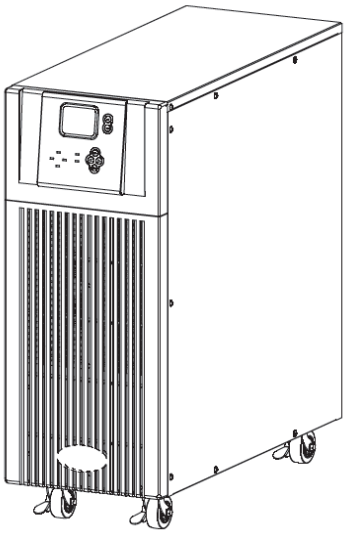
Uninterruptible Power Systems

single phase 6/10KVA



Operation Manual

Publish statement

Thank you for purchasing our This series UPS.
This series UPS is an intelligent, single phase in single phase out, high frequency online UPS designed by our RND team who is with years of designing experiences on UPS. With excellent electrical performance, perfect intelligent monitoring and network functions, smart appearance, complying with EMC and safety standards, This UPS has become standard product meets the world's advanced level.
Read this manual carefully before installation
This manual is for
Equipment operator
Technical support

Safety Instruction

1.Prohibition

1. 1 There is a high risk of electric shock from the UPS inside, so please don't open or remove the casing or front panel unless authorized technicians, otherwise warranty becomes void as well.

1.2 Please contact and discuss with distributors before connecting the UPS to following equipments

- Medical equipments which have direct relationship with patients' life
- Equipments like elevators which may do harm to human being
- Similar equipments as mentioned above

1.3 Don't dispose of the battery with fire so as to avoid explosion

2.Safety notice

1) Output of standard UPS configurator with internal batteries may be energized even if the UPS input is not connected to the utility
2) Do disconnect the UPS input and make sure the UPS is complete off before moving the UPS or reconfiguration the connection, otherwise there will be potential electric shock.
3) For the sake of human being safety, please well earth the UPS before starting it.
4) Working environment and storage way will affect the lifetime and reliability of the UPS. Avoid letting the UPS work under following environment for long time
   - Area where the humidity and temperature is beyond the specified range (temperature 0 to 40 Celsius degree, relative humidity 5%-95%).
   - Direct sunlight and location nearby heat
   - Area which can be crashed easily
   - Area with corrosive gas, flammable gas ,excessive dust ,etc.
5) Keep the ventilations in good conditions otherwise the temperature of components inside UPS will be high and the component and UPS life will be affected.
6) It is forbidden to pour liquid or put any objects into the UPS.
7) Don't use liquid extinguisher if there is a fire, a dry powder extinguisher is recommended.
8) Battery life cycle will be shorten as environment temperature rise. Replacing battery

periodical can help to keep UPS in normal state and assure backup time required. Battery replacement should be done by authorized technician.

9) 9 Keep the UPS in a dry area or environment if it will not be free of operation for long time. Storage temperature of UPS with internal battery is -20-55 Celsius degree, extend backup model without internal battery is -40-70 Celsius degree .
10) 10 Equipments or batteries in storage, it is recommended to connect them with the utility for at least 12 hours per 3 months to avoid battery damage
11) 11Don’t open the battery, electrolyte inside will do harm to eyes and skin. Please use plenty of clean water to wash if touching and go to see a doctor

Contents

1. Production

1.1 Application

This series UPS provide reliable AC power to various equipment, can be used for computer center, network management center, auto control system, telecom systems, etc

1.2 Product range

Capacity	6kVA		10kVA	
Model	Standard model	Extend model	Standard model	Extend model
Remark	with internal battery	External battery	with internal battery	External battery

1.3 System principle diagram

The system can work in single unit, and parallel so as to enhance the reliability.

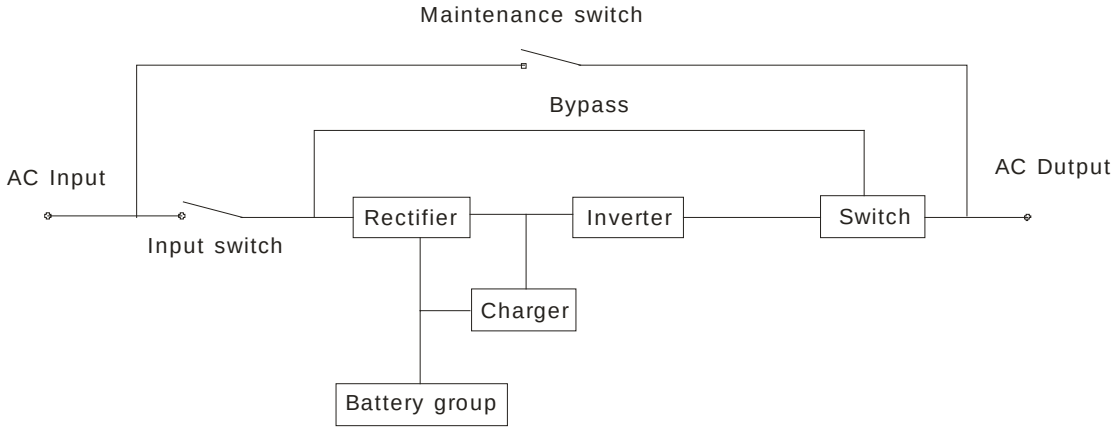


Fig.1-1 Single unit

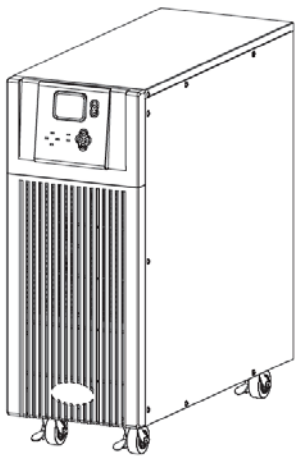
1.4 Features

This series 6kVA/10kVA UPS the newly introduced .it is an intelligent online sine wave UPS.

- High frequency, double conversion, high input power factor, wide input voltage range, the output will not be disturbed by power network, suitable for area with poor power supply condition
- DSP technology for all-digital control, high reliability, self diagnose and protections are featured
- Intelligent battery management which extends battery life
- LCD panel and LED indicators clearly indicate the system status and parameters such as input/output voltage, frequency , load ,temperature inside UPS etc
- Perfect network power management can be achieved by using UPS monitoring software
- Maintenance bypass switch is provided so the power supply to load will not be interrupted when doing repairing
- Friendly maintenance module design, easy to do maintenance.

1.5 Product overview

1.5.1 Product view



F1-2 Complete unit view

1.5.2 LCD Operation instruction

LCD control panel consists of LCD display board, LED and buttons, see Fig1-3, which displays and controls these information including Running information, alarm information, function setting information.

- LCD control panel

1) Five green LED and one red LED
2) LCD display board which can display two lines of Chinese or four line of English
3) Button: On, Off, ESC, Enter, and Left ,Right

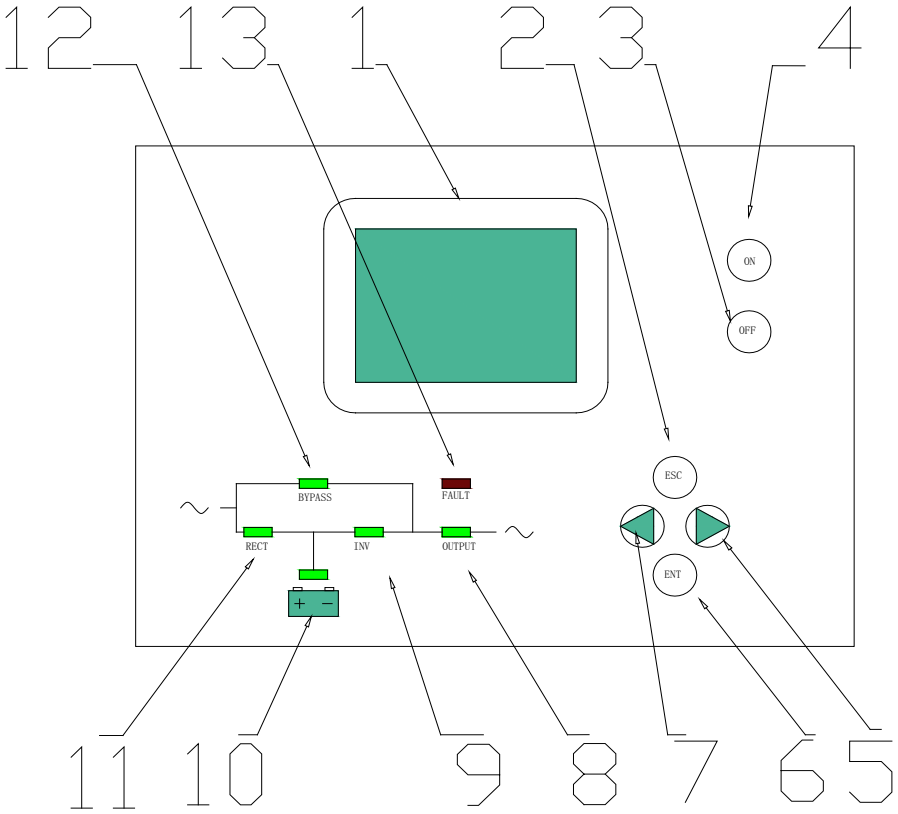


Fig.1-3 LCD control panel introduction

1. LCD Display Board
2. ESC
3. Off button
4. On button
5. right or down
6. Enter
7. left or up
8. Output Indicator
9. Inverter Indicator
10. Battery Indicator
11. Mains (AC) Indicator
12. Bypass Indicator
13. Fault Indicator

- LED indicator definition

1) Fault Indicator（red）： On when any fault, Off when no fault
2) Indicator（Green）： On when AC is normal, Off when AC is not present, blinking if voltage is beyond normal range
3) Inverter Indicator（Green）: On when load is powered by inverter, Off when it is not working, blinking when overload
4) Bypass Indicator（Green）： On when UPS is in bypass mode, off if not; blinking when the input is beyond normal range
5) Battery Indicator（Green）： On when UPS is in battery mode, off if not, blinking when battery voltage is low or battery is not connected
6) Output Indicator（Green）： On when there is output, off if not.

- LCD display content

1) Running parameters

Input voltage/frequency, output voltage/frequency/current, temperature inside UPS, battery remaining capacity, battery charging/fully charged, battery voltage.

2） Alarm information (priority from high to low)

Shutting down, auxiliary power fault, output short circuit, inverter fault, rectifier fault, over temperature, overload, charger fault, battery fault, battery capacity low, ready to shut down, output fault.

3） Parameter setting

Menu setting, floating /boosting charging setting, battery capacity setting, ID of parallel UPS, output voltage/frequency level/calibration .

- Boosting charging voltage 2.30 to 2.35V per cell, floating charging voltage 2.20 to 2.29V per cell
- Battery capacity setting includes the Ah of each battery unit, battery quantity (8 to 10)*2, parallel group number, low battery voltage alarm value (EOD).
- Parallel setting
- UPS ID setting
- LBS setting (Enable/Disable, Master/Slave)

■ Button definition

Button	Definition
ON	Switch on the inverter by pressing and holding it for 1s when the UPS is off
OFF	Switch off the inverter output by pressing and holding it for 1s when the UPS is on, load will be powered by bypass output if the bypass is normal
ENT	Confirm the operation
ESC	cancel to up menu
◄	Turn to another menu or parameter
►	Turn to another menu or parameter

■ UPS Mesages reference table

Explain	**Content**
Initialization	Cur State: In it
No export	No-Out
At bypass	Bypass
Rectifier working	Mains
Battery invert	Battery
Battery testing	Testing
Starting	Start in
ECO mode	Cur State : ECO
EPO mode	Cur State: EPO
UPS maintaining	Cur State: M-Byp
UPS fault	Cur State: Fault
Battery float charging	Battery Charging
Battery Boost charging	Battery Boost
Inverter working or no	Invter ON/ Invter OFF
Master of UPS	Inver Master
Maintenance switch close or open	SWMB ON/ SWMB OFF

1.5.3 Display instruction

1) The main interface below comes out when the power is connected or the system is cold start. See Fig1

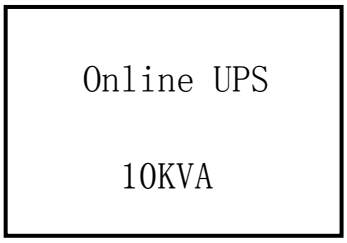


Fig.1：Main interface

2) Press any key, it will change to the basic status interface , see Fig2 below

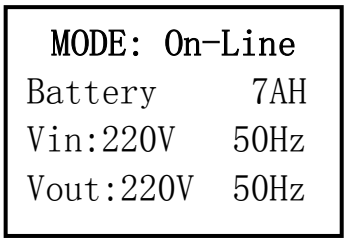


Fig.2：Basic status interface

3) Press the ◄ or ► button, it will change to main menu, see Fig3,

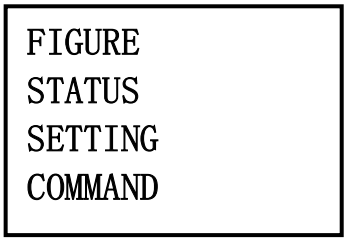


Fig.3： Main menu

4) An arrow icon will come out on the LCD when pressing the ENT, then, the data info, status info, setting info, command control can be selected by pressing the right or left arrow button, and checking the details by pressing

5) Select and confirm the data info can view the details. It contains the details of the AC input /output , inverter, battery , BUS, parallel , temperature. See Fig 4 to 12 below.

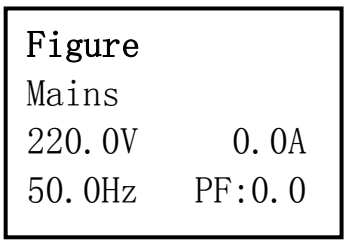


Fig.4：MAIN INPUT INFO

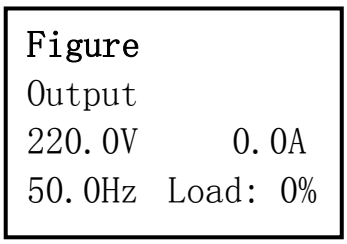


Fig.5：OUTPUT INFO

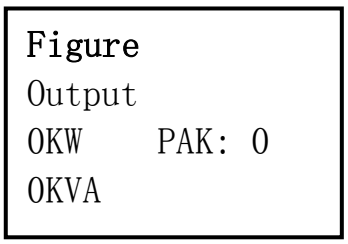


Fig.6：OUTPUT INFO

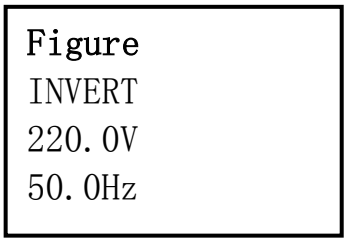


Fig.7：INVERT INFO

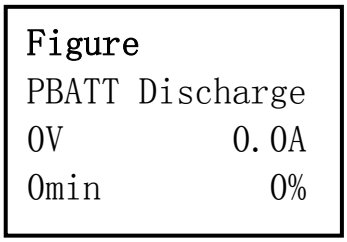


Fig.8：BATTERY INFO

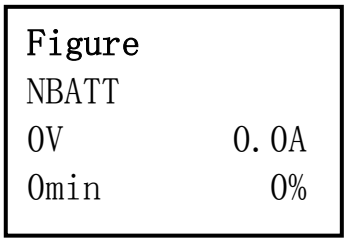


Fig.9 BATTERY INFO

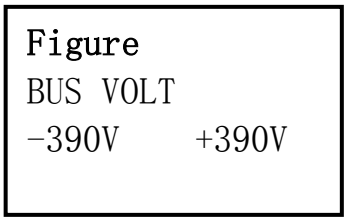


Fig.10：BUS INFO

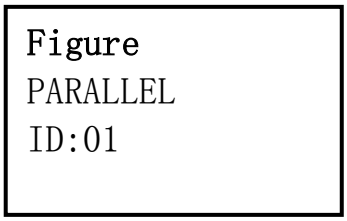


Fig.11：PARALLEL INFO

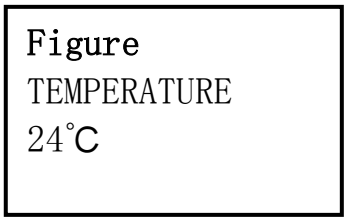


Fig.12：TEMPERATURE INFO

6) Select and confirm the status info can view the details, including status information, alarm information, code, power rating, version. See Fig 13 to 14

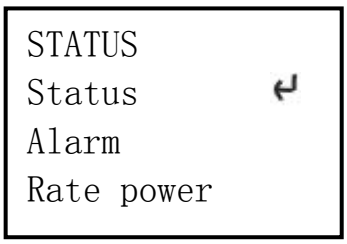


Fig.13：main menu

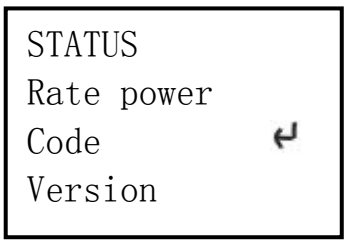


Fig.14：main menu

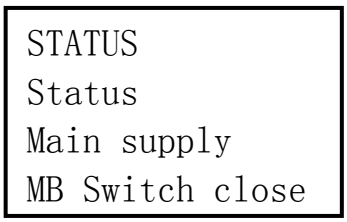


Fig.15：status info

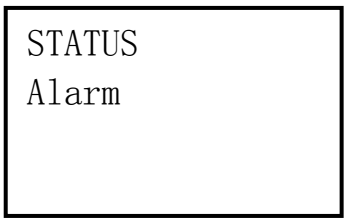


Fig.16：Alarm info

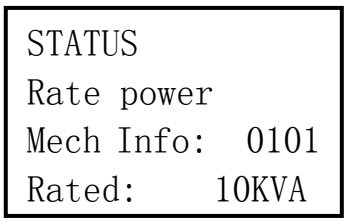


Fig.17：type info

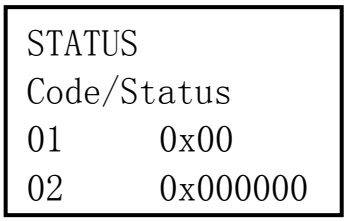


Fig18：code info

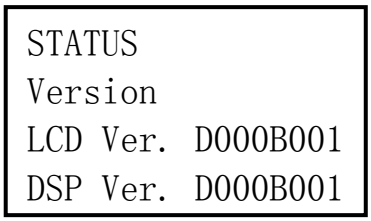


Fig19：version info

7) Select and confirm setting menu, setting information well be display witch including client setting, system setting, parallel setting, battery setting, correct setting.

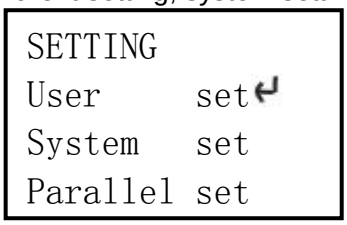


Fig.20：setting menu

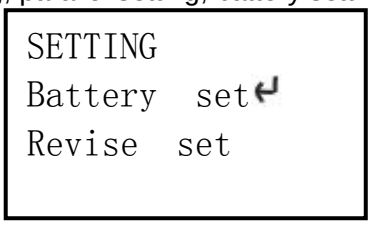


Fig.21：setting menu

■ Select and confirm client setting ,then

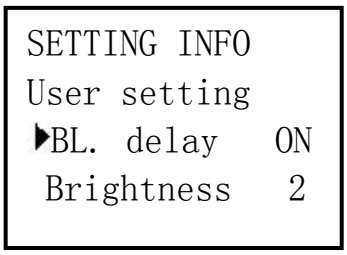


Fig.22：user setting information

■ Select and confirm system setting menu ,then see Fig23to Fig29

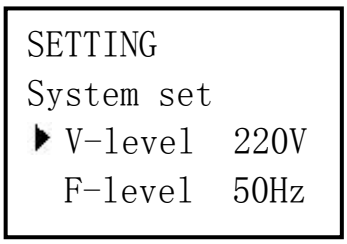


Fig.23：system setting

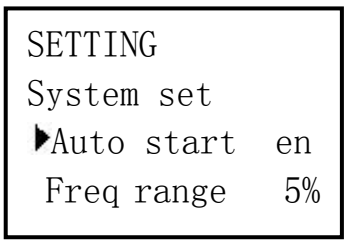


Fig.24：system setting

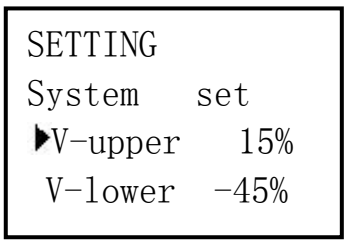


Fig.25：system setting

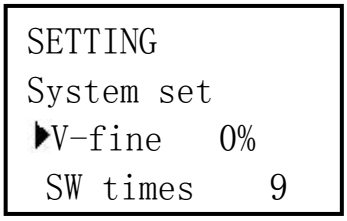


Fig.26：System setting

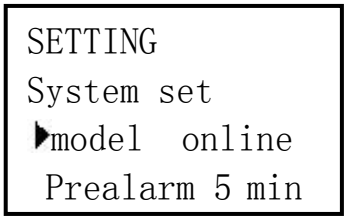


Fig.27：System setting

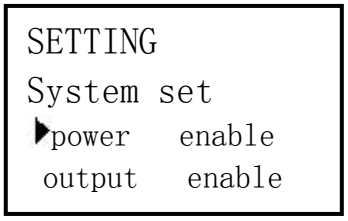


Fig.28：System setting

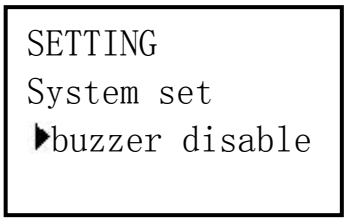


Fig.29：System setting

■ Select and confirm parallel menu，then see Fig.30 to Fig.31

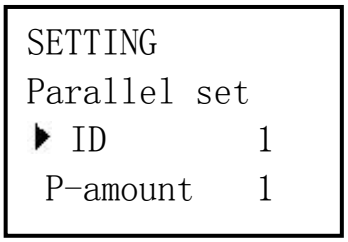


Fig.30：Parallel setting

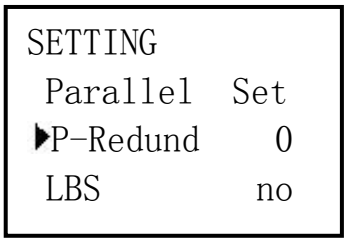


Fig.31：Parallel setting

■ Setting battery see F32～F35

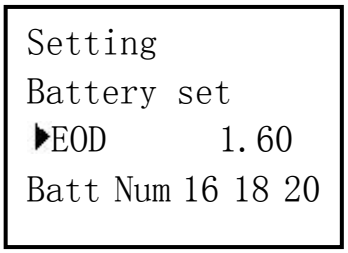


Fig.32：battery setting

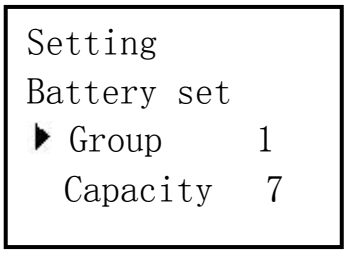


Fig.33：battery setting

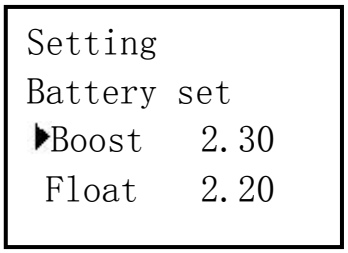


Fig.34：battery setting

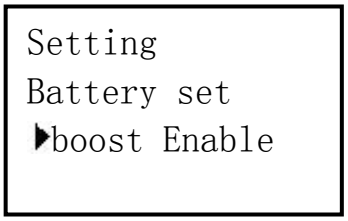


Fig.35 Battery setting

■ Parameter revise，see F36～F39

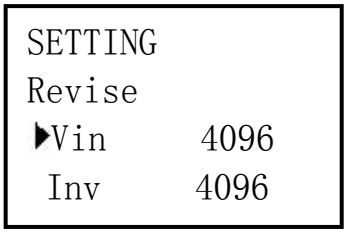


Fig.36 Parameter revise

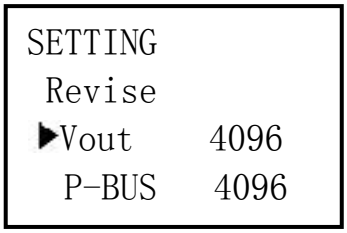


Fig.37 Parameter revise

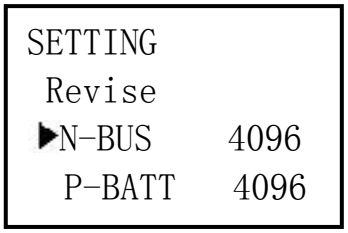


Fig.38 Parameter revise

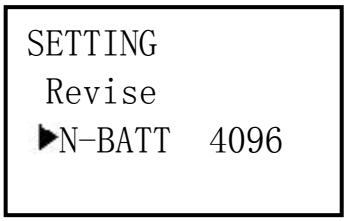


Fig.39 Parameter revise

■ Control operation see Fig.40～Fig.44

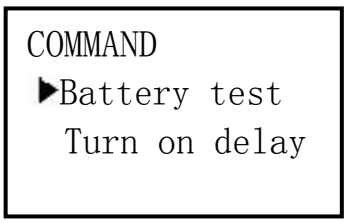


Fig.40：control menu

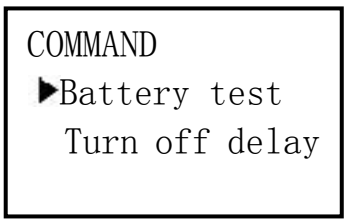


Fig.41：control menu

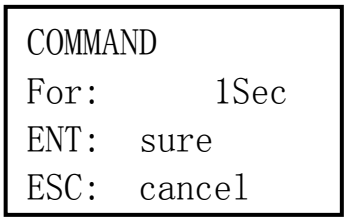


Fig.42 Battery self-test

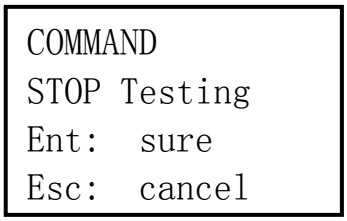


Fig.43 stop battery testing

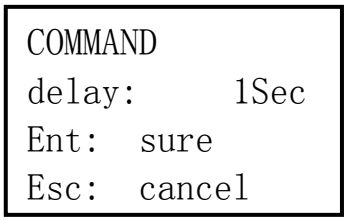


Fig.44 Turn on/off delay

8） Warning message see Fig.45～Fig.50

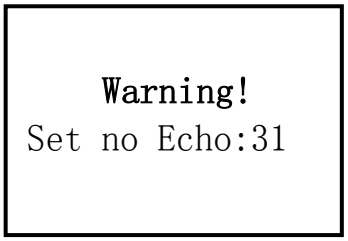


Fig.45 no echo for setting

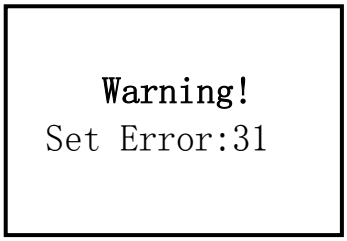


Fig.46 error for setting

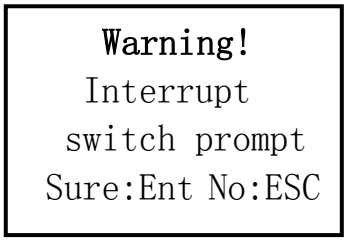


Fig.47 switch delay

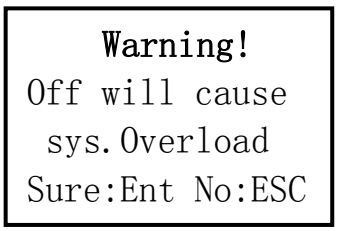


Fig.48 overload due to shutdown

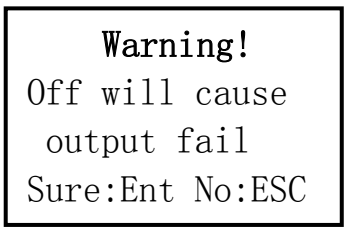


Fig.49 no output due to shutdown

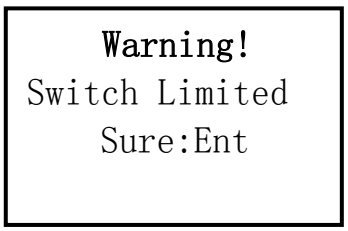


Fig.50 switch times

1.5.4 Rear panel instruction

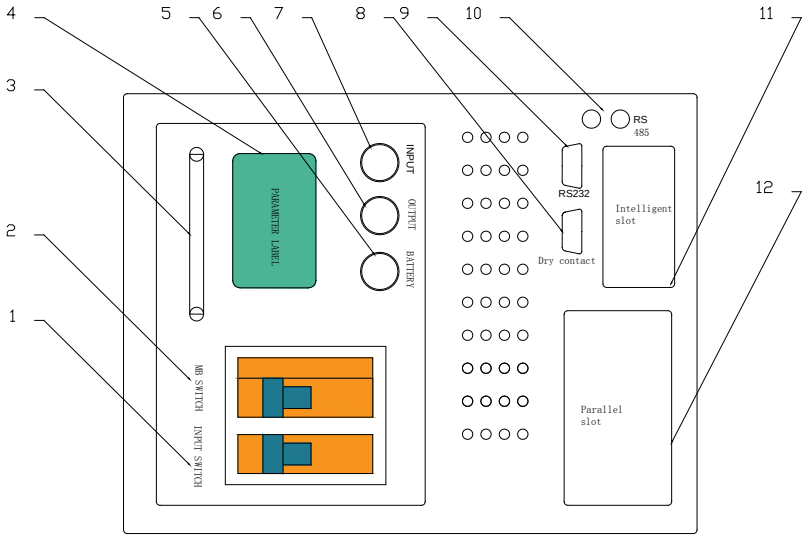


Fig.1-4 Rear Instruction

1. AC input
2. Maintenance bypass switch (covered)
3. Handle
4. label
5. External battery connector.
6. Output
7. Input
8. Dry contact
9. RS232
10. RS485
11. Intelligent slot
12. Parallel slot

2 Installation

2.1 Unpack checking

1) Don’t lean the UPS when moving it out from the packaging.
2) Check the appearance to see if the UPS is damaged or not during the transport, do not switch on the UPS if any damaged found and please contact the dealer.
3) Check the accessories according to the packing list and contact the dealer if found any missed

2.2 Installation procedure

2.2.1 Installation note

Put the UPS at flat place next to the equipment.
Keep UPS at least 20cm from wall or equipment or other object. Don’t block the ventilation holes of the UPS front panel and bottom part, so as to keep the ventilation in good conditions, avoid temperature of components inside getting high.
Keep the UPS away from high temperature, water, flammable gas, corrosive gas, dust, direct sunlight, explosive things
Don't lay the UPS outdoor
63A circuit breaker is required at the input L-N for 6KVA UPS, while 100A for the 10KVA UPS.
PDU is required to connect to the UPS output so as to weaken the affection between loads
In order to fix the UPS, please lock its wheels by shifting the sheet on each wheel
RCD load like computer, linear load and small inductive load can be connected with the UPS. Please contact dealer if other types of loads is required to connect.
For the sake of user and equipments, please betake correct power configuration.

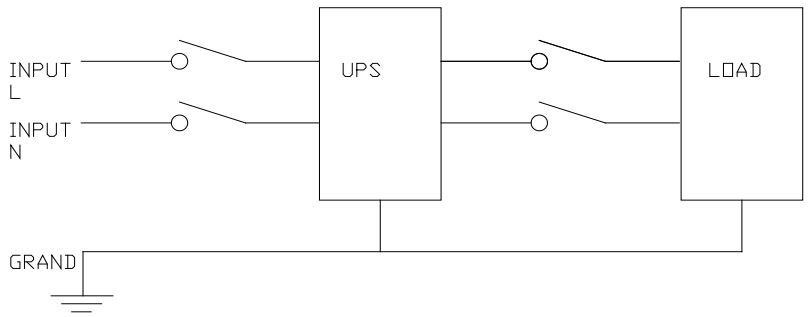


Fig.2-1 Correct power configuration

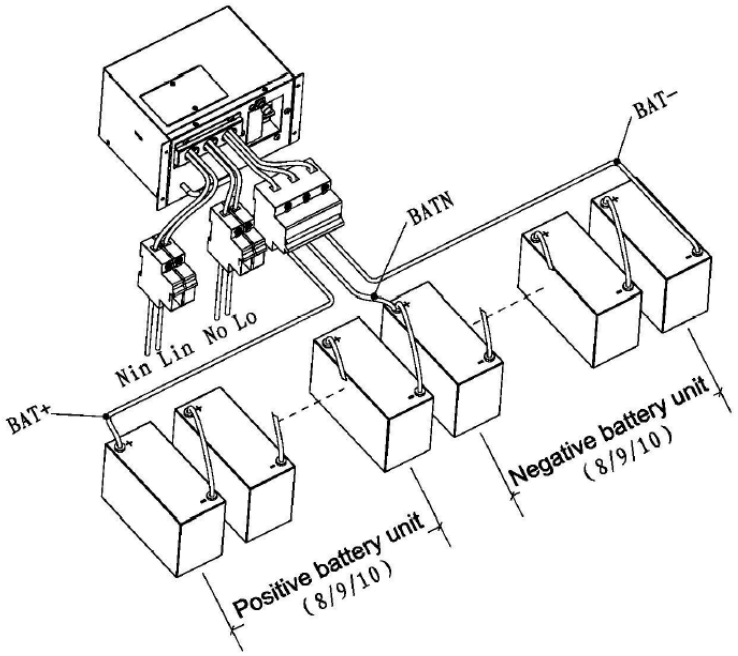
2.2.2 Installation

- **External battery connection (for extend model only)**

1) Make sure battery quantity complies with the specs. Measure the voltage of battery bank after finish connection, battery voltage should be around 240VDC. Don't mix batteries with different capacity, manufacturers, don't mixed brand new and old batteries.
2) The breaker on battery cabinet should be off.
3) Take out the connection box and remove the cover of terminals, use multi-meter to make sure there is no DC voltage at the battery terminals of UPS.
4) Connect battery pole witch positive pole ,negative pole and common pole to battery connecter(BAT+,BATN,BAT-），don't reverse battery connection.

CAUTION

It is recommend to connect or replace battery after switching off the system; don't reverse battery connection when doing battery hot-swap.



- **UPS input and output connection**

Minimum 10AWG copper wires are required for the 6KVA, and 8AWG for 10KVA, including input/output cables, battery cables.

1) Switch off all breakers before connecting cables

2) Remove the cover of the terminals, see Fig 2-3,following it to connect the cables

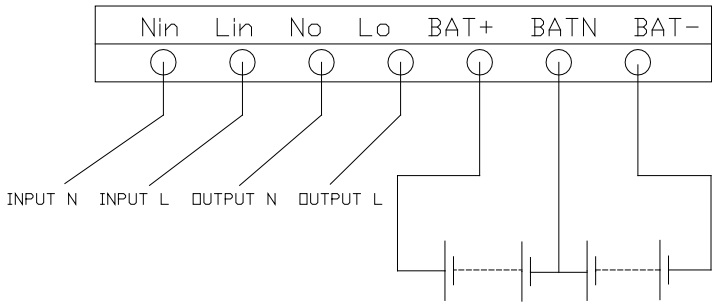


Fig.2-2I/O terminals connection

CAUTION
Terminators are required so as to ensure the connections are firm
Don't reverse the input L and N
Don't connect the UPS input to a wall outlet or the outlet will get burnt.

3) Connect the UPS output L, N, E to L, N, E of load via a PDU. Tighten the screws and shelter the terminals

WARNING !
Please connect the output Earth well before other operation

■ **Connection of UPS communication cables**

1) RS-232 cable provide with accessories can be used to connect the UPS with PC
2) Follow steps below to install SNMP (if purchased)：
   A. Remove the cover of SNMP slot at UPS rear panel and keep it for further use.
   B. Insert the SNMP card and tighten the screws
   C. Connect the UPS with internet by network cable.
   D. Refer to the SNMP manual provided to do SNMP setting

2.3 Connection of parallel system

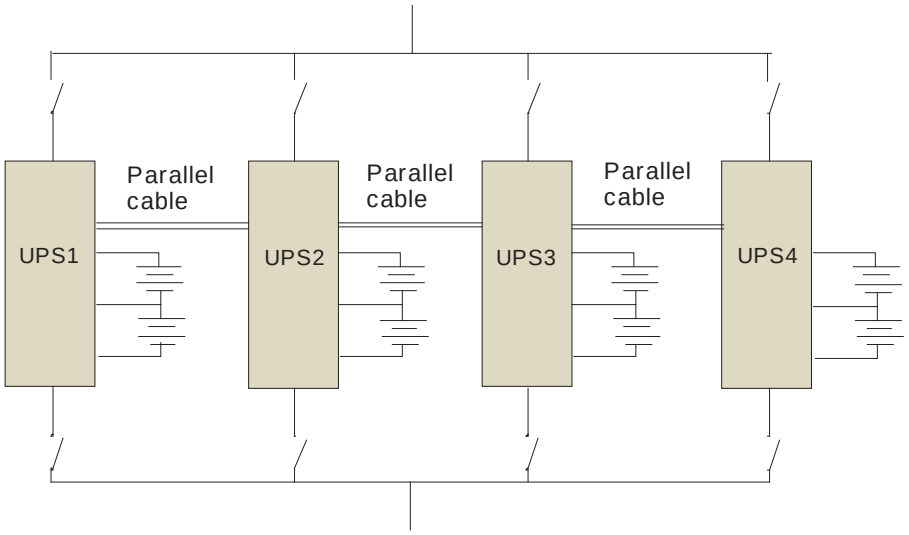


Fig.2-3 parallel system

Make sure all the breakers are off and no output at the UPS output.

CAUTION

Connect the L,N and E well

Configurate individual battery bank for each extend backup UPS in parallel system. Don't use common battery bank.

Parallel cables:

Minimum 10AWG copper wires are required for the 6KVA, and 8AWG for 10KVA

3.Operation

3.1 Working modes

The UPS has AC mode, bypass mode, battery mode and ECO mode

3.1.1 AC mode

If the AC input and load capacity are in normal ranges, load will be powered by inverter output, battery will be charged at the same time.AC and inverter indicators on LCD control panel will be on(green).

CAUTION

Please note below if the UPS input power is provide by a generator

1) Don't switch on load before starting UPS. After the UPS has started and worked steadily, switch on loads one by one. Suggest that the load capacity should lower than 30% of capacity of generator
2) It is suggested that the rating of generator should be 1.5-2 times of the capacity of UPS.

3.1.2 Bypass mode

When the AC power is connected and UPS has not been switched on, or UPS is overload after switching on UPS, it will go to bypass mode. Load will be powered by the AC , battery will be charged too, bypass indicator on the LCD control panel will be on (green) But if the bypass is beyond normal range or absent, UPS will not go to bypass mode, no power supply to load.

3.1.3 Battery mode

In AC mode, if the AC is absence or beyond normal range, the rectifier and charger will stop working, load will be powered by battery bank of which energy goes through inverter circuit. Inverter and battery indicator on LCD control panel will be on (green) and there will be beeps once per 3s.
In battery mode, if battery voltage becomes low and reaches the setting value, system will give low battery voltage alarm, beeps once every second, an LCD will give low battery alarm too.

CAUTION

Charge batteries for at least 8 hours when use the UPS at the first time as there might be energy loss during product transport although the UPS had been fully charged by manufacturer before shipping.

3.1.4 ECO mode

In AC mode, UPS can be set to work in ECO mode if load has no strict requirement on the power purity. Then UPS will transfer to bypass. If the AC is beyond normal range, UPS will transfer to battery mode. UPS efficiency in ECO mode is higher.

3.2 **Operation**

3.2.1 Power on

Switch on the AC input and bypass circuit breaker if all connections are correct .If external batteries are connected, please switch on battery breaker first, then AC breaker. Fans will run, system will do self diagnose. After the self diagnose is finished, buzzer inside will beep twice, system will go to bypass mode, AC and bypass indicators on front panel will be on (green).supply will change to inverter when invert is normal

3.2.2 System parameter setting

Check the information displayed on LCD by right or left arrow button, press ESC to quit to the main menu.
When the function setting interface as P.11 Fig3, press the ENT hold it for 1s to enter to do the function setting such as floating charging, boosting charging, temperature compensate function, battery capacity (for extend backup model only)

3.2.3 Start

- AC available

1) Press the On button and hold it for 1s until hearing a beep , wait for a few seconds, the bypass indicator will be off , inverter indicator will be on, see Fig3-6, then, UPS is working in AC mode

> **CAUTION**
> UPS can start automatically when the AC power comes back if the UPS was shut down due to battery exhausted last time , or the auto restart function has been enable.

2) Gradually increase the load after the UPS working normally. Load information can be checked through LCD.

3) If the buzzer beeps twice per second and overload alarm is displayed on LCD, it means the system is overload .Please decrease the load immediately.70% of load is recommended in case suddenly added load will not affect the UPS work normally

> **CAUTION**
> If the UPS has transferred to bypass mode due to overload for several times and reach the setting times in 1 hour, it will keep in bypass mode unless manually transfer to inverter mode or automatically transfer to inverter mode 1 hour later without overload

- Battery mode

UPS can start in battery mode even if the AC is absent.

1) Press the On button and hold for 1 second until hearing one beep, battery and inverter indicators will be on after finishing self-diagnose. UPS will beep once every 3 seconds which means it is working in battery mode
2) Add load as in AC mode above.

> **CAUTION**
> Please decrease load immediately if system is overload otherwise it will shut down in some time.

3.2.4 Manual battery testing

When the inverter is working, if the input AC is normal , no overload, battery voltage is not lower than 12V per unit, the battery testing can be carried out by pressing button on the LCD control panel. When the battery is being test, buzzer beeps, battery indicator blinks. When the testing is complete, buzzer stops beeping, battery indicator stops blinking, UPS will recover to status before the testing .If there are some problems with batteries, LCD will show the details

> **CAUTION**
> The battery status info will be reflash everytime after the testing.
> Battery fault info checked out by the testing due to battery not fully charged can be confirmed after fully charging.

3.2.5 inverter shutdown

1) If the AC is normal, press the off button and hold for 1 second until hearing one beep, inverter indicator will be off , bypass indicator will be on, UPS will work in Bypass mode
2) If the AC is absent, press the off button and hold for 1 second until hearing one beep, UPS will shut down the output ,LCD will display shutting down.

3.2.6 Power off

After switching off the inverter, switch off the AC and battery circuit breaker, LCD control panel will be off, fan will stop. If there is battery bank connected, it will take 30 seconds to shut down the system completely
Power of equipment will be cut off when the UPS is powered off

3.3 Working Mode and transferring

Usually, the UPS should be set to work in AC mode, so it will transfer to battery mode automatically without interrupt when AC is failed .When UPS is overload, it will transfer to bypass mode without interrupt When the inverter is defective or over temperature inside UPS, UPS will transfer to bypass mode if the bypass is normal

3.3.1 Transfer to bypass if overload

When the load of UPS is beyond normal range and lasts for setting time, it will transfer to bypass mode and beeps twice every second. Then, load is powered by AC directly, at that time, please decrease the load immediately until the alarm is eliminated. UPS will start the inverter after 5 mins. In order to protect the load and UPS, it has set the limitation of times of transferring to bypass mode due to overload in 1 hour. If it exceed the limitation, UPS will keep in bypass mode.

3.3.2 Normal mode to battery mode

UPS will go to battery mode if the AC is failed. UPS will shut down automatically if battery has been exhausted. When AC recovers, UPS will start inverter automatically. If UPS was shut down manually in battery mode, when AC recovers, it will work in Bypass mode, can not start the inverter automatically.

3.3.3 Goes to Bypass mode due to over temperature

The temperature inside UPS may be high if ambient temperature is high or the ventilation is poor, then UPS will go to Bypass mode, fault indicator will be on (red),LCD will display that the inner temperature is high, long beeps will come .If so, please cut off the input power of UPS, move objects that affecting the ventilation far way from UPS if any or increase the distance between UPS and wall. Wait until UPS temperature become normal, restart it.

3.3.4 Output short circuit

When the UPS output is short circuit, UPS will cut off the output, fault indictor will be on (red), LCD will display that output is short circuit, long beeps come .If so, please disconnect the short circuit load, cut off the UPS input power and wait for 10mins, UPS will shut down automatically or press the off button to shut down in after 10s.Before restarting the UPS, please make sure that the short circuit problem has been solved

3.4 UPS monitoring

Please refer to instruction of ups monitoring software provided.

3.5 LCD operation menu

3.5.1 Main menu switching

Press the left/right arrow and ENT button can switch among alarm info, running parameter and function settings. Press ENT to enter larm info or running parameter or function settings .To enter function settings, double pressing on ENT is required.

3.5.2 Submenu switching

1) Press the arrow button can view the details after entering the running function interface, press ESC to return to main menu.
2) Press the arrow button can view the details after entering the function settings interface, press ESC to return to main menu
3) Parameter which has been selected and to be changed will be highlighted. Press arrow button to change the value and press ENT to confirm the value. Once confirmed, it will not be highlighted.
4) Press the arrow button can view the detailed alarm info after entering the alarm info interface, press ESC to return to main menu

3.5.3 Priority of info displayed on LCD

1) If there is alarm but no valid operation on buttons, the alarm info with top priority will be shown on LCD automatically
2) When there isn't any alarm and LCD is displaying the submenu of running parameters, such as output current, these parameters will be always displayed on LCD if no operation on buttons .If LCD is not displaying the submenu of running parameters, it will return to main menu if 30s if there isn't operation on buttons

4 Maintenance

Please follow 2.2.1 to install UPS

4.1 Fan maintenance

Continual working time of fan is 20000 to 40000 hours, it will be shorten as temperature raises. Please check the fan periodically, make sure there is wind blown out front it.

4.2 Battery maintenance

There are sealed lead acid maintenance free batteries inside This series standard models. Battery life depends on environment temperature and discharge/charge cycles, it will be shorten if temperature raises or deep discharged. Periodical maintenance is required so as to keep battery in good conditions.

1) The most proper working temperature is 15 to 25 Celsius degree.
2) Avoid small discharging current. Don't let UPS work in battery mode continuously for 24 hours.
3) Charge battery for at least 12 hours every 3 months if it is free of operation. If the environment temperature is high, charge it once every 2 months.
4) For extend backup models, check and clean the battery connectors periodically.。

If backup time has become much less than before, or there is battery fault displayed on LCD, please contact distributors to confirm whether the batteries need to be replaced or not.

CAUTION

1) Don't short circuit battery, or it may cause a fire.
2) Don't open battery, released electrolyte is harmful to skin and eyes

4.3 Visual checking

Keep ventilation of UPS in good condition

4.4 UPS status checking

1) To check to see if there is any fault or not, fault indictor is on or not, any alarm there.
2) Please find the cause if UPS is working in bypass mode.
3) If UPS is working in battery mode, make sure it is normal if not, please find out the cause

4.5 Function checking

Do function checking once every 6 months.

1) Press the off button to see if the buzzer and indicators and LCD are normal or not. Please refer to 3.1
2) Press the On button, check the indicators, LCD and UPS inverter ,make sure they are normal
3) When UPS is working in normal ,do the battery testing to test battery.

5 Trouble shooting

Please contact the distributor if problems can not be solved by following trouble shooting below

No	Problem description	Probable causes	Solution
1	No display on LCD, no self- diagnose	A Input power absent B Low input	Use Multi-meter to measure the input to see if it is normal or not.
2	AC normal but AC indicator off, UPS is in battery mode	A Input circuit breaker off. B Input power connection problem	A Switch on input breaker B Check the connection and redo
3	No alarm but no output	Output connection problem	Check the connection and redo
4	UPS doesn't start after pressing On button	A time of pressing ON button is short B Overload	A Press and hold On button for 1s B Disconnect all loads and restart
5	AC indicator blinking A	Input AC is beyond normal range	Pay attention to the backup time if UPS is in battery mode
6	Buzzer beeps twice every second, LCD shows "output overload"	UPS overload	Disconnect some loads
7	"Fault indicator On and LCD shows "battery fault"	A Battery circuit breaker off or poor connection B Reverse battery connection C Battery defective	A Switch On the breaker, check the battery connections B Check the battery polarity C Contact distributor to replace battery
8	Fault indicator on ,LCD shows" charger fault "	Charger defective	Contact distributor
9	Abnormal backup time	A Battery not fully charged B Battery terminate	A Charge battery for 8 hours when AC is normal, then test the backup time again B Contact distributor to replace battery
10	Long beeps, fault indicator on, LCD show…	Over temperature inside UPS	A Check to see if there is wind blown out from fans B Move objects away from UPS C Wait till UPS becomes cool and restart UPS

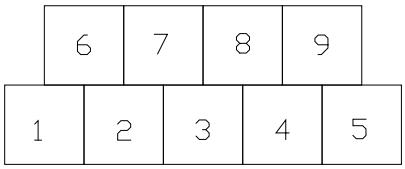
11	Long beep fault indicator on, LCD shows “output short circuit ”	Output short circuit	Eliminate the short circuit and restart UPS
12	Long beeps, fault indictor on, LCD shows “rectifier fault”/“inverter fault”/“auxiliary power fault”/“output fault”	Fault inside UPS	Contact distributor
13	Abnormal sound or smell	Fault inside UPS	shut down UPS immediately and Contact distributor

Please provide the UPS model, SN when calling distributor for maintenance.

`

Appendix 1. RS232 communication port definition

Definition of Male port：



Pin 2 receive, pin 3 send,
Pin 5 ground, others floating

Connection between PC RS232 port and UPS RS232 port

PC ---------- UPS
RDX 2<---------- TX 2
TDX 3----------> RX 3
GND 5---------- GND 5

Available function of RS232

- Monitor UPS power status
- Monitor UPS alarm info
- Monitor UPS running parameters
- Timing off/on setting

RS-232 communication data format

Baud rate ---------- 2400bps
Byte length ---------- 8bit
End bit ---------- 1bit
Parity check ---------- Null

Appendix 2. Specification

Capacity		6KVA/4.8W 10KVA/8KW
Type		6KVA-H/S 10KVA-H/S
input	Input mode	
	Power factor	≥0.99
	rating voltage	220VAC/230VAC（can be set）
	rating frequency	50Hz/60Hz（can be set）
	Voltage range	145~280V
	Frequency range	40~70Hz
	Bypass voltage range	max：+5%， +10% or +15%， default +5%
		min：-20%, -30% or -45%， default -45%
	Bypass frequency range	±1%、±2%、±4%、±5%、±10%
	THDI	5%（100% liner load，input THDV ≤1%）
		5% （100% non liner load，input THDV ≤1%）
battery	Battery number	2*(8～10)（12V）
	Batt type	VRLA
	Charge model	Boost charge or float charge auto switch
	Charge time	Boost charge up to 20Hr(Max)
	Charge current(A)	6KVA:1A（S）/6A（H）
		10KVA:1A（S）/6A（H）
output	Output type	Three line of single-phase
	Output precision	1.0%;
	Voltage distortion（THD）	less than 2% at 100% liner load
		less than 3.5% at 100% non-liner load
	Rating voltage	220/230V
	Frequency precision	±0.1%
	Rating Frequency	50Hz/60Hz
	Frequency track speed	1Hz/s
	Overload	105%~110%，1Hr
		110%~125% 10min
		125%~150% 1min
		≥150% 200ms
	Overload for bypass	125%
	Peak value factor	3:1
	Efficiency at normal	6KVA≥88% 10KVA≥90%

	Efficiency at battery mode	6KVA≥85% 10KVA≥81%
	Efficiency of inverter	6KVA>=90% 10KVA>=92%
	Dynamic respond	5.0%
		20ms
	DC heft	≤500mV
Switch time	Between Normal mode and battery mode	0ms
	Between invert and bypass	0ms。
		unlock：＜15ms (50Hz)，＜13.33ms (60Hz)
Norse		<55dB（1m）
Display		LCD+LED
safety		Meeting IEC62040-1 GB4943。
Max input voltage		320Vac，1Hr
EMI		Conduction ： IEC 62040-2
		Radiation ： IEC 62040-2
		Humorous ： IEC 62040-2
EMS		IEC 62040-2
MTBF		250,000Hr 1＋1 400,000Hr
MTTR		30min
Isolation resistance		> 2MΩ（500Vdc）
Isolation intension		2820Vdc， <3.5mA，1min
Surge		Meeting IEC60664-1 1.2/50uS+8/20uS 6kV/3kA.
Protection		IP20
Strike		Meeting YD/T 1095
Package		Meeting YD/T 1095
Traffic		Meeting YD/T 1095
Parallel circumfluence		1＋1≤8%，N＋1≤3%
Parallel equal current		1＋1≤8%，N＋1≤10%

Dimension & weight

DIMENSION		
Capacity	KVA	6KVA/4.8KW 10KVA/8KW
Hight	mm	655
Wide	mm	250
Deep	mm	590

Net weight	kg	6KVA：73Kg（S）/32.5（H） 10KVA：74Kg（S）/33（H）
Colour		Blackness

Appendix 3. Option

1. Extended battery box
2. Dry contact card
3. SNMP card
4. Parallel card

Appendix 4. UPS message table

01（running）

0x01	Non output
0x02	on bypass
0x03	on online
0x04	on battery
0x05	Battery self-testing
0x06	Invter starting
0x07	ECO mode
0x08	EPO
0x09	maintenance bypass
0x0A	Fault

02：（status）

							8	9	A	B	C	D	E	F	EPO
			4	5	6	7					C	D	E	F	Rectifier working
	2	3			6	7			A	B	C		E	F	Rectifier limit
1		3		5		7		9		B		D		F	Input normal

							8	9	A	B	C	D	E	F	Input 1：main /0：battery
			4	5	6	7					C	D	E	F	charging
	2	3			6	7			A	B	C		E	F	P-battery boost charging

1		3		5		7		9		B		D		F	N-battery boost charging

							8	9	A	B	C	D	E	F	Battery self-testing
			4	5	6	7					C	D	E	F	00：shutdown；01：soft start；
	2	3			6	7			A	B	C		E	F	0：no output；11：output normal
1		3		5		7		9		B		D		F	Alarm for switch delay

							8	9	A	B	C	D	E	F	Capacity no enough
			4	5	6	7					C	D	E	F	Overload to shutdown
	2	3			6	7			A	B	C		E	F	Overload to bypass
1		3		5		7		9		B		D		F	Parallel to bypass

							8	9	A	B	C	D	E	F	Switch times up to limit
			4	5	6	7					C	D	E	F	Master
	2	3			6	7			A	B	C		E	F	MB switch close
1		3		5		7		9		B		D		F	Input switch close

							8	9	A	B	C	D	E	F	00：no out；01：bypass；10：invert
			4	5	6	7					C	D	E	F	
	2	3			6	7			A	B	C		E	F	0（hold）
1		3		5		7		9		B		D		F	0 (hold）

03：（Alarm A）

							8	9	A	B	C	D	E	F	Rectifier fault
			4	5	6	7					C	D	E	F	Rectifier over temp
	2	3			6	7			A	B	C		E	F	Invert over temp
1		3		5		7		9		B		D		F	rectifier over current

							8	9	A	B	C	D	E	F	Assistant supply 1 fault
			4	5	6	7					C	D	E	F	Assistant supply 2 fault
	2	3			6	7			A	B	C		E	F	Input SCR fault
1		3		5		7		9		B		D		F	discharge SCR fault

							8	9	A	B	C	D	E	F	Charge SCR fault
			4	5	6	7					C	D	E	F	Fan fault
	2	3			6	7			A	B	C		E	F	Fan supply fault
1		3		5		7		9		B		D		F	BUS over voltage

							8	9	A	B	C	D	E	F	BUS lower voltage
			4	5	6	7					C	D	E	F	BUS voltage of P-N different
	2	3			6	7			A	B	C		E	F	Phases wrong
1		3		5		7		9		B		D		F	Soft start fault

							8	9	A	B	C	D	E	F	N loss
			4	5	6	7					C	D	E	F	Battery on the contrary

	2	3			6	7			A	B	C		E	F	No battery
1		3		5		7		9		B		D		F	P-charge fault

							8	9	A	B	C	D	E	F	N-charge fault
			4	5	6	7					C	D	E	F	Battery voltage lower
	2	3			6	7			A	B	C		E	F	Battery voltage higher
1		3		5		7		9		B		D		F	pre-alert for battery low

							8	9	A	B	C	D	E	F	Frequency of Input over limit
			4	5	6	7					C	D	E	F	Voltage of Input over limit
	2	3			6	7			A	B	C		E	F	0（hold）
1		3		5		7		9		B		D		F	0（hold）

04：（Alarm B）

							8	9	A	B	C	D	E	F	Inverter fault
			4	5	6	7					C	D	E	F	Bridge cross of inverter
	2	3			6	7			A	B	C		E	F	Invert SCR short circuit
1		3		5		7		9		B		D		F	Invert SCR open circuit

							8	9	A	B	C	D	E	F	bypass SCR short circuit
			4	5	6	7					C	D	E	F	bypass SCR open circuit
	2	3			6	7			A	B	C		E	F	CAN communication fault
1		3		5		7		9		B		D		F	Current no equality for parallel

							8	9	A	B	C	D	E	F	Bypass phase wrong
			4	5	6	7					C	D	E	F	sycn fault
	2	3			6	7			A	B	C		E	F	Bypass over track
1		3		5		7		9		B		D		F	Bypass over protect

							8	9	A	B	C	D	E	F	IGBT over current
			4	5	6	7					C	D	E	F	Fuse fault
	2	3			6	7			A	B	C		E	F	Parallel cable fault
1		3		5		7		9		B		D		F	Parallel relay fault

							8	9	A	B	C	D	E	F	LBS unlook
			4	5	6	7					C	D	E	F	Initialization fault
	2	3			6	7			A	B	C		E	F	Can’t start
1		3		5		7		9		B		D		F	overload

							8	9	A	B	C	D	E	F	Parallel overload
			4	5	6	7					C	D	E	F	DC heft over limit
	2	3			6	7			A	B	C		E	F	Bypass over current
1		3		5		7		9		B		D		F	Feedback protect