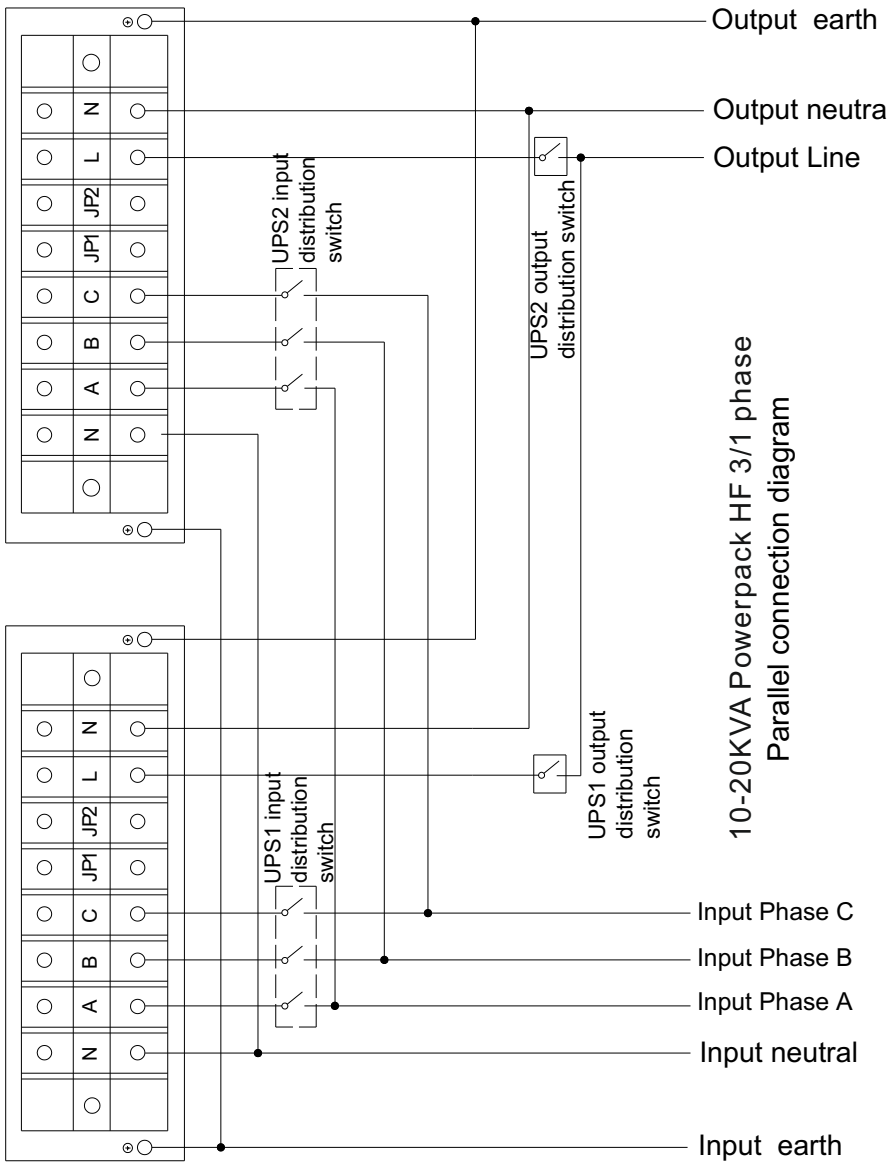
2.7 Operation and Maintenance



Parallel diagram

1. Please refer to the single units operation to operate the units.
2.Turn on: After all the UPS are turned on one by one, the units would go to inverter mode together.
Turn off: After all the UPS are turned off one by one, the unit would go to bypass mode together.
3.The maintenance, please refer to the maintenance procedure.


5-12.5KVA Powerpack HF 1/1 phase
Parallel connection diagram
Input earth
Input neutral
Input Line
UPS2 output distribution switch
UPS2 input distribution switch
UPS1 output distribution switch
UPS1 input distribution switch
Input Line
Input neutral
Input earth
L
N
JP1
JP2
L
N
L
N


Output earth
Output neutral
Output Line
UPS2 input distribution switch
UPS2 output distribution switch
UPS1 input distribution switch
UPS1 output distribution switch
10-20KVA Powerpack HF 3/1 phase
Parallel connection diagram
Input Phase C
Input Phase B
Input Phase A
Input neutral
Input earth
N
L
JP2
JP1
C
B
A
N

3. Operation and Running

The operation is very simple, before operate the UPS, please read the manual first.

3.1 Operation

3.1.1 Turn on the UPS on AC mode

1. Make sure the utility connection is correct, switch on the input switch, then the fan works, and the UPS powers the load by bypass and it is working on bypass mode, Yellow LED will light ON and the LCD status will show"on bps",the output indication is utility parameter.

2.Continuously press the ON/OFF button for above 1s to turn on the UPS, then the inverter will start up.

3.When UPS starts up, It will firstly do self-checking, when the green LED"ON"and the LCD status section displays"on line", it shows UPS is working on utility mode. If the utility is abnormal, UPS will work on battery mode, and the LCD item section characters "INPUT"will flash.

3.1.2 Turn on the UPS on DC mode (without utility)

1. Without utility input, long press the ON/OFF button for above 1s to turn on the UPS.

2. When UPS starts up, it will firstly do self-checking, when LCD status section displays"on batt",it shows UPS is working on battery mode.

3.1.3 Turn off the UPS on AC mode

1. Long press the ON/OFF button for above 1s to shut down the UPS and internal inverter.

2. When UPS shuts down, It will firstly do self-checking, when the yellow LED is "ON"and the LCD status section displays "on bps", it shows UPS is working on bypass mode and UPS has bypass output. If want to make the UPS has no output, you have to turn off the input switch, In this condition, the UPS will keep self-checking till the display panel has no display and indication and the UPS has no output.

3.1.4 Turn off the UPS on DC mode (without utility)

1. Long press the ON/OFF button for above 1s to shut down the UPS.

display panel has no display and indication and the UPS has no output.

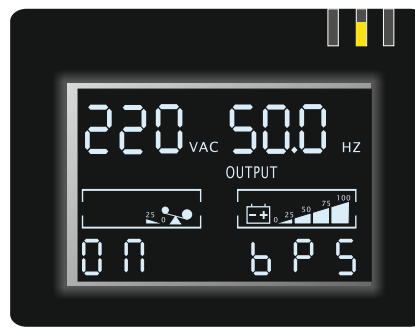
3.2 Running mode

3.2.1 Bypass mode

1. The display panel indication on bypass running mode is as below figure, the yellow LED lights on, and the load/battery capacity will be indicated according to the real capacity value. UPS will beep once every 2min.

2. If the LCD status section displays "INPUT" characters, it shows the AC input voltage or frequency is beyond the normal range.

3. When UPS works on bypass mode, it doesn't have backup function, and the load is powered directly by utility system after filtering.



UPS bypass running mode

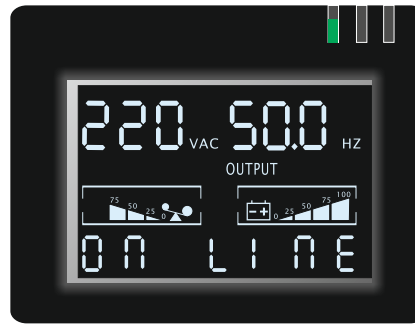
3.2.2 AC mode

1. The display panel indication on AC running mode is as below figure, and the LCD status section indicates "on line", and the load/battery capacity will be indicated according to the real capacity value.

2. If LCD status section indicates "on batt", it shows the AC input voltage or frequency is beyond the normal range and UPS is working on battery mode.

3. If the load capacity is >100%, the buzzer will beeps once every half second, and LCD graphic section load capacity blocks will flash which means UPS is overload, in this condition, you should remove some unnecessary load till the UPS load is below 95%, and then the overload warning will automatically disappear.

4. Press the INQUIRING button to check the input parameters, you can also check the R, S, T three phase input information for three phase



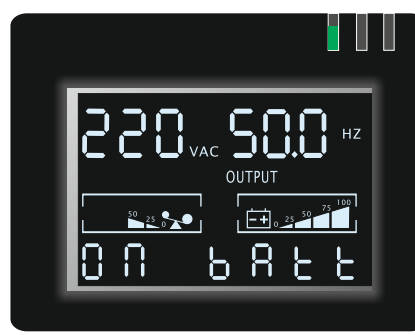
UPS AC running mode

3.2.3 Battery mode

1. The display panel indication on battery running mode is as below figure, and the LCD status section indicates “on batt”, and the load/battery capacity will be indicated according to the real capacity value.

2. Muting function: When UPS works on battery mode, the buzzer will beep once every 4s,then long press the FUNCTION button for above 1s, the buzzer will stop beeping, if long press the FUNCTION button for above 1s again, the buzzer will come back to beep warning.

3. When the battery capacity is decreased, the number of battery capacity indication blocks will be minus, when the battery voltage drops to battery low voltage, the buzzer will beep once every second, and the yellow LED will light on which reminds the users the battery capacity is not enough and need to save the useful data and shut down the load at once.



UPS battery running mode

Pay attention:

★ If connect the UPS to generator, please operate as steps below:

1. Start up the generator, when the generator runs normally, connect the generator output to UPS input, then turn on the UPS, after the UPS runs, please connect the load to the UPS step by step.

2. It's recommended to choose the generator whose capacity is twice of UPS capacity.

3.2.4 Abnormal mode

Display panel indication:

UPS abnormal running mode

Red LED lights on , the triangle fault mark on the LCD is indicated, and the right of digital section indicates fault code, and there is some simple fault information in status section, please refer to table (5-2) for

4. Maintenance and Service

Only minimum maintenance is required for this series of UPS. The battery is sealed lead acid maintenance free, only by frequent charging would obtain the expected battery life. UPS would charge batteries once it is connected to main AC, also, protection would be provided for battery against over-charging and deep discharging.

4.1 Battery maintenance

1. If UPS is not used for a long time, battery should be charged and discharged once every four to six months.

2. In high temperature area, battery should be charged and discharged once every two months.

3. Under normal condition, UPS should be charged and discharged once every four to six months, the recharge time should be more than 2 hours.

4. Normally, the battery working life is three to five years. If you find that the battery do not act well, like short backup time, too much differences on battery voltage and so on, the battery should be replaced as soon as possible, which shouldbe performed by qualified personnel.

5. To replace batteries, It is not recommended to change battery separately, batteries should be changed all together at one time.

 **Note:**

***Before replacing batteries, make sure that the UPS is turned off, metallic things like rings and watches are removed.**

***The screw driver you used should be with insulation handle,Do not lay tools or other metallic goods onto the battery.**

*** Never revert or short the battery connection.**

5. Trouble shooting

When there is some failure in the UPS, please pay attention to the UPS indication and alarm, it will help you to find and solve the problem.
1. Fault indicator ON, indicate that the UPS has detected some failure inside UPS.
2. Buzzer beeps, indicates that the UPS should be payed attention to.
3. To contact our service department, the following messages should be provided for analysis.

- UPS model and Serial number
- The date when the problem happened
- Detailed description of the problem, including panel indications.

5.1 Information inquiry

5.1.1 LCD/LED indication and warning（5-1.1）

No.	Workings tatus	LCD display	LED indication	Warning and beeps
1	AC mode	“on line”	Green “ON”	None
2	Battery mode	“on batt”	Green “ON”	Once every 4s
3	Battery low on Battery mode	“on batt”, battery section flashes	Yellow “ON”	Once every 1s
4	Bypass mode	“on bps”	Yellow “ON”	Once every 2min
5	Overload on AC mode, not turn to bypass mode	Alternate indication between “on line” and “load hi”, load section flashes.	Yellow “ON”	Twice per second
6	Overload on AC mode and turn to bypass mode	“on bps”, load section flashes.	Yellow “ON”	Twice per second
7	Overload on battery mode	Alternate indication between “on batt” and “load hi”, load section flashes.	Yellow “ON”	Twice per second
8	Overload on battery mode and shut down the output	“load hi”£¬load section flashes.	Red “ON”	Long beeps

5.1.2 Fault information inquiry table（5-1.2）

5-20KVA Powerpack HF	LCD display fault code			
	Bypass mode	AC mode	Battery mode	Battery self-checking mode
BUS voltage abnormal	30,31,32	05,25,15	06,26,16	40,41,10
Inverter abnormal		04	08	42
Output short circuit		09	09	09
Over-temperature	33	06	02	43
Overload	35	03	09	45
Fan abnormal	36	09	29	46
Charger fault	07	07	07	07
Internal communication fault	88	88	88	88
Parallel communication fault	82	82	82	82
Parallel number exceeds max. number	85	85	85	85
Parallel fault		84,81	84,81	84,81

5.2 Abnormal status handling (Table 5.2)

Abnormal Status	Possible Reason	Dealing way
No indication and no alarm	Switch on back pane is not turned on, no input	Place the switch to ON, check the input power.
Press and hold the ON button, but UPS can not start	Too Short holding time	Press and hold the ON button for above 1s
	Battery low,or without battery connected	Check the battery voltage, reconnect the batteries
	UPS failure	Contact the franchiser for repairing
Red LED lights “ON” and continuous warning	UPS fault	Please contact with your supplier.
LCD items section “INPUT” characters flash	AC voltage or frequency exceeds normal input range	UPS is working on battery mode, make sure it’s in UPS allowed range of input voltage or frequency.
Red LED lights ON and load capacity blocks flash, buzzer is long beeping.	UPS overload or load system fault	Remove the unnecessary load and check if the load system is fault.
LCD graphic section battery capacity blocks flash.	Battery voltage is too low, or battery is not (well) connected.	Check the UPS battery part, well connect the batteries, if the batteries are damaged, please replace them and make sure the battery switch is to “ON” state.
Battery discharge time is short	Battery is not fully charged	Continuously charge the batteries above 10hrs.
	Batteries damaged	Replace batteries
	Charger fault	Please contact with the supplier

5.3 Performance

Model	Rating	Input		Output		Fre-quency	Dimension W*L*H(mm)
		Voltage	Current	Voltage	Current		
5000VA 1/1	5KVA/3.5KW	(176-276)VAC	30Amax	220VAC	27A	50Hz	270*570*720
6000VA 1/1	6KVA/4.2KW	(176-276)VAC	30Amax	220VAC	27A	50Hz	270*570*720
6250VA 1/1	6.25KVA/4.3KW	(176-276)VAC	30Amax	220VAC	27A	50Hz	270*570*720
7500VA 1/1	7.5KVA/5.25KW	(176-276)VAC	30Amax	220VAC	27A	50Hz	270*570*720
10000VA 1/1	10KVA/7KW	(176-276)VAC	51Amax	220VAC	45A	50Hz	270*570*720
10000VA 3/1	10KVA/7KW	(304-480)VAC	51Amax	220VAC	45A	50Hz	270*570*720
12500VA 3/1	12.5KVA/8.75KW	(304-480)VAC	51Amax	220VAC	45A	50Hz	270*570*720
15000VA 3/1	15KVA/10.5KW	(304-480)VAC	73Amax	220VAC	68A	50Hz	270*570*720
20000VA 3/1	20KVA/14KW	(304-480)VAC	100Amax	220VAC	91A	50Hz	270*570*720

◆ Electrical performance

Input			
Model	Voltage	Frequency	Power factor
5-7.5KVA Powerpack HF 1/1	Single phase 220Vac	46Hz-54Hz	>0.95(full load)
10-20KVA Powerpack HF 3/1	Three phase 380Vac/220Vac	46Hz-54Hz	>0.95(full load)

Output					
Output Stability	Power factor	Frequency Stability	THD	Overload capacity	Crest factor
±1%	0.7	Under normal condition, (in AC mode, and frequency is in the limits), Output frequency would synchro-nize with input, other wise, frequency stability would be ±0.5%	Under full linear load, THD<3%	105%~130% load, 10min go to bypass, >130% load 1min shut down output	3 : 1 max

◆Environment

Temperature	0℃ ~ 40℃
Humidity	0~95% Non-condensing
Altitude	Less than 1000m.
Storage temperature	0℃~40℃

● In case you are using the UPS on above 1000m altitude,the

Altitude	1000	1500	2000	2500	3000	3500	4000	4500	5000
Load percentage that permitted	100%	93%	90%	80%	78%	75%	72%	68%	65%

5.4 Net Communication

This series of UPS provides a card slot for the intelligent LAN card(Optional), which helps to realize the remote monitoring, contact the franchiser for the details.

5.4.1 RS232 communication interface

RS232 is a serial port interface provided to monitor the main AC and UPS, UPS control is also available via this port.

1. Setting of the RS232 port

Baud rate: 2400bps

Stop bit: 1bit

Data bit: 8bit

Parity bit: None

Pin	Function	I/O
2	TXD	Output
3	RXD	Input
5	GND	Gound