User Manual

Online UPS
6kVA

-Power Module(UPS)

-External lithium Battery Pack (LiPo)

Uninterruptible Power Supply System

Version:1.X

alan 2024-01-22

Table of Contents

1. Important Safety Warning

Please read carefully the following user manual and the safety instructions before installing the unit or using the unit!

1-1. Transportation and Storage

 Please transport the UPS system only in the original package to protect against shock and impact.

 The UPS must be stored in the room where it is ventilated and dry.

1-2. Preparation

 Condensation may occur if the UPS system is moved directly from cold to warm environment. The UPS system must be absolutely dry before being installed. Please allow at least two hours for the UPS system to acclimate the environment.

 Do not install the UPS system near water or in moist environments.

 Do not install the UPS system where it would be exposed to direct sunlight or nearby heater.

 Do not block ventilation holes in the UPS housing.

1-3. Installation

 Do not connect appliances or devices which would overload the UPS (e.g. big motor-type equipment)) to the UPS output sockets or terminal.

 Place cables in such a way that no one can step on or trip over them.

 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.

 UPS has provided earthed terminal, in the final installed system configuration, equipotential earth bonding to the external UPS battery cabinets.

 The UPS can be installed only by qualified maintenance personnel.

 An appropriate disconnect device as short-circuit backup protection should be provided in the building wiring installation.

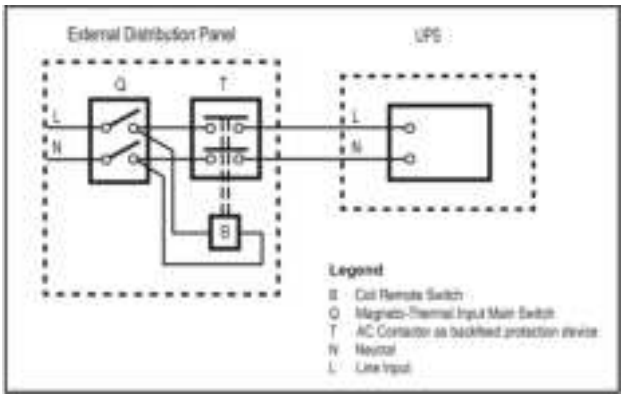
 An integral single emergency switching device which prevents further supply to the load by the UPS in any mode of operation should be provided in the building wiring installation.

 Connect the earth before connecting to the building wiring terminal.

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

1-4.  Connection Warnings

- There is no standard backfeed protection inside, please isolate the UPS before working according to this circuit. The isolation device must be able to carry the UPS input current.



- This UPS should be connected with **TN** earthing system.
- The power supply for this unit must be single-phase rated in accordance with the equipment nameplate. It also must be suitably grounded.
- Use of this equipment in life support applications where failure of this equipment can reasonably be expected to cause the failure of the life support equipment or to significantly affect its safety or effectiveness is not recommended. Do not use this equipment in the presence of a flammable anesthetic mixture with air, oxygen or nitrous oxide.
- Connect your UPS power module's grounding terminal to a grounding electrode conductor.
- The UPS is connected to a DC energy source (battery). The output terminals may be live when the UPS is not connected to an AC supply.

Before working on this circuit
- Isolate Uninterruptible Power System (UPS)
- Then check for Hazardous Voltage between all terminals including the protective earth.

Risk of Voltage Back feed

1-5. Operation

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

The UPS system features its own, internal current source (batteries). The UPS output sockets or output terminal blocks may be electrically live even if the UPS system is not connected to the building wiring outlet.

In order to fully disconnect the UPS system, first press the "OFF" button and then disconnect the mains.

Ensure that no liquid or other foreign objects can enter into the UPS system.

The UPS can be operated by any individuals with no previous experience.

2. Installation and setup

NOTE: Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. Please keep the original package in a safe place for future use.

2-1. Unpacking and Inspection

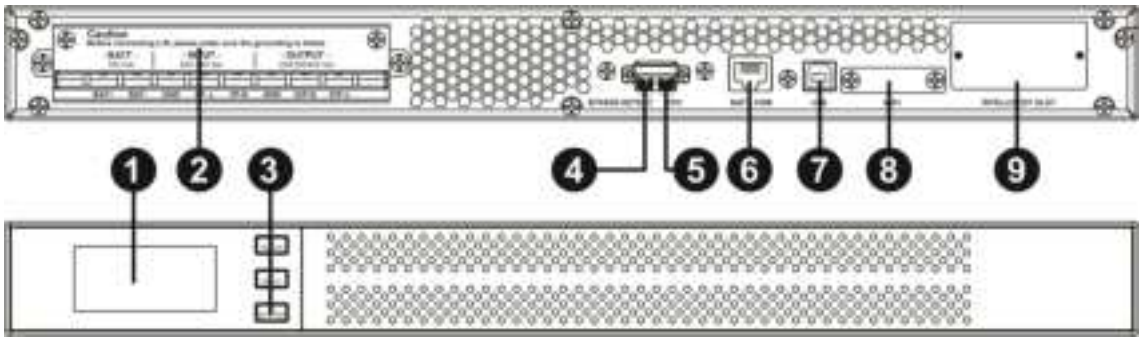
Unpack the package and check the package contents. The shipping package contains:

Power Module	**EBC(LiPo)**
UPS x 1	Battery pack x 1
Manual x 1	Manual x 1
USB cable x 1	Ear bracket x 1
Ear bracket x 1	External battery cable B x 1
External battery cable A x 1	Com cable x 1

NOTE: Before installation, please inspect the unit. Be sure that nothing inside the package is damaged during transportation. Do not turn on the unit and notify the carrier and dealer immediately if there is any damage or lacking of some parts. Please keep the original package in a safe place for future use.

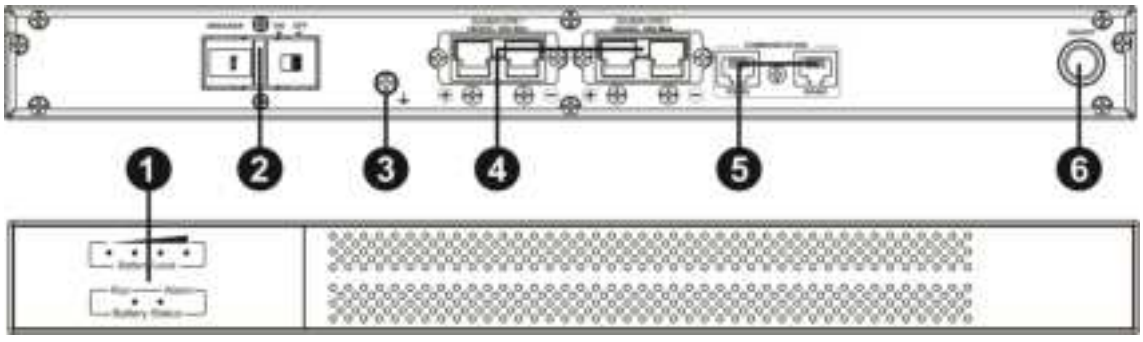
2-2. Front and Rear panel views

- Power Module



❶	LCD Display	❻	COM port(to EBC), RJ45
❷	Terminals(input, battery, output)	❼	USB port
❸	Buttons	❽	WIFI signal reserved port
❹	Connector for bypass detection	❾	Slot for optional card
❺	EPO (Emergency Power Off)		

- EBC



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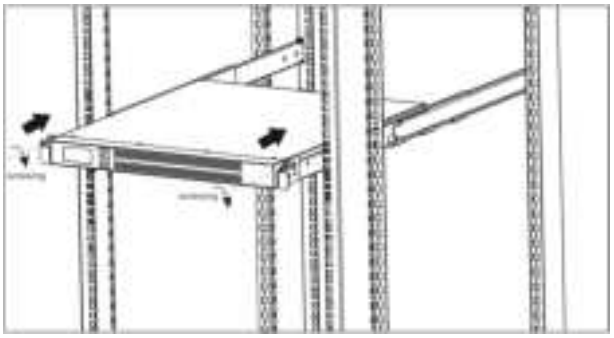
❶	LED Display	❹	External Battery Connectors
❷	Circuit Breaker	❺	COM ports
❸	Grounding Screw	❻	Manual On/Off Button

2-3. Rack Installation

This UPS can be mounted in the 19" rack chassis. Before installation UPS and EBC, Please install the rail kit into the cabinet.
Please follow below steps to position the UPS or EBC.

Step 1
Ear kit mounting to unit

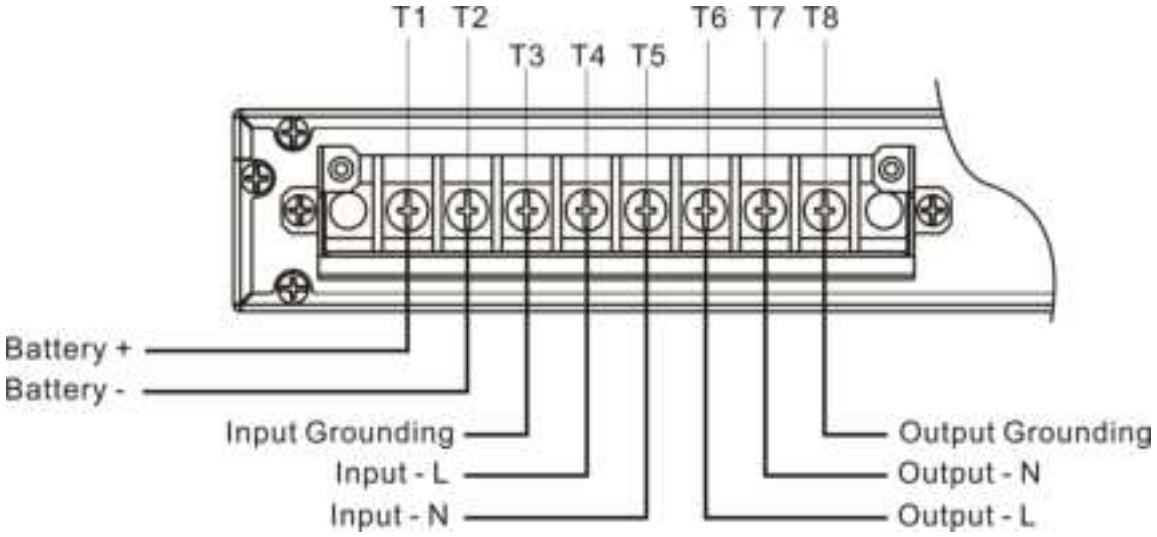
Step 2
install to cabinet and screw it



2-4. UPS and EBC Setup

Remove the terminal block cover on the rear panel of UPS. Then connect the wires according to the following terminal block diagrams: (Connect the earth wire first when making wire connection. Disconnect the earth wire last when making wire disconnection!). Put the terminal block cover back to the rear panel of the UPS

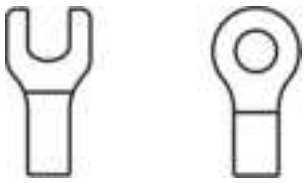
1). Terminal Block definition in details for wiring



NOTE 1: Make sure that the wires are connected tightly with the terminals.

NOTE 2: Please install the output breaker between the output terminal and the load, and the breaker should be qualified with leakage current protective function if necessary.

NOTE 3: the wire harness need mounted with the following terminal option, suitable size for wire #



2). Size of wires for input, output and battery connection, please reference:

Wiring spec (AWG / mm²)			
Input	Output	Battery	Ground
≧10 / 5.3	≧10 / 5.3	≧10 / 5.3	≧10 / 5.3

NOTE 1: It is recommended to use suitable wire in above table or thicker for safety and efficiency.

NOTE 2: The selections for color of wires should be followed by the local electrical laws and regulations.

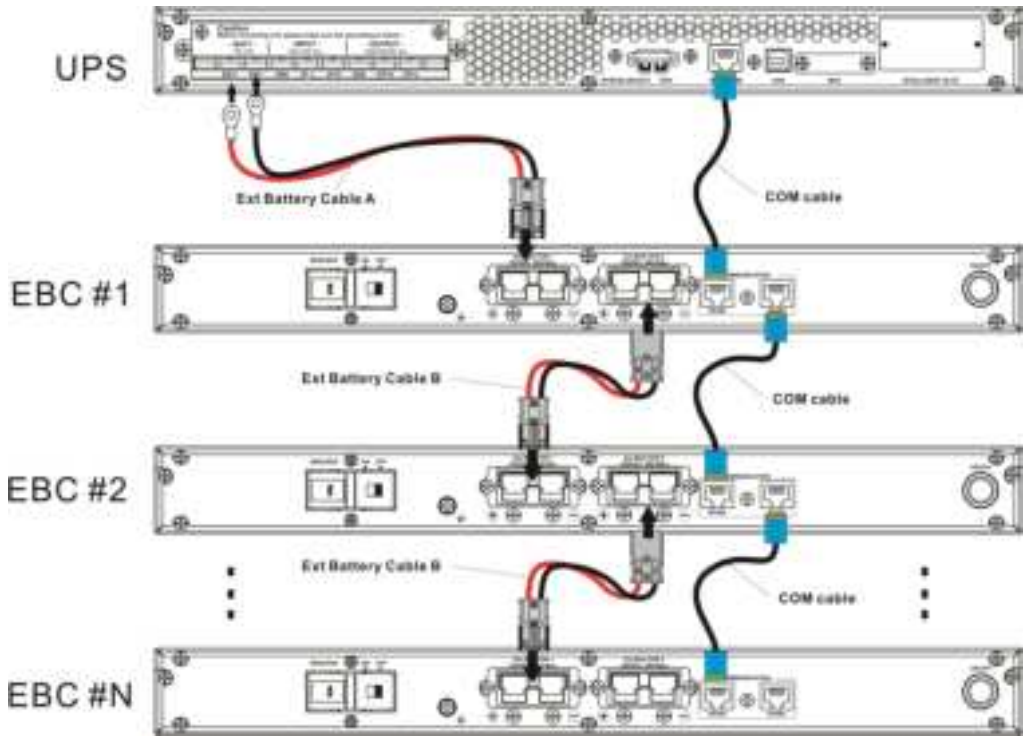
3). UPS link to EBCs.

UPS can link EBCs to max 5 units (N=5) in total.

When few EBCs in paralleling. The first EBC link to UPS called it as master, and others will be slave.

Slave EBC information will send to master when need during working.

RS485 as communication and CAN BUS between EBC #1 and EBC # N.



Warning:

● Make sure the UPS is not turned on before installation. The UPS should not be turned on during wiring connection.

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Warning:

● There are one DC breaker on EBC rear panel to disconnect the battery pack and the UPS. Switch off the battery breaker before installation.

NOTE: Set the battery pack breaker in "OFF" position and then install the battery pack.

● Pay highly attention to the rated battery voltage marked on the rear panel. If you want to change the numbers of the battery pack, please make sure you modify the setting simultaneously. The connection with wrong battery voltage may cause permanent damage of the UPS. Make sure the voltage of the battery pack is correct.

● 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.

● Make sure the protective earth ground wiring is correct. The current spec, color, position, connection and conductance reliability of wire should be checked carefully.

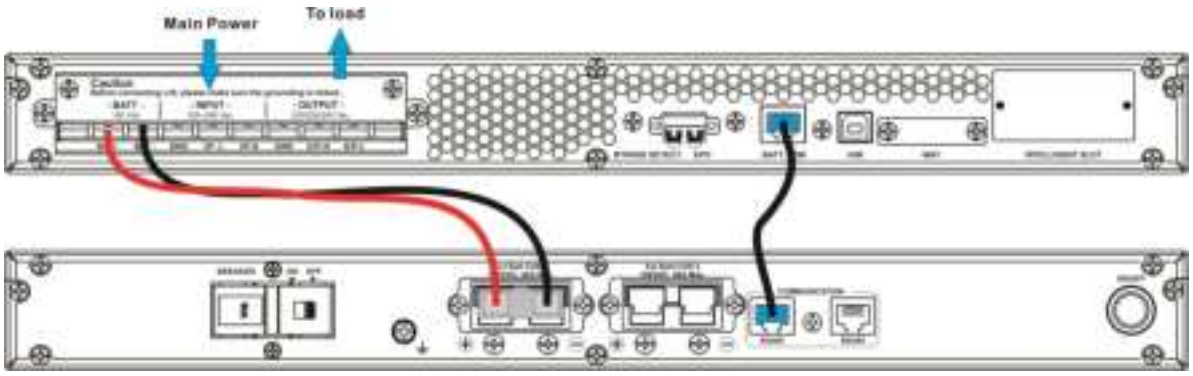
● Make sure the utility input & output wiring is correct. The current spec, color, position, connection and conductance reliability of wire should be checked carefully. Make sure the L/N terminal is correct, not reverse or short-circuited.

2-5. Turn on UPS and EBC

After UPS and EBC link properly. UPS need connecting to load and input power source.

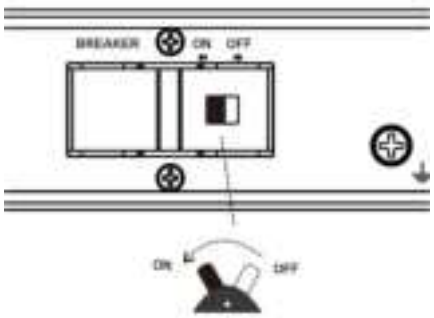
Following steps showing turn on UPS and EBC.

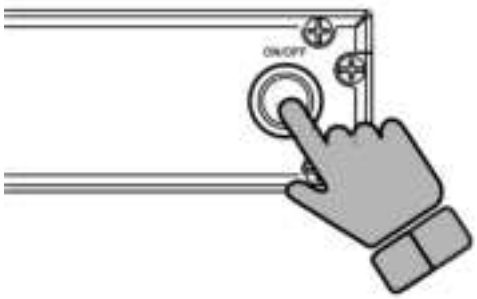
Step 1: all connections are ready.



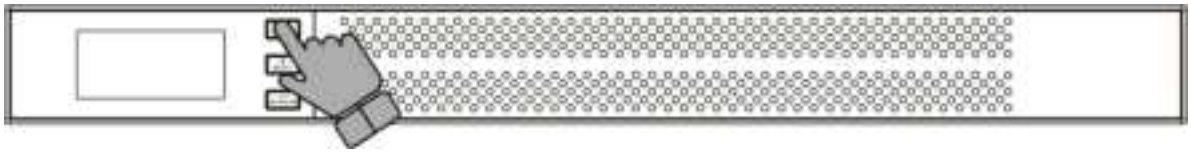
Step 2: Switch the breaker on EBC to "ON" position;

Step 3: Press "On/Off switch " and hold 5 seconds and release. The EBC will start up, after 10 seconds EBC will be ready for DC output.





Step 4: turn on the UPS.



After turn on 10 seconds, and UPS will work in normal.

2-6. Software Installation

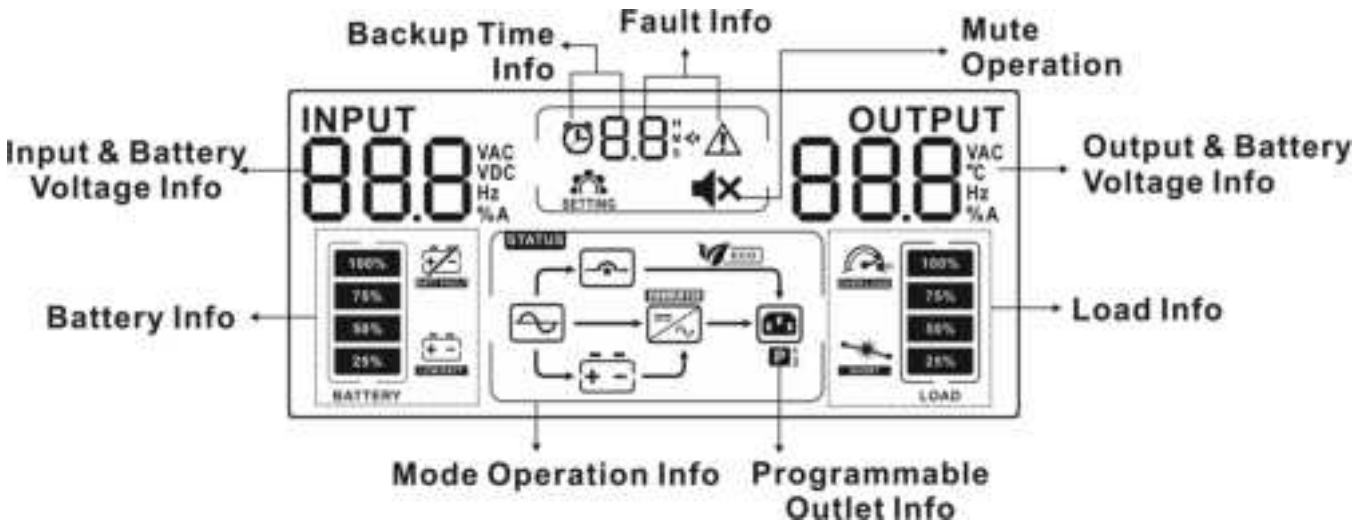
For optimal computer system protection, install UPS monitoring software to fully configure UPS shutdown.

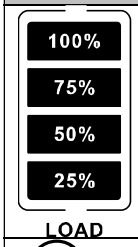
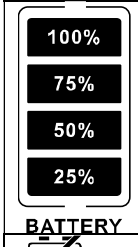
3. Operations

3-1. Button operation

Button	Function
ON/Mute Button	➢ Turn on the UPS: Press and hold ON/Mute button for at least 2 seconds to turn on the UPS. ➢ Mute the alarm: When the UPS is on battery mode, press and hold this button for at least 5 seconds to disable or enable the alarm system. But it's not applied to the situations when warnings or errors occur. ➢ Up key: Press this button to display previous selection in UPS setting mode. ➢ Switch to UPS self-test mode: Press and hold ON/Mute button for 5 seconds to enter UPS self-testing while in AC mode, ECO mode, or converter mode.
OFF/Enter Button	➢ Turn off the UPS: Press and hold this button at least 2 seconds to turn off the UPS. UPS will be in standby mode under power normal or transfer to Bypass mode if the Bypass enable setting by pressing this button. ➢ Confirm selection key: Press this button to confirm selection in UPS setting mode.
Select Button	➢ Switch LCD message: Press this button to change the LCD message for input voltage, input frequency, battery voltage, output voltage and output frequency. It will return back to default display when pausing for 10 seconds. ➢ Setting mode: Press and hold this button for 5 seconds to enter UPS setting mode when UPS is in standby mode or bypass mode. ➢ Down key: Press this button to display next selection in UPS setting mode.
ON/Mute + Select Button	➢ Switch to bypass mode: When the main power is normal, press ON/Mute and Select buttons simultaneously for 5 seconds. Then UPS will enter to bypass mode. This action will be ineffective when the input voltage is out of acceptable range.

3-2. LCD Panel



Display	Function
Remaining backup time information	
	Indicates the remaining backup time in pie chart.
	Indicates the remaining backup time in numbers. H: hours, M: minute, S: second
Fault information	
	Indicates that the warning and fault occurs.
	Indicates the warning and fault codes, and the codes are listed in details in 3-5 section.
Mute operation	
	Indicates that the UPS alarm is disabled.
Output information	
	Indicates the output voltage and frequency. Vac: output voltage, Hz: frequency
Load information	
	Indicates the load level by 0-25%, 26-50%, 51-75%, and 76-100%.
	Indicates overload.
	Indicates the load or the UPS output is short circuit.
Mode operation information	
	Indicates the UPS connects to the mains.
	Indicates the battery is working.
	Indicates the bypass circuit is working.
	Indicates the ECO mode is enabled.
	Indicates the Inverter circuit is working.
	Indicates the UPS is working in converter mode.
	Indicates the output is working.
Programmable outlets information	
P	Indicates that programmable management outlets are working.
Battery information	
	Indicates the Battery level by 0-25%, 26-50%, 51-75%, and 76-100%.
	Indicates the battery is fault.

LOW BATT	Indicates low battery level and low battery voltage.
Input & Battery voltage information	
INPUT 88.8 VAC VDC Hz %A	Indicates the input voltage or frequency or battery voltage. Vac: Input voltage, Vdc: battery voltage, Hz: input frequency

3-3. Audible Alarm

Description	Buzzer status	Muted
UPS status		
Bypass mode	Beeping once every 2 minutes	Yes
Battery mode	Beeping once every 4 seconds	
Fault mode	Beeping continuously	
Warning		
Overload	Beeping twice every second	No
Low battery	Beeping once every second	
Battery unconnected		
Over charge		
EPO enable		
Fan failure/Over temperature		
Charger failure		
Overload 3 times in 30min		
EPO status		
Cover of maintain switch is open		
Fault		
Bus start failure	Beeping continuously	Yes
Bus over		
Bus under		
Bus unbalance		
Inverter soft start failure		
High Inverter voltage		
Low Inverter voltage		
Inverter output short circuited		
Battery SCR short circuited		
Over temperature		
Overload		

3-4. UPS Operation

1. Turn on the UPS with utility power supply (in AC mode)

1) After power supply is connected correctly, set the breaker of the battery pack at "ON" position (the step only available for long-run model). Then, set the input breaker at "ON" position. At this time, the fan is running and the UPS supplies power to the loads via the bypass. The UPS is operating in Bypass mode.

   NOTE: When UPS is in Bypass mode, the output voltage will directly power from utility after you switch on the input breaker. In Bypass mode, the load is not protected by UPS. To protect your precious devices, you should turn on the UPS. Refer to next step.

2) Press and hold the "ON" button for 1s to turn on the UPS and the buzzer will beep once.

3) A few seconds later, the UPS will enter to AC mode. If the utility power is abnormal, the UPS will operate in Battery mode without interruption.

NOTE: When the UPS is running out battery, it will shut down automatically at Battery mode. When the utility power is restored, the UPS will auto restart in AC mode.

2. Turn on the UPS without utility power supply (in Battery mode)

1) Make sure that the breaker of the battery pack is at "ON" position (only for long-run model).
2) Press and hold the "ON" button for 1s to turn on the UPS, and the buzzer will beep once.
3) A few seconds later, the UPS will be turned on and enter to Battery mode.

3. Connect devices to UPS

After the UPS is turned on, you can connect devices to the UPS.

1) Switch on the devices one by one and it will display total load level in LCD panel.
2) If it is necessary to connect the inductive loads such as a printer, the in-rush current should be calculated carefully to see if it meets the capacity of the UPS, because the power consumption of this kind of loads is too big.
3) If the UPS is overload, the buzzer will beep twice every second.
4) When the UPS is overload, please remove some loads immediately. It is recommended to have the total loads connected to the UPS less than 80% of its nominal power capacity to prevent overload for system safety.
5) If the overload time is over acceptable time listed in spec at AC mode, the UPS will automatically transfer to Bypass mode. After the overload is removed, it will return to AC mode. If the overload occurs 3 times in half hour, the UPS will be locked in Bypass mode. UPS can transfer to Line mode only by manual restart. At this time, if bypass is enabled, the UPS will power to the load via bypass. If bypass function is disabled or the input power is not within bypass acceptable range, it will cut off output directly.

4. Charge the batteries

1) After the UPS is connected to the utility power, the charger will charge the batteries automatically except in Battery mode or during battery self-test.
2) It's suggested to charge batteries at least 10 hours before use. Otherwise, the backup time may be shorter than expected time.
3) Make sure the battery numbers setting on the control board (Please refer to the section 3-4-11 for detailed setting) is consistent to real connection.
4) The charging current can be changed from 1A to 6A via LCD or software. Please make sure that the charging current is suitable to battery specification.

5. Battery mode operation

1) When the UPS is in Battery mode, the buzzer will beep according to different battery capacity. If the battery capacity is more than 25%, the buzzer will beep once every 4 seconds. If the battery voltage drops to the alarm level, the buzzer will beep quickly (once every sec) to remind users that the battery is at low level and the UPS will shut down automatically soon. Users could switch off some non-critical loads to disable the shutdown alarm and prolong the backup time. If there is no more load to be switched off at that time, you have to shut down all loads as soon as possible to protect the devices or save data. Otherwise, there is a risk of data loss or power failure.
2) In Battery mode, if buzzer sound annoys, users can press the Mute button to mute the buzzer.
3) The backup time of the long-run model depends on the external battery capacity.
4) The backup time may vary from different environment temperature and load type.
5) When setting backup time for 16.5 hours (default value from LCD panel), after discharging 16.5 hours,

UPS will shut down automatically to protect the battery. This battery discharge protection can be enabled or disabled through LCD panel control. (Refer to 3-7 LCD setting section)

6. Turn off the UPS with utility power supply in AC mode

1) Turn off the inverter of the UPS by pressing "OFF" button for at least 1s, and then the buzzer will beep once. The UPS will turn into Bypass mode.

   NOTE 1: If the UPS has been set to enable the bypass output, it will bypass voltage from utility power to output sockets and terminal even though you have turned off the UPS (inverter).

   NOTE 2: After turning off the UPS, please be aware that the UPS is working at Bypass mode and there is risk of power loss for connected devices.

2) In Bypass mode, output voltage of the UPS is still present. In order to cut off the output, switch off the input breaker. A few seconds later, there is no display shown on the LCD panel and UPS is complete off.

7. Turn off the UPS without utility power supply in Battery mode

1) Turn off the UPS by pressing "OFF" button for at least 1s, and then the buzzer will beep once.
2) Then UPS will cut off power to output and there is no display shown on the display panel.

8. Mute the buzzer

1) To mute the buzzer, please press the "Mute" button for at least 1s. If you press it again after the buzzer is muted, the buzzer will beep again.
2) Some warning alarms can't be muted unless the error is fixed. Please refer to section 3-3 for the details.

9. Operation in warning status

1) When Fault LED flashes and the buzzer beeps once every second, it means that there are some problems for UPS operation. Users can get the fault code from LCD panel. Please check the trouble shooting table in chapter 4 for details.
2) Some warning alarms can't be muted unless the error is fixed. Please refer to section 3-3 for the details.

10. Operation in Fault mode

1) When Fault LED illuminates and the buzzer beeps continuously, it means that there is a fatal error in the UPS. Users can get the fault code from display panel. Please check the trouble shooting table in chapter 4 for details.
2) Please check the loads, wiring, ventilation, utility, battery and so on after the fault occurs. Don't try to turn on the UPS again before solving the problems. If the problems can't be fixed, please contact the distributor or service people immediately.
3) For emergency case, please cut off the connection from utility, external battery and output immediately to avoid more risk or danger.

11. Operation of changing battery numbers

1) This operation is only available for professional or qualified technicians.
2) Turn off the UPS. If the load couldn't be cut off, you should remove the cover of maintenance bypass switch on the rear panel and turn the maintenance switch to "BPS" position first.
3) Switch off the input breaker, and switch off the battery breaker.

4) Remove the cabinet cover, and then modify the jumpers (CN1) on the control board to set the battery numbers as following table:

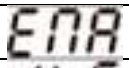
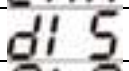
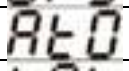
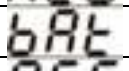
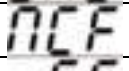
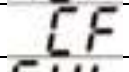
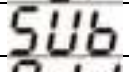
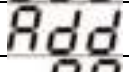
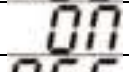
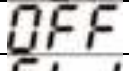
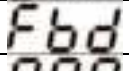
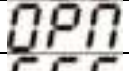
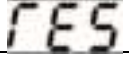
Battery Number	CN1					
	pin15	Pin16	Pin17	Pin18	Pin19	Pin20
16	X	1	0	0	0	0
17	X	0	1	0	0	0
18	X	0	0	1	0	0
19	X	0	0	0	1	0
20	X	0	0	0	0	1

Note：1 = connect with jumper; 0 = no jumper; x = the pins are for other functions.

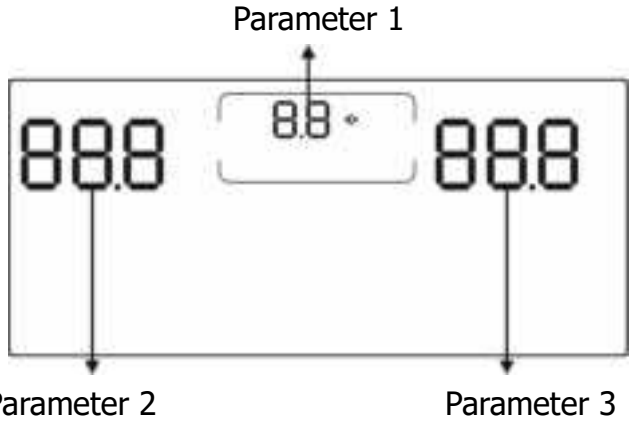
5) Modify the battery pack for the setting number carefully. After complete it, put the cover back, and switch on the battery breaker.

6) Switch on the input breaker and the UPS will enter Bypass mode. If the UPS is in maintenance Bypass mode, turn the maintenance switch to "UPS" position and then turn on the UPS.

3-5. Abbreviation Meaning in LCD Display

Abbreviation	**Display content**	**Meaning**
ENA		Enable
DIS		Disable
ATO		Auto
BAT		Battery
NCF		Normal mode (not CVCF mode)
CF		CVCF mode
SUB		Subtract
ADD		Add
ON		On
OFF		Off
FBD		Not allowed
OPN		Allow
RES		Reserved

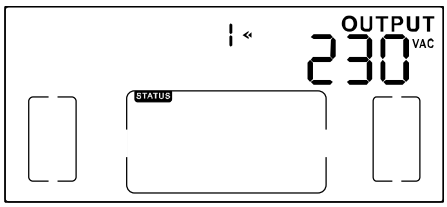
3-6. UPS Setting



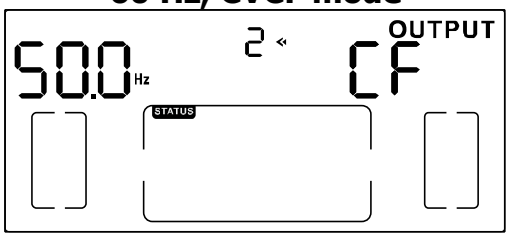
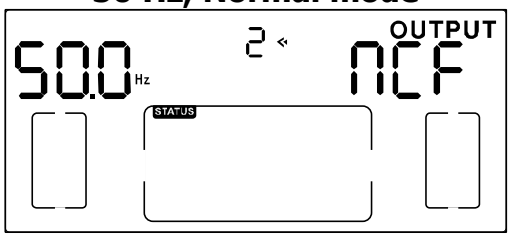
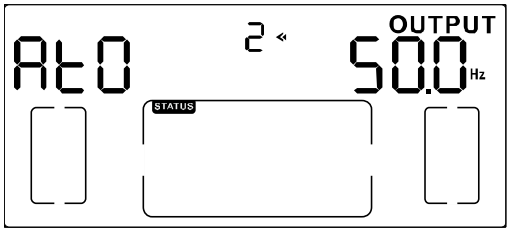
There are three parameters to set up the UPS.

Parameter 1: It's for program alternatives. Refer to below table. Parameter 2 and parameter 3 are the setting options or values for each program.

- **01: Output voltage setting**

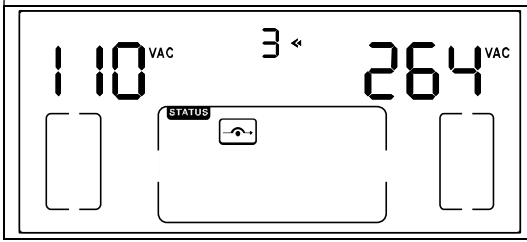
Interface	Setting
	**Parameter 3: Output voltage** You may choose the following output voltage: **208:** presents output voltage is 208Vac **220:** presents output voltage is 220Vac **230:** presents output voltage is 230Vac (Default) **240:** presents output voltage is 240Vac

- **02: Frequency Converter enable/disable**

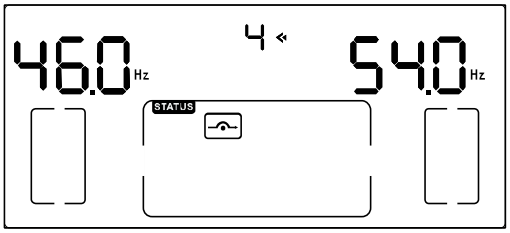
Interface	Setting
60 Hz, CVCF mode  **50 Hz, Normal mode**  **ATO** 	**Parameter 2: Output Frequency** Setting the output frequency. You may choose following three options in parameter 2: **50.0Hz:** The output frequency is setting for 50.0Hz. **60.0Hz:** The output frequency is setting for 60.0Hz. **ATO:** If selected, output frequency will be decided according to the latest normal utility frequency. If it is from 46Hz to 54Hz, the output frequency will be 50.0Hz. If it is from 56Hz to 64Hz, the output frequency will be 60.0Hz. ATO is default setting. **Parameter 3: Frequency mode** Setting output frequency at CVCF mode or non-CVCF mode. You may choose following two options in parameter 3: **CF:** Setting UPS to CVCF mode. If selected, the output frequency will be fixed at 50Hz or 60Hz according to setting in parameter 2. The input frequency could be from 46Hz to 64Hz. **NCF:** Setting UPS to normal mode (non-CVCF mode). If selected, the output frequency will synchronize with the input frequency within 46~54 Hz at 50Hz or within 56~64 Hz at 60Hz according to setting in parameter 2. If 50 Hz selected in parameter 2, UPS will transfer to battery mode when input frequency is not within 46~54 Hz. If 60Hz selected in parameter 2, UPS will transfer to battery mode when input frequency is not within 56~64 Hz.

	*If Parameter 2 is ATO, the Parameter 3 will show the current frequency.

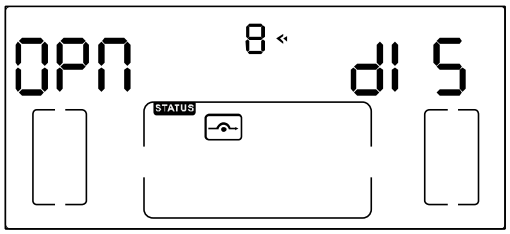
- **03: Voltage range for bypass**

Interface	Setting
	**Parameter 2:** Set the acceptable low voltage for bypass. Setting range is from 110V to 209V and the default value is 110V. **Parameter 3:** Set the acceptable high voltage for bypass. Setting range is from 231V to 276V and the default value is 264V.

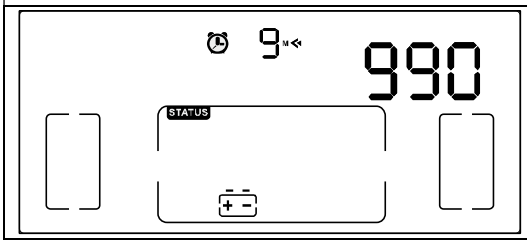
- **04: Frequency range for bypass**

Interface	Setting
	**Parameter 2:** Set the acceptable low frequency for bypass. 50 Hz system: Setting range is from 46.0Hz to 49.0Hz. 60 Hz system: Setting range is from 56.0Hz to 59.0Hz. The default value is 46.0Hz/56.0Hz. **Parameter 3:** Set the acceptable high frequency for bypass. 50 Hz: Setting range is from 51.0Hz to 54.0 Hz. 60 Hz: Setting range is from 61.0Hz to 64.0Hz. The default value is 54.0Hz/64.0Hz.

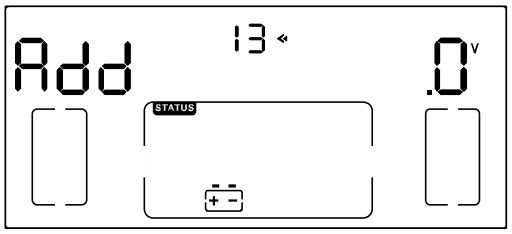
- **08: Bypass mode setting**

Interface	Setting
	**Parameter 2:** **OPN**: Bypass allowed. When selected, UPS will run at Bypass mode depending on bypass enabled/disabled setting. **FBD**: Bypass not allowed. When selected, it's not allowed for running in Bypass mode under any situations. **Parameter 3:** Only valid for OPN option. **ENA**: Bypass enabled. When selected, Bypass mode is activated. **DIS**: Bypass disabled. When selected, automatic bypass is acceptable, but manual bypass is not allowed. Manual bypass means users manually operate UPS for Bypass mode. For example, pressing OFF button in AC mode to turn into Bypass mode.

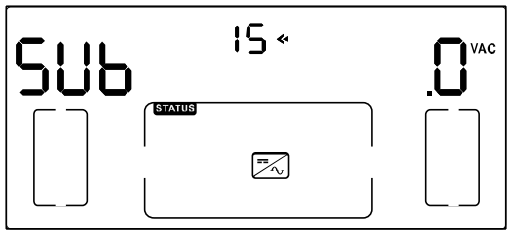
- **09: Autonomy limitation setting**

Interface	Setting
	**Parameter 3:** **000~999:** Set the maximum discharge time from 0 min. to 999 min. UPS will shut down to protect battery after discharge time arrives. The default value is 990 min. **DIS:** Disable battery discharge protection and backup time will depend on battery capacity.

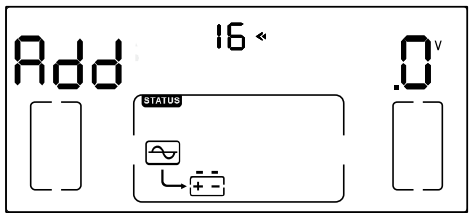
- **13: Battery voltage calibration**

Interface	Setting
	**Parameter 2:** Select "**Add**" or "**Sub**" function to calibrate battery voltage to real figure. **Parameter 3:** The voltage setting range is from 0V to 5.7V. The default value is 0V.

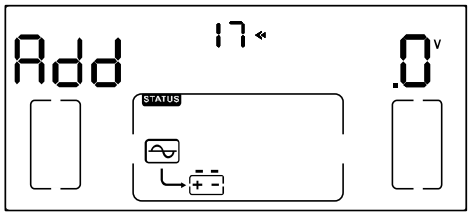
- **15: Inverter voltage calibration**

Interface	Setting
	**Parameter 2:** you may choose **Add** or **Sub** to calibrate inverter voltage **Parameter 3:** The voltage setting range is from 0V to 6.4V. The default value is 0V.

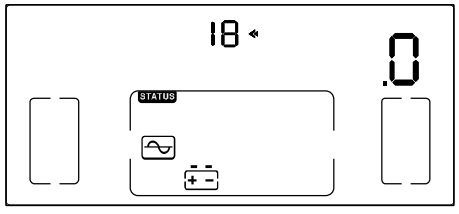
- **16: Floating charger voltage adjustment**

Interface	Setting
	**Parameter 2:** you may choose **Add** or **Sub** to adjust floating charger voltage. **Parameter 3:** the voltage range is from **0V to 5.7V**, the default value is 0V.

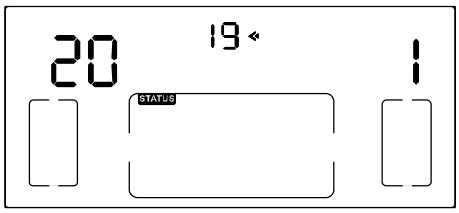
- **17: Constant charger voltage adjustment**

Interface	Setting
	**Parameter 2:** you may choose **Add** or **Sub** to adjust constant charger voltage. **Parameter 3:** the voltage range is from **0V to 5.7V**, the default value is 0V.

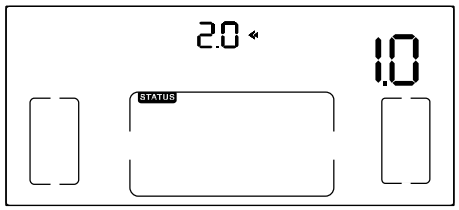
- **18: Maximum charger current setting**

Interface	Setting
	**Parameter 3:** The maximum charging current could be adjusted. Default value is 4A for long run model and 1A for standard model. The available options are 1A, 2A, 4A and 6A. 6A is only available for 16 pieces of batteries.

- **19: Battery capacity and groups setting**

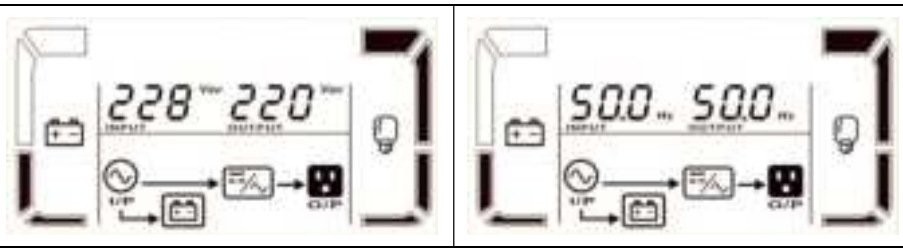
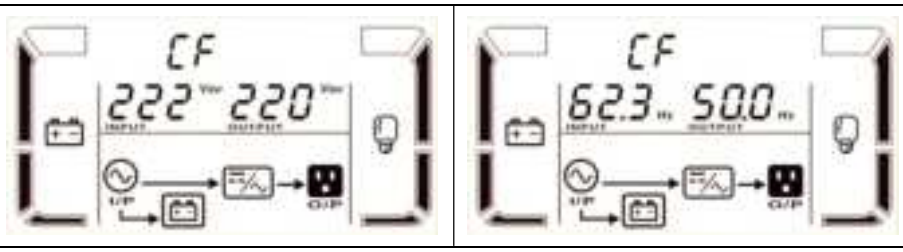
Interface	Setting
	**Parameter 2:** Set the battery capacity such as 7AH, 9AH, 10AH, 12AH, 17AH, 26AH, 40AH, 65AH, 100AH and so on. The default value is 9AH. **Parameter 3:** Set battery group range from 1 to 6. The default value is 1 group. These parameters are for the battery backup time calculation.

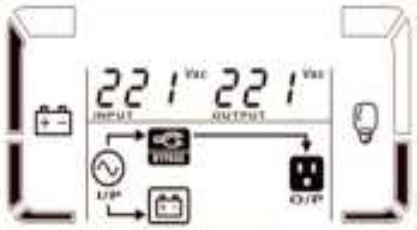
- **20: Backup time calibration**

Interface	Setting
	**Parameter 3:** Calibrate the displayed backup time by adjusting this multiplier factor. The formulation is listed below: Displayed backup time=Original calculated backup time x Multiplier factor The default value of multiplier factor is 1.0 and the setting range is from 0.5 to 2.

- **00: Exit setting**

3-7. Operating Mode Description

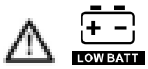
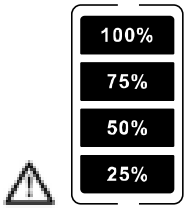
Operating mode/status		
AC mode	Description	When the input voltage is within acceptable range, UPS will provide pure and stable AC power to output. The UPS will also charge the battery at AC mode.
	LCD display	
CVCF mode	Description	When input frequency is within 46 to 64Hz, the UPS can be set at a constant output frequency, 50 Hz or 60 Hz. The UPS will still charge battery under this mode.
	LCD display	
Battery mode	Description	When the input voltage is beyond the acceptable range or power failure, UPS will backup power from battery and alarm will beep every 4 seconds.

	LCD display		
Bypass mode	Description	When input voltage is within acceptable range and bypass is enabled, turn off the UPS and it will enter Bypass mode. Alarm beeps every two minutes.	
	LCD display		
Battery Test	Description	When UPS is in AC mode or CVCF mode, press "Test" key for more than 1s. Then, the UPS will beep once and start "Battery Test". The line between I/P and inverter icons will blink to remind users. This operation is used to check the battery status.	
	LCD display		
Fault status	Description	When UPS has fault happened, it will display fault codes in LCD panel.	
	LCD display		

3-8. Fault Code

Fault event	Fault code	Icon	Fault event	Fault code	Icon
Bus start failure	01	None	Low Inverter voltage	13	None
Bus over	02	None	Inverter output short circuited	14	
Bus under	03	None	Battery SCR short circuited	21	None
Bus unbalance	04	None	Over temperature	41	None
Inverter soft start failure	11	None	Overload	43	
High Inverter voltage	12	None			

3-9. Warning Indicator

Warning	Icon (flashing)	Alarm
Battery low		Beeping every second
Overload		Beeping twice every second
Battery unconnected		Beeping every second
Over charge		Beeping every second
EPO enable		Beeping every second
Over temperature		Beeping every second
Charger failure		Beeping every second
Overload 3 times in 30min		Beeping every second
Cover of maintain switch is open		Beeping every second

4. Troubleshooting

If the UPS system does not operate correctly, please solve the problem by using the table below.

Symptom	Possible cause	Remedy
No indication and alarm in the front display panel even though the mains is normal.	The AC input power is not connected well.	Check if input cable firmly connected to the mains.
The icon ⚠ and the warning code EP flash on LCD display and alarm beeps every second.	EPO function is enabled.	Set the circuit in closed position to disable EPO function.
The icon ⚠ and BATT FAULT flash on LCD display and alarm beeps every second.	The external or internal battery is incorrectly connected.	Check if all batteries are connected well.
The icon ⚠ and OVERLOAD flash on LCD display and alarm beeps twice every second.	UPS is overload.	Remove excess loads from UPS output.
	UPS is overloaded. Devices connected to the UPS are fed directly by the electrical network via the Bypass.	Remove excess loads from UPS output.
	After repetitive overloads, the UPS is locked in the Bypass mode. Connected devices are fed directly by the mains.	Remove excess loads from UPS output first. Then shut down the UPS and restart it.
Fault code is shown as 43. The icon OVERLOAD lights on LCD display and alarm beeps continuously.	UPS is overload too long and becomes fault. Then UPS shut down automatically.	Remove excess loads from UPS output and restart it.
Fault code is shown as 14, the icon SHORT lights on LCD display, and alarm beeps continuously.	The UPS shut down automatically because short circuit occurs on the UPS output.	Check output wiring and if connected devices are in short circuit status.
Other fault codes are shown on LCD display and alarm beeps continuously.	A UPS internal fault has occurred.	Contact your dealer
Battery backup time is shorter than nominal value	Batteries are not fully charged	Charge the batteries at least 7 hours and then check capacity. If the problem still persists, consult your dealer.
	Batteries defect	Contact your dealer to replace the battery.
The icon ⚠ and flash on LCD display and alarm beeps every second.	The UPS temperature is too high.	Check fans and notify dealer.
UPS can not start up, the icon ⚠ flashes on LCD display, and alarm beeps every second.	Cover of maintain switch is open.	Check if the cover of maintain switch is screwed tightly.

5. Specifications

MODEL		**VICTOR 1U6KL**
PHASE		Single phase (L+N+PE)
CAPACITY		6000 VA / 4800 W
INPUT		
Nominal Voltage		208*/220/230/240VAC
Voltage Range		110-300VAC ± 3% at 50% load; 176-300VAC ± 3% at 100% load
Frequency Range		46~54Hz / 56~64 Hz
Power Factor		≧ 0.99 @ Nominal Voltage (100% load)
THDi		≦ 4 % @100% load ; ≦6 % @ 50% load
OUTPUT		
Output Voltage		208*/220/230/240VAC
Voltage Regulation		± 1%
Frequency Range (Synchronized Range)		46~ 54 Hz or 56 ~ 64 Hz
Frequency Range (Batt. Mode)		50 Hz or 60Hz ± 0.1 Hz
Current Crest Ratio		3:1(max.)
Harmonic Distortion		≦ 2 % THD (Linear Load) / 4 % THD (Non-linear Load)
Transfer Time	AC to DC	Zero
	Inverter to Bypass	4 ms (Typical)
Waveform (Batt. Mode)		Pure Sinewave
Overload	AC Mode	100%≦ load≦ 105% Warning only; 105%< load≦ 125% 1min; >125%: 1 sec
	Battery Mode	100%≦ load≦ 105% Warning only; 105%< load≦ 125% 30 sec; >125%: 1 sec
EFFICIENCY		
To AC Mode		95%
To Battery Mode		93%
Charger		
Nominal Voltage		192 VDC
Charging Current		6.0 A
Charging Voltage		210VDC ±1%
Battery Connector		2Poles (50A max.)
Lithium Battery Pack		
Model Name		**LIO 192003**
Capacity		3 Ah
Nominal DC Voltage		192 VDC
Cell Type and nominal capacity		LiFeO4 and 3.2V/3Ah
Continuous discharge current		30A max.
Battery Connector		2Poles (50A max.)

Status indicating	LED, battery level, status
Com ports	RS485 x 2: RS485 (Pack to UPS), CAN (pack to pack)
Capacity extension	YES, max up to 5 packs
Unit Dimension, D x W x H (mm)	530 x 438 x 44
Package Dimension, D x W x H (mm)	770 x 590 x 160
N.W /G.W of Pack	15.5 Kg / 18.2 Kg
INDICATORS & COM	
LCD	Load level, Battery level, AC mode, Battery mode, Bypass mode, and Fault indicators
Communication ports	USB, Mini Slot
Emergency Power Off (EPO)	YES
PHYSICAL	
Unit Dimension, D x W x H (mm)	500 x 438 x 44
N.W /G.W of UPS	11.3 Kg / 13.9 Kg
Package Dimension, D x W x H (mm)	770 x 590 x 160
ENVIRONMENT	
Humidity	0-95 % RH @ 0- 40°C (non-condensing)
Altitude	0~2000meters without derating; 2000~3000 meters, derating 1% every 100meters; >3000 meters, not working
Noise Level	Less than 55dBA @ 1 Meter
MANAGEMENT	
USB	Supports Windows 2000/2003/XP/Vista/2008/7/8, Linux, Unix, and MAC
Optional SNMP	Power management from SNMP manager and web browser
Optional WiFi module	App for Wifi linking

* Output will be derated when the output voltage is adjusted to 208VAC.
**Product specifications are subject to change without further notice.