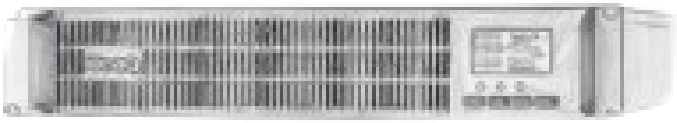
Uninterruptible Power Supply

USER MANUAL



Online Rack Mounted UPS MPST RT PRO Series 6K/10K

Statement

Personal Safety

1. The installation of this product must be carried out by professional engineers of the manufacturer's authorized agent, otherwise it may cause product failure or endanger personal safety.
2. Before installing and debugging this product, must read this product manual and safety matters in detail, otherwise it may cause product failure or endanger personal safety.
3. This product cannot be used as a power source for any life support equipment.
4. Don’t allow to place the battery of this product in fire to avoid explosion and endanger personal safety.

Equipment Safety

1. If stored or not used for a long time, This product must be placed in a dry, clean and specified temperature range environment.
2. This product should be used in an appropriate working environment (see the environmental requirements section of this product manual for details).
3. It is forbidden to use this product in the following working environments:

◆ High temperature, low temperature or humid places that exceed the technical specifications of this product;
◆ Places with conductive dust, corrosive gas, salt spray or flammable gas;
◆ Places close to heat sources or with strong electromagnetic field interference;
◆ UPS is only for commercial and industrial use and cannot be used as a power source for any life support equipment.

Disclaimer

We are not responsible for defects or failures caused by the following reasons:

◆ Exceeding the specified scope of use and working environment of the product;
◆ Unauthorized modification or repair, incorrect installation, improper operation;
◆ Encountering Irresistible factors
◆ Other matters that violate the provisions of this product manual.

Content

1. Safety Statement

Important safety operating instructions, please keep them properly

There is high temperature and high voltage inside the UPS. During the installation, operation and maintenance of the equipment, the local safety regulations and relevant operating procedures must be followed, otherwise personal injury or equipment damage may occur. The safety precautions mentioned in the manual are only a supplement to local safety regulations. Our company does not assume any responsibility for violating general safety operating requirements or violating design, production and use equipment safety standards.

1.1 Notes

1. Even if the UPS is not connected to the mains, its power output terminal may still have 220V AC voltage output!
2. To ensure the personal safety of users, this series of power products must have good grounding protection. First of all, reliably ground it before use!
3. If the battery line or power line needs to be replaced, please purchase raw materials from our service station to avoid heating or sparking due to insufficient capacity, causing fire!
4. Do not use fire to deal with batteries or battery packs, otherwise they will explode and injure people. Do not open or damage the battery. The overflowed electrolyte is highly toxic and harmful to the human body!
5. Please avoid short-circuiting the positive and negative poles of the battery, otherwise it will cause electric shock or fire!
6. Do not open the UPS host cover by yourself, there is a risk of electric shock!
7. Check whether there is high voltage before touching the battery!
8. The use environment and storage method have a certain impact on the service life and reliability of this product, so please be careful to avoid long-term use in the following working environments:

◆ High and low temperature and humid places that exceed the technical indicators (temperature 0℃~40℃, relative humidity 5%~95%).
◆ Places exposed to direct sunlight or close to heat sources.
◆ Places with vibration and easy to be hit.
◆ Places with dust, corrosive substances, salt and flammable gases.

9. Please keep the air inlet and outlet holes unobstructed. Poor ventilation of the air inlet and outlet holes will cause the temperature inside the UPS to rise and shorten the life of the components in the machine, thereby affecting the life of the entire machine.

1.2 Symbols

 **: In UPS case: WARNING! Risk of electric shock**

 **Attention! Read this information to avoid machine damage**

2. Introductions

2.1 Overview:

This series of UPS is single-input single-output UPS. These UPS can almost completely solve all power supply problems, such as power failure, mains high voltage, mains low voltage, voltage drop, amplitude reduction oscillation, high voltage pulse, voltage fluctuation, surge voltage, harmonic distortion, clutter interference, frequency fluctuation, etc.
This product has a wide range of applications, from computer equipment to communication systems and automatic equipment.

2.2 Model introduction:

S/N	Model	Description
1	6K	High frequency rack mounted UPS 6KVA long time unit
2	10K	High frequency rack mounted UPS 10KVA long time unit

S/N	Content	Description
1	Product name	Uninterruptible Power System(UPS)
2	Type	High frequency rack mounted
3	Dimensions(D*W*H)	6K:491x438x87mm
		10K:491x438x87mm

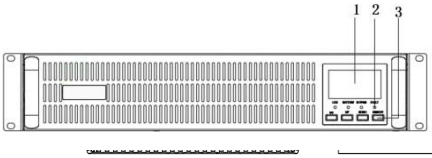
2.3 Check

Before installing the UPS, please perform the following preliminary inspections:

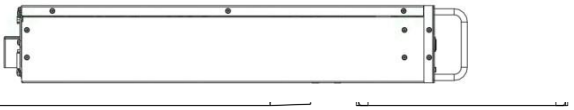
1. Check whether this machine model you want to purchase
2. Unpack the UPS cabinet and check whether the machine is damaged during transportation. If damage or missing parts, do not turn on the machine and inform the carrier and dealer of the relevant situation.
3. Check the packing list in the packaging box, and check whether the model specifications and quantity of the random accessories correspond to those described in the packing list. If there is any difference, you need to consult the customer service of r for the relevant situation and get a timely response.

2.4 Appearance view

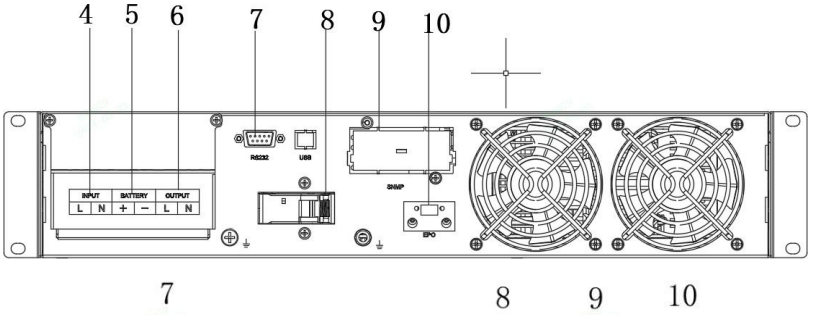
High frequency rack mounted UPS 6K/10K (H)



6K/10K Front view



6K/10K Side view



6K/10K Rear view

Remark:

(1) LCD display
(2) LED indicator
(3) Function buttons
(4) AC Input L &N Terminal
(5) External battery positive connecting port
(6) AC Output L &N Terminal
(7) USB port (optional) (with RS232 port)
(8) Input Breaker
(9) SNMP card slot (optional)
(10) EPO (optional)

3. Installation

⚠ Warning: To ensure safety, please pay attention to cut off the AC breaker before installation. The battery breaker also need to be cut off, if its a long backup time model.
⚠ Caution:
1. Installation and wiring must be performed by professional personnel in accordance with local regulations.
2. The UPS needs to connect to the ground.

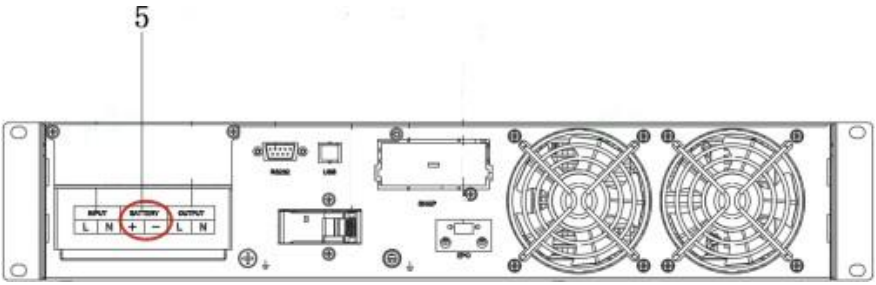
3.1 UPS connection

(a) UPS connection for 6-10kVA UPS:

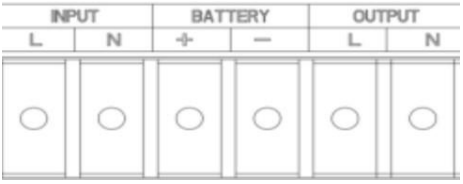
⚠ Warning: The rated current for the switch of the AC power must be larger than the UPS maximum input current. Otherwise the switch of the AC power will be burned and destroyed.

1. Please choose the wire according to the table of wiring.
2. Remove the terminal cover on the back panel of the UPS
3. Connect the input and output wires to the corresponding input and output terminals.
4. Tie the wire tightly and pass through the holes”5”
5. Tie the input, output and battery wire with the wire, adjust the wire to the appropriate position and fix the cable.

⚠Warning: When you are connecting the wire, please make sure that the input, output wire and the input, output terminals are connected tightly.



Terminals block:



6. Reinstall the cover and lock the cover with a screwdriver
7. After connecting the wire and AC, then put the UPS input breaker to "ON", the UPS will be powered.

3.2 External battery connection

The nominal DC voltage of external battery pack is 192VDC. Each battery pack consists of 16 pieces(optional 20 pieces) of 12V batteries in series. To achieve longer backup time, its possible to connect multi-battery packs.
The battery connecting procedure is very important, if you do not follow the procedure, you may encounter the hazardous of electric shock. So please strictly follow the steps below.
1. Set the battery breaker in "OFF" position and connect suitable battery in series.
2. Selecting a suitable battery cable to connect between the battery pack and UPS.(Refer to table in 3.1) One DC breaker must be connected between the battery pack an the UPS, The capability of breaker must be not less than the data specified in the general.

Model	6KS(H)	10KS(H)
Battery voltage	192VDC/240VDC	192VDC/240VDC
Battery discharge current	34A. max	56A.max

⚠ Warning: Please do not connect to the terminals of UPS first, otherwise you may encounter the hazardous of electric shock.

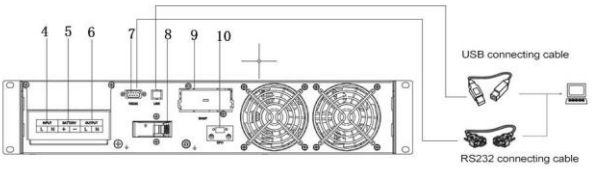
3. Connect the other end of the battery cable to the UPS, and then connect to the battery pack. The UPS does not connect any load first, and then turns the battery pack switch to "ON", then turn on AC, the UPS begins to charge.

⚠ Caution: ⏚ ground mark.

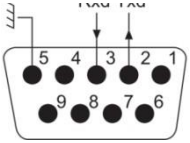
3.3 Connection to the computer

RS232: Using RS232 to connect UPS with the monitoring equipment
1. Use RS232 communication cable to connect to the computers RS232 port first.
2. Then use the other terminal of RS232 to connect to the RS232 port of UPS.

USB: Using USB to connect UPS with the monitoring equipment
1. Use USB communication cable to connect to the computers USB port first.
2. Then use the other terminal of USB to connect to the USB port of UPS.

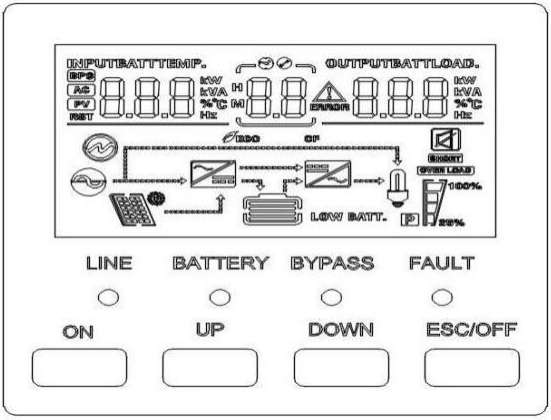


RS232 Interface on UPS:



4. UPS Operation

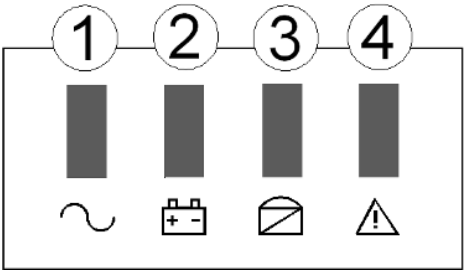
4.1 Panel display



4.1.1 Buttons function

Button	Description
ON	Turn on:Press this button more than 1s to turn on
ESC/OFF	Turn off：Press this button more than 1s to turn off
ON+DOWN	Self-test：Press the buttons combination more than 1s in AC mode to check battery normal or not. Mute：Press the buttons combination more than 1s in battery/fault/self-test mode to eliminate the alarm sound, and press the mute button combination more than 1s again to restore the alarm sound.
UP+DOWN	Functions setting: In bypass mode, press this button combination more than 2s on the display page to enter the function setting page. After confirming the set option, press the ESC again more than 0.2s to return to the main display page Confirm: On the function setting page, press the ENTER more than 0.2s to confirm the set option
UP **DOWN**	Page turning: Press the (UP) or (DOWN) more than 0.2s on any page to turn the page left or right. Polling mode: Press the (DOWN) more than 1s on the display page to enter the polling mode, and display each page content in a cycle. The display time of each page content is 2 seconds. Press the (DOWN) again more than 1s to exit the polling mode.

4.1.2 LED indicator



Indicator	Name	Description
~	**Inverter** （**Green**）	on：The UPS is working in the inverter-on mode (such as AC mode, battery mode, battery self-check mode, ECO mode) off：UPS is working in Non-inverting mode
+ −	**Battery** （**Yellow**）	on：UPS is working in battery/battery self-test mode off：UPS is working in non-battery mode and non-battery self-test mode flash: Battery low voltage alarm

	Bypass （**Yellow**）	on：UPS is working in bypass mode or ECO mode off：UPS is working in non-bypass mode and non-ECO mode flash：UPS is working in standby mode, frequency conversion is not turned on and bypass is abnormal
	Alarm （**Red**）	on：UPS failure off：UPS normal flash：UPS alarm

4.1.3 LCD display

The LCD display includes: icon display,Data display , function setting ,and work mode display

- **Icon display**
  - The load and battery graphics represent the load and battery capacity. Each square represents 25% capacity. The load icon will flash when the UPS is overloaded, and the battery icon will flash when the battery capacity is too low or the battery is not connected.
  - The fan icon shows the working status of the fan. Under normal circumstances, the fan icon will light up; the icon will flash when the fan alarm.
  - The buzzer icon shows whether the buzzer is muted. Under normal circumstances, the icon is not displayed; in battery and fault mode, press the mute combination (ON+DOWN) or set MUTE ON in the background software in any mode, the UPS enters the mute state and the buzzer icon will be displayed.
  - When the maintenance switch is turned on, the maintenance icon will light up, otherwise the icon will not be displayed.

- When the ECO function is enabled, the ECO icon will light up, otherwise the icon will not be displayed.
- When entering the setting menu, the setting icon will light up, otherwise the icon will not be displayed.
- The fault icon is only displayed in fault mode, otherwise the icon will not be displayed.

➢ **Data display & function setting**

- In non-function setting mode, this area displays relevant information of UPS. Normal mode displays output information. Operating the left and right query button (UP or DOWN) can display relevant information such as input voltage and frequency, output voltage and frequency, battery voltage and capacity, battery quantity, load, internal temperature, software version, etc. Fault mode displays fault code.

➢ - In the function setting page, you can set the output voltage (OPU), expert mode (EP), battery low voltage shutdown point (EOd), battery quantity (PCS), emergency shutdown (EPO), etc. by operating the function setting button and the left and right query button.

➢ **Work mode display**

- 3 seconds after power on, this display area mainly displays the UPS working mode, such as standby mode, bypass mode, AC mode, battery mode, battery self-test mode, fault mode, and ECO mode.

4.1.4 Indicator UPS status

Buzzer alarm	Description
Long beep	Fault mode
One beep per second	Low battery voltage in battery mode
	Overload
One beep per 2mins	Inverter not on
One beep per 4 second	All other alarms

S/N	Working status	Panel light display				Warning sound
		Normal	Battery	Bypass	Fault	
1	AC/Frequency Conversion mode					
	No fault alarm	•				no
	Existence alarm	•			★	1s/4s1 beep
2	Battery Mode					
	No low battery voltage warning	•	•		★	4s 1 beep
	Battery low voltage warning	•	★		★	1s 1beep
3	Battery self-test mode/boot process	★	★	★	★	4s 1 beep
4	Bypass Mode					
	No fault alarm			•		2mins 1beep
	Existence alarm			•	★	1s/4s 1beep
5	ECO Mode					
	No fault alarm	•		•		no
	Existence alarm	•		•	★	1s/4s 1 beep
6	Fault Mode				•	Long beep

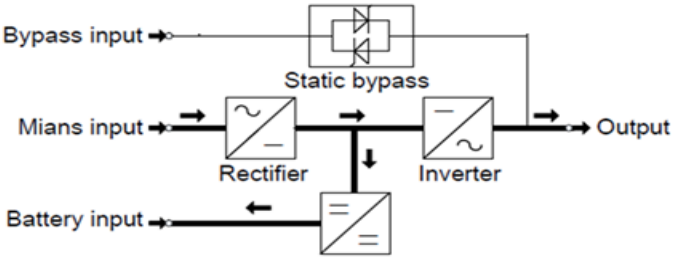
● Indicator light stays on ★ Indicator light Flashing

4.1.5 Operation Modes

The UPS is a double-conversion on-line UPS that may operate in the following alternative modes.

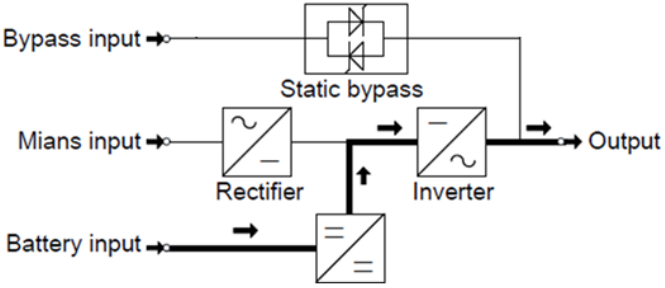
◆ Normal mode

The rectifier/charger derives power from the AC Mains and supplies DC power to the inverter while floating and boosting charge the battery simultaneously. Then, the inverter converts the DC power to AC and supplies to the load.



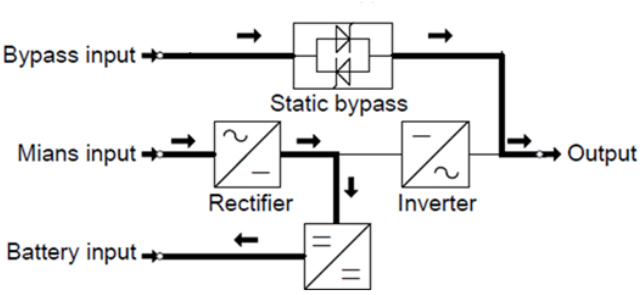
◆ Battery mode (Stored Energy Mode)

If the AC mains input power fails, the inverter, which obtains power from the battery, supplies the critical AC load. There is no power interruption to the critical load. The UPS will automatically return to Normal Mode when AC recovers.



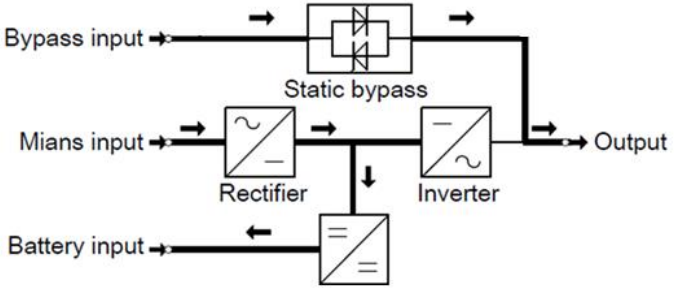
◆ Bypass mode

If the inverter is out of order, or if overload occurs, the static transfer switch will be activated to transfer the load from the inverter supply to bypass supply without interruption to the critical load. In the event that the inverter output is not synchronized with the bypass AC source, the static switch will perform a transfer of the load from the inverter to the bypass with power interruption to the critical AC load. This is to avoid paralleling of unsynchronized AC sources. This interruption is programmable but typically set to be less than an electrical cycle e.g. less than 15ms (50Hz) or less than 13.33ms (60Hz).



◆ ECO Mode

When the UPS is at AC Mode and the requirement to the load is not critical, the UPS can be set at ECO mode in order to increase the efficiency of the power supplied. At ECO mode, the UPS works at Line-interactive mode, so the UPS will transfer to bypass supply. When the AC is out of set window, the UPS will transfer from bypass to Inverter and supplies power from the battery, and then the LCD shows all related information on the screen.



4.2 Turn on/ off UPS

4.2.1 Turn on steps

When connect with normal battery or AC power then turn on operation.

- **AC power turn on**

When normal AC power is connected and the LCD panel displays standby mode or bypass mode, press the power button (ON) more than 1 second to start the machine. The LED lights will light up and go out in sequence. After waiting for a while, the panel will display AC power mode, indicating that the power-on is complete and enters AC power mode.

- **Battery turn on**

When normal battery is connected, press the power button (ON) more than 0.5 seconds, the display will light up, the panel will display standby mode, and the UPS will establish working power.

Meanwhile, press the turn on button (ON) more than 1 second to start the machine. The LED lights will light up and go out in sequence. After waiting for a while, the panel will display battery mode, indicating that the power-on is complete and enters battery mode.

4.2.2 Self -test operation

When the UPS is working in AC/ECO mode and the battery voltage is higher than the low voltage alarm point, press the self-test/mute button combination (ON+DOWN) for more than 1 second and wait for 10 seconds. The LED lights will light up and go out in sequence. The panel will display the battery self-test mode to test whether the battery is normal. After the self-test is completed, it will automatically exit and the LED and LCD will return to the state before the self-test.

4.2.3 Mute operation

When the UPS is working in battery/battery self-test/fault mode, press the self-test/mute button combination (ON+DOWN) for more than 1 second, the buzzer icon will be displayed in the panel graphic display area and the alarm sound will be eliminated. Press the self-test/mute button combination for more than 1 second again, the alarm sound will be restored and the buzzer icon in the panel graphic display area will disappear.

4.2.4 Operation in warning

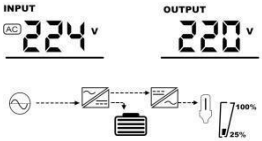
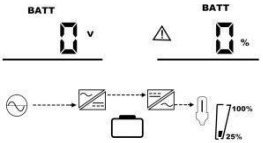
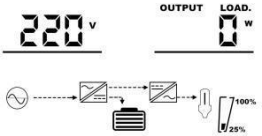
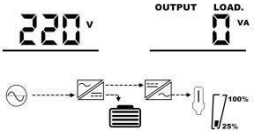
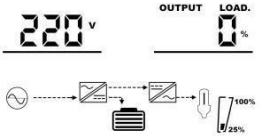
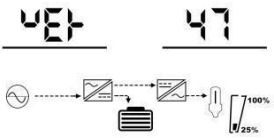
When the UPS has an alarm sound and the LED fault light flashes, it means that the UPS is working in an alarm state. You can check the cause of the alarm according to the alarm information or contact the supplier.

4.2.5 Operation in fault mode

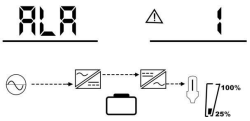
When the UPS buzzer sounds long and the LED fault light is on, it means that the UPS is working in fault mode. You can contact the supplier or maintenance personnel to provide relevant information about the fault alarm to assist in troubleshooting.

4.3 Parameter query

Press the DOWN right query key for more than 2 seconds, and the LCD enters the polling mode display: the display page will automatically turn every 2S, and long pressing DOWN again will exit the polling mode.

LCD Display 1: UPS input & output voltage	LCD Display 2: UPS input & output frequency
	
LCD Display 3: Battery voltage and capacity	**LCD Display 4: Output voltage and output active power**
	
LCD Display 5: Output voltage and output apparent power	**LCD Display 6: Output voltage and load percentage**
	
LCD Display 7: UPS system software version 47	**LCD Display 8: connected battery quantity**
	

LCD Display 9: UPS Alarm



4.4 Function setting

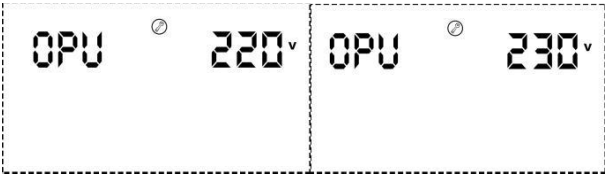
➢ **□UPS function setting operation, set up operation in standby/bypass mode.**

Enter and exit the function setting page and the specific operation of function setting are as follows:

- □ Press the function setting combination button UP+DOWN for more than 2 seconds to enter the function setting page, press the query button UP or DOWN for 0.1 to 2 seconds to select the function, and after turning the page to the desired function setting page, the corresponding function word flashes.
- □ Press the confirmation button ON for 0.1 to 2 seconds to enter the setting page of the selected function. At this time, the selected function word is long bright, and the value on the right of the selected function word flashes. Press the query button UP or DOWN for 0.1 to 2 seconds to select the value of the required function parameter.
- □ After turning the page to the desired function parameter, press the confirmation button ON for 0.1 to 2 seconds, the function setting is completed, and the function parameter value is long bright and no longer flashes.

  Press the function setting button ON for more than 2 seconds to exit the function setting page and return to the main display page (you can also do nothing and automatically jump back to the main display page after waiting for up to 30 seconds).

4.4.1 Output voltage settings (OPU)



Output voltage setting page

- ❑Press the function setting button combination UP+DOWN for more than 2 seconds to enter the function setting page, press the query button UP or DOWN for 0.1 to 2 seconds to select the function, and after turning the page to the output voltage OPU setting page, the word OPU flashes.
- ❑Press the confirmation button ON for 0.1 to 2 seconds to enter the output voltage OPU setting page. At this time, the word OPU is long bright, and the value on the right of the word OPU flashes. Press the query key UP or DOWN for 0.1 to 2 seconds to select different output voltage values. The available voltage values are 208V, 220V, 230V, and 240V. By default, the output voltage is 220V, and the settings are saved in real time.
- ❑After turning the page to the output voltage value you want to select, press the confirmation button ON for 0.1 to 2 seconds, the output voltage OPU setting is completed, and the value on the right of OPU is long bright and no longer flashes.
- ❑Press the function setting button ON for more than 2 seconds to exit the function setting page and return to the main display page (you can also do nothing and automatically jump back to the main display page after waiting for up to 20 seconds).
- ❑When the output voltage is set to 208V, the output needs to be reduced to 90%.

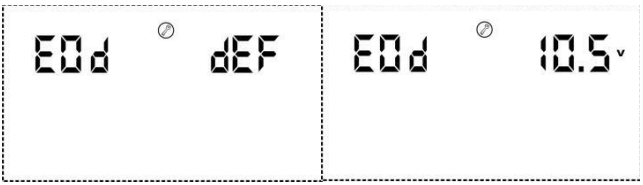
4.4.2 Expert mode settings (EP)

If the expert mode is set to ON, you will enter the function setting page again, and options such as battery quantity (PCS), emergency power off (EPO), and charging current will appear for setting; if the expert mode is set to OFF, the function setting page will only have some general function options

EP Mode Settings Page.

Notes:The expert mode is OFF by default. After set to ON, EP will be restored to OFF after power is cycled.

4.4.3 Battery low pressure shutdown point (EOD)



Battery low voltage shutdown point setting page

Notes:The available battery low voltage shutdown points are dEF, 9.8V, 9.9V, 10V, 10.2V, and 10.5V. By default, the battery low voltage shutdown point is dEF (the battery low voltage shutdown point varies with the load, 10.5V@load<25%, 10.2V@25%<load<50%, 10V@load>50%).

4.4.4 ECO Mode setting

ECO mode settings page

Statement:The ECO mode is turned off by default and can be turned on to improve system operation efficiency.

Notes: When UPS PF＜1, it is disabled by default and cannot be set

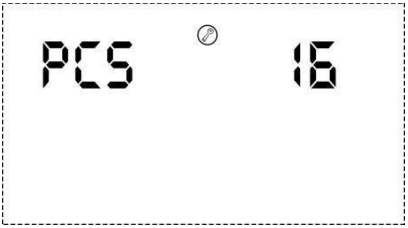
4.4.5 EPO function setting

EPO function setting page

Statement: When EP is set to ON, the EPO option appears on the function setting page, you can set the EPO. The EPO function is enabled by pulling out the EPO terminal (OFF) by default, and can be changed to enable by plugging in the EPO terminal (ON).

Notes:After EPO is activated, UPS will stop immediately and stop output.

4.4.6 Battery quantity setting



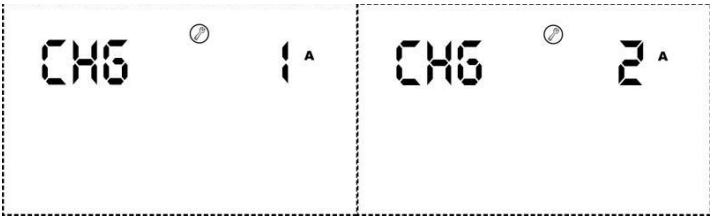
Battery quantity setting page

Note:

When EP is set to ON, the PCS option appears on the function setting page. Enter the password page. After entering the password (usually 135), you can set the battery quantity.

The default number of battery is 6K(16pcs)10K(16pcs)When sending the UM0 command to set it as a long time unit, the default battery quantity is 6K(16/20pcs)10K(16/20pcs)

4.4.7 Charge current setting (CHG)



Charge current setting page

Statement

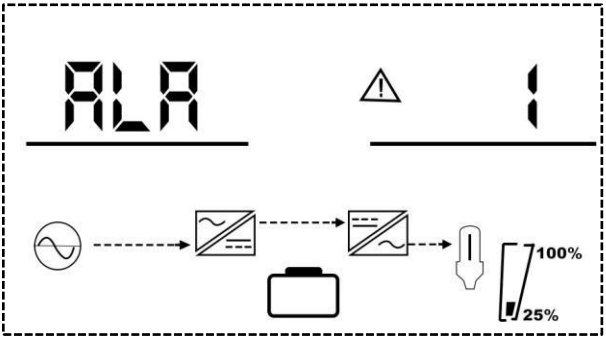
When EP is set to ON, the CHG option appears on the function setting page, and the charging current can be set. 1-12A is optional, and the default is 1A;

Note:

When sending the UM1 command to set it to a standard time UPS, the charging

current defaults to 1A and cannot be modified.

4.5 Fault and warning description



Fault and warning description icon

The fault and warning LCD display is as shown in the icon above. The fault icon of the fault mode is long on, and the alarm icon of the alarm state flashes. Contact the manufacturer according to the fault information to eliminate the abnormal condition.

4.5.1 Failure Instructions

- Fault: UPS enters fault mode, the LED light turns red and the LCD displays the fault code.

Fault code sheet

Fault code	Indication	Result	Triggering conditions	Recovery conditions	Fault alarm
1	Bus soft start fail	Fault mode	When the Bus soft-started,can't reach 380V in 30s.	No Recovery	Fault
2	Bus high	Fault mode	Bus>450V, lasts 5s	No Recovery	Fault
3	Bus low	Fault mode	Bus>200V,lasts 400ms	No Recovery	Fault
4	DC-DC fail	Fault mode	Triggering abnormal DC-DC hardware protection	No Recovery	Fault
7	Over temperature	Fault	PFC or INV	No Recovery	Fault

		mode	temperature sensor > 85℃		
9	Bus soft start relay fail	Fault mode	The bus voltage is still below 100V after 4s of DC/DC soft start.	No Recovery	Fault
10	Bus short	Fault mode	During normal operation, the bus voltage<180V instantly.	No Recovery	Fault
17	INV soft start fail	Fault mode	After 40s of inverter soft start, the rated output voltage still cannot be reached; or after 2s of inverter soft start, the inverter voltage is < 20V	No Recovery	Fault
18	INV over voltage	Fault mode	The inverter voltage >276V and lasts for 400ms	No Recovery	Fault
19	INV under voltage	Fault mode	The inverter voltage < 130V and lasts for 400ms	No Recovery	Fault
20	INV short	Fault mode	The inverter voltage <50V and the current > 20A for 4s.	No Recovery	Fault
39	Charger short	Fault mode	The battery voltage < 50V and the charging current >4A	No Recovery	Fault
66	Overload fault	Fault mode	Load exceeds specification	No Recovery	Fault
67	Battery reverse	Fault mode	Battery input is connected reversely	No Recovery	Fault
68	Model fault	Fault mode	Undefined machine model	No Recovery	Fault

73	No Boot	Fault mode	No boot loader	No Recovery	Fault

➢ 4.5.2 Alarm description

Alarm: UPS has not entered fault mode, LED flashes red, LCD displays alarm code

Alarm description sheet

Fault code	Indication	Result	Triggering conditions	Recovery conditions	Fault alarm
1	Battery open	Warning,Battery not charging	Battery voltage is <8V/cell	Change 10V/cell	Warning
2	Battery low	Warning,battery test mode will return to AC mode	Default 11.2V/cell Custom setting: 10.5~14V/cell(2)	Recoverable (operating point +0.2V/cell)	Warning
3	Battery charger short	Warning,Battery not charging	The battery voltage < 5V/cell and the current >4A	No Recovery	Warning
4	L/N reverse	Warning	Hardware trigger	1. Reverse the neutral and the live cables. Check the ground cable connection.	Warning

8	Battery high	Warning,Battery not charging	The default is 14.5V/cell. When the battery setting is customized, the overvoltage point is constant voltage charging voltage + 0.4V/cell	Recoverable (default 13.7V/cell. When the battery is set to custom, the recovery point is constant voltage charging voltage - 0.4V/cell)	Warning
9	Charger fail	Warning	After charging for 5 minutes, the battery voltage still <10V	Recoverable (battery voltage>10.5V)	Warning
10	Over temperature warning	Warning,Battery not charging	PFC or INV temperature sensor>80℃	Recoverable (temperature sensor is below 75°C)	Warning
12	Fan lock	Warning	Fan speed signal not detected	Recoverable	Warning
14	EEPROM Fail	Warning	EEPROM read and writing failure	No Recovery	Warning
21	Overload warning	Warning,Battery not charging	Load>102%	Recoverable (load < 97%)	Warning

22	Overload lock in bypass	Warning	If overload 3 times within 30 minutes, switch to bypass mode.	Manual startup can be restored	Warning
23	EPO Active	Warning,Battery not charging		Recoverable	Warning
24	MBS Active	Warning	The CN4 terminal on the control board is short-circuited	Recoverable	Warning

5. Battery Maintenance & Repair

(1) This series of UPS only needs very little maintenance. The batteries of the standard machine are seal type and no need to maintain frequently. But also keep charging to get the expected battery life. UPS keeps charging when it is connecting to AC, no matter on/off. And if also have function of over charging and overload protection.

(2) If you do not use UPS for a long time, you should charge the UPS every 4-6 months. In the area of high temperature, battery should be charging and discharging every two months, the charging time should not be less than 12 hours.

(3) In normal circumstances, service life of the battery is 3-5 years, if the battery is found to be in poor condition, it must be replaced in advance. When replacing the battery, it must be done by a professional.

(4) When replacing the battery, follow the principle of quantity and model consistent.

(5) The battery should not be replaced individually and when it replaced as a whole should be according to the battery suppliers instructions.

(6) In normal circumstances (under the condition of UPS with little back up power), the battery should be charged and discharged every 4-6 months. Keep discharging before UPS shut down then keep charging. The standard machine charging time should not be less than 12 hours.

Appendix 1 Common Problems and Solutions

If the UPS loses its normal function during use, it may be due to errors in installation, wiring or use. Please check these two aspects first. If confirmed, please contact our customer service center. Please also provide the following information:

1. Product model and serial number.
2. As detailed as possible when the fault occurs (LCD screen display information, indicator light status, etc.).

Reading this manual in detail will greatly help users use this UPS correctly. For the convenience of users, the following are some solutions to common problems for reference.

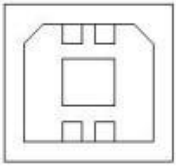
Issue	Related reason	Solution
UPS cannot turn on after connecting to AC power	Input power not connected Input voltage too low	Use a voltmeter to check whether the UPS input voltage/frequency meets the requirements.
The mains power normal but the mains power indicator off. The UPS in battery power mode.	Poor input power line connection	Make sure the input power cord is properly connected
The UPS does not report a	poor output power line	Make sure the output

fault but no output voltage	connected	power cord is properly connected
Mains indicator light flashes	The AC voltage exceeds the UPS input range	If the UPS operating in battery mode, please pay attention to the battery backup time
The battery indicator light flashes, no charging voltage or current	The battery pack cannot be connected to the UPS/the battery pack is damaged or the battery line is connected in reverse. The battery quantity and capacity set incorrectly.	Connect the battery pack to the UPS. If the battery damaged,replace the entire battery pack and connect the cables correctly.Enter the battery quantity /capacity setting interface set the parameters
The buzzer sounds an alarm every 0.5 seconds, and the LCD displays output overload.	overload	reduce some loads
The buzzer beeps continuously and the fault indicator lights up. The LCD displays the fault code "29".	UPS output short circuit	Please make sure the load no short-circuited and restart.
Only works in bypass mode and does not switch to inverter output	Set the working in ECO mode	Set the working mode to single mode
Cannot cold start	No battery connected /battery fuse blown/low battery voltage/set the battery quantity incorrectly/ the rear panel power switch is not closed	Connect the battery to the UPS; replace the battery fuse; turn on the machine under AC power and charge the battery; turn on the machine under AC

		power and set the battery parameters; turn on the power switch

Appendix 2 USB Communication Interface Description

Port Definition Male



The connection relationship between the computer's USB and the UPS's USB:

PC(USB)	UPS(USB)	Statement
PIN 1	PIN 1	PC: +5V
PIN 2	PIN 2	PC: DPLUS signal
PIN 3	PIN 3	PC::DMINUS signal
PIN 4	PIN 4	Grounding

USB communication provides the following functions:

- ♦ Monitor the current power supply status of UPS.
- ♦ Monitor the current alarm information of UPS.

Communication data format:

Baud rate----------9600bps

Byte length----------8bit

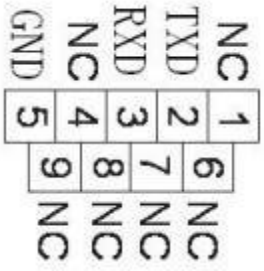
End bit ---------- 1bit

Parity ---------- None

Notes! The USB, RS232 interfaces cannot be used at the same time. Only one of them can be used.

Appendix 3 RS-232 Communication Interface Description

Port Definition Male:



The connection relationship between the computer's RS232 and the UPS's RS232

PC (DB9 Male)	UPS (DB9 Female)	Statement
PIN 2	PIN 2	UPS sends,PC receives
PIN 3	PIN 3	PC sends,UPS receives
PIN 5	PIN 5	Common ground

RS-232 communication provides the following functions:

- ♦ Monitor the current power supply status of UPS.
- ♦ Monitor the current alarm information of UPS.

Communication data format:

Baud rate----------9600bps

Byte length ---------8bit

End bit---------- 1bit

Parity check----------None

Notes! The USB, RS232 interfaces cannot be used at the same time. Only one of them can be used.

Appendix 4 Specification Parameter

Capacity		6K	10K
Capacity		6kVA/6kW	10kVA/10kW
Input	Phase	L+N+PE	
	Rated Voltage	208/220/230/240Vac	
	Operating voltage range	110~300Vac	
	Operating frequency range	50/60Hz±6Hz	
	Power factor	≥0.99	
	Harmonic distortion (THDi)	≤4% (100% linear load)，≤5% (100% non-linear load)	
Output	Phase	L+N+PE	
	Output voltage	208/220/230/240Vac	
	Power factor	1	
	Voltage regulation	±1%	
	Output frequency	Utility Mode: follow utility; Battery Mode:(50/60±0.1%)Hz	
	Crest factor	3:1	

	THD	≤3% with linear load; ≤5% with non linear load	
	Efficiency(AC)	≥93%	
	Efficiency(Batt.)	≥89%	
	Overload	AC mode: Load≤110%, last 30min; ≤130%, last 10min; ≤150%, last 30s; >150%, 200ms to bypass. Battery mode: Load≤110%, last 1min; ≤130%, last 10s; ≤150%, last 3s; >150%, 200ms to bypass.	
Battery	Battery QTY	16-20 PCS adjustable	
	Charge Current	1A default,1-A for standard unit, 1-12A for long unit	
Transfer Time		Utility to Battery : 0ms; Utility to bypass: 0ms	
Environment	Operating temperature	0℃～40℃	
	Storage temperature	-25℃～55℃(no battery)	
	Humidity range	20～95% (non condensing)	
	Altitude	< 1000m	
	Noise level	<45dB	
Cooling		forced-air ventilation (Front to rear)	
Protection	Alarm	overload, utility abnormal, UPS fault, battery low, etc	
	Protection	short circuit, overload, over temperature, battery low, fan fault alarm	
	Communication	RS232,USB, dry contact card(optional), SNMP card(optional)	
Physical	Dimension D×W×H (mm)	491x438x87	
	Net Weight(kg)	8.9	10.9
IP Rating		IP20	
Standards		EN62040-1, EN62040-2	