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1 INTRODUCTION

1.1 Thanks

Thank you for your purchasing of Kstar UPS, its design is safe, reliable and needless to maintain.

1.2 Reading

Please read this manual, it contains safe installation and operating introduction. It helps you to get the optimal using life and service. The manual recounts UPS internal working way and relative protection function.

1.3 Brief introduction

Master series on-line UPS is a new generation intelligent-type UPS specially designed for finance system, telecom system, electric power system, intelligent building, working station to meet the high quality and high reliability requirement of the system to power supply.

1.4 Characteristic

computer port

UPS intelligent monitoring function can be got by the computer port. The detail refers to the Section 9 and *UPS intelligent monitoring software user manual*.

LCD display

The running status, load capacity and battery capacity are clear at a glance on LCD on UPS control panel. You can master the change of UPS power supply quality of and running environment at any time.

electron bypass switch

When UPS is faulty, the bypass will be activated at once and supply power to

load through the built-in static electron bypass switch, at the same time the buzzer sounds alarm for long-time.

intelligent battery charger

When UPS has found AC input, the high-power charger can automatically be started up and float charge battery circularly after extending for 10ms, avoiding mangle because it can't be supplied in time after battery discharged.

Safety

2 SAFETY

To reduce the danger of electric shock caused because load equipment isn't good connected to the grounding, when installing computer port signal cable, please switch off the AC input power, only after all signal cables have good connected, you can connect the power.

There must be proper branch protector (Breaker) on UPS connecting to AC input power with grounding. That of connecting to any other type socket will cause electric shock and infringe local electrical rule.

Do not attempt to maintain UPS, there isn't any parts maintained by user in UPS. There is potential damage voltage in UPS and the services can only be performed by the trained regular person. If user make bold to maintain and refit UPS, the warranty qualification will be canceled.

3 APPEARANCE

3.1. Display/Control panel(Figure 1)

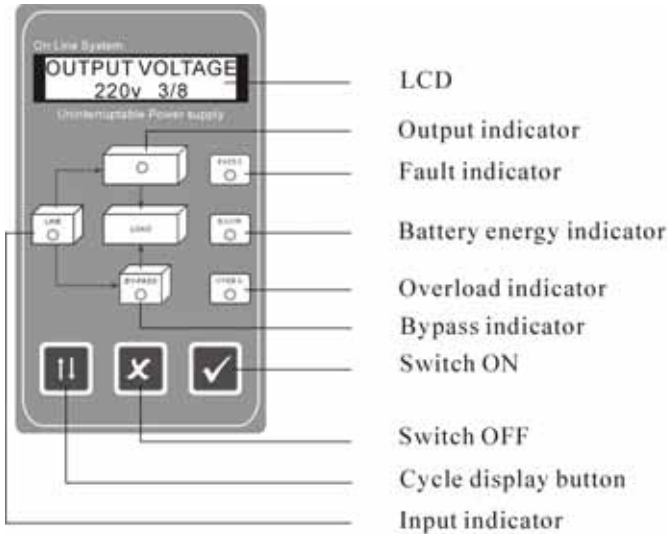


Figure 1. Symbol instruction of front panel indicator

- 1) Welcome screen
 WELCOME TO
 x x x x x x x x
- 2) Display of system status
 x x x x x
 x x KVA.
- 3) Display of input voltage value*
 ON LINE
 AC IN : 220V
- 4) Display of input frequency value*
 ON LINE
 AC FRE : 50Hz

-
- 5) Display of output voltage value*
ON LINE
OUTPUT : 220V
 - 6) Display of output frequency value
ON LINE
OUT FRE : 50Hz
 - 7) Display of output power Percent
ON LINE
LOAD : 80%
 - 8) Display of battery voltage value
ON LINE
BATTERY : 218V
 - 9) Temperature display in machine
ON LINE
TEMP : 33

Note : ON BYPASS mode , the output voltage and frequency are displayed be “0” .LED would display only after the unit is switched on.

***These parameters vary with machine model.**

- 10) LCD cycle display switch button: digital signal display items switch button.
- 11) UPS switch button: UPS general switch button.
 - (1) Turn on UPS inverter by pressing the “ON” key. UPS convert to UPS inverter power output 20s later, UPS pure AC output power is supplied by UPS internal power supply equipment.
 - (2) By keeping pressing the OFF switch for 3s , we can shut down the inverter , turn the UPS to bypass mode.

The button acts as general switch mainly.

3.2. Machine appearance (Figure 2)

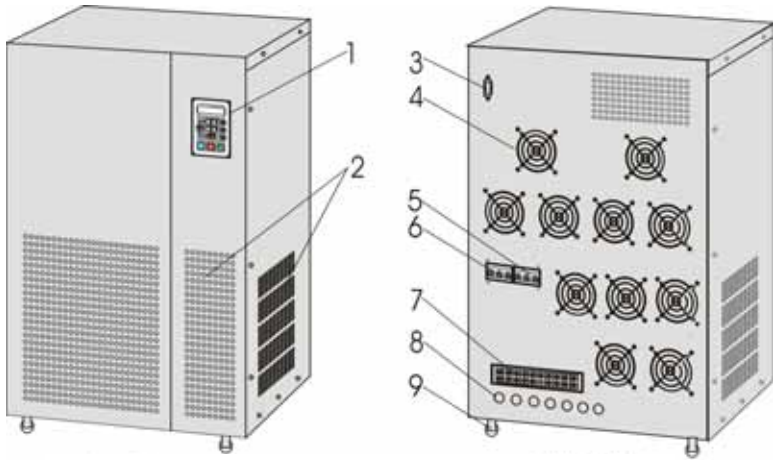


Figure 2

1). Display/Control panel.

2). Scattering heat ventilation hole:

The ventilation hole and other small long elliptic ventilation holes all need to keep good ventilation.

3). RS232 communication interface receptacle.

The standard communication interface between UPS and computer.

4). Air blower.

5). Battery Switch.

6). MAIN INPUT switch

7). Wiring Terminal support

Power wiring Terminal support of input, output and battery.

8). Wiring inlet/outlet hole:

Wiring inlet/outlet hole of input, output and battery group

9). Active wheel:

There are four hidden active wheel, in favor of movement.

4 POSITIONING

4.1 Transit or movement

1. Please dismantle all barge-connecting cable firstly. (Perform after turn off)
2. Careful and light placement, forbid any hit.
3. Please do not move UPS inverted.

4.2 Placement

1. Do not place the UPS on slope or scraggy land. (Figure 3)

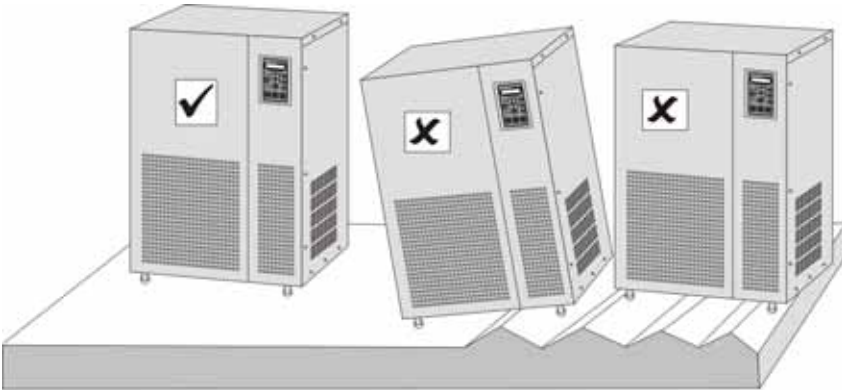


Figure 3

2. Please place the UPS in the place where keeps good ventilation, UPS's back face and side face should be more than 10cm away from the room wall. (Figure 4)
3. Do not position UPS in sunshine, drain and damp place. (Figure 5, 6)

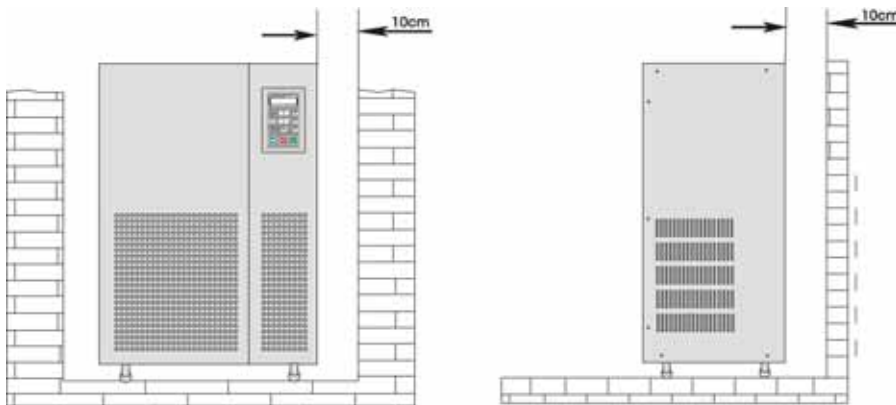


Figure 4

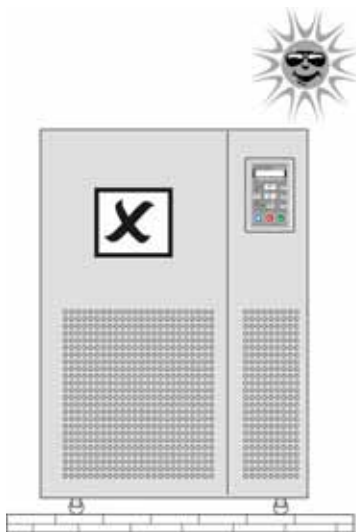


Figure 5



Figure 6

4. Please keep UPS away from fire source and high temperature avoiding over-high temperature. (Figure 7)
5. Do not lay goods on the UPS. (Figure 8)

6. Do not position UPS in the place where contains caustic gas. (Figure 9)
7. Running environment temperature: 0 -40



Figure 7



Figure 8



Figure 9

5 INSTALLATION

5.1 AC Input

1. Prohibit using general household receptacle, because the Max current of general receptacle is 15A, the socket may be burned down for overload.
2. Please connect UPS input terminal to utility power switchboard close. (Figure 10).

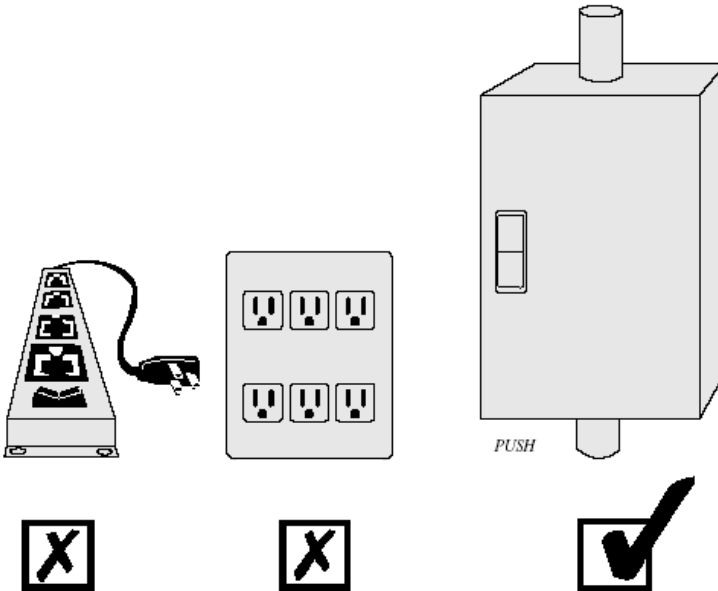


Figure 10

Note: Don't make anti-connection of polarity

3. Simple identification way of power polarity:
 - (1) Firing line (R, S,T): There is 380V voltage between Line and Line.
 - (2) Neutral (N): there is 220V voltage to Firingline, there is 0.5-2V voltage to Grounding.

- (3) Grounding (G): Please find real connecting point to the grounding of the switchboard.
4. If the difference between the neutral and the ground is more than 5V or can't meet the system requirement, please reinstall good grounding system to maintain operating safety of system.
5. The power cable and the impaction terminal must be quality goods, prohibit wrapping power cable on the terminal support directly.
6. Please follow the electrician principle when installation.
7. Avoid using same a switch with other equipment when connect to switchboard, try to connect to utility terminal.(Figure 11)

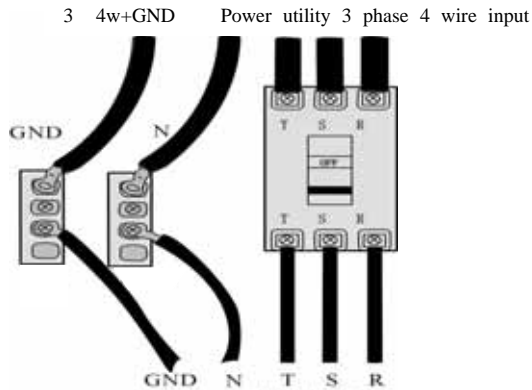
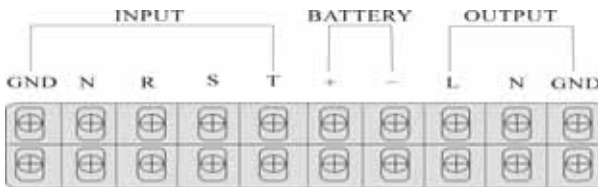


Figure 11

8. AC input connect wiring position



AC INPUT

Figure 12

5.2 AC Output

1. Please consult input installation principle about output principle.
2. Output power cable is designed according to load current, do not use over-thin cable.
3. Avoid short-circuit and overload.
4. The grounding to the unit only acts as reference point, if the grounding isn't good, that may cause disturbance and false datum management and affect UPS and computer, please ask professional personnel for handling immediately.
5. User offers a good grounding system.
6. Try to make the grounding close to connection point of grounding club or start point in switchboard.
7. AC OUTPUT connect wiring position(Figure 13)

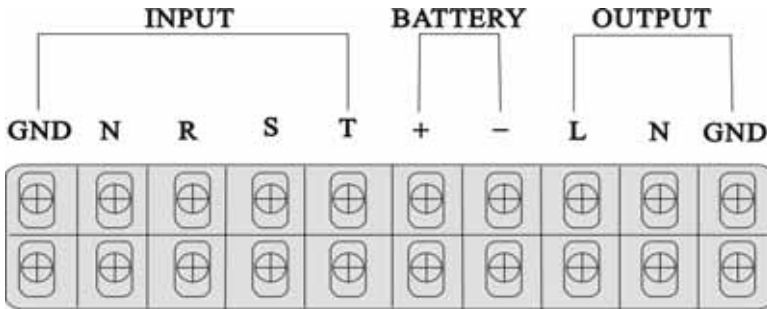
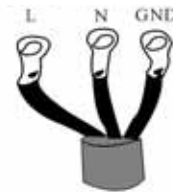


Figure 13



AC OUTPUT

5.3 DC input wiring

1. DC input connection please refer to AC input installation rules.
2. Connection way and position, please refer to figure 14.

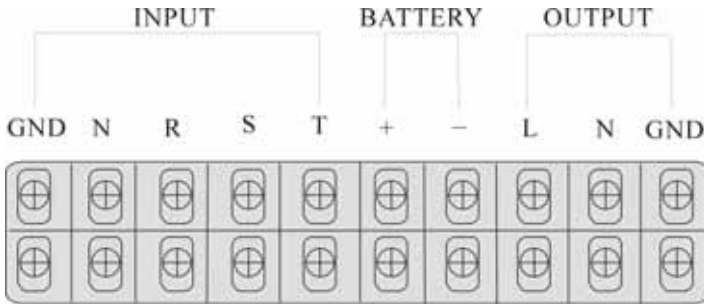


Figure 14

Battery wire

5.4 Connecting position and way

1. Remove the cover screw on wiring terminal support with Philip Head.
2. Remove the cover and find the wiring terminal plate below the power switch.
3. According to connecting guide, draw AC power input cable, output cable and battery pack power cable though the wiring outlet/inlet, then connect to relevant terminal.
4. After connection, please carefully confirm if the connection is correct and firm.
5. After connection is correction, please relock the cover.

6 OPERATION

6.1 Preparing process before start-up.

To make UPS normal and correct running, please confirm the following items. (Refer to figure 2)

3. Verify electric power switch on back panel is in the ‘OFF’ position.
4. Verify the installation place again. (Figure 4 to 10)
5. Rock power cable with hand and see if there is any looseness, if looseness, retighten the seizure screw.
6. Do not connect load.
7. Inspect input voltage is to meet the demand of UPS (220V±10%) with ammeter.

6.2 Operation process at first start-up

After verify above items are correct, please start up UPS according to the following ways:

1. Please switch electric power switch NO FUSE BREAKER (NFB) on the back panel to the “ON” position. Input indicator light and bypass indicator light on the front panel are lit on at the same time. As follows figure 15.

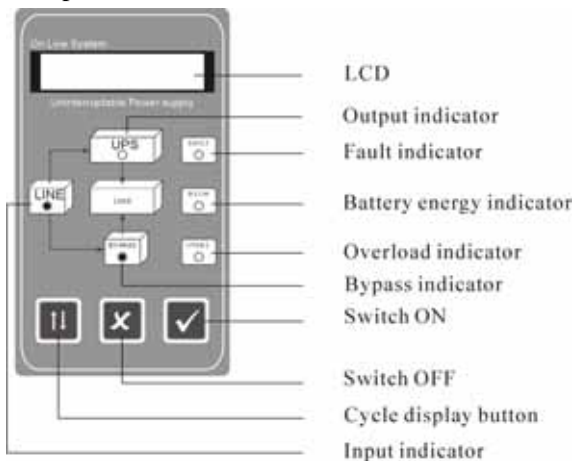


Figure 15

2. Plug the switch ON button on front panel. As follow drawing. The input indicator light and the bypass indicator light are on continuously. LCD display is lit. Utility supplies power to output via bypass.

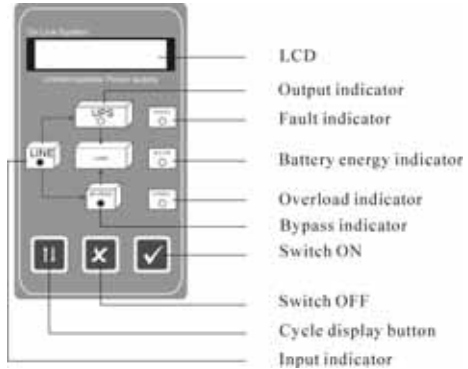


Figure 16

3. After 20s, input indicator light on front panel is lit, bypass indicator light is off, output indicator light is on the welcoming information is displayed on LCD , UPS inverter supplies power to output.

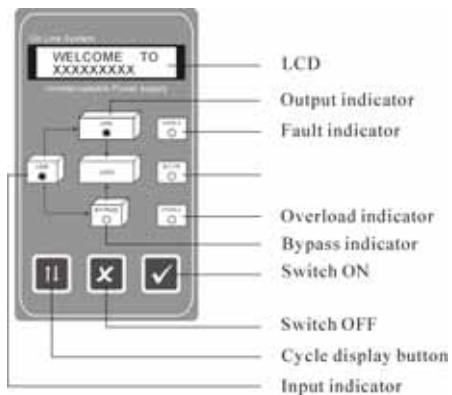


Figure 17

4. Shutdown input power of UPS, utility indicator light is off, the welcoming information is displayed on LCD, UPS inverter supplies power to output., as follow drawing. UPS sounds every four seconds, which indicates battery pack supplies power to UPS at present. The sound will automatically stop 90s later.

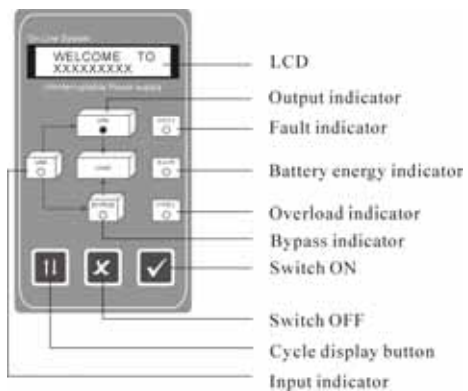


Figure 18

UPS will sound alarm every 1s again when battery power is to be exhausted.

5. Utility indicator light will be on when UPS input power source is resumed. Plug the LCD display cycle switch button to switch items displayed, see if display value is normal, thus first start-up procedure has been completed. Please measure output voltage and see if it meets the requirement, then connect load to UPS output terminal. Use pure power provided by UPS formally.

6. After connect load, plug LCD display cycle switch button to switch items displayed till display the item of output power display percent %. If the value displayed is more than 100%, please dismantle the unimportant load till the value displayed is less than 100%.

6.3 Daily switch ON/OFF operation procedure

If you want to switch on/off during daily using, please operate UPS according to the following ways:

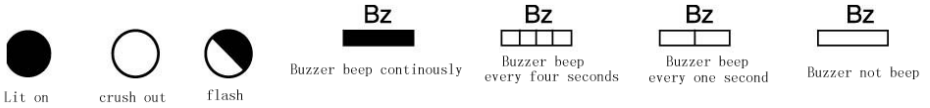
1. If you want to switch off UPS, you can switch off UPS by plugging the “OFF” button located on front panel. At the time UPS is under bypass condition, utility supplies power to output and the batteries are under charging condition.
2. Always turn on UPS by plugging down the “OFF” button when daily operation.

6.4 Switch ON/OFF operation procedure when UPS hasn't been will be not used for long-time.

1. If the time in during UPS will be not used exceeds ten days, please first turn off UPS by pushing the “off” button on front panel, then position the NFB on back panel the position of “OFF”.
2. If the time that UPS doesn't be used exceeds three months, please run UPS for above 24 hours according to the process of first start-up and make the battery on the full electrical position and extend battery life.

7 STATUS HANDLING

7.1. Symbol indicator:



Note: If indicator light flash, the flash period is synchronal with that of buzzer sounds

7.2 UPS run status indicator and handling ways when normal

Please refer to indicator, LCD indicator value and buzzer sound on the panel, you can see if UPS running is normal, if UPS is abnormal, please refer to the handling thing according to panel indicator status.

1. Panel indicator status is as the right:

(1) UPS running status:

Utility is normal, UPS runs normally and UPS is used under full-load.

(2) Handling way: needless handling.

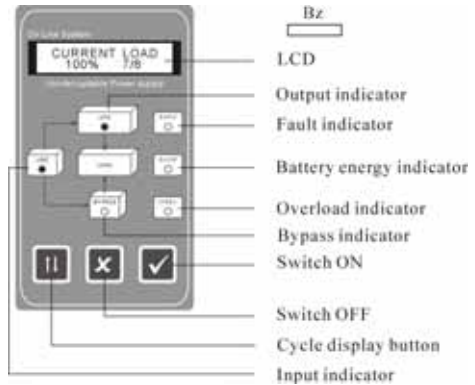


Figure 19

2. panel indicator status is right:

(1) UPS running status:

Utility is normal, UPS runs normally and battery capacitor is above 90%.

(2) Handling way: needless handling.

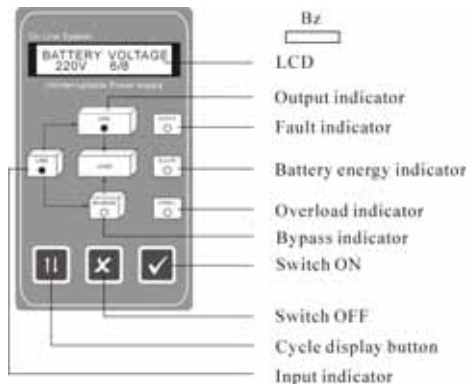


Figure 20

3. panel indicator status is right:

(1) UPS running status:

Utility supplies power 220Vac normally and UPS runs normally.

(2)Handling way:

needless handling.

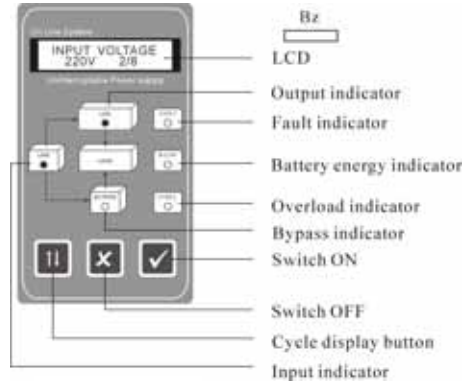


Figure 21

4. panel indicator status is right:

(1)UPS running status:

Utility supplies power normally, UPS runs normally and battery voltage is low.

(2)Handling way: needless handling.

The charger is fault, please replace charging board.

Note: the indicated material parameters vary with the machine type.

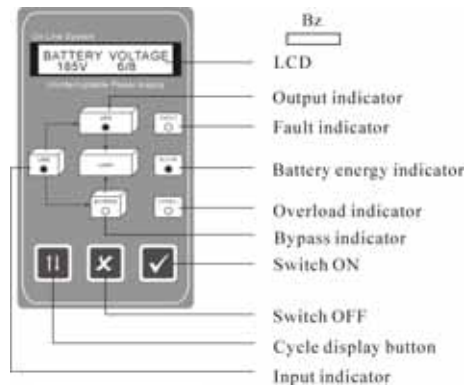


Figure 22

5. panel indicator status is right:

(1)UPS running status

Utility power is normal and it is transferred to utility mode. UPS don't start up until the startup button on the panel of UPS is pressed.

(2)Handling way: please deal with it reference to status dealing flow chart 2.

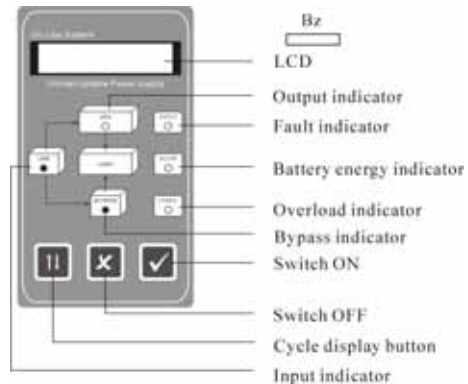


Figure 23

6. Panel indicator status is right:

(1)UPS running status:

Utility supplies power. Under overload 125%, overload indicator light is solid on and the buzzer beeps continuously.

(2)Handling way:

Please release load to ensure the indicated percent of LCD output power is less than 100%. If the thing is still present after removing load, please refer to flow chart 3 of status handling.

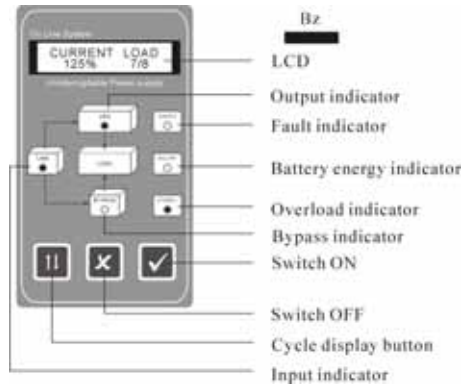


Figure 24

7. Panel indicator status is right:

(1)UPS running status:

Utility power is normal, UPS runs abnormally and transfers to be supplied power by utility.

(2)Handling way:

Please refer to flow chart 4 of status handling.

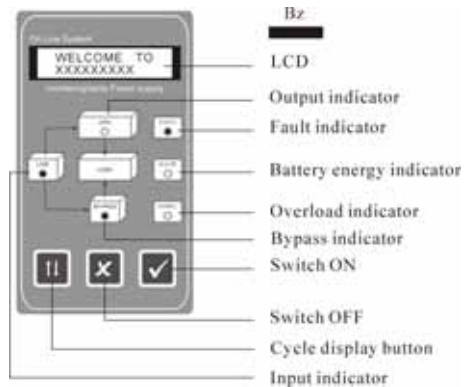


Figure 25

8. Panel indicator status is right:

(1)UPS running status:

Utility power is disconnected, UPS is supplied power by battery and load is full load. Buzzer beeps once every four seconds.

The battery energy indicator light flashes every four seconds (buzzer

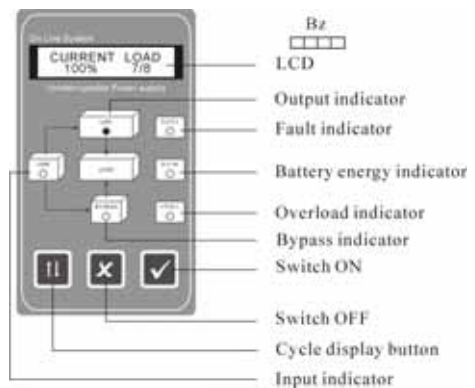


Figure 26

and indicator light stop beep and flash.

(2)Handling way:

If utility is disconnected normally, please remove non-critical loads to increase used time. If it is disconnected abnormally, please refer to flow chart 1 of status handling.

9. panel indicator status is right:

(1)UPS running status:

Utility power is disconnected and UPS is supplied power by battery. Buzzer beeps once every one second when the battery power will be exhausted.

(2)Handling way:

UPS will shutdown at once, please save files as you could.

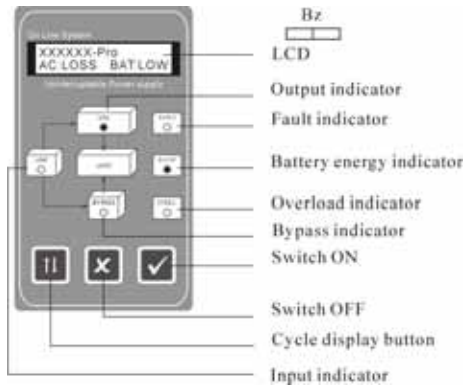


Figure 27

10. Panel indicator status is right:

(1)UPS running status:

Utility power may have been disconnected and battery power has been exhausted, UPS shutdown automatically.

(2)Handling way:

Waiting for utility power connecting and then UPS will automatically startup.

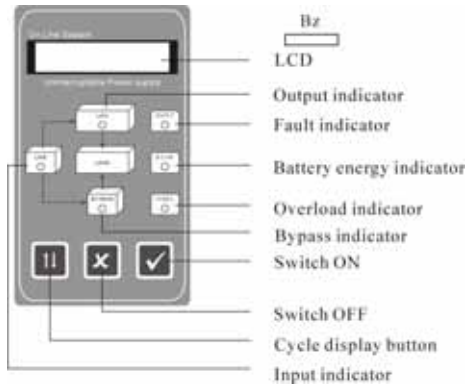
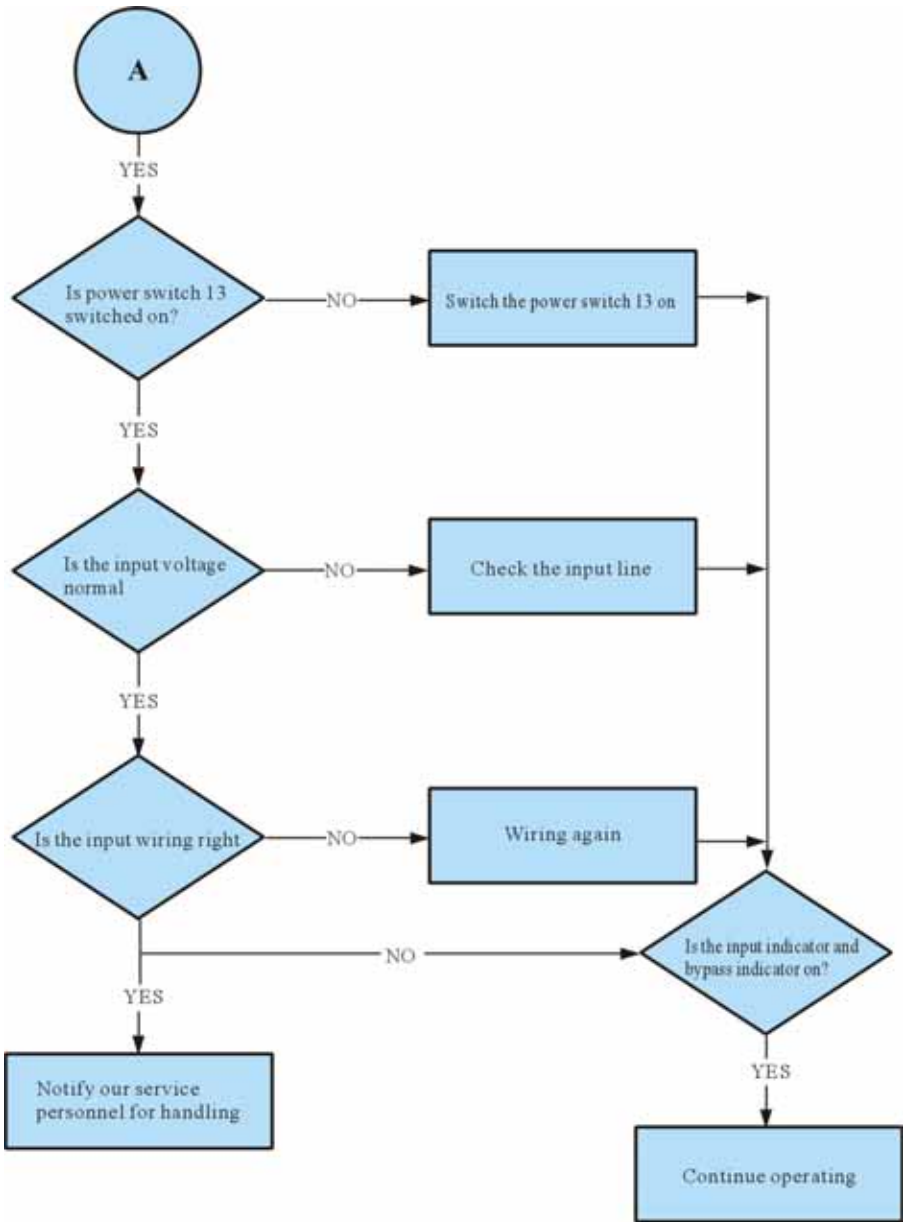
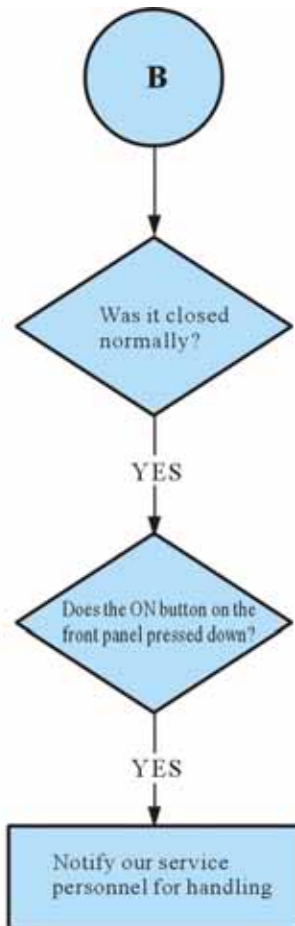


Figure 28

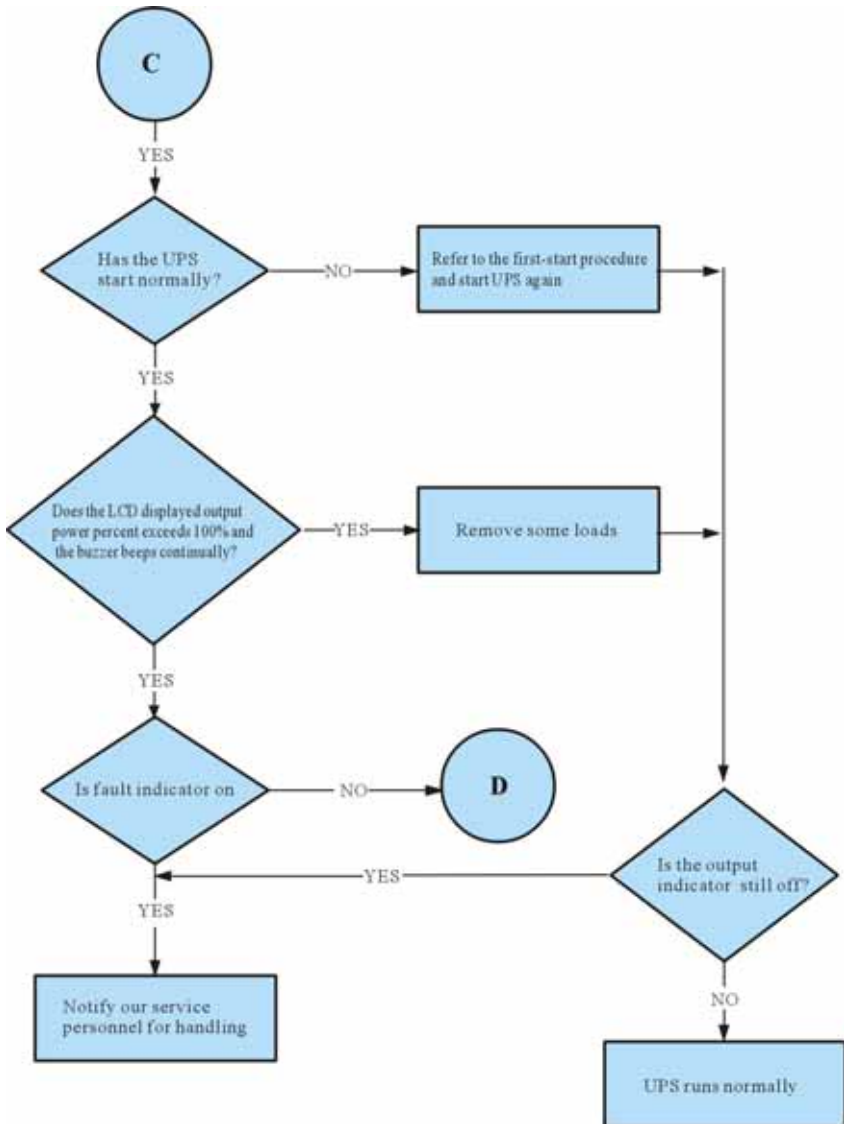
If utility power is disconnected for long period of time, please turn off UPS according to switch on/off program for power cut of long period of time



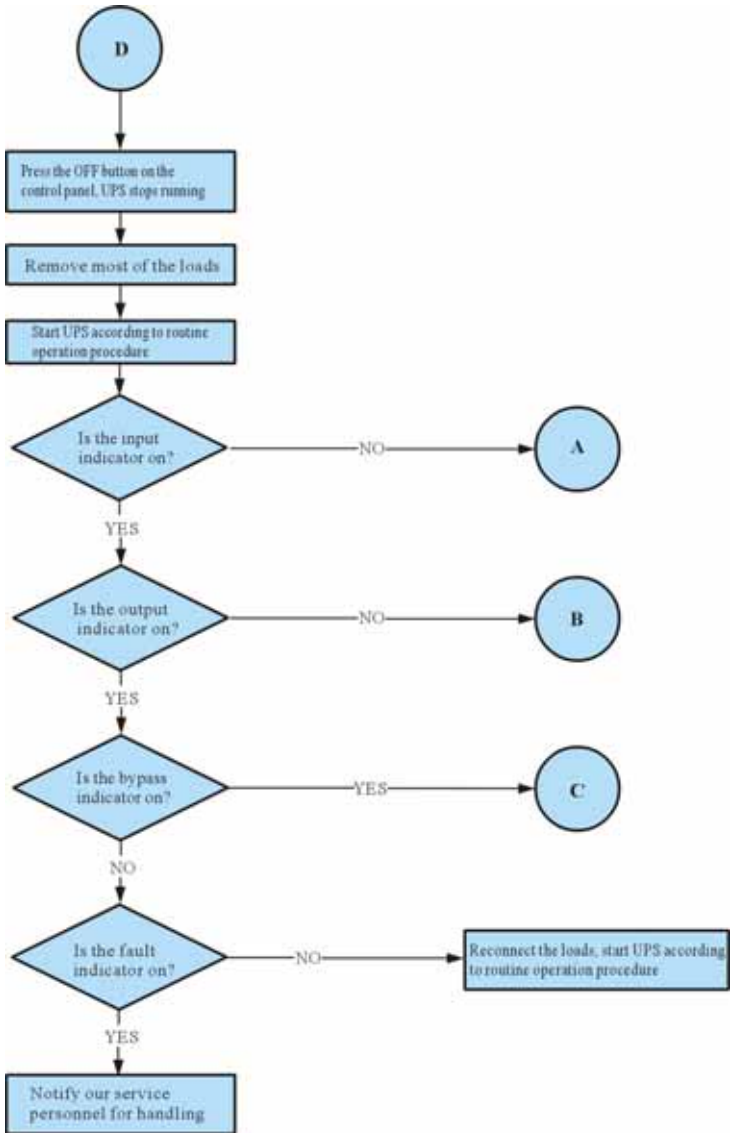
Flow chart 1 of status handling



Flow chart 2 of status handling



Flow chart 3 of status handling



Flow chart 4 of status handing

8 WORKING FLOW

8.1 UPS system configuration block figure: figure 29

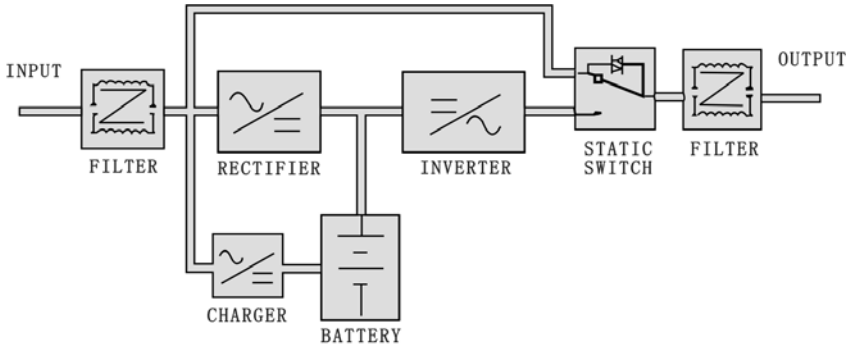


Figure 29

8.2 UPS's running way when UPS runs normally

When UPS runs normally, after high-frequency harmonic noise in utility power is filtered by the filter, on the one hand utility power charges battery pack via the inverter and keeps battery power on full voltage level and on the other hand utility power is converted into direct current via the rectifier and is transferred into pure sine wave power via the inverter, finally power is transmitted to user equipment for using via the static switch and the filter. As figure 30.

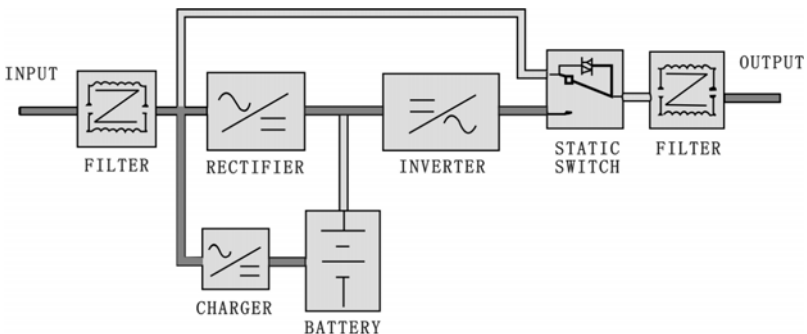


Figure 30

8.3 UPS's running way when utility power is disconnected

As figure 31, when utility power is disconnected, power is supplied to the inverter by the battery and then is transmitted to user equipment for using via the static switch and the filter to avoid the case that load isn't supplied power.

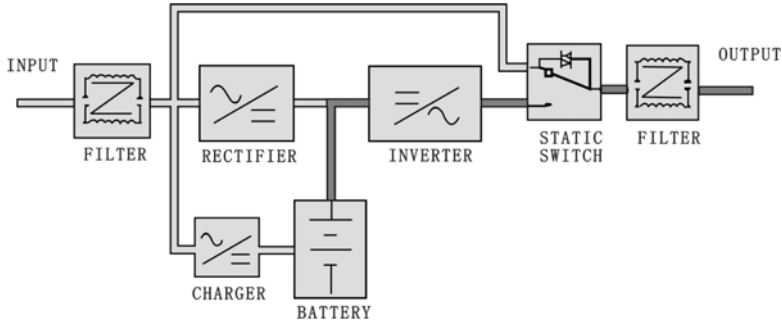


Figure 31

8.4 UPS's running way when UPS supplies power on bypass mode

There are five kinds of status when UPS supplies power on bypass mode. As figure 32

1. overload
2. inverter failure
3. when switch on, UPS is in the course of slow startup during pressing the "SWITCH ON" button for 20 seconds
4. When switch off, please press the "SWITCH OFF" button.
5. UPS runs under the condition of internal over-temperature.

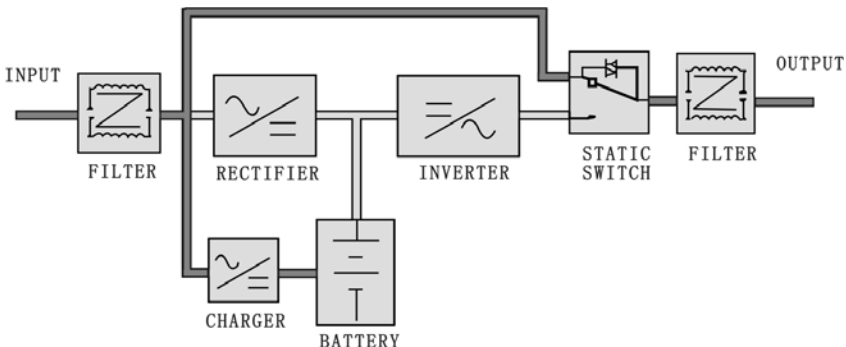


Figure 32

9 Monitoring software

9.1. Summarize

UPS can offer the function of communication and command with computer.

To avoid data loss or damage, computer needs some time to close system in an orderly way. When external power is disconnected, the computer system protected by UPS finally still is closed lawless because of losing power when battery has been exhausted. Through monitoring software, UPS can communicate with computer system so as to inform computer system to close computer systematically when UPS battery will be exhausted.

9.2 Software

When the server is unguarded, the power thing record and the function of informing turn off, control and auto startup can be achieved through UPS intelligent monitoring software. The software is suit to most operation system, a signal cable with software. The detail refers to *UPS intelligent monitoring software user manual*.

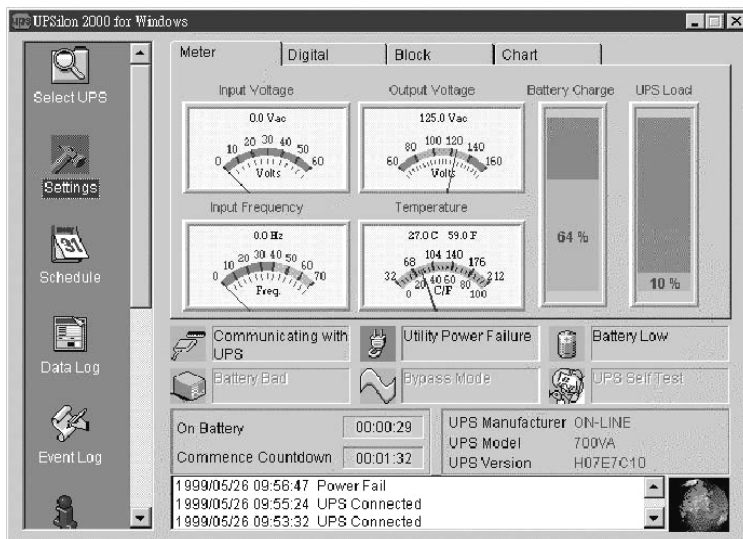


Figure 33

9.3 port component

To computer system with built-in UPS monitoring software, the port component can connect UPS into your system. Each component includes relevant port cable that convert UPS status signal into identifiable signal to system. (only using UPS monitoring cable supplied by factory)

PIN2: RS232 RXD
PIN3: RS232 TXD
PIN5: GND

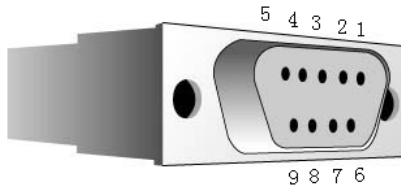


Figure 34

10 Technical specification

Capacity	6KVA	8KVA	10KVA	12KVA	15KVA	20KVA	25KVA	30KVA
AC input								
Voltage	380VAC \pm 20%							
Frequency	50 (60)Hz \pm 5%							
Phase	Three phases + Grounding							
Max.current	10A	13A	16A	20A	24A	32A	40A	56A
AC output								
Voltage	220V							
Frequency	50 (60)Hz							
Voltage	\pm 1%							
frequency	\pm 0.5% (When disconnection)							
Wave form	SPWM sine wave							
Power factor	0.8 Later							
distortion	<3% (linear load)							
Battery								
Voltage	192VDC						240VDC	
Model	Lead –acid free maintenance							
Charging time	90% capacity after 8-10 hours							
Alarm								
Utility disconnect	Buzzer beeps once every four seconds							
Battery exhausted	Buzzer beeps once every one second							
Overload	Overload indicator light is solid on, buzzer continuously beeps for long-time.							
UPS abnormal	Fault indicator light is solid on, buzzer continuously beeps for long-time.							

Technical specification

Capacity	6KVA	8KVA	10KVA	12KVA	15KVA	20KVA	25KVA	30KVA
Internal protection equipment and LCD panel								
Battery	UPS automatically shutdowns when battery is low power level, there is no fuse switch protection.							
Overload	When load reaches 110~150% of rating, transfer to bypass after 30s, recover auto after unload.							
Over-temperature	Automatically transfer to bypass if UPS internal temperature > 85							
Output short-circuit	Limit current, automatic shutdown, fuse and there no fuse switch protection.							
UPS abnormal	Automatically transfer to bypass and supplied power by utility							
Noise filter	10~100KHz at 40Db; 100KHz~100MHz at 70dB							
LCD display	input, output voltage, frequency, battery voltage, output power (%), temperature							
Battery BVL	One LED, it lit on when battery low voltage							
Environment								
Temperature	0~40							
Humidity	0~95%, non-condensing							
Noise	<58dB (1m)							
General								
Output socket	Terminal plate							
Unit weight	118Kg	128Kg	155Kg	165Kg	262Kg	297Kg	326Kg	336Kg
Dimension (mm)	305×585×864				725×430×1180			
others								
Full efficiency	>85%							
Transform time	0ms							
UPS status indicator	Utility, inverter, bypass, UPS abnormal (fault)							
Communication interface	RS232 interface of DB9 model							

11 Shipping list

code	Content	Number
1	UPS	1
2	«UPS use manual»	1
3	Intelligent monitoring software	1
4	Computer port cable RS232	1