ENERTEC
POWER SOLUTIONS

EP-RT 1-3kVA Convertible Rack / Tower Online Double Conversion AC UPS

User Manual

Version 2.2

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Publish statement

Thank you for purchasing this UPS series.
This UPS is an intelligent, single-phase in/single-phase out, high-frequency online model, designed by our experienced R&D team with years of expertise in UPS technology. With excellent electrical performance, advanced intelligent monitoring, network functionality, and a sleek design, this UPS meets global industry standards.
Please read this manual carefully before installation.
It provides essential technical support for operators of this equipment.
For proper disposal of the product or its components, please contact your nearest hazardous waste disposal facility.

Contact the nearest hazardous waste disposal station when the products or components are discarded.

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

- Transport the UPS system only in its original packaging to protect it from shock and impact.

1-2 Preparation

- Condensation may occur if the UPS system is moved from a cold to a warm environment. Ensure the UPS is completely dry before installation. Allow at least two hours for the system to acclimate to the new environment.
- Do not install the UPS system near water or in moist environments.
- Avoid installing the UPS where it will be exposed to direct sunlight or near heaters.
- Do not block the ventilation openings on the UPS housing.

1-3 Installation

- Do not connect appliances or devices that may overload the UPS system (e.g., laser printers) to the UPS output sockets.
- Arrange cables in a way that prevents anyone from stepping on or tripping over them.
- Do not connect household appliances, such as hair dryers, to the UPS output sockets.
- The UPS should only be operated by individuals with prior experience.
- Connect the UPS only to an earthed, shockproof outlet that is easily accessible and located close to the UPS.
- Use only VDE-tested, CE-marked mains cables (e.g., the power cable from your computer) to connect the UPS system to the building's wiring outlet (shockproof outlet).
- Use only VDE-tested, CE-marked power cables to connect the loads to the UPS

system.

- When installing the equipment, ensure that the total leakage current of the UPS and the connected devices does not exceed 3.5mA.
- Before installing the UPS, consider the installation environment. Avoid placing it in areas with high temperatures, humidity, or excessive dust.
- Ensure proper ventilation for the UPS and avoid obstructing the front and rear panels. It is recommended to leave at least 50 cm of space in front and behind the UPS for heat dissipation.

1-4 Operation

- Do not disconnect the mains cable from the UPS system or the building wiring outlet (shockproof socket) during operation, as this would disable the protective grounding for both the UPS and all connected devices.
- The UPS has its own internal power source (batteries). The output sockets or terminal block may still carry an electrical charge even if the UPS is not connected to the building wiring outlet.
- To fully disconnect the UPS system, first press the OFF/Enter button to disconnect it from the mains.
- Ensure no liquids or foreign objects enter the UPS system.

1-5 Maintenance, Service and Faults

- The UPS operates with hazardous voltages. Repairs should only be carried out by qualified personnel.
- **Caution** – Risk of electric shock: Even after disconnecting the UPS from the mains, components inside remain connected to the battery and may still carry live, dangerous voltage.
- Before performing any service or maintenance, disconnect the batteries and verify that no current or hazardous voltage is present in high-capacity components, such as BUS-capacitors.
- Only individuals familiar with batteries and the required safety precautions should replace batteries or supervise battery operations. Unauthorized persons should be kept away from the batteries.
- **Caution** – Risk of electric shock: The battery circuit is not isolated from the input voltage. Hazardous voltages may exist between the battery terminals and ground. Always verify that no voltage is present before touching any parts!
- Batteries can cause electric shock and have a high short-circuit current. Please follow these precautionary measures and any other necessary safety steps when working with batteries:

  - Remove wristwatches, rings, and other metal objects.

  - Use only tools with insulated grips and handles.

- When replacing batteries, ensure that the same number and type of batteries are installed.
- Do not attempt to dispose of batteries by burning them, as this could cause an explosion.
- Do not open or destroy batteries. Leaking electrolyte can cause injury to the skin and eyes and may be toxic.
- Only replace fuses with ones of the same type and amperage 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. Installation and Setup

NOTE: Before installation, inspect the unit to ensure there is no damage. Keep the original packaging in a safe place for future use.

2-1 Unpacking and Inspection

- Do not tilt the UPS when removing it from its packaging.
- Inspect the UPS for any damage that may have occurred during transportation. Do not power on the UPS if any damage is found. Contact the dealer immediately.
- Verify the accessories against the packing list. If any parts are missing, contact the dealer.

  The package includes:

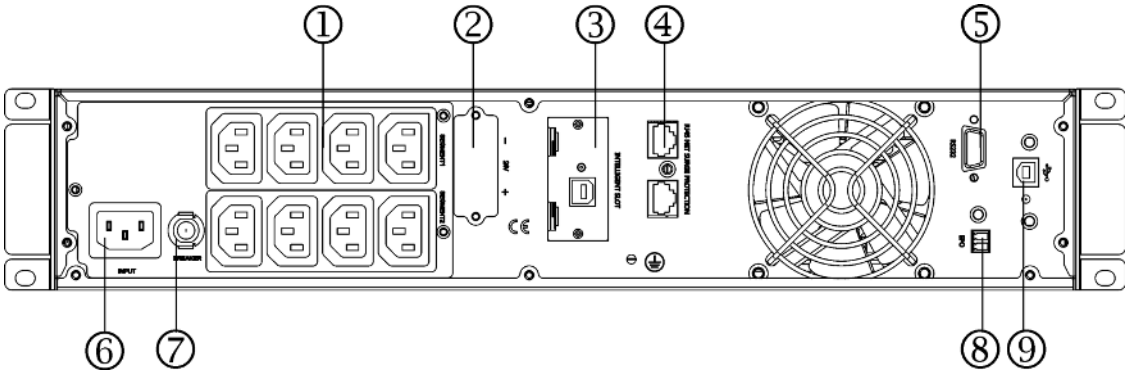
  (1) UPS User's Guide

  (2) USB Cable

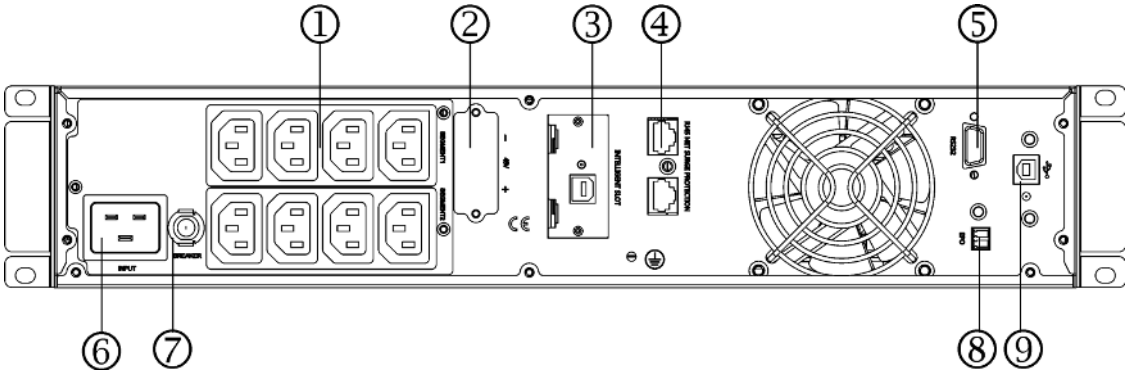
  (3) Power Cord (Input or Output)

2-2 Real panel view

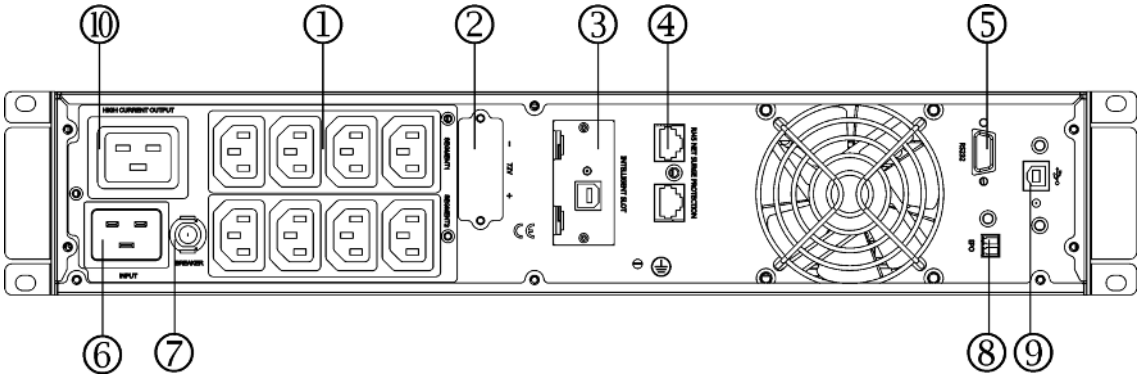
1KVA/1.5KVA(S/H):



2KVA(S/H):



3KVA(S/H):



1. 10A Output Receptacles
2. Battery Terminal
3. SNMP Intelligent Slot (optional)
4. Network/Fax/Modem Surge Protection (optional)
5. RS232 Communication Port
6. AC Input Receptacle
7. Input Circuit Breaker
8. EPO (Emergency Power Off, optional)
9. USB Port (optional)
10. 16A Output Receptacle

2-3 Installing the UPS

CAUTION

- *The cabinet is heavy. At least two people are required to safely remove it from its carton.*
- *If installing optional External Battery Packs (EBPs), ensure they are placed directly below the UPS. This ensures that all wiring between cabinets is installed behind the front covers and remains inaccessible to users.*

NOTE *Mounting rail kits are sold separately and are required for each individual cabinet.*

● Rackmount Installation

The rackmount cabinet includes all necessary hardware for installation in a standard EIA or JIS seismic rack configuration, compatible with both square and round mounting holes. The rail assemblies (sold separately) can be adjusted to fit 19" racks with a depth ranging from 70 to 76 cm (27 to 30 inches).

(1) Rackmount Rail Kit Installation:

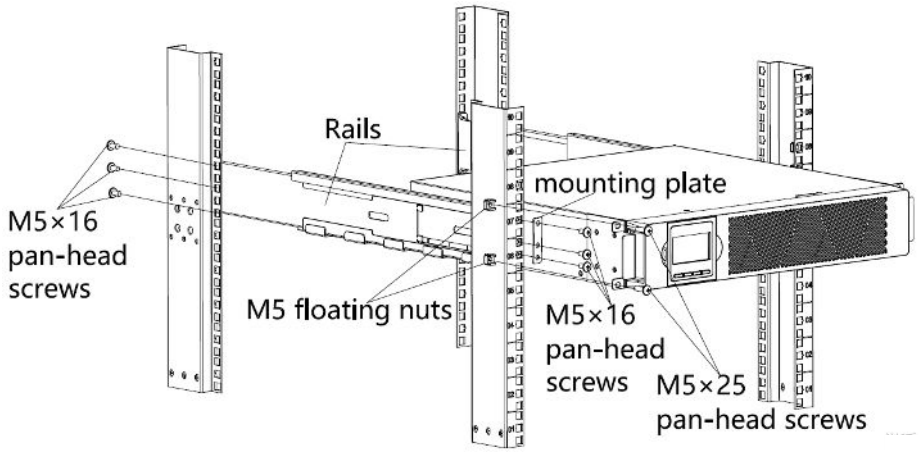


Figure 1 Securing the Rails

a) Assemble the left and right rails to the rear rails as shown in Figure 1. Do not fully tighten the screws yet. Adjust each rail to fit the depth of your rack.

b) Choose the appropriate position in the rack for the UPS (see Figure 1). The rail assembly will occupy four positions on both the front and rear of the rack.

c) Attach one rail assembly to the front of the rack using three M5×16 pan-head screws and one mounting plate. Then, use three more M5×16 pan-head screws and another mounting plate to secure the rail assembly to the rear of the rack.

d) Repeat Steps 2 and 3 for the second rail assembly.

e) If you are installing optional cabinets, repeat Steps 1 through 4 for each rail kit.

f) Place the UPS on a flat, stable surface with the front of the cabinet facing you.

g) Align the mounting brackets with the screw holes on each side of the UPS and secure them using the supplied M4×8 flat-head screws (see Figure 2).

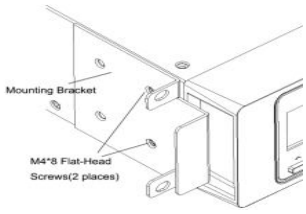


Figure 2 Installing the Mounting Brackets

h) If installing optional cabinets, repeat Steps 6 and 7 for each cabinet.

i) Slide the UPS and any additional optional cabinets into the rack.

j) Secure the front of the UPS to the rack using four M5×25 pan-head screws and four M5 floating nuts (see Figure 3).

Repeat this process for any optional cabinets.

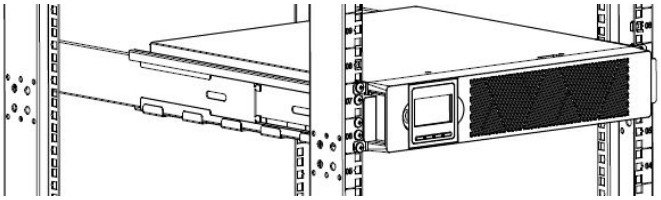


Figure 3 Securing the Front of the Cabinet

k) Continue to the following section: Rackmount Wiring Installation.

(2) Rackmount Wiring Installation

a) Installing the UPS, including connecting the UPS internal batteries.

b) Connecting any Optional External Battery Box.

● IMPORTANT NOTES:

NOTE *Do not make unauthorized changes to the UPS, as this may cause damage to your equipment and void your warranty.*
NOTE *Do not connect the UPS power cord to the utility until the installation is completed.*

a) To remove the front cover of the UPS:

Press the side of the cover with the LCD display while holding the opposite side. Quickly extract one side and then remove the other side with the display (see Figure 4).

> **NOTE** A ribbon cable connects the LCD control cover to the UPS. Do not pull on this cable or disconnect it.

When removing the cover, follow the procedure shown in the right side of Figure 4 instead of the left side.

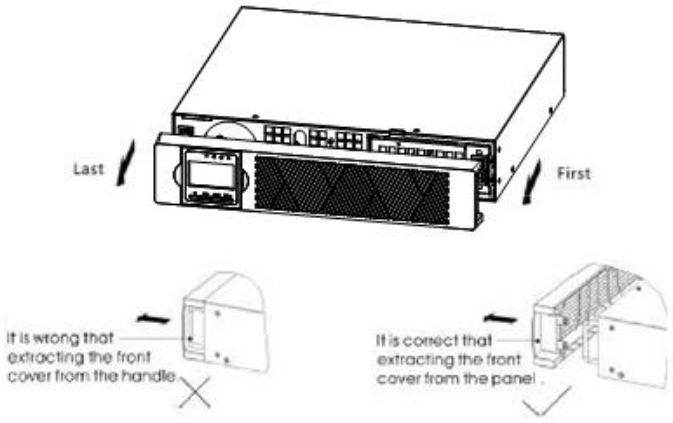


Figure Extracting the UPS Front Cover

CAUTION

A small amount of arcing may occur when connecting the internal batteries. This is normal and will not harm personnel. Connect the cables quickly and firmly.

a) Connect the internal battery connector (see Figure 5).

   Connect red to red and press the connector tightly together to ensure a proper connection.

b) If you are installing External Battery Packs (EBPs), refer to the following section, "Connecting the EBP(s)" before continuing with the UPS installation.

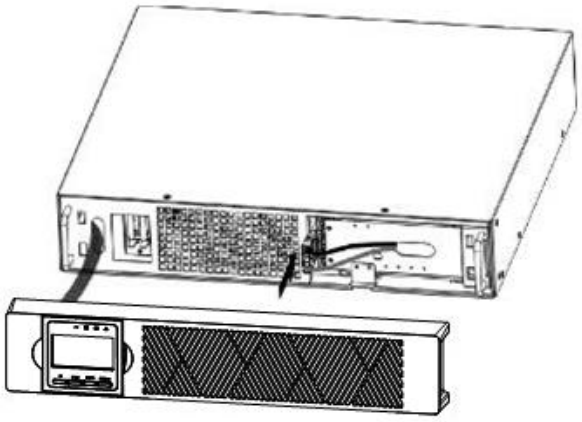


Figure 5 Connecting the UPS Internal Batteries

c) Replace the front cover of the UPS.

d) If you are installing power management software, connect your computer to one of the communication ports or the optional connectivity card. Use an appropriate cable for the communication ports.

e) If your rack has conductors for grounding or bonding ungrounded metal parts, connect the ground cable (not supplied) to the ground bonding screw. Refer to "Rear Covers" for the location of the ground bonding screw for each model.

f) If an emergency power-off (disconnect) switch is required by local codes, refer to "Remote Emergency Power-off" (REPO) to install the REPO switch before powering on the UPS.

g) Proceed to "UPS Startup."

● Rackmount Converted to Tower Installation

(1) Rackmount Converted to Tower Plastic Base Installation

- Components:

1. Two plastic base brackets
2. Flatten the brackets after inter-crossing.

Inter-cross the brackets as shown in the following figure:

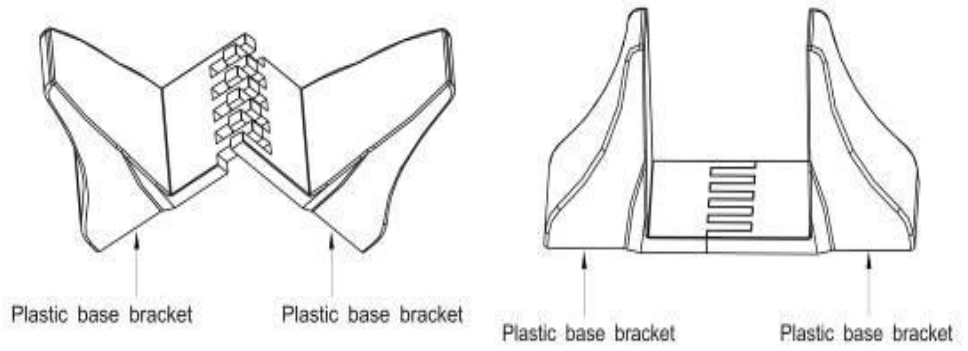
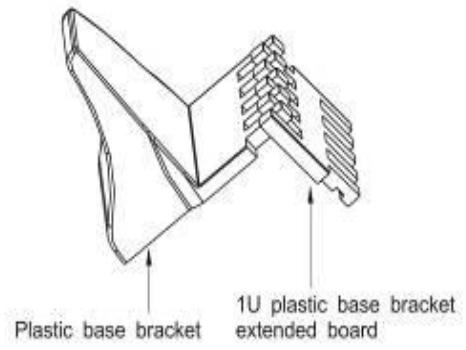
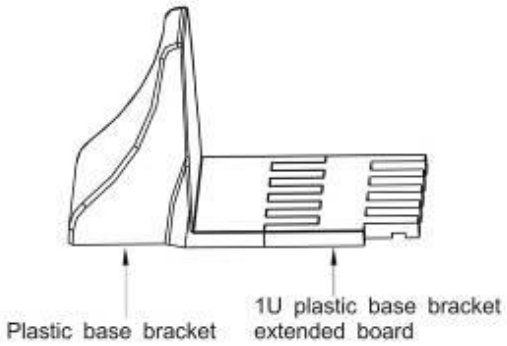


Figure 6 plastic base installation

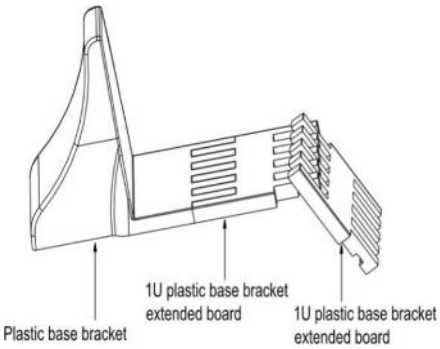
3. If a larger UPS, or battery cabinet needs to be placed, the assembly of the plastic base is similar (see Figure 6). The difference is that two 1U plastic base extension boards (optional for 1KV model) are added in the middle, as shown below.



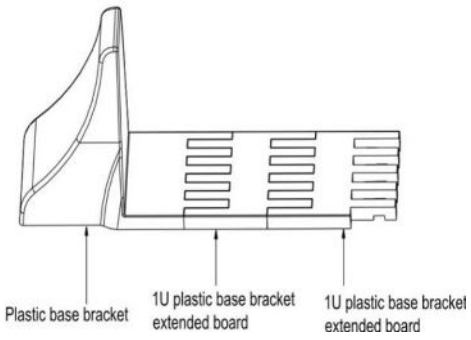
(A)



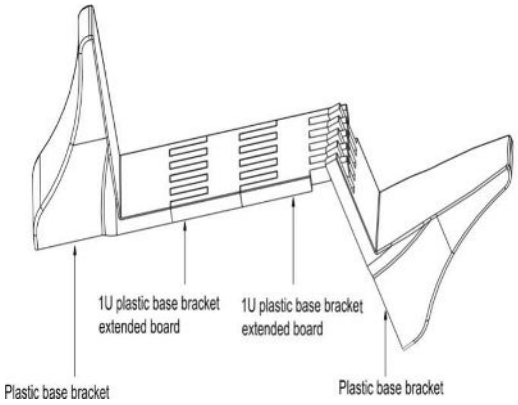
(B)



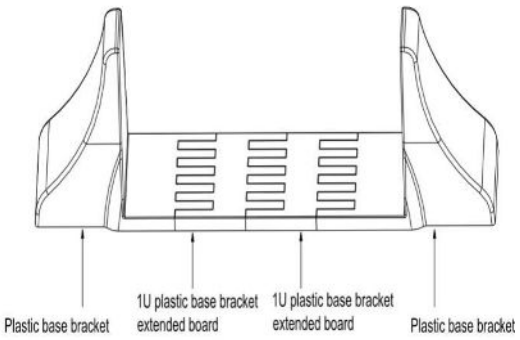
(C)



(D)



(E)



(F)

(2) Rackmount Converted to Tower LCD Display Installation

1. Gently pull and rotate the LCD 90 degrees from horizontal to vertical, (**see figure 7a**).

2. Alternatively, you can remove the front panel by gently pulling on its corners, rotate the LCD 90 degrees from horizontal to vertical, and then carefully replace the panel, (**see figure 7b**).

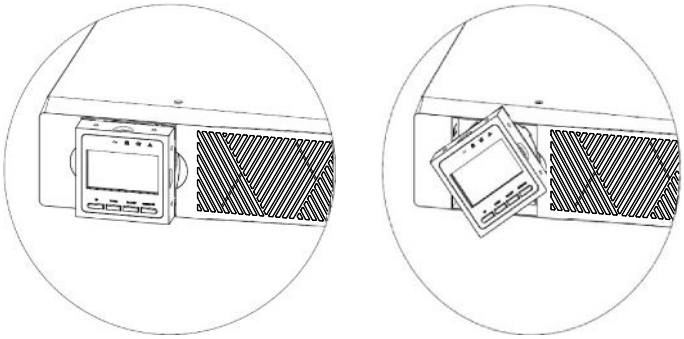


Figure 7 Rack mount converted to Tower installation

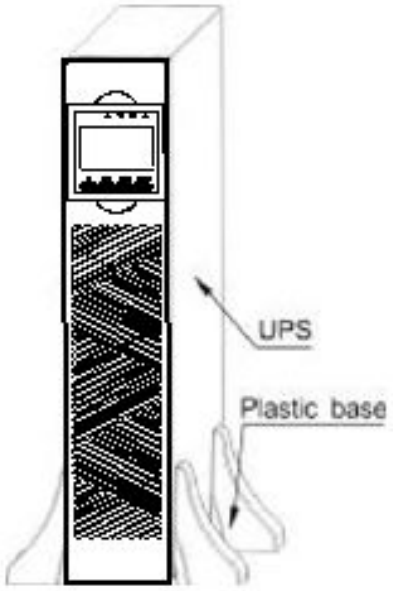


Figure 8 Rack mount converted to Tower-Display

● Installation of UPS and External Battery Boxes

The installation process between the UPS and the external battery boxes can be referenced in Figure 9.

1. Remove the battery terminal cover plate from both the UPS and the external battery boxes.
2. Remove the standard battery connection cable from the battery box.
3. Connect the corresponding voltage battery box according to the UPS battery voltage.
4. Note: The external battery system supports up to four battery boxes.

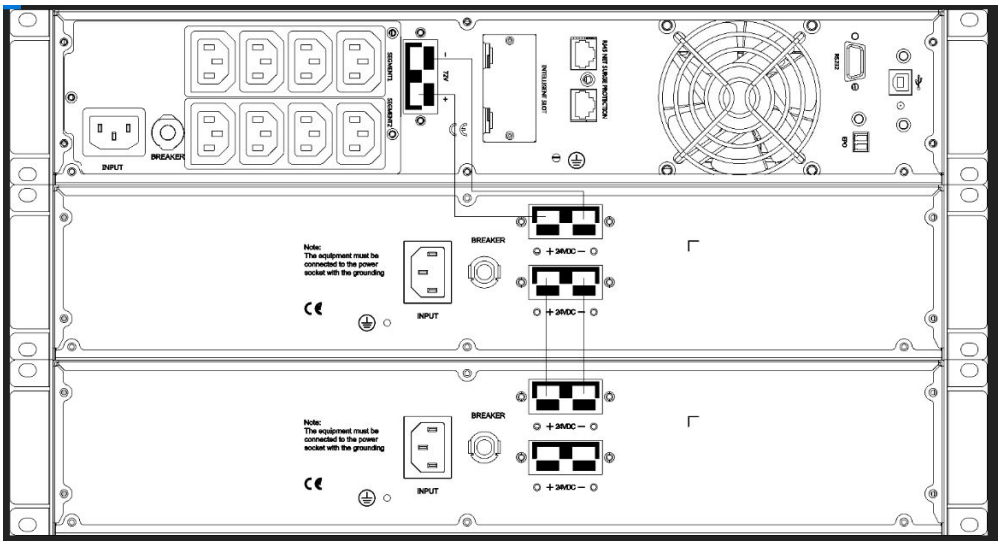


Figure 9 The installation for UPS and External battery boxes

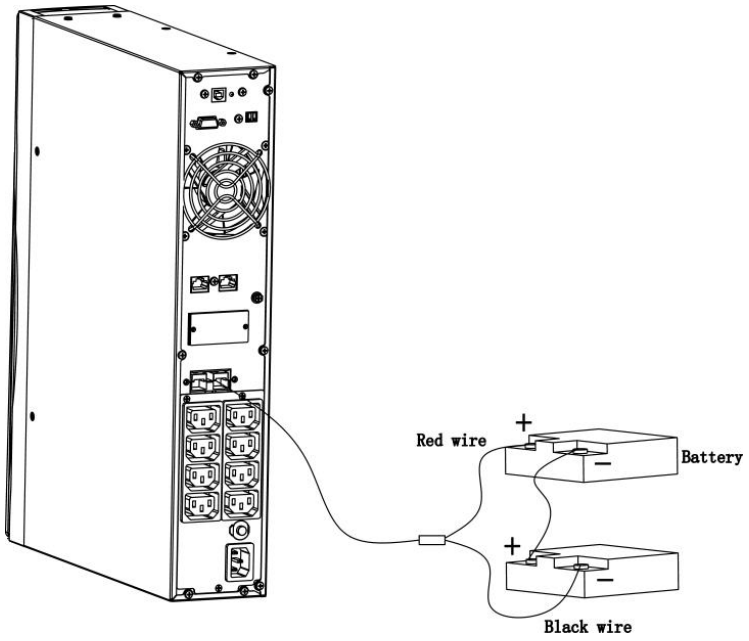


Figure 10 Long backup external battery connection

2-4 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 the mains power is plugged in, the UPS enters standby mode with bypass and no output. All indicator lights will be off, and battery charging will begin. If you intend to switch to inverter output mode, press the "ON" key.

b) Press and hold the ON key for more than three seconds to start the UPS. This action will activate the inverter.

c) Once started, the UPS will perform a self-test. The LEDs will light up and go out in a circular and orderly manner. When the self-test is complete, the UPS will enter line mode, and the corresponding LED lights will indicate that the UPS is operating in line mode.

(2) Turn On the UPS by DC without Mains Power

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

b) The startup process of the UPS will be similar to that when mains power is available. After the self-test is complete, the corresponding LED lights will indicate that the UPS is operating in battery mode.

- **Turn Off the UPS in Line Mode**

(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 has shut down, the LEDs will go out, and there will be no output. If output is needed, you can enable the bypass mode by setting "ON" in the LCD setting menu.

(2) 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.

a) When turning off the UPS, it will perform a self-test first. The LEDs will light up and go out in a circular and orderly manner until there is no display on the cover.

2-5 Configuring Battery Settings

- **Set the UPS according to the number of External Battery Packs (EBPs) installed.**

- To ensure accurate display of the battery backup time, it is necessary to set the correct battery capacity. This is based on the number of built-in batteries and external battery boxes connected to the UPS. The total capacity of the batteries connected to the UPS is calculated as follows;

  Connected Battery Capacity = (AH of a single battery × Number of groups).

- Access the setting interface and configure the battery capacity through the battery capacity setting page according to the actual battery capacity. (Refer to

"04" Battery Capacity Setting on page 27 for guidance on setting battery capacity on the LCD screen.)

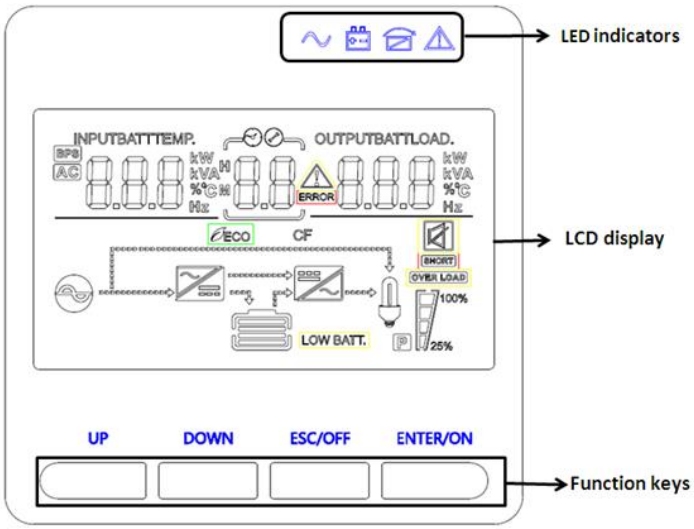
- **The following table shows the battery pack number and the corresponding Ah setting values for the UPS and its supporting battery box.**

All UPS and EBP Cabinets	Number of Battery Strings	UPS LCD Battery capacity setting
UPS only (internal batteries)	1 (default)	9AH (default)
UPS+1EBP	3	27 AH
UPS+2EBPs	5	45AH
UPS+3EBPs	7	63AH
UPS+4EBPs	9	81AH
NOTE The UPS contains one battery string; each EBP contains two battery strings.		

2-6 Operation and Display Panel

The operation and display panel, illustrated in the diagram below, is located on the front panel of the UPS. It includes four indicators, four function keys, and an LCD display that conveys the operating status and input/output power information.

LCD control Panel Introduction



(1) LED Indicators (from right to left: "Alarm", "Bypass", "Battery", "Inverter");

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

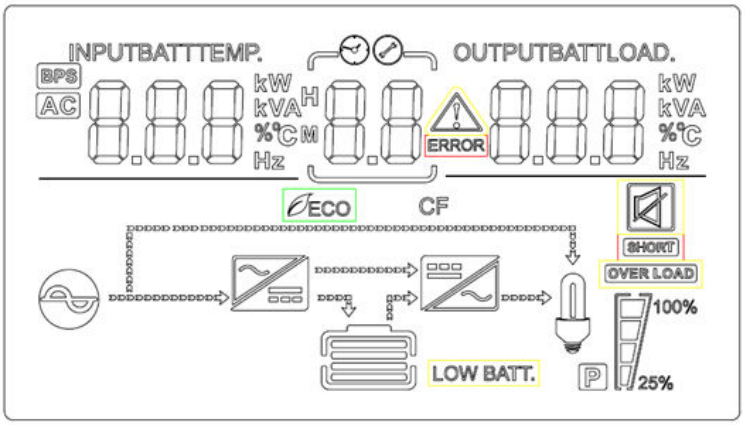
LED Indicator

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 in Online mode and 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 turn off the UPS or exit the setting mode without saving changes.
UP	To navigate to the previous selection.
Down	To navigate to the next selection.
ENTER/ON	To turn on the UPS or confirm the selection in setting mode.

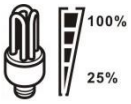
LCD Display Icons



Icon	Function description
Input Source Information	
AC	Indicates the AC input.
INPUTBATT 888 kW VA % °C Hz	Indicates input voltage, input frequency, battery voltage and Temperature
Configuration Program and Fault Information	
88	Indicates the setting programs.
88 ERROR	Indicates the warning and fault codes. Warning: 88 flashing with warning code. Fault: 88 ERROR lighting with fault code
Output Information	
OUTPUTBATTLOAD 888 kW VA % Hz	Indicate output voltage, output frequency, load percent, load in VA, load in Watt
Battery Information	
CHARGING	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 Current 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 the top bars will flash

Load Information				
OVER LOAD	Indicates overload.			
	Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.			
	0%~24%	25%~49%	50%~74%	75%~100%
				
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.			
Mute Operation				
	Indicates unit alarm is disabled.			

3. Operations

3-1 Button Operation

Button	Function
ON /ENTER	➢ **Turn on the UPS**: Press and hold the ON button for at least 2 seconds to power on the UPS. ➢ **Confirm Current settings**: In setting mode, press this button to confirm the desired settings. Use the UP/DOWN buttons to change settings. ➢ **Exit Bypass Mode**: When in bypass mode, press and hold this button to switch back to normal mode. ➢ **Switch to UPS Self-Test Mode:** Press and hold this button for 2 seconds to initiate the UPS self-test while in AC mode.
OFF/ESC	➢ **Turn off the UPS**: Press and hold this button for at least 2 seconds to turn off the UPS in battery mode. The UPS will enter standby mode under normal power or switch to bypass mode if enabled by pressing this button. ➢ **Exit Setting Mode:** Press this button to exit setting mode without saving any changes.
UP	➢ **Up key**: Press this button to display the previous selection in UPS setting mode.
DOWN	➢ **Navigate Down**: Press this button to display the next selection in UPS setting mode. ➢ **Confirm Selection and Exit Setting Mode:** Press this button to confirm the selection and exit setting mode when the LCD displays the last selection.
UP + DOWN	➢ **Enter Setting Mode**: Press and hold these buttons for 5 seconds to enter UPS setting mode.

3-2 Setup the UPS

Step 1: UPS Input Connection

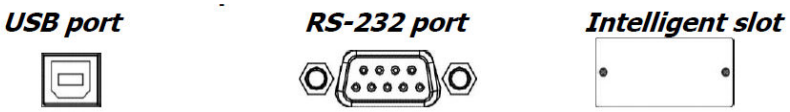
- Plug the UPS into a two-pole, three-wire, grounded receptacle only. Avoid using extension cords.
- **For 200/208/220/230/240 VAC models:** The power cord is supplied with the UPS package.

Step 2: UPS Output Connection

- **For socket-type outputs:** simply connect devices to the outlets.
- **For terminal-type inputs or outputs:** Follow these steps for the wiring configuration:
  a) Remove the small cover from the terminal block.
  b) Use AWG 14 or 2.1 mm² power cords for the 3 KVA models (200/208/220/230/240 VAC).
  c) After completing the wiring configuration, ensure that the wires are securely affixed.
  d) Replace the small cover on the rear panel.

Step 3: Communication Connection

- **Communication Port:**



To enable unattended UPS shutdown/start-up and status monitoring, connect one end of the communication cable to the USB/RS-232 port and the other end to the communication port of your PC. With the monitoring software installed, you can schedule UPS shutdown/start-up and monitor the UPS status through your PC.

The UPS is equipped with an intelligent slot that accommodates either an SNMP or Relay card, providing advanced communication and monitoring options.

NOTE: The USB port and RS-232 port cannot be used simultaneously.

Step 4: Turn On the UPS

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

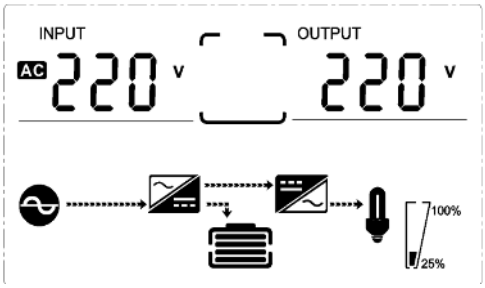
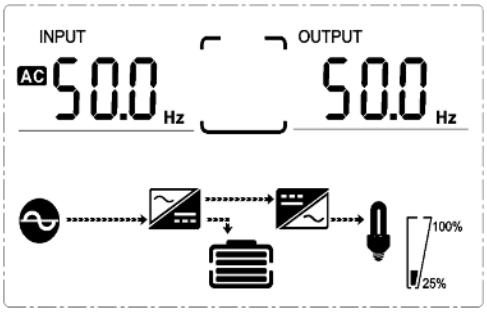
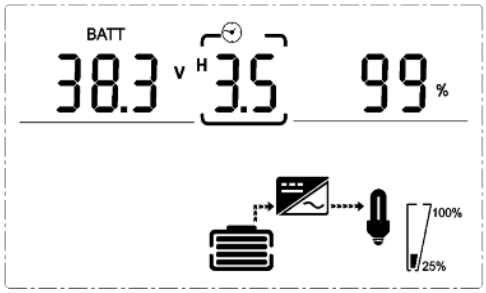
Note: The battery charges fully during the first five hours of normal operation. Do not expect full battery run capability during this initial charge period.

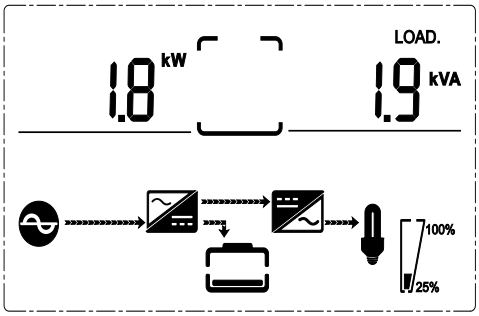
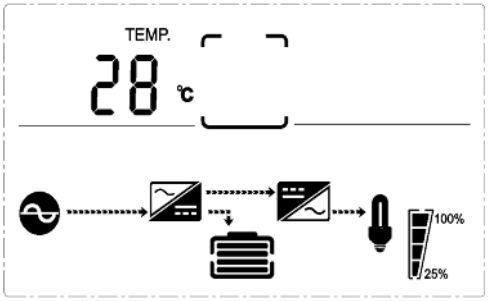
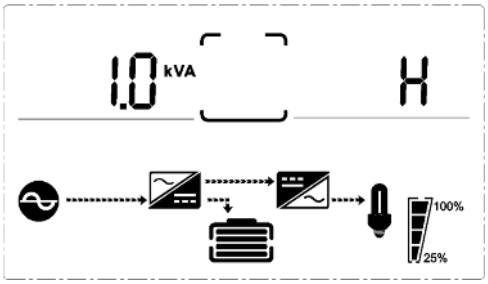
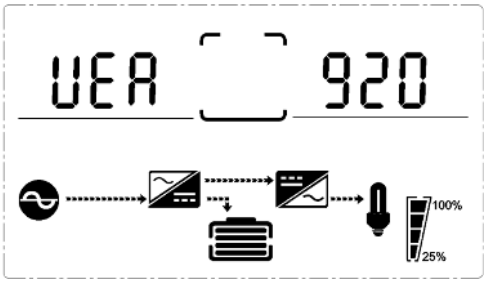
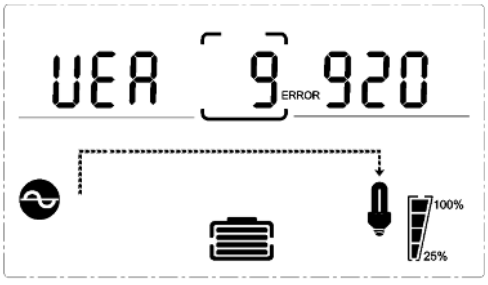
Step 5: Install Software

- Find the download link in the software installation guide included in the packaging box. Download the corresponding software package and install it.

3-3 LCD Display

- The LCD display offers 8 interfaces, providing various operational information and settings.

Item	Interface Description	Content Displayed
01	Input voltage& Output voltage	
02	Input frequency& Output frequency	
03	Battery voltage &Backup time& Battery capacity	

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)	

3-4 UPS Setting

The UPS offers several customizable settings accessible through its control panel. These settings can be adjusted while the UPS is operating in any mode, and they will take effect under specific conditions. Below is a summary of how to navigate and set the UPS configurations.

Setting Functions

- **Entry into Settings Mode:**

  To access the settings interface, press and hold the **Up** ▲ and **Down** ▼ buttons simultaneously for 5 seconds after powering on the UPS. This will take you to the settings page.

- **Navigating the Settings:**

  Use the following buttons to navigate through the settings:

- **Up** ▲: Move to the previous selection or setting.
- **Down** ▼: Move to the next selection or setting. This button is also used to confirm the selection when you're at the last option.

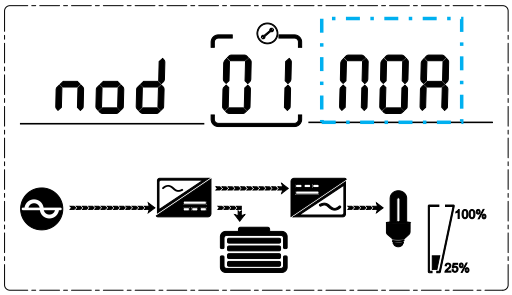
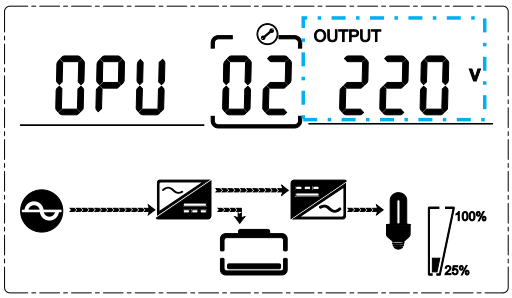
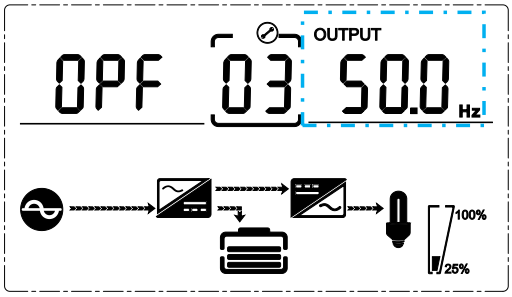
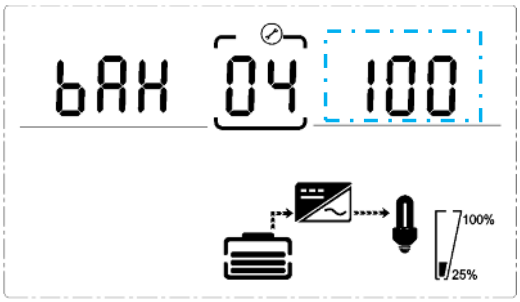
- **Confirming Settings:**

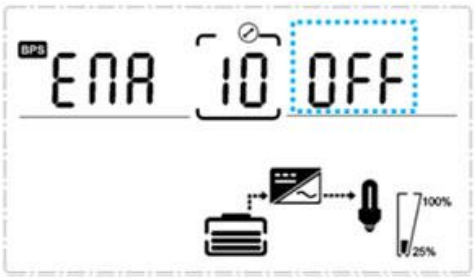
  Press the ON/Enter button to confirm your selection or changes to the settings.

- **Exiting Settings Mode:**

  To exit the settings mode without saving any changes, press the OFF/ESC button. If you want to exit after confirming a selection, use the Down ▼ button when at the last selection.

Note: Changes made in the settings will only take effect when the UPS meets specific operational conditions. Always ensure that you understand the impact of any settings you modify to maintain the integrity and functionality of the UPS.

Item	Settings	Content display
01	Mode setting Press Enter button to change the setting (ECO or NOR or CF 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 capacity setting Press Enter button to change the setting (Battery capacity range is 1-200Ah). Press UP button ▲ to select the previous setting. Press DOWN button ▼to select the next setting.	
05	Battery EOD voltage setting(Segment 1) Press Enter button to change the setting (1.75/1.84/1.92). Press UP button ▲ to select the previous setting. Press DOWN button ▼to select the next setting.	

06	Battery EOD voltage setting(Segment 2) Press Enter button to change the setting (1.60/1.70/1.75/1.80). Press UP button ▲ to select the previous setting. Press DOWN button ▼to select the next setting.	
07	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.	
08	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.	
09	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.	
10	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.	

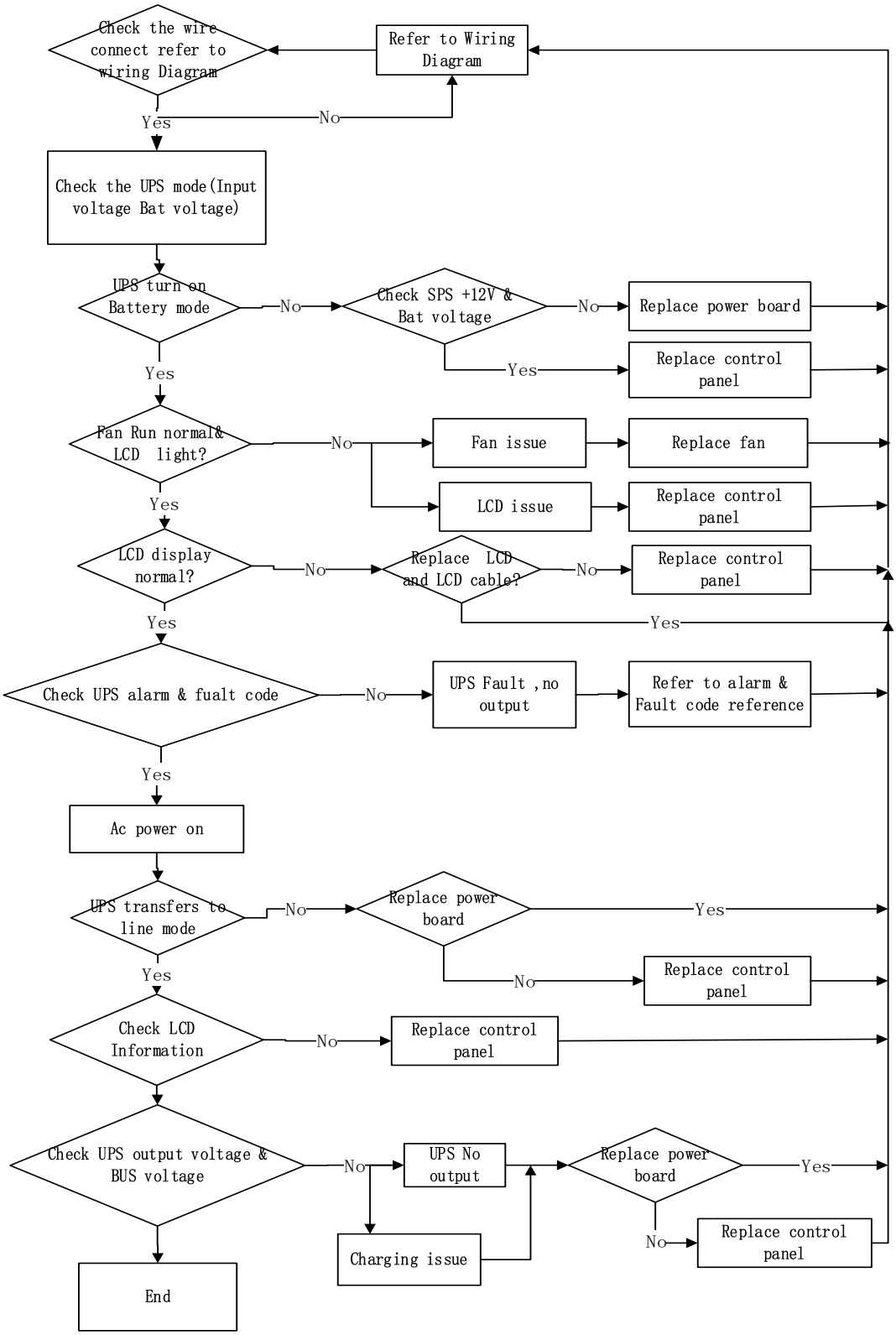
3-5 Alarm or Fault reference code

Event log	UPS Alarm Warning	Buzzer	LED
1	Rectifier Fault	Beep continuously	Fault LED lit
2	Inverter fault(Including Inverter bridge is shorted)	Beep continuously	Fault LED lit
9	Fan fault	Beep continuously	Fault LED lit
12	Self-test 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	Environment temperature Over Temperature	Twice per second	Fault LED blinking
20	Inverter model Over Temperature	Twice per second	Fault LED blinking
26	Battery over voltage	Twice per second	Fault LED blinking
27	Mains Input reverse	Once per second	Fault LED blinking
28	Bypass Input reverse	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 out of tracking range	None	BPS LED blinking
45	EPO Enable	Beep continuously	Fault LED lit

4. Troubleshooting

If the UPS system does not operate correctly, use the table below to identify potential issues and solutions.

Symptom	Possible Cause	Remedy
No indication and alarm even though the mains is normal.	AC input power is not connected well.	Check if the input power cord is firmly connected to the mains.
	AC input is connected to the UPS output.	Plug the AC input power cord into the AC input correctly.
Alarm code "33" and battery LED blinking.	External or internal battery is incorrectly connected.	Check if all batteries are connected well.
Alarm code "26" and battery LED blinking	Battery voltage is too high or charger is faulty.	Contact your dealer.
Alarm code "34" and battery LED blinking	Battery voltage is too low or charger is faulty.	Contact your dealer.
Alarm code "32" and INV or BYPASS LED blinking	UPS is overloaded	Remove excess loads from the UPS output.
Alarm code "27 & 28" and FAULT LED light	Mains input or bypass input reverse connection.	Check input L/N wiring for reverse connection.
Alarm code "29" and FAULT LED light	UPS shut down due to short circuit on the output.	Check output wiring and connected devices for short circuit status.
Alarm code "9" and FAULT LED light	Fan fault.	Contact your dealer.
Alarm code "01, 02, 15, 16, 17, 18"	Internal fault in the UPS.	Contact your dealer.
Battery backup time shorter than nominal value	Batteries are not fully charged.	Charge the batteries for at least 5 hours, then check capacity.
	Battery defect.	Contact your dealer.

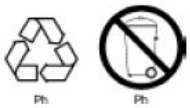


Trouble Shooting Chart

5. Storage and Maintenance

Operation

- The UPS system contains no user-serviceable parts.
- The batteries have a service life of approximately 3 to 5 years at an ambient temperature of 25°C. After this period, the batteries must be replaced. Contact your dealer for battery replacement recommendations.



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

Storage

- Before storing the UPS, charge it for 5 hours.
- Store the UPS covered, upright, and in a cool, dry location.
- Recharge the battery according to the storage temperature and frequency listed below:

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

Proper maintenance and storage will help ensure the long-term reliability of the UPS system.

6. Options

SNMP Card: Internal SNMP (Optional)

- Installation Steps:

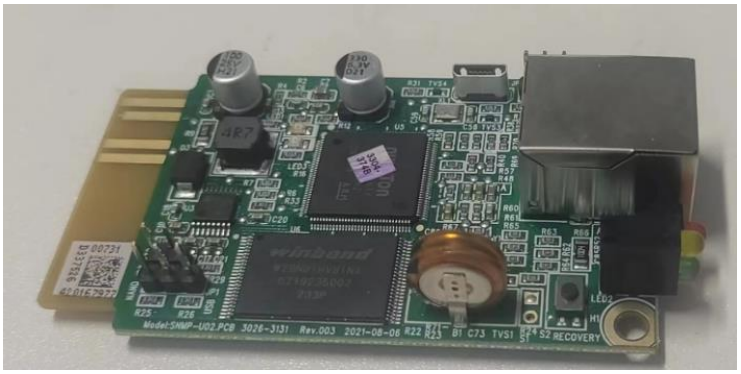
1 Loosen the two torque screws located on each side of the card slot.
2 Carefully insert the SNMP card into the slot.
3 Secure the card by tightening the screws.

The **KPM220** is a built-in network SNMP card that provides independent management capabilities for the UPS. It supports **SNMPv1/v2/v3** protocols and includes features such as:

- Email alarm notifications for UPS status changes or faults.
- Historical event logs to track UPS activity.

- Historical data storage for performance monitoring.

The SNMP card allows for advanced UPS monitoring and management over a network.



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

For specific operation and function descriptions refer to the KPM220 User Manual V2.2

Relay Card (Optional)

The **Mini Dry Contact Card** provides an interface for peripheral monitoring of the UPS system. It communicates the UPS's real-time status through contact signals and allows timely feedback to monitoring systems when abnormal situations arise, such as UPS failure, mains interruption, or bypass activation.

This card is installed in the **intelligent slot** of the UPS and is connected to peripheral monitoring devices via a **terminal board**. It includes **6 output ports** and **1 input port** for effective monitoring.

Pins Definition of Connecting Terminal on the Board

Relay Card Electrical Parameters

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) (Optional)

The Emergency Power-off (EPO) function is designed for situations where it is necessary to shut down the UPS and its load from a remote location. This feature can be used to shut down both the load and the UPS during emergencies, such as overheating. When the EPO is activated, the UPS will:

- Shut down the output: All power to the connected devices is immediately cut off.
- Shut down power converters: Stops all internal power conversion processes within the UPS.
- Remain on: The UPS will continue to stay powered, but in an alarm state to signal the fault condition.

EPO Connections

EPO Connections

- EPO Activation: Depending on the configuration, the UPS will either run or shut down when the EPO connector pins are either shorted or opened.
- To Restart: Reconnect (or re-open) the EPO connector pins and manually turn the UPS back on.
- Test EPO Function: It is recommended to test the EPO functionality before applying critical loads to the UPS to avoid accidental shutdowns.
- Connector Installation: Even if the EPO function is not needed, leave the EPO

connector in place on the EPO port to prevent accidental activation.

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 groups of outlets that can be controlled independently using power management software or via the UPS display. This feature provides the ability to prioritize power usage by shutting down non-critical loads while keeping essential equipment running during power outages. Each UPS typically comes with two load segments, which allows:

- **Orderly shutdown:** During an outage, you can shut down less critical devices to conserve battery power.
- **Selective startup:** When power returns, critical devices can be powered up first, followed by the rest of the equipment.

Load Segments (Optional)

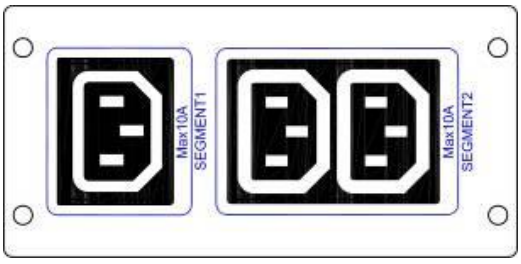
Load segments refer to groups of UPS output receptacles that can be controlled separately through power management software or the UPS display. These segments allow for the controlled shutdown and startup of equipment, which is particularly useful during power outages to conserve battery power.

Segment 1:

- Customizable Power Shedding: The battery voltage at which Segment 1 shuts down can be set using the UPS's LCD interface. This enables users to manage when to cut power to certain non-essential devices based on the battery's remaining charge.
- Reference: Check the Battery EOD (End of Discharge) voltage setting for Segment 1 through the UPS's LCD display to adjust this configuration.

Segment 2:

- Pre-set Power Shedding: Segment 2 automatically shuts down when the battery reaches the end of its discharge cycle (EOD). This setting is not customizable, but it ensures non-critical devices are powered off as the battery approaches full depletion, preserving energy for essential equipment.



7. Specification

MODEL		1KVA(S)	1KVA(H)	1.5KVA (S)	1.5KVA(H)	2KVA(S)	2KVA(H)	3KVA(S)	3KVA(H)
PHASE		Single phase with ground							
Capacity (VA/Watts)		1000VA/ 800W /900W/1000W		1500VA/ 1200W /1350W/1500W		2000VA / 1600W/1800W/2000W		3000VA / 2400W/2700W/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							
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		**0.8/0.9/1.0**							
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	Zero							
	Inverter <-> bypass	4ms(Typical)							
Efficiency(up to)		89%(AC mode)		89.5%(AC mode)		90%(AC mode)		91%(AC mode)	
BATTERY									
Battery Type		12V9AH	depends on the capacity of external	12V9AH	depends on the capacity of external	12V9AH	depends on the capacity of external	12V9AH	depends on the capacity of external

			batteries		batteries		batteries				batteries	
Numbers		2	2	3	3	3	4	4	6	6	6	8
Backup time		Long run unit depends on the capacity of external batteries										
Typical recharge time(standard model)		4 hours recover to 90% capacity (typical)										
Charging voltage		27.4 ±1%		41.0 ±1%			54.7±1%		82.1 ±1%			109.4±1%
Charge current		1/2A	6/12A	1/2A	6/12A		1/2A	6/12A		1/2A	6/12A	
SYSTEM FEATURES												
Overload	Line Mode	105%~125%: UPS transfer to bypass after 1minute when the utility is normal 125%~130%: UPS transfer to bypass after 30 seconds when the utility is normal >130%:UPS transfer to bypass immediately when the utility is normal										
	Batt. Mode	105%~125%:UPS after 1minute shut down; 125%~130%: UPS after 10seconds shut down; >130%: UPS immediately 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										
Communication interface		USB(or RS232), SNMP card(optional), Relay card (optional)										
ENVIRONMENTAL												
Operating temperature		0℃～40℃										
Storage temperature		-25℃～55℃										
Humidity range		20-90 % RH @ 0- 40°C (non-condensing)										
Altitude		< 1500m										
Noise level		Less than 55dBA at 1 Meter										
PHYSICAL												
Dimension W×D×H (mm)		440*325*86.5		440*460*86.5	440*600*86.5		440*460*86.5	440*600*86.5				
Net Weight (kg)		11.3	5.6	16.5	8.1		19.5	8.5	26.2	8.8		
STANDARDS												
Safety		IEC/EN62040-1,IEC/EN62477-1										
EMC		IEC/EN62040-2,IEC61000-4-2,IEC61000-4-3,IEC61000-4-4, IEC61000-4-5,IEC61000-4-6,IEC61000-4-8										

* Derate to 80% of capacity when the output voltage is adjusted to200/208VAC

** 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