CyberPower®

User´s Manual

OLS6000E(XL)
OLS10000E(XL)

CyberPower Systems Inc.
www.cyberpower.com

K01-C000044-06

CONTENT :

1. Safety

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

1.1. Installation

- This is permanently connected equipment, and it must be installed by qualified maintenance personnel.
- Condensation may occur if the UPS is moved directly from a cold to a warm environment. The UPS must be absolutely dry before being installed. Please allow an acclimatization time of at least two hours.
- Do not install the UPS near water or in damp environment.
- Do not install the UPS where it would be exposed to direct sunlight or near heat.
- Do not connect appliances or items of equipment which would overload the UPS (e.g. laser printers, etc.) to the UPS output.
- Do not block ventilation openings in the UPS's housing. Ensure allow at least 0.5m of space on front and rear of the UPS.
- Place cables in such a way that no one can step on or trip over them.
- Connect UPS with the earth reliably before connecting to the building wiring terminal, and external battery source must also be earthed.
- 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.
- An appropriate disconnect device as short-circuit backup protection should be provided in the building wiring installation.
- The equipment is powered by two sources: the mains source, the internal battery or the external battery source.
- With the installation of the equipment, the sum of the leakage current of the UPS and the connected load does not exceed 5% of rated value of input current.

1.2. Operation

- Do not disconnect the main cable on the UPS or the building wiring terminals during operation since this would remove the protective earth from the UPS and all connected loads.
- The UPS output terminal block may still be electrically lived even if the UPS is

not connected to the building wiring terminal, for there is internal current source (batteries).

- In order to fully disconnect the UPS, first turn the input breaker in the "OFF" position, then disconnect the mains lead.
- Indiscriminate operation of switches may cause output loss or damage to equipment. Refer to instruction before conducting any control.
- While the UPS work as a parallel system, the external parallel cable should be reinforced insulation.
- Ensure that no liquid or other foreign objects can enter the UPS.

1.3. Maintenance, Servicing and Faults

- Do not remove the enclosure since the UPS operates with hazardous voltages. It is to be serviced only by qualified maintenance personnel.
- **Caution!** Risk of electric shock. Even after the unit is disconnected from the mains power supply (building wiring terminal) components inside the UPS are still connected to the battery which are potentially dangerous.
- Before carrying out any kind of service or maintenance, isolate UPS and disconnect the batteries. Verify that no current is present and no hazardous voltage exists in the capacitor or BUS capacitor.
- Batteries must be replaced only by qualified personnel.
- Batteries have a high short-circuit current and pose a risk of shock. Take all precautionary measures specified below and any other necessary measures when working with batteries:

  ─ remove all jewellery, wristwatches, rings and other metal objects

  ─ use only tools with insulated grips and handles.
- When changing batteries, replace with the same quantity and the same type of batteries.
- Do not attempt to dispose of batteries by burning them. It could cause explosion.
- The UPS may be connected to external battery package. Proper disposal of batteries is required. Refer to your local codes for disposal requirements.
- Do not open or destroy batteries. Effluent electrolyte can cause injury to the skin and eyes. It may be toxic.
- Replace the fuse only by a fuse of the same type and of the same spec in order to avoid fire hazards.

1.4. Transport

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

1.5. Storage

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

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 3
RS.....:IEC/EN 61000-4-3	Level 3
EFT.....:IEC/EN 61000-4-4	Level 4
SURGE.....:IEC/EN 61000-4-5	Level 4
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. Description of Commonly Used Symbols

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

Symbol and Explanation			
Symbol	**Explanation**	**Symbol**	**Explanation**
	Alert you to pay special attention		Caution of high voltage
	Alternating current source(AC)		Direct current source(DC)
	Turn on or turn off the UPS		Protective ground
	Recycle		Do not dispose with ordinary trash

3. Introduction

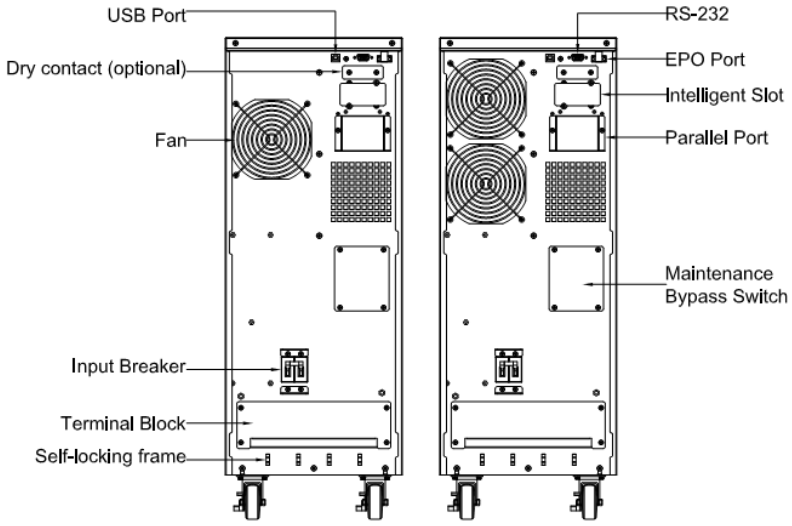
This On-Line series is an uninterruptible power supply incorporating double-converter technology. It provides perfect protection specifically for computer equipments, communication servers, and data centers.

The double-converter principle eliminates all mains power disturbances. A rectifier converts the alternating current from the mains power to direct current. On the basis of this DC voltage, the inverter generates an AC sinusoidal voltage, which constantly supplies the loads. In the event of power failure, the maintenance-free batteries power the inverter.

This manual covers the UPS listed as follows. Please confirm whether it is the model you intend to purchase by performing a visual inspection of the Model No. on the rear panel of the UPS.

Model NO.	Type	Model NO.	Type
OLS6000E	Standard	OLS6000EXL	Extended backup time
OLS10000E		OLS10000EXL	

" XL" Model: Extended backup time.



OLS6000E(XL) OLS10000E(XL)

Fig.3-1 The rear view of OLS6000E(XL)/OLS10000E(XL)

3.1. Feature

This series UPS is a new generation of UPS, which provides the outstanding reliability, and most cost-performance ratio in the industrial. Following benefit the product has:

- True online double-conversion technology with high power density, frequency independence and generator compatibility.
- High input power factor ⩾0.99,overall high efficiency ⩾ 92%, save power and wiring expense. Low input current distortion, avoid power pollution.
- Output power factor is 0.9, perfect output sine waveform, suitable almost all critical equipment.
- Outstanding adaptability to the worst mains input condition. Extra wide input voltage, frequency range and waveform, avoid excessive dissipating limited

battery energy.

- Internal charger of XL model could be up to 4Amps to decrease recharging time of battery.
- N+X parallel redundancy to increase the reliability and flexibility. Number of parallel operating UPS is up to 4.
- ECO mode with high efficiency ≥96%, save power expense for user.
- Start-able without battery.

3.2. Electrical Specifications

Input		
Model NO.	OLS6000E(XL)	OLS10000E(XL)
Phase	Single	
Voltage Range	110~276Vac(Depends on load level)	
Frequency Range	(45~55)/(54~66)Hz	
Rated Current	31(36)A	50(55)A
Power Factor	≥0.99 @ full load	
Battery		
Rated Voltage	240Vdc	
Rated Current	28A	47A
Output		
Model NO.	OLS6000E(XL)	OLS10000E(XL)
Power Rating	6kVA/5.4kW	10kVA/9kW
Voltage*	208/220/230/240Vac	
Frequency	Synchronized 50/60×(1±10%)Hz @Line mode 50/60×(1±0.1%)Hz @Battery mode	
Wave Form	sine	

Load Type	PF 0.5~1, lagging
THDV	≤ 2% @ full linear load ≤5% @ full nonlinear load
Overload**	In Line mode: 10 min 105~125% 1 min 125~150% 10 s >150% 100 ms >170% In Battery mode: 2 min 105~125% 30 s 125~150% 100 ms >150%

*The load capacity would be derated to 90% automatically when the output voltage is adjusted to 208Vac.

**The overload capacity would be derated automatically in Line mode while the circumstance temperature is larger than 35 degree.

3.3. Operating Environment

Temperature	Humidity	Altitude	Storage temperature
0℃~40℃	<95%	<1000m	-15℃~50℃

Note: The load capacity should be derated 1% every 100m heightened on the basis of 1000m.

3.4. Dimensions and Weights

Model NO.	Dimensions W×H×D(mm)	Net Weight (kg)
OIS6000E	260×708×550	70
OLS6000EXL	260×708×550	25
OLS10000E	260×708×550	86
OLS10000EXL	260×708×550	28

4. Installation

The system must be installed and wired only by qualified electricians in accordance with applicable safety regulations!
For safety, please cut off the mains power switch before installation!
When installing the electrical wiring, please note the nominal amperage of your incoming feeder.

4.1. Unpacking

- A UPS
- A user's manual
- A USB cable
- A RS232 cable (optional)
- A parallel cable
- A parallel port cover plate
- Terminal splices 12pcs (using for the wire connection on input terminal)

***PowerPanel® Business Edition software is available on our website. Please visit www.cyberpower.com and go to the Software Section for free download.**
CAUTION! Inspect the appearance of the UPS to see if there is any damage 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.

4.2. Power Wires Installation

4.2.1. Notes for installation:

1) The UPS must be installed in a location with good ventilation, far away from water, inflammable gas and corrosive agents.
2) Ensure the air vents on the front and rear of the UPS are not blocked. Allow at least 0.5m of space on each side.
3) Condensation to water drops may occur if the UPS is unpacked in a very low temperature environment. In this case it is necessary to wait until the UPS is fully dried inside out before proceeding installation and use. Otherwise there are hazards of electric shock.

4.2.2. Installation

Use cable cross section and protective device specification：

Model	OLS6000E(XL)	OLS10000E(XL)
Protective earthing conductor Min cross section	6mm² (UL1015 10AWG)	10 mm² (UL1015 8AWG)
Input L, N Min conductor cross section	6mm² (UL1015 10AWG)	10 mm² (UL1015 8AWG)
Input breaker	40A/250Vac	63A/250Vac
Output L,N, Jumper(J1-J2) Min conductor cross section	6mm² (UL1015 10AWG)	10 mm² (UL1015 8AWG)
External Battery Cabinet Positive Pole(+), Negative pole(-), Min conductor cross section	6mm² (UL1015 10AWG)	10 mm² (UL1015 8AWG)
External Battery Cabinet Fuse in Positive Pole(+), Negative pole(-)	30A/240Vdc	60A/240Vdc
External Battery Cabinet Breaker in Positive Pole(+), Negative pole(-)	32A/240Vdc	60A/240Vdc
Torque for fixing above terminals	3.95~4.97Nm (35~44 1b in)	

1) It is suggested to install an external isolating device against current backfeed between mains input and UPS. After the device is installed, it must add a warning label with the following wording or the equivalent on the external AC contactor: **RISK OF VOLTAGE BACKFEED**. Isolate the UPS before operating on this circuit, then check for hazardous voltage between all terminals.

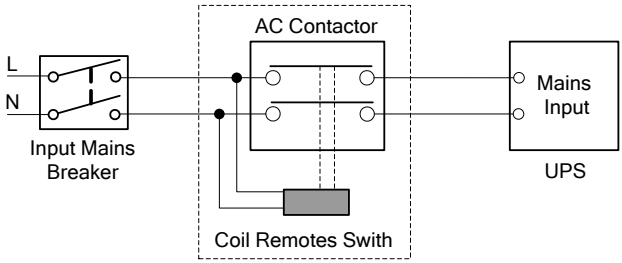


Fig.4-1 Typical external isolating device installation

2) No matter the UPS is connected to the mains power or not, the output of the UPS may be electrically live. The parts inside the unit may still have hazardous voltage after turning off the UPS. To make the UPS have no output, turn off the UPS, and cut off the mains power supply, wait the UPS shut down completely, finally cut off the battery connection.
3) Open the terminal block cover located on the rear panel of UPS, please refer to the appearance diagram.
4) For OLS6000E(XL), it is recommended to select the UL1015 10AWG (6mm²) or other insulated wire which complies with AWG Standard for the UPS input and output wirings.
5) For OLS10000E(XL), it is recommended to select the UL1015 8AWG (10 mm²) or other insulated wire which complies with AWG Standard for the UPS input and output wirings.
6) Ensure the capacity of mains power supply. 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.
7) The protective earth ground wire should be installed first according to the following diagram. It is better to use green wire or green wire with yellow ribbon wire.
8) Connect other input and output wires to the corresponding input and output terminals according to the following diagram.

Note: Make sure that the input and output wires and the input and output terminals are connected tightly.

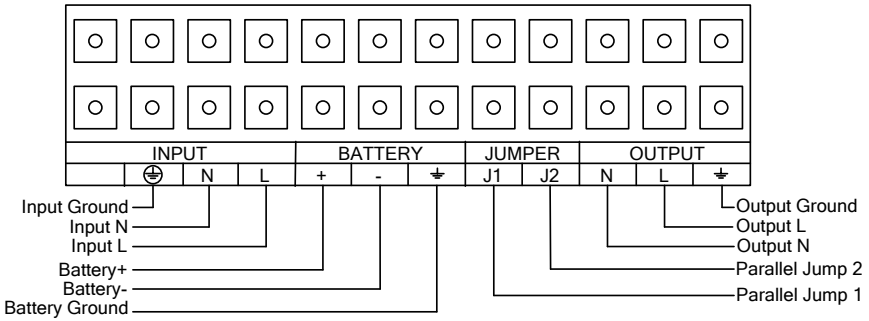


Fig.4-2 Input and output Terminal Block wiring diagram

Important notes:

- If the UPS is used in single mode, J1 and J2 must be connected.
- If the UPS is used in parallel mode, the Jumper between J1 and J2 must be removed.

9) It is requested to use the accessorial terminal splices which can be compacted on the wires tightly, to ensure the connection between the wires and the terminal block is reliable.
10) Install an output breaker between the output terminal of UPS and the load, and the breaker should be with leakage current protective function if necessary.
11) Turn off all the loads first before connecting the load with the UPS, then perform the connection and finally turn on the loads one by one.
12) After completing the installation, please check the wires to make sure all were connected correctly and tightly.
13) Suggest charging the batteries for 8 hours before use. After Installation, turn on the mains power switch and turn the input breaker in the "ON" position, the UPS will charge the batteries automatically. It can also use the UPS immediately without charging the batteries, but the backup time may be less than the standard value.
14) If it is necessary to connect the inductance load such as a monitor or a laser printer to the UPS, the start-up power should be used for calculating the capacity of the UPS, as its start-up power consumption is too big to make the UPS which capacity is small fail easily.

4.3. External Battery Pack Connecting Procedure

1. The nominal DC voltage of external battery pack is 240Vdc. To achieve longer backup time, it is possible to connect multi-battery packs, but the principle of "same voltage, same type" should be strictly followed.
2. For OLS6000E(XL), select the UL1015 10AWG (6mm²) respectively or other insulated wire which complies with AWG Standard for the UPS battery wirings.
3. For OLS10000E(XL), select the UL1015 8AWG (10mm²) respectively or other insulated wire which complies with AWG Standard for the UPS battery wirings.
4. The external battery pack must be independent for each UPS. It is forbidden that two UPS use one external battery pack.
5. The procedure of installing battery pack should be complied with strictly.

Otherwise it may encounter the hazardous of electric shock.

1) Ensure the UPS is not powered on and the mains input breaker is set in the "OFF" position.
2) A DC breaker must be installed between the external battery pack and the UPS. The capacity of breaker must be not less than the data specified in the general specification.
3) Set the external battery pack breaker in "OFF" position and connect the 20 pieces of batteries in series.
4) Connect the external battery pack to the battery terminals. Check the polarity of connection is correct.
5) Set breaker of the battery pack in the "ON" position.
6) Set the mains input breaker in the "ON" position, the UPS would power on and start to charge the battery pack.

4.4. EPO Connection

EPO (Emergency power off): when the emergency occurs, such as the failure of load, the UPS can cut off the output at once by operating the EPO port manually.

The connection：

Normally the EPO connector is closed with a wire on the rear panel, which is supplied in the accessory. Once the connector is open, the UPS would stop the output and enter EPO status (Fig.4-3).

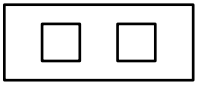


Fig.4-3 Enable the EPO status

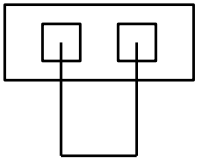


Fig.4-4 Disable the EPO status

To recover to normal status, first EPO connector should be closed (Fig.4-4), and enter LCD menu (illustrated in the chapter of 5.3) to clear EPO status, then UPS would stop alarm and recover to Bypass model. And UPS needs be turned on by manual operation.

5. Operation

5.1. Display Panel

The UPS has a five-button, dot matrix LCD with white text and a blue background. Besides the LCD, the UPS has four colorized LED to provide more convenient information.

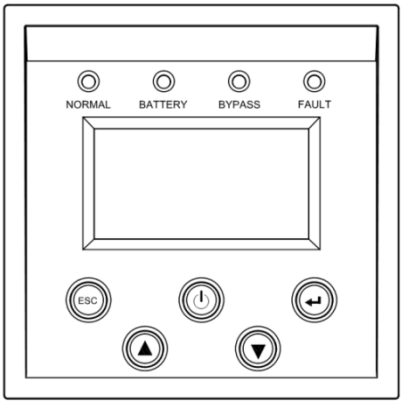


Fig.5-1 LCD Panel

Control button functions：

The Button	Function	illustration
⏻	Power on	When the unit is no power and has connected with battery, press this button more than 200ms to power on
	Turn on	When the unit is powered on and is in Bypass mode, press this button more than 1s to turn on
	Turn off	When the unit has been turned on, press this button more than 3s to turn off
↵	Enter	Press this button more than 200ms to confirm current selection or enter the current selection window
ESC	Exit	Press this button more than 200ms to cancel current selection and return to previous menu
▲	UP	Press this button more than 200ms to move the focus to the up menu
▼	Down	Press this button for more than 200ms to move the focus to the down menu

LED definition:

UPS state	NORMAL (Green LED)	BATTERY (Yellow LED)	BYPASS (Yellow LED)	FAULT (Red LED)
Bypass mode with no output			★	☐
Bypass mode with output			○	☐
Line mode	○			☐
Battery mode	○	○		☐
ECO mode	○		○	☐
Battery test mode	※	※	※	※
Turn on	※	※	※	※
Fault mode			☐	○
Warning mode	☐	☐	☐	★

Note：

○: Lightened constantly； ※: #1-#4 Lightened circularly

★: Flashing； ☐: Depended on the fault/warning status or other status

Alarm definition:

UPS condition	Buzzer status
Fault active	Continuous
Warning active	Beep every second
Battery mode	Beep every 4 seconds, if battery low, buzzer Beep every second
Bypass mode	Beep every 2 minutes
Overload	Beep twice every second

The UPS provides useful information about UPS itself, load status, battery, events, identification, and settings through the front panel display.

During powering on, the LCD would display the CyberPower logo for several seconds and then enter to the default page which shows the UPS status summary. On the UPS status screen it provides the following information:

- Status summary, including mode, load, battery and utility
- Alarm status, if any is present.
- Fault status, if any is present.
- Output parameter, including output voltage, current and frequency.
- Input parameter, including input voltage and frequency.
- Bypass parameter, including bypass voltage and frequency.
- Power parameter, including output VA and watt.
- Battery parameter, including battery capacity, voltage and remain time.

5.2. Turning On and Turning Off UPS

Attention: The UPS could only be turning on while connecting with the mains at the first time.

Attention: Please switch off the connected loads first before turning on the UPS, and switch on the loads one by one after the UPS is turned on. Switch off all of the connected loads before turning off the UPS.

Turning on UPS with mains：

1) Check all the connection is correct. Check the breaker of external battery pack is in "ON" position.
2) Set input breaker in "ON" position. At this time the fan begins to rotate, LCD will show "CyberPower". Then LCD will show the default UPS status summary screen after UPS finishing self-test.
3) By pressing button ⏻ continuously for more than 1 second，the buzzer will beep for 1s, UPS starts to turn on.
4) A few seconds later, the UPS turns into Line mode. If the mains power is abnormal, the UPS will transfer to Battery mode without output interruption of the UPS.

Turning on UPS without mains：

1) Check all the connection is correct. Check the breaker of external battery pack is in "ON" position.
2) By pressing button ⏻ continuously for more than 200ms, the UPS would be powered on. At this time the fan begins to rotate, LCD will show "CyberPower".

Then LCD will show the default UPS status summary screen after UPS finishing self-test.

3) By pressing button ⏻ continuously for more than 1 second，the buzzer will beep for 1s, UPS starts to turn on.
4) A few seconds later, the UPS turns into Battery mode. If the mains power comes back, the UPS will transfer to Line mode without output interruption of the UPS.

Turning off UPS with mains：

1) To turn off the inverter of UPS by pressing button ⏻ continuously for more than 3s and the buzzer will beep for 3s. The UPS will turn into Bypass mode at once.
2) When completing the above action, UPS output voltage is still present. In order to cut off the UPS output, simply cut off the mains power supply. A few seconds later, LCD display shuts down and no output voltage is available from the UPS output terminal.

Turning off UPS without mains：

1) To power off the UPS by pressing button ⏻ continuously for more than 3s, and the buzzer will beep 3s. The UPS will cut off the output at once.
2) A few seconds later, LCD shuts down and no voltage is available from the UPS output.

5.3. LCD Operation

Except the default UPS status summary screen, the user could get more useful information about UPS current status, old events which ever occurred, UPS own identification, and could change the settings to fit the user own requirements, optimize the function of UPS.

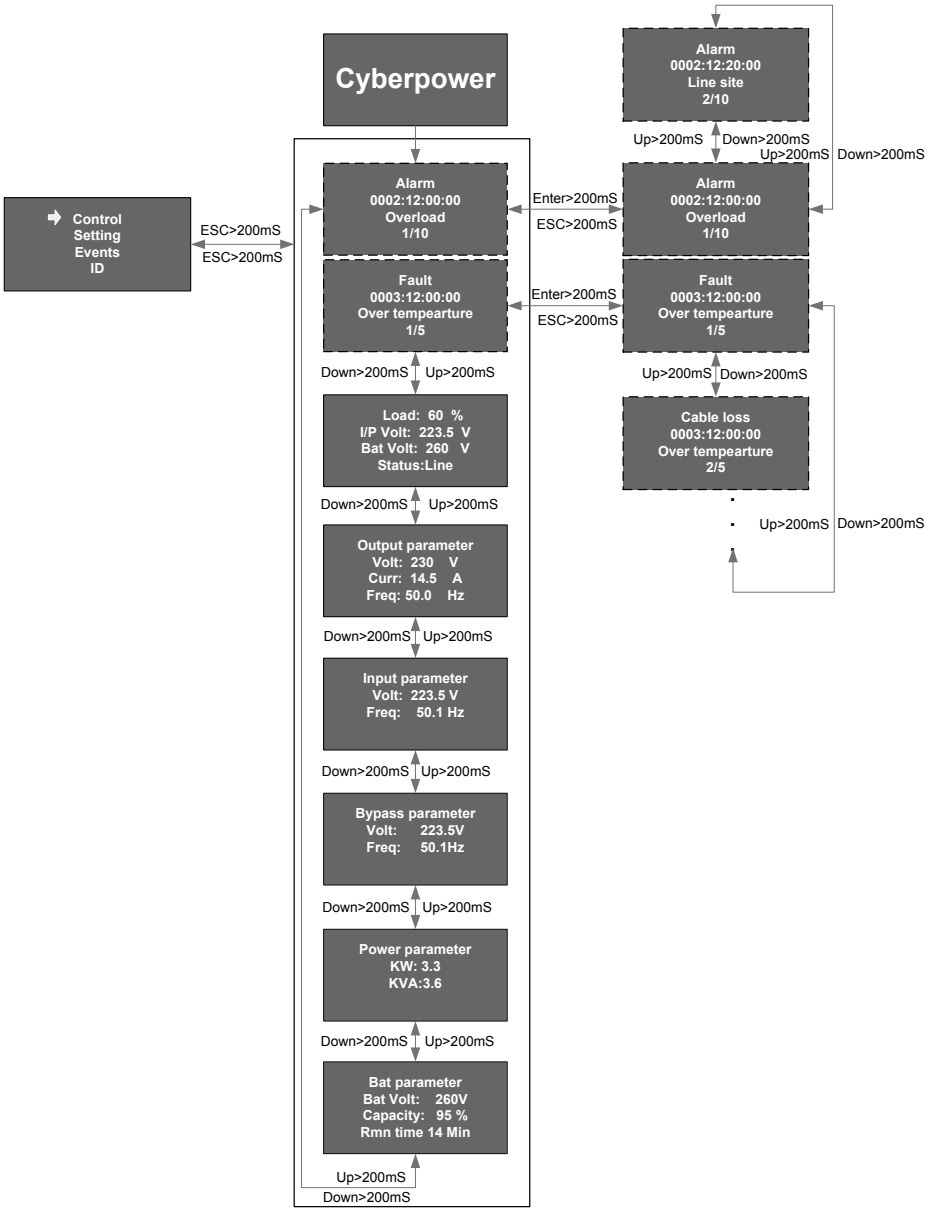


Fig.5-2 UPS status menu

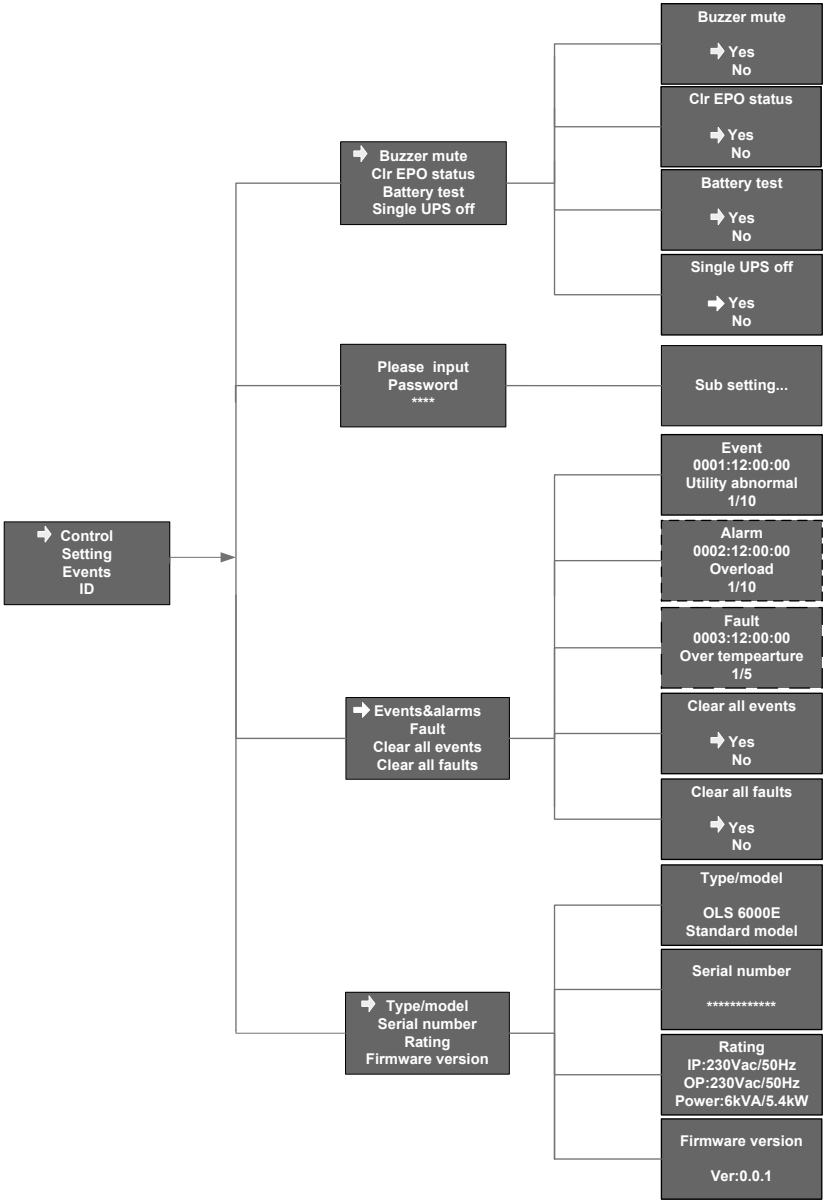


Fig.5-3 Main menu

The status screen：

In the UPS status screen, when pressing ▲ or ▼ >200ms the detailed information about UPS information that include alarm, fault output, input, bypass, load and battery parameter would be shown. See Fig.5-2.

when pressing ESC > 200ms the main menu would be shown. In fault or alarm screen, when pressing ↵ > 200ms, the other alarm or fault would be shown by pressing ▲ or ▼ >200ms, and press>200ms the display would return to status screen. The main menu includes four branches: UPS control menu, setting menu, event menu and identification menu. See Fig.5-3.

The control menu：

By pressing ↵ , enter the menu of "Control". The display would enter the next control menu screen.

1) Buzzer mute
2) Battery test: is one command to control all UPS in a parallel system to do the battery test at the same time.
3) Clear EPO status: once EPO status is enabled, the UPS output would be cut off. To recover to normal status, first EPO connector should be closed, and enter this menu to clear EPO status, then UPS would stop alarm and recover to Bypass model. And UPS needs be turned on by manual operation.
4) Single UPS off: is one command to turn off one UPS which is operated currently in parallel system, and other UPS continue working to supply the load in the parallel system.

The setting menu：

Please contact your local distributor for further information before using the settings. Some settings would change the specification, and some settings would enable or disable some functions. The unsuitable option set by user may result in potential failures or protecting function loss, even directly damage the load, battery or UPS. The most of settings could only be done while UPS is in Bypass mode.

Submenu item	Optional Values	Default Value
User password*	enabled/disabled	disabled
Audio alarm	enabled/disabled	enabled
Site wiring fault alarm	enabled/disabled	enabled

Ambient temperature warning	enabled/disabled		enabled	
DC start	enabled/disabled		enabled	
Auto Restart	enabled/disabled		enabled	
Automatic overload restart	enabled/disabled		enabled	
Auto Bypass	enabled/disabled		enabled	
Short circuit clearance	enabled/disabled		disabled	
Power strategy**	normal/ECO/converter		normal	
Rated output voltage	208/220/230/240V		230V	
Output frequency	50/60Hz		50Hz	
Bypass voltage low range	10%,15%,20%		15%	
Bypass voltage high range	10%,15%		10%	
Bypass frequency range	1%~10%		10%	
ECO voltage range	10%,15%		10%	
ECO frequency range	1%~10%		5%	
Ext. Bat Type	Standard/Customized		Standard	
Ext. Bat Pack	0~15	1~15	0	1(XL)
Automatic battery tests period	0~45days		7days	
Set running time	Day: hour: minute: second 0000:0000:00~9999:23:59:59		Running time	
Restore default setting***	Yes/NO			

*Password is AAAA when enabled.

**Read the chapter of 6.1 and 6.2, before using ECO or Converter function. UPS need shut down, if change work mode from converter to others.

***UPS need shut down.

6. Special Function

The series UPS has some special functions, which could satisfy some special application of user. And the functions have own features, please contact your local distributor for further information before using the function.

6.1. ECO Function

Brief introduction of ECO function：

If ECO function is set to enable, after the UPS is turned on, the power used by the load is directly supplied from the mains power via internal filter while the utility power is in normal range, so the economy mode could be gained in ECO mode. Once the mains power is loss or abnormal, the UPS would transfer to Line mode or Battery mode and the load is supplied continuously.

The great virtue is overall high efficiency≥96% of UPS, to save power for user.

But the disadvantage is:

1) The load can't be protected as well as in Line mode, for the load is directly supplied from the mains;
2) The transfer time of UPS output from ECO mode to Battery mode is about 10ms.

So the function is not suitable to some sensitive loads, and the region where the mains power is unstable.

Set the function：

The function could be enabled through the LCD setting in Bypass mode. Enter the power strategy setting menu by following chapter of 5.3.

6.2. Converter Function

Brief introduction of Converter function：

In converter mode, the UPS would free run with fixed output frequency (50Hz or 60Hz). Once the mains power is loss or abnormal, the UPS would transfer to Battery mode and the load is supplied continuously.

The great virtue is the output frequency is fixed, which is required by some very sensitive loads. But the disadvantage is the load capacity of UPS should be derated to 60% in converter mode.

Set the function：

The function could be enabled through the LCD setting in Bypass mode. Enter the

power strategy setting menu by following chapter of 5.3.

6.3. Parallel Function

Brief introduction of the redundancy：

N+X is currently the most reliable power supply structure. N represents the minimum UPS number that the total load needs, X represents the redundant UPS number, i.e. the fault UPS number that the system can handle simultaneously. When the X is larger, the reliability of the power system is higher. For occasions where reliability is highly depended on, N+X is the optimal mode.

As long as the UPS is equipped with parallel cables, up to 4 UPS can be connected in parallel to realize output power sharing and power redundancy.

How to install a new parallel UPS system：

1) Before installing a new parallel UPS system, user need to prepare input and output wires, input and output breaker, main maintenance bypass switch.
2) Remove the cover plate of the parallel port on the UPS, connect each UPS one by one with the parallel cable, and re-screw the parallel port cover which is supplied in the accessories.

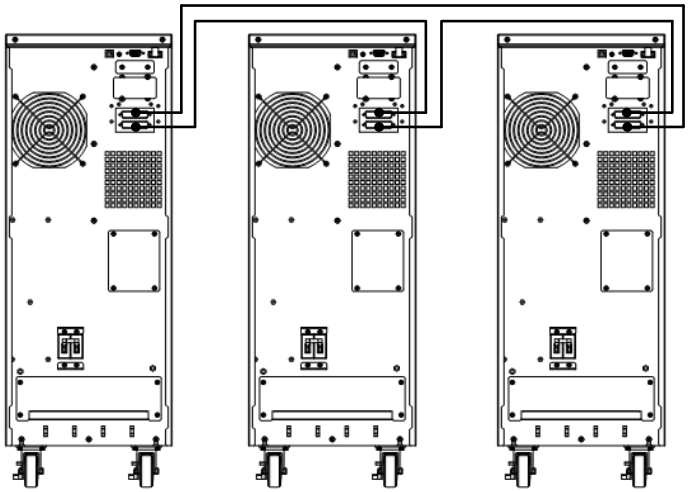


Fig.6-1 Parallel cable connect diagram

3) Strictly follow the chapter of 4.2, the wiring requirement of single UPS to perform the wiring of each UPS.
4) Connect the output wires of each UPS to an output breaker panel.

5) Disconnect the Jumper on J1 to J2 of the terminal block first, and connect each output breaker to a main output breaker and then to the loads.

6) Each UPS needs an independent battery pack.

7) Please refer to the wiring diagram in the following diagram.

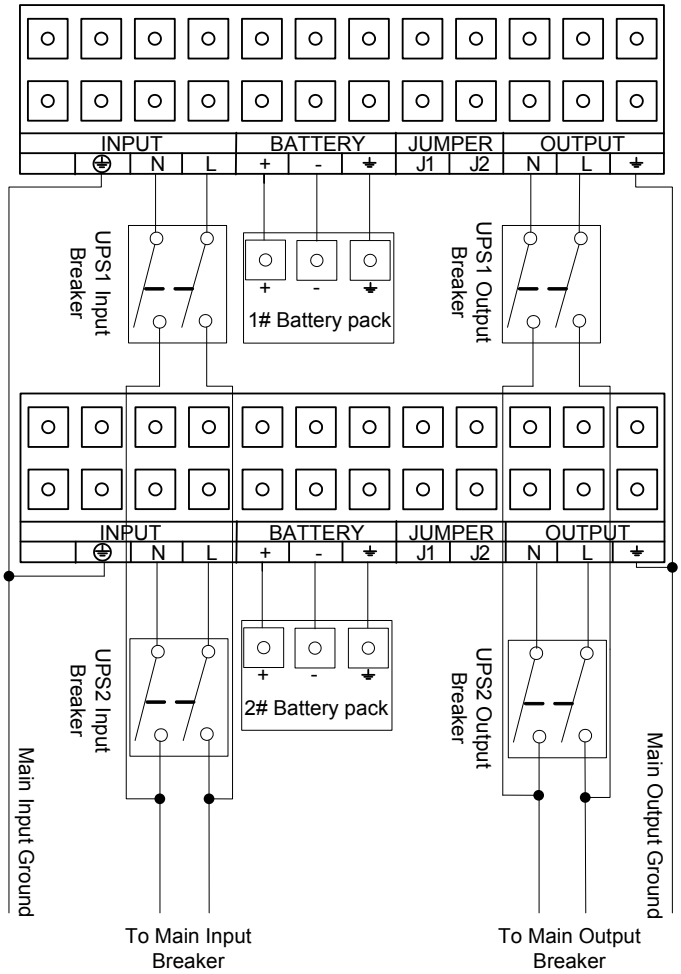


Fig.6-2 Input and output Terminal Block wiring diagram

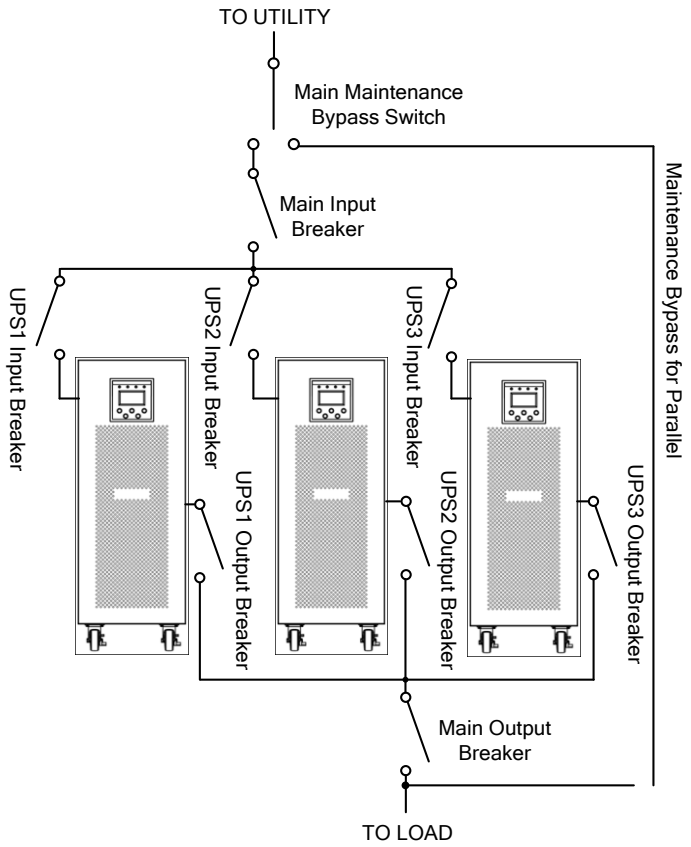


Fig.6-3 Parallel installation diagram

8) The distance between the UPS in parallel and the breaker panel is required to be less than 20 meters. The difference between the wires of input and output of the UPS is required to be less than 20%.

9) Do not switch on the output breaker of each UPS, switch on the input breaker of the each UPS, the UPS should work in bypass with output, observe their display to check if there are any warning or fault information, measure the output voltage of each UPS separately to check if the voltage difference between them is less than 1V. If the difference is more than 1V, check the wiring.

10) Press the button ⏻ of one UPS, each UPS would start to turn on, all the UPS would transfer to the Line mode together. Measure the output voltage of each UPS separately to check if the voltage difference between them is less

than 0.5V. If the difference is more than 0.5V, the UPS need to be regulated.

11) Press the button ⏻ of one UPS, each UPS would start to turn off and transfer to the Bypass mode, switch on the output breaker of each UPS to parallel all the output of UPS together.
12) Press the button ⏻ of one UPS, each UPS would start to turn on , after turning on, the UPS should work parallel in the Line mod.

How to join a new UPS to a parallel system:

1) First the parallel system must be installed one main maintenance bypass switch.
2) Regulate the output voltage of the new UPS separately: check if the output voltage difference between the new UPS and the parallel system is less than 0.5V.
3) Ensure the bypass of the parallel system is normal and the bypass setting is "enable", remove the cover plate of maintenance bypass switch on the rear panel of each UPS, the UPS system would transfer to bypass automatically. Set the own maintenance bypass switch of each UPS from "UPS" to "BPS".
4) Set the main maintenance bypass switch from "UPS" to "BPS", switch off the main output breaker and the main input breaker, the UPS would shut down.
5) Ensure the UPS shut down totally, add the new UPS and reinstall the new UPS parallel system by following step 1) to 9) of the last chapter- “How to install a new parallel UPS system”.
6) Switch on the main input breaker and the main output breaker, and set the main maintenance bypass switch from "BPS" to "UPS", then set the UPS own maintenance bypass switch from "BPS" to "UPS" and screw the maintenance cover plate back again. Press the button ⏻ of one UPS, each UPS would start to turn on, after turning on, the UPS should work parallel in the Line mode.

How to remove a single UPS from a parallel system:

1) First the parallel system must be installed one main maintenance bypass switch.
2) Ensure the bypass of the parallel system is normal and the bypass setting is "enable", remove the cover plate of maintenance bypass switch on the rear panel of each UPS, the UPS system would transfer to bypass automatically. Set the own maintenance bypass switch of each UPS from "UPS" to "BPS".

3) Set the main maintenance bypass switch from "UPS" to "BPS", switch off the main output breaker and the main input breaker, the UPS would shut down.
4) Ensure the UPS shut down totally, remove the wanted UPS and reinstall the new UPS parallel system by following step 1) to 9) of the last chapter- "How to install a new parallel UPS system".
5) If the removed UPS or the remained UPS will be used in a stand-alone mode, then J1 and J2 on the terminal block should be connected with a short connection wire.
6) Switch on the main input breaker and the main output breaker, and set the main maintenance bypass switch from "BPS" to "UPS", then set the UPS own maintenance bypass switch from "BPS" to "UPS" and screw the maintenance cover plate back again. Press the button ⏻ of one UPS, each UPS would start to turn on, after turning on, the UPS should work parallel in the Line mode.

7. Trouble Shooting

If the UPS system does not operate correctly, first check the operating information on the LCD display. Please attempt to solve the problem using the table below. If the problem still persists, consult your dealer.

7.1. Trouble Shooting According to Warning Indication

Problem Displayed	Possible cause	Remedy
EPO active	EPO connector is open	Check the EPO connector status.
Maintain on	Maintain bypass switch is open	Check the maintain bypass switch status.
Battery open	Battery is disconnect	Do the battery test to confirm; Check the battery bank is connected to the UPS; Check the battery breaker is turn on
Fan warning	Fan blocked or disconnected	Check the fan status

Site fail	The ground wire is disconnected, or phase and neutral conductor at input of UPS system are reversed	Check the Ground wire status; Reverse mains power wiring
Battery volt low	Battery voltage is low	When audible alarm sounding every second, battery is almost empty
Bat over voltage	Battery voltage is higher than normal value	Check if the battery quantity is right
Over Charge	Battery is over charged	The UPS will turn off the charger until the battery voltage is normal
Over Load	Over Load	Check the loads and remove some non-critical loads; Check if some loads are failed.
Charger fail	The charge fails	Consult dealer
Amb NTC abnormal	The ambient temperature is too high	Check the environment ventilation
Over Temperature	Inside temperature of UPS is too high	Check the ventilation of UPS and the ambient temperature
Cable disconnect	The parallel cable is disconnected	Check the parallel cable
Cable loss	The parallel cable is disconnected	Check the parallel cable
Battery differ	The battery packs of some UPS are disconnected	Check if all the battery pack is Connected
Line differ	The mains input of some UPS is disconnected	Check the building wiring and input cable; Check if the input breaker is closed; Ensure the UPS are connected to same input source

Work Mode differ	There are different power strategy setting in parallel system	The UPS with different power strategy setting (Ex. one Line mode and one Converter mode) are forbidden to parallel
Setting differ	There are different setting in parallel system	Check the setting.
ECO In Parallel	ECO function is enabled in parallel system	ECO function is forbidden in parallel system
Fuse open	Input fuse break	Check the input fuse status

7.2. Trouble Shooting According to Fault Indication

Problem Displayed	Possible cause	Remedy
Output Short	Output short circuit	Remove all the loads. Turn off the UPS. Check if UPS output and loads is short circuit. Ensure short circuit is removed before turning on again.
Over Load	Over Load	Check the loads and remove some non-critical loads; Check if some loads are failed.
Neg power fail	The load is pure inductive and capacitive	Remove some non-critical loads; Bypass supplies the load first, ensure there is no overload, then turn on UPS
Over Temperature	Inside temperature of UPS is too high	Check the ventilation of UPS and the ambient temperature.
Fan fail	Fan blocked or disconnected over time	Check the fan status.
Back feed	Output voltage is returned to input	Consult dealer

DC short	Bus short	Consult dealer
DC Over	Bus Over Voltage	Consult dealer
DC Under	Bus Under Voltage	Consult dealer
DC Unbalance	Bus Unbalance	Consult dealer
DC soft fail	Bus Soft start fail	Consult dealer
Output soft fail	Output Soft start fail	Consult dealer
Output Volt low	Output Volt low	Consult dealer
Output volt high	Output volt high	Consult dealer

7.3. Trouble Shooting in Else Cases

Problem	Possible cause	Remedy
No indication, no warning tone even though system is connected to mains power supply	No input voltage	Check the building wiring and input cable; Check if the input breaker is closed.
BYPASS LED light up even though the power supply is available	Inverter not switched on	Press button ⏻ to turn on UPS.
BATTERY LED lights up, and audible alarm sounding every 1 beep in every 4 seconds	Input voltage and/or frequency are out of tolerance	Check input power source; Check the building wiring and input cable; Check if the input breaker is closed.
Emergency supply period shorter than nominal value	Batteries not fully charged / batteries defect	Charge the batteries for at least 12 hours and then check capacity.

Please have the following information at hand before calling the After-Sales Service Department:

1) Model number, serial number.

2) Date on which the problem occurred.
3) LCD/LED display information, Buzzer alarm status.
4) Mains power condition, load type and capacity, environment temperature, ventilation condition.
5) The information (battery capacity, quantity) of external battery pack if the UPS is "XL" model.
6) Other information for complete description of the problem.

8. Battery Maintenance

Battery replacement should be performed by qualified personnel.

- This series UPS only requires minimal maintenance. The battery used for standard models are value regulated sealed lead-acid maintenance free battery. These models require minimal repairs. The only requirement is to charge the UPS regularly in order to maximize the expected life of the battery. When being connected to the utility power, whether the UPS is turned on or not, the UPS keeps charging the batteries and also offers the protective function of overcharging and over-discharging.
- The UPS should be charged once every 4 to 6 months if it has not been used for a long time.
- In the regions of hot climates, the battery should be charged and discharged every 2 months. The standard charging time should be at least 12 hours.
- Under normal conditions, the battery life lasts 3 to 5 years. In case if the battery is found not in good condition, earlier replacement should be made. Battery replacement should be performed by qualified personnel.
- Replace batteries with the same number and same type of batteries.
- Do not replace the battery individually. All the batteries should be replaced at the same time following the instructions of the battery supplier.
- If the battery service life (3~5 years at 25°C ambient temperature) has been exceeded, the batteries must be replaced.

9. Communication Port

9.1. USB Interface

The USB port is compliance with USB 1.1 protocol for its communication software.

9.2. Dry contact Interface (optional)

This series UPS has independent dry contact interface. Please contact your local distributor for details.

9.3. RS232 Interface

The RS232 port is available for UPS monitoring, control, and firmware updates.

9.4. Intelligent slot

This series is equipped with an intelligent slot for other optional card to achieve remote management of the UPS through internet / intranet. Please contact your local distributor for further information.

CyberPower Systems Inc.

www.cyberpower.com

6F, No. 32, Sec. 1, Chenggong Rd., Nangang District, Taipei 115, Taiwan