

H series array online UPS 1-6KRS/L



User's manual

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1. Introduction

This array online UPS supplies power immediately to prevent the data lost and your system damaged when the main power is abnormal. With WinPower software, the uninterruptible power supply (UPS) will safely store data and shut down your network operating system before the battery is fully discharged, whether you're there or not. It provides perfect protection specifically for file servers, minicomputers, internet hubs, telecommunication systems and other mission-critical applications.

This array online UPS includes: 1KRS(L), 2KRL, 3KRL, 6KRL. The models with L extension allow for expanding runtime by simply plugging in additional battery packs.

2. Safety instructions

Please read the following user manual and the safety instructions before installing the unit and starting it up!

Transport

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

Set-up

- Ø Condensation may occur if the UPS system is moved directly from a cold to a warm environment. The UPS system must be absolutely dry before being installed. Please allow an acclimatization time of at least two hours.
- Ø Do not install the UPS system near water or in damp environment.
- Ø Do not install the UPS system where it would be exposed to direct sunlight or near heat.
- Ø Do not block off ventilation openings in the UPS system's housing.

Installation

- Ø Do not connect appliances or equipment which would overload the UPS system (e.g. laser printers) to the UPS output socket.
- Ø Place cables in such a way that no one can step on or trip over them.
- Ø Do not connect domestic appliances such as hair dryers to UPS output sockets.
- Ø The UPS can be operated by any individuals with no previous technical experience.

The following for 1KRS(L)/2KRL/3KRL specially:

- Ø Assure to connect with the earth reliably.
- Ø The building wiring socket outlet (shockproof socket outlet) must be easily accessible and close to the UPS system.
- Ø With the installation of the equipment, the sum of the leakage current of the UPS and the connected consumer does not exceed 3.5mA.

The following for 6K specially:

- Ø Warning -- this is a product for restricted sales distribution to informed partners. Installation restrictions or additional measures may be needed to prevent disturbances.
- Ø A readily accessible disconnect device shall be incorporated in the building installation wiring and the disconnect device must be easily accessible and close to the UPS system.
- Ø This is permanently connected equipment and only qualified maintenance personnel may carry out installations.

Operation

- Ø The UPS system features its own, internal current source (batteries). The UPS output sockets may be still exists even if the UPS system is not connected to the building wiring socket outlet.
- Ø In order to fully disconnect the UPS system, firstly press the standby switch then disconnect the mains lead.
- Ø Ensure that no fluids or other foreign objects can enter the UPS system.

Maintenance, servicing and faults

- Ø The UPS system operates with hazardous voltage. Repair may be carried out only by qualified maintenance personnel.

Caution -- risk of electric shock. Even some the unit is disconnected with the mains power supply (building wiring socket outlet), components inside the UPS system are still connected to the battery and are still electrically live and dangerous.

- Ø Before carrying out any kind of servicing and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exist in the terminals of high capability capacitor such as BUS-capacitors.
- Ø Only persons adequately familiar with batteries and with the required precautionary measures may exchange batteries and supervise operations. Unauthorized persons must be kept away from the batteries.

Caution -- risk of electric shock. The battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground. Before touching any operation, please verify that no voltage is present!

- Ø Batteries may cause electric shock and have a high short-circuit current. Please take the precautionary measures specified below when working with batteries:

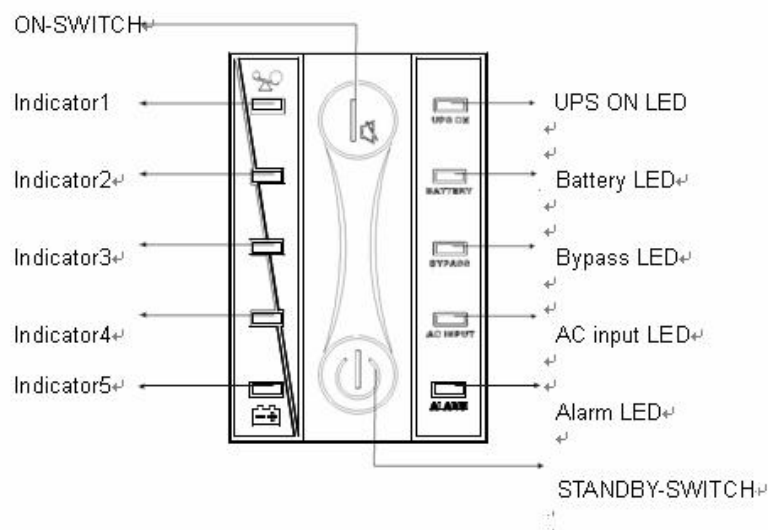
- remove wristwatches, rings and other metal objects
- use only tools with insulated grips and handles.

- Ø When exchange batteries, install the same number and type of batteries.
- Ø Do not attempt to dispose of batteries by burning them. This could cause battery explosion.
- Ø Do not open or destroy batteries. Escaping electrolyte can cause injury to the skin and eyes. It may be toxic.
- Ø Please replace the fuse only with a fuse of the same type and amperage in order to avoid fire hazards.

3. System description

3.1. Display panel

The UPS power control and operating indicators are located on the front display panel.



ON-SWITCH

- Ø The UPS can be turned on by pressing ON-SWITCH button for at least 1 second.
- Ø The acoustic alarm can be deactivated by pressing ON-SWITCH button.

STANDBY-SWITCH

The inverter can be turned off by pressing STANDBY-SWITCH. The output can be provided by the mains power via the bypass.

AC input LED

- ∅ Lights up when the mains power is normal.
- ∅ Blinks when the mains power is abnormal or the live conductor and the neutral conductor reversed at the input.

UPS ON LED

Lights up when output power provided by the mains power via the inverter.

Battery LED

Lights are up when the mains power is failed and the inverter is powered by the batteries.

Bypass LED

Lights up when output power provided by the mains power via the bypass.

Alarm LED

Lights up when the UPS system is in fault condition, at the same time, an acoustic warning signal is issued every second.

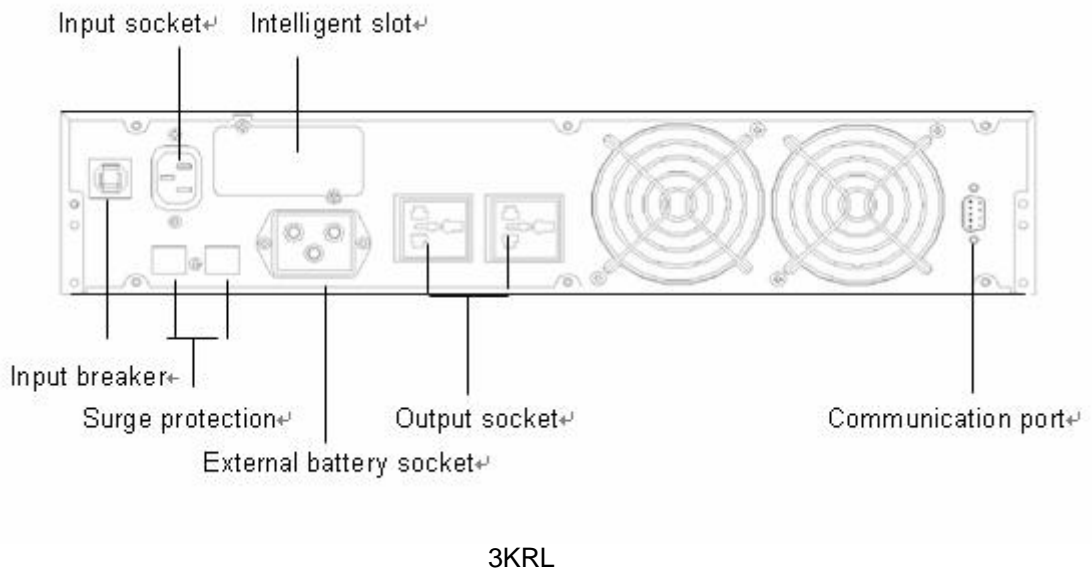
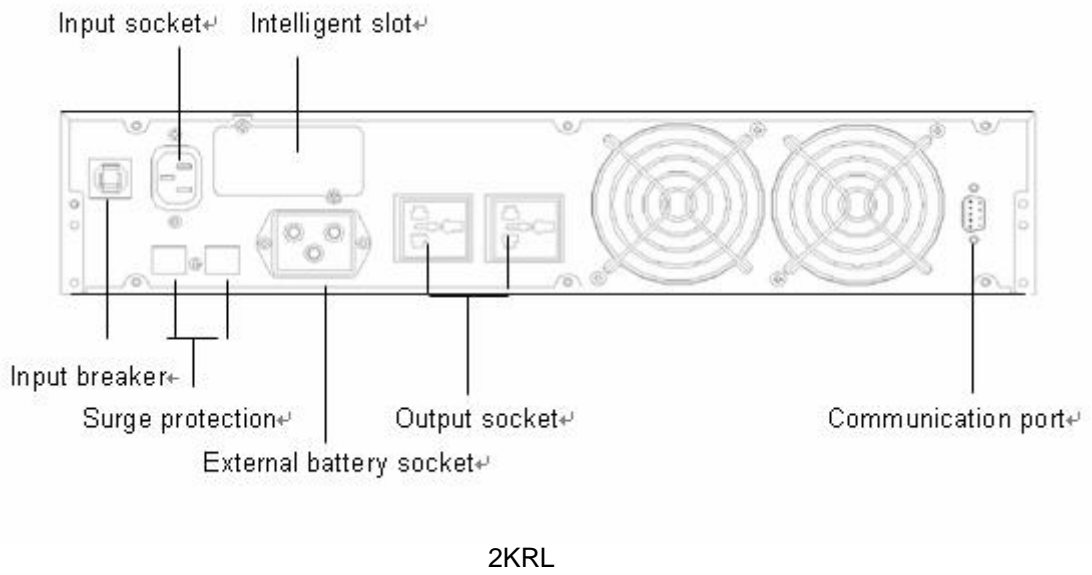
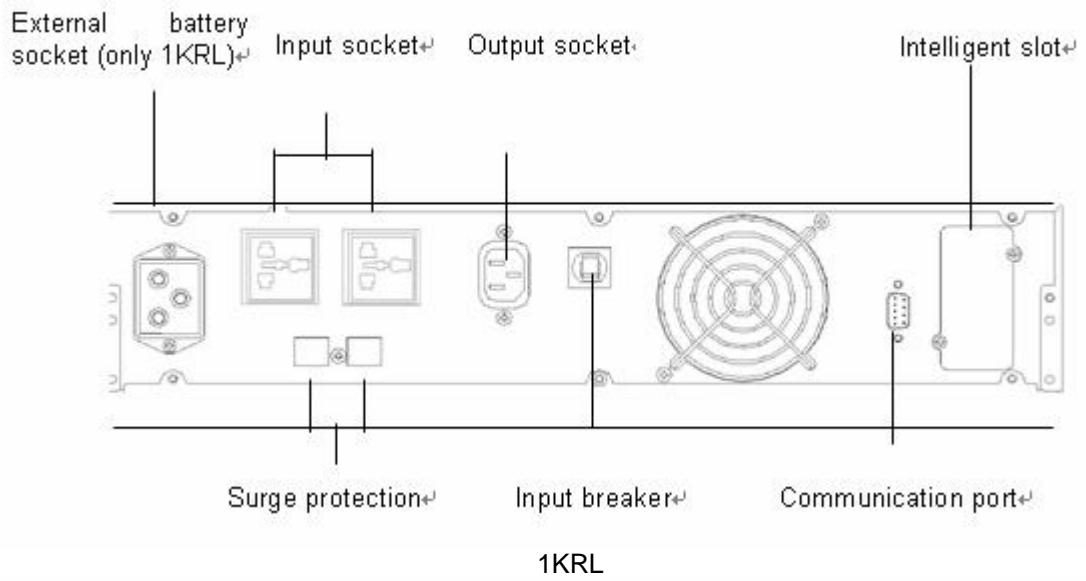
Indicator

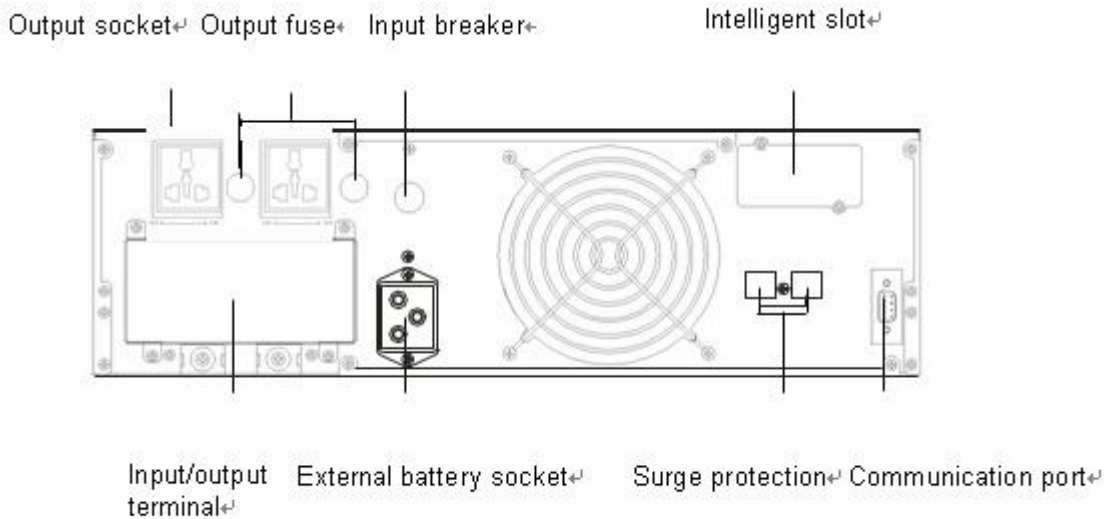
- ∅ Load level signaled when the AC input LED lighting up.
- ∅ Battery level signaled when the battery LED lighting up.

Indicators	Load level	Indicators	Battery level
Indicator 1~5	96%-105%	Indicator 1	1%-35%
Indicator 2~5	76%-95%	Indicator 1~2	36%-55%
Indicator 3~5	56%-75%	Indicator 1~3	56%-75%
Indicator 4~5	36%-55%	Indicator 1~4	76%-95%
Indicator 5~5	1%-35%	Indicator 1~5	96%-100%

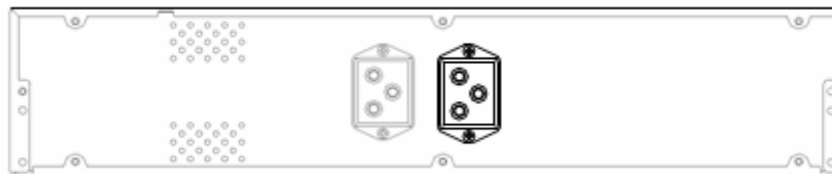
3.2. Real panel

The rear panels of your UPS and battery pack can be found among below drawings. The input and output connectors and some other useful connectors are on the rear panel.

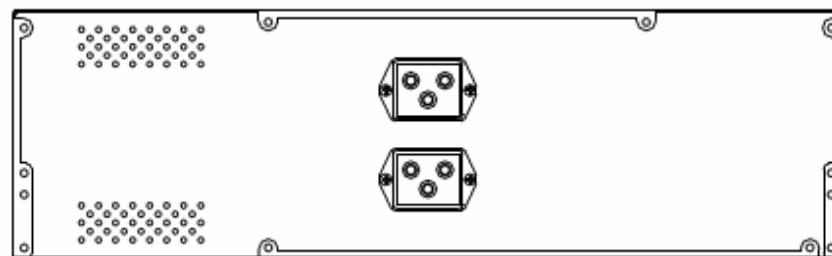




6KRL



Battery pack for 1KRS(L)/2KRL/3KRL



Battery pack for 6KRL

Surge protection: provide a surge protection for telephone fax and network line protectors and so on.

Communication port: WinPower software can be used with the UPS for power management. Standard serial interface cable is compatible with 1KRS(L)/2KRL/3KRL UPS, however, only the special cable applied with the UPS can be used on 6K UPS.

Input/output: if socket is available, just insert compatible cable plug; if terminal is available, wiring can be completed by professional electrician.

Note: terminal cover should be put back for safety reason after wiring completed.

Input breaker: if the breaker pops out/off, reduce the load on the UPS by unplugging equipment and reset the breaker.

External battery socket: special cable is offered for the battery pack, insert one end into the external battery socket on the UPS, the other to the battery pack, the same packs can be paralleled with together to achieve desired back up time.

Notes: one chain of battery packs can be connected to one UPS only; only the battery connectors marked with the equal voltage can be connected.

4. Maintenance

4.1. Operation environment

- I Ambient temperature: 0°C to 40°C
- I Installation height: < 1000M
- I Relative humidity: < 95%

4.2. Battery application

The battery can be charged to 90% capacitance within 5 hours. If the battery service life (3–5 years at 25 °C ambient temperature) has been exceeded, the batteries must be exchanged. In this case please contact your dealer. If there is not any operation to the UPS for long time then the battery must be charged every three month.

4.3. Trouble shooting

Using the table below, some common problems can be solved. If the problem still exists or some problems not found in the following table, please call the after-sales service department. Be sure you have the following information:

- I Model number, serial number
- I Date on which the problem occurred
- I Description in detail of the problem

Problem↕	Possible cause↕	Remedy↕
No indication, no warning tone even though system is connected to mains power supply↕	No input voltage↕	Check building wiring socket outlet, check input cable↕
AC input LED blinks↕	Phase and neutral conductor at input of UPS system are reversed↕	Turn mains power socket by 180° or connect UPS system according to chapter 4↕
AC input LED blinks and battery LED lights up↕	Input power and/or frequency are out of tolerance↕	Check input power source and inform dealer if necessary↕
AC input and bypass LED light up even though the power supply is available↕	Inverter not switched on↕	Press ON button "I"↕
UPS ON LED lights up, warning tone at intervals (every 1 or 4 seconds)↕	Mains power supply has failed↕	Battery operation; warning tone at intervals of 1 second means battery is almost empty↕
Alarm LED lights up, warning tone once a second↕	Overload↕	Reduce number of users at UPS output↕
Alarm LED lights up, permanent warning tone↕	UPS mistake↕	Notify dealer↕
Emergency supply period shorter than nominal value↕	Batteries not fully charged/batteries defective↕	Charge the batteries for at least 1-2 hours. Check capacity. If the problem still persists, consult your dealer.↕

5. Technical data

5.1. Electrical specifications

Model	1KRS(L)	2KRL	3KRL	6KRL
Input				
Voltage	220/230/240VAC			

Frequency	46Hz~54Hz/56Hz~64Hz			
Amperage (maximum)	5A(L mode 7A)	10A(L mode 12A)	15A(L mode 16A)	30A
Output				
Power rating	1KVA/0.7KW	2KVA/1.4KW	3KVA/2.1KW	6KVA/4.2KW
Voltage	220/230/240VAC			
Frequency	50/60Hzx(1±0.2%), battery mode			50/60Hzx(1±0.1%), battery mode
Wave form	Sinusoidal			
Batteries(standard)				
Number and type	3x12V/7.2AH	8x12V/7.2AH		20x12V/7.2AH

5.2. Typical stored energy time (battery mode)

Typical values at 25°C in minutes:

Model	100% load	50% load
1K	5	14
2K	9	21
3K	5	15
6K	8	23

5.3. Mechanical data

Model	Net weight(Kg)	Dimension(mm)
1KS	16.3	<p>Depth: 450</p>
1KL	9.1	
Battery pack 36V	22.5	
2KL	11.5	
3KL	12.3	<p>Depth: 600</p>
Battery pack 96V	27.8	
Battery pack 240V	64.2	

5.4. CE conformity

1KRS(L)/2KRL/3KRL

- Ø Safety: EN62040-1-1:2003
- Ø Conducted emission: EN50091-2 Class B
- Ø Radiated emission: EN50091-2 Class B
- Ø Harmonic current: EN61000-3-2
- Ø Voltage fluctuations and flicker: EN61000-3-3

EMS	EN61000-4-2(ESD)	Level 4
	EN61000-4-3(RS)	Level 3
	EN61000-4-4(EFT)	Level 4
	EN61000-4-5(lightning surge)	Level 4

Ø EN61000-2-2 (immunity to low frequency signals)

6KRL

- Ø Safety: EN62040-1-1:2003
- Ø Conducted emission: EN50091-2
- Ø Rated output current exceeding 25A limits
- Ø Radiated emission: EN50091-2
- Ø Rated output current exceeding 25A limits

EMS	EN61000-4-2(ESD)	Level 4
	EN61000-4-3(RS)	Level 3
	EN61000-4-4(EFT)	Level 4
	EN61000-4-5(lightning surge)	Level 4

Ø EN61000-2-2 (immunity to low frequency signals)

5.5. Communication port

The type of signals, serial command (RS232), is provided by the UPS to communicate with a host computer. The RS232 communication port transmits both utility power and UPS status to the host computer, providing the host computer with proprietary command sequence to monitor the utility power and UPS status and to control the UPS output.

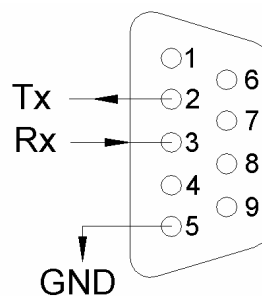
The data format of RS232 is listed as followed:

Baud rate	2400 bps
Data length	8 bits
Ending bit	1 bit
Parity bit	None

5.5.1. RS232 interface

Two types of signals, relay contact or serial command (RS232), are provided by the UPS to communicate with a host computer. The relay contact transmits both utility power and UPS status to the host computer by using "ON" and "OFF" states of relays, providing the host computer with proprietary command sequence to monitor the utility power and UPS status and to control the UPS output. The host computer can also monitor the UPS through RS232 communication port.

Pin#	Description	I/O
2	TXD	Output
3	RXD	Input
5	GND	Input



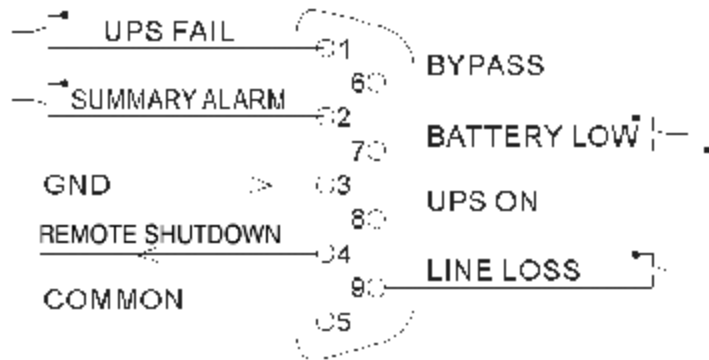
RS232 interface

5.5.2. AS400 interface

Except for the communication protocol as mentioned above, this series UPS has AS400 card (an optional accessory) for AS400 communication protocol. Please contact your local distributor for details.

The following is the pin assignment and description of DB-9 connector in AS400 card.

Pin#	Description	I/O type
1	UPS failure	Output
2	Summary alarm	Output
3	GND	
4	Remote shutdown	Input
5	Common	
6	Bypass	Output
7	Battery low	Output
8	UPS on	Output
9	Utility power failure(line loss)	Output



DB9 interface of AS400 communication protocol