User Manual

ES-SU6K Online UPS

Uninterruptible Power Supply System

Version: 1.0

Please comply with all warnings and operating instructions in this manual strictly. Save this manual properly and read carefully the following instructions before installing the unit. Do not operate this unit before reading through all safety information and operating instructions carefully.

Table of Contents

1. Safety and EMC instructions

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. If the outer packaging or UPS is damaged, please contact the manufacturer. They will assess whether it can be installed and used directly.

 The UPS product should be stored in a dry, well-ventilated area with a temperature range of -20°C to +40°C and humidity levels between 10% and 90% without condensation

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. Before starting the UPS, ensure the ambient temperature is above 0°C and maintained for at least 2 hours.

 Do not install the UPS in uncontrolled environments near the coast of the ocean, places lacking temperature and humidity control, such as offshore fishery processing workshops, salt field operation rooms and other semi-open production environments, warehouses without air conditioning or dehumidification equipment, semi-open machine rooms, coastal open-air distribution cabinets, outdoor communication base stations, etc.

 Do not install the UPS in places with conductive dust, high concentration of corrosive gas, salt mist deposition or flammable and explosive gas mixture.

 Do not install the UPS near high heat radiation sources or places with strong electromagnetic radiation sources.

 Do not install the UPS in places where there is a risk of mold, insects/parasites breeding.

 Do not install the UPS in places where there is a risk of severe vibration, sudden impact, continuous swaying, or active earthquakes.

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.

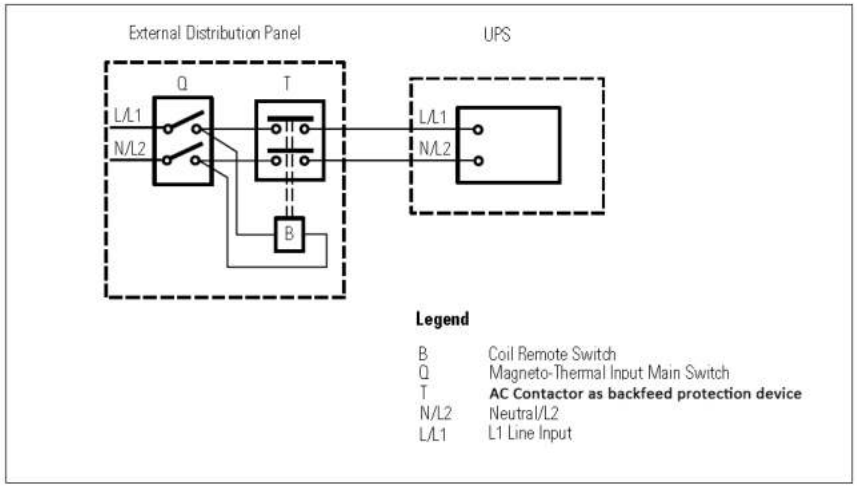
⚠ An integral single emergency switching device which prevents further supply to the load by the UPS in any mode of operation should be provided in the building wiring installation.

⚠ 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

- In accordance with safety standard EN-IEC 62040-1, installation has to be provided with a《Backfeed Protection》 system, as for example a contactor, which will prevent the appearance of voltage or dangerous energy in the input mains during a mains fault. There is standard backfeed protection inside of the UPS. If want add external backfeed protection outside of the UPS. Please isolate the UPS before working according to below diagram. The isolation device must be able to carry the UPS input current.



External backfeed protection wiring

⚠ There can be no derivation in the line that goes from the «Backfeed Protection» to the UPS, as the standard safety would be infringed.

- Warning labels should be placed on all primary power switches installed in places away from the device to alert the electrical maintenance personnel of the presence of a UPS in the circuit. The label will bear the following or an equivalent text:

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 Backfeed

- 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.

WARNING
HIGH LEAKAGE CURRENT
EARTH CONNECTION ESSENTIAL
BEFORE CONNECTING SUPPLY

- 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.

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.

1-6. Standards

*** Safety**	
IEC/EN 62040-1	
*** EMI**	
Conducted Emission.....:IEC/EN 62040-2	Category C3
Radiated Emission.....:IEC/EN 62040-2	Category C3
***EMS**	

ESD.....:IEC/EN 61000-4-2	Level 2/ Level 3:Contact/ Air Discharge
RS..... ...:IEC/EN 61000-4-3	Level 3
EFT..... :IEC/EN 61000-4-4	Level 3
SURGE..... :IEC/EN 61000-4-5	Level 2
CS..... :IEC/EN 61000-4-6	Level 3
Power-frequency Magnetic field..... :IEC/EN 61000-4-8	Level 4
Low Frequency Signals.....:IEC/EN 61000-2-2	
Warning: This is a product for commercial and industrial application in the second environment-installation restrictions or additional measures may be needed to prevent disturbances.	

2. Installation and Operation

2-1. Unpacking and Inspection

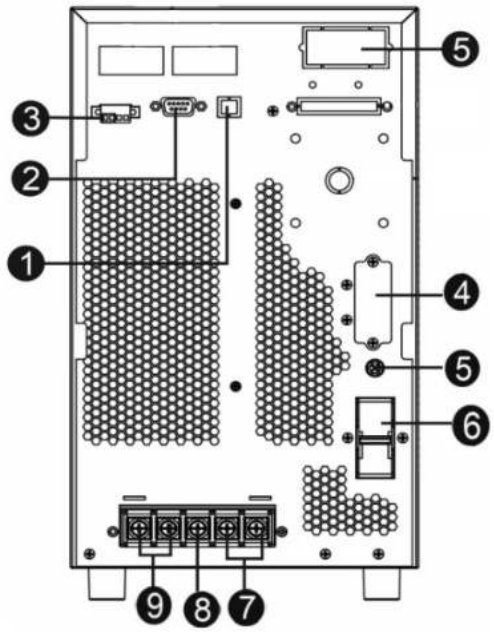
Unpack the package and check the package contents. The shipping package contains:

- One UPS
- One user manual
- One RS-232 cable
- One USB cable
- One Battery cable
- Vertical mounting tripod

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. Rear Panel View

TH: Tower



RH: Rack

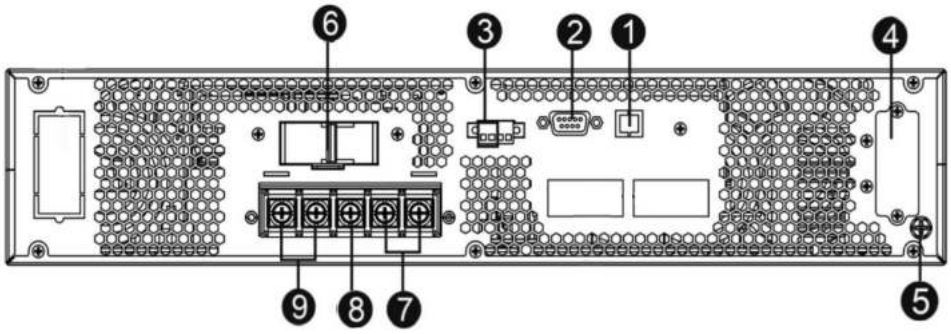


Diagram 1: UPS Rear Panel

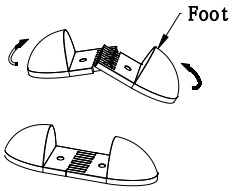
1. Intelligent slot USB communication port
2. Line input circuit breaker/switch RS-232 communication port
3. Emergency power off function connector (EPO)
4. External battery connector
5. External battery ground screw
6. Input power circuit breaker
7. Mains input terminal
8. Grounding terminalL ine input terminals
9. Output terminals

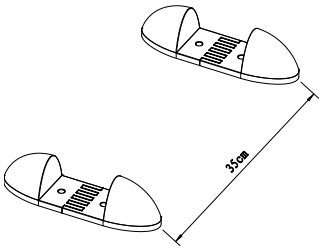
2-3. Rack mountUPS Installation methd

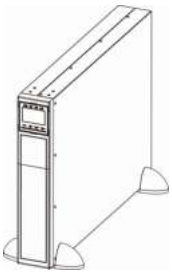
2-3-1 Vertical installation

Assemble two feet as one tower stand shown in step 1. Align the two stands approximately 35cm apart in step 2. Then, put UPS module in the stands as shown in step 3.

Step 1 Step 2 Step 3





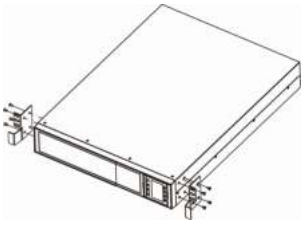


2-3-2 Cabinet mounting

Please follow below steps to mount UPS into 19” rack or rack enclosure.

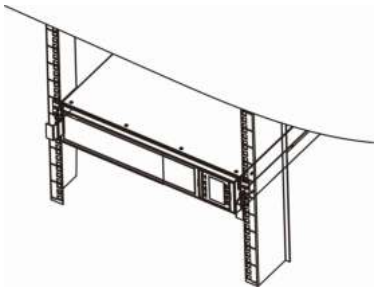
Step 1: Attach mounting ears to the side mounting holes of UPS using the screws provided and the ears should face forward. Please refer to chart 1.

Chart 1



Step 2: Lift the UPS module and slide it into rack enclosure. Attach the UPS module to the rack with screws, nuts and washers (user-provided) through its mounting ears and into the rack rails. Please refer to chart 2.

Chart 2



2-4. UPS Installation

Installation and wiring must be performed in accordance with the local electric laws/regulations and execute the following instructions by professional personnel.

1) Make sure the mains wire and breakers in the building are enough for the rated capacity of UPS to avoid the hazards of electric shock or fire.

NOTE: Do not use the wall receptacle as the input power source for the UPS, as its rated current is less than the UPS's maximum input current. Otherwise the receptacle may be burned and destroyed.

2) Switch off the mains switch in the building before installation.

3) Turn off all the connected devices before connecting to the UPS.

4) Prepare wires based on the following table:

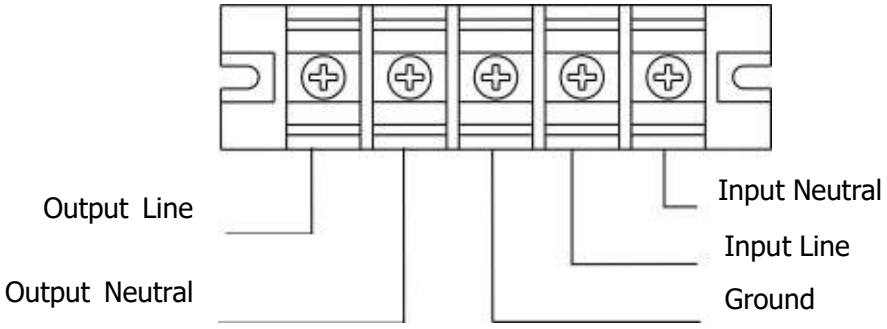
Model	Wiring spec (AWG)			
	Input	Output	Battery	Ground
ES-SU6K	6	6	6	6
ES-SU10K	10	10	10	10

NOTE 1: The cable for ES-SU6K should be able to withstand over 50A current. It is recommended to use 6AWG or thicker wire for safety and efficiency.

NOTE 2: The cable for ES-SU10K should be able to withstand over 63A current. It is recommended to use 10AWG or thicker wire for safety and efficiency.

NOTE 3: The selections for color of wires should be followed by the local electrical laws and regulations.

5) 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!)

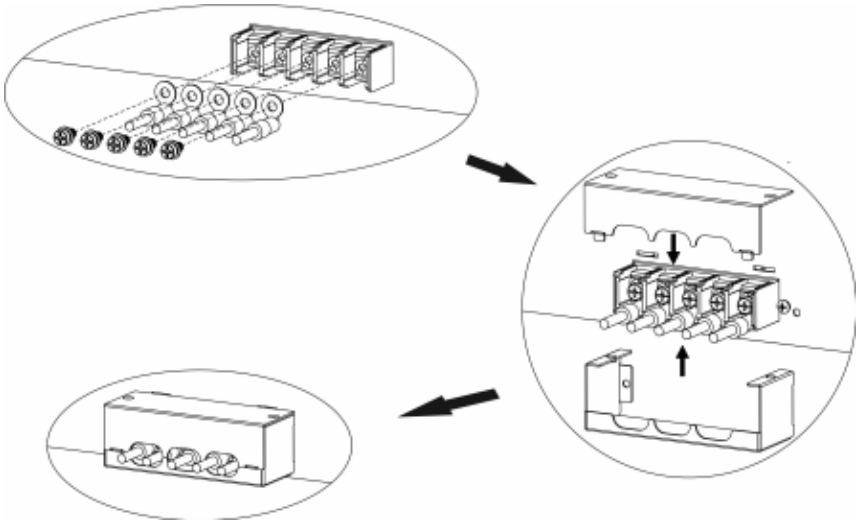


Terminal Block wiring diagram

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.

6) Put the terminal block cover back to the rear panel of the UPS.



Warning:

- Make sure the UPS is not turned on before installation. The UPS should not be turned on during wiring connection.
- Make sure a DC breaker or other protection device between UPS and external battery pack is installed. If not, please install it carefully. Switch off the battery breaker before installation.

Warning:

- For standard battery pack, there is one DC breaker to disconnect the battery pack and the UPS. But for other external battery pack, make sure a DC breaker or other protection device between UPS and external battery pack is installed. If not, please install it carefully. 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 wire current spec, color, position, connection and conductance reliability should be checked carefully.
- Make sure the utility input & output wiring is correct. The wire current spec, color, position, connection and conductance reliability should be checked carefully. Make sure the L/N site is correct, not reverse and short-circuited.

2-5. Software Installation

For optimal computer system protection, install UPS monitoring software to fully configure UPS shutdown. You may insert provided CD into CD-ROM to install the monitoring software. If not, please follow steps below to download and install monitoring software from the internet:

1. Go to the website **http://www.power-software-download.com**
2. Click ViewPower software icon and then choose your required OS to download the software.
3. Follow the on-screen instructions to install the software.
4. When your computer restarts, the monitoring software will appear as an orange plug icon located in the system tray, near the clock.

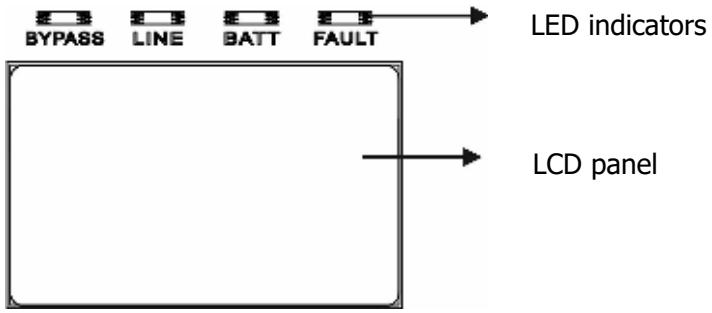
3. Operations

3-1. Button Operation

Button	Function
ON/Enter Button	➢ Turn on the UPS: Press and hold the button more than 0.5s to turn on the UPS. ➢ Enter Key: Press this button to confirm the selection in setting menu.
OFF/ESC Button	➢ Turn off the UPS: Press and hold the button more than 0.5s to turn off the UPS. ➢ Esc key: Press this button to return to last menu in setting menu.
Test/Up Button	➢ Battery test: Press and hold the button more than 0.5s to test the battery while in AC mode, or CVCF mode. ➢ UP key: Press this button to display next selection in setting menu.
Mute/Down Button	➢ Mute the alarm: Press and hold the button more than 0.5s to mute the buzzer. Please refer to section 3-4-9 for details. ➢ Down key: Press this button to display previous selection in setting menu.
Test/Up + Mute/Down Button	➢ Press and hold the two buttons simultaneous more than 1s to enter/escape the setting menu.

* CVCF mode means converter mode.

3-2. LED Indicators and LCD Panel

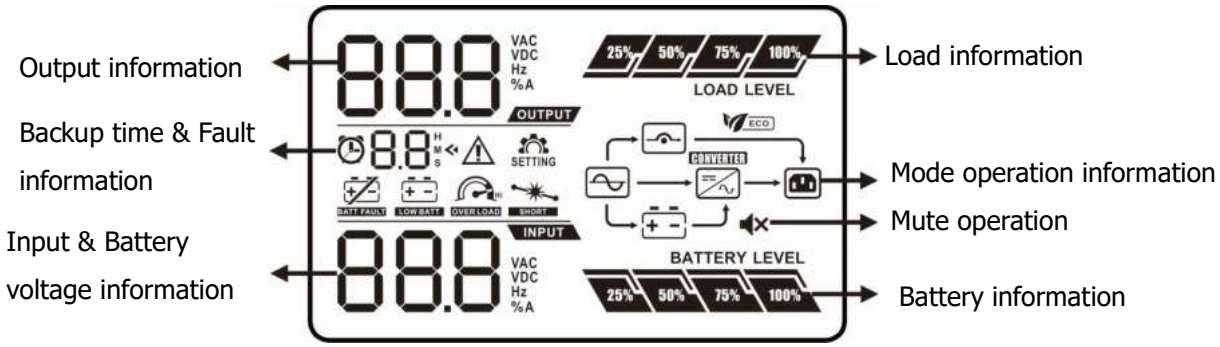


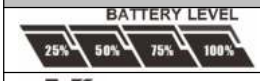
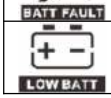
There are 4 LEDs on front panel to show the UPS working status:

Mode / LED	Bypass	Line	Battery	Fault
UPS Startup	●	●	●	●
No Output mode	○	○	○	○
Bypass mode	●	○	○	○
AC mode	○	●	○	○
Battery mode	○	○	●	○
CVCF mode	○	●	○	○
Battery Test	●	●	●	○
ECO mode	●	●	○	○
Fault	○	○	○	●

Note: ● means LED is lighting, and ○ means LED is faded.

LCD Panel:



Display	Function
Backup time information	
	Indicates battery discharge time in numbers. H: hours, M: minutes, S: seconds
Fault information	
	Indicates that the warning and fault occurs.
	Indicates the fault codes, and the codes are listed in details in section 3-9.
Mute operation	
	Indicates that the UPS alarm is disabled.
Output & Battery voltage information	
	Indicates the output voltage, frequency or battery voltage. Vac: output voltage, Vdc: battery 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 output is short.
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 output is working.
Battery information	
	Indicates the Battery capacity by 0-25%, 26-50%, 51-75%, and 76-100%.
	Indicates the battery is not connected.
	Indicates low battery level and low battery voltage.

Input & Battery voltage information	
	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	Yes
Others	Beeping once every second	
Fault		
All	Beeping continuously	Yes

3-4. Use

3-4-1. 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 enter to power on mode for initialization, several seconds later, UPS operates in Bypass mode and supplies power to the loads via the bypass.

   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 0.5s 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.

3-4-2. 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.

2) Press the "ON" button to set up the power supply for the UPS, UPS will enter to power on mode. After initialization UPS will enter to No Output mode, then Press and hold the "ON" button for 0.5s 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.

3-4-3. Connect devices to UPS

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

1) Turn on the UPS first and then switch on the devices one by one, the LCD panel will display total load level.

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 longer than 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 time is longer than acceptable time listed in spec at Battery mode, the UPS will become fault status. At this time, if bypass is enabled and the voltage and frequency in the range of it is set value, 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.

3-4-4. Charge the batteries

1) After the UPS is connected to the utility power and working on the AC mode, the charger will charge the batteries automatically except in Battery mode or during battery self-test.
2) Suggest charging batteries at least 10 hours before use. Otherwise, the backup time may be shorter than expected time（Standard model）.

3-4-5. 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 load failure.
2) In Battery mode, if buzzer sound annoys, users can press the Mute button to disable 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 (990min in LCD setting menu 09), 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)

3-4-6. Test the batteries

1) If you need to check the battery status when the UPS is running in AC mode/CVCF mode/ECO mode, you could press the "Test" button to let the UPS do battery self-test.
2) To keep the system reliable, the UPS can perform the battery self-test periodically while connect the monitoring software.
3) Users also can set battery self-test through monitoring software.
4) If the UPS is at battery self-test, the LCD display and buzzer indication will be the same as at Battery mode except that the battery LED is flashing.

3-4-7. 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 0.5s, 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 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 display panel and UPS is complete off.

3-4-8. Turn off the UPS without utility power supply in Battery mode

1) Turn off the UPS by pressing "OFF" button for at least 0.5s, 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.

3-4-9. Mute the buzzer

1) To mute the buzzer, please press the "Mute" button for at least 0.5s. If you press it again after the buzzer is muted, the buzzer will beep again.
2) All warning alarms can be muted unless the error is fixed. Please refer to section 3-3 for the details.

3-4-10. 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 warning code from LCD panel. Please check the 3-11 warning code table and 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.

3-4-11. 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 3-9 fault code table and 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.

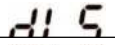
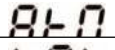
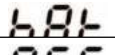
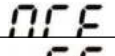
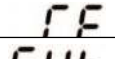
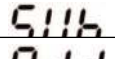
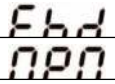
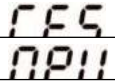
3-4-12. Operation of changing charging current:

1) In bypass mode, press "Test/UP" and "Mute/Down" buttons simultaneous for more than 1s to enter the setting menu.
2) Press the "Mute/Down" button until it shows 17 in parameter 1 and press "Enter" button to adjust the charging current. (Check 3-7 LCD setting for the details.)
3) In the parameter 2, you can select the charging current to 1A/2A/4A/6A/8A by pressing "Test/UP" or "Mute/Down" button. Please confirm the setting by pressing "ON/Enter" button.
4) In the parameter 3, it is to adjust the charging current according to the deviation between the actual charging current and the setting value of the current.
5) For example, you want to have charging current in 4A, but in fact, the charging current is measured only 3.7A. Then, you need to select "+" and change the number to 4 in parameter 3. It means the setting charging current will be added 0.3A as output charging current. Then, confirm this modification by pressing "ON/Enter" button. Now, you may press "Test/UP" and "Mute/Down" buttons at the same time to exit the setting mode.

NOTE 1: Be careful that the maximum charging current should not exceed the maximum battery charging current.

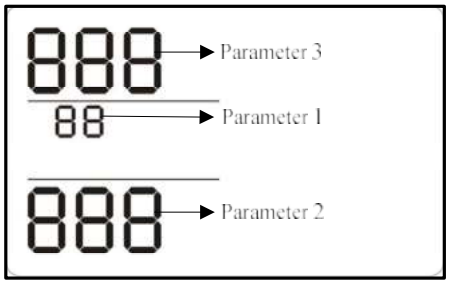
NOTE 2: All parameter settings will be saved only when UPS shuts down normally with battery connection. (Normal UPS shutdown means turning off input breaker in bypass/no output mode).

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
OP.V		Output voltage
PAR		Parallel

3-6. LCD Setting

There are three parameters to set up the UPS. Refer to following diagram.



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.

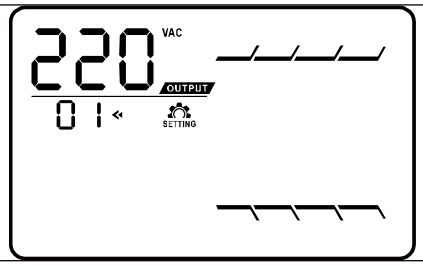
Programs available list for parameter 1:

Code	Description	Bypass/ No output	AC	ECO	CVCF	Battery	Battery Test
01	Output voltage	Y					
02	Output frequency	Y					
03	Voltage range for bypass	Y					
04	Frequency range for bypass	Y					
05	ECO mode enable/disable	Y					
06	Voltage range for ECO mode	Y					
07	ECO mode frequency range setting	Y					
08	Bypass mode setting	Y	Y				

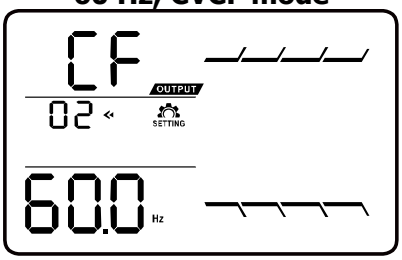
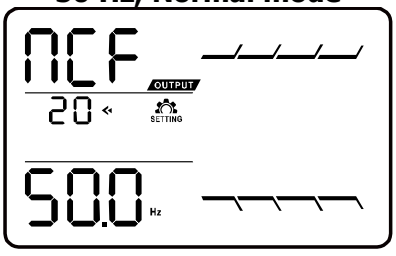
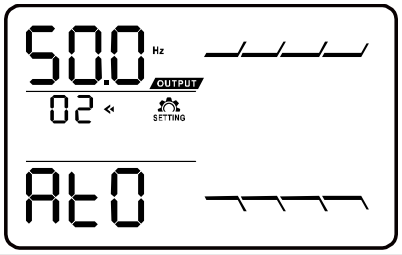
09	Battery backup time setting	Y	Y	Y	Y	Y	Y
10	Reserved	Reserved for future					
11	Reserved	Reserved for future					
12	Hot standby function enable/disable	Y	Y	Y	Y	Y	Y
13	Battery voltage adjustment	Y	Y	Y	Y	Y	Y
14	Charger voltage adjustment	Y	Y	Y	Y	Y	Y
15	Inverter voltage adjustment		Y		Y	Y	
16	Output voltage calibration		Y		Y	Y	
17	Charging current setting	Y	Y	Y	Y	Y	Y

*Y means that this program can be set in this mode.
Note: All parameter settings will be saved only when UPS shuts down normally with internal or external battery connection. (Normal UPS shutdown means turning off input breaker in bypass mode).

- **01: Output voltage**

Interface	Setting
	**Parameter 3: Output voltage** You may choose the following output voltage in parameter 3: **208:** Presents output voltage is 208Vac **220:** Presents output voltage is 220Vac **230:** Presents output voltage is 230Vac **240:** Presents output voltage is 240Vac

- **02: Output frequency**

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 not 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 (not 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.

Note: If the UPS is set to CVCF mode, the bypass function will be disabled automatically.

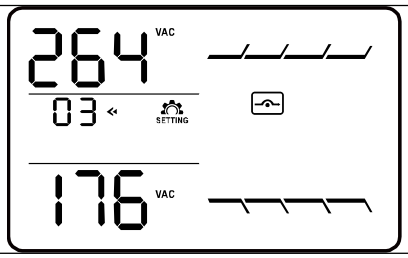
But when a single UPS without parallel function is powered on with mains and before the UPS finished the startup, there will be a few seconds of voltage pulse (same as the input voltage)

on the bypass output.

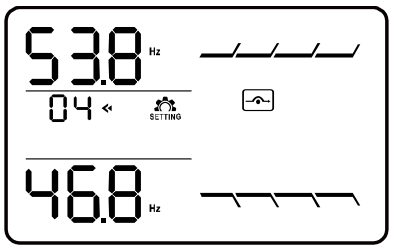
If you need to remove the pulse on this mode to protect your load better, you could contact the dealer for help.

For the UPS with parallel function, this pulse situation won't happen.

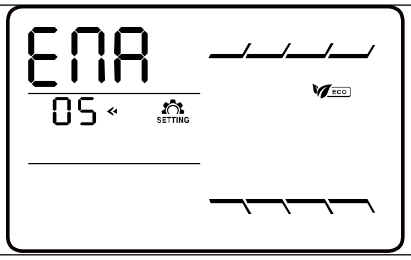
- **03: Voltage range for bypass**

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.

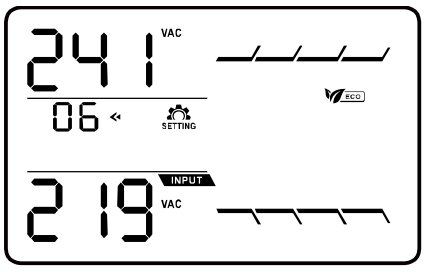
- **04: Frequency range for bypass**

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.

- **05: ECO mode enable/disable**

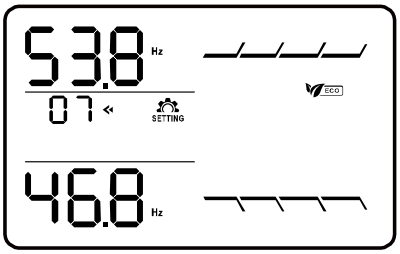
Interface	Setting
	**Parameter 3:** Enable or disable ECO function. You may choose following two options: **DIS:** disable ECO function **ENA:** enable ECO function If ECO function is disabled, voltage range and frequency range for ECO mode still can be set, but it is meaningless unless the ECO function is enabled.

- **06: Voltage range for ECO mode**

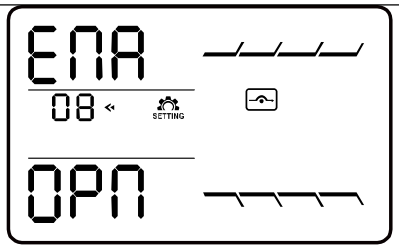
Interface	Setting
	**Parameter 2:** Low voltage point in ECO mode. The setting range is from 5% to 10% of the nominal voltage. **Parameter 3:** High voltage point in ECO mode. The setting range is from 5% to 10% of the nominal voltage.

- **07: Frequency range for ECO mode**

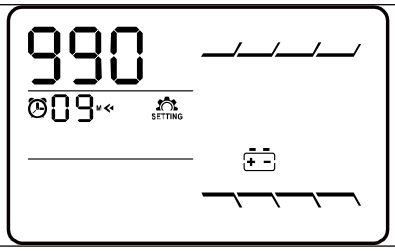
Interface	Setting

	**Parameter 2:** Set low frequency point for ECO mode. 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 48.0Hz/58.0Hz. **Parameter 3:** Set high frequency point for ECO mode. 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 52.0Hz/62.0Hz.

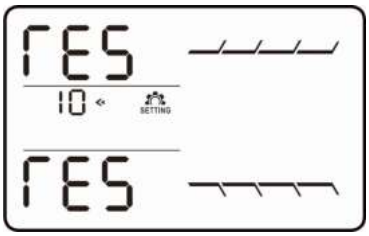
- **08: Bypass mode setting**

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:** **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.

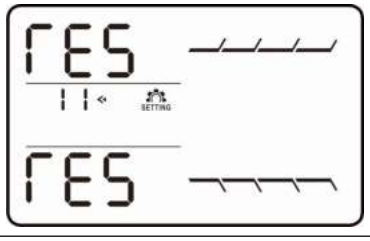
- **09: Battery backup time setting**

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

- **10: Reserved**

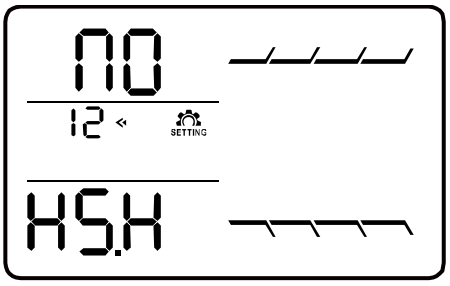
Interface	Setting
	Reserved

- **11: Reserved**

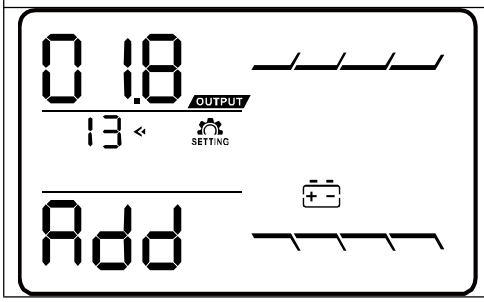
Interface	Setting
	Reserved

- **12: Hot standby function enable/disable**

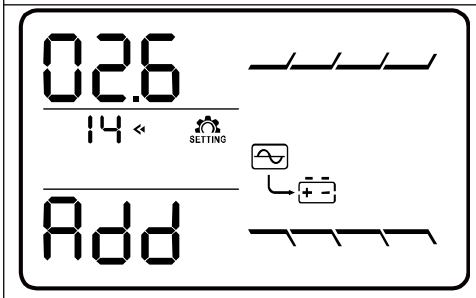
Interface	Setting

	**Parameter 2: HS.H** Enable or disable Hot standby function. You may choose following two options in **Parameter 3**: **YES:** Hot standby function is enabled. It means that the current UPS is set to host of the hot standby function, and it will restart after AC recovery even without battery connected. **NO:** Hot standby function is disabled. The UPS is running at normal mode and can't restart without battery

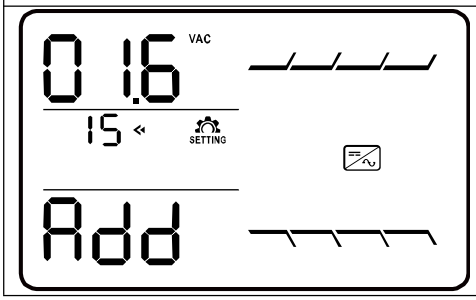
- **13: Battery voltage adjustment**

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

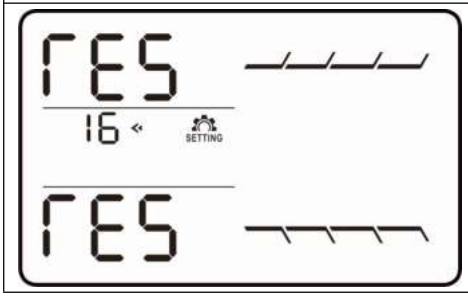
- **14: Charger voltage adjustment**

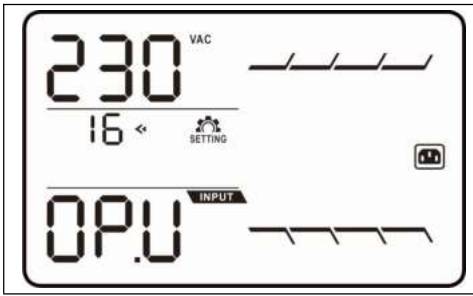
Interface	Setting
	**Parameter 2:** you may choose **Add** or **Sub** to adjust charger voltage **Parameter 3:** the voltage range is from 0V to 9.9V, the default value is 0V. **NOTE:** *Before making voltage adjustment, be sure to disconnect all batteries first to get the accurate charger voltage. *We strongly suggest to use the default value (0). Any modification should be suitable to battery specifications.

- **15: Inverter voltage adjustment**

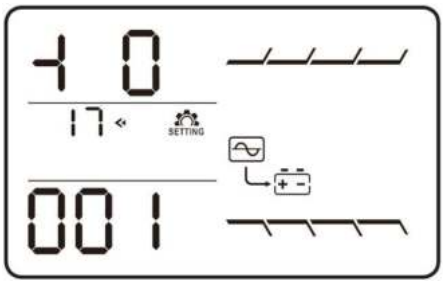
Interface	Setting
	**Parameter 2:** you may choose **Add** or **Sub** to adjust inverter voltage **Parameter 3:** the voltage range is from 0V to 6.4V, the default value is 0V.

- **16: Output voltage calibration**

Interface	Setting
	When the output voltage can not be detected(less than 50VAC), this menu will be reserved, "rES" will be displayed in parameter 2 and parameter 3.

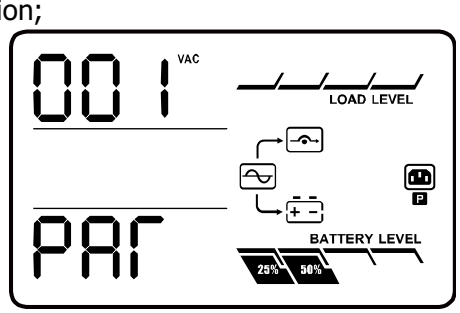
	**Parameter 2:** it always shows **OP.V** as output voltage. **Parameter 3:** it shows the internal measurement value of the output voltage, and you can calibrate it by pressing **Up** or **Down** according to the measurement from an external voltage meter. The calibration result will be effective by pressing **Enter**. The calibration range is limited within +/-9V. This function is normally used for parallel operation.

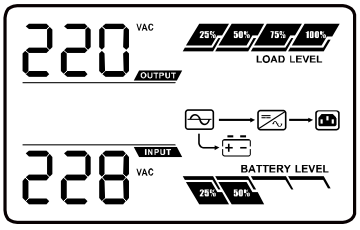
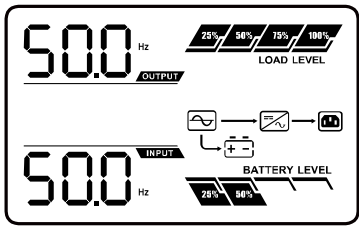
- **17: Charging current setting**

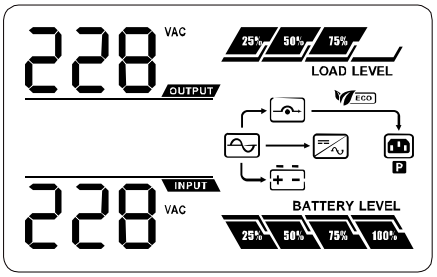
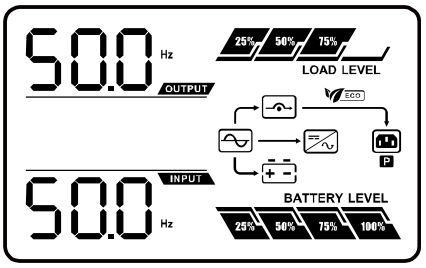
Interface	Setting
	**Parameter 2:** Set up charging current of the charger**:** Set the charging current of the charger, you can choose one of them: 1A/2A/4A/6A/8A. **Parameter 3:** Calibrate the charging current. If there is deviation between setting current and real measured current, please use this parameter to calibrate the charging current. **± 0~± 5:** You may choose **'+'** as **add** or **'-'** as **Sub** to calibrate charging current. This setting number is the first number after the decimal point. The calibrated formula is listed as below: Setting charging current = "real measured current" + or – "value setting in parameter 3" For example, if setting charging current is 4A, but real current is detected as 3.7A, please set up calibrated current as + 3. Setting charging current 4A = real measured current 3.7A + 0.3A

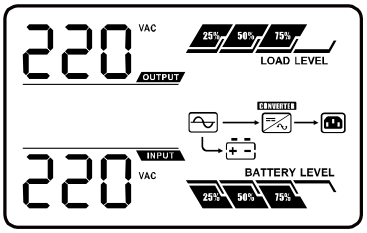
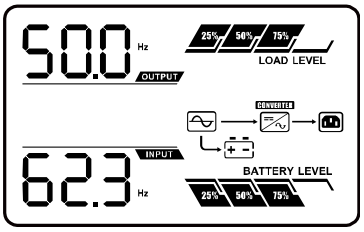
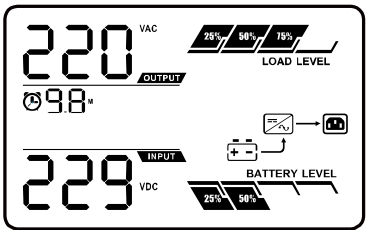
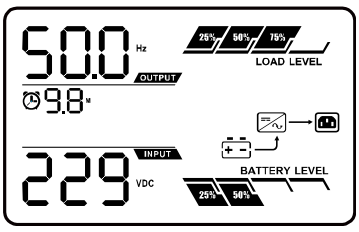
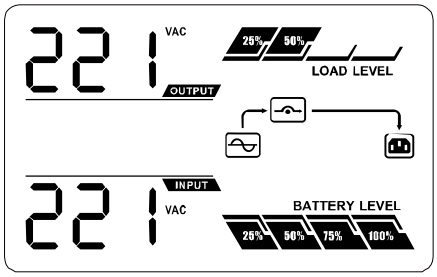
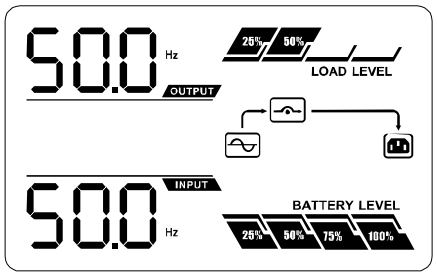
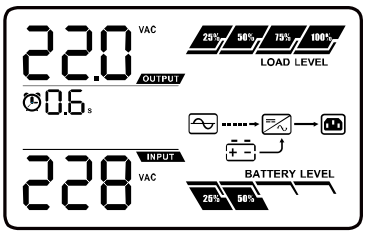
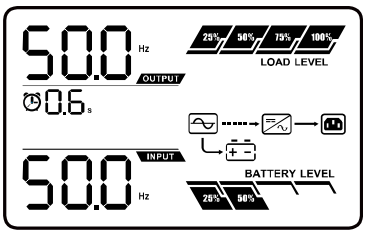
3-7. Operating Mode/Status Description

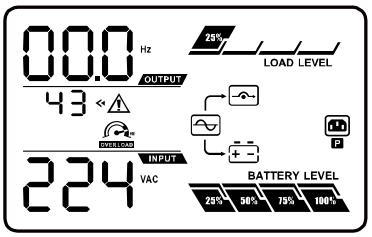
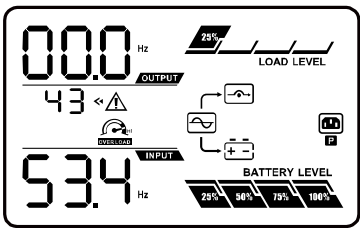
If parallel UPS systems are successfully set up, it will show one more screen with "PAR" in parameter 2 and be assigned number in parameter 3 as below parallel screen diagram. The master UPS will be default assigned as "001" and slave UPSs will be assigned as either "002" or "003". The assigned numbers may be changed dynamically in the operation;



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		
ECO mode	Description	When the input voltage is within voltage regulation range and ECO mode is enabled, UPS will bypass voltage to output for energy saving.	

	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 0.5s. 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 messages in LCD panel.	

	LCD display		

3-8. Fault Code

Fault event	Fault code	Icon	Fault event	Fault code	Icon
Bus start failure	01	None	Battery SCR short circuited	21	None
Bus over	02	None	Inverter relay short circuited	24	SHORT
Bus under	03	None	Charger short circuited	2a	None
Bus unbalance	04	None	Can communication fault	31	None
High Inverter voltage	12	None	Over temperature	41	None
Low Inverter voltage	13	None	CPU communication failure	42	None
Inverter output short circuited	14	SHORT	Overload	43	OVER LOAD
Negative power fault	1A	None	Battery turn-on failure	6A	None
Inverter over current	60	None	PFC current failure in battery mode	6B	None
Inverter current detection error	6D	None	Bus voltage changes too fast	6C	None
Transformer over temperature	77		SPS 12V abnormal	6E	None

3-9. Warning Indicator

Warning	Icon (flashing)	Alarm
Overload	⚠ OVER LOAD	Beeping twice every second
Battery unconnected	⚠ LOW BATT	Beeping every second
Over charge	⚠ OVER LOAD	Beeping every second
EPO enable	⚠ BATT FAULT	Beeping every second
Fan failure/Over temperature	⚠ BATTERY LEVEL 25% 50% 75% 100%	Beeping every second
Charger failure	⚠ EP	Beeping every second
I/P fuse broken	⚠	Beeping every second
Overload 3 times in 30min	⚠	Beeping every second

3-10 Warning Code

Warning code	Warning event	Warning code	Warning event
01	Battery unconnected	10	L1 IP fuse broken
07	Over charge	21	Line situations are different in parallel system
08	Low battery	22	Bypass situations are different in parallel system
09	Overload	33	Locked in bypass after overload 3 times in 30min

0A	Fan failure	3A	Cover of maintain switch is open
0B	EPO enable	3D	Bypass unstable
0D	Over temperature	3E	Boot loader is missing
0E	Charger failure	42	Over-temperature on transformer
44	Failure on parallel redundancy	45	Overload on parallel redundancy

4. Trouble Shooting

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 LOW BATT 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 OVER LOAD 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 OVER LOAD 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.
Fault code is shown as 01, 02, 03, 04, 11, 12, 13, 14,1A, 21, 24, 35, 36, 41, 42 or 43 on LCD display and alarm beeps continuously.	A UPS internal fault has occurred. There are two possible results: 1. The load is still supplied, but directly from AC power via bypass. 2. The load is no longer supplied by power.	Contact your dealer.
Battery backup time is shorter than nominal value	Batteries are not fully charged	Charge the batteries for 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.	Fan is locked or not working; or the UPS temperature is too high.	Check fans and notify dealer.

5. Storage and Maintenance

5-1. Storage

Before storing, charge the UPS at least 7 hours. Store the UPS covered and upright in a cool, dry location. During storage, recharge the battery in accordance with the following table:

Storage Temperature	Recharge Frequency	Charging Duration
-25°C - 40°C	Every 3 months	1-2 hours
40°C - 45°C	Every 2 months	1-2 hours

5-2. Maintenance

 The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.

 Even after the unit is disconnected from the mains, components inside the UPS system are still connected to the battery packs which are potentially dangerous.

 Before carrying out any kind of service and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exists in the terminals of high capability capacitor such as BUS-capacitors.

 Only persons are adequately familiar with batteries and with the required precautionary measures may replace batteries and supervise operations. Unauthorized persons must be kept well away from the batteries.

 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.

 Batteries may cause electric shock and have a high short-circuit current. Please remove all wristwatches, rings and other metal personal objects before maintenance or repair, and only use tools with insulated grips and handles for maintaining or repairing.

 When replace the batteries, install the same number and same type of batteries.

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

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

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

 Do not disassemble the UPS system. For UPS systems equipped with filters, it is important to regularly inspect the surface for dust accumulation, damage, or blockages. Additionally, ensure that the vents are not obstructed. Clean the filters on a monthly basis, and plan to replace them every 1 to 2 years, depending on the level of wear and tear observed.

目录

1. 安全性和电磁兼容性(EMC)相关注意事项

请先详阅使用手册和安全指示后，再安装及使用本产品！

1-1. 运送和存放

 在需要搬运本台 UPS 系统时，务必先以原包装材料包好，以防止并减缓意外的冲撞。如外包或 UPS 外观有破损，请与厂家联系，经厂家评估后再决定能否直接安装使用。

 此 UPS 产品存放的场所必须是干燥且通风良好、温度保持在-20℃至+40℃之间，湿度控制在10%-90%无凝结。

1-2. 准备

 本 UPS 系统在由寒冷环境直接送入室内等温暖环境时，可能会有结露情形。此时，务必等到完全干燥后，才可进行安装。为此，在移至安装场所后，UPS 开机之前，必须先让环境温度回暖至 0℃以上，并维持 2 小时以上。

 本 UPS 系统绝不可安装在海洋近岸非密闭环境，缺乏温湿度调控的场所，例如：近海渔业加工车间、盐场操作间等半开放生产环境、无空调或除湿设备的仓库、半开放式机房、沿海露天配电柜、户外通信基站等。

 本 UPS 系统绝不可安装在导电性粉尘、高浓度腐蚀性气体、盐雾沉积或易形成易燃易爆气体混合物的场所。

 本 UPS 系统绝不可安装在邻近高热辐射源或存在强电磁辐射源的场所。

 本 UPS 系统绝不可安装在霉菌、昆虫/寄生虫滋生风险的场所。

 本 UPS 系统绝不可安装在剧烈震动、突发冲击、持续摇摆或地震活跃等风险的场所。

1-3. 安装

 绝不可将可导致本UPS过载的设备(如大功率电机类设备)连接到本UPS的输出插座或端子。

 电源线等线路在布在线应避免在会遭到踩踏或发生绊倒的地方。

 不可阻塞或遮蔽此UPS外壳上的通风孔。本UPS安装的场所必须通风良好，并且确认UPS主机周围有保留足够的通风空间。

 本 UPS 设有接地端子，用于在系统安装完成最后，供外接的UPS电池室连上而构成等电位接地。

 本 UPS 的安装仅能由专业维修人员实施。

 在屋内布线安装中，应加入短路防护断路器等之适当的断路设备。

 在屋内布线安装中，应配置一个专用的紧急切换装置，用来在需要时能停止 UPS 继续对负载设备供电，而且不受限于当时 UPS 的运作模式。

⚠ 先完成接地后，再连上市电供电端子。

⚠ 相关安装和布线必须遵照当地相关电工法规之规定。

1-4. ⚠连接注意事项

- 依据安全规范EN-IEC 62040-1，所加装的隔离装置要具备《反向馈电保护》的系统，作为连接器；来预防市电异常时，在市电输入端可能出现危险电压的状况。UPS 内部有标准反馈保护。如果要在 UPS 外部添加外部反馈保护。请在工作前根据下图隔离 UPS。隔离装置必须能够承载 UPS 输入电流。

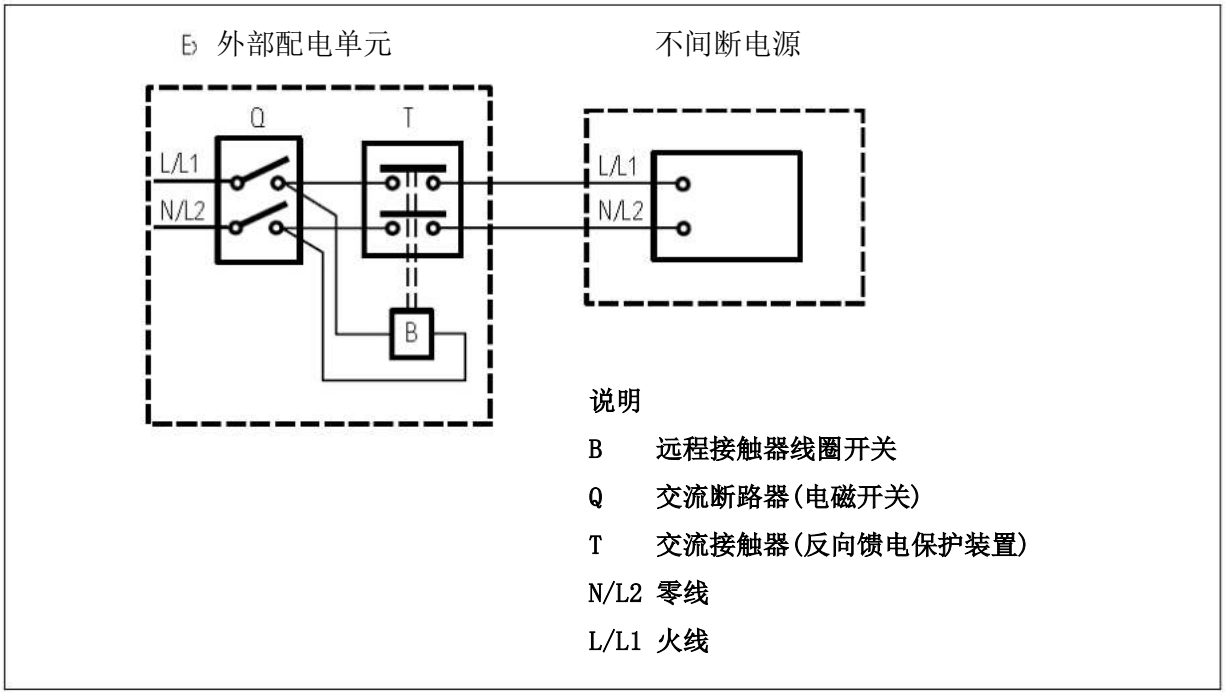


图 1: 外部反馈电保护接线

⚠ 从《反向馈电保护》装置到不间断电源系统的线路，是不可以分流导入；否则视为违反安全规定。

- 警告标语的贴纸应放置在距离安装设备远处的所有主电源开关上，以提醒电器维护人员；不间断电源系统是包含在电路中。其标语须包含以下文字内容：

在对此电路接线进行维修前

- **先隔开不断电系统 (UPS)**
- **然后，在包括保护用接地端子等之各端子间进行危险电压测试**

 **反向馈电危险**

- 此不间断供电系统必须要接地。
- 此不间断供电系统的输入电源端须为单相且已接地。

警告

高漏电流 !!在连接电源前请务必优先连接地线

- 不建议此不间断供电系统用于维持生命相关的应用仪器，因为当此机器发生错误时有可能会造成这些仪器发生故障，请不要在易燃气体与空气、氧气或一氧化二氮存在环境下使用本机器。
- 请确保此不间断供电系统的输出地线端子确实连接到地线。
- 此不间断供电系统会连接到一个直流电源(即电池)，所以即使此UPS尚未连接到市电，输出端子台仍有可能带电。

1-5. 操作使用

 无论何时绝不可断开 UPS 的接地线或市电连接端子，以免包含对此UPS系统和负载设备的接地保护失效。

 此 UPS 系统内部具有电流源 (电池)。即使是未连接于市电供电端子，其输出插座或端子台仍可能带电。

 为了能完全断开此 UPS 系统，请先按 <OFF>钮后，再由主电源断开。

 防止液体或其他异物进入UPS系统内部。

 本UPS系统的操作可由没有经验的人士实施。

1-6. 标准

*** 安全性**	
IEC/EN 62040-1	
*** EMI**	
传送放射.....:IEC/EN 62040-2	Category C3
电磁幅射.....:IEC/EN 62040-2	Category C3
***EMS**	

ESD.....:IEC/EN 61000-4-2	Level 2/ Level 3:Contact/ Air Discharge
RS..... ...:IEC/EN 61000-4-3	Level 3
EFT..... :IEC/EN 61000-4-4	Level 3
SURGE..... :IEC/EN 61000-4-5	Level 2
CS..... :IEC/EN 61000-4-6	Level 3
工频磁场..... :IEC/EN 61000-4-8	Level 4
低频信号.....:IEC/EN 61000-2-2	
警告：本产品是第二环境非民用的商业和工业用产品，为防止干扰可能需要采取额外的预防措施。	

2. 安装和操作使用

2-1. 开箱检查

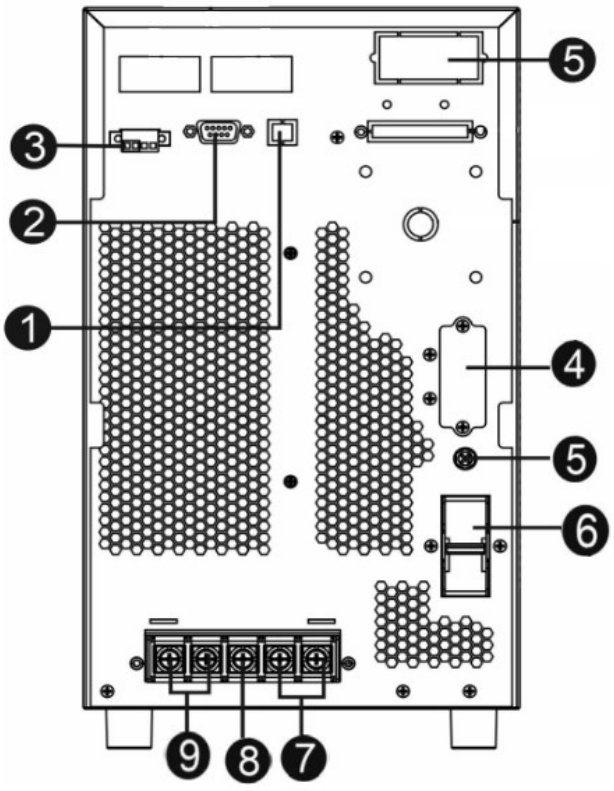
请打开包装，检查如下物品是否齐全。包装所含项目如下：

- UPS 主机一台
- 使用手册一本
- RS-232 连接线一条
- USB 连接线一条
- 电池连接线一条
- 立式安装脚架（仅机架式）

注：在安装之前，请先检视包装内容，确认无任何疑似破损或损坏的异状。如有任何破损或缺件时，请勿使用本产品，而应立即通知运送者和您的经销商。请收好原包装材料，以备未来需要时使用。

2-2. 背面面板

TH：塔式：



RH：机架式

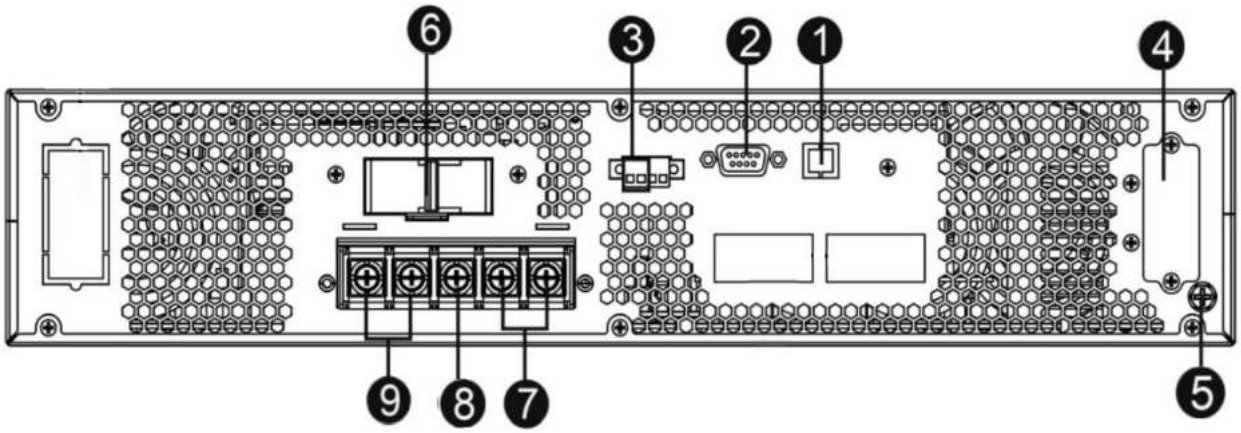


图 1: UPS 背板图

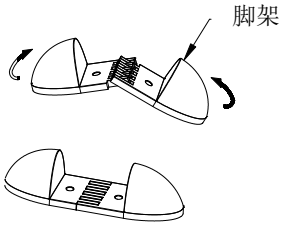
1) USB 通讯端口
2) RS-232 通讯端口
3) 紧急关机功能接口
4) 外接电池接口
5) 外接电池接地螺丝
6) 输入电源断路器
7) 市电输入端子
8) 接地端子
9) 输出端子

2-3. 机架式 UPS 安装方式

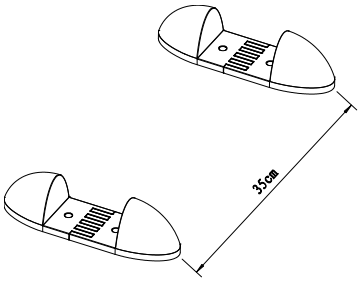
2-3-1 立式安装

如下图步骤 1 安装 2 组脚架，将组装好的脚架平行相距约 35cm，如步骤 2。最后按照步骤 3 将 UPS 安放。

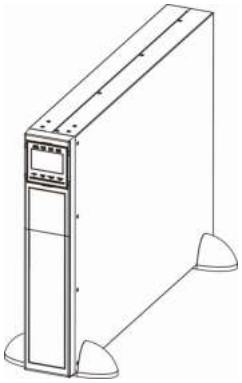
步骤 1



步骤 2



步骤 3

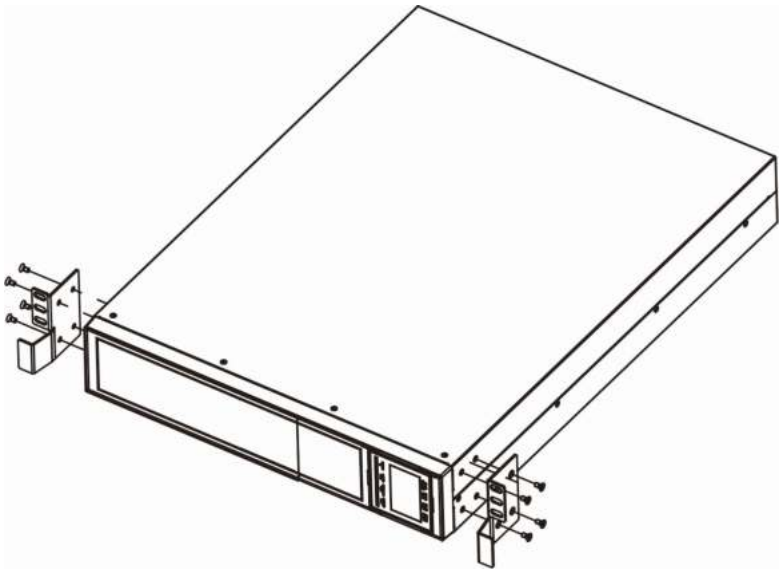


2-3-2 机柜安装

请按照以下步骤将 UPS 锁于 19 寸的机架上。

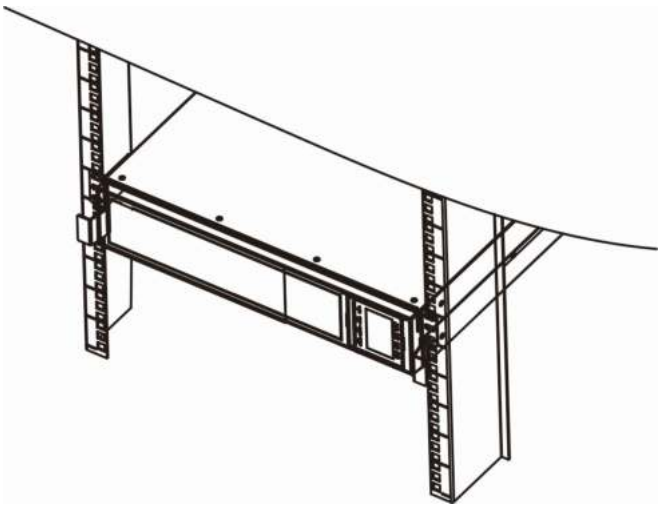
步骤 1: 将机架锁孔附加于 UPS 两侧孔洞中并使用附件螺丝锁紧，请注意机架锁孔须朝外，请见图 1。

图 1



步骤 2: 将 UPS 机台抬起并滑入机架中。将螺丝、螺帽、垫圈(附件)对齐锁孔以将 UPS 机台固定于机架上，请见图 2。

图 2



2-4. UPS 安装

安装和布线均需符合当地的电工法规，并且，由专业电工人员执行下列指示事项：

7) 确认建筑配电线路和断路器足以支持 UPS 的容量，以避免触电或火灾意外

注： 如果屋内插座的额定电流量小于 UPS 的最大电流量的话，绝对不可将 UPS 系统插上此插座；否则，该

插座可能会烧毁。

8) 在安装前，先关闭屋内的电源总开关。

9) 所有负载设备均需先关闭电源后，才能插上 UPS 系统。

10) 依照如下对照表来准备线材：

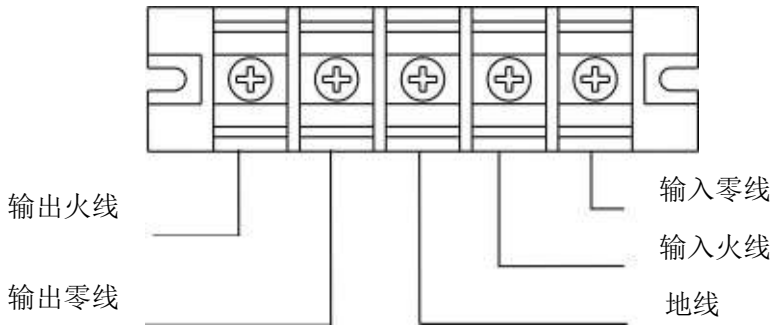
型号	布线规格(mm^2)			
	输入	输出	电池	接地
ES-SU6K	6	6	6	6
ES-SU10K	10	10	10	10

注 1: 用于 ES-SU6K 的线材必须使用 6 mm^2 或更高规格的线材，以兼顾安全和效率。

注 2: 用于 ES-SU10K 的线材必须使用 10 mm^2 或更高规格的线材，以兼顾安全和效率。

注 3: 线材的颜色必须遵照当地的电工法规。

11) 取下在 UPS 背面面板上的端子台保护盖。接着，依照如下端子台图来布线： (在布线时，请先连接接地线。在拆除布线时，则将接地线留到最后!)



端子布线图

注 1： 确认在端子上的所有线材均已锁紧而固定。

注 2：必要时请在输出端子和负载设备之间设置输出断路器，并且，请确认该断路器具有规格上适当的防漏电功能。

12) 将端子台保护盖装回原位。

警告：

a) 在安装前，请确认 UPS 尚未开启。 UPS 不可在完成安装之前开启电源。

- 请确认在 UPS 和外接电池之间设有 DC 断路器或其他相同功能的保护设备。如果没有，在安装外接电池时请格外小心。在有断路器时，请先断开电池断路器，再进行安装。

警告：

- 在标准电池套件上，设有一个 DC 断路器用来断开该电池套件和 UPS。不过，对于除此之外的外接

电池，则请确认在 UPS 和外接电池之间是否设有 DC 断路器或其他相同功能的保护设备。如果没有，在安装外接电池时请格外小心。在有断路器时，请先断开电池断路器，再进行安装。

注： 安装标准电池套件时，请先将该套件的断路器设定成<OFF>后，再进行安装。

- 请确认背面面板上标示的电池电压。如果您要改变电池套件的数目，请记得要同时修改设定。如果连接的电池电压有误，UPS 可能会损坏而无法修复；因此，请务必确认电池电压符合 UPS 规格。
- 请务必要看清外接电池端子台上的正负极标示，，以正确地连接电池的正负极；否则，一旦接错正负极，UPS 可能会损坏而无法修复。
- 请确认接地线的配线正确。尤其，需详细检查并确认配线的电流规格、颜色、位置、接线、和电导可靠性符合要求。
- 请确认市电输入和输出的配线正确无误。尤其，需详细检查并确认配线的电流规格、颜色、位置、接线、和电导可靠性符合要求。请检查并确认火线和中线已正确连接，没有接反或短接的情形。

2-5. 软件安装

为了提供计算机最完善的保护，请安装 UPS 监控软件，完成有关 UPS 的相关设定。您可将本产品随附的光盘片插入您的光驱内，藉此安装监控软件。如果光盘片没有附在包装里的话，请按如下步骤，透过因特网下载安装监控软件：

1. 请连上网站 **http://www.power-software-download.com**
2. 点选<ViewPower>软件图标，选择您的操作系统后，开始下载软件。
3. 依屏幕上出现的指示，开始安装软件。
4. 在计算机重新启动后，监控软件的橘色插头形状的插头会出现在靠近时钟的工具栏上。

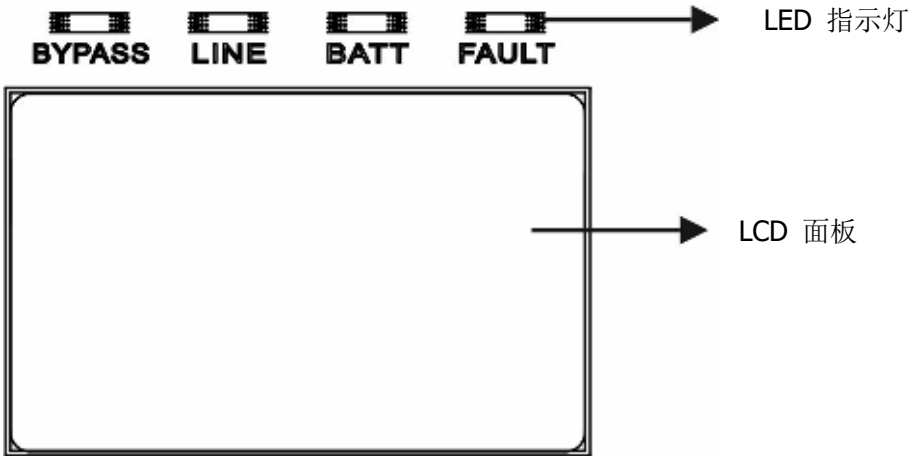
3. 使用操作

3-1. 按钮操作

按钮	功能说明
开启/输入钮 (ON/Enter)	➢ 开启 UPS： 按下此钮不放超过 0.5秒，UPS便会通电。 ➢ 输入钮：在选单画面进行设定时，按此钮便可确认您的选项。
关闭/离开钮 (OFF/ESC)	➢ 关闭 UPS：按下此钮不放超过 0.5秒，UPS便会断电而停止运作。 ➢ 离开键：在选单画面进行设定时，按此钮便可回到上一层选单。
测试/向上钮 (Test/Up)	➢ 电池测试： 在AC模式或CVCF模式中，藉由按下此钮不放超过 0.5秒，便可对电池进行测试。 ➢ 向上键： 在选单画面中，按下此钮可显示下一个选项。
静音/向下钮 (Mute/Down)	➢ 关闭警音： 按下此钮不放超过 0.5秒，可关闭警音。详细内容请参阅第3-4-9节。 ➢ 向下键：在选单画面中，按下此钮可显示上一个选项。
测试/向上钮 + 静音/向下钮	➢ 同时按下这两个钮不放1秒以上，便可开启或结束设定选单。

* CVCF 模式是指变频模式。

3-2. LED 指示灯和 LCD 面板

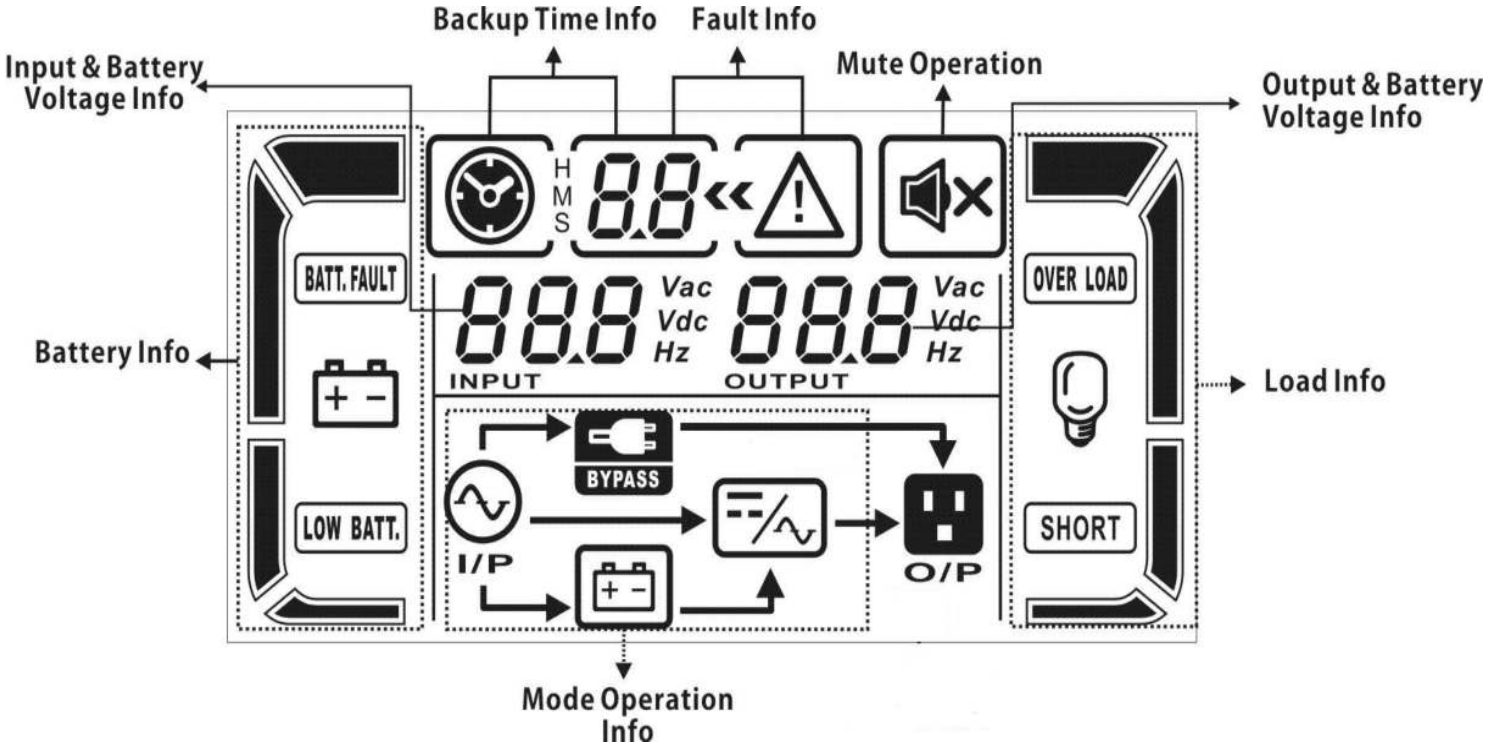


在前置面板上设有 4 个 LED 灯，用来显示 UPS 运作状态：

状态 / LED	Bypass	Line	Battery	Fault
UPS 起始	●	●	●	●
无输出	○	○	○	○
旁路模式	●	○	○	○
AC 模式	○	●	○	○
电池模式	○	○	●	○
CVCF 模式	○	●	○	○
电池测试	●	●	●	○
ECO 模式	●	●	○	○
发生错误	○	○	○	●

注：● 代表指示灯亮灯，而○ 表示指示灯熄灭。

LCD 面板:



显示	功能
备援时间信息	
H M S 8.8	以数字显示备援时间。 H: 小时，M: 分钟， S: 秒钟
错误信息	
« !	显示已发生警示和错误。
8.8	显示该警示和错误的代码；代码所代表的意义如第 3-9 节所示。
静音	
	显示UPS的警音功能已经停用。
输出和电池的电压信息	
88.8 Vac Vdc Hz OUTPUT	显示输出电压、频率或电池电压。 Vac: 输出电压；Vdc: 电池电压；Hz: 频率
负载信息	
	以等级来显示目前的负载量，分成0-25%、26-50%、51-75%、和 76-100%。
OVER LOAD	显示已过载。
SHORT	显示负载端或 UPS 输出端发生短路。
其他运作信息	
I/P	显示 UPS 系统连上主电源。
	显示电池正在供电中。
BYPASS	显示已进入旁路功能模式。

ECO	显示已进入 ECO 模式。
	显示变频电路运作中。
O/P	显示目前输出插座输出中。
电池信息	
	以等级来显示目前的电池电量， 分成 0-25%、26-50%、 51-75%、和 76-100%。
BATT. FAULT	显示电池发生故障。
LOW BATT.	显示电池电量及电压已偏低。
Input & Battery voltage information	
88.8 Vac Vdc Hz INPUT 12	显示输入电压或频率，或是电池电压。 Vac: 输入电压；Vdc: 电池电压；Hz: 输入频率

3-3. 警音

说明	警音状态	静音
UPS 状态		
旁路模式	每 2 分钟响一声	可
电池模式	每 4 秒响一声	
错误模式	持续鸣响	
警示		
过载	每秒响两声	可
其他	每秒响一声	
错误		
所有状况	持续鸣响	可

3-4.使用

3-4-1. 在市电接通的情况下开启 UPS 电源（AC 模式)

1) 在正确连接电源供应器后，先将电池套件的断路器切换至<ON>位置，再将输入断路器切换至<ON>。如此一来，冷却风扇应以开始转动，同时 UPS 以旁路方式对负载进行供电，即 UPS 在此是处在旁路模式进行供电。

注： 当在 UPS 处于旁路模式下接通上述输入断路器时，UPS 的输出电压是直接来自市电。换言之，在旁路模式下，UPS 并未对负载提供任何保护。为了保护您的设备，您需要开启 UPS；相关开启操

作请参阅如下步骤。

2) 按下不放<ON>钮 0.5 秒，便可开启 UPS，而此时您会听到一声哔声。
3) 过了数秒，UPS 将会进入 AC 模式。此时，如果市电不正常的话，UPS 会直接进入电池模式，避免对负载的供电中断。

注： UPS 在电池模式中，会在耗尽电池电力后自动关闭。 接着，在市电复原后，UPS 会自动重新启动而进入 AC 模式。

3-4-2. 在无市电的情况下开启 UPS (电池模式)

1) 请确认电池套件的断路器设定在<ON>位置。
2) 按下不放<ON>钮 0.5 秒，UPS 会进入无输出状态，然后再按压 0.5 秒开启 UPS，而此时您会听到一声哔声。
3) 数秒之后，UPS 便会开启并进入电池模式。

3-4-3. 连接负载至 UPS

在 UPS 开启后，您便可将您的设备连接至 UPS。

1) 先开启 UPS，再逐一开启您的设备；此时，LCD 面板会显示当前的负载等级。
2) 如果有需接上例如打印机等之电感性负载的话，则需先计算这些负载运作时的电流，以确认 UPS 容量是否足以支持这样的负载，因为一般这类负载所需的电力会超过 UPS 所能支持的程度。
3) 当 UPS 过载时，警音会每秒响两声。
4) 当 UPS 过载时，请立即移除部分负载。连上 UPS 的总负载量建议限制在 UPS 正常支持规格的 80% 以下，以避免发生过载，进而确保系统安全。
5) 在市电模式中，如果 UPS 发生过载的次数超过规格上容许的次数频率的话，UPS 会自动进行旁路模式。在过载的设备移除后，UPS 会回到市电模式。另一方面，如果过载次数超过规格的情形是发生在电池模式的话，UPS 会进入错误发生状态。在此情况中，如果旁路功能设定成启用的话，UPS 会以旁路方式对负载供电。然而，如果旁路功能未设定启用或是输入电力超出旁路功能支持范围的话，UPS 会直接停止供电。

3-4-4. 电池充电

1) 除了在电池模式或电池测试时之外，从 UPS 连接上市电起，充电器便自动开始对电池充电。
2) 建议先充电至少 10 小时后，再开如使用 UPS。否则，有可能因充电不足，导致电力备援时间不如原先预期。

3-4-5. 电池模式操作

1) 当 UPS 在电池模式时，依照电池所剩电力，警音鸣响的方式和间隔会有所不同：电池所剩电力高于 25%时，每 4 秒响一声哔； 当电池电压降至警戒程度时，警音间隔会缩短成每秒一声，警告使用者电池电量已偏低且 UPS 即将自动关机。在后者情况中，使用者可藉由关闭部份次要设备来暂时解除自动关机警报，并藉此延长电池备援时间。 如果当时没有其他设备可以关机来延长电池供电时间的话，您必须即刻开始关闭所有需要保护的设备或储存重要数据，以避免突然断电造成设备故障或数据消失。
2) 在电池模式中，如果警音恼人的话，可藉由按下<Mute>钮来关闭警音。
3) 长延机机种的电力备援时间长短取决于外接电池的容量。
4) 电池备援时间会依环境温度和负载设备种类而有所差异。

5) 当电力备援时间设定在 16.5 小时 (由 LCD 面板设定之 990)时，在 UPS 以电池供电 16.5 小时后，便会自动关机以保护电池。此电池放电保护功能可由 LCD 面板来启用或停用 (细节请参阅<第 3-7 节 LCD 设定>乙节)

3-4-6. 电池测试

1) 在 UPS 处在 AC 模式/CVCF 模式/ECO 模式的情况下，如果有检测电池状态的需要时，您可按<Test>钮，让 UPS 进行电池自我测试。
2) 为了确保系统的可靠性，UPS 会定期执行电池的自我测试。
3) 用户也可利用监控软件来设定电池自我测试的执行方式。
4) 当 UPS 进行电池自我测试时，除了电池 LED 指示灯闪烁之外，LCD 指示灯和警音的情形概与电池模式相同。

3-4-7. 在市电供电的 AC 模式下关闭 UPS

1) 按下 UPS 的<OFF>钮 0.5 秒，便可关闭 UPS 的变频器，而此时您会听到一声哔。在关闭后，UPS 会进入旁路模式。

   注 1： 如果 UPS 已设定成启用旁路输出的话，即便您关闭 UPS(变频器)，UPS 仍会以市电藉由旁路而输出电压至输出插座或端子。

   注 2： 在关闭 UPS 后，请记得 UPS 是以旁路方式供电；换言之，一旦市电停电，UPS 上连接的设备有立即断电之虞。

2) 在旁路模式中，UPS 在输出端仍有电压。如果需要关闭输出的话，请关闭输入断路器。 经过数秒后，LCD 面板会熄灭，UPS 完全关闭而没有输出。

3-4-8. 在没有市电供电的电池模式下关闭 UPS

1) 按下 UPS 的<OFF>钮 0.5 秒，便可关闭 UPS，而此时您会听到一声哔。
2) UPS 会关闭所有输出，LCD 面板也不会有任何显示。

3-4-9. 关闭警音

1) 如要关闭警音的话，请按下<Mute>钮至少 0.5 钮。在关闭警音后，如果再按此钮一下，警音功能就会恢复。
2) 所有警音可以手动关闭。细节请参阅第 3-3 节。

3-4-10. 在警示状态下的操作

1) 当<Fault> LED 指示灯闪烁且警音每秒响一声时，这表示 UPS 在运作上已发生一些问题。使用者可由 LCD 面板找出错误码，并依照第 4 章详述的故障排除方法来解决问题。
2) 所有警音可以手动关闭。细节请参阅第 3-3 节。

3-4-11. 在错误模式下的操作

1) 当<Fault> LED 指示灯亮起且警音持续鸣响，这代表 UPS 发生了足以中断运作的致命性错误。使用者可由 LCD 面板找出错误码，并依照第 4 章详述的故障排除方法来解决问题。
2) 在这类错误发生时，请即刻检查负载、布线、通风、市电、电池等各部位。在问题解决之前，绝对

不可尝试重新启动 UPS。如果无法解决问题，请立即连络您的经销商或维修人员。

3) 如果情况紧急时，请立即断开市电、外接电池、和输出，以避免危险进一步扩大。

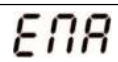
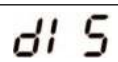
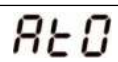
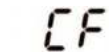
3-4-12. 变更最大充电电流操作

1) 在旁路模式下，同时按压 "Test/UP" 和 "Mute/Down" 按键超过 1 秒钟后，LCD 显示会进入设定模式。
2) 按压"Mute/Down"按键直到参数 1 显示为 17 之后，按压"Enter"按键开始调整充电电流数值。(详情请参考 3-7 LCD 设定章节)
3) 跳到参数 2 显示时，可透过按压"Test/UP"或者"Mute/Down"按键来设定充电电流值，可设定的充电电流值为 1A、2A、4A、6A 或 8A ，按压 "ON/Enter"键确认设定值。
4) 跳到参数 3 则是用来校准实际充电电流与设定充电店流之间的差异值。
5) 例如，若想要设定充电电流为 4A，但实际上充电电流经过测量确只有 3.7A，则需要选择"+"并在参数 3 里变更数值为 3，这代表所设定的充电电流将会增加 0.3A 成为输出的充电电流值，按压"ON/Enter"键确认此修改，此时可以同时按压"Test/UP"和"Mute/Down" 键离开设定模式。

注 1: 请小心设定，设定最大充电电流值不得超过规格所设定的电池。

注 2: 所有的参数设定的修改储存必须在 UPS 有连接电池(不论是内建或外接)的情况下正常关机后，才能成功储存修改设定值。(正常 UPS 关机指的是在旁路或无输出模式下断开输入断路器)

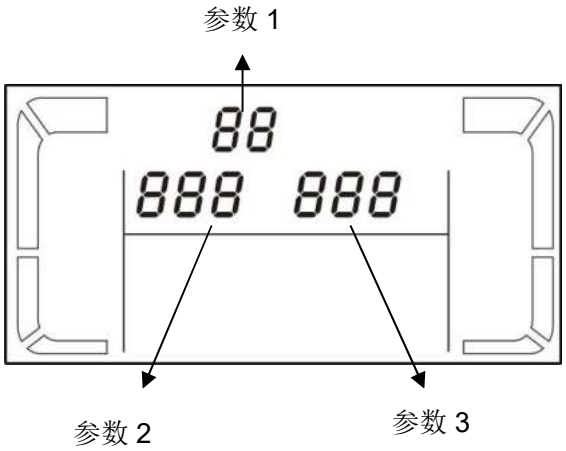
3-5. LCD 显示器上的缩写

缩写	显示内容	意义
ENA		启用(Enable)
DIS		停用(Disable)
ATO		自动(Auto)
BAT		电池(Battery)
NCF		正常模式(Normal mode) (非 CVCF 模式)
CF		CVCF 模式
SUB		减(Subtract)
ADD		加(Add)
ON		开(On)

OFF	OFF	关(Off)
FBD	Fbd	禁止(Not allowed)
OPN	OPN	允许(Allow)
RES	rES	保留(Reserved)
OP.V	OPU	输出电压（Output voltage)
PAR	PAr	并联机，001 代表第一台 UPS

3-6. LCD 设定

在此有三个参数用来设定您的 UPS。请参照下图。



参数 1: 这是程序选项编号。详细设定程序，请参阅下表。

参数 2 和参数 3 则是用来在各程序中设定选项和值。

标注：请按压**"Up"**或**"Down"**键来选择成是选项或改变参数值。

参数 1 所代表的设定程序列表：

编号	说明	旁路/ 无输出	AC	ECO	CVCF	电池	电池 测试
01	输出电压	Y					
02	输出频率	Y					
03	旁路的容许电压范围	Y					
04	旁路的容许频率范围	Y					
05	ECO 模式的启用/停用	Y					
06	ECO 模式的容许电压范围	Y					
07	ECO 模式的容许频率范围设定	Y					
08	旁路模式设定	Y	Y				
09	电池最大供电时间设定	Y	Y	Y	Y	Y	Y
10	保留	保留作为未来使用					

11	保留	保留作为未来使用					
12	热待机功能的启用/停用	Y	Y	Y	Y	Y	Y
13	电池电压校准	Y	Y	Y	Y	Y	Y
14	充电电压调整	Y	Y	Y	Y	Y	Y
15	逆变器电压调整		Y		Y	Y	
16	输出电压校准		Y		Y	Y	
17	充电电流设定	Y	Y	Y	Y	Y	Y

*Y 表示程序可在对应的模式下进行设定。

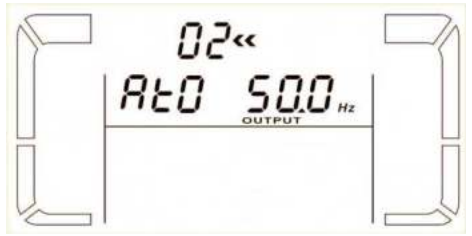
注: 所有的设定的变更储存只有当 UPS 有电池连接下正常关机。(正常 UPS 关机指的是在旁路或无输出模式下断开输入断路器)

- **01: 输出电压**

面板显示	设定
	**参数3：输出电压** 您可以参数3来选择如下输出电压： **208:** 默认输出电压为208Vac **220:** 默认输出电压为220Vac (默认值) **230:** 默认输出电压为230Vac **240:** 默认输出电压为240Vac

- **02: 输出频率**

面板显示	设定

60 Hz, CVCF 模式  **50 Hz, 正常模式**  **ATO**  	**参数2：输出频率** 用来设定输出频率。在此，参数2有如下3个选项： **50.0Hz:** 输出频率设定成50.0Hz. **60.0Hz:** 输出频率设定成60.0Hz. **ATO:** 如果选择本项，输出频率则取决于最近一次 UPS 正常工作的市电频率。如果市电频率在 46Hz 到 54Hz 之间时，输出频率将设定成 50.0Hz；如果在 56Hz 到 64Hz 之间时，则设定成 60.0Hz。ATO 为默认值。 **参数3：频率模式** 设定CVCF模式和非CVCF模式的输出频率。在此，参数3有如下2个选项： **CF:** 将UPS设定成 CVCF 模式。如果选择本项，输出频率会依参数2的设定而固定在 50Hz 或 60Hz。容许的输入频率范围为46Hz 到 64Hz。 **NCF:** 将UPS设定成正常模式 (非 CVCF 模式)。如果选择本项，输出频率会依参数2的设定，在输入频率落在46~54 Hz范围时成为50Hz，或在输入频率落在56~64 Hz范围时成为60Hz。如果依参数2而设定成50 Hz的话，当输入频率不在46~54 Hz范围内时， UPS会进入电池模式；如果依参数2而设定成50 Hz的话，当输入频率不在56~64 Hz范围内时， UPS会进入电池模式。 *如果参数2设定成ATO的话，参数3会显示当前的频率。

注: 若 UPS 设成 CVCF 模式，旁路功能将会自动停用，但是在单一机器运作下，市电连接情况下机器开启后会有几秒时间产生旁路输出现象，因此，为了避免连接负载受损，强烈建议在变频模式运作的应用里，增加一个外接的输出继电器板。在并机系统下，此现象不会出现。

- **03: 旁路的容许电压范围**

面板显示	设定
 	**参数2：**设定旁路模式容许的最低电压值。设定范围为110V 到209V，且默认值为110V。 **参数3：**设定旁路模式容许的最高电压值。设定范围为231V 到276V，且默认值为264V。

- **04: 旁路模式的容许频率范围**

面板显示	设定
 	**参数2：**设定旁路模式的最低容许频率。 50 Hz系统： 设定范围由 46.0Hz 到 49.0Hz。 60 Hz系统： 设定范围由 56.0Hz 到 59.0Hz。 默认值为46.0Hz/56.0Hz。 **参数3：**设定旁路模式的最高容许频率。 50 Hz： 设定范围由 51.0Hz 到 54.0 Hz。 60 Hz： 设定范围由 61.0Hz 到 64.0Hz。 默认值为54.0Hz/64.0Hz。

- **05: ECO 模式的启用/停用**

面板显示	设定

	**参数3**：启用或停用 ECO 功能。在此，有如下2个选项： **DIS:** 停用 ECO 功能。 **ENA:** 启用 ECO 功能。 即使停用 ECO 功能， 您仍可设定ECO模式的容许电压范围和容许频率范围；不过，这些范围设定必须在启用 ECO 功能后才会生效。

- **06: ECO 模式的容许电压范围**

面板显示	设定
	**参数2**：ECO模式的最低容许电压。设定范围为额定电压的 -5% 到 -10%。 **参数3**：ECO模式的最高容许电压。设定范围为额定电压的 +5% 到 +10%。

- **07: ECO 模式的容许频率范围**

面板显示	设定
	**参数2**：设定ECO模式的最低容许频率。 50 Hz 系统： 设定范围由 46.0Hz 到 49.0Hz。 60 Hz 系统： 设定范围由 56.0Hz 到 59.0Hz。 默认值为48.0Hz/58.0Hz。 **参数3**：设定ECO模式的最高容许频率。 50 Hz: 设定范围由 51.0Hz 到 54.0 Hz。 60 Hz: 设定范围由 61.0Hz 到 64.0Hz。 默认值为52.0Hz/62.0Hz。

- **08: 旁路模式设定**

面板显示	设定
	**参数 2:** **OPN**: 允许进入旁路模式。选择本项时，UPS 会依旁路功能启用/停用设定来决定如何执行旁路模式。 **FBD**: 不允许进入旁路模式。选择本项时，UPS 在任何情况下都不会进入旁路模式。 **参数 3:** **ENA**: 旁路功能启用。选择本项时，旁路模式将启用。 **DIS**: 停用旁路功能。选择本项时，将允许 UPS 自动进入旁路模式，但不允许手动旁路模式。手动旁路方式是指以手动方式让 UPS 进入旁路模式的操作，例如在 AC 模式时按下<OFF>钮而尝试使 UPS 进入旁路模式便属之。

- **09: 电池最大供电时间设定**

面板显示	设定

	**参数 3：** **000~990:** 设定电池最大供电时间，设定范围由 0 分钟到 990 分钟。当时间到时，UPS 会自动关闭而保护电池以免电池达到低电压位置。 **DIS:** 停用电池放电保护功能，供电时间将取决于电池电力。(默认值)

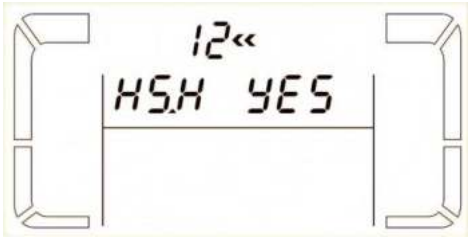
- **10:** 保留

面板显示	设定
	保留作为未来其他设定使用

- **11:** 保留

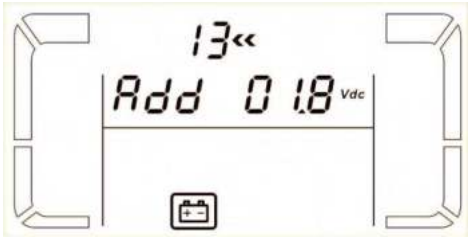
面板显示	设定
	保留作为未来其他设定使用

- **12:** 热待机功能的启用/停用

面板显示	设定
	**参数 2：HS.H** 启用或停用热待机功能。在此，**参数 3** 提供 2 个选项： **YES:** 热待机功能启用。这表示此 UPS 已被设定成热待机功能的主机，而此 UPS 会在 AC 电源恢复时重新启动，即便未连接电池也会同样动作。 **NO:** 热待机功能停用。此 UPS 会以正常模式运作，并且没有连接电池的话就不会重新启动。

- **13:** 电池电压校准

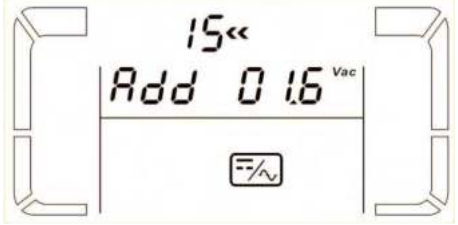
面板显示	设定

	**参数 2：**选择 **<Add>** 或 **<Sub>**来校准电池电压。 **参数 3：**电压范围是由 0V 到 5.7V，默认值为 0V。

- **14: 充电器电压校准**

面板显示	设定
	**参数 2：**选择 **<Add>** 或 **<Sub>**来校准充电器电压。 **参数 3：**电压范围是由 0V 到 9.9V，默认值为 0V。 **注：** *在进行电压校准之前，请务必先断开所有电池，以测得正确的充电电压。 *我们强烈建议您保留默认值(0V)不动。如需更改的话，请务必符合电池规格。

- **15: 逆变器电压调整**

面板显示	设定
	**参数 2：**选择 **<Add>** 或 **<Sub>**来设定逆变器电压的调整方式。 **参数 3：**电压范围是由 0V 到 6.4V，默认值为 0V。

- **16: 输出电压校准**

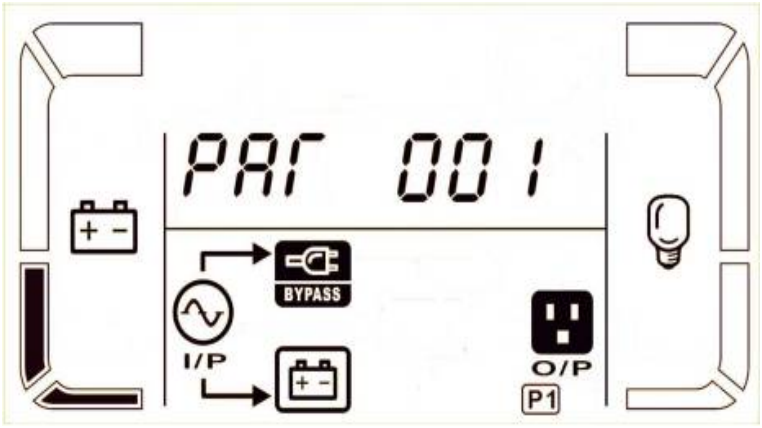
面板显示	设定
	若输出电压无法侦测到(低于 50VAC)，此功能菜单会保留，在参数 2 与参数 3 会显示"rES" 。
	**参数 2：**永远显示 **OP.V** 代表输出电压。 **参数 3：**显示输出电压的内部校准值，可以依据外接的电压侦测仪器侦测到的数据，透过**"Up"**或**"Down"**键来提供校准过的数值，校准过的数值在按压过"Enter"键会直接立即生效，而校准数值范围需在+/-9V 内，而这个功能通常是套用于并联机使用的。

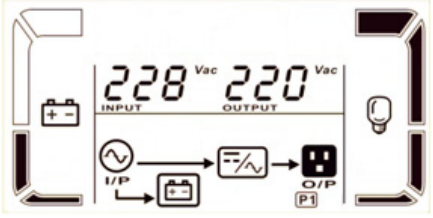
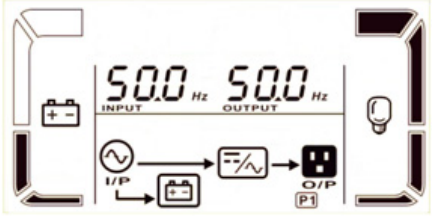
- **17: 充电电流设定**

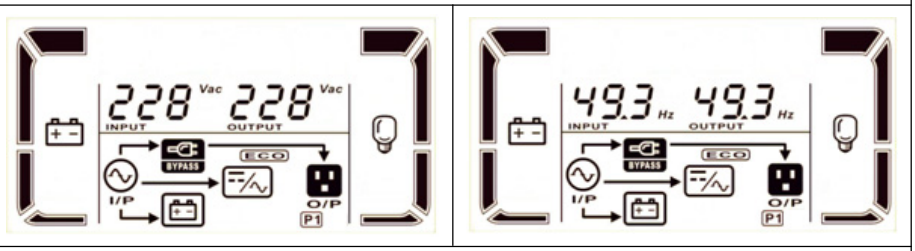
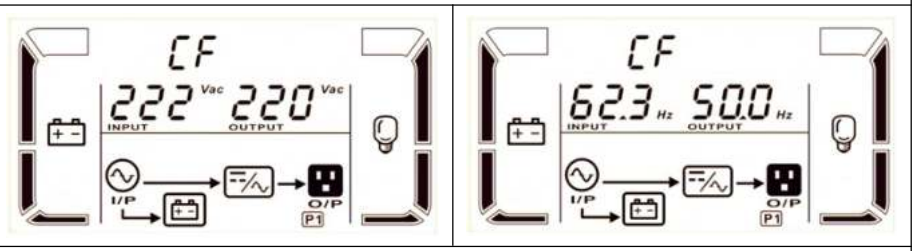
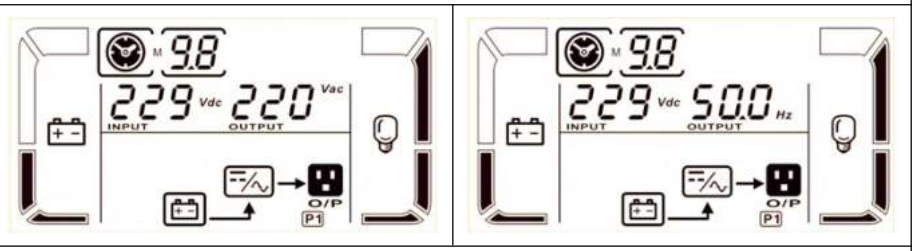
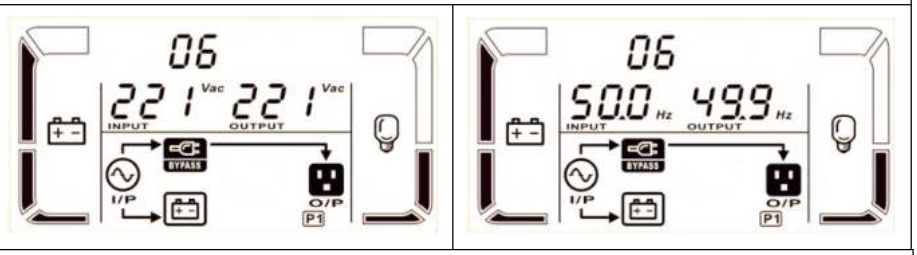
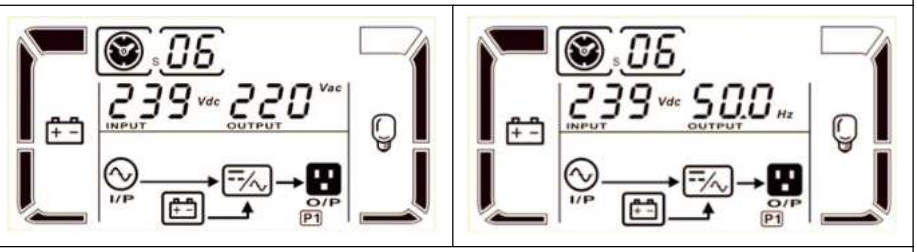
面板显示	设定
	参数 2: 设定充电电流值为 1A、2A、4A、6A 或 8A (001、002、004、006 或 008) 。 **参数 3:** 校准充电电流，若在设定充电电流值与实际良测到的电流值有差异值时，就需要透过此参数校准充电电流值。 **± 0~± 9:** 可选择**'+'**为**增加值**或者 **'-'**为**减少值**来校准充电电流。后面所设定数字则代表为小数点后第一个数字。 校准公式如下: 设定充电电流 ="实际测量到的电流值" + 或 –"在参数 3 里所设定的值" 例如: 若想设定充电电流为 4A，但实际测量到的电流值为 3.7A，请设定校准的数值为 "+ 3"。 设定充电电流 4A = 实际测量到的电流值 3.7A + 0.3A

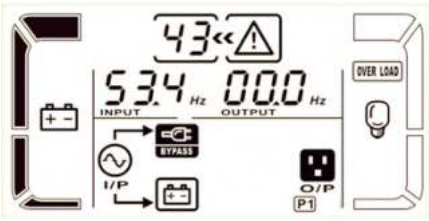
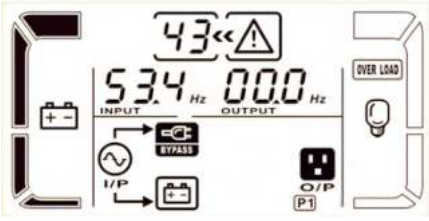
3-7. 运作模式/状态之说明

若并机系统已经安装成功，则 LCD 显示会多一个画面显示"PAR"在参数 2 上，同时也会在参数 3 上显示被授与的并机号码(见下图)，主机会默认为"001"，并机则会被设为"002"或"003"，这些默认值会随系统运作而变动。



运作模式/状态			
市电模式	说明	当输入电压在容许范围内时，UPS 可提供稳定的纯交流电源输出。UPS 在市电模式时，会对电池进行充电。	
	LCD 显示内容		

ECO 模式	说明	当输入电压在电压容许范围内，并且，ECO 模式启用时，UPS 会以旁路方式接通电压到输出端，藉此达到节能的目的。
	LCD 显示内容	
CVCF 模式	说明	当输入频率在 46 Hz 到 64 Hz 的范围内时，UPS 可将输出频率依您的设定而稳定地定在 50 Hz 或 60 Hz。在此模式下， UPS 仍会对电池进行充电。
	LCD 显示内容	
电池模式	说明	当输入电压不在容许范围内或是停电时， UPS 将以电池电力来进行供电同时警音每 4 秒响 1 声。
	LCD 显示内容	
旁路模式	说明	当输入电压在容许范围而旁路功能启用时， 如果关闭 UPS，UPS 会进入旁路模式。此时，警音会每 2 分钟响 1 声。
	LCD 显示内容	
电池测试	说明	当 UPS 在 AC 模式或 CVCF 模式时，按下<Test>钮 0.5 秒以上，UPS 将会在一声哔后进行<Battery Test (电池测试)>。在 I/P 图示和变频器圆示之间的指示线会闪烁。本操作的用途是测试电池当前的状态。
	LCD 显示内容	
待机模式	说明	UPS 关机状态且无输出，但是此时仍可以对电池充电。

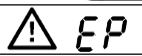
	LCD 显示内容		
错误状态	说明	当 UPS 发生错误时，LCD 面板上会显示错误讯息。	
	LCD 显示内容		

3-8. 错误码

错误事件	错误码	图示	错误事件	错误码	图示
总线起始失败	01	无	电池 SCR 短路	21	无
总线电压过高	02	无	变频器继电短路	24	无
总线电压偏低	03	无	充电器短路	2a	无
总线不平衡	04	无	CAN 通讯错误	31	无
变频器软启动失败	11	无	并联输出电流不平衡	36	无
变频器电压过高	12	无	过热	41	无
变频器电压过低	13	无	CPU 联机失败	42	无
变频器输出端短路	14	SHORT	过载	43	OVER LOAD
负功错误	1A	无	电池启动失败	6A	无
逆变过流	60	无	在电池模式下 PFC 电流错误	6B	无
逆变电流侦测测错误	6D	无	母线电压改变太快	6C	无
变压器过温	77	无	SPS 12V 不正常	6E	无

3-9. 警告指示

警告内容	图示 (闪烁)	警音
电池电量偏低	⚠ LOW BATT.	每秒响一声
过载	⚠ OVER LOAD	每秒响两声
电池未接好	⚠ BATT. FAULT	每秒响一声

充电过度		每秒响一声
EPO 启用		每秒响一声
风扇故障/过热		每秒响一声
充电器故障		每秒响一声
输入端熔丝断开		每秒响一声
30 分钟内第 3 次过载		每秒响一声

3-10 警告码

警告码	警告事件	警告码	警告事件
01	电池未接好	10	输入端熔丝断开
07	过充	21	并机系统下线电压状态不一致
08	电池电量偏低	22	并机系统下旁路设定不一致
09	过载	33	在 30 分钟内 3 次过载造成旁路锁定
0A	风扇故障	3A	维修盖板打开
0B	EPO 启用	3D	旁路不稳定
0D	过热	3E	引导程序缺失
0E	充电器故障	42	变压器过温
44	并机冗余系统失败	45	并机冗余系统过载

4. 故障排除

当 UPS 系统有运作不正常的情况时，请依下表来尝试解决问题。

问题情形	可能原因	解决方法
主电源正常，可是没有任何指示灯亮灯，亦无警音响起。	AC 输入电源可能松脱，未接好。	检查输入电线线有无松脱的情形。
LCD 面板上有 ⚠ 图示和 EP 错误码在闪烁，并且，每秒会有警音响一声。	EPO 功能已启用。EPO 开关是"OFF"状态或者跳真是开路状态。	请将设定电路设定成闭合状态，藉此停用 EPO 功能。
LCD 面板上有 ⚠ 和 BATT. FAULT 图示在闪烁，并且，每秒会有警音响一声。	外接或内接电池的连接方式错误。	检查所有电池的连接方式是否正确。

LCD 面板上有 ⚠ 和 OVER LOAD 图示在闪烁，并且，每秒会有警音响两声。	UPS 过载。	请由 UPS 输出端移除负载超出的部分。
	UPS 过载，而 UPS 目前正以旁路方式直接以电力网对设备供电中。	请由 UPS 输出端移除负载超出的部分。
	短时间内多次过载，UPS 已经锁定在旁路模式，直接将设备连上主电源中。	请先由 UPS 输出端移除负载超出的部分，然后，关闭并重新启动 UPS 系统。
错误码显示 43 且 OVER LOAD 图示亮起，并且，警音持续鸣响。.	UPS 过载时间过久而进入错误状态，并自动关机。	由 UPS 输出端移除过载部分后重新启动。
错误码显示 14 且 SHORT 图示亮起，并且，警音持续鸣响。	UPS 自动关闭，因为输出端发生短路。	检查输出端的布线，确认设备是否有短路的情形。
LCD 面板上有错误码(01, 02, 03, 04, 11, 12, 13, 14,1A, 21, 24, 35, 36, 41, 42 或 43)显示，并且，警音持续鸣响。	UPS 内部发生故障。	请连系您的经销商。
电池提供备援电力的时间比规格时间还短。	电池可能未充饱电。	请先充电至少 7 个小时后，再检查电池电量。如果电池电量仍低，请连系您的经销商。
	电池故障。	请连系您的经销商，要求更换电池。
LCD 面板上有⚠ 和 图示在闪烁，并且，每秒会有警音响一声。	风扇卡住或无法转动；或 UPS 过热。	检查风扇并连系您的经销商。

5. 存放和保养

5-1. 存放

在存放本产品之前，请先充电 7 小时。存放时应以直立方式置放于干爽的场所。在存放期间，请依下表实施充电保养：

存放温度	**充电间隔**	**充电时间**
-25°C - 40°C	每 3 个月	1 到 2 小时
40°C - 45°C	每 2 个月	1 到 2 小时

5-2. 保养

⚠ 本UPS系统在运作时会使用到具危险性的电压电源；因此，任何维修仅许由具维修资格的人员实施。

⚠ 即便本产品已由插座(屋内配线插座)i取下，由于内部组件仍与内建的电池相连，所以仍带电而具危险性。

⚠ 在实施任何维修及/或保养时，除了应断开电池，亦应确认内部已无电流，尤其应确认总线电容等

之高电容零件接头间已无电压存在。

 仅可由熟悉电池的人员，在采取妥善的安全措施下，从事电池更换或从事相关指导。未经授权的人员不得接近电池。

 在进行任何保养和维修之前，务必确认电池端子之间已无电压且已确实接地存在。在本产品中，电池电路一直与输入电压保持连接，因此，电池端子和接地线之间仍可能存在具危险性的电压。

 电池有可能导致触电而产生相当高的短路电流。在对电池进行维修时，请务必取下身上的手表、戒指和其他任何金属物品，并仅使用具绝缘握把设计的工具。

 在更换电池时，请安装相同数量和相同型式的电池。

 不可将电池丢入火中，否则可能引发爆炸。废弃电池应依遵照当地法规来处理。

 不可拆解或损伤电池，电池所含的电解质一旦泄漏，会对皮肤和眼睛造成伤害，甚至可能带有毒性。

 更换保险丝时，务必使用相同型号和相同安培数的保险丝，以避免火灾发生。

 不可拆解本 UPS 系统；带有防尘网的 UPS 定期检查防尘网表面是否积灰、破损或堵塞，确保通风口无遮挡，并每月清理灰尘，定期全面更换防尘网（建议每 1-2 年全面更换,视实际磨损情况调整）