

USER MANUAL

ON LINE UPS



EX1K-3K

CONTENTS

1.	SAFETY INSTRUCTION.....	2
2.	INSTALL INSTRUCTION.....	3
3.	OPERATION.....	12
4.	MAINTENANCE.....	20
5.	GUARANTEE CLAUSE.....	21
6.	BATTERIES MATTERS.....	22
	APPENDIX 1. EMC GRADE STANDARD.....	22
	APPENDIX 2. SIGNS MEANING.....	23
	APPENDIX 3. SPECIFICATION.....	24
	APPENDIX 4. COMMUNICATION INTERFACE... 	26

1. SAFETY INSTRUCTION

- I Even the UPS does not connect with main power; its output socket may still have 220Vac voltage.
- I If UPS charging cable or power cords need to replace, please contact our service center or distributor to buy original cables, to avoid any fire accident resulted from heat or fire fighting caused by other cables capacity shortage.
- I Do not disposal the battery or the resistance by fire; otherwise it will explode to hurt people.
- I Do not open or damage the battery, the electrolyte would overflow which is toxic and harmful to health.
- I Please avoid positive pole and negative pole short circuit; otherwise it will cause electric shock or fire.
- I Do not try to open the UPS case; there would be risk of electric shock.
- I Do not touch the battery connector terminals, since the battery circuits and input voltage loop are not isolated, thus there would be risk of high voltage between the battery terminals and earth.
- I For the safety of UPS, please do not connect electrical equipment such as hair dryer or electric heater to UPS.

NOTICE:

There is high voltage inside UPS. Thus if any questions of UPS please consult with the professional distributor, or call our customer service center to make sure personal safety, do not take the liberty of repairing it.

2. INSTALL INSTRUCTION

2.1 Unpacking Inspection

- 1) When open UPS package, please check the accessories, which including one user manual, one input power cable. For Long backup UPS, it should have one more battery cable.
- 2) Check if UPS is damaged during transport. If any damage or parts missing, please do not start the ups and then inform the carriers and distributors.
- 3) Check whether the UPS are the model you want to buy, according to model number that print on front panel and back panel.

Model	Type	Model	Type
EX1K	Standard	EX1KL	Long backup
EX2K	Standard	EX2KL	Long backup
EX3K	Standard	EX3KL	Long backup

Note :

- 2 Please keep the package box for future transport use.
- 2 The UPS is heavy, please handle with care.

2.2 Installation Matters

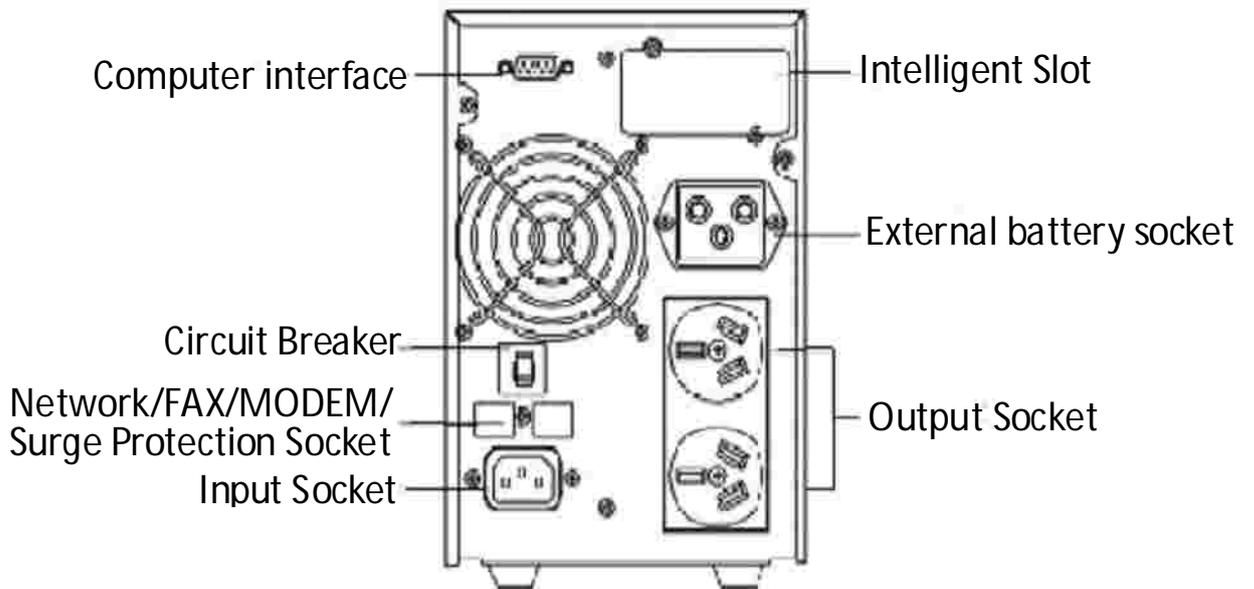
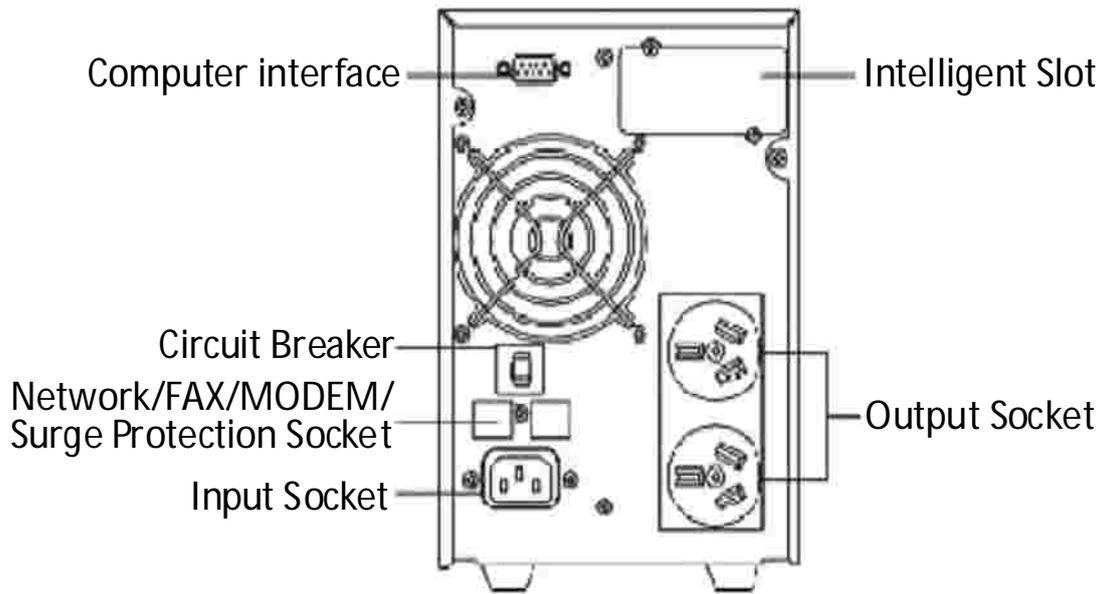
- 1) Place UPS in the environment of good ventilation, keep away from water, flammable gases and corrosive.
- 2) Do not side lay the UPS. Keep the ventilation of the hole that below front panel, the fan ventilating holes on back panel and vent holes on the side of UPS case.
- 3) Keep UPS in the environment temperature between 0°C -40°C.
- 4) There may be condensation when user unpack and install UPS at low temperature. Please wait until UPS completely dry both inside and outside before install and start, otherwise there would be risk of electric shock.
- 5) Please place the UPS near main power socket, if any emergency

problems, user can disconnect mains input plug and cut off power immediately.

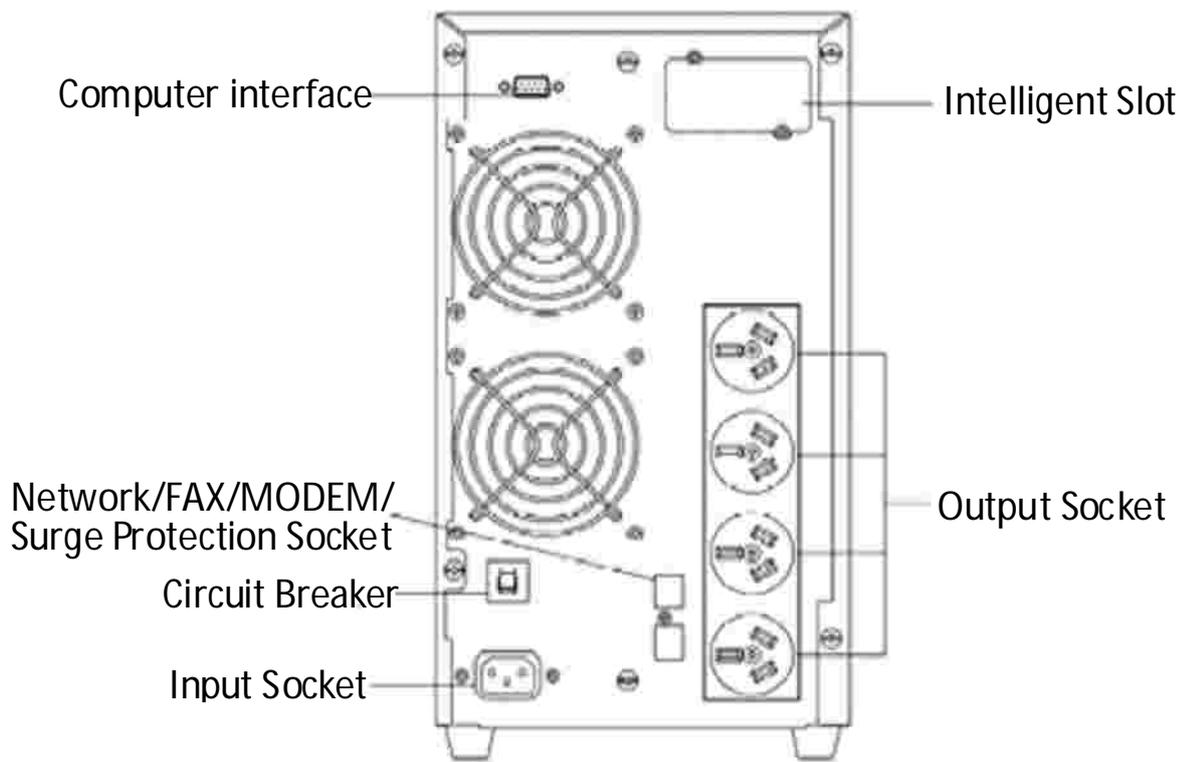
NOTICE :

- 2 When connect UPS with load, please turn off all loads firstly, and then connect the wiring, finally turn on all loads one by one.
- 2 Connect UPS to specified sockets with over-current protection.
- 2 All sockets must connect to ground protection wire.
- 2 Whether input power cable connecting to mains power socket or not, the UPS output may with electricity. Even turning off UPS can not make sure UPS inner parts are free from electricity. If user wants UPS without output, please turn off UPS and then cut off mains power.
- 2 For standard UPS, it is recommended to charge the batteries for 8hours before usage. As long as the power plugs connecting with UPS, it will automatically charge the batteries. It also can be used without charge immediately, but backup time will be less than standard value
- 2 Choose UPS according to starting power of motors, monitors, laser printers and other inductive loads, because they have a high starting power, which is twice as rated power.

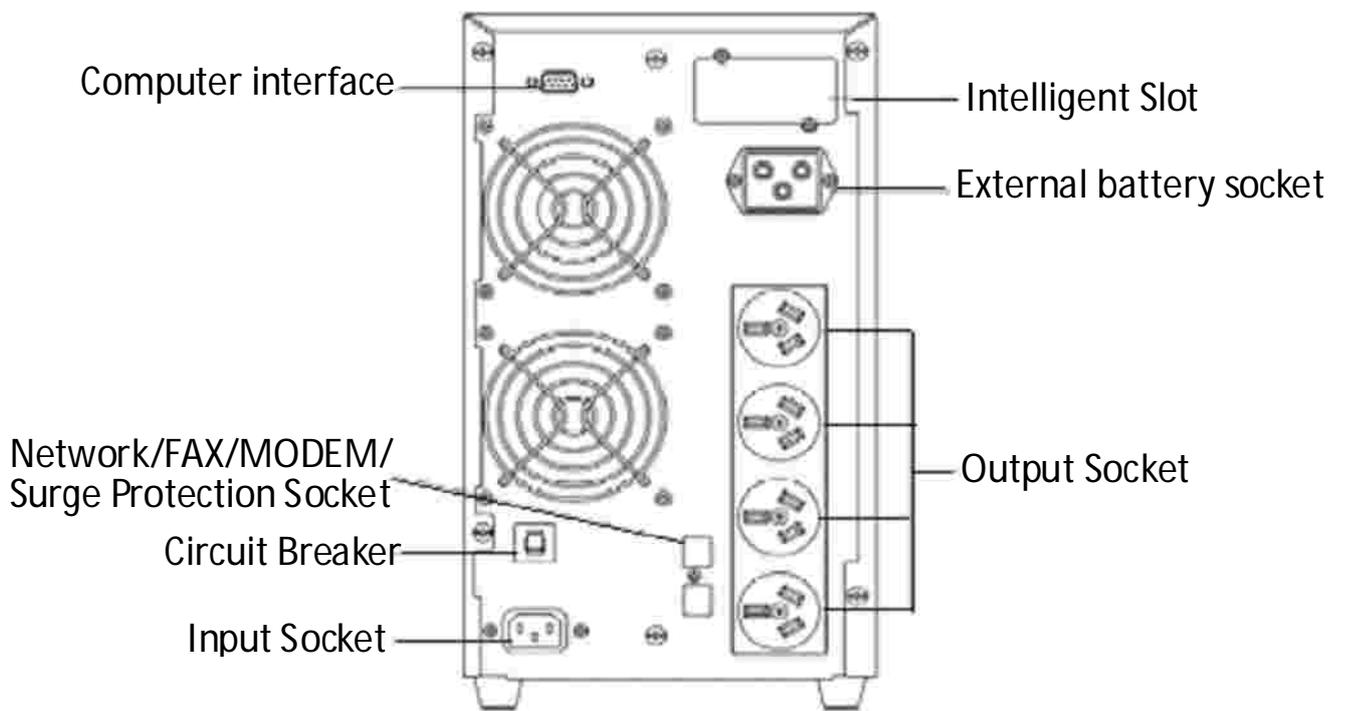
2.3 UPS Rear panel view :



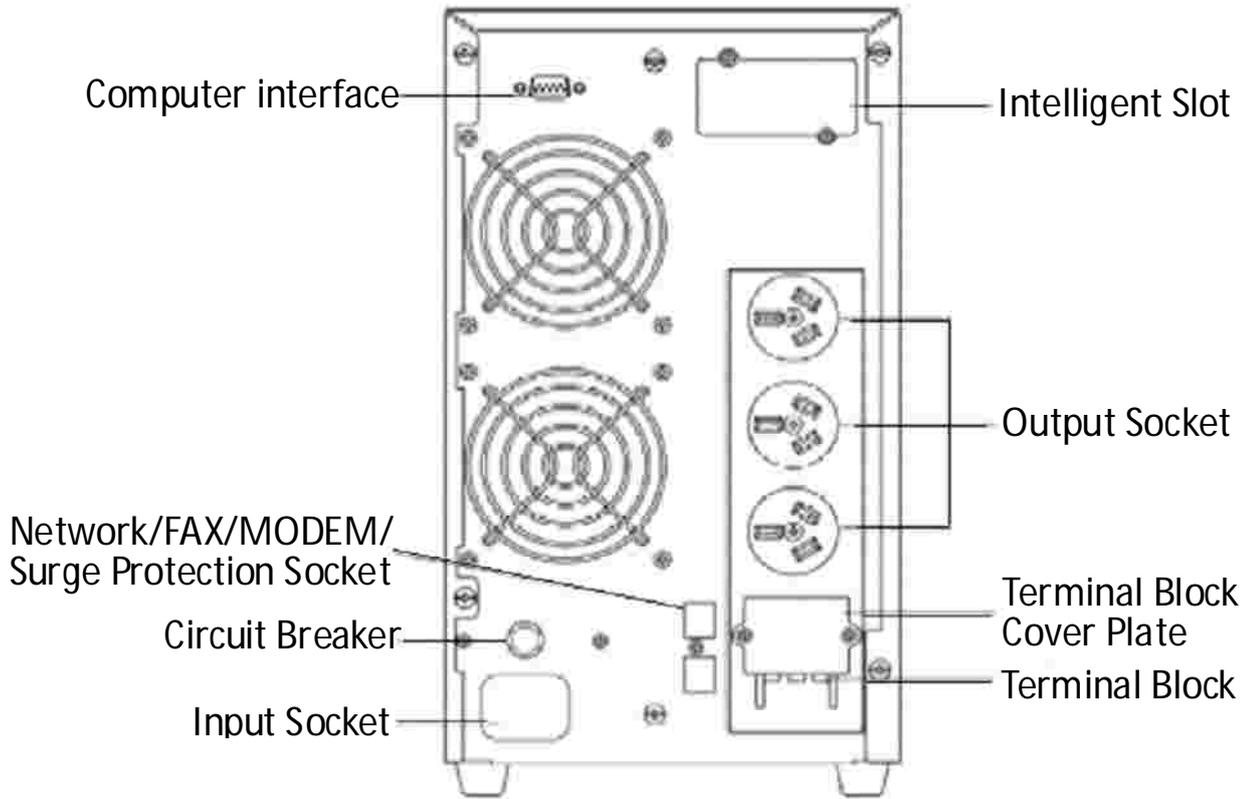
Picture 2-1 EX1K/EX1KL Rear panel



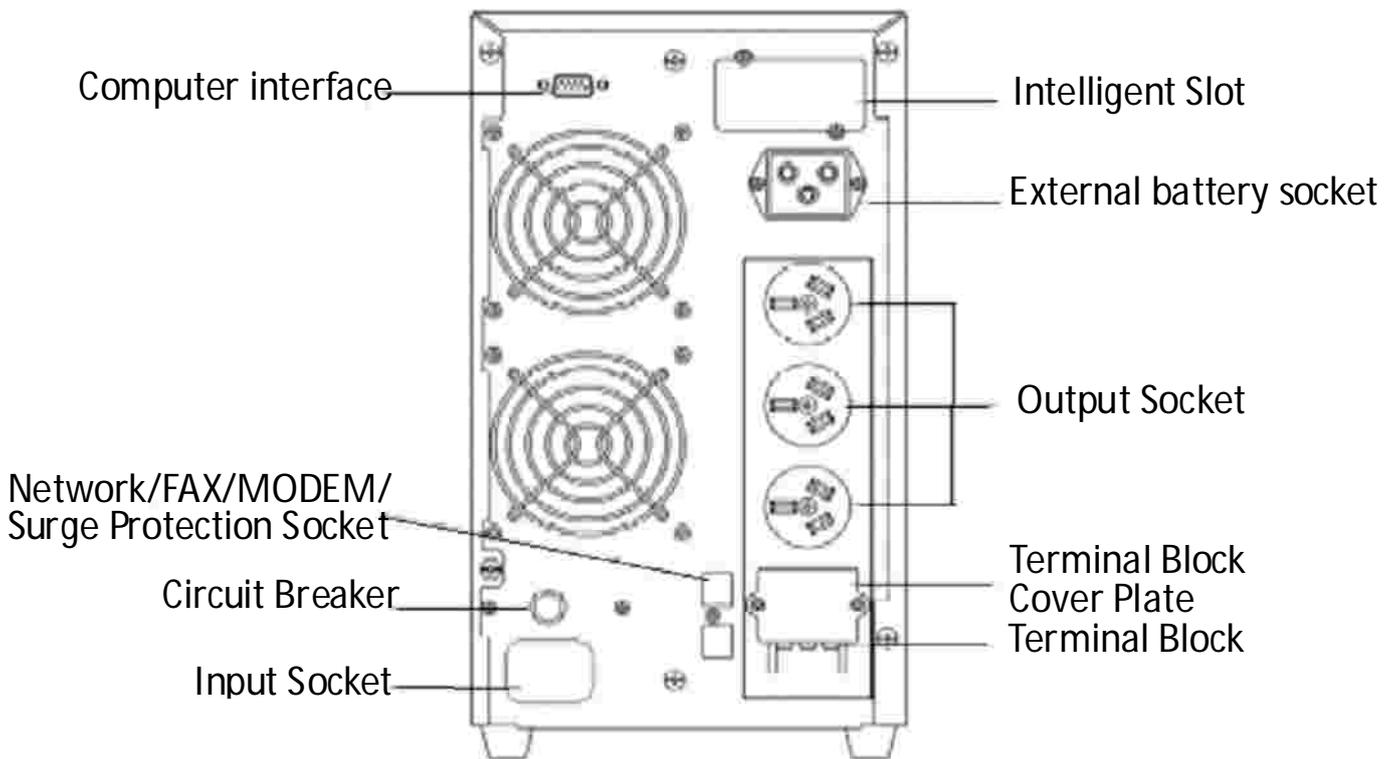
Picture 2-2 EX2K Rear Panel



Picture 2-3 EX2KL Rear Panel



Picture 2-4 EX3K Rear Panel

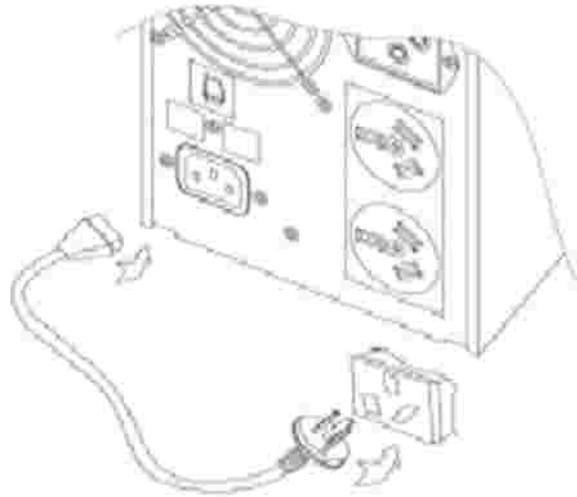


Picture 2-5 EX3KL Rear Panel

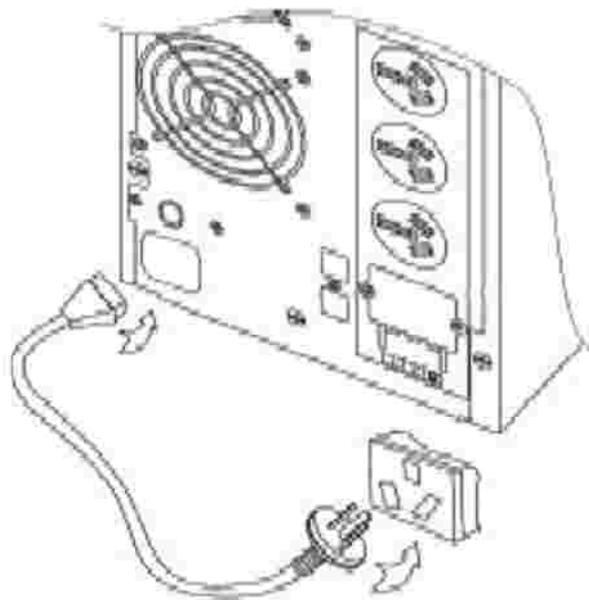
2.4 UPS Input Connection

Connecting with power cord, please use suitable socket which has over-current protection, and pay attention to its capacity. It should be above 10A for EX1K(L) and EX2K(L), above 16A for EX3K(L).

Connecting details are as below:



Picture 2-6 EX1K(L)、EX2K(L) Input way

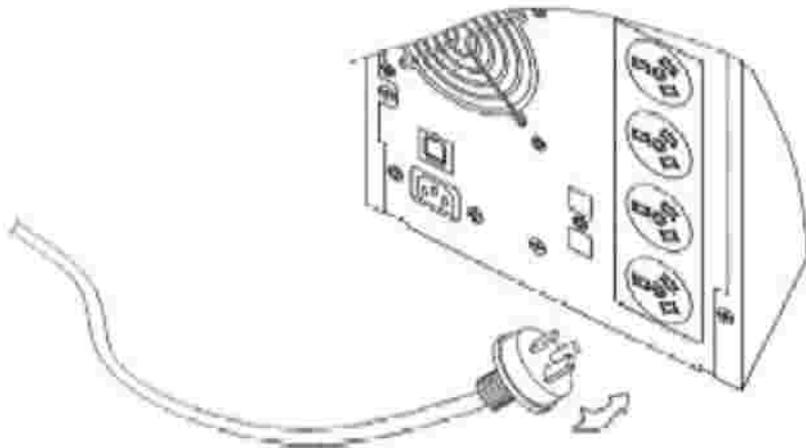


Picture 2-7 EX3K(L) Input way

2.5 UPS Output Connection

Model	Socket (pcs)	Terminal block
EX1K(L)	2	No
EX2K(L)	4	No
EX3K(L)	3	Yes

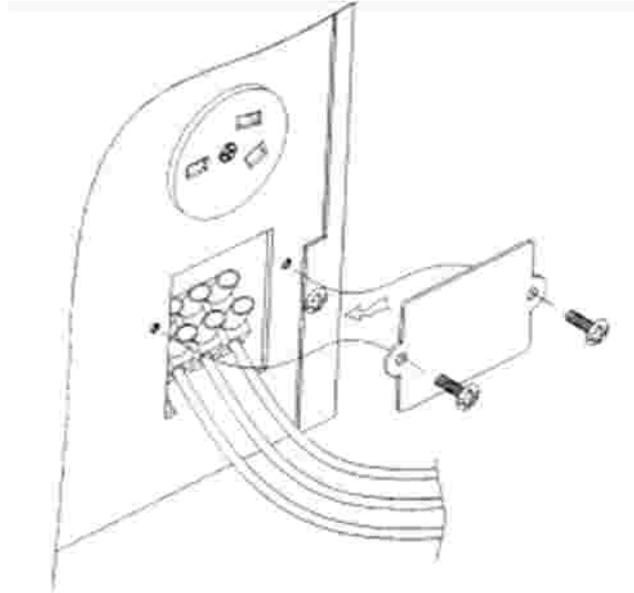
1) Please just plug load power cord in sockets of EX1K (L) and EX2K (L), As Below:



Picture 2-8 EX1K (L); EX2K (L) Output way

2) EX3K (L) not only has output sockets, but also can provide terminal block output. Its wiring procedures are as below:

- 1) Take down the small cover plate above terminal blocks;
- 2) Wiring with AWG14 or 2.1mm² cables;
- 3) After finishing wiring, please check if all connecting cables are fixed;
- 4) Install the cover plate above terminal blocks.



Picture 2-9 EX3K (L) Terminal Block Wiring

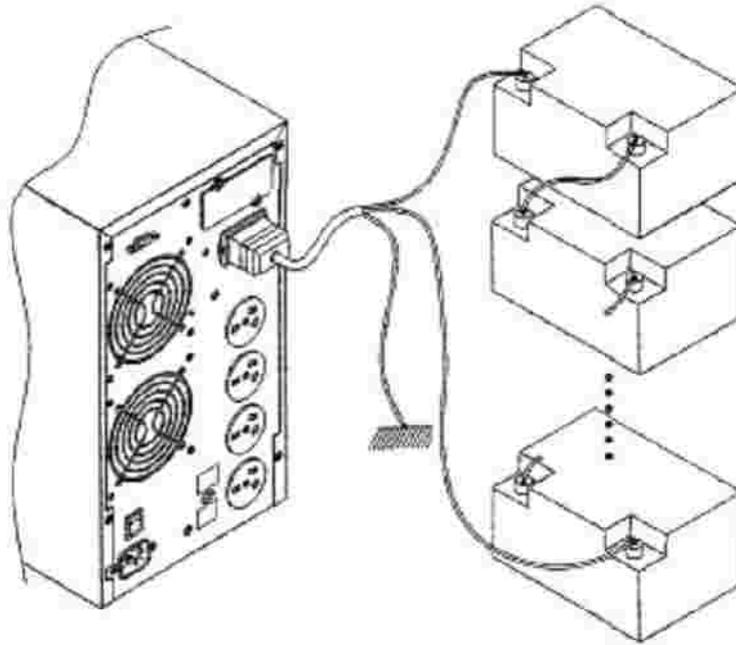
2.6 Long backup UPS connecting with external batteries

1) Please connect with correct DC voltage battery bank according to different UPS model. DC voltage for EX1KL is 36VDC and that for EX2KL and EX3KL IS 96VDC. Do not connect with wrong battery quantities, otherwise will lead to damage:

2) Put one side of charging cable plug into UPS, and the other side connecting with battery bank are open type three cables. The battery connecting procedure is very important, if operate in wrong way, will have risk of electric shock. Thus please operate as below procedures:

- 1) Firstly please install batteries in series to ensure correct battery bank voltage.
- 2) Connect charging cable with battery terminals firstly, (Do not connect the cable with UPS firstly, otherwise will have risk of electric shock), red cable with battery anode "+", black cable with battery cathode "-", yellow green dual color line with earth wire.
- 3) Do not connect UPS with load, firstly connect UPS with mains power cable, and provide mains power to UPS.

4) Then plug charging cable into UPS battery socket, by then the connection is finished and UPS start to charge battery banks.



Picture 2-10 EX1K(L) ~ EX3K(L) Long backup UPS connecting with batteries

Yellow green dual color line——Earth protection wire

Red cable———Battery anode

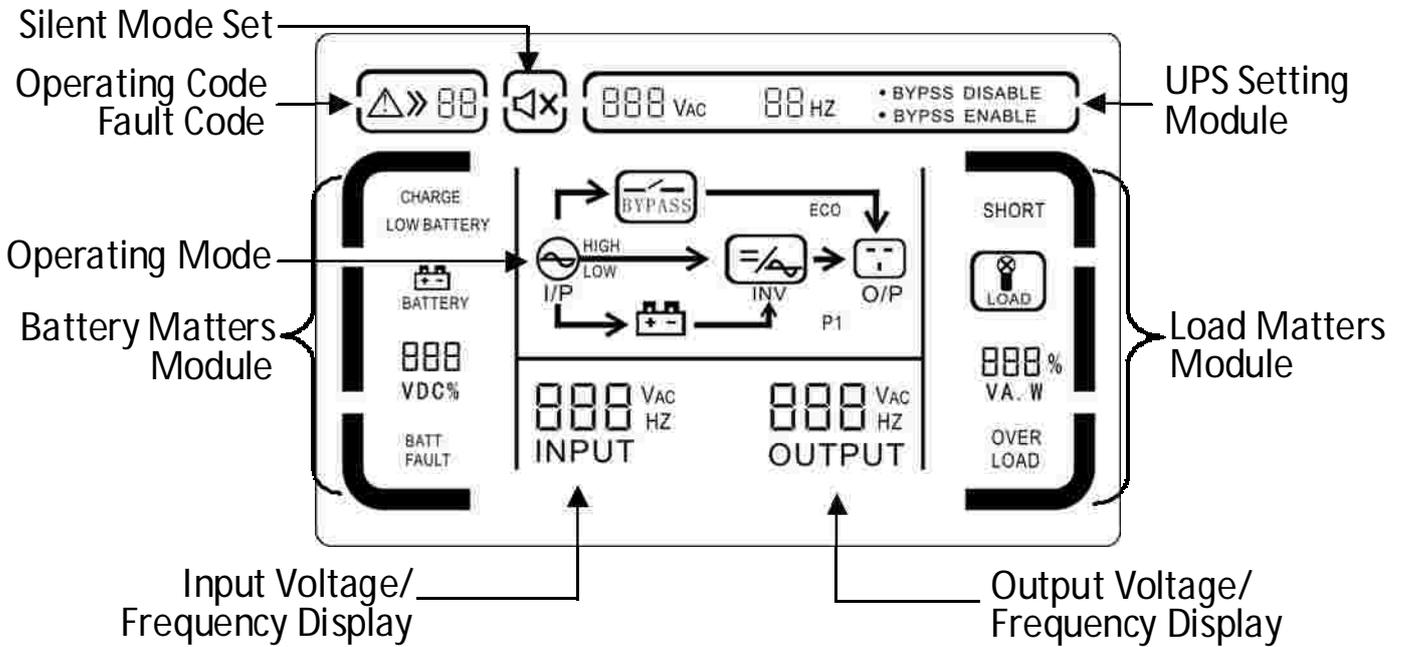
Black cable———Battery cathode

3. OPERATION

It is easy to operate this UPS. Users just need to read this manual, and operate UPS according to procedures, no need any professional training.

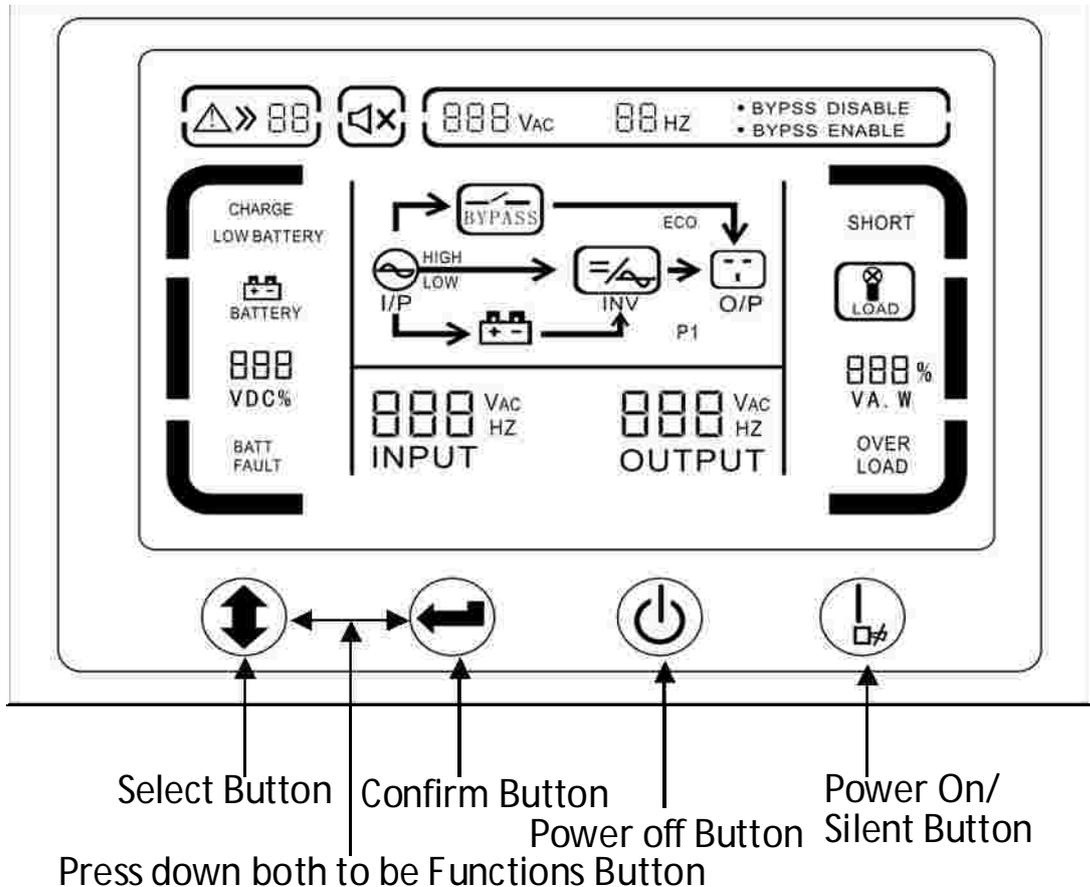
3.1 Description of Panels

1) Panel Display



Picture 3-1 Description of Panel Display

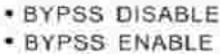
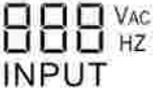
2) Description of Buttons



Picture 3-2 Description of Buttons

Button name	Description
Power On/Silent Button	Press down and hold this button over 1S to start UPS; In battery mode, press it over 1S to set silent mode, and press over 1S again to recover sound mode.
Power Off Button	To shut down UPS.
Functions Button	It will be effective in AC Bypass mode (connecting with AC, but do not start UPS). When press down both Select button and Confirm button at same time, it will be Functions Button, hold them over 2S, user can enter UPS parameter adjust mode.
Select Button	Only in valid when UPS parameter adjust mode, press down and hold over 1S, to select parameters.
Confirm Button	Only in valid when UPS parameter adjust mode, press down and hold over 1S, to select parameters.

3) Display Signs Meaning

Signs	Meaning
	When UPS failure this signal will display, and together with the corresponding code. Overload fault 10, meanwhile, show "OVERLOAD"; Over-temperature fault 11, BUS fault 12, Output short circuit 13, meanwhile, show "SHORT"; Inverter fault 14; Battery over-voltage 15, meanwhile, show "BATT FAULT"; Fan fault 16; Charger fault 17.
	00 Bypass mode; 01 AC mode; 02 Battery mode; 03 Battery test mode
	Battery mode mute display, when mute mode, will show "X".
	Display output voltage when set parameter, can set 200V, 208V, 220V, 230V, 240V.
	Display output frequency when set parameter, can set 50Hz, 60Hz.
	Display "BYPASS DISABLE" means bypass effective, and display "BYPASS ENABLE" means bypass invalid.
	Display remaining battery capacity, battery voltage, battery capacity and voltage parameter; automatically switch the display every three seconds.
	When Battery polarity reverse or error will display this icon.
	Display AC input voltage and frequency; automatically switch between frequency and voltage every three seconds.
	Display output voltage and frequency; automatically switch between frequency and voltage every three seconds.

	Means Bypass mode.
	Display "HIGH" means AC input voltage high; display "LOW" means AC input voltage low. When AC is normal, will show nothing. When neutral line and fire wire reverse, it will flash every second.
	Display UPS inverter mode.
SHORT	Means output short circuit.
	Display load capacity, When VA value>W value, show VA value, and when W value>VA value, show W value.
OVER LOAD	Means Overload. When overload, it will alarm and flash every second.
	Display Load.
CHARGE	Means battery is being charged.
LOW BATTERY	Means battery voltage is low, when alarm it will flash every second.

4) UPS Fault Code

Fault Code	Fault	Reasons and Solutions
10	Overload fault	UPS Loads are more than machine rating power. UPS can return to normal after reducing some loads, if still not resolved, please contact local seller or factory for a solution.
11	Over temperature fault	UPS is under severe working environment, poor ventilation, and indoor high temperature. Please shutdown UPS and restart it 10mins later after cooling down. If still not resolved, please contact local seller or factory for a solution.

12	BUS Fault	Part of UPS inside circuits is damaged; please contact local seller or factory for a solution.
13	Output Short circuit	Shut down UPS, remove all loads, to make sure there is no loads fault or short circuit internally, and then restart it. If still not resolved, please contact local seller or factory for a solution
14	Invert Fault	Part of UPS inside circuit is damaged; please contact local seller or factory for a solution.
15	Battery Overvoltage	If UPS with external batteries please check Battery numbers is correct or not. 1Kva is with 3pcs, 2Kva and 3Kva are with 8pcs, some special UPS model is with 6pcs only. Please refer to UPS specification for details. If still not resolved, please connect local seller or factory for a solution.
16	Fan Fault	Please check whether the fan is dusty, clean fan and restart UPS, if still not resolved, please connect local seller or factory for a solution.
17	Charger Fault	Part of UPS inside circuit is damaged; please contact local seller or factory for a solution.

3.2 Operate

1) Start UPS connecting with AC main power:

- 1) UPS Connected to AC Main Power. Users can set up UPS through Winpower software whether need to work under bypass mode.
- 2) UPS start to self-test in half second after pressing UPS "Power ON" Button, the screen appear self-test sign, then disappear. The alarm beeps if any system or connection problems. Please don't turn on UPS at this time, check for trouble-shooting firstly.
- 3) Please press "Power ON" button more than 1 second to

enter AC Mode, the screen appears AC Mode sign at this time, then system will switch to Inverter mode automatically in few seconds, and UPS has been working in AC Inverter Mode. If AC Main Power is unusual, UPS will switch to Battery Mode.

2) Start UPS connecting with DC power without AC main power:

- 1) Without AC Main Power connected, turn on UPS by pressing "Power ON" button continuously more than one second.
- 2) The UPS start procedures are same as connecting with AC main power, except the sign on UPS Screen is Battery Mode.

3) Shut down UPS when connecting with AC main power:

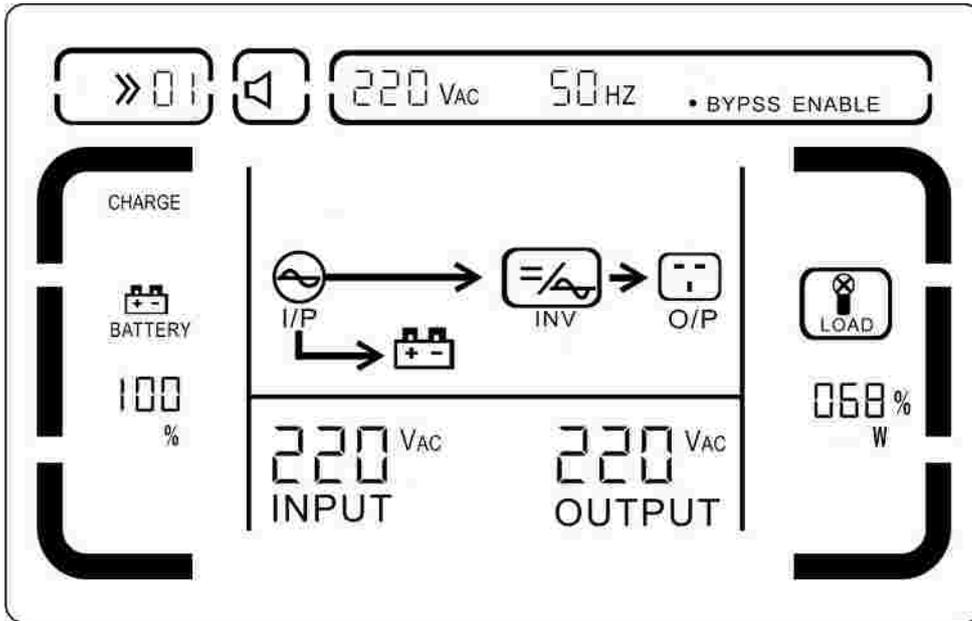
- 1) Please press "Power Off" button continuously more than one second to shutdown UPS.
- 2) If set UPS work under bypass mode through Winpower software, and then bypass sign will light up, at this time UPS is working under bypass mode, so UPS still have output after power off. Please cut off AC Main Power if need UPS without output. At this time UPS will start to self-test firstly, finally there is no display on screen, and UPS is without output voltage.

4) Shut down UPS when connecting with DC power without AC main power:

- 1) Press "Power OFF" button continuously more than 1 second to turn off UPS.
- 2) UPS is with no display and no output voltage after shut down.

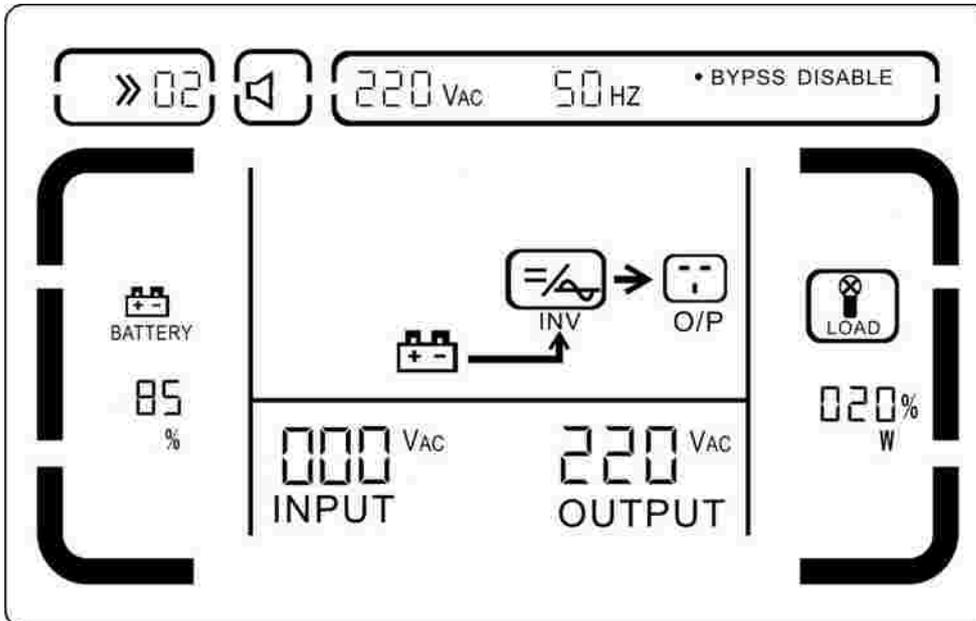
3.3 Operating Mode

1) AC Mode



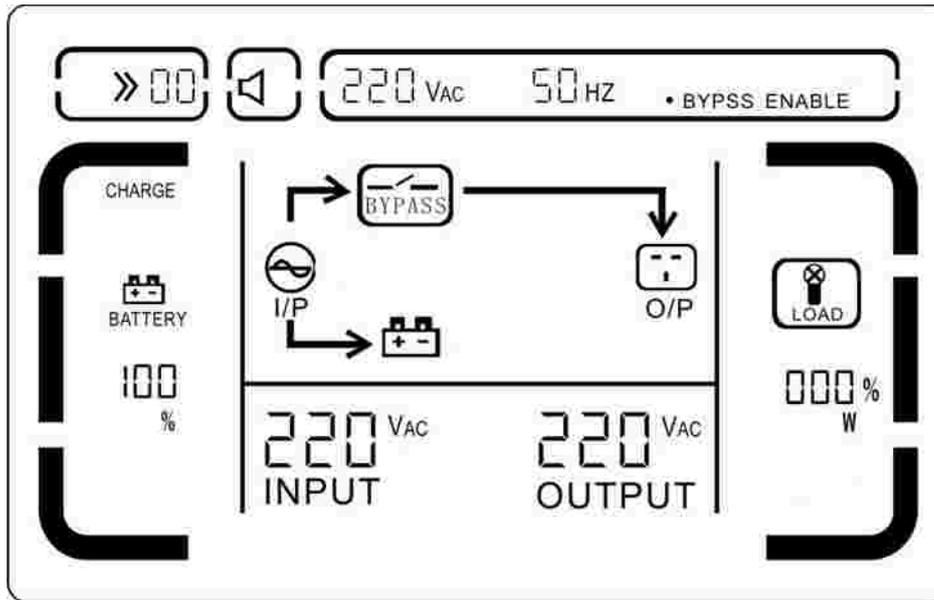
Picture 3-3 AC Inverter Operating Mode

2) Battery Mode



Picture 3-4 Battery Operating Mode

3) Bypass Mode



Picture 3-5 UPS Bypass Operating Mode

NOTICE:

If connecting UPS with generator, please operate as below:

- 2 First start generator, after its running please connect output power of generator with UPS input (Be sure that UPS is without any load), then start UPS according to UPS start procedure . After UPS start, please connect with loads one by one.
- 2 It is recommended to choose generator capacity twice a UPS capacity.

4. MAINTENANCE

EX series UPS need little maintenance only. Batteries for standard UPS are VRLA low free maintenance type battery, it just need to keep charging to obtain expect life. UPS is charging batteries with continuous power and provide overcharge, over discharge protection no matter UPS is on or off.

If UPS is not been used for a long time, suggested to charge batteries in every 3 or 5 months.

In normal case, battery use life is 3-5 years. Please replace them

in advance if it is not working well. Replacing batteries must be operated by professional staff.

It is not suitable to replace single battery, when replacing all batteries, please according to the instructions from battery supplier.

In normal case, battery charge and discharge in every 4 or 5 months, keep discharging until UPS turns off, then re-charge it. The charging time should not be less than 12 hours for standard UPS.

In high-temperature area, battery charge, discharge in every 2 month. The charging time should not be less than 12 hours for standard UPS.

NOTICE:

User must turn off UPS and disconnect with mains power before replacing batteries.

Take off metal objects such as ring, watch etc.

Use the screwdriver with insulated handle; please do not place the tools and other metal objects on batteries.

It is normal phenomenon of appearing petty sparks in joints while connecting with batteries, no harmful to personal safety and UPS.

5. GUARANTEE CLAUSE

Our promise: We provide free repair service for you in three years since the date when machine is purchased

Repair by dealer's valid proof;

Repair by machine's production serial NO.

Freight should be undertaken by user if any transport fees occurred in guarantee period. Please contact the nearest service center and dealer if machine is out of order.

The situation below is out of guarantee range:

Man-made fault;

Out of warranty period

The product which change or lost its production serial No.;

Damage or loss caused by force majeure;
Dismantle or change the machine without permission;
Go against user manual or operating indicates;
Battery deep discharge or man-made damage.

Note: Above matters are subject to change without notice!

Please provide below files when you contact with repair center:

UPS MODEL NO., UPS SERIAL NO.

Date of problem.

Complete problem statement (include display screen specification, sounds, power condition, load capacity, also provide the battery solution if it is long-backup UPS.)

6. BATTERY MATTERS

- 1) Please take off metal objects such as ring, watch before handling batteries.
- 2) If Battery cables need to replace, please contact our service center or distributor to buy original cables, to avoid any fire accident resulted from heat or fire fighting caused by other cables capacity shortage.
- 3) Do not disposal the battery or the battery bank by fire; otherwise it will explode to hurt people.
- 4) Do not open or damage the battery, the electrolyte would overflow which is toxic and harmful to health.
- 5) Please avoid positive pole and negative pole short circuit; otherwise it will cause electric shock or fire.
- 6) Do not touch the battery before your checking of battery voltage, since the battery circuits and input voltage loop are not isolated, thus there would be risk of high voltage between the battery terminals and earth.
- 7) Battery's maintenance please refers to "MAINTENANCE" part.

APPENDIX 1. EMC GRADE STANDARD

EX Series UPS is produced according to below EMC grade standard:

EX1K(L) / EX2K(L) /EX3K(L)	
*EMS	
IEC61000-4-2(ESD)	Level 4
IEC61000-4-3(RS)	Level 3
IEC61000-4-4(EFT)	Level 4
IEC61000-4-5(Surge)	Level 4
*EMI	
GB9254-1998/IEC62040-2	Class B

APPENDIX 2. SIGNS MEANING

Below signs are used in user manual, and may be appear in you use UPS. Thus, please read and remember their meanings.

Signs Meaning	
Signs	Meaning
	Notice or Fault
	High voltage risk
	Start UPS
	Shut down UPS
	Standby or shut down UPS
	AC
	DC
	Earth protection
	Cancel alarm (Silent)
	Overload
	Battery inspection
	Circle
	Do not place with sundries

APPENDIX 3. SPECIFICATION

Electric Property

Model	EX1K/EX1KL	EX2K /EX2KL	EX3K/ EX3KL
Rated Power	1000V/A700W	2000V/A1400W	3000VA/2100W
Standard Voltage	220VAC		
Standard Frequency	50Hz		

INPUT

Model	EX1K/EX1KL	EX2K/ EX2KL	EX3K/ EX3KL
Voltage Range (Single phase)	115V ~ 300VAC		
Frequency Range	40Hz ~ 60Hz		
Power Factor	=0.97		

OUTPUT

Model	EX1K/EX1KL	EX2K/EX2KL	EX3K/EX3KL
Voltage	220X (1±2%) VAC		
Frequency (Battery mode)	50X (1±0.2%) Hz		
Overload Capacity	Load>150%, 300ms to bypass mode		
	Load>110%, 30s to bypass mode		
Load Crest	3 : 1 (MAX)		

BATTERY VOLTAGE

Model	EX1K/EX1KL	EX2K/EX2KL	EX3K/ EX3KL
Battery standard voltage	36VDC	96VDC	96VDC

BACKUP TIME

Model	Full Load (Minutes)	Half Load (Minutes)
EX1K	>6	>14
EX2K	>8	>21
EX3K	>6	>15

Backup time for long backup UPS is depended on external batteries capacity.

TRANSFER TIME

Model	EX1K/EX1KL	EX2K/ EX2KL	EX3K/EX3KL
AC Mode◆Bypass Mode	=4ms (Standard time is 2.5ms)		
AC Mode◆Bypass Mode	0ms		

OPERATE ENVIRONMENT

Model	EX1K/EX1KL	EX2K/ EX2KL	EX3K/EX3KL
Temperature	0°C to 40°C		
Relative Humidity	0-95% No condensing		
Altitude	<Altitude 1500 meters		
Storage Temperature	-25°C to 55°C		

SPECIFICATION

Model	EX1K/EX1KL	EX2K/ EX2KL	EX3K/ EX3KL
Dimension W*D*H (mm)	145*400*340	192*460*340	192*460*340
Weight (kgs)	N.W.	14/7	32/13.5
	G.W.	15/8.5	33.5/14
		33.5/15.5	35/16.5

ENTERPRISE STANDARD

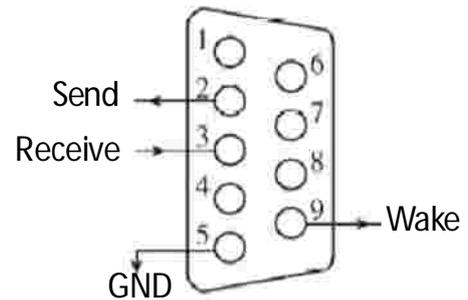
Enterprise Standard	Q/ZLPOWER601
---------------------	--------------

APPENDIX 4. COMMUNICATION INTERFACE

Computer Interface

EX Series UPS provide a standard DB9 port on back pane. The port provides several signals, assigned as below:

Lead Foot	Assigned signals
1	NC
2	Send
3	Receive
4	NC
5	GND
6	NC
7	NC
8	NC
9	Wake



Network Communication

EX Series UPS provide an intelligent slot for intelligent network card (optional part). The specified intelligent network card is compatible with software, hardware and internet operating system which is popular in Internet nowadays. It can support HP Openview, IBM nEXview, SUN nEXmanager and other operating systems, which ensure UPS to get the direct Internet access immediately and provide timely information of UPS and power, in order to communicate and manage by kinds of network management systems.

Please contact our local dealers for more details.

Version :01
614-10005-00