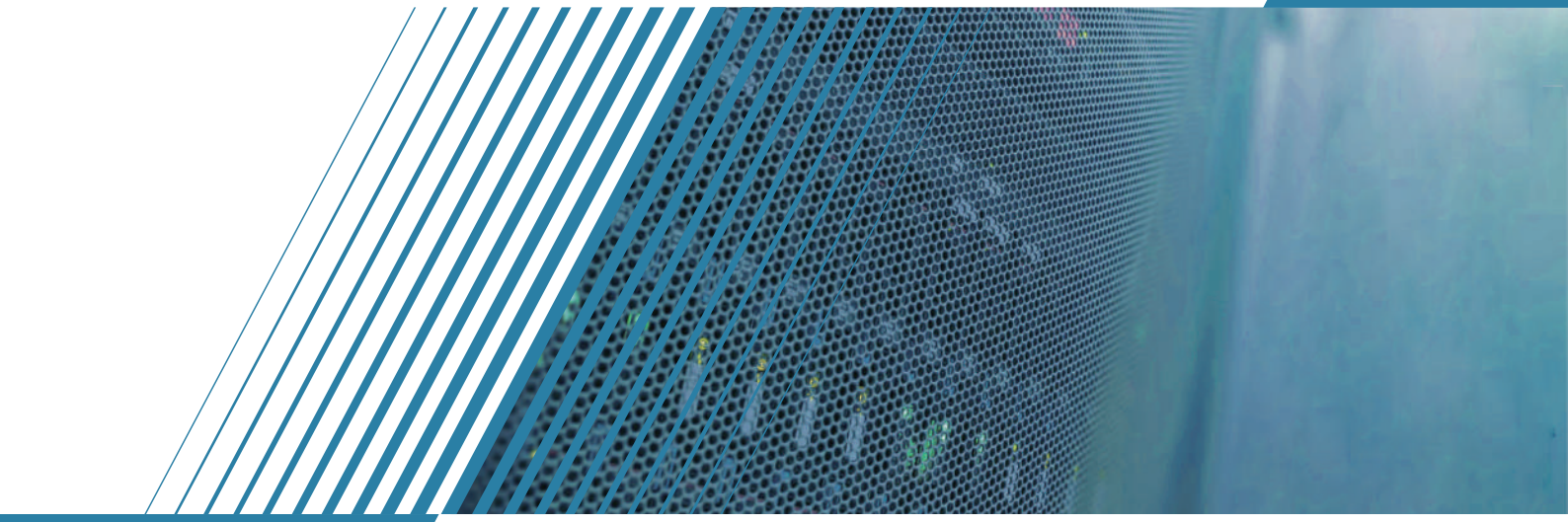
ATENCO POWER TECH CO. LTD



User Manual

RM11E PRO 1-3kVA (internal)

Solutions behind the power

Publish statement

Thank you for purchasing this series UPS.

This series UPS is an intelligent, single phase in single phase out, high frequency online UPS designed by our R&D team who is with years of designing experiences on UPS. With excellent electrical performance, perfect intelligent monitoring and network functions, smart appearance, complying with EMC and safety standards, The UPS meets the world’ s advanced level.

Read this manual carefully before installation

This manual provides technical support to the operator of the equipment.

Table of Contents

1. Important Safety Warning

Important safety instructions – Save these instructions

Please comply with all warnings and operating instructions in this manual strictly. Save this manual properly and read carefully the following instructions before installing the unit. Do not operate this unit before reading through all safety information and operating instructions carefully

There exists dangerous voltage and high temperature inside the UPS. During the installation, operation and maintenance, please abide the local safety instructions and relative laws, otherwise it will result in personnel injury or equipment damage. Safety instructions in this manual act as a supplementary for the local safety instructions. Our company will not assume the liability that caused by disobeying safety instructions.

1-1 Transportation

- Please transport the UPS system only in the original package to protect against shock and impact.

1-2 Preparation

- Condensation may occur if the UPS system is moved directly from cold to warm environment. The UPS system must be absolutely dry before being installed. Please allow at least two hours for the UPS system to acclimate the environment.
- Do not install the UPS system near water or in moist environments.
- Do not install the UPS system where it would be exposed to direct sunlight or near heater.
- Do not block ventilation holes in the UPS housing.

1-3 Installation

- Do not connect appliances or devices which would overload the UPS system (e.g. laser printers) to the UPS output sockets.
- Place cables in such a way that no one can step on or trip over them.
- Do not connect domestic appliances such as hair dryers to UPS output sockets.
- The UPS cannot be operated by any individuals with no previous experience.
- Connect the UPS system only to an earthed shockproof outlet which must be easily accessible and close to the UPS system.
- Please use only VDE-tested, CE-marked mains cable (e.g. the mains cable of your computer) to connect the UPS system to the building wiring outlet (shockproof outlet).
- Please use only VDE-tested, CE-marked power cables to connect the loads to the UPS system.

- When installing the equipment, it should ensure that the sum of the leakage current of the UPS and the connected devices does not exceed 3.5mA.

1-4 Operation

- Do not disconnect the mains cable on the UPS system or the building wiring outlet (shockproof socket outlet) during operations since this would cancel the protective earthing of the UPS system and of all connected loads.
- The UPS system features its own, internal current source (batteries). The UPS output sockets or output terminals block may be electrically live even if the UPS system is not connected to the building wiring outlet.
- In order to fully disconnect the UPS system, first press the OFF/Enter button to disconnect the mains.
- Prevent no fluids or other foreign objects from inside of the UPS system.

1-5 Maintenance, service and faults

- The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.
- **Caution** - risk of electric shock. Even after the unit is disconnected from the mains (building wiring outlet), components inside the UPS system are still connected to the battery and electrically live and dangerous.
- Before carrying out any kind of service and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exists in the terminals of high capability capacitor such as BUS-capacitors.
- Only persons are adequately familiar with batteries and with the required precautionary measures may replace batteries and supervise operations. Unauthorized persons must be kept well 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, please verify that no voltage is present!
- Batteries may cause electric shock and have a high short-circuit current. Please take the precautionary measures specified below and any other measures necessary when working with batteries:

- remove wristwatches, rings and other metal objects

- use only tools with insulated grips and handles.

- When changing batteries, install the same number and same type of batteries.
- Do not attempt to dispose of batteries by burning them. This could cause battery explosion.
- Do not open or destroy batteries. Escaping electrolyte can cause injury to the skin and eyes. It may be toxic.

- Please replace the fuse only with the same type and amperage in order to avoid fire hazards.
- Do not dismantle the UPS system.

1-6 Symbols used in this guide

WARNING!

Risk of electric shock

CAUTION!

Read this information to avoid equipment damage

2. UPS View

NOTE: Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. Please keep the original package in a safe place for future use.

2-1 Unpack checking

- Don't lean the UPS when moving it out from the packaging.
- Check the appearance to see if the UPS is damaged or not during the transportation, do not switch on the UPS if any damage found. Please contact the dealer right away.
- Check the accessories according to the packing list and contact the dealer in case of missing parts.

  It includes:

  (1) User manual

  (2) USB cable

  (3) RS232 cable

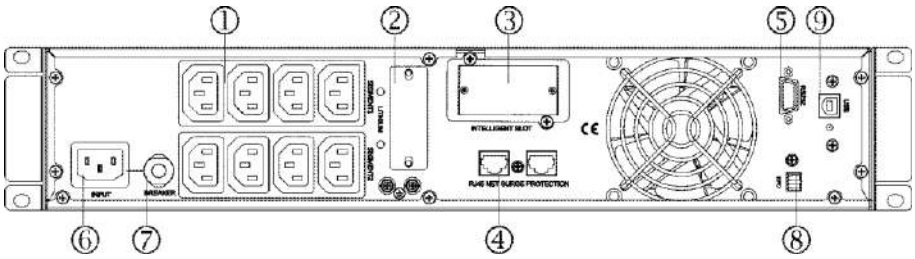
  (4) Power cord (Input and output)

  (5) Mounting ears

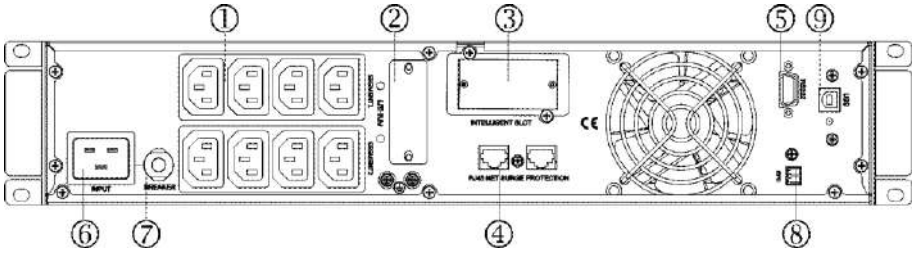
  (6) Standing holders(option)

2-2 Real panel view

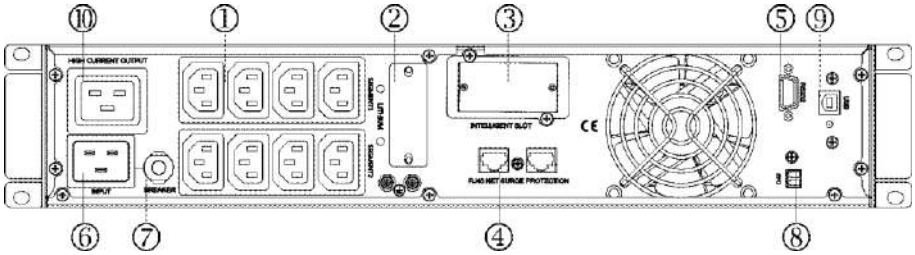
1/1.5KVA(S):



2KVA(S):



3KVA(S):



1. Output receptacles(10A)
2. Cover
3. SNMP intelligent slot (option)
4. Network /Fax/Modem Surge Protection(option)
5. RS232 communication port
6. AC input receptacle
7. Input circuit breaker
8. EPO
9. USB
10. Output receptacle(16A)

2-3 UPS startup and turn off

● Startup operation

(1) Turn on the UPS in line mode

> ***NOTE*** *Verify that the total equipment ratings do not exceed the UPS capacity to prevent an overload alarm.*

a) Once mains power is plugged in, the UPS will charge the battery, at the moment, the LCD shows that the output voltage is 220, which means the UPS automatically start the inverter. If it is expected to change to bypass mode, you can Press "OFF" key.

b) Press and hold the ON key for more than three seconds to start the UPS, then it will start the inverter.

c) Once started, the UPS will perform a self-test function, LED will light and go out circularly and orderly. When the self-test finishes, it will come to line mode, the corresponding LED lights, the UPS is working in line mode.

(2) Turn on the UPS by DC without mains power

a) When mains power is disconnected, press and hold the ON key for more than three seconds to start UPS.

b) The operation of the UPS in the process of start is almost the same as that when mains power is in. After finishing the self-test, the corresponding LED lights and the UPS is working in battery mode.

● Turn off operation

(1) Turn off the UPS in line mode

a) Press and hold the OFF key for more than half a second to turn off the UPS and inverter.

b) After the UPS shutdown, the LEDs go out and there is no output. If output is needed, you can set bps "ON" on the LCD setting menu.

(1) Turn off the UPS by DC without mains power

a) Press and hold the OFF key for more than half a second to turn off the UPS.

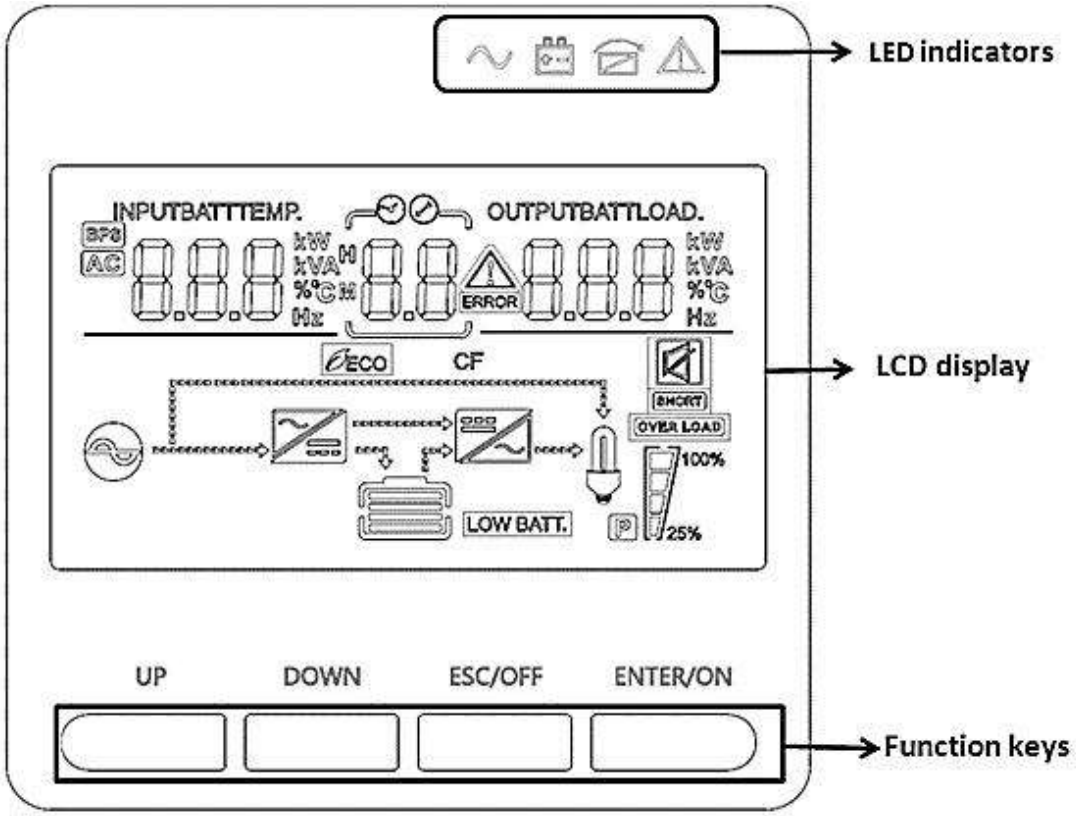
b) When turning off the UPS, it will do self-testing firstly. The LEDs light and go out circularly and orderly until there is no display on the cover.

3. Operations and Display Panel

3-1 LCD Introduce

The operation and display panel, shown in below chart, is on the front panel of the inverter. It includes Four indicators, four function keys and a LCD display, indicating the operating status and input/output power information.

LCD control panel introduction



(1) LED (from right to left: "alarm", "bypass", "battery", "inverter");

(2) On-Line UPS LCD display; (3) Function keys

LED Indicator

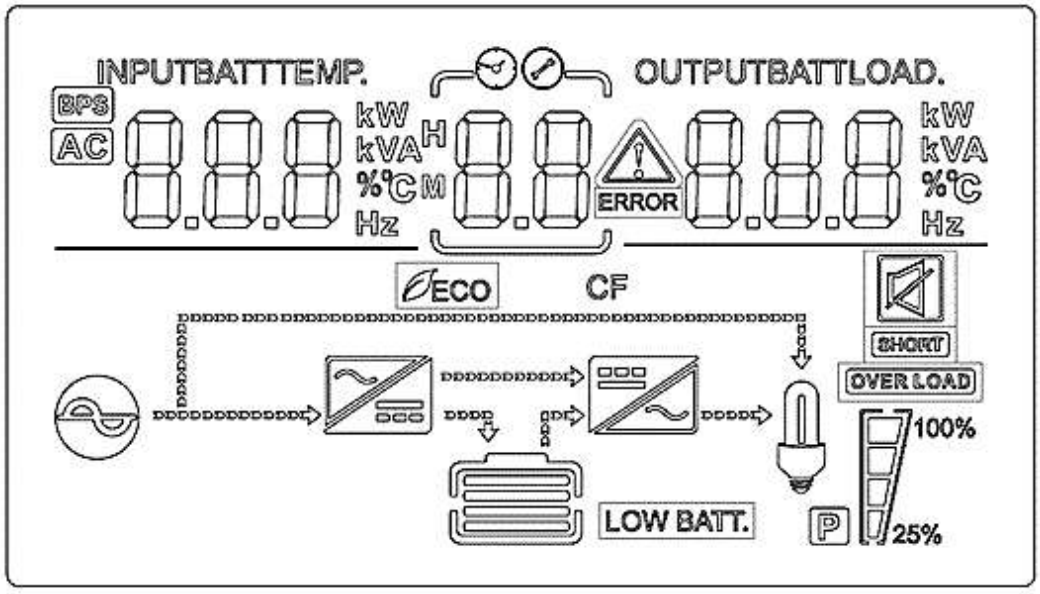
Indicator	Status	Description
 Red	On	The UPS has an active alarm or fault.
 Yellow	On	The UPS is in Bypass mode. The UPS is operating normally on bypass during High Efficiency operation.

Yellow	On	The UPS is in Battery mode.
Green	On	The UPS inverter is operating normally on Online mode & Battery mode
NOTE When power on or startup , these indicators will turn on and off sequentially. ***NOTE*** On different operation models , these indicators will indicate differently.		

Function Keys

Function Key	Description
ESC/OFF	To exit setting mode without save Or turn off the ups
UP	To go to previous selection
Down	To go to next selection
ENTER/ON	To turn on the ups or confirm the selection in setting mode.

LCD Display Icons

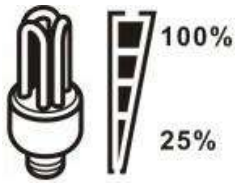


Icon	Function description
Input Source Information	
AC	Indicates the AC input.
INPUTBATT 888 kW VA % Hz °C	Indicate input voltage, input frequency, battery voltage and Temperature

Configuration Program and Fault Information	
	Indicates the setting programs.
	Indicates the warning and fault codes. Warning:  flashing with warning code. Fault:  lighting with fault code
Output Information	
	Indicate output voltage, output frequency, load percent, load in VA, load in Watt.
Battery Information	
	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode.

In AC mode, it will present battery charging status.

Status	Battery capacity	LCD Display
Constant Curren mode	0-24%	4 bars will flash in turns
	25-49%	Bottom bar will be on and the other three bars will flash in turns
	50-74%	Bottom two bar will be on and the other two bars will flash in turns
	75-100%	Bottom three bar will be on and thetop bars will flash

Load Information				
	Indicates overload.			
	Indicates the load level by 0-24%, 25-50%, 50-74% and 75-100%.			
	0%~25%	25%~50%	50%~75%	75%~100%
				
	Indicates Segment 1 output socket available			

Mode Operation Information	
	Indicates unit connects to the mains.
BYPASS	Indicates load is supplied by utility power.
	Indicates the utility charger circuit is working.
	Indicates the DC/AC inverter circuit is working.
CF	Indicates the UPS is working in converter frequency mode.
GEN	Indicates the UPS is working in Generator mode.
ECO	Indicates the UPS is working in ECO mode.
Alarm Information	
	Indicates unit alarm buzzer is disabled.
OVER LOAD	Indicates unit overload alarm.
LOW BATT.	Indicates unit battery low status.
SHORT	Indicates unit output short ciucuit.

3-2 Button operation

Button	Function
ON /ENTER Button	➢ **Turn on the UPS:** Press and hold ON button for at least 3 seconds to turn on the UPS. ➢ **Confirm current settings:**When the UPS enters the setting mode, must press this button to confirm the settings value what you want,next press up/down button to change settings information ➢ **Exit bypass mode：** when the UPS enter to bypass mode, press and hold this button it will switch to normal mode. ➢ **Switch to UPS self-test mode:** Press and hold this button for 2 seconds to enter UPS self-testing while in AC mode

OFF/ESC Button	➢ **Turn off the UPS:** Press and hold this button at least 3 seconds to turn off the UPS in battery mode. UPS will be in standby mode under power normal or transfer to Bypass mode if the Bypass enable setting by pressing this button. ➢ **Exit setting mode:**Press this button to exit setting mode when in UPS setting mode,but save nothing.
UP Button	➢ **Up key:** Press this button to display previous selection in UPS setting mode.
DOWN Button	➢ **Down key:** Press this button to display next selection in UPS setting mode. ➢ **To confirm selection and exit setting mode:**Press this button to confirm selection and exit setting mode when LCD display the last selection in UPS setting mode.
UP + DOWN Button	➢ **Setting mode:** Press and hold this button for 5 seconds to enter UPS setting mode.

3-3 Setup the UPS

Step 1: UPS input connection

Plug the UPS into a two-pole, three-wire, grounded receptacle only. Avoid using extension cords.

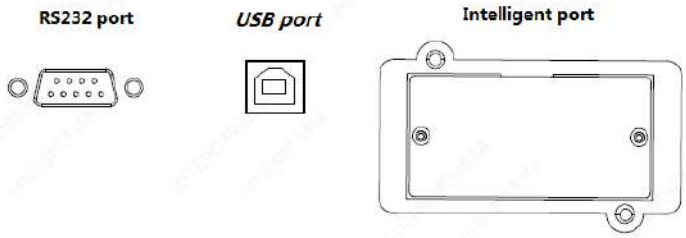
- For 220/230/240VAC models: The power cord is supplied in the UPS package.

Step 2: UPS output connection

- For socket-type outputs, simply connect devices to the outlets.

Step 3: Communication connection

Communication port:



To allow for unattended UPS shutdown/start-up and status monitoring, connect the communication cable one end to the USB/RS232 port and the other to the communication port of your PC. With the monitoring software installed, you can schedule UPS shutdown/start-up and monitor UPS status through PC.

The UPS is equipped with intelligent slot perfect for either SNMP or Relay card. When installing either SNMP or Relay card in the UPS, it will provide advanced communication and monitoring options.

NOTE: USB port and RS232 port can't work at the same time.

Step 4: Turn on the UPS

Press the ON button on the front panel for two seconds to power on the UPS.

Note: The battery charges fully during the first five hours of normal operation. Do not expect full battery run capability during this initial charge period.

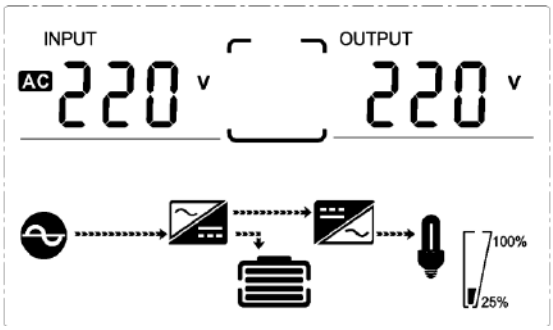
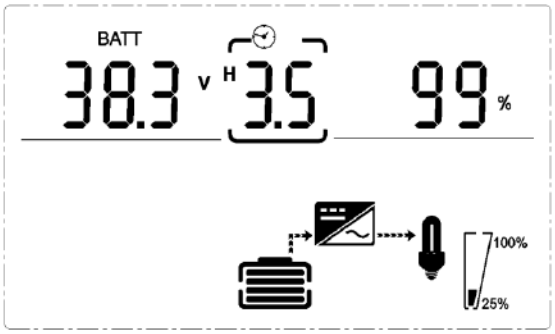
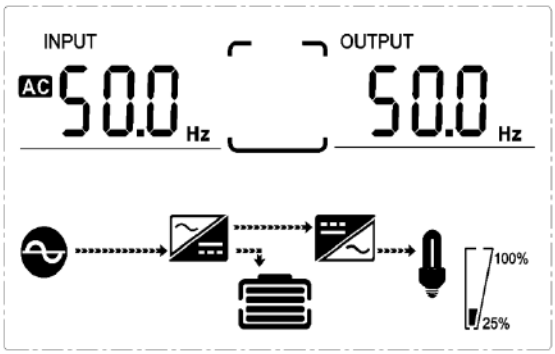
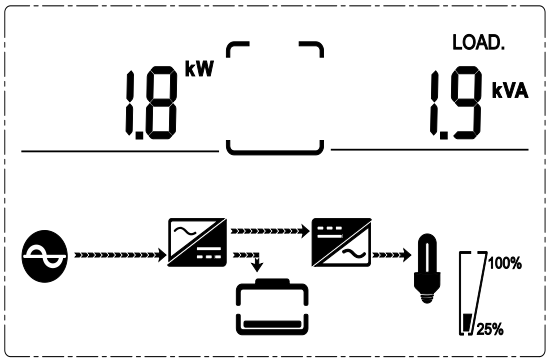
Step 5: Install software

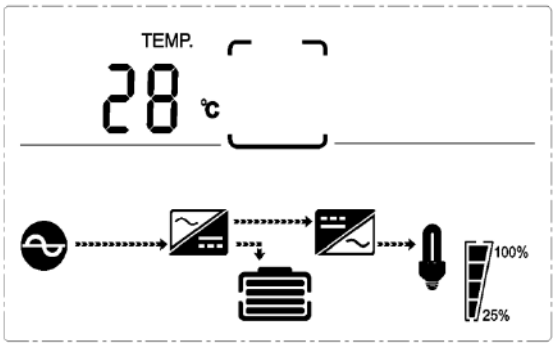
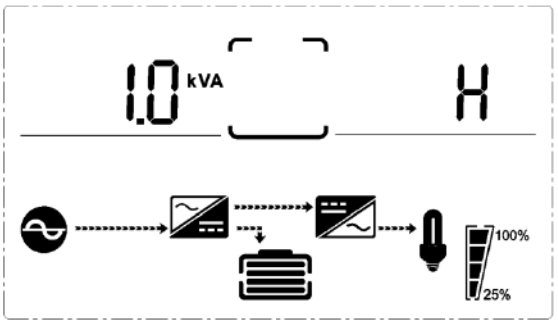
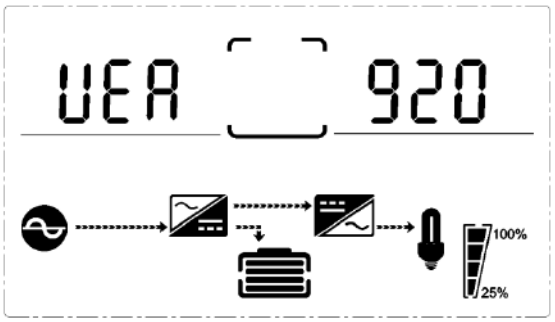
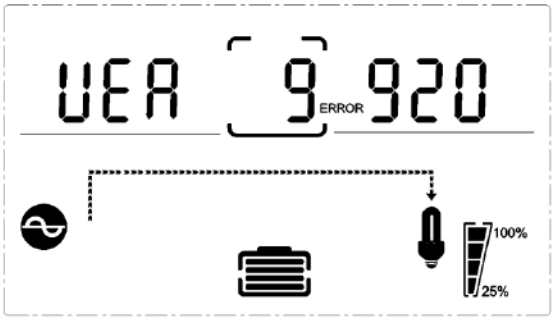
Find the download link on the software installation guide in the packaging box, download the corresponding software package then install.

3-4 LCD display

Part one: Rack display

There are 8 interfaces available in the LCD display.

Item	Interface Description	Content Displayed
01	Input voltage& Output voltage	
02	Battery voltage& Battery capacity	
03	Input frequency& Output frequency	
04	Load	

05	Environment Temperature	
06	UPS model.	
07	Firmware Version	
08	Alarm Code(Warming Message) All alarm codes are present when abnormal behavior(s) occur(s)	

3-5 UPS setting

The UPS has setting functions. This user settings can be done under any kind of UPS working mode. The setting will take effect under certain condition. Below table describes how to set the UPS.

The setting function is controlled by 4 buttons (Up ,Down, ON/Enter,OFF/ESC):

"Up ▲+ Down▼" ---goes into the setting page;

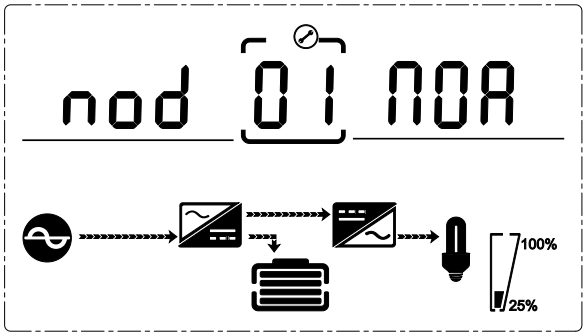
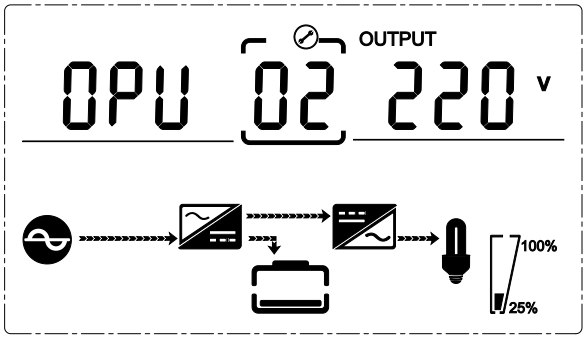
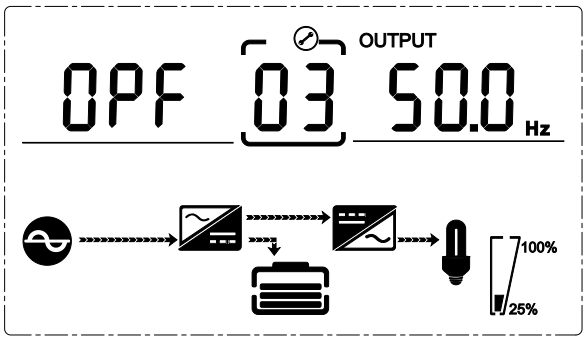
ON/Enter --- - confirm the settings option;

Up ▲ &Down ▼--- value adjustment for choosing different pages;

OFF/ESC--- Exit setting mode;

After the UPS turn ON, press buttons "UP+Down" for 5 seconds and then goes into the setting interface page.

Note: Press "Down" button to confirm selection and exit setting mode when LCD display the last selection in UPS setting mode.

Item	Settings	Content display
01	Mode setting Press Enter button to change the setting (NOR or CF or ECO or GEN). Press UP button ▲ to select the previous setting. Press DOWN button ▼ to select the next setting.	
02	Output voltage setting Press Enter button to change the setting(200,208,220,230,240). Press UP button ▲ to select the previous setting. Press DOWN button ▼ to select the next setting.	
03	Frequency setting Press Enter button to change the setting (50 or 60Hz). Press UP button▲ to select the previous setting. Press DOWN button ▼ to select the next setting.	

04	Battery EOD capacity setting(Segment 1) Press Enter button to change the setting (0%/20%/30%). Press UP button ▲ to select the previous setting. Press DOWN button ▼ to select the next setting.	
05	Bypass voltage upper limit setting Press Enter button to change the setting(The bypass voltage upper limit range is 230-264Vac). Press UP button ▲ to select the previous setting. Press DOWN button ▼ to select the next setting.	
06	Bypass voltage lower limit setting Press Enter button to change the setting(The bypass voltage lower limit range is 176-220Vac). Press UP button to select the previous setting. Press DOWN button to select the next setting.	
07	Mute setting Press Enter button to change the setting(ON or OFF). Press UP button to select the previous setting. Press DOWN button to save and exit the setup.	
08	BYPASS enable/disable setting Press Enter button to change the setting(ON or OFF). Press UP button ▲ to select the previous setting. Press DOWN button ▼ to save and exit the setup.	

3-6 Alarm or Fault reference code

Event log	UPS Alarm Warning	Buzzer	LED
2	Inverter fault(Including Inverter bridge is shorted)	Beep continuously	Fault LED lit
9	Fan fault	Beep continuously	Fault LED lit
12	Initiail fault	Beep continuously	Fault LED lit
13	Battery Charger fault	Beep continuously	Fault LED lit
15	DC Bus over voltage	Beep continuously	Fault LED lit
16	DC Bus below voltage	Beep continuously	Fault LED lit
17	DC bus unbalance	Beep continuously	Fault LED lit
18	Soft start failed	Beep continuously	Fault LED lit
19	UPS Inside Over Temperature	Twice per second	Fault LED blinking
20	Heatsink Over Temperature	Twice per second	Fault LED blinking
26	Battery over voltage	Twice per second	Fault LED blinking
27	Input voltage reversed	Once per second	Fault LED blinking
28	Bypass voltage reversed	Once per second	Fault LED blinking
29	Output Short-circuit	Beep continuously	Fault LED lit
30	Input current limit	Once per second	Fault LED blinking
31	Bypass over current	Once per second	BPS LED blinking
32	Overload	Once per second	INV or BPS LED blinking
33	No battery	Once per second	Battery LED blinking
34	Battery under voltage	Once per second	Battery LED blinking
35	Battery low pre-warning	Once per 2 seconds	Battery LED blinking
36	Over load time out	Once per 2 seconds	Fault LED blinking
37	DC component over limit.	Once per 2 seconds	INV LED blinking
39	Mains volt. Abnormal	Once per 2 seconds	BPS LED blinking

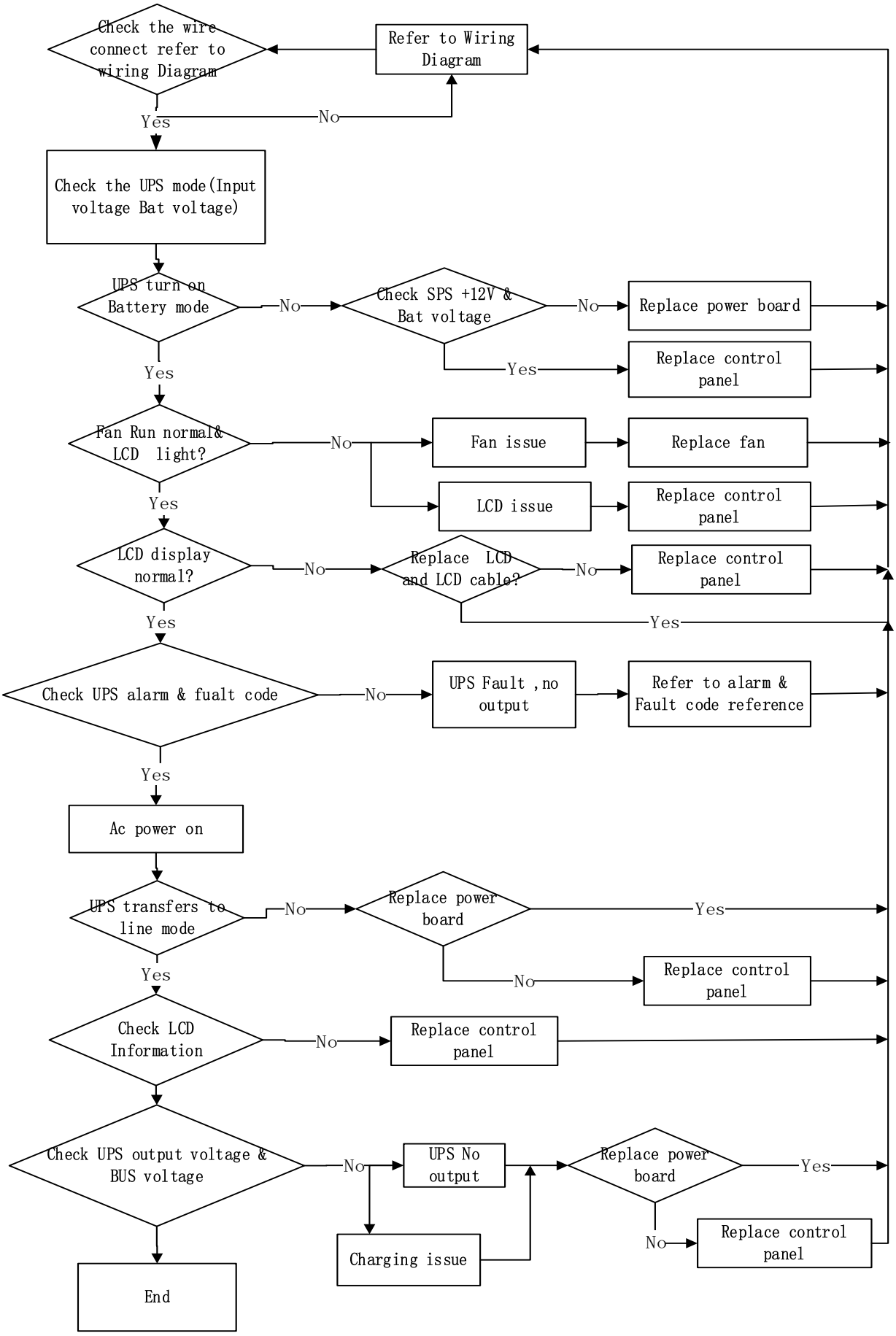
40	Mains freq. abnormal	Once per 2 seconds	BPS LED blinking
41	Bypass Not Available	None	BPS LED blinking
42	Bypass unable to trace	None	BPS LED blinking
45	EPO Enable	Twice per second	Fault LED lit

4. Troubleshooting

If the UPS system does not operate correctly, please solve the problem by using the table below and theTrouble Shooting Chart.

Symptom	Possible cause	Remedy
Alarm code is shown as“33” and battery led blinking.	The external or internal battery is incorrectly connected.	Check if all batteries are connected well. Whether the battery voltage is low due to the long service life of the battery;
Alarm code is shown as“34”and battery led blinking.	Battery under voltage, the charger fail, or the jumper cap model of the control board is not configured correctly;	Contact your dealer.
Alarm code is shown as“35”and battery led blinking.	Low battery voltage or charger failure	Contact your dealer.
Alarm code is shown as“32”and INV and BYPASS led blinking	UPS is overload	Remove excess loads from UPS output.
Alarm code is shown as“27&28”and FAULT led light.	Mains Input reverse& Bypass Input reverse	Check input L/N wiring Reverse connection
Alarm code is shown as“29” and FAULT led light.	The UPS shut down automatically because short circuit occurs on the UPS output.	Check output wiring and if connected devices are in short circuit status.
Alarm code is shown as “9” and FAULT led light.	Fan fault.	Please check whether the fan is stuck by other objects, shut down and restart ups
Alarm code is shown as“26”and FAULT led light.	Battery over voltage	Check if the battery cartridge match the UPS, if yes, replace the unit
Alarm code is shown as“13” and FAULT led light.	Battery charger fault	Check if the charging voltage is too high or too low, if yes, replace the unit
UPS can not cold start (LCD does not light)	Battery over current protection was triggered at the moment of plugging the battery for the first time	Replug the battery and reboot the UPS

	Battery short circuit protection was triggered	Check if the battery terminal is reversed connected or short circuit (measure the impedance)
	Battery over discharge, battery voltage is too low	Check the battery terminal voltage, if the voltage is too low, if yes, charge the battery
	Battery over temperature protection was triggered, battery output voltage was disabled	Wait for a while, reboot the UPS after battery cool down
	Battery internal fault (BMS board or others)	Battery internal fault (BMS board or others)
Battery charging speed is too slow or can not be charged	Battery low temperature protection was triggered	Check if the ambient temperature is lower than 0°C. If yes, use the UPS within the temperature specified in the spec sheet
	Battery over temperature protection was triggered	Check if the ambient temperature is higher than 40°C. If yes, use the UPS within the temperature specified in the spec sheet
Battery backup time is too short	Batteries are not fully charged	Batteries are not fully charged



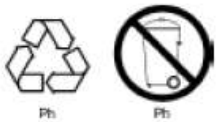
Trouble Shooting Chart

5. Storage and Maintenance

Lithium Unit

● Operation

The repair and replacement of all components of this lithium battery system must be handled by professionals, and ordinary users are not allowed to perform such operations. If the battery has exceeded its service life, please contact the dealer for replacement.



Be sure to deliver the spent battery to a recycling facility or ship it to your dealer in the replacement battery packing material.

It should be stored in a dry warehouse without exposure to the sun and rain. Harmful gases, flammable, explosive products and corrosive chemicals are not allowed in the warehouse. Avoid mechanical shock, heavy pressure and strong magnetic fields. Avoid direct sunlight. The distance from the heat source should not be less than 2m. The packing box should be cushioned. The floor is at least 20cm high, and the distance from the wall, window or air inlet is at least 50cm. Products stored for more than 3 months under the specified conditions must be recharged. Products with a storage period of more than 6 months must undergo a capacity verification test. Products with a storage period of more than 1 year must be re-tested and can be used only after they are qualified.

● Storage

Before storing, charge the UPS 5 hours,Shut down the UPS and disconnect the battery , placed in the normal package with the front face up. A dry, coll place. During storage, please perform charging maintenance according to the following table:

Storage Temperature	Recharge Frequency	Charging Duration
-25°C - 40°C	Every 3 months	1-2 hours
40°C - 45°C	Every 2 months	1-2 hours

Note: Environmental factors will affect battery life. High ambient temperature, high humidity, low-quality power supply, and frequent short discharges will shorten battery life.

● Battery maintenance

If you do not use the battery box for a long time or work in an area with uninterrupted power for a long time, you should charge and discharge the battery every three months. In high temperature areas, the battery should be charged and discharged manually every

two months, and the operation process is the same as the above. otherwise it will affect the performance of the battery.

Long-term storage of batteries (more than 3 months) must be placed in a dry, cool place, the storage environment requires a temperature of 25 ± 2 ℃, humidity (65 ± 20) %RH

In normal use, if the battery is found to be in poor condition, such as the battery backup time is significantly shortened, and the terminal voltage of each battery is severely unbalanced, it must be replaced early. When replacing the battery, it must be performed by a professional.

Exception handling

If the machine accident update process power, serial communication interrupt, please disconnect the electric machine waiting for automatic electric (without battery when opening electric machine immediately shut down, if the machine with a battery will need to wait 30 seconds timeout electric). It is more effective to repeat the 3.4 serial port after the power is completed under the machine.

6. Options

SNMP card: internal SNMP（options)

- ◆Loosen the 2 torque screws (on each side of the card).
- ◆Carefully insert the SNMP card and lock the screws

KPM220 is a built-in network SNMP card independently, It supports SNMPv1/v2 and v3 protocols, features e-mail alarm, historical events and historical data storage. Picture is shown as below，

Download installation files from http://download.ksdatacloud.com，

Specific operation and function description are provided for reference： KPM220 User Manual V2.2

Relay card (options)

Mini dry contact card is used for providing the interface for UPS peripheral monitoring. The contact signals can reflect UPS running status. The card is connected to peripheral monitoring devices via terminal board to facilitate the effective monitoring of the real-time status of UPS and timely feedback the status to monitor when abnormal situation occurs(such as UPS failure, mains interruption, UPS bypass and ect.). It is installed in the intelligent slot of the UPS.

The relaycard includes 6 output ports and one input port. Please refer to the following table for detail.

Pins definition of connecting terminal on the board

Relaycard electrical parameter

Terminal No.	Terminal function	Terminal No.	Terminal function
1	Common source	9	Bypass enable NO
2	UPS on NC	10	Bypass enable NC
3	AC fail NO	11	UPS fail NO
4	AC fail NC	12	UPS fail NC
5	Batt low NO	CN4-1	Remote shutdown
6	Batt low NC	CN4-2	GND
7	UPS alarm NO		
8	UPS alarm NC		

	max	Type
Relay card contact	(Max Switched Voltage) AC:120V DC:24V	AC:120V
		DC:5~12V
	(Max Switched Current) AC:1A DC:1A	AC:1A
		DC:1A

Emergency Power Off (EPO) (options)

EPO is used to shut down the UPS from a distance. This feature can be used for shutting

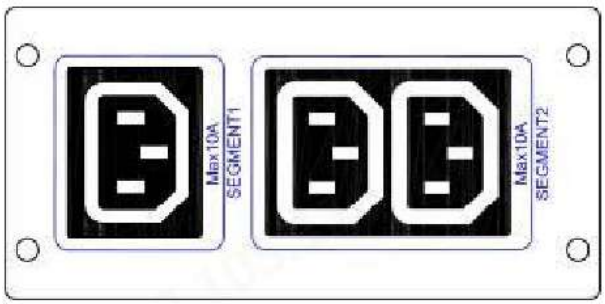
down the load and the UPS by thermal relay, for instance in the event of room over temperature. When EPO is activated, the UPS shuts down the output and all its power converters immediately. The UPS remains on to alarm the fault.

EPO Connections

NOTE Depending on user configuration, the pins must be shorted or opened to keep the UPS running. To restart the UPS, reconnect (re-open) the EPO connector pins and turn on the UPS manually. Maximum resistance in the shorted loop is 10 ohms.
Always test the EPO function before applying your critical load to avoid accidental load loss.Leave the EPO connector installed onto the EPO port of the UPS even if the EPO function is not needed.

Load Segments (options)

Load segments are sets of receptacles that can be controlled by power management software or through the display, providing an orderly shutdown and startup of your equipment. For example, during a power outage, you can keep critical equipment running while you turn off other equipment. This feature allows you to save battery power. Each UPS has two groups:



Load Segment 1: The remaining capacity of the battery in this section can be set through the LCD, the default is 0%, (0%, 20%, 30% optional)
Load Segment 2: The power shedding battery end of discharge(EOD), cannot be set. the default backup time is 0 or 2.7V per cell.

7. Specification

MODEL		1KVA(S)	1.5KVA(S)	2KVA(S)	3KVA(S)
PHASE		Single phase with ground			
Capacity (VA/Watts)		1000VA /1000W	1500VA / 1500W	2000VA / 2000W	3000VA / 3000W
INPUT					
Nominal voltage		200/208/220/230/240Vac			
Operating voltage range (Ambient Temp. <40℃)	Low line transfer	176Vac±5% @100%-50% load; 110Vac±5% @50%-0% load;			
	Low line comeback	186Vac±5% @100%-50% load; 120Vac±5% @50%-0% load;;			
	High line transfer	264Vac±5% @100%-50% load; 300Vac±5% @50%-0% load;			
	High line comeback	254Vac±5% @100%-50% load; 290Vac±5% @50%-0% load;			
Operating frequency range**		40-70Hz			
Input Power factor		0.99@100% load(Nominal Input Voltage)			
Bypass voltage range		**Bypass high voltage point** 230-264: setting the high voltage point in LCD from 230Vac to 264Vac. (Default: 264Vac) **Bypass low voltage point** 176-220: setting the low voltage point in LCD from 176Vac to 220Vac. (Default: 176Vac)			
Generator input		Support			
OUTPUT					
Output voltage*		200/208/220/230/240Vac			
Power factor		1.0			
Voltage regulation		±1%			
Frequency	Line Mode (synchronized range)	46-54Hz or 56-64Hz			
	Bat. Mode	(50/60±0.1)Hz			
Crest factor		3:1			
Harmonic distortion (THDv)		≤3% THD with linear load ≤5% THD with nonlinear load			
Waveform		Pure Sinewave			
Transfer time	AC mode <->Batt. mode	0ms			
	Inverter <-> bypass	4ms(Typical)			
On Line Efficiency		*90.00%*	*91%*	*92.00%*	*92.00%*
Economy mode efficiency		*95.00%*	*96.5%*	*96.00%*	*96.50%*
BATTERY					
Battery Type(Lithium)		25.6V9AH	48.0V6AH	76.8V6AH	76.8V9AH
Backup time		9min @ full Load	7 min @ full Load	9min @ full Load	9min @ full Load
Typical recharge time(standard model)		4 hours recover to 90% capacity (Typical)			
Charging voltage		28.0 VDC ±0.2VDC	52.5 VDC ±0.2VDC	84.0 VDC ±0.2VDC	84.0 VDC ±0.2VDC

Charging current	2A			
SYSTEM FEATURES				
Over Load Capability (Online mode)	*105%-125%: UPS transfer to bypass after 1 minute when the utility is normal* *125%~130%: UPS transfer to bypass after 30 seconds when the utility is normal* *>130%:UPS transfer to bypass after 0.2 second when the utility is normal*			
Over Load Capability (Battery mode)	*105%-125%: UPS after 1minute shut down* *125%~130%: UPS after 10 seconds shut down* *>130%: UPS after 0.2 second shut down*			
Short Circuit	Hold Whole System			
Overheat	Line Mode: Switch to Bypass; Backup Mode: Shut down UPS immediately			
Low battery voltage	Alarm and Switch off			
EPO (optional)	Shut down UPS immediately			
Audible & Visual alarms	Line Failure, Battery Low, Overload, System Fault			
Comunication interface	USB(or RS232), SNMP card (optional), Relay card (optional)			
ENVIRONMENTAL				
Operating temperature	0℃～40℃			
Storage temperature	-25℃～55℃			
Humidity range	0 ~ 95% (non-condensing)			
Altitude	0 - 3000 (1000-3000 derating required)			
Noise level	< 55 dB at 1 m			
PHYSICAL				
Dimension W×D×H (mm)	440*325*86.5	440*460*86.5	440*500*86.5	440*640*86.5
Net Weight (kg)	9.6	12.5	16.1	21.0
STANDARDS				
Safety	CB: IEC 62040-1:2017, CE-LVD: EN IEC 62040-1:2019+A11:2021			
EMC	IEC 62040-2-2016, EN IEC 62040-2-2018 C2			
Transportation	Meet ISTA Procedure 2A			

Derate to 80% of capacity when the output voltage is adjusted to 200/208VAC

** Derate to 75% of capacity when the Input voltage frequency out of range(50/60±4Hz)

***Product specifications are subject to change without further notice.

ATENCO POWER TECH CO. LTD
2 F.-7, No. 14, Xiwei St., Sanchong Dist., New Taipei City 241707, Taiwan
TEL：+886-2-2280-6939 info@atenco.com.tw
FAX：+886-2-2290-2939 www.atenco.com.tw