

Uninterruptible Power Supply

User Manual

Pure Sine Wave Line Interactive UPS
1-3KVA

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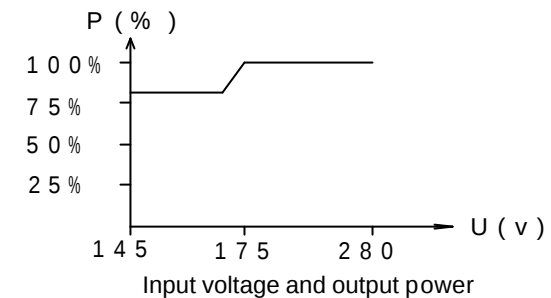
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1. Safety And Summary

Please obey the items below to ensure the security:

- Charge battery longer than 12hrs before using
- After battery discharge or being stored more than three months, 12hrs recharging in time are required
- The product is designed for group computers, could not connect with the sensitive load (motor, fridge etc.)
- Keep above 50cm away from the display while installing the product
- It is normal that the case surface temperature go up to 50 during using
- Do not use UPS with overload
- Do not open UPS cover in case danger of electric shock, maintenance and battery replacement should be handled by technicians ;
- UPS inner short circuit will cause electric shock or fire danger. Do not put any liquid vessel on UPS
- Cut off power rapidly if equipment work abnormal
- Make sure not to keep or use the product in following environment
 - ◆ No good air circulation
 - ◆ Place having flammable gas、corrosive material or lots of dust
 - ◆ Place under abnormal high or low temperature (above 42 or below -2), and high humidity (above 90%)
 - ◆ Place having direct sunlight or close to heater equipment.
 - ◆ Place having severe vibration
 - ◆ Outdoor

- Use powder extinguisher if there is fire around UPS. Not to use liquid extinguisher in case danger of electric shock.
- Place sockets nearby UPS, so as to pull out sockets and cut off the power in an emergency situation.
- The product provide 100% power output within range of rated voltage $\pm 25\%$; if out of the range, the output power meet as followings :

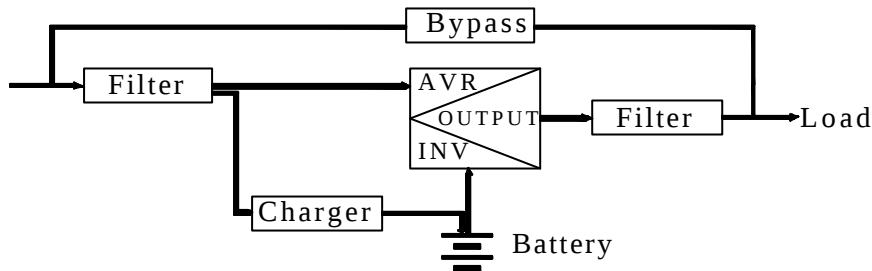


Warning! Equipment must be connected to the ground

1. The equipment must be connected to the ground. Make sure connect UPS to the ground well while connecting AC to supply power
2. The power sockets must be 15A/250V or above this specification if the capacity of UPS is above 2

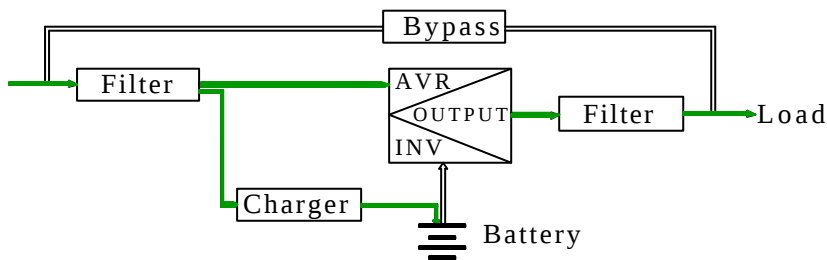
2. Working principle

2.1 System circuit diagram



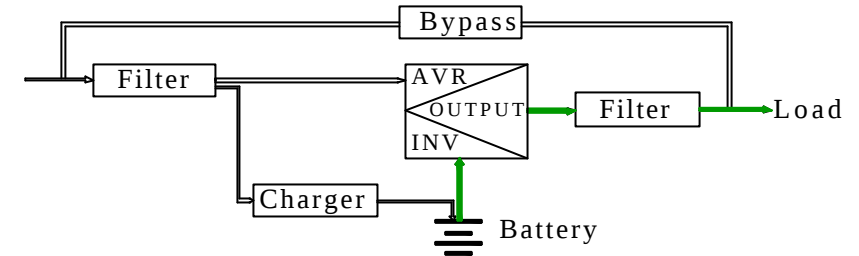
2.2 Normal power supplies

When UPS works in normal condition, miscellaneous waves of high-frequency of main power are eliminated by wave filter, after this, batteries group are charged by the chargers in one route and keep the batteries in full power condition, another route is through UPS stabilizer, the power will be sent to user's equipment through the wave filter.



2.3 Main power off :

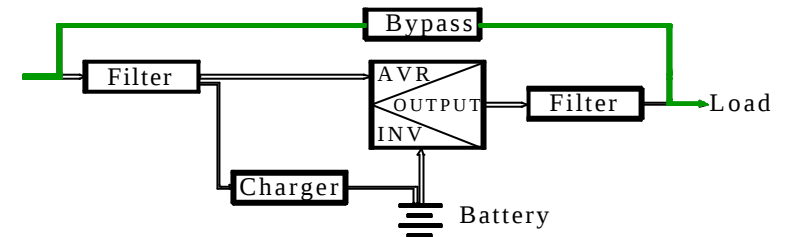
In main power off condition, batteries will supply power to the inverter promptly, then uninterruptedly send the power to user's equipments after though wave filter



2.4 Power supply by bypass :

There are four conditions when power supply by bypass:

1. Over load;
2. UPS failure;
3. Start the machine: keep pressing the button for 3seconds, within 15seconds, UPS will be in the process of starting;
4. Shut-down: press the shut-down button for 3seconds, UPS will shut down.



2.5 Battery and charging :

1. Automatic self-recharging when UPS is connected to the main power. The charger can charge the batteries to 90% within 8 hours.
2. Please keep the batteries in full power condition, so as to prolong the life as well as discharging time.
3. There are high voltage power and electronic elements inside UPS, make sure the machine not be started by a staff without technique, in case not lead to danger.

4. Please construct and use according to this manual

3. Products features

3.1 Wide input range:

With online synchronous voltage regulation technology, with safe operating input range 165-275Vac (optional: 150-275V), it greatly decrease the batteries' discharging and recharging time, and prolong batteries' using life effectively.

3.2 Auto switching machine function (Please turn off the input switch in the rear if no need the automatic switch-on function.)

- UPS will start automatically when it is connected with the main power, then turn on the input switch in the rear, it will change to power supply of main power voltage regulation.
- Batteries will supply power promptly when it's in main power off condition, after finishing discharging, UPS will be power off automatically with long ringing.
- UPS will start automatically if main power recovers after auto shutting-down, and recharge the batteries.

3.3 Humanized alarm system

- UPS alarms 1/5seconds when main power is off and normal inverter supplies power; the sound will be dispelled automatically after 40 seconds, in order not to disturb the working environment any more.

- UPS starts the alarm automatically with long ringing, when the batteries will be nearly exhausted soon, the frequency is 1/0.2seconds, in order to remind people that batteries is used up and UPS will turn off soon.
- When batteries are almost used up, UPS will shut down automatically to protect the batteries.

3.4 Protective functions of online UPS:

- Overload on main power condition: in main power supply condition, UPS will alarm with long ringing when load is over 110%, it will supply power by bypass, and at the same time stop ringing. Ups will supply power on normal condition if load have been decrease to a normal range.
- Overload on normal inverting condition: when in inverting power supply condition, UPS will alarm with long ringing when load is over 110% of the rated load, it will supply power again if load decreased to a normal range within 60seconds and at the same time stop ringing. Ups will supply power on normal condition; If load haven't been decrease within 60s, ups will automatically shut down, end-users should turn on manually(press the ON button in the front panel) or wait for the automatically turn on when the mains recovered.

- Overload on abnormal inverting condition: when in inverting power supply condition, UPS will alarm with long ringing when load is over 125% of the rated load, ups will automatically shut down after 5s, end-users should turn on manually (press the ON button in the front panel) or wait for the automatically turn on when the mains recovered.
- Short circuit protection : When in inverting power supply condition, UPS output meet instant big current and short circuit, its output will be in a limited range, if over 10ms, system will shut-down automatically, end-users should turn on manually (press the ON button in the front panel) or automatically turn on when the mains recovered. After that, it will restart by pressing the front panel's button or wait for the automatically turn on when the mains recovered. (If in main power supply condition, there is an input fuse protection first, and then turn to inverter mode.)

3.5 Phase lock function:

On main power condition, system tracks the main power phase position automatically, which can ensure the wave form of inverting output voltage and main power voltage go ahead simultaneously. It can lower the spike pulse and surge voltage occurred at transfer between AC and batteries, so as to ensure the disturbance and

damage to equipment are in the lowest level.

3.6 LCD and LED display panel :

It has an intuitive display panel that users can easily learn the information of battery capacity, load capacity and UPS working status to know the system working status.

3.7 Automatically shut off when there is no load in inverter mode (option):

When UPS is in inverter mode, the alarm will disappear after 40 seconds, and at the same time it will automatically detect the load capacity, when the load is less than 5%, UPS will take this situation as no load, it will automatically shut off after 1 minute to ensure the battery full and prolong the battery life.

3.8 Automatically distinguish output frequency:

The mains frequency is 50HZ or 60HZ, when the UPS is connected with the mains, it can automatically detect the mains frequency, and the UPS output frequency will be the same as the mains frequency (50HZ or 60HZ) when the mains is failed.

3.9 Battery detection:

The product can work with monitor software to detect battery at fix time, if there is any fault such as battery cable open circuit or battery failure, the UPS can detect the faulty information through communication ports to inform user. Meanwhile, the UPS has self-protection function to shut down the charging system and turn to bypass supply power mode (for the UPS with bypass model), when the mains is normal, then it is power

supplied by bypass, the LCD will display “PWR DN”, as well as the icon “” or the word “full”.

3.10 Intelligent communication ports (with intelligent computer monitoring function): (option)

This series UPS can be monitored by PC through RS232、USB or SNMP card, it can provide UPS on /off control and auto file-saving functions for different kinds of systems, such as WINDOWS98/NT/2000/ME/2003/XP/Vistar

1. This series UPS can automatically detect the condition of the mains failed and battery in low voltage; as well as UPS other working data (LCD UPS)
2. When the mains is failed, the system will make countdown to automatically save files, shut down system and UPS.
3. It can set system power supply time, make history record of UPS working status, the mains status and so on.

When the system is in shut-down countdown, it can set UPS self-detection and time for UPS on and off.

4. Technical specification

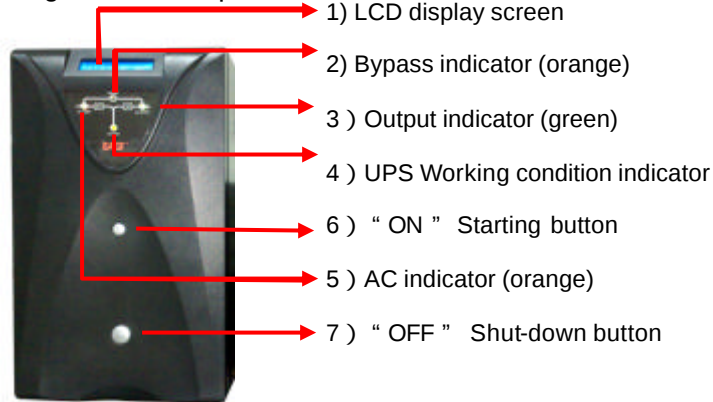
Model	1000VA	1500VA	2000VA	3000VA
Real Power Rating	600W	900W	1200W	1800W
Display				
Indicator on Panel	LED / LCD plus LED display			
AC Mode				
Types Of Load	Ancillary equipments such as PC, display, group computers and so on			
Input Voltage	165Vac ~ 275Vac / 150Vac-275Vac(optional)			
Input Frequency	45-65 Hz(transfer to battery mode if out of this range)			
Output voltage	220Vac ± 10%			

Efficiency	= 96% (AC Mode)			
Overload in AC mode	110% transfer to bypass within 60sec; 120% transfer to bypass within 30sec; Automatically recovery if decrease the load capacity.			
Short Circuit	Protected by Input Fuse			
Inverter Mode				
Output Voltage	220Vac± 5%			
Output Frequency	50HZ/60HZ ± 1% self-detection			
Output P.F	=0.6			
Waveform Distortion	Liner Load = 5%			
Battery Backup Time	= 10min (PC load)			
Transfer Time	Typical value 5ms, Max: 8ms			
Efficiency	= 80(INV Mode)			
Overload in INV mode	110% Shut down within 60sec; 120% Shut down within 5sec;			
Short Circuit	=20ms System shut down automatically			
Alarm				
AC abnormal	Once every 4sec, be silent after 40s			
Battery low	Once every 0.2sec			
Overload	Once every 1sec			
Battery				
DC voltage	24V	24V	36V	48V
Configuration	2× 12V7AH	2× 12V8AH	3× 12V 8AH	4× 12V 8AH
Recharge Time	90% Capacity after 8hours			
Communication	RS232/USB/SNMP(can be set to turn on/off UPS automatically)			
Others				
Output Sockets	Customized upon request			
IP Level	IP20			
Ambient Temperature	0 ~ 40			
Ambient Humidity	10% ~ 90% (No Condensing)			
Noise	=50dB (1m)			
Dimension (mm) D*W*H	360× 145× 215		430× 145× 215	475× 200× 337
Packing Dimension(mm)	450× 325× 245		510× 325× 245	590× 320× 465
Net Weight (kg)	14.5	15.5	18.5	27
Gross Weight (kg)	15.5	16.5	19.5	28.60

5. Product components

5.1 LCD front panel

1. Brief diagram of front panel:



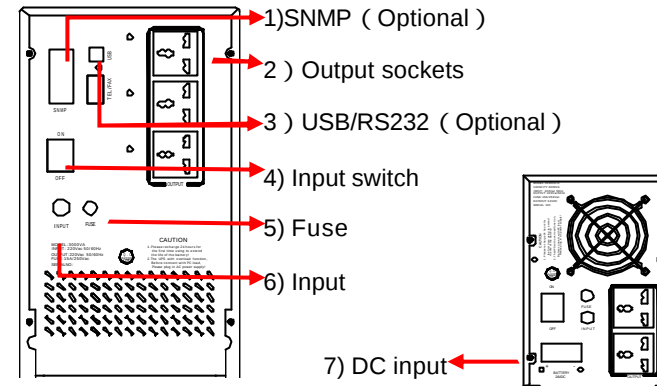
2. Introduction of the indicative lamp:

- 1) LCD display screen : Display input and output voltage, frequency, battery and load capacity.
- 2) Bypass indicator(orange) : the light is off when UPS is working with main power input
- 3) Output indicator (green): the light is on when UPS is working ;
- 4) UPS Working condition indicator(green/red): the green light is on when there is main power input; red light is on when main power is off
- 5) AC indicator (orange): the light is on when there is input main power ;
- 6) "ON" Starting button: Start UPS by pressing it 3 seconds, UPS

output power normally in 15 seconds(daily start using)

- 7) "OFF" Shut-down button: shut-down UPS by pressing it 3 seconds (working through bypass with main power input and the bypass light is on (daily shut-down using)

5.2 brief diagram and introduction of back panel:



Standard type Rear Panel

Long Back-up type Rear panel

6. Installation and usage

6.1 Product installation

1. Close the equipments(for example: computer master),pull out the power wire from the main power socket
2. Put the UPS to the suitable position(check the article 6 from cautions for reference)
3. The power wire of equipments which need UPS (for sample: computer master and so on) should be connected to output sockets of UPS. others should be connected to the common main power

sockets

4. UPS input socket is connected to main power socket.(make sure L, N be right and the ground line is ok)

6.2 Start/shut-down:

1. On main power condition: open the main switch on back panel of UPS,UPS will start self-testing and output through bypass and will be in normal condition in 15 seconds, the output indicator and working indicator(green) of UPS will be on, the bypass indicator is off ,user can start PC and other load at this moment

2. On battery condition (no main power): Turn on the main switch on rear panel of UPS firstly, and then press the start button on front panel for 3 seconds, UPS will output power normally from Inverter.

- 1) Daily start: Press the start button for 3 seconds, UPS will output normally in 15 seconds.
- 2) Daily shut-down: Press the shut-down button on front panel for 3 seconds, UPS will be shut-down, but there is still output through bypass of UPS. Bypass LED will be illuminated at the moment.

Cautions:

- 1) Please start UPS then computer load when starting computer and shut-down the computer load then UPS
- 2) Normally it's unnecessary to switch off UPS so as to charge the batteries
- 3) It will transfer to battery mode once the mains power goes off, please save your files or do other emergency deal to PC or other load

6.3 ON and OFF operation after long time storage of UPS

1. If exceeds 7 days, please press the OFF button on front panel, and then switch on the input breaker on the rear panel;
2. If exceeds half a month, please let UPS work more than 24 hours following above method(6.1.1) to charge battery in order to prolong the life of battery.

6.4 Installation of Long backup type UPS

Warning: In order to ensure equipment and human safety, it must be installed by professional technicians.

1. Firstly, please connect batteries with battery cable. (Note: red is positive, black is negative) ;
2. Secondly, please plug UPS into main power, then turn on the input switch on the rear panel. And then use multimeter to ensure UPS and battery connector's identification and voltage to be compliant.
3. For battery connection, please use multimeter to test battery input for UPS and battery connection to be compliant.

7. Maintenance

7.1 Preventative Maintenance

Preventative maintenance to UPS system can guarantee the reliability and long-time service; do test it per month as follows:

1. Shut-down UPS (Refer the operation steps for details)
2. Check the vents not be blocked
3. Check whether there is so much dust covering the surface

4. Check input/output and if the connection between batteries and cables is firm and the insulating barrier of cable is ok
5. Make sure UPS not damp
6. Start UPS (Refer the operation steps for details)
7. Keep UPS working for 5 minutes on battery mode with little testing load, there is no other alarm information during this period, if any; please contact the local service center

7.2 Battery Maintenance

Valve Regulated Lead Acid battery is used in this UPS. The life time can be reduced by operating environment, frequency of discharging, and high temperature. Even battery is not used, the performance can be degraded. So, we advise to do a discharging every 3 months if there is no power off for long time.

There are maintenance steps in the following (Just before battery out of use, the performance will be degraded very fast, so we should keep some operations of battery maintenance):

- 1) Connect AC input, switch on UPS, and charge battery up to 8 hours. Look out load running status which is connected to UPS;
- 2) Keep the load, and record the total power, then shut off AC input, UPS transfer to battery mode, till shut off automatically, record the discharging time. Also keep the discharging time record, in order to refer it later.

- ◆ The total power of load is calculated in unit of “Watt”
- ◆ If the marking of UPS just shows power capacity in “VA”, we need to multiply power factor(if no marking, it is 0.6) to calculate in unit of “Watt”

- ◆ If there is just Ampere value marked, then multiply rated voltage and power factor to calculate in “Watt”
- 3) In normal using condition, the life time of battery is near 2-3 years. If battery temperature and discharging frequency is high, the life time will be near 0.5-1 year.
 - 4) Along with the running time longer, the performance of battery is degraded. If the discharging time reduces to be 80% of initial time, performance is degrading fast. So, battery maintenance should be done every month.
 - 5) Battery maintenance of long backup UPS:
 - ◆ Clear the dust on battery
 - ◆ Check the connection cables between batteries are loosen or not, if necessary, replace the battery. Keep the battery and cable connection tight

The discharging test above is just a simple test to check the battery charging status and performance. If needing know the exact status of battery charging status, should contact with battery supply locally.

7.3 Trouble shootings

UPS can offer reliability to load. if abnormal accident occurs, advise you go to local service center, so as to prevent more damage and unnecessary fee. When UPS is in abnormal status, you can refer the following trouble shootings. If can't solve problem, please get in touch with local distributor, or contract direct with our company

Phenomenon	Confirmation and Solution
Main power is normal, main power indicator is off	1, whether Cable is loose. 2, whether fuse is burnt.
UPS can not stay in mains mode, The mains power indicator is off with the buzzer ringing, even the UPS input plug has been inserted to main power socket, and power switch is pushed.	whether fuse is burnt or not After pulling out the UPS plug, use screwdrivers to revolve the fuse counterclockwise and get it out. Check that whether the fuse is fusing, if so, need replacement
Mains Mode no problem, battery mode can not work	Whether the battery is not charged or not; Whether UPS is not switched on
When power is off, computer will stop working	When main power is normal, start UPS. Charge the battery for more than ten hours, and then start the UPS.
When mains connected, UPS beeps for 60 seconds, then transfer to bypass; When no AC input, UPS shut of automatically after 60 seconds beeping	Check UPS is overload or not
When UPS transfer to battery mode, but shut off immediately; When AC connected, UPS stay in bypass mode, and LCD shows "PWR ON" "  " or "full"	Battery connection cables open circuit or battery damage

8. Packing List

1. UPS: 1 unit;
2. User Manual: 1 copy;
3. Battery connection cable: 1 piece (for long backup model);
4. Others are according to customer needs