

USER MANUAL

Online Low Frequency UPS

GP33 1:1 1KVA—20KVA Series

GP33 3:1 8KVA—40KVA Series

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1. INTRODUCTION

On-line UPS can supply adjusted stable uninterruptible power to electrical equipments. When AC fails, voltage vary, voltage jam or surge, and noise conditions, UPS can keep the load works normally. In commonly operations, UPS first send the power to rectifier for adjust and eliminate the unstable factor, then thru inverter to transfer the DC to pure AC to the load. When UPS detect AC voltage below the acceptable range of load, UPS turn from AC to the battery mode. Under this condition, battery power thru inverter and supply stable power to load. When AC turns back to the acceptable range of load, UPS adjust power again to the rectifier and inverter. Meanwhile, UPS charge the battery. During the full courses, it has no transfer time from AC to battery backup, operating will not be interrupted. So we call it true on line UPS.

Further more, when inverter stopped output if UPS fails, system will automatically transfer to the bypass. AC supplies power directly to load. All the courses will not power off.

UPS can supply stable power to electrical machines and carry with the following characters:

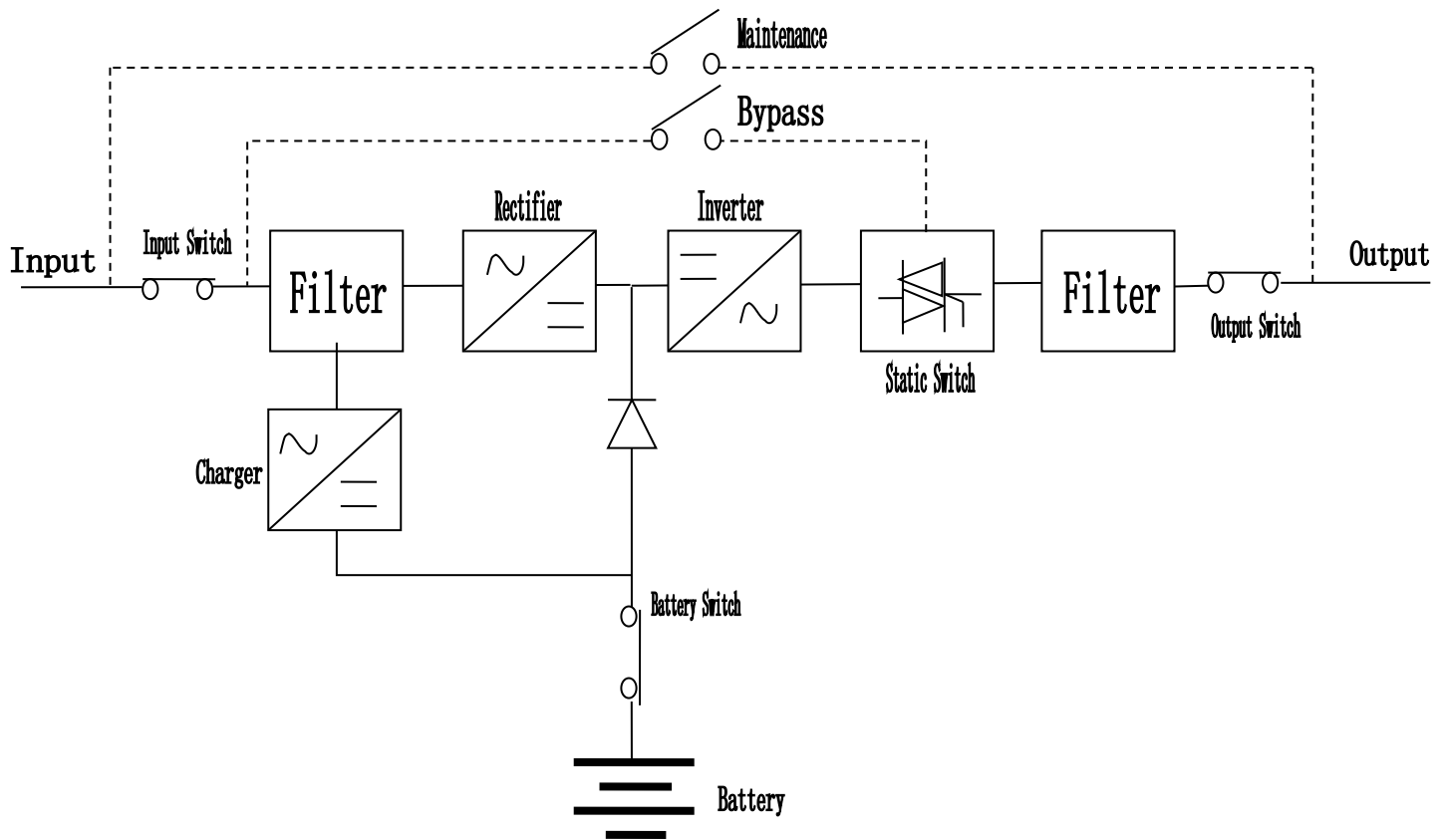
- Improve power quality;
- Reduce the noise disturb;
- Compatible with most load;
- Output protection when power off;
- Perfect battery protection.

2. Uninterruptible Power Supplies (UPS)

A. Modes of operation

1.AC normal mode

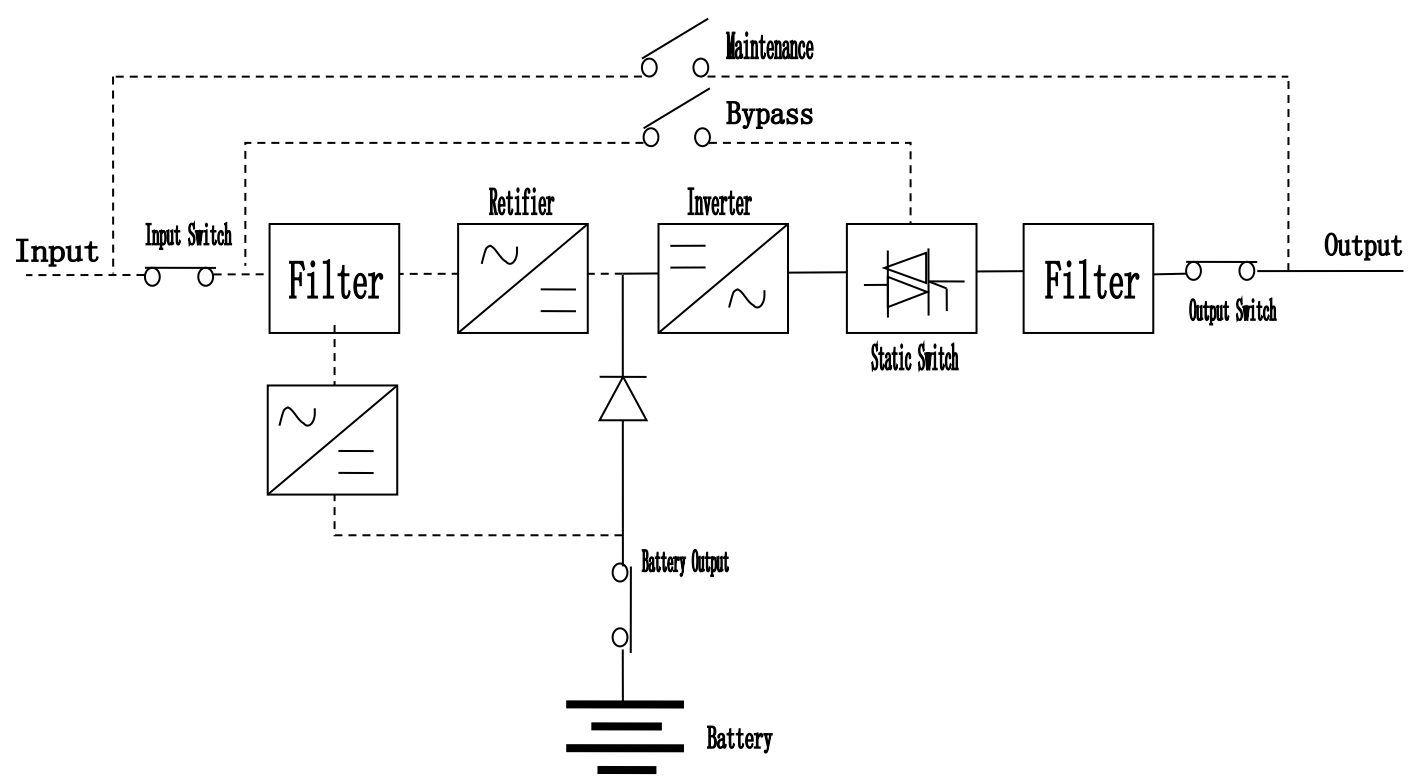
As shown in Fig.2-1, the AC power supply passes through the Filter/Rectifier/Inverter /Static Switch/Filter to the output, and charges the battery by the charger.



(Fig. 2-1)

2.Power failure mode

As shown in Fig.2-2, the battery supplies the output to load through the inverter.

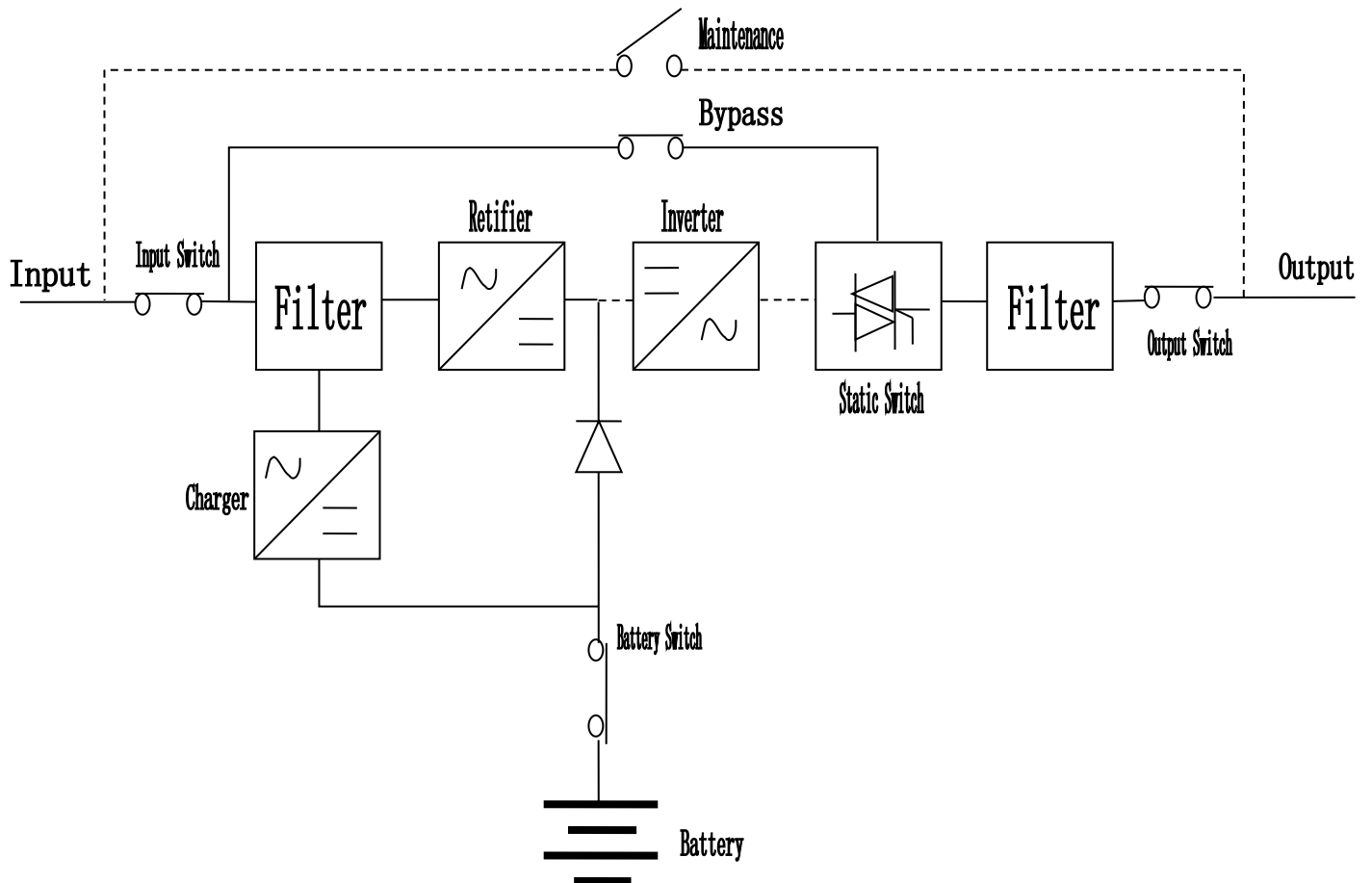


(Fig. 2-2)

3. Bypass mode

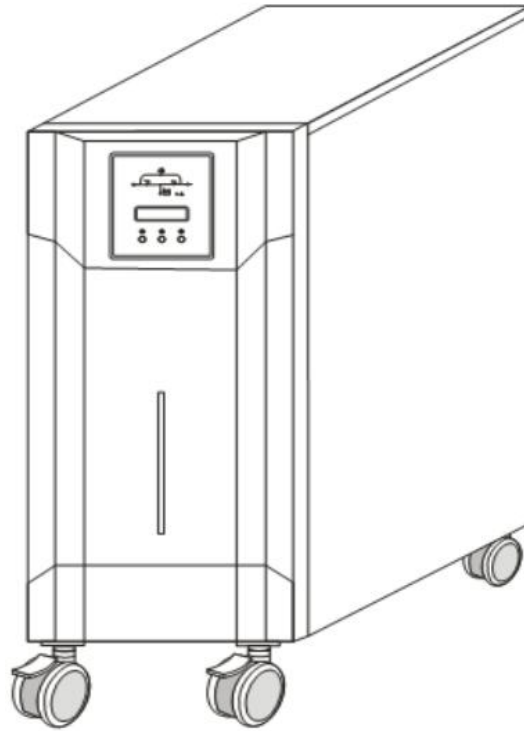
As shown in Fig.2-3, the unit will switch to bypass mode under the following conditions:

- 1) Overload
- 2) Inverter failure
- 3) The inverter switch on the front panel isn't pushed to the "ON" or within the initial 25 seconds after it is pushed to "ON".
- 4) The inverter switch is pushed to the "OFF".

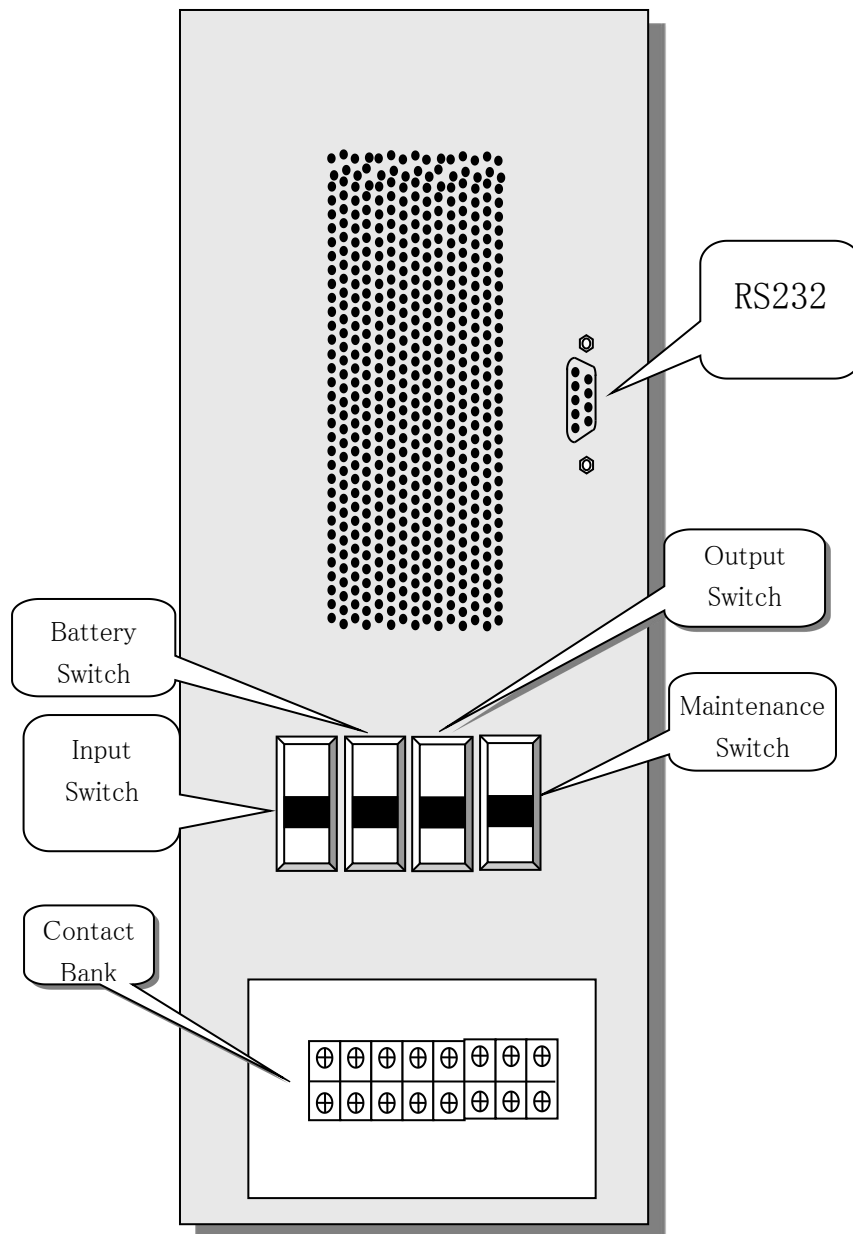


(Fig. 2-3)

B. External Views



Front Panel



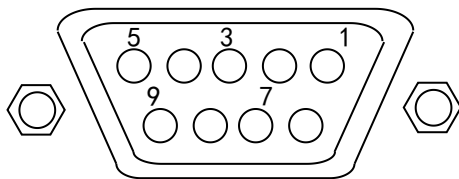
Rear panel

C. RS232 Port

The UPS may be connected with a host computer. This port allows the computer to monitor the status of the UPS and control the operation of the UPS in some cases. Its major functions normally include the following:

- 1). To send a warning when power fails.
- 2). To save open files of the host computer before the battery exhausted.
- 3). To turn off the UPS.

Some computers are equipped with a special connector to link with this remote port. For some computers, a special plug-in card may be needed to be put in the computer. Some computers may need a special UPS monitoring software. Contact your dealer for the detail of different interface kits.



Pin 2: Send signal.

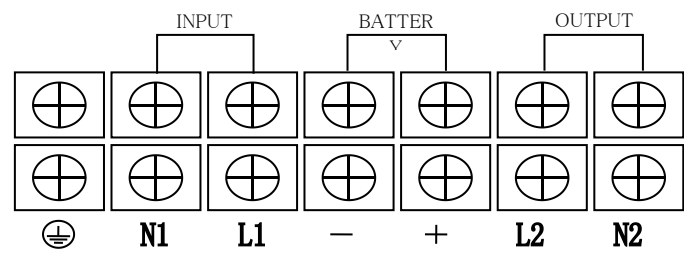
Pin 3: Receive signal.

Pin 5: GND

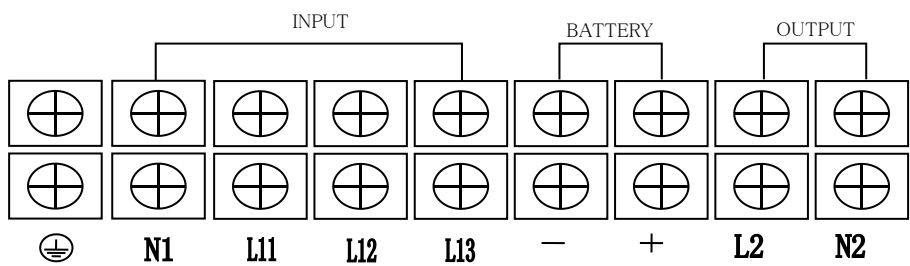
D. Contact Bank

Note: Pictures for reference only, in kind prevail.

1) Contact Bank of GP33 1:1 series



2) Contact Bank of GP33 3:1 series



3.install and Operation

A. Preparation:

To achieve ultimate performance of this on-line UPS, please observe the following:

- 1.Read the user's manual.
- 2.Follow the operating instructions closely.
- 3.Be gentle and careful when moving the unit around.
- 4.Plug into correct power source.
- 5.Never open the cabinet to avoid electric shock and damaging to the unit.
- 6.When the unit is unused for extended period, please run it for 24 hours every three months.
- 7.Do not apply load which exceeds the rated capacity. Otherwise damage may occur.
- 8.Keep the user's manual handy for quick reference.
- 9.Refer to the "troubleshooting guide" when having problems.
- 10.Keep the unit clean all time.

B. System Setup

1.Precaution

- 1) Remove all the wires.
- 2) Handle the unit very carefully and avoid dropping.
- 3) Never leave the unit upside down.

2.install

Refer to the following instructions for system install:

Input:

- a. Never plug the unit into a wall outlet. The standard 15A wall outlet will not support the heavy load of the unit.
- b. It is safe to connect the unit to the nearest utility panel.
- c. Refer to Fig.3-1 for terminal block connections. The input power cord should be connected to the right terminals. Note also that UPS output and external batteries also share the same terminal block.
- d. Use high quality power cord.
- e. Always turn the power off before wiring.
- f. Please follow the standard wiring procedures.
- g. Watch for the correct polarity.
- h. Avoid sharing the same terminals with other equipment.
- i. When wiring is done, make sure that no wire touches the metal case to prevent short circuit.

C. Operating Instructions

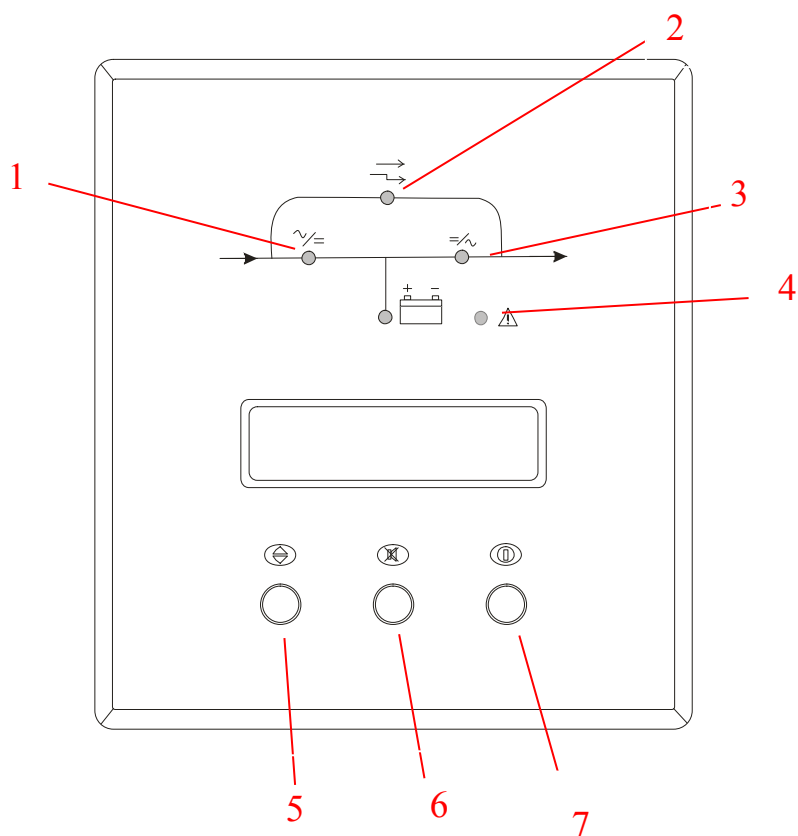
1. Pre-testing

To ensure proper functioning of the UPS, the following step should be followed:

- 1) Double check the site of installation.
- 2) Make sure that the Power switch on the rear panel is OFF.
- 3) Unplug all loads.
- 4) Use a tester to check if the input voltage is at rated level.
- 5) Gently twist the input / output wiring and tighten loose ones.
- 6) Inspect the input/output fuses to be in working order.
- 7) Make sure the Maintenance Switch is off.

2. Control and LED indicators

- 1) LINE input (green)
OFF when there is AC input failure or AC input voltage is low.
- 2) INVERTER output (green)
ON when the inverter works.
- 3) BYPASS (yellow)
ON when in bypass mode.
- 4) FAULT (red)
ON when inverter is at fault.
- 5) Menu keyswitch
When pushed once, there is a different variable appearing in the LCD.
- 6) Buzzer keyswitch
Turn off the buzzer. Pressing it once can close the buzzer which raising the alarm.
Only when the next alarm appears or pressing buzzer keyswitch once again, the buzzer can raise the alarm.
- 7) Inverter on/off keyswitch
Turn on or turn off the inverter. When pushed over one second, the unit will turn on inverter and switch from bypass mode to normal operation. When pushed over three second, the unit will turn off inverter and switch from normal operation to bypass mode.
- 8) Power switch
Located on the rear panel of the unit, controls the input AC power and the input Batteries power for the unit.



1. Line input indicator(Rectifier)
2. Bypass indicator(Bypass)
3. Inverter output indicator(Inverter)
4. Fault indicator(Fault)
5. Menu keyswitch(Menu)
6. Buzzer keyswitch(Ventil)
7. Inverter on/off keyswitch(On/Off)

3. Power-on Procedure

The procedure is very simple. Please follow the steps below for proper operation:

Startup

- 1) Make sure that the Power switch is OFF and there is no equipment connected to the unit.
- 2) Check for correct input voltage.
- 3) Power on the unit and the LINE and BYPASS indicator will be on. The cooling fans will also be running.
- 4) In about 20 seconds the BYPASS indicator will be off while the INVERTER indicator will be on indicating everything is normal.
- 5) Turn off the AC input and the LINE indicator will also be off. The audible alarm will beep in 4 seconds interval indicating the batteries is in use.
- 6) Push in the Inverter on/off keyswitch over three second, then the unit will be powered off.
- 7) Power on again.
- 8) The unit is now ready for use.

Note: Please keep the unit running for at least 12 hours so that the battery could be fully charged. During this period the INVERTER may be turned off. Make sure the Maintenance Switch is off when the unit is working!

Storage

- 1) Fully charge the unit for 24 hours prior to storage.
- 2) Turn the Power switch off.
- 3) Store into and cool place (below 27°C).

4. Routine Operation

- 1) Press the Inverter on/off keyswitch to operate the unit under bypass mode.
- 2) Press the Inverter on/off keyswitch again to operate the unit under normal condition.

5. Unused for Extend period

- 1) Leave all the switches to OFF position if unused for more than 10 days.
- 2) If unused for more than 3 months, repeat the startup procedure and let the unit running for at least 24 hours to prolong the batteries' life.

6. Lights frontal cover

The UPS has lights on the front that displays the status of UPS as follows:

- 1) If the lights are blues means there is no problem .
- 2) If the lights are reds means that the load is being fed to the energy stored in batteries.
- 3) If the lights are flashing blue is means that the load is being fed through the bypass.

7. Emergency Power Off (EPO)

The UPS system has EPO keyswitch which can stop Inverter and Output, this keyswitch was installed on the front panel.

4. UPS and Battery Maintenance

A. UPS Maintenance

1. Keep the unit clean and vacuum the ventilation intake periodically.
2. Wipe with soft and damp cloth.
3. Check for loose and bad connections monthly.
4. Never leave the unit on an uneven surface.
5. Position the unit to allow at least 50cm clearance between the rear panel and the wall.
Keep the ventilation intake open.
6. Avoid direct sunlight, rain, and high humidity.
7. Stay away from fire and extremely hot location.
8. Do not stack materials on top of the unit.
9. The unit should not be exposed to corrosive air.
10. The normal operating temperature is 0-40°C.

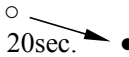
B. Battery Maintenance

1. For longer backup time the external battery is recommended. Ask your dealer when placing order.
2. The lead-acid free battery requires very low maintenance.
3. If the battery you are using is the lead-acid type (like the automobile use), you should check the electrolyte every 3 months. Refill with distill water when the electrolyte level is too low.

5. Troubleshooting

A. LED Indicators

○ Indicator on ● Indicator off ((. Buzzer on

LED Indicators Status				Buzzer		Status	Action
LINE	INVERTER	BYPASS	FAULT				
○	○	●	●			Normal	
●	○	●	●	((.	Every 4 seconds	AC Power failure	
●	●	●	●				Refer to Fig. 5-1
○	●	●	●				Refer to Fig. 5-2
○	●	○	●				Refer to Fig. 5-3
●	○	●	●	((.	Repaired beeping every 0.5 seconds	Battery low	Turn off UPS on disconnect load
●	●	●	○	((.	Continuous beeping	Battery dead and power not back	Turn off UPS
○	● 	○ 	●			AC input on	
○	●	○	○	((.	Continuous Beeping	Inverter fault or overload	Refer to Fig. 5-4
○	●	●	●	((.	Every 4 seconds	UPS charger failure	Call for service
○	○	●	●			No output	Check the fuse

B. Troubleshooting Guide

Ⓐ “LINE” Indicator not on:

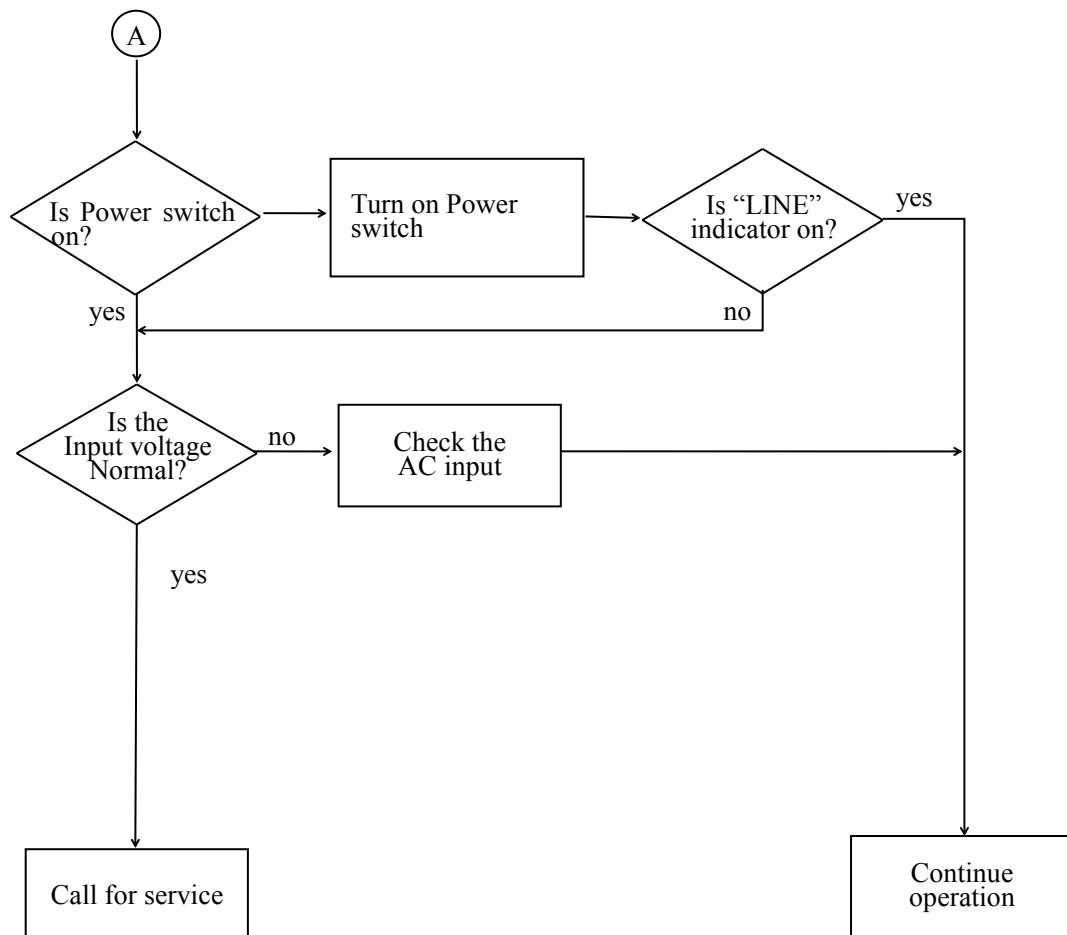


Fig. 5-1

Ⓑ “INVERTER” Indicator not on:(The Power switch already on.)

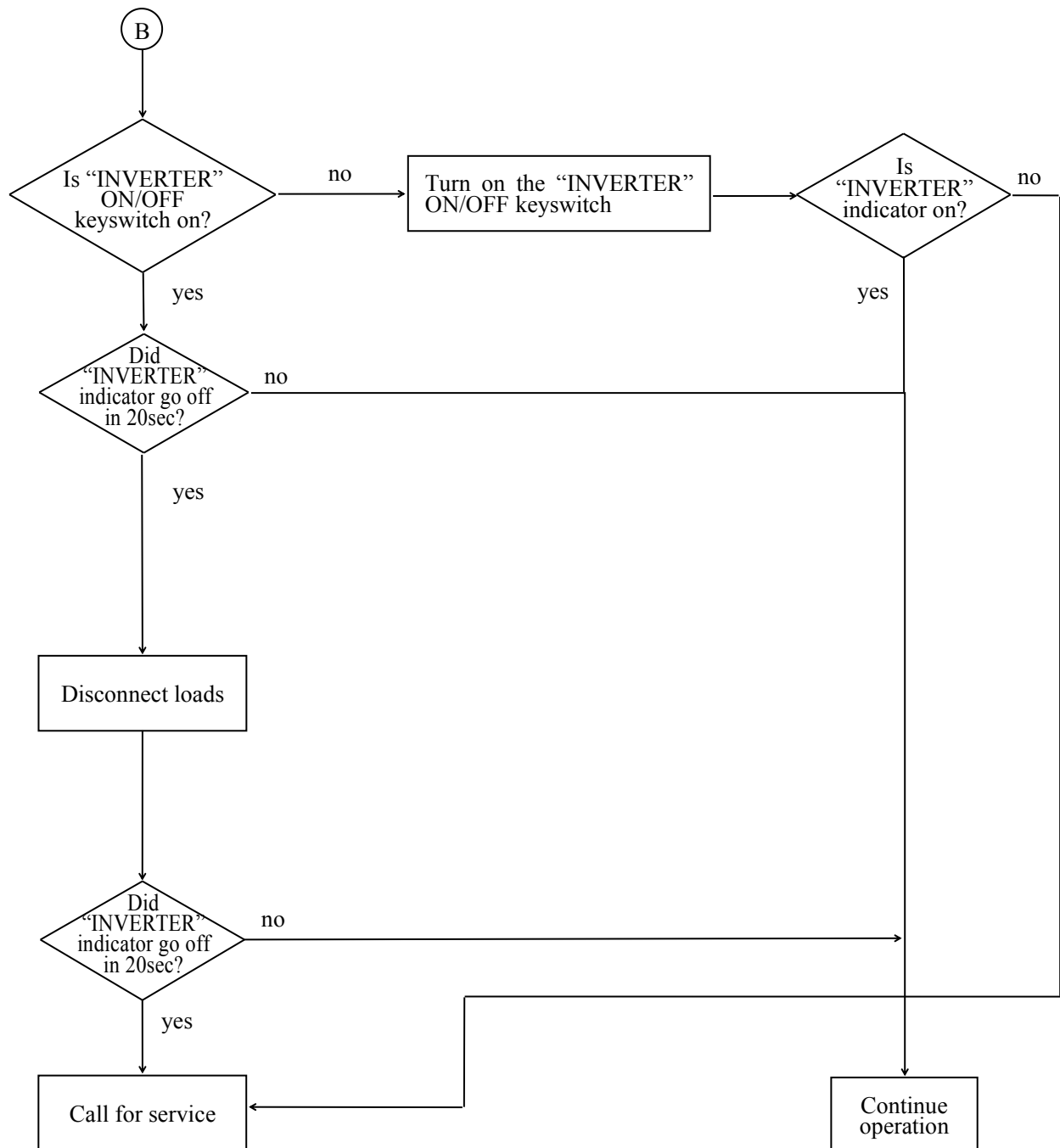


Fig. 5-2

③ “BYPASS” Indicator on:

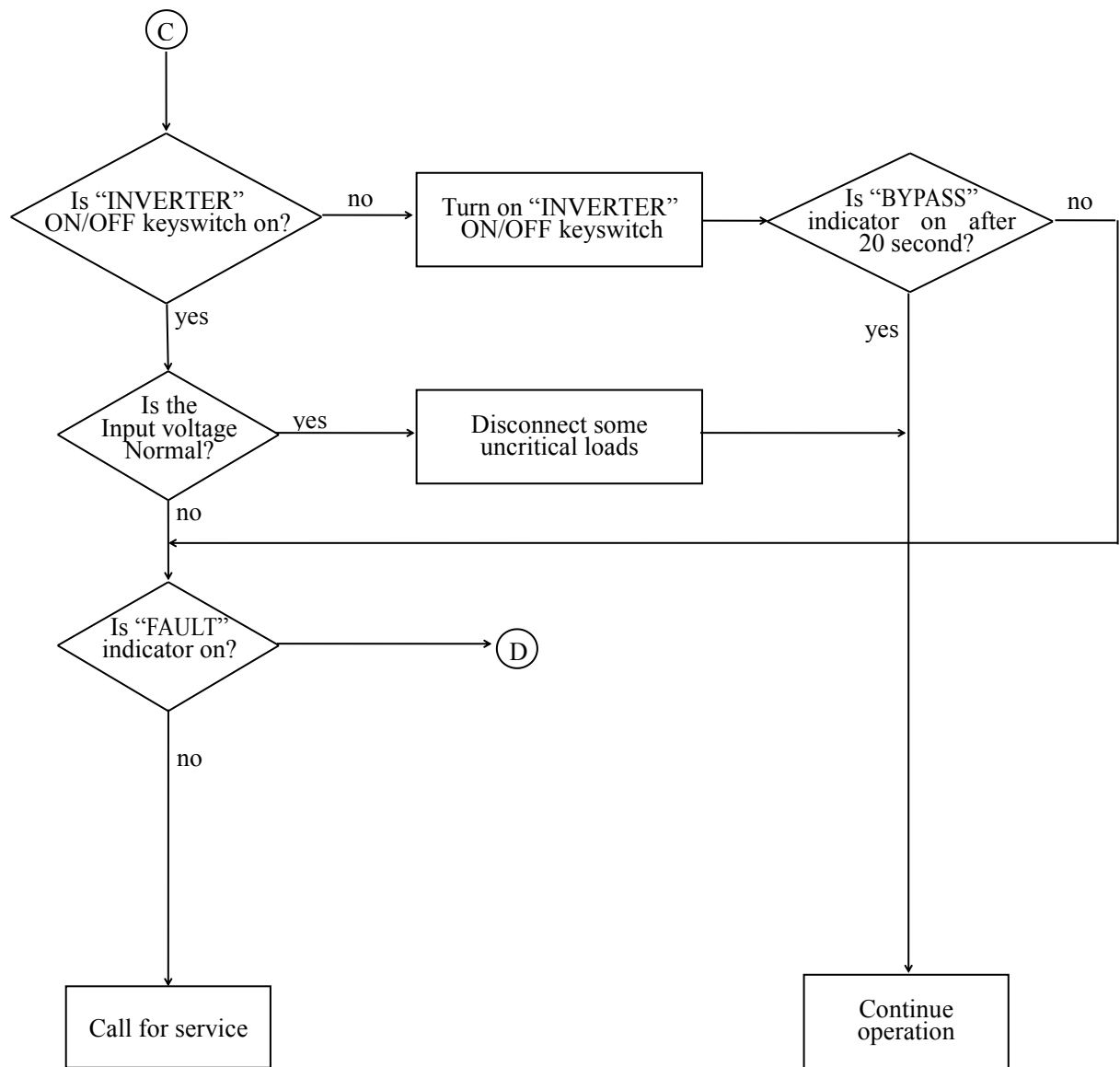


Fig. 5-3

① “FAULT” Indicator on:

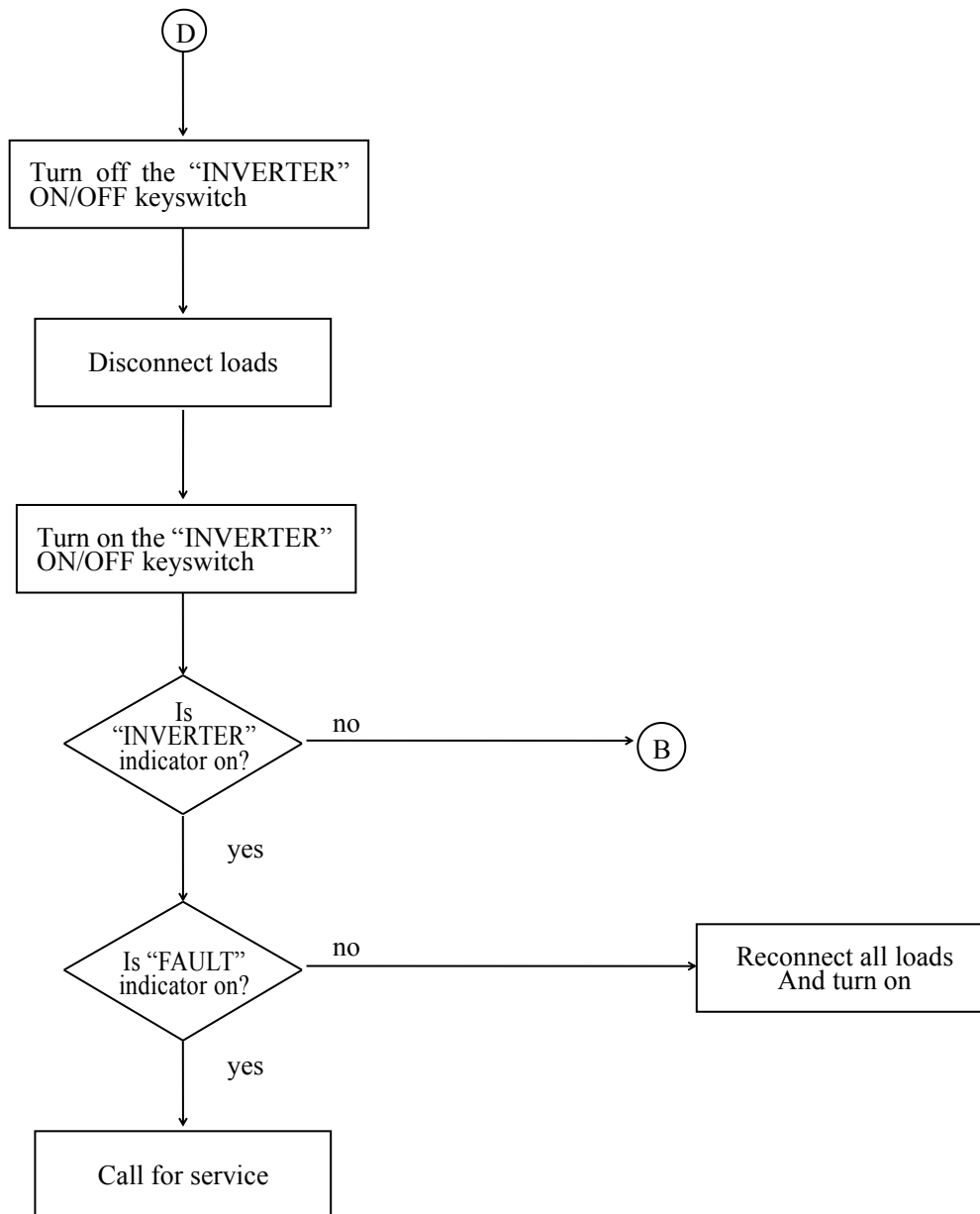


Fig. 5-4

6. Specifications

1) GP33 1:1 SERIES Specifications

Model		1K	2K	3K	5K	6K	8K	10K	15K	20K
Power rating		1KVA /0.8K W	2KVA /1.6K W	3KVA /2.4K W	5KVA /4KW	6KVA /4.8K W	8KVA /6.4K W	10KVA /8KW	15KVA /12KW	20KVA /16KW
AC Input	Voltage	220V $\pm$ 25%								
	Frequency	50Hz $\pm$ 5%								
	Phase	One phase								
	Power factor	>0.8 (Full load)								
Battery	DC voltage	192V								
	Protection	Battery low cut-off without draining any current								
	The lowest discharge voltage	165V $\pm$ 5V								
	Floating charge	218.5 $\pm$ 2V								
	Reserve time	According to user requirements configuration								
AC Output	Voltage	220V $\pm$ 1%								
	Frequency	50Hz $\pm$ 0.5%								
	Phase	One phase								
	Peak Value Coefficient	3: 1 (At full load)								
	Power Factor	0.8~1 lagging								
	Harmonic Distortion	< 3% at linear load, < 5% at non-linear load								
	Overload Detection	125% for 10 Min, 130% for 20 s ,								
Efficiency	Whole	> 80%(Full load)								
Transfer	Power Failure Or Recovery	0 ms								
	Over Load Disappear	Auto transfer to UPS								
	Bypass	< 2ms								
Noise Level	1m.Distance	< 56dB								
LED indicators	Status	1.LINE INPUT (Green), 2.INVERTER OUTPUT (Green) 3.BYPASS (Yellow), 4.FAULT (Red)								
LCD indicator control		1.Menu keyswitch (the first key), 2. Buzzer keyswitch (the second key), 3. Inverter on/off keyswitch (the third key).								
Alarm	UPS Fault	Continuous beeping sound								
Protection level		IP20								

Isolation Voltage		2820V(DC)								
Leakage Current		≤ 3.5 mA								
EMC		Meet GB9254 and CISPR22 standards								
Lightning strike protection		Pulse voltage current shock ≤ 5 KW、1.2/50 μ s								
Type of cooling		Air-cooled								
Perform standard		GB/T14715—93								
RS232 port	DB9 Connector	allows the host computer to monitor the status of the UPS and control the operation of the UPS in some cases. when power is exceptional, the managing software in the host computer will send a warning and save open files of the host computer.								
Environment	Temperature	0-45℃								
	Humidity	0%-90% (Non-condensing)								
	The altitude	Not less than 1500 meters								
Physical Size (mm)	Wide	250			335			380		
	Deep	530			680			870		
	High	600			800			980		
Weight	Net Weight	42	45	55	58	65	85	90	140	160

2) GP33 3:1 SERIES Specifications

Model		8K	10K	15K	20K	30K	40K
Power rating		8KVA/ 6.4KW	10KVA/ 8KW	15KVA/ 12KW	20KVA/ 16KW	30KVA/ 24KW	40KVA/ 32KW
AC Input	Voltage	380V $\pm$ 25%					
	Frequency	50Hz $\pm$ 5%					
	Phase	Three phase					
	Power factor	>0.8 (Full load)					
Battery	DC voltage	384V					
	Protection	Battery low cut-off without draining any current					
	The lowest discharge voltage	330V $\pm$ 5V					
	Floating charge	436 $\pm$ 2V					
	Reserve time	According to user requirements configuration					
AC Output	Voltage	220V $\pm$ 1%					
	Frequency	50Hz $\pm$ 0.5%					
	Phase	One phase					
	Peak Value Coefficient	3: 1 (At full load)					
	Power Factor	0.8~1 lagging					
	Harmonic Distortion	< 3% at linear load, < 5% at non-linear load					
	Overload Detection	125% for 10 Min, 130% for 20 s ,					
Efficiency	Whole	> 80%(Full load)					
Transfer	Power Failure Or Recovery	0 ms					
	Over Load Disappear	Auto transfer to UPS					
	Bypass	< 2ms					
Noise Level	1m.Distance	< 56dB					
LED indicators	Status	1.LINE INPUT (Green), 2.INVERTER OUTPUT (Green) 3.BYPASS (Yellow), 4.FAULT (Red)					
LCD indicator control		1.Menu keyswitch (the first key), 2. Buzzer keyswitch (the second key), 3. Inverter on/off keyswitch (the third key).					
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RS232 port	DB9 Connector	allows the host computer to monitor the status of the UPS and control the operation of the UPS in some cases. when power is exceptional, the managing software in the host computer will send a warning and save open files of the host computer.					
Environment	Temperature	0-45℃					
	Humidity	0%-90% (Non-condensing)					
	The altitude	Not less than 1500 meters					
Physical Size (mm)	Wide	335				380	
	Deep	680				870	
	High	800				980	
Weight	Net Weight	90	95	145	165	200	250