



CP 5~20KVA

On-Line UPS

User's Manual

[NOTE]

Please carefully read the user's manual before operation for the sake of understanding correct operation of the instrument. Please keep the manual handy for future reference.



WARNING



The input and output of the instrument is with danger high voltages which may endanger the safety of life. Please strictly follow the operating description is not allowed to remove the cover of the instrument.

1. Please keep the instrument connect the ground before connecting instrument.
2. The input & output voltage of the instrument is dangerous which will endanger the safety of life.
3. Please do not open the cover of the instrument by yourself in view of danger of shock.
4. Please turn off the mains input switch and the battery switch for any emergency.
5. There are many kinds of power sources for the instrument, the line bank or the socket may still have voltage if only the main power is disconnected.
6. Please remove the cable between the battery & instrument before repairing. It's necessary to wait for another 5 minutes for discharging, because of the danger of shock.
7. The wires should be fastened to the terminals. It is prohibited to short the +ve and -ve of battery. It's prohibited to touch any two of wire connectors or bare end of connecting wires. Otherwise, it may lead to damage of battery or personal injury.
8. Please keep the battery and battery group away from the fire and all the instrument that may cause spark to prevent the danger and damage.
9. Please do not open or shatter the battery, the overflow electrolyte is with causticity that may be harmful to life.
10. Please contact the professional personnel of the local dealer or the special maintenance station for any trouble-shooting. Random disposal of the trouble is not allowed.
11. This is an A-grade product with electromagnetic compatibility; it may make some radio disturbance in environment. In this situation, users should adopt some actual and feasible method for anti-interference.
12. The instrument should be maintained by the service professional.
13. Before usage, confirm that the temperature of the instrument has dropped into the normal run range. It is recommended still placement for 24 hours in the normal temperature range before startup.
14. Before you replace the battery of different brand and different type, make sure the charging voltage is matching with UPS charging voltage due to the different required charging voltage of different battery, if any doubt, please consult with the manufacturer.

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1. System Overview

1.1 Product feature

CP Series UPS is the high performance sine wave on-line UPS, specially designed for the network computer and mini-intellectual instrument. Ex. testing equipment, industrial automatic instrument used in finance, communication, insurance, railway, medical, mine, enterprise etc. Suitable for bad electric environment.

CP series UPS is sine wave on-line high performance uninterruptible power supply with the following features :

1. True on-line double conversion structure design

Outputs are isolated with transformer.

2. Broad Input Voltage Range

The input voltage is 320~480Vac, the input voltage and frequency is even broader. It can work with village utility and oil generator.

3. LCD Display Panel

Gently touch the button, the UPS input voltage, output voltage, input frequency, output frequency, load percentage; battery percentage can be clearly display on LCD panel.

4. Complete Protection Measurement

Over voltage protection, over current protection, battery low voltage, instant limited current and short circuits protection etc. keep the machine away from the wrong operation, and ensure it works reliably in any conditions.

2. Basic Principles and Structures

2.1 Working Principles

CP series UPS includes: AC-DC converter, charger, DC-AC inverter, controlled driver circuits, LCD display control etc. the high performance UPS has strict requirement on anti-interference etc. Thus, its choiceness circuits and component ensure all sections have more voltage and current redundancy. Especially, it adapts IGBT, which has excellent high temperature on current and bring high performance.

2.2 Working Procedure

In Case of proper external utility power supply to UPS, there is DC voltage developed in the DC main circuit and thru DC/AC inverter it converts steady 400 output AC voltage. In case of low voltage or sudden failure of utility power supply, the battery supplies power to the DC circuit. There is no switching interval from grid power supply to battery power supply. When battery is nearly out of power (battery Low), UPS will give out light and sound alarm; restrict the inverter's operation and give out long sound alarms while the battery is

discharging completely. UPS also has over-load protection function. When fault is eliminated, switch on UPS and resume operation. When UPS is abnormal, it will give out sound and light alarm, the UPS have alarm and protection function.

Table 2-1 abnormal status and alarm protection function

UPS status	Buzzer	Protection/Alarm
Normal	Silent	None
Overload $\geq 100\%$	Beeping every 2 seconds	Alarm & Trip after 60Second
Overload $\geq 110\%$	Beeping every 1 second	Alarm & Trip after 60 Second
Overload $\geq 125\%$	Long Beeping	Alarm & Trip after 10 Second.
Overload $\geq 150\%$	Long Beeping	Protection
Battery voltage to alarm point	Beeping every 2 seconds	Alarm
Battery voltage to low point	Long Beeping	Protection

The UPS will start up and charge the battery when the utility come back after low battery protection.

3 Shape and structure

3.1 Display panel structure

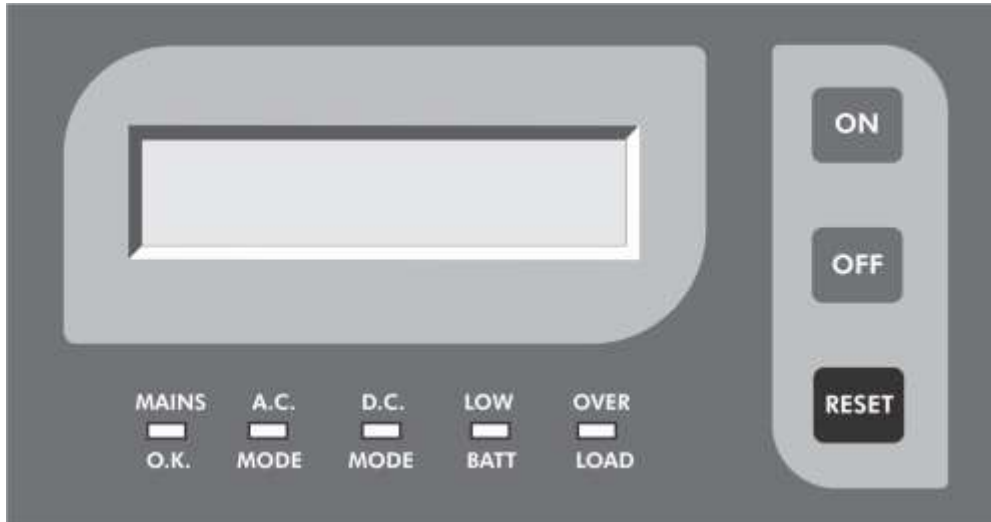


Fig. Display panel of CP (10~20KVA) series

3.2 Operation Display Panel:

1. ON button:

Pressing the ON button more than 1 second the UPS system is turned on.

2. OFF button:

By pressing this button more than 1 second turns off the UPS system whenever the ups run under the Normal mode/Battery mode.

3. RESET button:

For reset the ups functions.

4. LED Indications:-

The LED indicator contains, MAINS OK, A.C.MODE, D.C. MODE, LOW BATT, and OVER LOAD.

4. Transportation and storage

4.1 Transportation

It should strictly confirm to the care signs during transportation, and place the UPS according to the care signs, to avoid the shake to the UPS. It can't put the equipment on the open vehicle and cabin, and should be put together with flammable articles. It is prohibited to put the equipment in the open air in the midway, and should avoid the drench of the rain, snow or other wet goods, also machinery damage.

4.2 Storage

- Place the equipment according to the care signs. It should part from ground for 20cm, part from wall, hot source, cold source, windows or air entrance for 50cm
- Environment temperature for storage is 0~45°C, relative humidity is 20%~80%, and the equipment should not have any flammable and corrosive elements, physical impact and magnetic field. The storage period in this condition is for six months, over six months, the equipment should be checked, and charge the battery every three months.

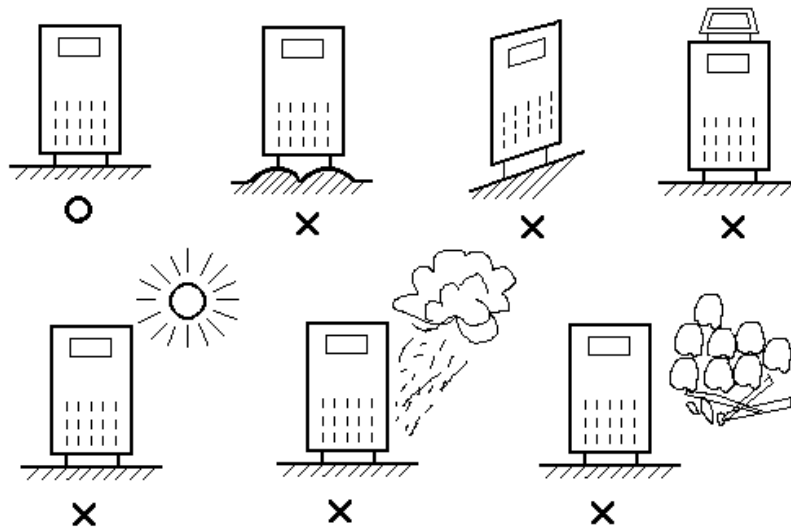
5. Installation

5.1 Precautions during installation

1. Before installation, check whether the UPS is in good shape, circuitry is smooth, including every connection point, electrical outlet, to avoid open circuit or short circuit.
2. For input 3phase system , it should be verified the Earthing to be well grounded, ensure the voltage between neutral and ground wire should be lower than 5V, if it is not well grounded, the voltage may be reach 100V. If the users have the strict requirement on the voltage, pay attention to the well ground, to avoid any unnecessary loss.
3. When install UPS, it is recommended to connect the input and output neutral wires, live wires, and ground wires correctly, to avoid short circuit. In the meantime check the input voltage is normal.
4. Please follow the instructions and sequences while installing the battery. The wires should be fastened to the terminals properly. It is recommended not to short the +Ve and -Ve terminals of battery. It is prohibited to touch any two of wire connectors or bare end of connecting wires. All the misconducts may lead to damage of battery or personal injury. Before connect the battery packs to the UPS, check whether the battery voltage conforms to the UPS specification.

6. UPS installation requirement:

- ◆ UPS must be evenly placed on the floor (avoid slanting or uneven ground);
- ◆ Do not place articles on the top of UPS, No one is allowed to sit on top of UPS.
- ◆ Avoid placing UPS in direct sunlight, rain or humid grounds.
- ◆ Do not place the UPS in any place with erosive gases.



6.1. Location and environment requirement

6.1.1. Location Requirement

1. Clearance:-

There should be no garbage or sundries around UPS because the liquid or metal improperly deposited or suddenly fall down from other place may cause UPS short-circuit endanger power system and operator. The dust or sundries on the vent can clutter air circulation influence fan's work or may shut down the power system.

2. Fireproofing:-

To lessen the possibility of on fire and reduce the expense to the least, UPS room's wall, ceiling and floor should be made of fireproofing material. Portable CO2 fire extinguisher

3. Air circulation and heat elimination:-

To easily operator, maintenance Inverter and eliminate Inverter inner heat, there should be at least 50-70 cm room around UPS frame and 50 cm room above it. Also electronic fan should be installed near the battery to keep the house in good air circulation. Only operate in the normal temperature (20°C), battery life will be the longest.

6.1.2. Environment requirement

Environment temperature: 0~45°C;

Relative humidity: 0%RH~95%RH, no condensation;

UPS must be installed in an environment that has enough wind, cool, not high humidity and clean air.

Operation temperature for recommended is 20~25°C, and humidity is about 50%.

Note: It is prohibited to install the UPS in an environment that has metal electric dust.

7. Startup Procedure:

1. Ensure that all the MCB's /Switches of the UPS are in OFF Position.
2. Wire up the UPS Input Mains Supply & Output Load to the Rear Panel of the UPS system.
3. Install the Batteries in the Battery Bank provided & connect the batteries as per the DC Voltage of the UPS system mentioned at the Back Panel of the UPS system.
4. Switch on the Mains Supply & the input MCB at the back panel of the UPS.
5. The front panel LCD of the UPS will light up & show "LOW BATTERY" "Battery Low LED".
6. "Reset" from Display Panel
7. Now connect the battery bank in correct polarity to the battery strip at the back panel of the UPS.
8. Ensure that all the equipment connected to the UPS are in OFF position.
9. Now switch on the UPS by pressing the "ON" switch on the front panel of the UPS & wait until the "AC Mode On" LED is glowing.
10. Now turn 'On' the equipment connected to the UPS one by one.

11. Now turn 'OFF' the input MCB at the back panel of the UPS to check that the UPS is functioning properly in the Battery Mode.

Note: Do not connect the battery bank to the UPS before switching on the input mains as doing so can result in heavy sparking there by damaging the UPS system.

8. Maintenance

Daily Maintenance of Battery:-

1. Charge the battery for 4-6 hours every three months if it is not used for a long time
2. Charging the UPS for 4-6 hours before using, the UPS can be used while charging, but if the utility fail at that time, the backup time may be less than the standard value.
3. The battery should charge and discharge every four or six months when normally using. The standard models should charge after overload protection, and the charging time should be less than 4 hours.
4. In high temperature locations, the battery should charge and discharge every two months, the standard models' charging time should be less than 4 hours.
5. It is prohibited to mix use different capacity, different type and different manufacturer's battery.
6. Use the dishcloth with clean water to clean the battery crust, it is not allowed to use oil or organic chemistry such as gasoline or thinner.
7. Keep the battery or battery pack away from fire source, to avoid any unnecessary losses.
8. Check the charger regularly, to avoid the situation of over-charge or not complete charge. Don't over discharge the battery, full charge the battery after discharge (no more than 24 hours), it is not allowed to discharge the battery when it is not full charge, otherwise I will reduce the battery capacity, even damage the battery.
9. Turn "OFF" the switch after stop using the UPS, to avoid over discharge after power cut.

Replace the battery:-

1. Don't throw the battery into water.
2. Don't open up or break down the battery, the electrolyte will do harm to skin and eyes.

3. Take back the batteries according to the relative explain.
4. Replace the battery with the same type and same grade battery.
5. Replace the whole battery pack; don't use the new battery with the worn battery.
6. Please note the following items when replace the battery:

Note: Dangerous voltage exist between battery terminal and ground, please test before touch.

9. CP Series Trouble-shooting:-

S.NO	FAULT	REASONS	ACTIONS
1.	While switching ON, the input MCB trips.	Short circuit in the DC path/Rectifier.	a) Check for short circuit in the DC path/Rectifier. b) If short circuit persists contact for service.
2.	After switching the "ON" button at Display panel, output is not coming.	High inrush current or Inverter tripping due to short circuit/overload.	a) Reduce the load & increase it step by step. b) Disconnect load & switch on the ups If the output starts coming then the problem lies with the load.
3.	Backup not available immediately after the mains failure.	Battery not getting charged or battery failure.	a) Check battery connections. b) Check battery voltage at battery input terminal. c) Charge the batteries for 8 hours, if the backup is still less, then contact for service.
4.	UPS Unit giving shock.	Earthing not connected.	a) Check connection of input & output ear thing at UPS terminal. b) Check for proper ear thing at the point from where input AC is being fed to the UPS.
5.	In case of any serious problem i.e. such as smoke, abnormal Noise or some burns smell.	Serious problem in unit.	Switch off all loads & switch of the UPS rocker switch & the mains input MCB. Contact service center.