

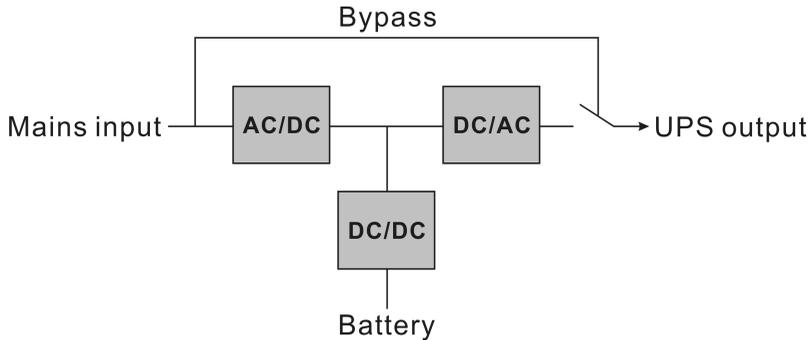
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1. Product Introduction

1.1 Functions description



- This product is a true online double-conversion UPS (Uninterruptible Power Supply). It provides perfect protection for critical load such as computer system. It can eliminate almost all mains power disturbances. The input AC current can be corrected to a wave following the mains voltage, so it is a high power factor system. Through the PWM control technology, the output voltage can be a pure & stable sine wave AC voltage.
- When the mains input become abnormal, the controller will stop the AC/DC and start the DC/DC section immediately to make sure the DC/AC (inverter) section can continue to work. After the mains input comeback to normal range, the DC/DC will be stopped and the AC/DC works again. So the load is always power-supplied through inverter without any interrupt if the UPS is turned on.
- The UPS also provides an internal bypass way to make the load can be powered by mains input directly when the UPS is off or failed.
- The UPS have an internal charger for batteries, the charger will charge the batteries when the mains is in a reasonable range on “bypass mode” or “line mode”.

1.2 Mode description

- **Bypass mode**

Bypass mode means that the UPS provides the power through the internal bypass way to load directly without any regulation. If the controller detects the mains is abnormal, it will shut off the output to protect the load. The bypass voltage/frequency range and default output status (on/off) could be set by communication software.

- **Line mode**

Line mode means that the mains input is rectified/converted by the AC/DC section and then inverted to stable output by DC/AC section. In line mode, the output is clean and good to the loads. If the mains get abnormal, the UPS will transfer to battery mode without interrupt.

- **Battery mode**

Battery mode means that the battery power goes through the DC/DC section to the inverter (DC/AC) and get a stable backup output when the mains input is not usable. If the mains input recovered, the UPS will transfer to line mode without interrupt.

- **Battery test mode**

In this mode, the UPS will stop the AC/DC section and discharge the battery while mains input is normal. If the controller found the battery is error, it will transfer back to line mode immediately, and warning by display to see whether the battery needs to be replaced. The battery test mode could be triggered in line mode by pressing the button or by the communication command.

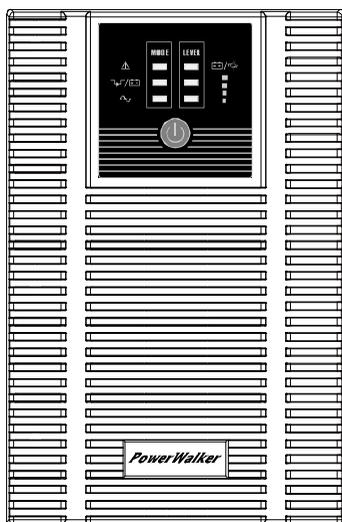
- **Fault mode**

If the UPS generates some internal failure and have to stop its inverter, it will go into fault mode and alarm by display and buzzer.

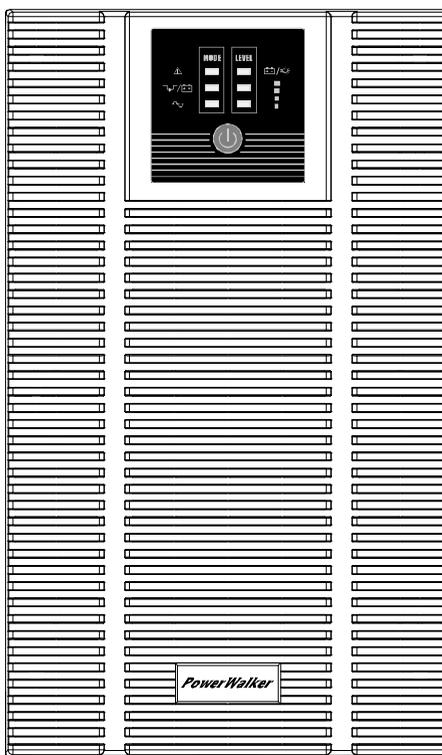
In fault mode, the loads have the risk of power loss because the output will come from the bypass after UPS fault.

1.3 Front panel

1.3.1 Front view

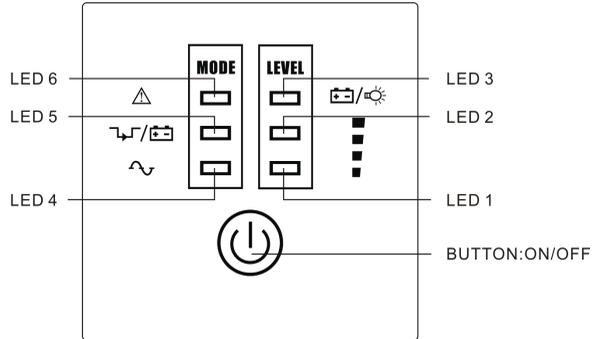


1K/1KS



2K/2KS/3K/3KS

1.3.2 LED display



● LED definition

There are total 6 LEDs to indicate the status of UPS.

LED No.	Colour	Name	Function
1~3	Green	Load/Battery level LED	Indicate the load level in line mode or bypass mode.
			Indicate the battery level in battery mode.
4	Green	Inverter status LED	If it is turned on constantly, it shows that the load current is supplied from utility power or battery via the inverter.
5	Orange	Bypass/Battery mode LED	If it is turned on constantly, it shows that the UPS is in battery mode, and the load current is from battery via the inverter.
			If it is flashing, it shows that the UPS is in bypass mode, and the load current is directly from the utility power.
6	Red	Fault/Warning mode LED	If it is turned on constantly, it shows that the UPS is in fault mode;
			If it is flashing, it shows that the UPS is in warning status.

● LED action summary

LED No.	1	2	3	4	5	6
Bypass mode	○	○	○		★	
Line mode	○	○	○	●		
Battery mode	⊙	⊙	⊙	●	●	
Battery test mode	⊙	⊙	⊙	●	★	
Fault mode	◇	◇	◇	◇	◇	●
Warning	□	□	□	◇	□	★

○: Lightened according to load level

⊙: Lightened according to battery level

◇: Depended on the fault/warning status

□: Depended on the original display

●: Lightened constantly

★: Flashing

1.3.3 Button

There is only one button for ON/OFF/Mute function on this product. The controller can distinguish the command according to the operation time deference.

(1) Button action description

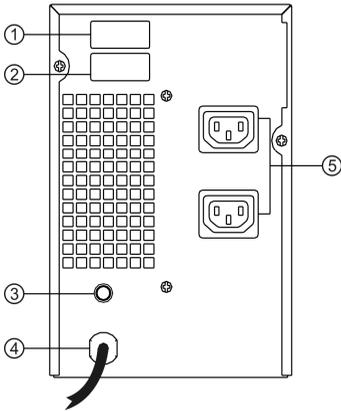
Button actions are distinguished with “short-press” and “long-press”. Please refer to the following tables for the detail.

Button action type	Definition
Short-press	Press the button more than 0.04s and less than 0.5s
Long-press	Press the button more than 2s
Invalid press	Press the button more than 0.5s and less than 2s.

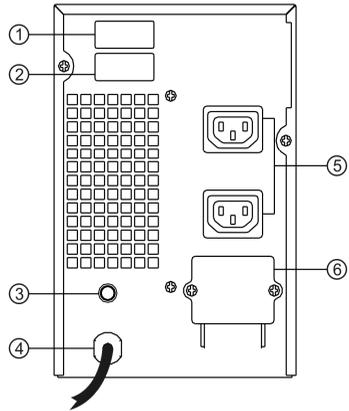
(2) UPS response to the button

Original mode	Button action	UPS response
Power off (cold status)	Long-press	Turn on the UPS into battery mode.
	Other press	The internal power supply is triggered for a short time and then shutdown.
Bypass mode	Long-press	Turn on the UPS into line mode.
	Short-press	Mute the buzzer if there is a warning or alarming.
Line mode	Long-press	Turn into bypass mode.
	Short-press	Turn into battery test mode.
Battery mode	Long-press	Turn off the UPS.
	Short-press	Mute the buzzer.
Battery test mode	Long-press	Turn into bypass mode.
	Short-press	Turn into line mode.
Fault mode	Long-press	Turn into bypass mode or shutdown, dependent on the fault type.
	Short-press	Change the beep status of buzzer.

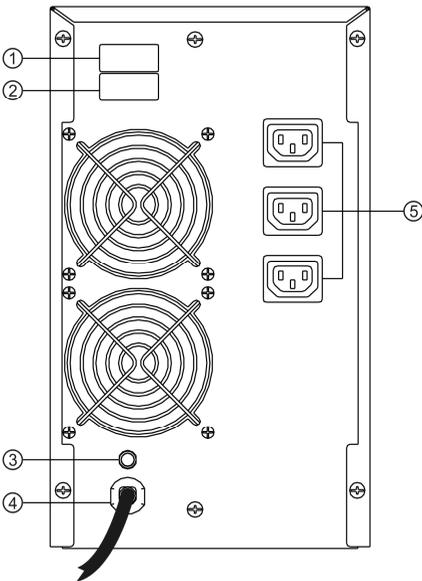
1.4 Rear panel



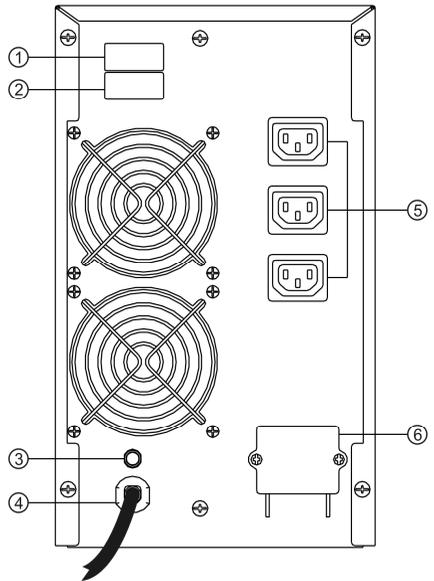
1K



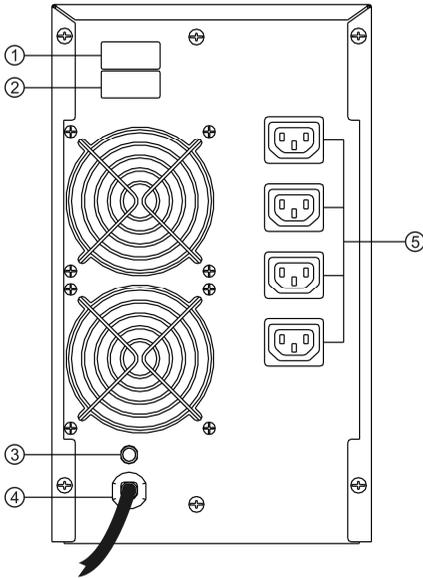
1KS



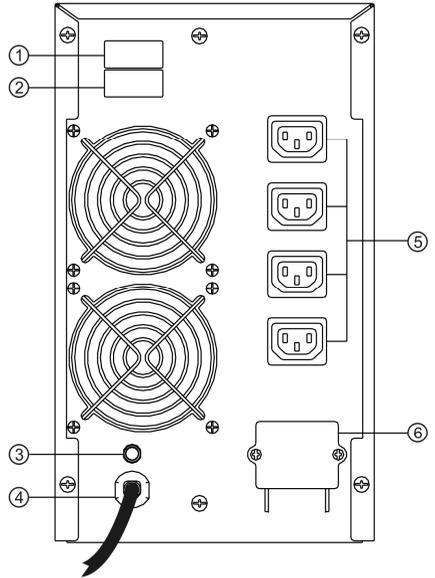
2K



2KS



3K



3KS

- ①/② Communication port (USB or RS232)
- ③ Mains input protection
- ④ Mains input power cord
- ⑤ Output socket
- ⑥ External battery terminal block

1.5 Product specification

1.5.1 Model description

This manual is applicable to the following models:

Model name	PowerWalker VFI 1K	PowerWalker VFI 1KS	PowerWalker VFI 2K	PowerWalker VFI 2KS	PowerWalker VFI 3K	PowerWalker VFI 3KS
Power rating	1000VA/700W		2000VA/1400W		3000VA/2100W	

Note: The model names without “S” represent standard model with internal battery. The model names with “S” represent long backup time model with external battery.

1.5.2 Environment specification

Model name	PowerWalker VFI 1K	PowerWalker VFI 1KS	PowerWalker VFI 2K	PowerWalker VFI 2KS	PowerWalker VFI 3K	PowerWalker VFI 3KS
Operating Temperature	0-40°C					
Storage Temperature	0-40°C					
Altitude	<1000m @ full load <2000m @ 90%load <3000m @ 80%load <4000m @ 70%load					
Relative Humidity	<95%					
Noise Level	<45dB @ 1 meter from front panel					

1.5.3 Mechanical Specification

Model name	PowerWalker VFI 1K	PowerWalker VFI 1KS	PowerWalker VFI 2K	PowerWalker VFI 2KS	PowerWalker VFI 3K	PowerWalker VFI 3KS
Dimension (W×H×D) (mm)	144×220×345		190×318×369		190×318×369	
Weight (Kg)	9.8	5.2	20	10.8	24.6	10.8

1.5.4 Electrical Specification

Model name	PowerWalker VFI 1K	PowerWalker VFI 1KS	PowerWalker VFI 2K	PowerWalker VFI 2KS	PowerWalker VFI 3K	PowerWalker VFI 3KS
Power	1000VA/700W		2000VA/1400W		3000VA/2100W	
Input						
Current (Max.)	5A	6A	10A	11A	15A	16A
Voltage Range	176~276VAC @ full load (110~276VAC @ half load)					
Frequency Range	46 ~ 54Hz @ 50Hz system / 56 ~ 64Hz @ 60Hz system					
Input Power Factor	≥0.98 @ full load					
Output						
Voltage	208/220/230/240VAC (sine-wave)					
Frequency	Synchronizing mains input @ line mode					
	50/60Hz ± 0.2 Hz @ battery mode					
THD	≤4% (Linear load)					
Voltage Regulation	± 2%					
Overload Capacity	Line mode: 60s @ 100%~130%; 1s @ > 130%					
	Battery mode: 10s @ 100%~130%; 1s @ >130%					
Efficiency						
Line Mode	86%					
Battery Mode	80%	83%		83%		
Battery & Charger @ 25°C						
Total battery rating voltage	24VDC		48VDC		72VDC	
Backup Time (Half Load)	>9min		>9min		>9min	
Recharge Time (to 90%)	5Hours		5Hours		5Hours	
Charging Current (Max.)	1A	4A	1A	4A	1A	4A
Discharging Current (Max.)	44A		42A		42A	
Rated Charging Voltage	27.3Vdc		54.6Vdc		81.9Vdc	

1.5.5 Standards

* Safety	
IEC/EN 62040-1-1	
* EMI	
Conducted Emission.....:IEC/EN 62040-2	Category C1
Radiated Emission.....:IEC/EN 62040-2	Category C1
Harmonic Current.....:IEC/EN 61000-3-2 (Input Current≤16A)	
Voltage Fluctuation and Flicker.....:IEC/EN 61000-3-3 (Input Current≤16A)	
*EMS	
ESD..... :IEC/EN 61000-4-2	Level 4
RS.....:IEC/EN 61000-4-3	Level 3
EFT..... :IEC/EN 61000-4-4	Level 4
SURGE..... :IEC/EN 61000-4-5	Level 4
CS..... :IEC/EN 61000-4-6	Level 3
Power-frequency Magnetic field..... :IEC/EN 61000-4-8	Level 3
Low Frequency Signals.....:IEC/EN 61000-2-2	

1.6 Communication port

The communication port is for the monitoring software. There are 2 options: RS232 or USB. There is only one option can work in the same time and same product.

- **RS232 (optional)**

Pin assignment and description of DB-9 connector:

Pin#	Definition
2	TXD (output)
3	RXD (input)
5	GND

- **USB (optional)**

The USB port is compliance with USB 1.1 protocol for its communication software.

2. Installation

2.1 Installation Safety Instructions

You must read the following safety instructions before installation!

- **Installation Personnel**

This product must be installed only by qualified or professional personnel accord to safety instructions!

- **Installation Environment**



Do not install and operate the UPS when water condensation happen which may occur if the UPS is moved directly from a cold to a warm environment. The UPS must be absolutely dry before being installed and operated. Please allow an acclimatization time of at least 2 hours. Otherwise there is hazard of electric shock!



Do not install the UPS in the environment where it is damp or would be exposed to direct sunlight or near heat. Ensure the UPS is far away from water, inflammable gas and corrosive agents.



Do not block air vents in the housing of UPS. The UPS must be installed in a location with good ventilation. Ensure enough space on each side for ventilation.

● **Wiring & Grounding**



Installation and Wiring must be performed in accordance with the local electrical laws and regulations.



The UPS must be securely grounded. If there are external UPS battery cabinets, please make sure the battery cabinets have the equipotential earth bonding to the UPS main cabinet.



An appropriate switch device as backup protection for over-current or short-circuit should be provided in the input utility.

● **Battery**



Strictly follow the principle of “same voltage, same type” when paralleling multi battery packs.



DC breaker or fuse must be used as a protection device between the external battery pack and the UPS. The spec of protection must be matched to the UPS specification.

2.2 Unpacking and Inspection

2.2.1 Unpack the package and check the contents. The shipped package contains:

- 1 UPS
- 1 user manual

2.2.2 Inspect the appearance of the UPS to see if there is any damage during transportation. Do not turn on the unit and notify the dealer immediately if there is any damage or lack of some parts.

2.3 Installation steps for standard model

- 1) Make sure the wire / circuit breaker / socket are enough for the current rating of UPS to avoid the hazards of electric shock and fire.
- 2) Make sure the mains switch in the building is cut off.
- 3) Make sure the UPS is not be turned on before wiring operation.
- 4) Turn off all load switches first before connecting the load to the UPS.
- 5) Make sure the protective earth ground is correct.
- 6) Connect the loads to the UPS through the outlet sockets.
- 7) Connect the input power cord of UPS to mains.

2.4 Installation steps for long back up time model

- 1) Make sure the wire / circuit breaker / socket are enough for the power rating of UPS to avoid the hazards of electric shock and fire.
- 2) Make sure the mains switch in the building is cut off.
- 3) Turn off all load switches first before connecting the load to the UPS.
- 4) Make sure the protective earth ground is correct.
- 5) Install the external battery as following:
 - a) **Warning:** Make sure the mains input have been cut off.
 - b) Switch off the battery breaker if there is a battery breaker.
 - c) Remove the cover of external battery terminal of UPS.
 - d) **Warning:** Pay highly attention to the rating battery voltage marked on the rear panel, the connection with wrong battery voltage may cause permanent damage of the UPS.
 - e) **Warning:** Pay highly attention to the polarity marking on external battery terminal block, and make sure the correct battery polarity is connected. Wrong connection may cause permanent damage of the UPS.

- f) Prepare the external battery cable that should be able to carry the current of >50A, the cross section area should be greater than 5.26 mm². It is recommended to use 8 AWG wire or thicker for safety and efficiency. And battery wire color is recommended as following:

+	GND	-
Red wire	Yellow/Green wire	Black wire

- g) Connect the GND pole of external battery terminal block on the rear panel of UPS to the earth point of battery pack.

Note: Always connect the earth wire first!

- h) Connect the Positive (+) pole of external battery terminal block on the rear panel of UPS to the Positive polarity of battery pack;
- i) Connect the Negative (-) pole of external battery terminal block on the rear panel of UPS to the Negative polarity of battery pack.
- j) Check the wiring and voltage of the battery pack. Make sure the polarity and voltage is correct, and the wires are fastened.
- k) Install the terminal block cover on the rear panel of the UPS.

6) Connect the loads to the UPS through the outlet sockets.

7) Connect the input power cord of UPS to mains

2.5 Installation for communication software (optional)

- 1) Connect the communication cable between UPS and PC. If the port is RS232, please lock the secure screw both on UPS and PC after connection. If the port is USB, it has Plug and Play function.
- 2) Please refer to the guide manual of software or contact the service center for installation and operation of management (monitoring) software.

3. Operation

3.1 Operation Safety Instructions

You must read the following safety instructions before operation!

- **Operation personnel**

Laymen can operate this product.

- **Operation warning**



Do not disconnect the earth conducting wire on the UPS or the building wiring terminals in any time since this would cancel the protective earth of the UPS system and all connected loads.



Do not try to disassemble the original part of the UPS before turn off and disconnect it from the mains power & external battery.



The UPS output socket may be electrically lived even if the UPS system is not connected to the mains power source.



Do not make any liquid and foreign objects enter the UPS.



Turn off the mains input switch and external battery switch immediately at any accident of electric shock and fire related to the UPS.

3.2 Start the UPS with mains (AC source)

- 1) If the UPS is a long back up time model, with external battery banks, please switch on the battery breaker first;
- 2) If the wiring is correct, turn on the mains breaker in your building. Then the power supply inside the UPS will be started automatically, the fans will run, and the panel will display with bypass mode.

Note 1: If the UPS have been set to enable the bypass output, the output socket will have the voltage directly from mains after you turn on the input breaker.

Note 2: In bypass mode, the load is not protected. You should go on to the next step to turn on the UPS for protecting your load.

- 3) Press the button of the UPS front panel continuously for more than 2 seconds. The buzzer will beep once, and all the LEDs will be lightened, and then black out one by one. After a few seconds of self-diagnoses, the UPS will be turned on to the normal mode (line mode) and output the spec voltage.
- 4) After the UPS is turned on to line mode normally, the Inverter LED will be on, the Bypass/Battery LED will be off. The Load/Battery level LEDs will be lightened according to the load capacity. There is no beep of buzzer.

Note: If the UPS is shutdown in battery mode automatically, when the mains power returned to the input, the UPS will start up and switch to line mode automatically.

3.3 Start the UPS with battery (DC source) only

This UPS can be started with DC source (battery) without AC source.

- 1) If the UPS is a long back up time model with external battery banks, please switch on the battery breaker first.
- 2) Press the button of the UPS front panel continuously for more than 2 seconds. The buzzer will beep once, and all the LEDs will be lightened, and then black out one by one. After a few seconds of self-diagnoses,

the UPS will be turned on to the battery mode and output the spec voltage.

- 3) After the UPS is turned on to battery mode normally, both the Inverter LED and Bypass/Battery LED will be on. The Load/Battery level LEDs will be lightened according to the battery capacity. The buzzer will beep according to the battery level.

3.4 Connect loads to UPS

After the UPS is turned on, you can switch on the loads.

- 1) It is recommended to switch on the load one by one. The Load/Battery level LED will indicate the load capacity in line mode.
- 2) If it is necessary to connect the inductance load such as a printer to the UPS, the start-up power should be considered for calculating the capacity of the UPS, because the power consumption is too big when this kind of load is started.
- 3) If the UPS is overloaded, all the load level indication LEDs will flash and the buzzer will beep twice every second for alarming.
- 4) If the UPS is overloaded, some loads must be switched off or decreased immediately. It is recommend that the total loads connected to the UPS had better be less than 80% of its nominal power capacity to prevent the overload happen at the transient time, and it will make your system more safe.
- 5) If the overload time is over spec in line mode, the UPS will transfer to bypass, after the overload disappears, it will return to line mode. If the overload time is over spec in battery mode, the UPS will cut off the output and then shutdown according battery level.

3.5 Charge the batteries

- 1) After the UPS is connected to normal mains, the charger will work and charge the batteries automatically in bypass mode or line mode.
- 2) Suggest charging the batteries for 10 hours before use. Otherwise the backup time may be less than the standard value.

3.6 Discharge the batteries

- 1) When the UPS is in battery mode, the buzzer will beep according to different battery level. If the battery voltage drops to the alarming level, the buzzer will beep hurry (once every sec) to remind the user that the battery is low level and the UPS will be shutdown automatically soon. The user could switch off some non-critical loads to avoid the shutdown alarming and prolong the backup time. If have no more load to be switched off at that time, you have to shutdown all loads as soon as possible to protect the loads or save data. Otherwise there is the risk of data loss or load failure.
- 2) In battery mode if the user don't like the buzzer noise, the beep could be muted by short-press the button.
- 3) The backup time of the long backup time model is dependent on the external battery capacity except the load capacity mainly.
- 4) The backup time may vary from different environment temperature and load type.

3.7 Test the batteries

- 1) If you need to check the battery level or aging status when the UPS is running on normal mode (line mode), you could short-press the button to let the UPS transfer to battery test mode.
- 2) To make the system more reliable, the UPS will perform the battery test

automatically periodically. The default period is once per week.

- 3) The battery test could be performed by the command from monitoring software through the communication port.
- 4) If the UPS enter the battery test mode, the display and buzzer indication will be same as the battery mode except that the Bypass/Battery LED is flashing. So you can check the battery level at this mode.

3.8 Turn off the UPS with mains (AC source)

- 1) Firstly turn off the UPS (inverter) to bypass mode, please press the button continuously for more than 2 seconds.
- 2) After you press the button, the buzzer will beep once. All the LEDs will be lightened, and then black out one by one. Then the panel will display the bypass mode.

Note 1: If the UPS have been set to enable the bypass output, the output socket will have voltage from mains directly after you turn off the UPS (inverter) to bypass mode.

Note 2: Because there is risk of power loss for the loads if you turn off the UPS to bypass mode, please make sure the loads are prepared for your operation.

- 3) If you want to turn off the output of UPS and shut down the UPS completely, you have to cut off the mains input of UPS.

Note: please make sure all the loads are prepared or turned off for your operation before you shutdown the UPS system.

- 4) After you cut off the mains input of UPS to shut down, all the LEDs will be lightened, and then black out one by one. Finally all the LEDs will be lightened to indicate the UPS is saving data to the memory. After the saving process, the UPS will be shutdown completely.

3.9 Turn off the UPS with battery (DC) only

- 1) To turn off the UPS in battery mode, please press the button continuously for more than 2 seconds.
- 2) After you press the button, the buzzer will beep once. All the LEDs will be lightened, and then black out one by one. Finally all the LEDs will be lightened to indicate the UPS is saving data to the memory. After the saving process, the UPS will be shutdown completely.

Note: please make sure all the loads are prepared or turned off for your operation before you shutdown the UPS system.

3.10 Mute the buzzer

- 1) To mute the buzzer, please short-press the button. If you short-press it again after the buzzer muted, the beep will be returned.
- 2) It is not anytime the buzzer can be muted. If it is in warning/battery-low/overload, the buzzer can't be muted unless the trouble is solved.
- 3) If it is in fault mode, short-press the button could transfer the continuous beep to once-every-second.

3.11 Operation in warning status

- 1) In case the Fault/Warning LED is flashing and the buzzer is beeping once every second, it shows that the UPS system have some troubles, please check the troubleshooting table in chapter 4 to find out what happen to the UPS.
- 2) If the warning happens, the UPS will continue work in the original mode, the operation will not be interrupted. If the error is corrected, the warning alarm will stop.

3.12 Operation in fault mode

- 1) In case the Fault/Warning LED is lightened constantly and the buzzer beep continuously, it shows that there is must a fatal error happen to the UPS and it is operating in abnormal mode.
- 2) If fault happens, please notes and record what the display shows, the display information is very important for the trouble shooing. Please refer to the troubleshooting table in chapter 4 for detail.
- 3) Please check your loads, wiring, ventilation, mains, battery and so on after the fault happens. Don't try to turn on the UPS again before find out the reason. If the trouble can't be shoot, please contact the distributor or service people.
- 4) In the emergency case, please cut off the connection from mains / external battery / output immediately to avoid more risk or danger.

3.13 Indication summary in normal operation

Operating mode	Load level	Battery level	LED						Buzzer beep once
			1	2	3	4	5	6	
Line mode	0~50%		●			●			None
	50~75%		●	●		●			None
	75~100%		●	●	●	●			None
	>100%		★	★	★	●			Every 0.5 sec
Bypass mode	No output		●				☆ *		Every 2 min
	0~50%		●				★		Every 2 min
	50~75%		●	●			★		Every 2 min
	75~100%		●	●	●		★		Every 2 min
	>100%		★	★	★		★		Every 0.5 sec
Battery mode	0~100%	0~25%	★			●	●		Every sec
	0~100%	25~50%	●			●	●		Every 4 sec
	0~100%	50~75%	●	●		●	●		Every 4 sec
	0~100%	75~100%	●	●	●	●	●		Every 4 sec
	>100%		□	□	□	●	●		Every 0.5 sec
Battery test mode	0~100%	0~25%	★			●	★		Every sec
	0~100%	25~50%	●			●	★		Every 4 sec
	0~100%	50~75%	●	●		●	★		Every 4 sec
	0~100%	75~100%	●	●	●	●	★		Every 4 sec
	>100%		□	□	□	●	★		Every 0.5 sec

- : Lightened constantly ☆: Flash once every 4 seconds.
- ★: Flash once every second □: Depended on the original display

***Note:** In this case, it indicates there is no output in bypass mode. The causes may be that the mains input is out of range or the output is set to disable in bypass mode. Check the mains input, check the bypass output setting, or turn on the UPS.

4. Maintenance

4.1 Maintenance Safety Instructions

You must read the following safety instructions before maintenance!

- **Maintenance Personnel**

This product must be maintained only by qualified professional personnel accord to safety instructions!

- **Risk of electric shock**



No matter the UPS is connected to the utility power or not, the output may have electricity. The parts (battery, capacitor) inside the unit may still have hazardous voltage after turning off the UPS.



Make sure to disconnect the batteries before carrying out any kind of maintenance or repair. In this product, the battery is dangerous.



Verify that no voltage between the battery terminals and the ground is present before maintenance or repair. In this product, the battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground.



Verify that no hazardous voltage exists in the energy storage capacitor before maintenance or repair.



Remove all jewellery, wristwatches, rings and other metal personal goods before maintenance or repair.



Only use tools with insulated grips and handles when maintaining or repairing.

● Battery

Only qualified personnel can replace the batteries!



Do not short the positive and negative of the battery electrode. Batteries have a high short-circuit current and may cause a risk of serious shock or fire.



When changing batteries, replace with the same quantity and the same type of batteries.



Do not attempt to dispose of batteries by burning them. It could cause explosion. The batteries must be rightly deposited according to local regulation.



Do not open or destroy batteries. Effluent electrolyte can cause injury to the skin and eyes. It may be toxic.

● Fuse



Please replace the fuse only by a fuse of the same type and of the same amperage in order to avoid fire hazards.

4.2 Typical Trouble Shooting

(1) Trouble shooting according to warning indication.

LED				Possible cause	Action
1-3	4	5	6		
□	★	□	★	Fan abnormal, or internal temperature is too high	Check the fans. Check the loads. Check the ventilation, ambient temperature.
□	□	□	★	I/P fuse open	Check the I/P fuse and related power component.
□	★	□	☆	Battery low abnormally or battery not connected (line mode), or battery discharged over 14 hours	Check the battery. If the UPS is a long back up model, check whether the external battery protection (breaker or fuse) is open. If the battery is damaged or aged, replace the battery.
□	□	□	☆	Battery over voltage, or charger failed	Check the charger output, battery input.

□: Depended on the original display ☆: Flash every 4 seconds

★: Flash every second

Note 1: when the UPS warning, the red Fault/Warning LED will flash, and the buzzer will beep once every second.

Note 2: When the UPS warning, the UPS is still working on the original mode with the original display except the inverter LED maybe flash.

Note 3: If the warning can't be shoot, please contact the distributor or service center.

(2) Trouble shooting according to fault indication

LED						Possible cause	Action
1	2	3	4	5	6		
		•			•	Output short circuit	Remove all the loads. Turn off the UPS. Check whether the output of UPS and loads is short circuit. Make sure the short circuit is removed, and the UPS has no internal faults before turning on again.
	•				•	Internal fault (inverter failed)	Contact the distributor or service center.
	•	•			•	Internal fault (inverter relay short)	Contact the distributor or service center.
•					•	Overload	Check the loads and remove some non-critical loads. Check whether some loads are failed.
•		•			•	Internal over temperature	Check whether the UPS is overloaded, the air vents are blocked, and the ambient temperature is over 40°C. If the overload or block is removed, please make the UPS cool down for 10 minutes before turning on again. It is not recommended the UPS is operated at the ambient temperature of over 40°C.
•	•				•	Internal fault (bus voltage fault)	Contact the distributor or service center.
•	•	•			•	Other internal fault	Contact the distributor or service center.

•: Lightened constantly

Note 1: when the UPS failed, the red Fault/Warning LED will be lightened constantly, and the buzzer will beep continuously.

Note 2: When the UPS is fault, it will stop the power conversion of mains or battery, the original Load/Battery level LED will code the fault cause.

Note 3: If the fault can't be shoot, please contact the distributor or service center.

(3) Trouble shooting in else cases.

Problem	Possible cause	Action
Battery discharging time diminishes	Battery not yet been fully charged.	Keep UPS connected to utility power persistently for more than 10 hours to recharge the batteries.
	UPS overloaded.	Check the loads and remove some non-critical loads.
	Battery aged.	Replace the batteries.
	Charger failed	Check the charger. Contact the distributor or service center.
The UPS cannot power on after pressing the button	The button is pressed too briefly.	Press the button continuously for more than 2 seconds.
	Battery is not connected or battery voltage is too low, or Charger failed.	Check the charger and battery.
	UPS fault.	Contact the distributor or service center.

4.3 Battery Maintenance

- 1) The battery used for standard models are valve regulated sealed lead-acid maintenance free battery. It should be charged regularly in order to maximize the expected life of the battery. When being connected to the utility power, whether the UPS is turned on or not, the UPS keeps charging the batteries and also offers the protective function of overcharging and over-discharging.
- 2) The UPS should be charged once every 4 to 6 months if it has not been used for a long time.
- 3) In the regions of hot climates, the battery should be charged/ discharged every 2 months. The charging time should be >12 hours.
- 4) In normal conditions, the battery life lasts 3 to 5 years. If the battery is found in bad condition, earlier replacement should be made.
- 5) Do not replace the battery individually. All batteries should be replaced at the same time following the instructions of the supplier.

4.4 Contact the service center

If contact the service center for trouble shooting, please provide the information as following:

- 1) Model name of product.
- 2) Serial number of product.
- 3) The date when the problem found.
- 4) LED display status.
- 5) Buzzer alarm status.
- 6) Mains power condition
- 7) Load type and capacity.
- 8) Environment temperature, ventilation status.
- 9) The information (battery capacity, quantity) of the external battery pack if the UPS is long back up model.
- 10) Other information for complete description of the problem.

5. Transport and Storage

- 5.1 Please transport the UPS only in the original packaging.
- 5.2 The UPS must be stored in the room where it is ventilated and dry.