

USER MANUAL

On-Line UPS

**1000VA/3000VA
100/110/115/120VAC**

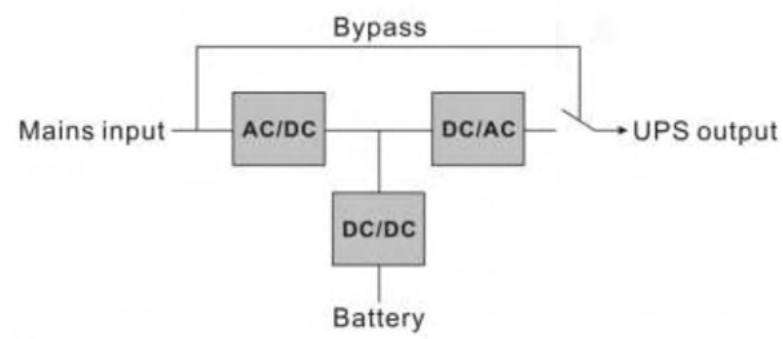
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1. Product introduction

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

The different strings could be displayed on the LCD screen corresponding to their own operating modes, and they are illustrated as the following table. At any time, only one normal operating string or fault string is presented. But the warning, even several warnings could appear in a certain normal operating mode at one time. And the normal operating mode string and the warning string would be shown circularly. Once one fault is come forth, then all previous warnings would not be shown again but only the fault string is presented.

Normal operating mode	Code
No output mode	STbY
Bypass mode	bYPA
Line mode	LINE
Battery mode	bATT
Battery test mode	TEST
ECO mode	ECO

● No output mode

The LCD display in No output mode is shown in the following diagram. The information about the utility power, the battery level, the UPS output and the load level could be displayed. The “STbY” string indicates the UPS is working in the No output mode.



No output mode

- **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.

The LCD display in bypass mode is shown in the following diagram. The information about the utility power, the battery level, the UPS output and the load level could be displayed. The UPS will beep once every 2 minutes in bypass mode. The “bYPA” string indicate the UPS is working in the bypass mode.



■ The Bypass mode

- **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.

The LCD display in Line mode is shown in the following diagram. The information about the utility power, the battery level, the UPS output and the load level could be displayed. The “LINE” string indicates the UPS is working in Line mode.



■ The Line mode

- **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.

The LCD display in battery mode is shown in the following diagram. The information about the utility power, the battery level, the UPS output and the load level could be displayed. The “bATT” string indicates the UPS is working in the battery mode.

When the UPS is running in battery mode, the buzzer beeps once every 4 seconds. If the “ON” button on the front panel is pressed for more than 1 second again, the buzzer will stop beeping (in silence mode). Press the “ON” button once again for more than 1 second to resume the alarm function.



■ The Battery mode

- **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.

The LCD display in battery test mode is same as the battery mode, The “TEST” string indicates the UPS is working in the battery test mode.

- **ECO mode**

It is also called high efficiency mode. In ECO mode, on LCD display, the mode string is “ECO”.

After the UPS is turned on, the power used by the load is supplied from the utility power via internal filter while the utility power is in normal range, so the high efficiency could be gained in the ECO mode. Once the mains is loss or abnormal, the UPS would transfer to battery mode and the load is supplied continuously by the battery.

1) It could be enabled through the LCD setting or the software

2) It is attention that the transfer time of UPS output from ECO mode to battery mode is less than 10ms.

The LCD display in ECO mode is same as the Bypass mode, The “ECO” string indicates the UPS is working in the ECO mode.

- **EPO (Emergency Power Off)**

It is also called RPO (Remote Power Off). Turn off the EPO switch could occur RPO .On LCD display, the mode string is “EPO”.

It is a special status in which the UPS would shut the output off and alarm. The UPS could not be turned off by pressing “OFF” button on the panel, only after releasing EPO status by connecting the EPO switch.

- **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.

In fault mode such as Bus fault etc., the corresponding fault string would be shown to indicate the operating mode of the UPS. For example “SHOR” would be shown when the load or the UPS output is short. The LCD display is shown in the following diagram.



■ The Fault mode

1.3. Description of commonly used symbols

Some or all of the following symbols may be used in this manual. It is advisable to familiarize yourself with them and understand their meaning:

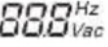
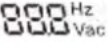
Nation and Explanation			
Nation	Explanation	Nation	Explanation
	Alert you to pay special attention		Protective ground
	Caution of high voltage		Overload indication
	ON/OFF		Bypass
	Alternating current source (AC)		Inverter
	Direct current source (DC)		Do not dispose with ordinary trash
	Battery		

1.4 Front panel LCD display



The Display Panel

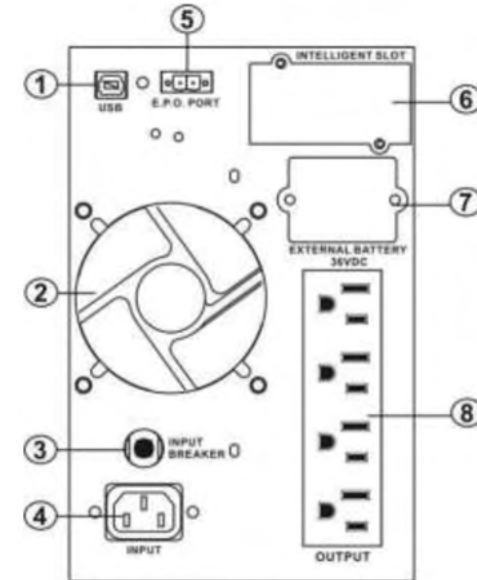
LCD Display Information:

Display	Function	Display	Function
Input Information		Output Information	
	It indicates input voltage/frequency value, which are displayed alternately.		It indicates output voltage/frequency value, which are displayed alternately.
	It indicates the input is connected with mains, and the input power is supplied from the mains.		It indicates the Output plug.
1 2 3	It indicates the Number of the input supplied from the mains.	1 2 3	It indicates the Number of the output connected with load.
Battery Information		Load Information	
	It indicates the battery capacity. Every grid represents the capacity of 20%.		It indicates the load level. Every grid represents the level of 20%.
Mode/Fault/Warning Information		Else	
	It Indicates the operating mode or Fault kind or Warning kind, several warning kinds at the same time could be displayed alternately.		It indicates the UPS is in setting mode.
			It indicates the UPS is in Fault mode or has some warnings.

Button Information:

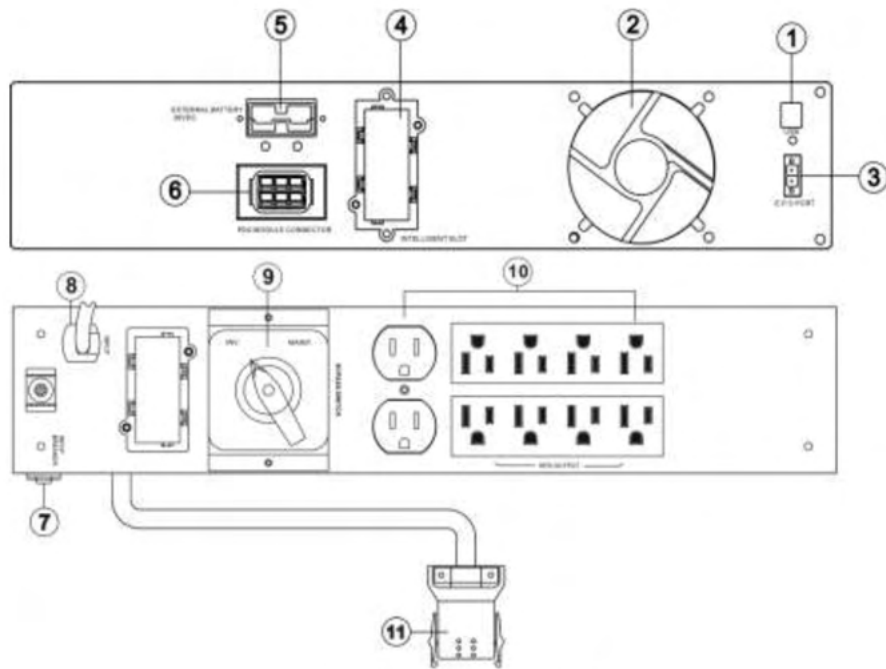
Switch	Function
ON-Button	Turn on UPS system: By pressing this Button the UPS system is turned on. Deactivate acoustic alarm: By pressing this Button an acoustic alarm can be deactivated in the battery mode. Do the battery test: By pressing this Button the UPS can do the battery test in the Line mode or ECO mode.
OFF-Button	When mains power is normal, the UPS system switches to No output or Bypass mode by pressing this Button, and the inverter is off. At this moment, if Bypass is enabled, then the output sockets are supplied with voltage via the bypass if the mains power is available. Deactivate acoustic alarm: By pressing this Button an acoustic alarm can be deactivated in the bypass mode. Release the UPS from fault mode and EPO status.
Select-Button	If the UPS system is No output or Bypass mode, The output voltage, frequency, Bypass disable/enable and ECO or normal mode , could be selected by pressing Select-Button,
Enter-Button	If the UPS system is No output or Bypass mode, confirmed the selected by pressing Enter-Button.

1.5 Rear panel



1KVA Tower UPS

1. USB Port
2. Cooling Fan
3. Input Breaker
4. Input
5. E.P.O. Port
6. Intelligent Slot(Optional)
7. External Battery(Optional): 36VDC
8. Output Socket

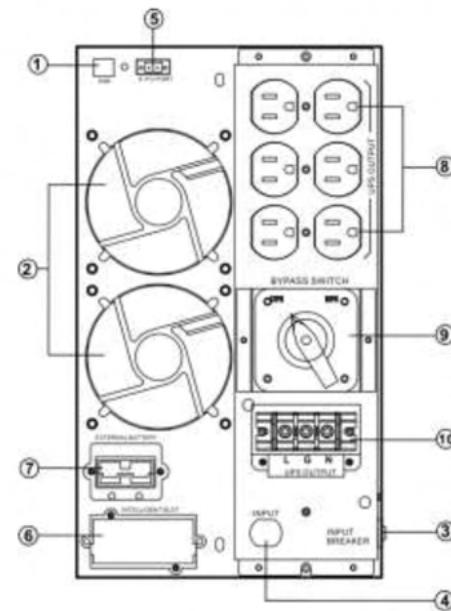


1KVA Rack UPS & PDU

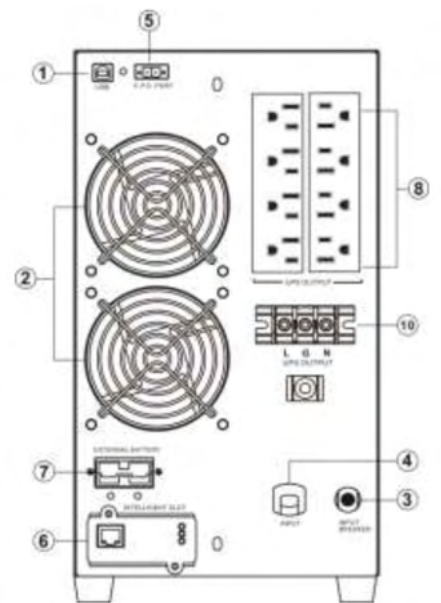


1KVA Rack UPS (Without PDU)

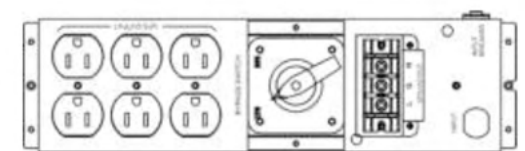
- | | |
|---|------------------------------|
| 1. USB Port | 7. Input Breaker |
| 2. Cooling Fan | 8. Input |
| 3. E.P.O Port | 9. Maintenance Bypass Switch |
| 4. Intelligent Slot(Optional) | 10. Output Socket |
| 5. External Battery Connector(Optional) | 11. PDU Module Plug |
| 6. PDU Module Connector | |



3KVA Tower UPS(With PDU)

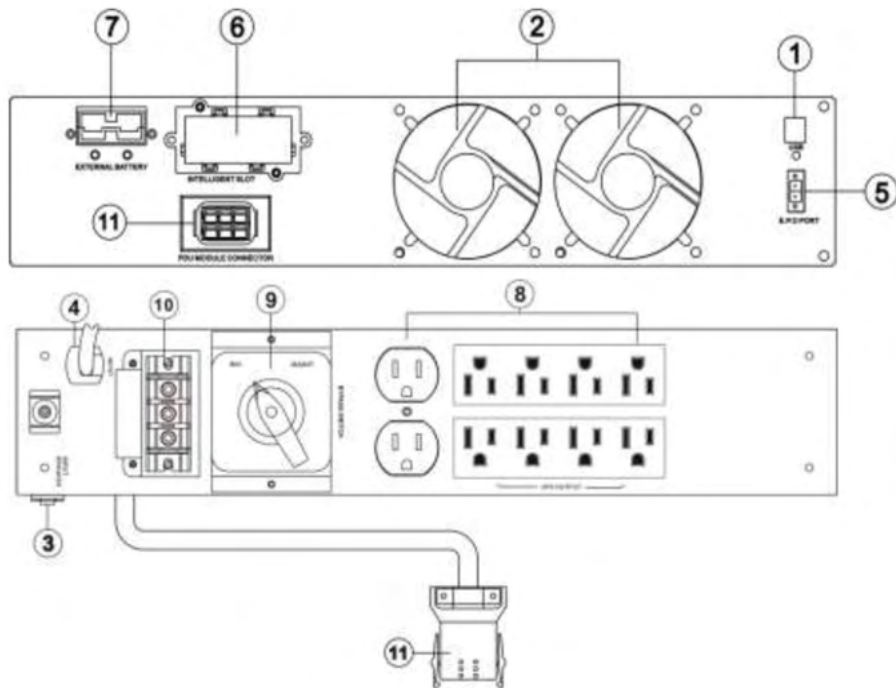


3KVA Tower UPS(Without PDU)

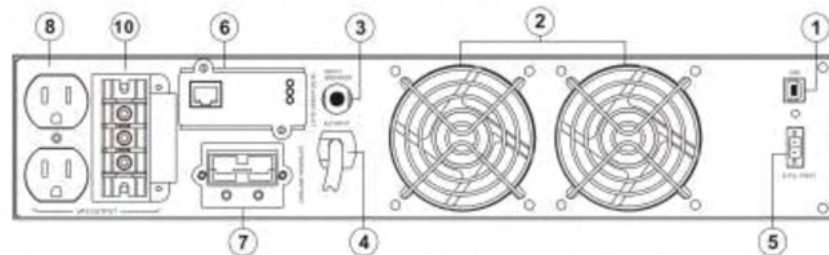


PDU of 3KVA Tower UPS

- | |
|---|
| 1. USB Port |
| 2. Cooling Fan |
| 3. Input Breaker |
| 4. Input |
| 5. E.P.O. Port |
| 6. Intelligent Slot(Optional) |
| 7. External Battery Connector(Optional) |
| 8. Output Socket |
| 9. Maintenance Bypass Switch |
| 10. Output Terminal |
| 11. PDU Module Connector |
| 12. PDU Module Plug |

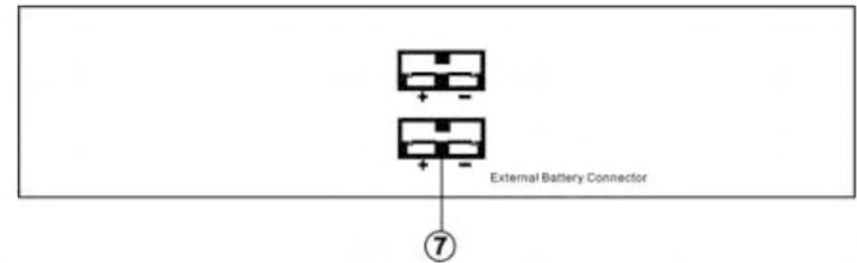


3KVA Rack UPS & PDU



3KVA Rack UPS(Without PDU)

- | | |
|-------------------------------|---|
| 1. USB Port | 7. External Battery Connector(Optional) |
| 2. Cooling Fan | 8. Output Socket |
| 3. Input Breaker | 9. Maintenance Bypass Switch |
| 4. Input | 10. Output Terminal |
| 5. E.P.O. Port | 11. PDU Module Connector |
| 6. Intelligent Slot(Optional) | |



Battery Bank for Rack UPS

1.6 Product specification

1.6.1 Model description

This manual is applicable to the following models:

Model name	1KVA	3KVA
Power rating	1000VA/800W	3000VA/2400W

1.6.2 Environment specification

Model	1KVA	3KVA
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%	

1.6.3 Mechanical Specification

Model	1KVA	3KVA
Dimension (W×H×D/MM)	144×220×345	190×318×369
Weight(Kg)	12.5	27.1

1.6.4 Electrical Specification

Model	1KVA	3KVA
Power	1000VA/800W	3000VA/2400W
Input		
Current (Max.)	10A	30A
Voltage Range	85~150VAC @ full load (55~150VAC @ half load)	
Frequency Range	46 ~ 54Hz @ 50Hz system / 56 ~ 64Hz @ 60Hz system	
Input Power Factor	≥ 0.98 @ full load	
Output		
Voltage	110/115/120VAC (sine-wave) 100V Need derating to 90%	
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 @ 102%~130%; 1s @ > 130%	
	Battery mode: 10s @ 102%~130%; 1s @ >130%	
Efficiency		
Line Mode	88%	
Battery Mode	84%	84%
Battery & Charger @ 25°C		
Total battery rating voltage	36VDC	72VDC
Backup Time (Half Load)	>16min	>12min
Recharge Time (to 90%)	5Hours	5Hours
Charging Current (Max.)	1A	1A
Discharging Current (Max.)	33A	49.6A
Rated Charging Voltage	41.0Vdc	81.9Vdc

1.6.5 Standards

Safety		EN62040-1	
EMI	Conduction	FCC PART 15	Class B
	Radiation	FCC PART 15	Class B
	Harmonics	IEC/EN 61000-3-2	
	Flicker	IEC/EN 61000-3-3	
EMS	ESD	IEC/EN 61000-4-2	Level 3
	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
	MS	IEC/EN 61000-4-8	Level 3
	DIPS	IEC/EN 61000-4-11	
	low frequency signals	IEC/EN 61000-2-2	

1.7 Communication port

The communication port is for the monitoring software and program update.

- **USB**

The USB port is compliance with USB 1.1 protocol.

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.

 With the installation of the equipment, the sum of the leakage current of the UPS and the connected load does not exceed 3.5mA.

- **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 quipotential 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.

 Use No. 10AWG (for 3KVA output wire), 90°C copper wire and 12 lb-in Torque force when connecting to terminal block.

- **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.

	1KVA	3KVA
Fuse/Breaker	60A/125VDC	90A/125VDC

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. It is recommended to use 10AWG for 3KVA.
- 2) Make sure the mains switch in the building is cut off.
- 3) Make sure the UPS is not being turned on before wiring operation.
- 4) Turn off all load switches first before connecting the load to the UPS.
- 5) Connect the loads to the UPS through the outlet sockets.

2.4 Installation steps for external battery

- 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) Specified external battery cable is recommended. Using the specified external battery cable to connect the external battery and UPS could be safer.
- g) If there isn't any specified external battery cable. Please prepare the external battery cable that should be able to carry the current of >42A for 3KVA, and >28A for 1KVA, the cross section area should be greater than 10 mm² for 3KVA, and greater than 4 mm² for 1KVA. And battery wire color is recommended as following:

+	GND	-
Red wire	Yellow/Green wire	Black wire

- h) Connect the GND pole of external battery cable to the earth point of battery pack. Connect the Positive (+) pole of external battery cable to the Positive polarity of battery pack; Connect the Negative (-) pole of external battery cable to the Negative polarity of battery pack.

Note: Always connect the earth wire first!
 - i) Connect the plug of external battery cable to external battery terminal block on the rear panel of UPS.
 - j) Check the wiring and voltage of the battery pack. Make sure the polarity and voltage is correct, and the wires are fastened.
- 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

- 1) Connect the communication cable between UPS and PC. 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 LCD will display with bypass mode or standby 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, and the LCD display “bYPA”, else the output socket will not have the voltage and the LCD display “STbY”.

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 on-button of the UPS front panel continuously for more than 1 second. The buzzer will beep once. After a few seconds, 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. 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 on-button of the UPS front panel continuously for more than 1 second. The buzzer will beep once. After a few seconds, 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. 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 level grids 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 grids will display, display “OVLd ”and “LINE” in turns for 2 seconds, 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 doesn't like the buzzer noise, the beep could be muted by press the on-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 press the on-button for more than 1 second to let the UPS transfer to battery test mode.
- 2) The battery test could be performed by the command from monitoring software through the communication port.
- 3) If the UPS enter the battery test mode, the display and buzzer indication will be same as the battery mode except that the mode displays "TEST". 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 off-button continuously for more than 1 second.
- 2) After you press the off-button, the buzzer will beep once. Then the panel will display the bypass mode or standby 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. After a few seconds, the UPS will be shutdown completely and the LCD extinguish.

3.9 Turn off the UPS with battery (DC source) only

- 1) To turn off the UPS in battery mode, please press the off-button continuously for more than 1 second.
- 2) After you press the button, the buzzer will beep once. After a few seconds, the UPS will be shutdown completely and the LCD extinguish..

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

If the alarm is too annoying in battery mode, you may press on- button continuously for more than 1 second to clear it. Moreover, the alarm will be enabled when the battery is low to remind you to shutdown the load soon.

If the alarm is too annoying in bypass mode, you may press off-button continuously for more than 1 second to clear it. The action doesn't affect the warning and fault alarm.

3.11 Operation in warning status

- 1) In case the Fault/Warning icon  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 icon  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 Steps for On-Line UPS PDU disassemble

1. If UPS is turned on, please press "OFF" button to switch UPS to Bypass Mode.
2. Please switch Maintenance Bypass Switch of PDU module from "INV." to "MAINT.", then PDU module can be disassembled.
3. For 3KVA tower UPS, there are two screws for each top and bottom of PDU module. Please disassemble screws and PUD module is available to remove.

Safety Guides of Maintenance Bypass Switch

1. Maintenance Bypass Switch can only be operated by qualified personnel.
2. Ensure UPS is on Bypass mode when operating Maintenance Bypass Switch to avoid serious danger.
3. Please switch Maintenance Bypass Switch to "MAINT." before remove PDU module.
Then loads will continue be supplied by city power.
4. Maintenance Bypass Switch is on "INV." when UPS works normally.
5. Make sure the cover of Maintenance Bypass Switch locked tightly when operating UPS.

Do not open or remove the cover.

3.14 Setting by LCD module

The output voltage , output frequency, bypass state, and ECO mode could be set directly through LCD module. The output voltage could be set to 100Vac, 110Vac, 115Vac and 120Vac. The output frequency could be set to 50Hz and 60Hz. The operating mode of UPS could be set between the Line mode and ECO mode .The bypass state could be set to enable and disable. But all the settings could only be done when the UPS is in bypass or no output mode.

In bypass or no output mode, pressing the "Select" button on the LCD panel for more than one second, "100Vac" will flicker on the screen. And if pressing the "Select" button continuously again, the flickering character string would display "110Vac", next to "115Vac", "120Vac", "50Hz", "60Hz", "BPE"(means bypass enable), "BPd"(means bypass disable), "ECO", "UPS" in turn. And if pressing the "Enter" button for more than one second at this time, the output voltage or frequency or bypass state or mode state setting would be modified to the selected value. And if no any pressing on the "Select" or "Enter" button lasting for more than 30 seconds, the setting mode exit automatically.

The only one voltage value could be selected in "100Vac", "110Vac", "115Vac", "120Vac" at any time. The only one frequency value could be selected in "50Hz", "60Hz" at any time. And the output voltage and frequency would be changed to the corresponding value after the right values are selected on the LCD panel and the UPS is turn on by pressing the "ON" Button. The UPS would turn to bypass mode after "BPE" is selected, and turn to no output mode after "BPd" is selected. The mode change would be active only after the UPS is turned on.

Here is an example for changing the output voltage from 110Vac to 120Vac through the LCD panel.

Step 1: The figure “100” would flickering after pressing the “Select” button.



Step 2: The flickering figure would change to “120” after pressing the “Select” button three times again.



Step 3: Pressing the “Enter” button the new setting output voltage has been confirmed, turn on the UPS and the output is change to 120V.



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 disposed 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.

LCD WARNING CODE	Possible cause	Action
CHGF	Charger failed	Make sure the charger is ok.

TEPH	Temperature High	Check the ventilation of the UPS, check the ambient temperature.
bOPN	The battery is disconnected	Check if the battery connect abnormal.
OVLD	Overload	Check the loads and remove some non-critical loads. Check whether some loads are failed.
EPO	EPO function is active.	Connect the EPO switch.
bLOW	Battery low	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.
HIGH	Battery over voltage, or charger failed	Check the charger output, battery input.

(2) Trouble shooting according to fault indication

LCD FAULT CODE	Possible cause	Action
SHOR	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.
INVL	Internal fault (inverter Voltage low)	Contact the distributor or service center.
INVH	Internal fault (inverter Voltage high)	Contact the distributor or service center.

ISFT	Internal fault (inverter fail)	Contact the distributor or service center.
OVLd	Overload	Check the loads and remove some non-critical loads. Check whether some loads are failed.
OVTP	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.
bUSH	Internal fault (bus voltage high)	Contact the distributor or service center.
bSFT	internal fault	Contact the distributor or service center.

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

Note 2: When the UPS is fault, it will stop the power conversion of mains or battery.

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 1 second.
	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.

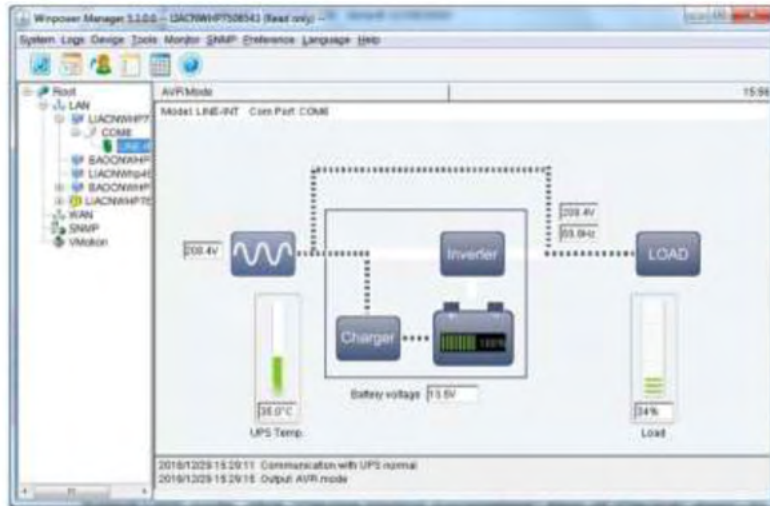
4.3 Battery Maintenance

- 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.

5. Software

Free Software Download – WinPower

WinPower is a brand new UPS monitoring software, which provides user-friendly interface to monitor and control your UPS. This unique software provides safely auto shutdown for multi-computer systems while power failure. With this software, users can monitor and control any UPS on the same LAN no matter how far from the UPS.



Installation procedure:

1. Go to the website:
<https://www.phoenixtecpower.com/us/en-us/Support/Download.html>
2. Choose the operation system you need and follow the instruction described on the website to download the software.
3. When downloading all required files from the internet, enter the serial No:
511C1-01220-0100-478DF2A to install the software.

When your computer restarts, the WinPower software will appear as a green plug icon located in the system tray, near the clock.

NOTES