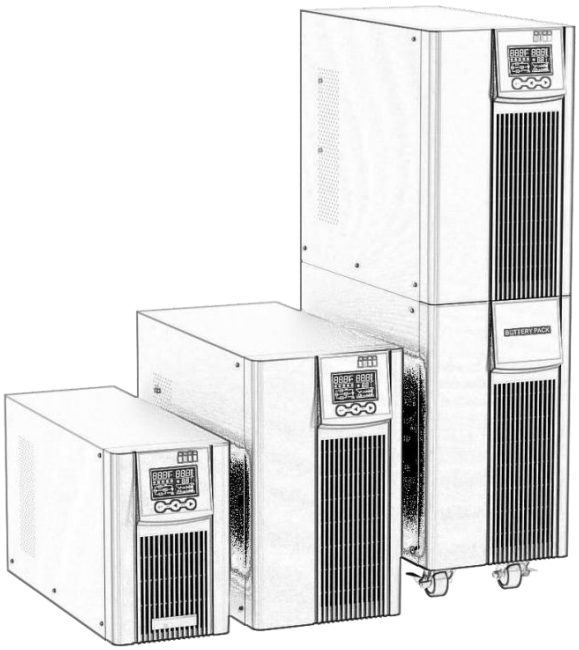
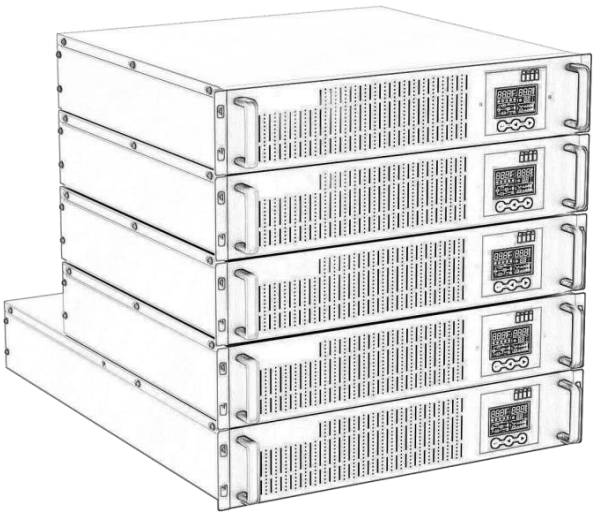
PowerInverter®
Líderes en transformaciones de energía

HIGH FREQUENCY ONLINE UPS

USER MANUAL





1KVA/2KVA/3KVA/6KVA/10KVA

PF 1.0

www.powerinverter.cl

Table of Contents

CHAPTER 1 SAFETY INSTRUCTIONS

1.1 About This Manual

Purpose

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.

Scope

This manual provides safety and installation guidelines as well as information on wiring.

1.2 Transportation

Transport the unit only in suitable packaging to protect it from jolts and shocks. The UPS must be kept upright at all times and handled with care.

1.3 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.

1.4 Installation

- Do not connect appliances or devices which would overload the UPS system (e.g. laser printers) to the UPS output sockets or terminals.
- 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 can 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.
- 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.

1.5 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 ◄ + ► button to disconnect the mains.
- Prevent no fluids or other foreign objects from inside of the UPS system.

1.6 Maintenance

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.

1.7 Deenergizing Safety

The UPS contains internal batteries and may present a shock hazard even when disconnected from branch circuit(mains). Before installing or servicing the equipment check that the:

- Input circuit breaker in the OFF position.
- Internal UPS batteries are removed.

1.8 Standards

*** Safety**	
IEC/EN 62040-1	
*** EMI**	
Conducted Emission..... :IEC/EN 62040-2	Category C3
Radiated Emission.....:IEC/EN 62040-2	Category C3
***EMS**	
ESD..... :IEC/EN 61000-4-2	Level 4
RS .....:IEC/EN 61000-4-3	Level 3
EFT .....:IEC/EN 61000-4-4	Level 4
SURGE.....:IEC/EN 61000-4-5	Level 4
CS ..... :IEC/EN 61000-4-6	Level 3
Power-frequency Magnetic field..... :IEC/EN 61000-4-8	Level 4
Low Frequency Signals.....:IEC/EN 61000-2-2	
Warning: This is a product for commercial and industrial application in the second environment-installation restrictions or additional measures may be needed to prevent disturbances.	

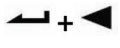
CHAPTER 2 SYMBOLS DESCRIPTION

2.1 General Introduction

This series UPS, available in 1kVA, 2 kVA, 3 kVA, 6 kVA and 10 kVA, is an advanced online and double-conversion UPS providing reliable and consistent pure sine-wave quality power to your equipment. It supports personal computers, networks, servers, telecommunication equipment and a variety of other facilities. It provides protection for electronic equipment from utility power blackouts,brownouts, sags, surges, small utility power fluctuations and large disturbances. It also provides battery backup power for connected equipment until utility power returns to acceptable levels or the batteries are fully discharged.

Each model has internal batteries and can connect to the external battery pack (optional). The unit provides output power factor up to 1.0, produces greater smoothly at all times.

2.2 Symbols Information

ICON	Information	ICON	Information
	Pay attention		Ground
	High voltage danger		Alarm cut off
	Turn on UPS		Overload
	Turn off UPS		Battery inspection
	Function button		Repeat cycle
	Page UP / Down		Do not place it with the sundries
	Alternating current		Battery
	Direct current		

CHAPTER 3 INSTALLATION AND SETUP

There are two different types of online UPS: short-backup and long-run models. Please refer to the following model table.

Model	Type	Model	Type
1K	Long-run Online UPS	1KB	Short-backup Online UPS
2K		2KB	
3K		3KB	
6K		6KB	
10K		10KB	

3.1 Unpacking and Inspection

Unpack the package and check the package contents. The shipping package contains:

- One UPS
- One user manual
- One battery cable (only for long-run models)

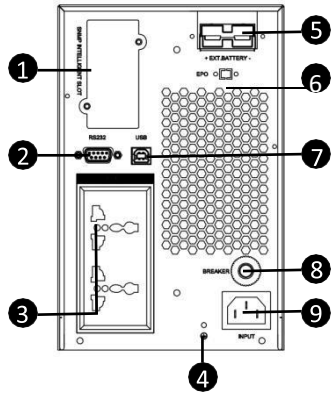
During UPS transportation, some unpredictable situations might occur. It is recommended that you inspect the UPS's exterior packaging. If you notice any damage, please immediately contact the dealer from whom you purchased the unit.

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.

3.2 Product Rear View

3.2.1 Rear for Tower Type

1K



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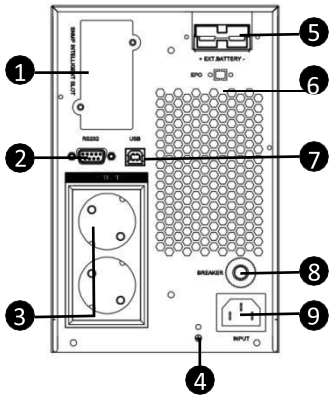

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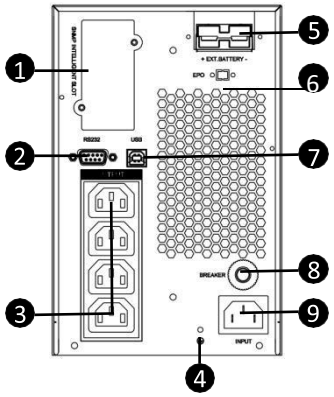

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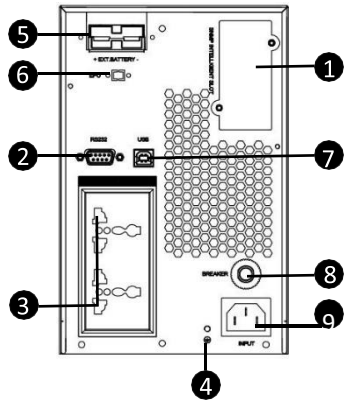

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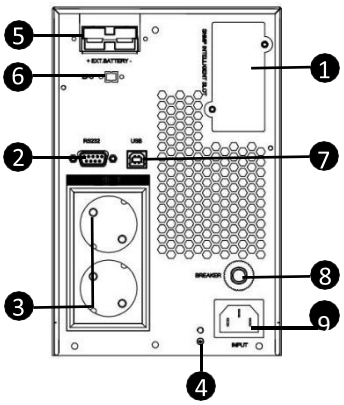

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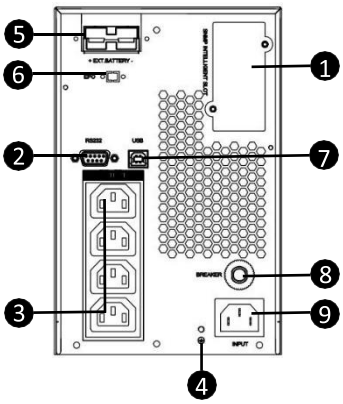

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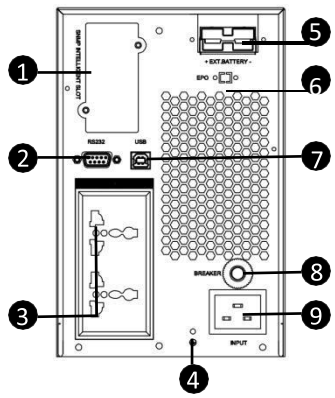

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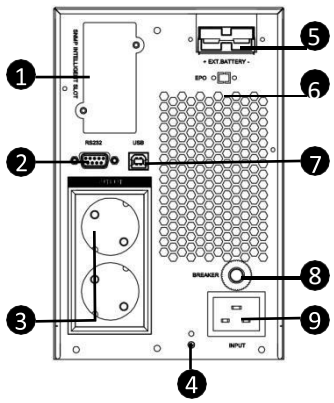

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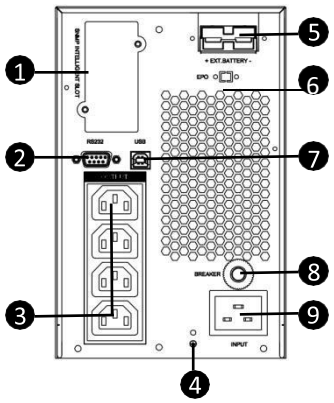

IEC Type

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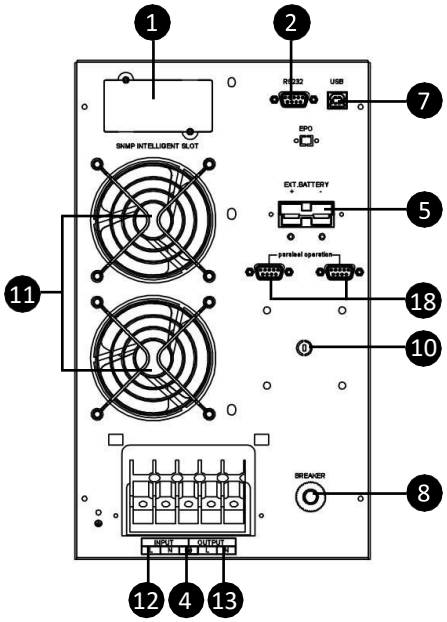

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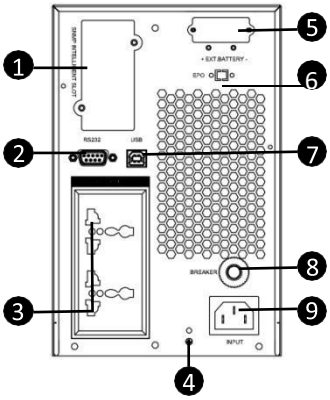

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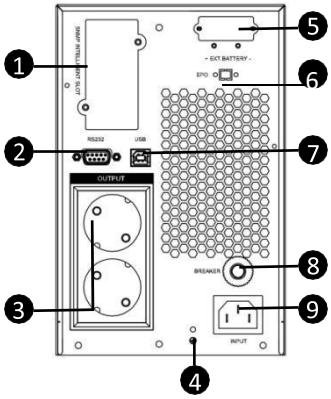

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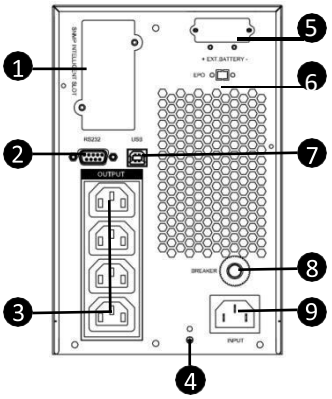

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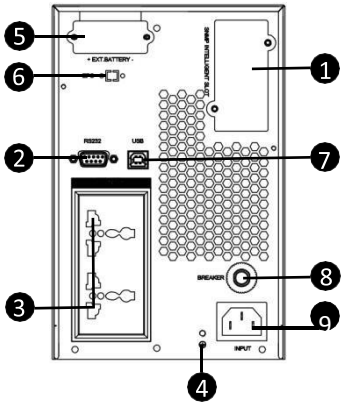

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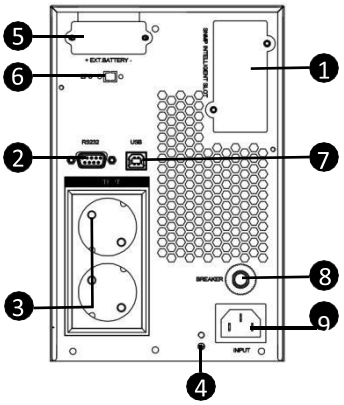

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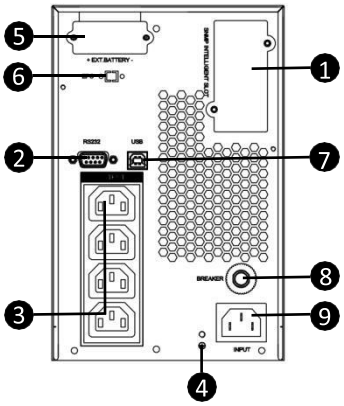

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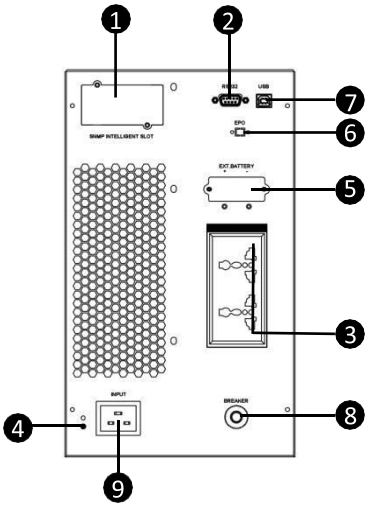

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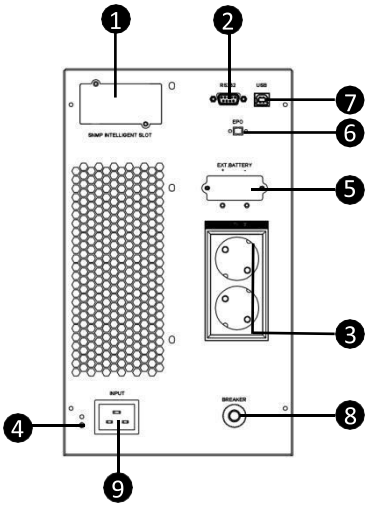

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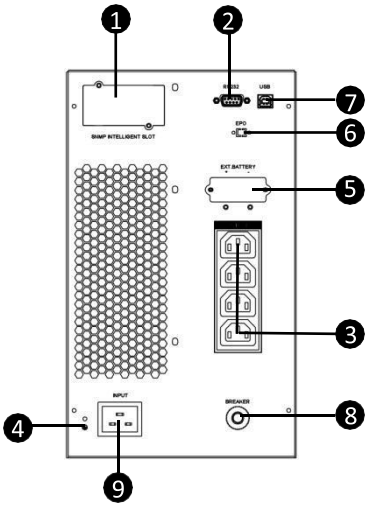

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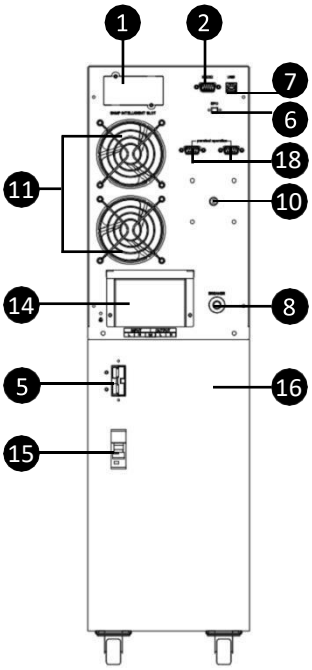
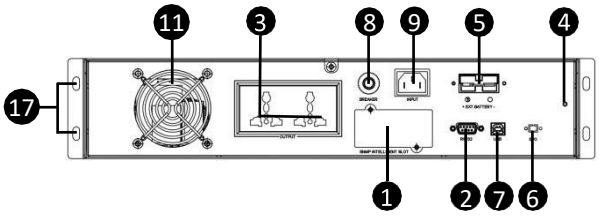


3.2.2 Rear for Rack Mount

1K



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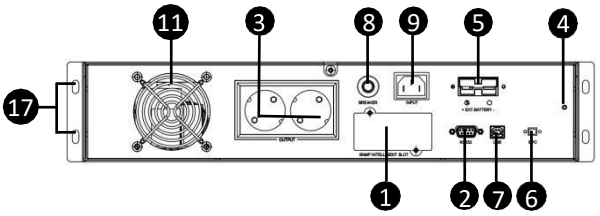

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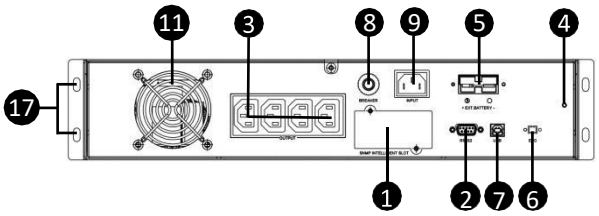

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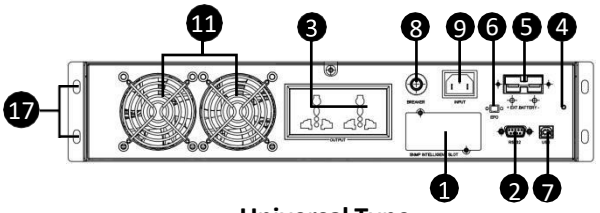

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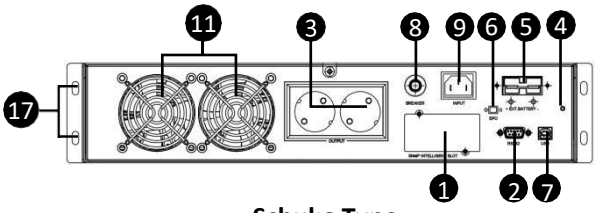

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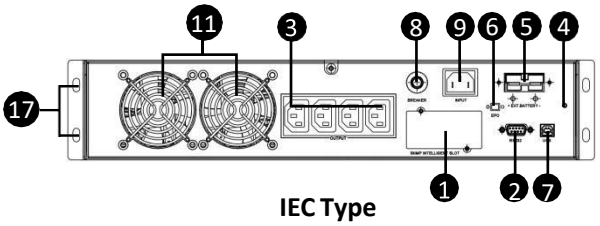

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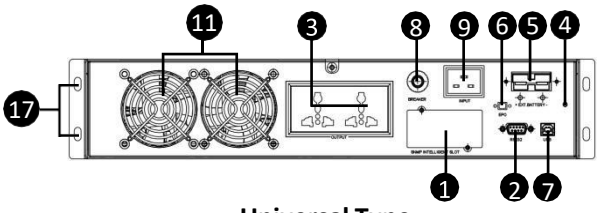

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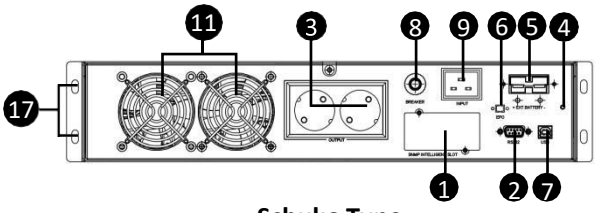

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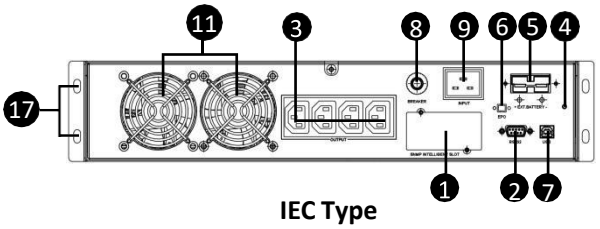

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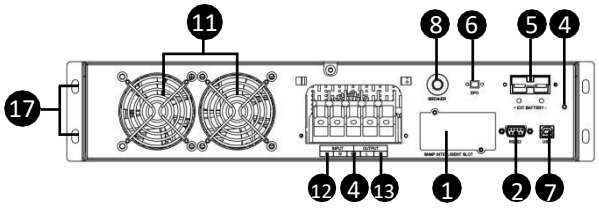

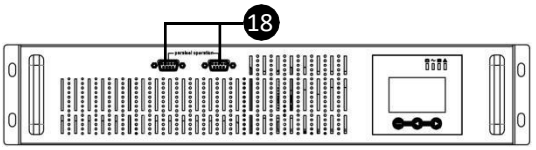

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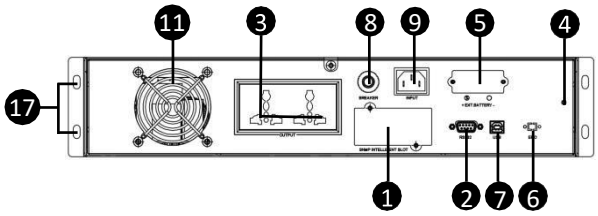

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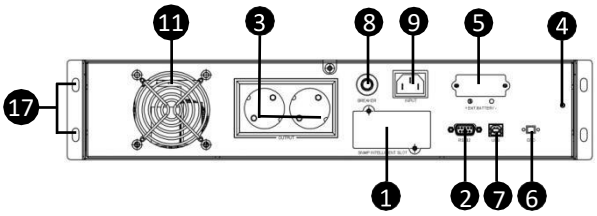

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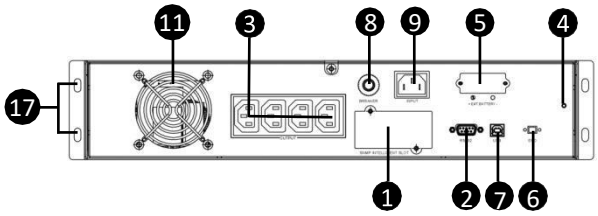

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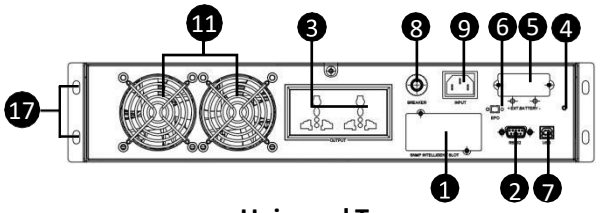

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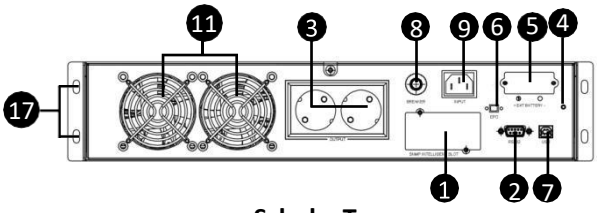

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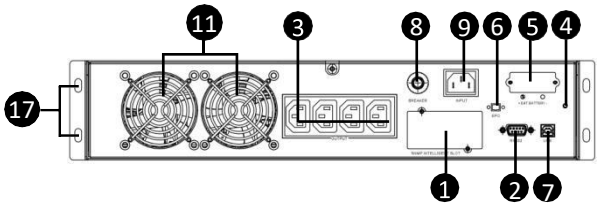

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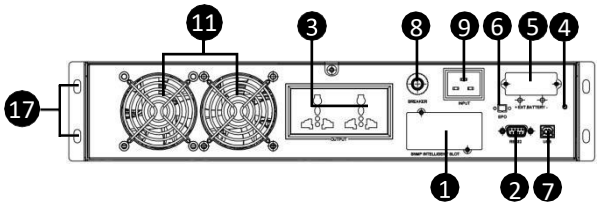

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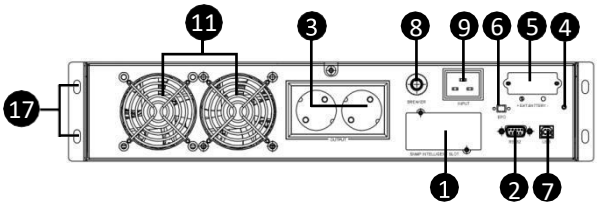

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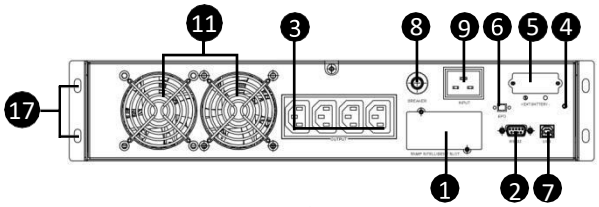
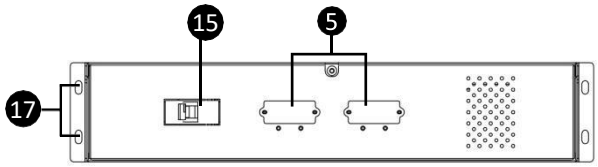
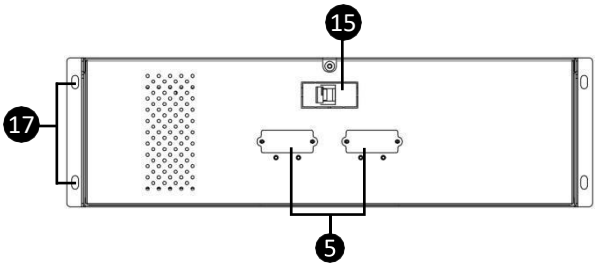


IEC Type

3.2.3 Rack Mount Battery Pack



2U Battery Pack

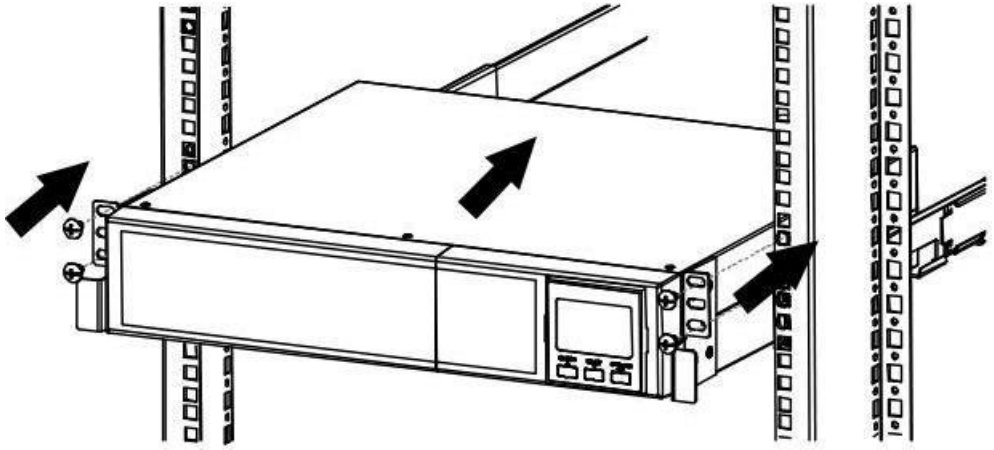


3U Battery Pack

1. Smart slot
2. RS-232 port
3. Output receptacles
4. Ground terminal
5. External battery connector (only forlong-run models, short backup models are option)
6. Emergency power off connector (option)
7. USB port
8. Input circuit breaker
9. AC Input socket
10. Maintenance bypass switch (option)
11. Cooling fan
12. AC Input terminal
13. AC Output terminal
14. AC Input/Output terminal
15. Battery pack output circuit breaker
16. Battery bank
17. Rack mount hole
18. Parallel operation port (option)

3.3 Rack Mount UPS Installation

This UPS can be mounted in the 19”rack chassis. Please follow below steps to position this UPS.



3.4 Setup the UPS

Before installing the UPS, please read below to select proper location to install UPS.

- UPS should be placed on the flat and clean surface. Place it in an area away from vibration, dust, humidity, high temperature, flammable liquids, gases, corrosive and conductive contaminants. Install the UPS indoors in a clean environment, where it is away from window and door. Maintain minimum clearance of 100mm in the bottom of the UPS to avoid dust and high temperature.
- Maintain an ambient temperature range of 0ºC to 40ºC for UPS optimal operation. For every 5ºC above 40ºC, the UPS will derate 10% of nominal capacity at full load.
- It’s required to maintain maximum altitude of 1000m to keep UPS normal operation at full load UPS. If it’s used in high altitude area, please reduce connected load.
- It’s equipped with fan for cooling. Therefore, place the UPS in a well-ventilated area. It’s required to maintain minimum clearance of 100mmin the front of the UPS and 300mm in the back and two sides of the UPS for heat dissipation and easy-maintenance.
- When connecting external battery bank or packs, please be sure to connect polarity correctly. Connect positive pole of battery bank or pack to positive pole of external battery connector in UPS and negative pole of battery bank or pack to negative pole of external battery connector in UPS. Polarity misconnection will cause UPS internal fault. It’s recommended to add one breaker between positive pole of battery pack and positive pole of external battery connector in UPS to prevent damage to battery bank or packs from internal fault.

Prepare wires based on the following table:

Model	Wiring spec (AWG)			
	Input	Output	Battery	Ground
6KB	10	10	-	12
10KB	8	8	-	8
6K	10	10	10	12
10K	8	8	8	8

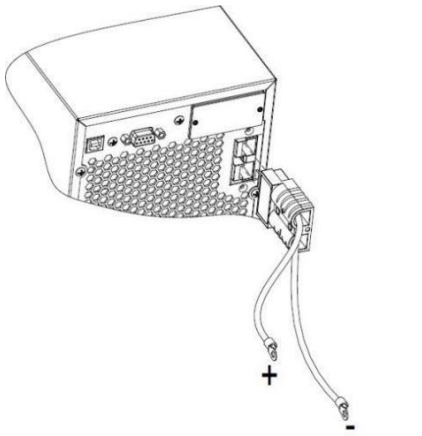
*** NOTE 1:** It is recommended to use suitable wire in above table or thicker for safety and efficiency.

*** NOTE 2:** The selections for color of wires should be followed by the local electrical laws and regulations.

STEP 1: EXTERNAL BATTERY CONNECTION

If UPS is long-run model, please connect external batteries as below chart.

- **Tower type UPS external battery connection**



- **Rack mount UPS external battery pack connection**

Note:

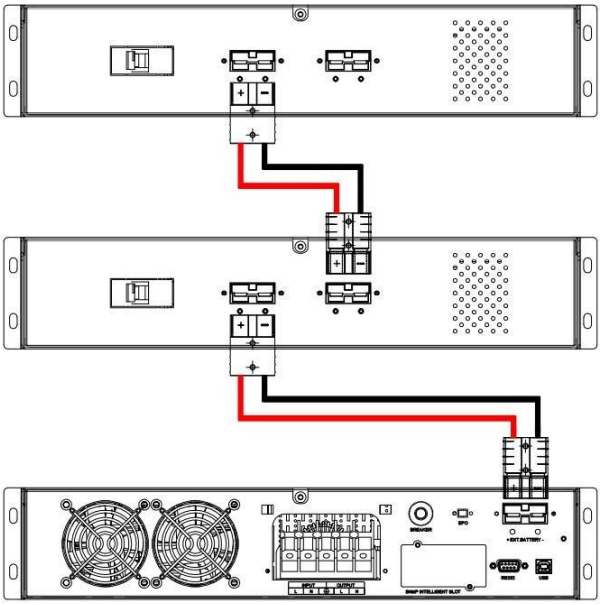
Before connecting the external battery pack (optional) to the UPS, check whether the rating voltage of the battery pack is suitable for the UPS.

(1) Set the battery pack's DC breaker to the OFF position.

(2) Remove the cover of the external battery pack connector located on the rear side of the UPS.

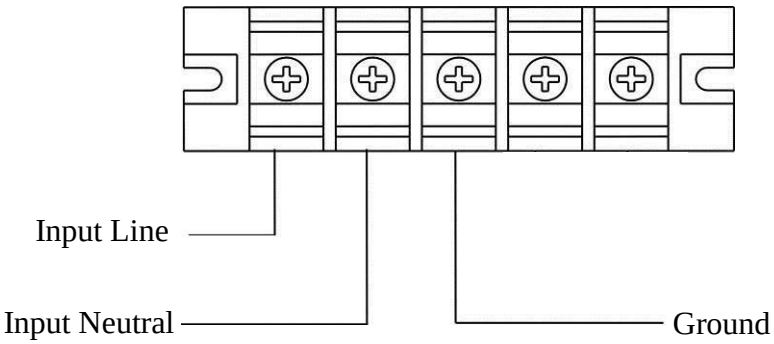
(3) Connect the battery cable attached to the external battery pack (optional) to the UPS's battery pack connector.

(4) Set the battery pack's circuit breaker to the ON position.



STEP 2: UPS INPUT CONNECTION

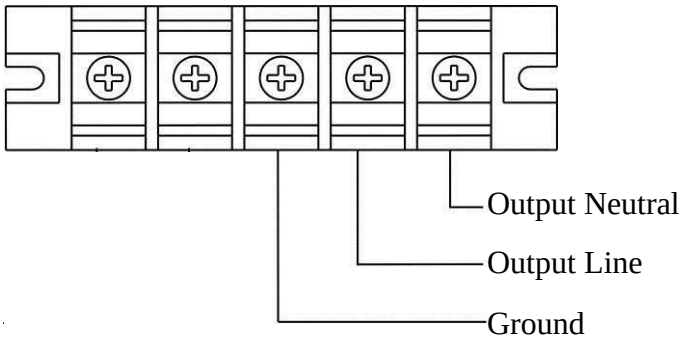
- For Socket - Plug the UPS into a two-pole, three-wire and grounded receptacle only. Avoid using extension cords.
- For terminal connection - Remove the terminal block cover on the rear panel of UPS. Then connect the wires according to the following terminal block diagrams: (Connect the earth wire first when making wire connection.)



STEP 3: UPS OUTPUT CONNECTION

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

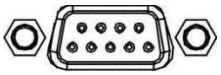
For terminal-type input or outputs, connection as below:



STEP 4: COMMUNICATION CONNECTION

Communication port:

USB port



RS-232 port

Intelligent slot

USB Port

After connect UPS and computer by USB cable,you can use computer monitor UPS status by remote control.

RS-232 Port

RS-232 interface is for the monitoring software and firmware update. UPS connect to monitor device with RS-232 cable.

- One end of RS-232 cable connects to computer RS-232 port.
- One end of RS-232 cable connects to UPS RS-232 port.

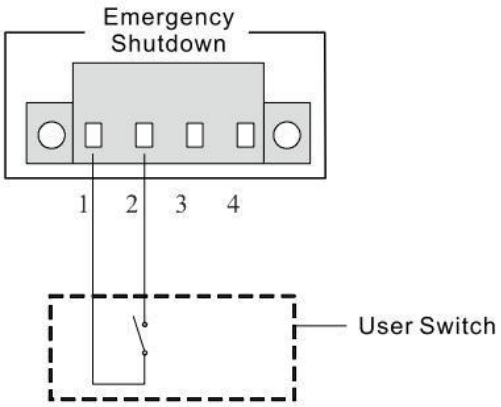
Intelligent Slot

The UPS is equipped with intelligent slot perfect for either SNMP or AS400 card. It allows the UPS communicate in a variety networking environment and with different types of devices. Before installation, UPS must be turned off.

EPO (Emergency Power OFF)

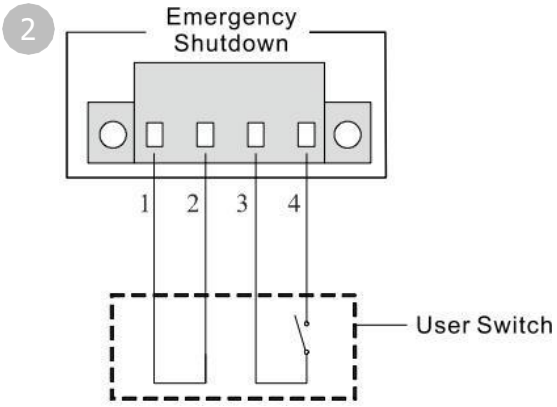
It is option for 1KVA/2KVA/3KVA, and standard for 6KVA/10KVA. It is a green connector lays on the UPS rear panel, we can shutdown UPS via remove EPO connector in the event of emergency. The EPO wire connect diagram see below.

1



Pin 1 closed to pin 2, UPS shutdown immediately. Pin 3 and pin 4 float.

2



Pin 1 and pin 2 are always connected. When pin 3 and pin 4 disconnected, UPS shutdown immediately.

STEP 5: TURN ON UPS

Press + 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 6: INSTALL SOFTWARE

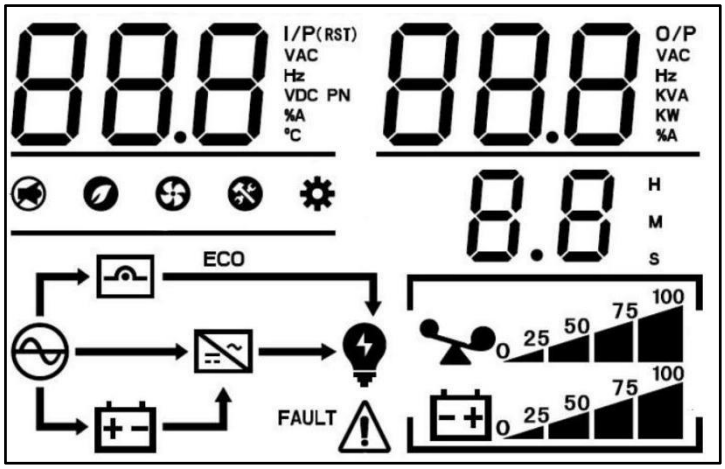
For optimal computer system protection, install UPS monitoring software to fully configure UPS shutdown. You may insert provided CD into CD-ROM to install the monitoring software. If not, please contact your local service to offer the software.

CHAPTER 4 OPERATION

4.1 Button Operation

Button	Function
↵ + ◄	**Turn on the UPS:** Press this combined button for at least 2 seconds to turn on the UPS.
◄ + ►	**Turn off the UPS:** Press this combined button at least 2 seconds to turn off the UPS.
↵ + ►	This combined button has two functions. Please refer to the following for detailed information. **1. Battery test:** Press this button at least 2 seconds to execute battery test in online mode. **2. Buzzer ON/OFF:** When the buzzer is on in battery mode/fault mode/battery test mode, press the button for 1 second to turn off the buzzer. When the buzzer is off, press the button for 1 second to turn on the buzzer.
↵	This button has two functions. Please refer to the following for detailed information. **1. Function setting:** Press this button at least 2 seconds to enter the function setting page, after confirming the setting, press the button again for 2 seconds to back the main page. **2. Confirm:** In setup mode, press the button for 0.1 second above to enter the item that you want to set up or confirm your parameter setup.
◄ , ►	**Page up/down:** Press the button for 0.2 seconds to go to the previous/next display or to increase/decrease number.

4.2 LCD Display Icons



ICON	Function
	When UPS in overload, the icon will be flashing.
	Indicates the load level by 0-25%, 26-50%, 51-75%, and 76-100%.
	Indicates battery capacity by 0-25%, 26-50%, 51-75%, and 76-100%.
	Indicates the UPS connects to the mains.
	It will flash when battery capacity low or disconnect battery.
	Indicates the inverter circuit status.
	Indicates the fan status. In normal, the fan icon is on. It will flash in abnormal.
	Indicates the buzzer is muted or not. In normal, this icon is off. It will display in battery mode or fault mode.
	Indicates UPS ECO is working.
	When the maintenance switch is on, this icon is lighting on.
	Indicates that UPS enters setting mode.
H M S	Indicates the remaining backup time in numbers. H: hours, M: minute, S: second

	Indicates the input voltage, frequency, battery voltage, current or temperature. I/P: input, VAC: input voltage, Hz: frequency, VDC: battery voltage, %A: input current, ℃: temperature
	Indicates the output voltage, frequency, capacity or current. O/P: output, VAC: output voltage, Hz:frequency, KVA: output capacity in KVA, KW: output capacity in KW, %A: output current
ECO	Indicates the ECO mode is enabled.
FAULT	Indicates fault and error information.
	Indicates warning and error information.

4.3 LED Indicators

There are 4 LED on front panel to show the UPS working status:

ICON	Name	Color	Description
	INVERTER	GREEN	ON: UPS is working in inverter mode. OFF: UPS works in non-inverter mode.
	BATTERY	YELLOW	ON: UPS is working in battery mode or battery test mode. OFF: The UPS works neither in battery mode nor in battery test mode. Flashing: Low battery voltage alarm.
	BYPASS	YELLOW	ON: UPS is working in bypass mode or ECO mode. OFF: The UPS works neither in bypass mode nor in ECO mode. Flashing: The UPS is in standby mode, the inverter is not turned on, and the bypass is abnormal.
	FAULT	RED	ON: UPS failure. OFF: UPS works normally. Flashing: UPS alarm.

4.3 Audio Alarm

Battery Mode	Sounding every second
Low Battery	Sounding every second
Overload	Sounding every second
Fault	Continuously sounding
Inverter is not turned on	Sounding every 2 minutes
Other alarms	Sounding every 4 seconds

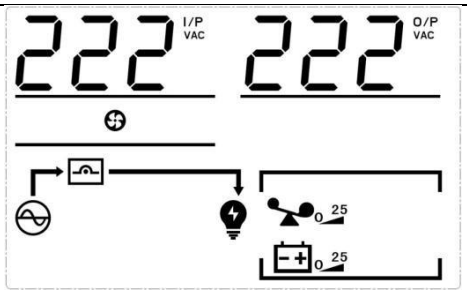
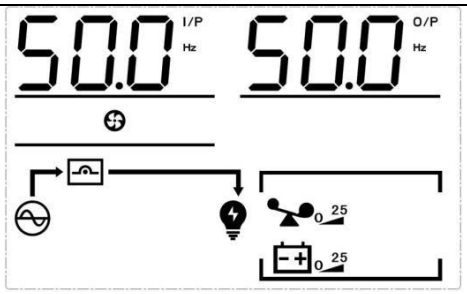
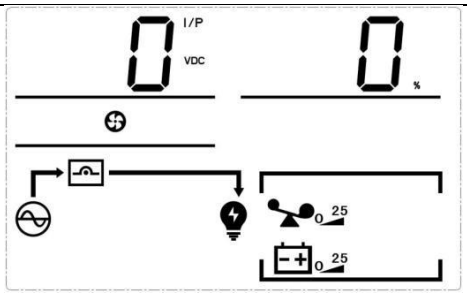
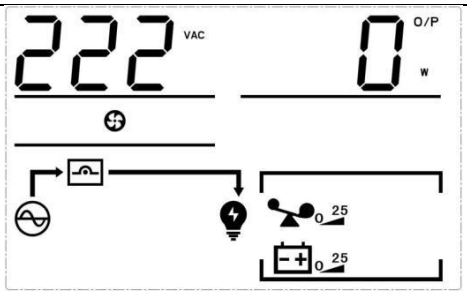
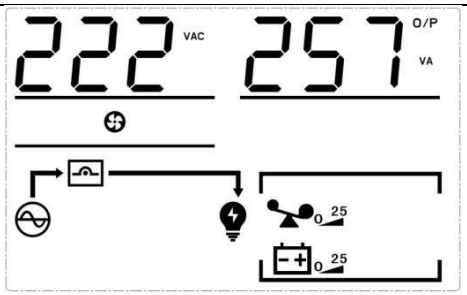
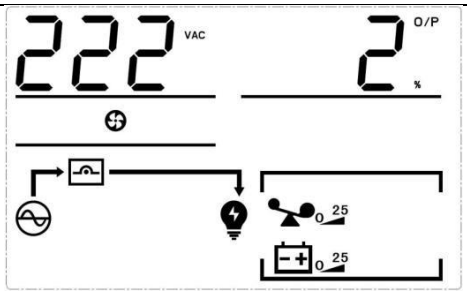
4.4 UPS Working Status

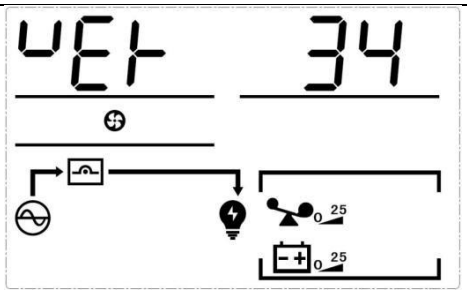
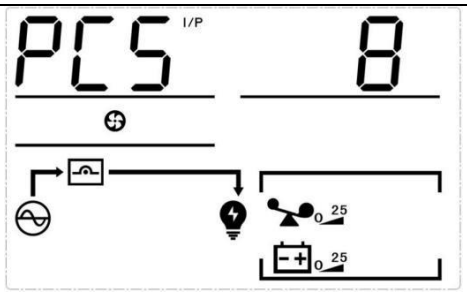
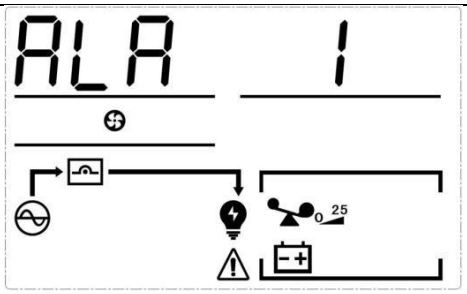
Working status	**LED indicator**			
	INV	**BATTERY**	**BYPASS**	**FAULT**
UPS Startup	★	★	★	★
Bypass mode	○	○	●	○
AC mode	●	○	○	○
Battery mode	○	●	○	○
Battery self-test	★	★	★	★
ECO mode	●	○	●	○
Fault	○	○	○	●

Note: ● means LED is lighting, ★ means LED is flashing, ○ means LED is faded.

4.5 LCD Display Information

The LCD display information will be switched in turns by pressing ◄ or ► button. The selectable information is switched as below: UPS input/output voltage, UPS input/output frequency, battery voltage and capacity(%), UPS output voltage and power (W), UPS output voltage and power (VA), UPS output voltage and load (%), UPS software version, battery number.

ITEM	LCD display
UPS input/output voltage	
UPS input/output frequency	
Battery voltage and capacity(%)	
UPS output voltage and power (W)	
UPS output voltage and capacity (VA)	
UPS output voltage and load (%)	

ITEM	LCD display
UPS software version	
Battery number	
Alarm information	

4.6 UPS Operation

4.6.1 Turn on the UPS with utility power supply

4.6.1.1 After power supply is connected correctly, connect the breaker of the battery bank. Then, set the input breaker at "ON" position. At this time, the UPS supplies power to the loads via the bypass. The UPS is operating in Bypass mode.

NOTE:

When UPS is in Bypass mode, the output voltage will directly power from utility after you switch on the input breaker. In Bypass mode, the load is not protected by UPS.

4.6.1.2 Press and hold the ↵ + ◀ button for 2s to turn on the UPS and the buzzer will beep once.

4.6.1.3 A few seconds later, the UPS will enter to AC mode. If the utility power is abnormal, the UPS will operate in Battery mode without interruption.

NOTE:

When the UPS is running out battery, it will shut down automatically at Battery mode. When the utility power is restored, the UPS will auto restart in AC mode.

4.6.2 Turn on the UPS without utility power supply

4.6.2.1 Make sure that the breaker of the battery bank is at "ON" position.

4.6.2.2 Press and hold the ↵ + ◀ button for 2s to turn on the UPS, and the buzzer will beep once.

4.6.2.3 A few seconds later, the UPS will be turned on and enter to Battery mode.

4.6.3 Connect devices to UPS

After the UPS is turned on, you can connect devices to the UPS.

4.6.3.1 Switch on the devices one by one and it will display total load level in LCD panel.

4.6.3.2 If it is necessary to connect the inductive loads such as a printer, the in-rush current should be calculated carefully to see if it meets the capacity of the UPS, because the power consumption of this kind of loads is too big.

4.6.3.3 If the UPS is overload, the buzzer will beep every second.

4.6.3.4 When the UPS is overload, please remove some loads immediately. It is recommended to have the total loads connected to the UPS less than 80% of its nominal power capacity to prevent overload for system safety.

4.6.3.5 If the overload time is over acceptable time listed in spec at AC mode, the UPS will automatically transfer to Bypass mode. After the overload is removed, it will return to AC mode. If the overload occurs 3 times in half hour, the UPS will be locked in Bypass mode. UPS can transfer to Line mode only by manual restart. At this time, if bypass is enabled, the UPS will power to the load via bypass. If bypass function is disabled or the input power is not within bypass acceptable range, it will cut off output directly.

4.6.4 Charge the batteries

4.6.4.1 After the UPS is connected to the utility power, the charger will charge the batteries

automatically except in Battery mode or during battery self-test.

4.6.4.2 It's suggested to charge batteries at least 10 hours before use. Otherwise, the backup time may be shorter than expected time.

4.6.4.3 The charging current can be changed from 1A to 12A for long run model via LCD or software. Please make sure that the charging current is suitable to battery specification.

4.6.5 Battery mode operation

4.6.5.1 When the UPS is in Battery mode, the buzzer will beep according to different battery capacity. If the battery capacity is more than 25%, the buzzer will beep once every 4 seconds. If the battery voltage drops to the alarm level, the buzzer will beep quickly (once every sec) to remind users that the battery is at low level and the UPS will shut down automatically soon. Users could switch off some non-critical loads to disable the shutdown alarm and prolong the backup time. If there is no more loadto be switched off at that time, you have to shut down all loads as soon as possible to protect the devices or save data. Otherwise, there is a risk of data loss or power failure.

4.6.5.2 In Battery mode, if buzzer sound annoys, users can press the ↵ + ► button to mute the buzzer.

4.6.5.3 The backup time of the long-run model depends on the external battery capacity.

4.6.5.4 The backup time may vary from different environment temperature and load type.

4.6.6 Turn off the UPS with utility power supply in AC mode

4.6.6.1 Turn off the inverter of the UPS by pressing ◄ + ► button for at least 1s, and then the buzzer will beep once. The UPS will turn into Bypass mode.

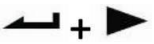
4.6.6.2 In Bypass mode, output voltage of the UPS is still present. In order to cut off the output, switch off the input breaker. A few seconds later, there is no display shown on the LCD panel and UPS is complete off.

4.6.7 Turn off the UPS without utility power supply

4.6.7.1 Turn off the UPS by pressing the ◄ + ► button for at least 1s, and then the buzzer will beep once.

4.6.7.2 Then UPS will cut off power to output and there is no display shown on the display panel.

4.6.8 Mute the buzzer

4.6.8.1 To mute the buzzer, please press the  button for at least 2s. If you press it again after the buzzer is muted, the buzzer will beep again.

4.6.8.2 Some warning alarms can't be muted unless the error is fixed.

4.6.9 Operation in warning status

4.6.9.1 When Fault LED flashes and the buzzer beeps once every second, it means that there are some problems for UPS operation. Users can get the fault code from LCD panel. Please check the trouble shooting table in chapter 5 for details.

4.6.9.2 Some warning alarms can't be muted unless the error is fixed.

4.6.10 Operation in Fault mode

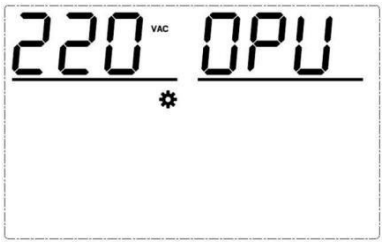
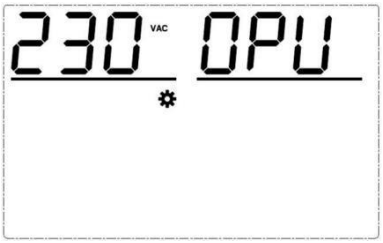
4.6.10.1 When Fault LED illuminates and the buzzer beeps continuously, it means that there is a fatal error in the UPS. Users can get the fault code from display panel. Please check the trouble shooting table in chapter 5 for details.

4.6.10.2 Please check the loads, wiring, ventilation, utility, battery and so on after the fault occurs. Don't try to turn on the UPS again before solving the problems. If the problems can't be fixed, please contact the distributor or support centre immediately.

4.6.10.3 For emergency case, please cut off the connection from utility, external battery and output immediately to avoid more risk or danger.

4.7 UPS Setting

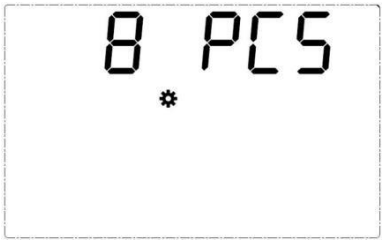
4.7.1 Output voltage setting

Interface	Setting
	Enter the function setting page, turn to output voltage setting page[OPU], you may choose the following output voltage: 208: presents output voltage is 208Vac 220: presents output voltage is 220Vac (Default) 230: presents output voltage is 230Vac 240: presents output voltage is 240Vac
	Set output voltage to 230VAC 

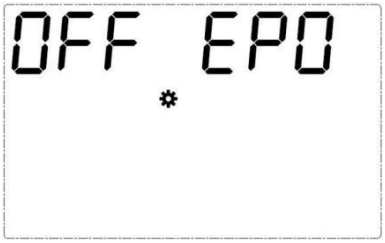
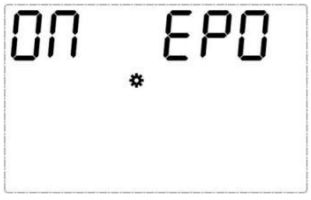
4.7.2 Expert mode settings (EP)

Interface	Setting
	• If the expert mode (EP) is set to ON, the setting is including battery number setting (PCS), emergency power off setting (EPO), battery end of discharge voltage setting (EOd), ECO setting (ECO), and battery charging current setting (CHG). • Expert Mode is OFF by default. Once set to ON, the UPS should be powering on again to take effect.
	Set expert mode (EP) to ON 

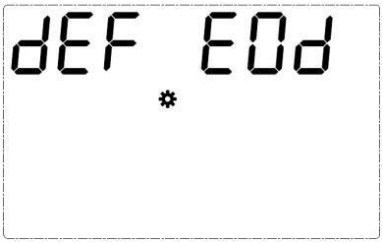
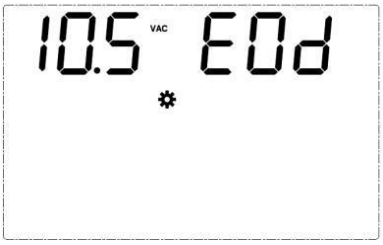
4.7.3 Battery number setting (PCS)

Interface	Setting
	When EP is ON, turn to battery number setting page[PCS], it's required password to enter page(default password: 135). 1KVA/1KW 3PCS(default) >> 1KVA/1KW 2PCS 2KVA/2KW 6PCS(default) >> 2KVA/2KW 4PCS 3KVA/3KW 8PCS(default) >> 3KVA/3KW 6PCS 6KVA/6KW 16PCS(default) >> 6KVA/6KW 20PCS 10KVA/10KW 16PCS(default) >> 10KVA/10KW 20PCS **NOTE:** 1. Battery number setting is only for long-run UPS model. 2. When sending UM0 command to set as long-run model, the default battery number is 1KVA(3PCS)/2KVA(6PCS)/3KVA(8PCS)/6KVA(16PCS)/10KVA(16PCS), and cannot be modified.
	Set UPS 3KVA battery number to 6 PCS. 

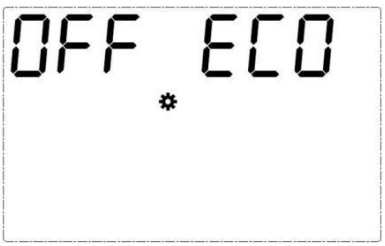
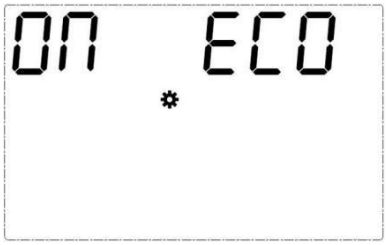
4.7.4 Emergency power off setting (EPO)

Interface	Setting
	When EP is ON, turn to emergency power off setting page[EPO]. By default, the EPO is valid(OFF) by pulling out the EPO terminal, and it can be changed to be valid(ON) by inserting the EPO terminal.
	Set EPO to ON. 

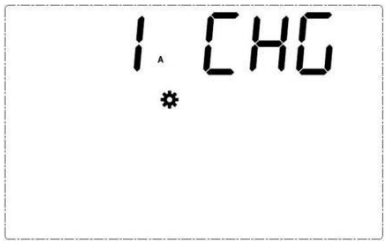
4.7.5 Battery end of discharge voltage setting (EOd)

Interface	Setting
	When EP is ON, turn to battery end of discharge voltage setting page[EOd]. You can set EOd as below value: dEF(default), 9.8V, 9.9V,10V,10.2V,10.5V. Battery end of discharge voltage varies with load: 10.5V: @load<25%, 10.2V: 25%<@load<50%, 10V: @load > 50%.
	Set EOd to 10.5V. 

4.7.6 ECO setting (ECO)

Interface	Setting
	When EP is ON, turn to ECO setting page[ECO]. You may choose the following two options: OFF: ECO mode disable (Default) ON: ECO mode enable
	Set ECO to ON. 

4.7.7 Battery charging current setting (CHG)

Interface	Setting
	When EP is ON, turn to battery charging current setting page[CHG]. You can set battery charging current as below value: Long-run: 1A - 12A, 5A default. 2KVA/3KVA short backup: 1A - 4A, 1A default. 1KVA short backup: only for 1A. **NOTE:** When sending the UM1 command to set as the short backup unit, the default charging current is 1A and cannot be modified.
	Set battery charging current from 1A to 2A. 

4.8 Operation Mode Description

4.8.1 Standby Mode

After the UPS is connected to the AC utility, it will supply power to the UPS and the batteries will be charged.

4.8.2 Online Mode

In online mode, the connected loads are supplied by the inverter, which derives its power from the utility AC power, and the UPS charges the batteries and provides power protection to its connected loads.

4.8.3 Bypass Mode

In bypass mode, the critical loads are directly supplied by the utility power and the batteries are charged.

4.8.4 Battery Mode

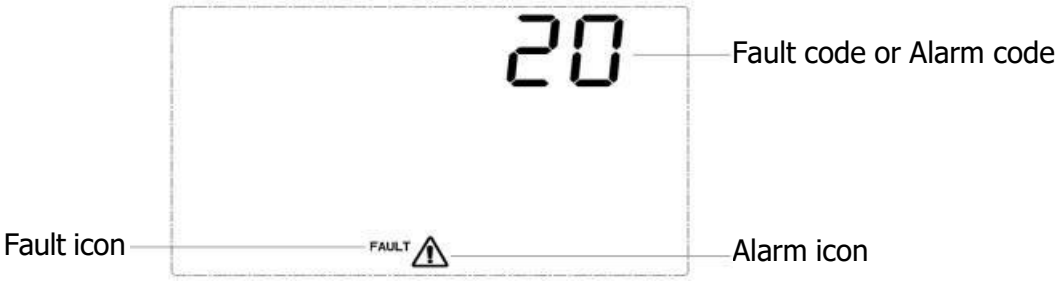
When the UPS is operating during a power outage, the batteries provide DC power, which maintains inverter operation to support the connected critical loads.

4.8.5 ECO Mode

You can manually set the UPS to run in ECO mode. In ECO mode, when the utility input voltage and

frequency are within the range of rating voltage +/-10% and rating frequency +/-5Hz, the connected loads are supplied by the utility power; if out of the range, the connected loads are supplied by the inverter.

4.9 Fault and Alarm Information



The fault and alarm display is as shown in the figure above. The fault icon in the fault mode is always on, and the alarm icon in the alarm status is flashing. Contact the manufacturer to eliminate the abnormal situation according to the fault information.

NOTE:

When the UPS is in the fault mode, the LED red light is always on, and the LCD displays the fault code and fault icon.

4.9.1 Fault Code

Fault code	Fault events	Fault code	Fault events
1	Bus soft start fail	18	INV output over voltage
2	Bus voltage high	19	INV output under voltage
3	Bus voltage low	20	INV output short circuit
4	DC-DC fail	39	Charger short circuit
7	Over temperature	66	Overload fault
9	Bus soft start relay fail	67	Battery reversed connection
10	Bus short circuit	68	Mode fault
17	INV soft start fail	73	No boot loader

4.9.2 Alarm Code

Alarm code	Alarm information	Alarm code	Alarm information
1	Battery disconnection	12	Fans lock
2	Battery low voltage	14	EEPROM fail
3	Battery charger short circuit	21	Overload warning
4	Input L/N wiring reversed or PE disconnect	22	Overload lock in bypass
8	Battery high voltage	23	EPO active
9	Battery charger fail	24	MBS active
10	Over temperature warning		

4.10 UPS Parallel

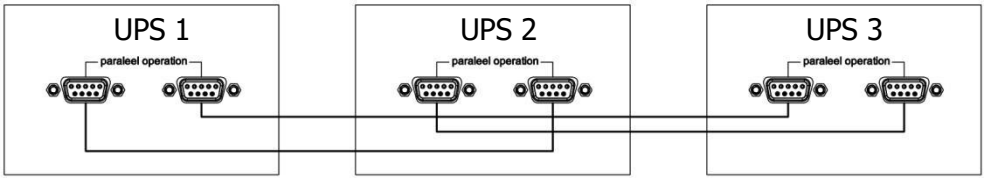
4.10.1 Redundancy Introduction

N+X is currently the most reliable power supply structure. N represents the minimum UPS number that the total load needs, X represents the redundant UPS number, i.e. the fault UPS number that the system can handle simultaneously. When the X is larger, the reliability of the power system is higher. For occasions where reliability is highly depended on, N+X is the optimal mode. As long as the UPS is equipped with parallel cables, up to 3 units UPS (only for 6KVA or 10KVA) can be connected in parallel to realize output power sharing and power redundancy.

4.10.2 Parallel Installation

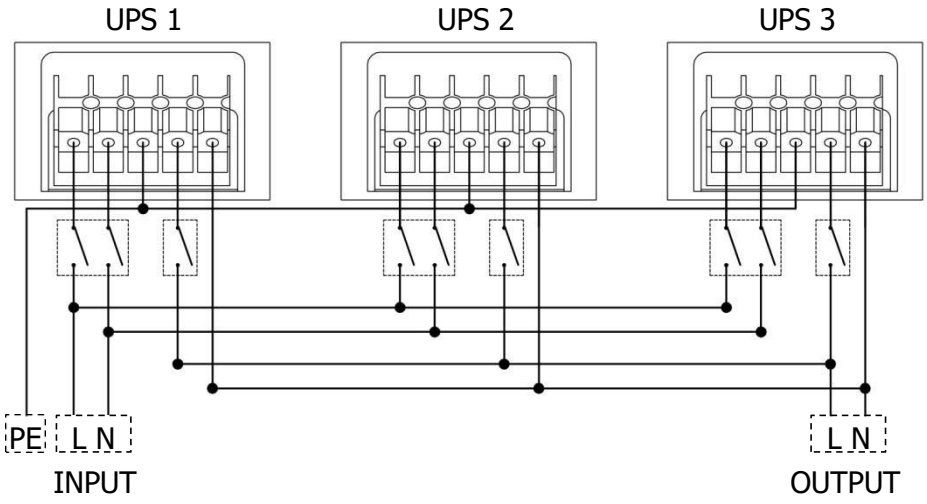
Parallel UPS is an optional function for user, before installing a new parallel UPS, users need to prepare parallel accessories and ask service person to help for information. The number of parallel UPS is up to 3 units maximum. Each parallel UPS need an independent battery bank or battery pack.

4.10.2.1 Install the parallel card on UPS, connect each UPS one by one with parallel cable, the parallel card is the communication port between UPS.



4.10.2.2 Connect the output wire of the parallel UPS to an output terminal block, load connect to the output terminal block via load wire.

4.10.2.3 The parallel UPS input terminal panel and output terminal panel see below, the wires of each parallel UPS must follow the wire requirement for single UPS.



4.10.2.4 Each parallel UPS need an independent battery bank or battery pack.

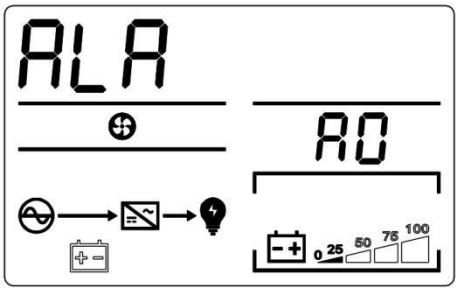
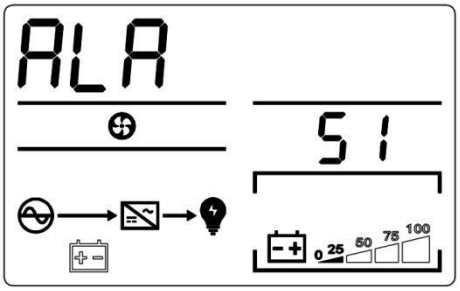
4.10.3 Parallel Operation

4.10.3.1 Normal operation need to follow operation guide for single UPS.

4.10.3.2 Turn on parallel UPS:

- Turn on UPS with power normal: After utility power connection done, press the + button for one UPS and the all the parallel UPS will go to online mode.
- Turn on UPS without utility power: Press each UPS + button to make each UPS power on, then all the parallel UPS will go to battery mode.

4.10.3.3 Parallel UPS display

Master UPS (A0)	Slave UPS (S1, S2 …….)
	

CHAPTER 5 TROUBLESHOOTING

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

Fault	Possible Causes	Solutions
The display does not light up.	Power on switch not pressed.	Press the + button on the front panel.
	Main connection cable missing.	Check that the power cable is connected correctly.
	Intervention of the input circuit breaker.	If present, reset the circuit breaker by pressing button on the black of the UPS.
	No mains voltage (Blackout).	Check that the power reaches the socket where the UPS is connected.
The display is on but the load is not powered.	The UPS is in standby mode.	Press the ON button on the front panel to power the load.
	The standby OFF mode is selected.	It is necessary to change mode. The standby OFF mode. In fact, only powers the loads in the event of a blackout.
	No connection to the load.	Check the connection to the load.
The icon and flashing and showing code: 1 and alarm is sounding every second.	The external or internal battery is incorrectly connected.	Check if all batteries are connected well.
The UPS display code 23 and icon flashing.	EPO function is enabled.	Set the circuit in closed position to disable EPO function.
UPS overload, show code: 21 / 22, icon and are flashing.	UPS is overload.	Remove excess loads from UPS output.
	UPS is overload. Devices connected to the UPS are fed directly by the electrical network via the bypass.	Remove excess loads from UPS output.
Code: 66, icon FAULT and are lighting.	After repetitive overloads, the UPS is locked in the bypass mode. Connected devices are fed directly by the mains.	Remove excess loads from UPS output first. Then shut down the UPS and restart it.
The display shows code: 8, icon flashing, and alarm is continuously sounding.	Battery voltage is too high.	Contact your dealer.

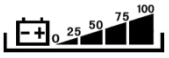
Fault	Possible Causes	Solutions
The display shows code: 2, icon ⚠ flashing, and alarm is continuously sounding.	Battery voltage is too low.	Contact your dealer.
The display shows code: 12, icon  is flashing.	Fans is locked or not working.	Check the fans back of the UPS.
The display shows code: 9, icon ⚠ flashing, and alarm is continuously sounding.	Battery charger is fault.	Contact your dealer.
The display shows code: 67, icon FAULT lighting, and alarm is continuously sounding.	Battery reverse.	Connect battery in correct polarity.
The display shows code: 20, icon FAULT lighting, and alarm is continuously sounding.	UPS output is short circuit.	Check the wiring at the UPS output to see if the device is short circuit or not.
Other fault codes are shown on display.	A UPS internal fault has occurred.	Contact your dealer.
The UPS is operating from the battery despite the presence of mains voltage.	The input voltage is outside the permitted tolerance range for the mains operation.	Problem with the mains. Wait until the input mains voltage returns within the tolerance range. The UPS will automatically return to mains operation.
	Intervention of the input circuit breaker.	If present, reset the circuit breaker by pressing the button on the back of the UPS.
Battery backup time is shorter than nominal value.	Batteries are not fully charged.	Charge the batteries for at least 5 hours and the check capacity. If the problem still persists, consult your dealer.
	Batteries defect.	Contact your dealer to replace the battery.

CHAPTER 6 STORAGE AND MAINTENANCE

6.1 Prior to Installation

If the UPS needs to be stored prior to installation, it should be placed in a dry area. The allowable storage temperature and relative humidity (non-condensing) are -15°C ~+60°C and 5~95% respectively.

6.2 After Usage

Press the ◄ + ► button, disconnect the UPS from the utility power, make sure the UPS is shut down, remove all equipment from the UPS, and store the UPS in a dry and well-ventilated area at a temperature between -15°C and +60°C and at a relative humidity (non-condensing) between 5~95%. Idle batteries must be fully recharged every three months if the UPS needs to be stored for an extended period of time. Whenever you recharge the batteries (internal and external), please fully charge them until the Battery capacity bar 

shown on the UPS's LCD is fully on.

NOTE : After storage and before start-up of the UPS, you must allow the UPS to adjust to room temperature (20°C~25°C) for at least two hours to avoid moisture condensing inside the UPS.

CHAPTER 7 SPECIFICATIONS

7.1 Specification of Tower Type UPS 1KVA - 3KVA

MODEL		**1K**	**1KB**	**2K**	**2KB**	**3K**	**3KB**
CAPACITY		1KVA/1KW		2KVA/2KW		3KVA/3KW	
Battery Voltage		24V / 36V (default)	24V	48V/72V (default)	48V	72V/96V (default)	72V
Size, DxWxH (mm)		290x143x222		395x143x222		395x143x222	390x190x330
Net Weight (kgs)		4	8	6	14	6	22
INPUT							
Nominal Voltage		208/220/230/240VAC					
Input Voltage Range		110-300VAC					
Frequency Range		50Hz:44Hz~56Hz or 60Hz:54Hz~66Hz					
Phase		Single Phase, L+N+PE					
Power Factor		≧ 0.99 @ nominal voltage (input voltage)					
Harmonic Distortion		≤4% (Linear Load), ≤5% (Non-linear Load)					
OUTPUT							
Output voltage		208/220/230/240VAC					
AC Voltage Regulation		± 1% (Batt. Mode)					
Frequency Range(Line Mode)		Synchronized range					
Frequency Range (Batt. Mode)		50 Hz or 60Hz ± 0.1%					
Overload Capacity		AC Mode: 30mins @102%-110% load 10mins @110%-130% load 30sec @130%-150% load 200ms @>150% load		Battery Mode: 1min @102%-110% load 10sec @110%-130% load 3sec @110%-130% load 200ms @>150% load			
Current Crest Ratio		3:1					
Harmonic Distortion		≦3% THD (Linear Load); ≦5% THD (Non-linear Load)					
Transfer Time	AC to Battery	0ms					
	Inverter to Bypass	4ms					
Waveform (Batt. Mode)		Pure Sine Wave					
EFFICIENCY							
AC Mode		94.5%		95.5%			
Battery Mode		88.5%	87.5%	91.5%	89.5%	91.5%	89.5%
BATTERY							
Battery Type		Sealed Maintenance-free					
Battery Numbers		2/3(default)	2x12V7AH	4/6(default)	4x12V7AH	6/8(default)	6x12V7AH
Charging Current		5A (Default) 1A-12A adjustable	1A	5A (Default) 1A-12A adjustable	1A (Default) 1A-4A adjustable	5A (Default) 1A-12A adjustable	1A (Default) 1A-4A adjustable

MODEL	1K	1KB	2K	2KB	3K	3KB
Charging Voltage	41VDC	27VDC	81VDC	54VDC	108VDC	81VDC
Charging Mode	2-stage or 3-stage (settable)					
INDICATORS						
LCD	Load level, Battery level, AC mode, Battery mode, Bypass mode,and Fault conditions					
ENVIRONMENT						
Ambient temperature	0- 40°C					
Operation Humidity	5%-95% (non-condensing)					
Storage temperature	-15~60°C (no battery inside)					
Altitude	<1000m (the height above 1000m should be reduced to a maximum of 4000m.)					
Noise Level	Less than 50dBA @ 1 Meter					
COMMUNICATION						
Communication Interface	Standard: RS232, USB; Option: Dry contact, EPO					
Smart Slot	Optional SNMP Card					

7.2 Specification of Tower Type UPS 6KVA - 10KVA

MODEL		6K	6KB	10K	10KB
CAPACITY		6KVA/6KW		10KVA/10KW	
Battery Voltage		192V(default)/240V		192V(default)/240V	
Size, DxWxH (mm)		395x190x330	475x190x696	395x190x330	475x190x696
Net Weight (kgs)		15	53	15	53
INPUT					
Nominal Voltage		208/220/230/240VAC			
Input Voltage Range		110-300VAC			
Frequency Range		50Hz:44Hz~56Hz or 60Hz:54Hz~66Hz			
Phase		Single Phase, L+N+PE			
Power Factor		≧ 0.99 @ nominal voltage (input voltage)			
Harmonic Distortion		≤5% (Linear Load), ≤8% (Non-linear Load)			
OUTPUT					
Output voltage		208/220/230/240VAC			
AC Voltage Regulation		± 1% (Batt. Mode)			
Frequency Range(Line Mode)		Synchronized range			
Frequency Range (Batt. Mode)		50 Hz or 60Hz ± 0.1%			
Overload Capacity		AC Mode: 30mins @102%-110% load 10mins @110%-130% load 30sec @130%-150% load 500ms @>150% load		Battery Mode: 10min @102%-110% load 1min @110%-130% load 10sec @110%-130% load 500ms @>150% load	
Current Crest Ratio		3:1			
Harmonic Distortion		≦2% THD (Linear Load); ≦5% THD (Non-linear Load)			
Transfer Time	AC to Battery	0ms			
	Inverter to Bypass	0ms			

MODEL	6K	6KB	10K	10KB
Waveform (Batt. Mode)	Pure Sine Wave			
EFFICIENCY				
AC Mode	95.5%			
Battery Mode	95.3%			
BATTERY				
Battery Type	Sealed Maintenance-free			
Battery Numbers	16(default)/20	16x12V7AH	16(default)/20	16x12V7AH
Charging Current	5A (Default) 1A-12A adjustable	1A (Default) 1A-4A adjustable	5A (Default) 1A-12A adjustable	1A (Default) 1A-4A adjustable
Charging Voltage	216VDC(default)/270VDC			
Charging Mode	2-stage or 3-stage (settable)			
INDICATORS				
LCD	UPS status, Load level, Battery level, Input/Output voltage, Discharge timer, and Fault conditions			
ENVIRONMENT				
Ambient temperature	0- 40°C			
Operation Humidity	5%-95% (non-condensing)			
Storage temperature	-15~60°C (no battery inside)			
Altitude	<1000m (the height above 1000m should be reduced to a maximum of 4000m.)			
Noise Level	Less than 50dBA @ 1 Meter			
COMMUNICATION				
Communication Interface	Standard: RS232, USB; Option: Dry contact, EPO			
Smart Slot	Optional SNMP Card			

7.3 Specification of Rack Mount UPS 1KVA - 3KVA

MODEL		1K	1KB	2K	2KB	3K	3KB
CAPACITY		1KVA/1KW		2KVA/2KW		3KVA/3KW	
Battery Voltage		24V/36V (default)	24V	48V/72V (default)	48V	72V/96V (default)	72V
Size, DxWxH (mm)		440x420x88				440x420x88	440x600x88
Net Weight (kgs)		6	9.5	6.5	17	7	21.5
INPUT							
Nominal Voltage		208/220/230/240VAC					
Input Voltage Range		110-300VAC					
Frequency Range		50Hz:44Hz~56Hz or 60Hz:54Hz~66Hz					
Phase		Single Phase, L+N+PE					
Power Factor		≧ 0.99 @ nominal voltage (input voltage)					
Harmonic Distortion		≤4% (Linear Load), ≤5% (Non-linear Load)					
OUTPUT							
Output voltage		208/220/230/240VAC					
AC Voltage Regulation		± 1% (Batt. Mode)					
Frequency Range(Line Mode)		Synchronized range					
Frequency Range (Batt. Mode)		50 Hz or 60Hz ± 0.1%					
Overload Capacity		30mins @102%-110% load 10mins @110%-130% load 30sec @130%-150% load 200ms @>150% load					
Current Crest Ratio		3:1					
Harmonic Distortion		≦3% THD (Linear Load); ≦5% THD (Non-linear Load)					
Transfer Time	AC to Battery	0ms					
	Inverter to Bypass	4ms					
Waveform (Batt. Mode)		Pure Sine Wave					
EFFICIENCY							
AC Mode		94.5%	95.5%				
Battery Mode		87.5%	88.5%	91.5%			
BATTERY							
Battery Type		Sealed Maintenance-free					
Battery Numbers		2/3(default)	2x12V7AH	4/6(default)	4x12V7AH	6/8(default)	6x12V7AH
Charging Current		5A (Default) 1A-12A adjustable	1A	5A (Default) 1A-12A adjustable	1A (Default) 1A-4A adjustable	5A (Default) 1A-12A adjustable	1A (Default) 1A-4A adjustable
Charging Voltage		41VDC	27VDC	81VDC	54VDC	108VDC	81VDC
Charging Mode		2-stage or 3-stage (settable)					
INDICATORS							
LCD		Load level, Battery level, AC mode, Battery mode, Bypass mode,and Fault conditions					
ENVIRONMENT							
Ambient temperature		0- 40°C					
Operation Humidity		5%-95% (non-condensing)					

MODEL	1K	1KB	2K	2KB	3K	3KB
Storage temperature	-15~60℃ (no battery inside)					
Altitude	<1000m (the height above 1000m should be reduced to a maximum of 4000m.)					
Noise Level	Less than 50dBA @ 1 Meter					
COMMUNICATION						
Communication Interface	Standard: RS232, USB; Option: Dry contact, EPO					
Smart Slot	Optional SNMP Card					

7.4 Specification of Rack Mount UPS 6KVA - 10KVA

MODEL		6K	6KB	10K	10KB
CAPACITY		6KVA/6KW		10KVA/10KW	
Battery Voltage		192V(default)/240V		192V(default)/240V	
Size, DxWxH (mm)		440X420X88	UPS: 440X420X88 Battery Pack: 440X680X88	440X420X88	UPS: 440X420X88 Battery Pack: 440X680X88
Net Weight (kgs)		10	UPS: 10 Battery Pack: 48	11	UPS: 11 Battery Pack: 48
INPUT					
Nominal Voltage		208/220/230/240VAC			
Input Voltage Range		110-300VAC			
Frequency Range		50Hz:44Hz~56Hz or 60Hz:54Hz~66Hz			
Phase		Single Phase, L+N+PE			
Power Factor		≧ 0.99 @ nominal voltage (input voltage)			
Harmonic Distortion		≤4% (Linear Load), ≤5% (Non-linear Load)			
OUTPUT					
Output voltage		208/220/230/240VAC			
AC Voltage Regulation		± 1% (Batt. Mode)			
Frequency Range(Line Mode)		Synchronized range			
Frequency Range (Batt. Mode)		50 Hz or 60Hz ± 0.1%			
Overload Capacity		30mins @102%-110% load 10mins @110%-130% load 30sec @130%-150% load 500ms @>150% load			
Current Crest Ratio		3:1			
Harmonic Distortion		≦3% THD (Linear Load); ≦6% THD (Non-linear Load)			
Transfer Time	AC to Battery	0ms			
	Inverter to Bypass	0ms			
Waveform (Batt. Mode)		Pure Sine Wave			
EFFICIENCY					
AC Mode		95.5%			
Battery Mode		95.3%			
BATTERY					

MODEL	6K	6KB	10K	10KB
Battery Type	Sealed Maintenance-free			
Battery Numbers	16(default)/20	16x12V7AH	16(default)/20	16x12V7AH
Charging Current	5A (Default) 1A-12A adjustable	1A (Default) 1A-12A adjustable	5A (Default) 1A-12A adjustable	1A (Default) 1A-12A adjustable
Charging Voltage	216VDC			
Charging Mode	2-stage or 3-stage (settable)			
INDICATORS				
LCD	UPS status, Load level, Battery level, Input/Output voltage, Discharge timer, and Fault conditions			
ENVIRONMENT				
Ambient temperature	0- 40°C			
Operation Humidity	5%-95% (non-condensing)			
Storage temperature	-15~60°C (no battery inside)			
Altitude	<1000m (the height above 1000m should be reduced to a maximum of 4000m.)			
Noise Level	Less than 50dBA @ 1 Meter			
COMMUNICATION				
Communication Interface	Standard: RS232, USB; Option: Dry contact, EPO			
Smart Slot	Optional SNMP Card			

7.5 Specification of Rack Mount Battery Pack

MODEL	72VB	96VB	192VB	240VB
Battery Type	Sealed Maintenance-free			
Battery Voltage	72VDC	96VDC	192VDC	240VDC
Size, DxWxH (mm)	440X420X88 [2U]		440X680X88 [2U]	440X600X132 [3U]
Net Weight (kgs)	23	28	48	57
Battery Numbers	6x12V7AH	8x12V7AH	16x12V7AH	20x12V7AH
Charging Current	1A			
Charging Voltage	81VDC	108VDC	216VDC	270VDC
Breaker	1P 63A			
Output Port	2 x Anderson connector			
ENVIRONMENT				
Ambient temperature	0- 40°C			
Storage temperature	0- 40°C			