



Online Lead-Acid UPS - 5 kVA - 10 kVA

User Manual



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1. Important Safety Warning

SAVE THESE INSTRUCTIONS - This manual contains important instructions for the installation and maintenance of the UPS and batteries.

Please strictly comply with all warnings and operating instructions in this manual. Do not operate this unit before carefully reading through all safety information and operating instructions.

1.1 Transportation and Storage

- Please transport the UPS system only in the original package to protect against shock and impact.
- The UPS must be stored in a room where it is ventilated and dry.

1.2 Preparation

- Condensation may occur if the UPS system is moved directly from a cold to a warm environment. The UPS system must be absolutely dry before being installed. Please allow at least two hours for the UPS system to acclimate to 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 nearby heaters.
- Do not block ventilation holes in the UPS housing.

1.3 Installation

- Do not connect appliances or devices that would overload the UPS (e.g., motor-type equipment) to the UPS output receptacles or terminal.
- Place cables in such a way that no one can step on or trip over them.
- Do not block air vents in the housing of the system components. The UPS system must be installed in a location with good ventilation. Ensure enough space on each side for ventilation.
- UPS has provided a ground terminal for equipotential earth bonding to the external UPS battery cabinets in the final installed system configuration.
- The UPS can be installed only by qualified maintenance personnel.
- An appropriate disconnect device for short-circuit backup protection should be provided in the building wiring installation upstream of the UPS.
- An integral single emergency switching device that prevents further supply to the load by the UPS in any mode of operation should be provided in the building wiring installation.
- Connect the ground before connecting to the building wiring terminal.
- Installation and wiring must be performed following the local electrical laws and regulations.

1.4 Connection

- This UPS must be installed and grounded following local and national electrical codes.
- The power supply for this unit must be single-phase rated following the equipment nameplate. It also must be suitably grounded.



WARNING
HIGH LEAKAGE CURRENT
EARTH CONNECTION ESSENTIAL
BEFORE CONNECTING SUPPLY

**CAUTION**

Do not dispose of batteries in a fire. The battery may explode.

Do not open or mutilate the batteries. The electrolyte from the batteries is toxic and harmful to the skin and eyes. Risk of Electric Shock – Hazardous voltage may exist between battery terminals and ground. A battery can present a risk of electrical shock and high short circuit current.

1.5 Recycling the Used Battery

- Do not dispose of the battery in a fire. The battery may explode. Proper disposal of the battery is required. Refer to your local codes for disposal requirements.
- Do not open or mutilate the battery. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- Do not discard the UPS or the UPS batteries in the trash. This product contains sealed, lead-acid batteries and must be disposed of properly. For more information, contact your local recycling/reuse or hazardous waste center.

1.6 Operation

- Do not disconnect the ground conductor cable on the UPS or the building wiring terminals at any time since this would cancel the protective grounding of the UPS system and of all connected loads.
- The UPS system features its own internal current source (batteries). The UPS output receptacles or output terminal blocks may be electrically live even if the UPS system is not connected to the building wiring system.
- To fully disconnect the UPS system, press the “OFF” button and disconnect the mains.
- Ensure no liquid or other foreign objects can enter the UPS system.
- The UPS can be operated by any individual with no previous experience.

1.7 Standards

*Safety	
Safety Conformance: IEC/EN 62040-1, UL1778 (5th Edition)	
Safety Markings: UL, CE	
*EMI	
Conducted Emission: IEC/EN 62040-2, FCC PART15 CLASS A	
Radiated Emission: IEC/EN 62040-2, FCC PART15 CLASS A	
*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	Level 4
Low-Frequency Signals: IEC/EN 61000-2-2	

2. Installation

2.1 Unpacking and Inspection

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

- UPS
- User manual
- Front mount brackets and screws
- Viewpower monitoring software CD
- RS-232 cable
- USB cable
- Tower Mounting Feet

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

- Battery pack
- User manual
- Front mount brackets and screws
- DC connection cable

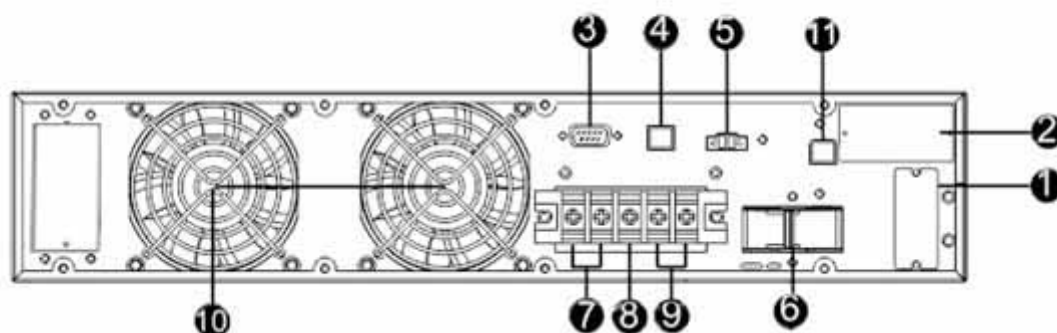
Note: Before installation, please inspect the system components. Be sure that nothing inside the package was damaged during transportation. Do not turn on the UPS system; notify the carrier and dealer immediately if there is any damage or missing parts. Please keep the original packaging in a safe place for future use.

2.2 Selecting Installation Position

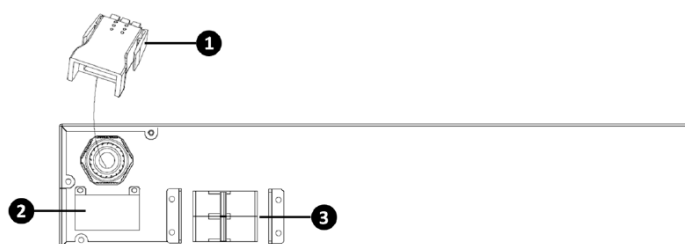
It is necessary to select a proper environment to install the unit to minimize the possibility of damage to the battery pack and extend the life of the batteries. Please follow the instructions below:

- Keep at least 20 cm (8 inches) clearance from the unit's rear panel to the wall or other obstructions.
- Do not block the airflow to the ventilation openings of the unit.
- Please ensure the installation site environmental conditions are in accordance with the unit's working specifications to avoid overheating and excessive moisture.
- Do not place the unit in a dusty or corrosive environment or near flammable objects.
- This UPS system is not designed for outdoor use.

2.3 Rear Panel Views

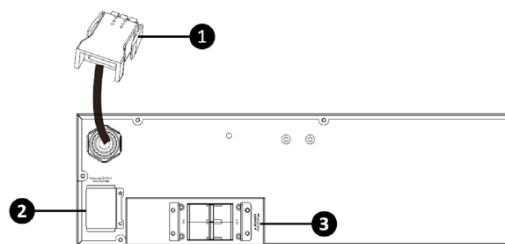


1. External battery connector
2. Intelligent slot
3. RS-232 communication port
4. USB communication port
5. Emergency power off function connector (EPO connector)
6. Input circuit breaker
7. Output terminals
8. Ground
9. Input terminals
10. Cooling Fan
11. External maintenance bypass switch port



2U battery pack rear view

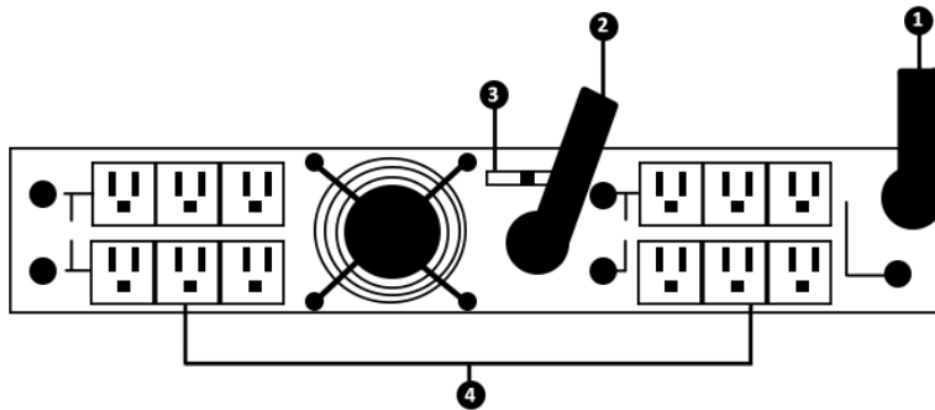
2U Battery Pack



3U battery pack rear view

3U Battery Pack

1. DC connector cable: connects to either UPS or an additional battery pack
2. DC connection point for additional battery pack
3. DC breaker: Battery over-current protection breaker

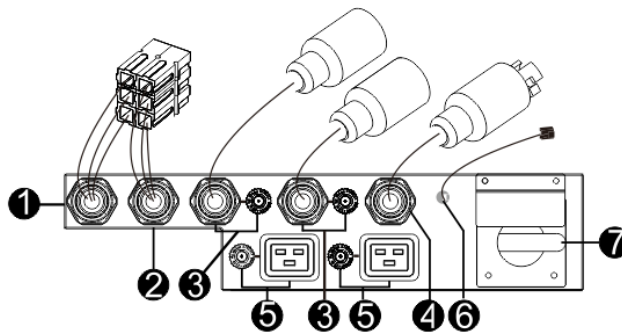


IT60A Isolation Transformer Rear Panel

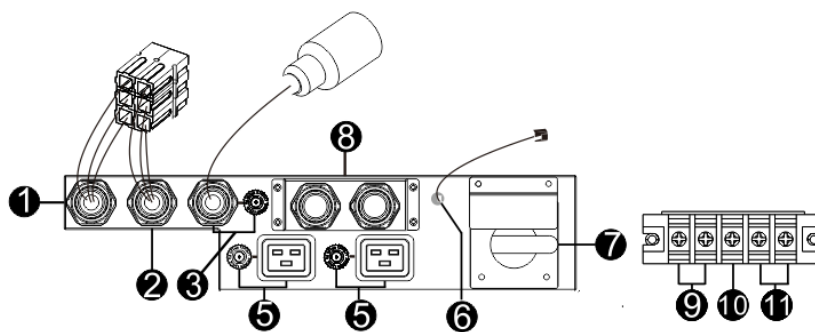
2.3.1 PM module Introduction

The product is an optional external power distribution unit with UPS systems or large-scale voltage regulators. It allows the manual transfer of the connected equipment to utility power via a bypass switch, permitting scheduled maintenance or UPS replacement without power interruption. Combined with the power distribution feature and the master-controlled design, it provides a maintenance bypass function and power saving within a rack mechanism.

Product Overview



PM6KA



PM10KB

- | | |
|--|-------------------------|
| 1. Socket to UPS output | 7. Bypass switch |
| 2. Socket to UPS input | 8. Terminal Block Cover |
| 3. Output cable and Circuit breaker | 9. Output Terminal |
| 4. AC input | 10. Earth terminal |
| 5. Output receptacle and Circuit breaker | 11. AC input terminal |
| 6. RJ45 (for connecting ups' EMBS) | |

2.3.2 Installation of optional PM module

Unpacking and Inspection

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

- Maintenance bypass switch module
- Quick guide
- Mains power cord
- Screws and mounting ears

Note: Before installation, please inspect the unit. Be sure that nothing inside the package was damaged during transportation. Do not turn on the unit, and notify the carrier and dealer immediately if there is any damage or lack of some parts. Please keep the original package in a safe place for future use.

Initial Setup

The Installation and wiring must follow the local electric laws/regulations and instructions by professional personnel:

1. Make sure the mains wire and breakers in the building are enough for the rated capacity of UPS to avoid the hazards of electric shock or fire.

Note: Do not use the wall receptacle as the input power source for the UPS, as its rated current is less than the UPS's maximum input current. Otherwise, the receptacle may be burned and destroyed.

2. Switch off the mains switch in the building before installation.
3. Turn off and shut down the connected UPS.
4. Prepare wires based on the following information:

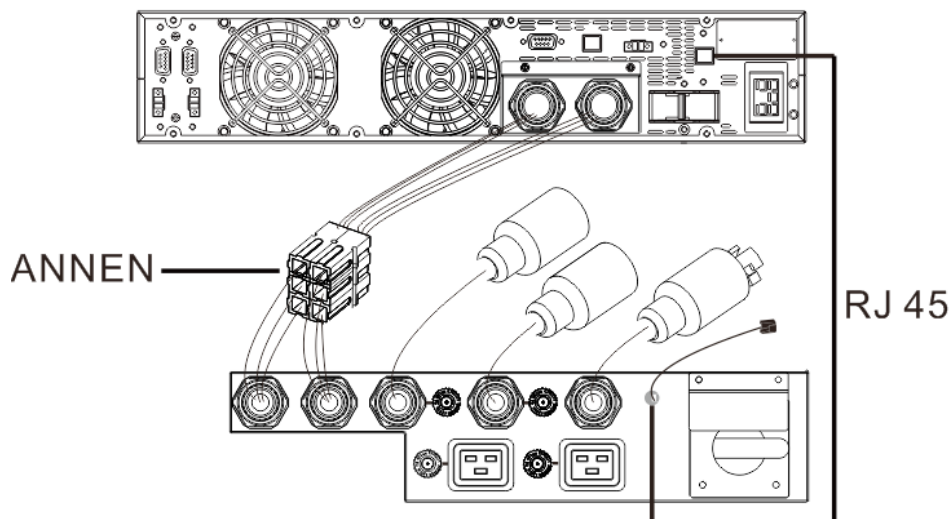
Note 1: The cable for 10K UPS should be able to withstand over 63A current. It is recommended to use 8 AWG or thicker wire for safety and efficiency.

Note 2: The selections for the color of wires should be followed, adhering to the local electrical laws and regulations.

5. Remove the terminal block cover on the module's rear panel. Connect the wires according to the following terminal block diagrams:

Connecting to the AC INPUT AND UPS

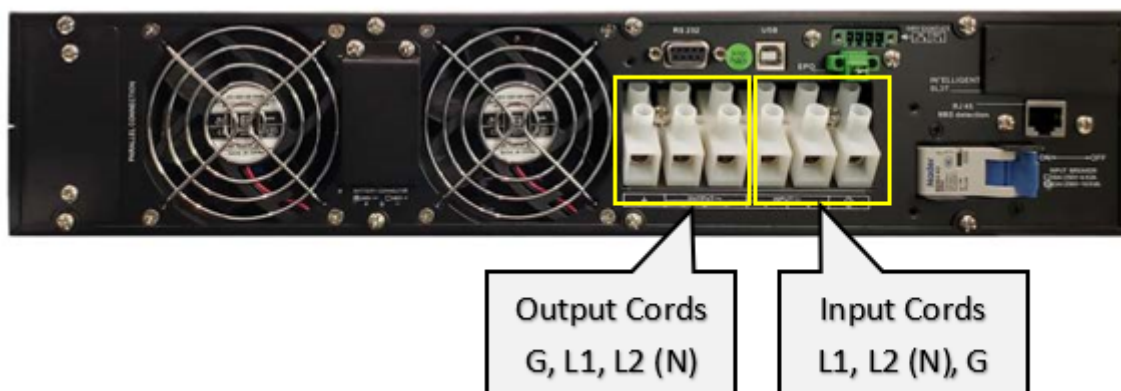
Plug the input power cord of the unit into the AC INPUT. Connect a power cord from the UPS input to the UPS input socket on the unit. Use one power cord to connect the UPS output to the UPS output socket on the unit.



The red connector cord gets installed into the input side of the UPS. Brown is L1, blue is L2 (N), and green is ground.

The black connector cord gets installed into the output side of the UPS.

Red is L1, black is L2 (N), and green is ground.



2.3.3 PM Module Operation

Transfer to Maintenance Bypass

To transfer to maintenance bypass from UPS, follow the below steps:

Step 1: Press the “OFF” button of the UPS unit to transfer to bypass mode.

Step 2: Open the maintenance switch door. If step 1 is not executed first, the UPS unit will automatically transfer to bypass mode with the control output signal connection when opening the maintenance switch door.

Step 3: Transfer the rotary switch to the “BPS” position and switch off the UPS input breaker on the module. Then, the utility directly powers all devices, and there is no current through the UPS. The output and input of UPS are isolated from the system. You may now service or maintain the UPS by shutting down the batteries of UPS.

Transfer to UPS Protection

After maintenance service, follow the steps below to transfer back to UPS operation.

Step 1: Switch on the input breaker of the module and reconnect the UPS battery input breaker. Then, UPS will enter bypass mode.

Step 2: Transfer the rotary switch to the “UPS” position. Then, all devices are powered by the utility through UPS bypass mode.

Step 3: Close the back maintenance switch door and press the “ON” button of the UPS unit. Then, all devices are protected by the UPS.

Note: If maintenance will be executed in another place before removing the UPS and the module, please follow the “Transfer to Maintenance Bypass” steps and disconnect all wires between the UPS and the module for complete isolation.

2.3.4 Specification of Critical Components

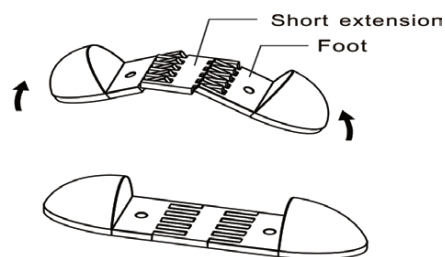
Parameter		5K/6K Max	10K Max
Input Breaker	Current	50 A	63 A
	Voltage	250 V	250 V
Bypass Switch	Current	80 A	80 A
	Voltage	600 V	600 V

2.4 Tower Installation

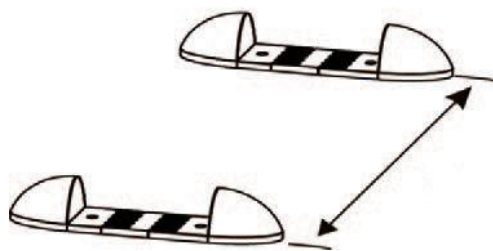
The UPS system is shipped with two sets of feet and six extensions (two short extensions plus four long extensions) that can be used to tower install the UPS module in the battery pack.

Install the UPS Module

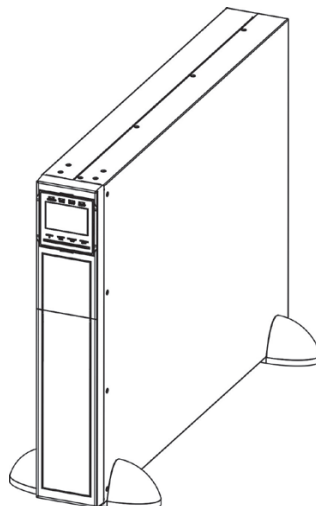
Step 1: Assemble two feet and one short extension as one tower stand.



Step 2: Align the two stands approximately 14" (355 mm) apart.

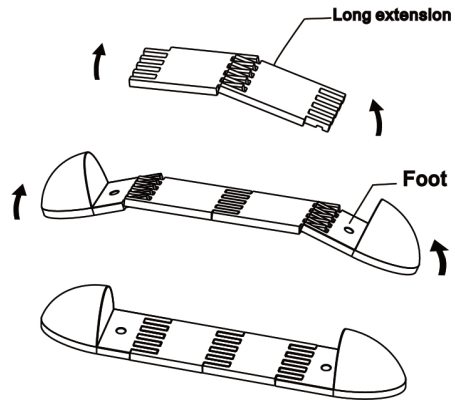


Step 3: Put the UPS module on the stands.

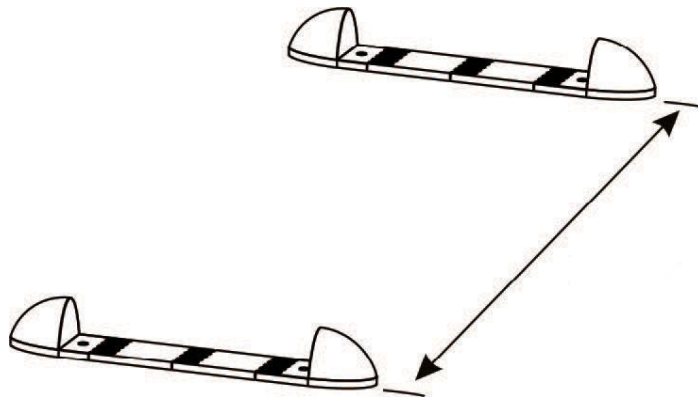


Install the UPS Module and Battery Pack

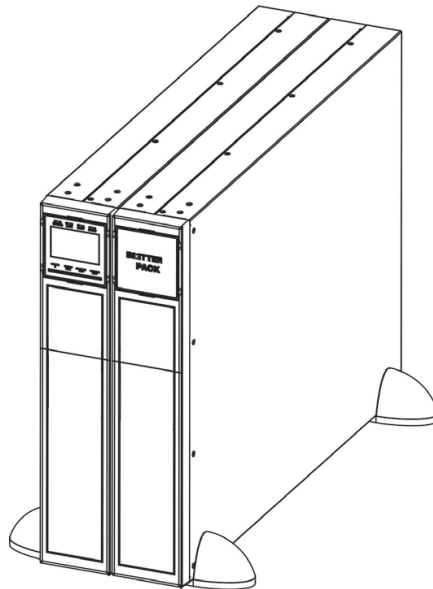
Step 1: Assemble two feet and two long extensions as one tower stand.



Step 2: Align the two stands approximately 14" (355 mm) apart.



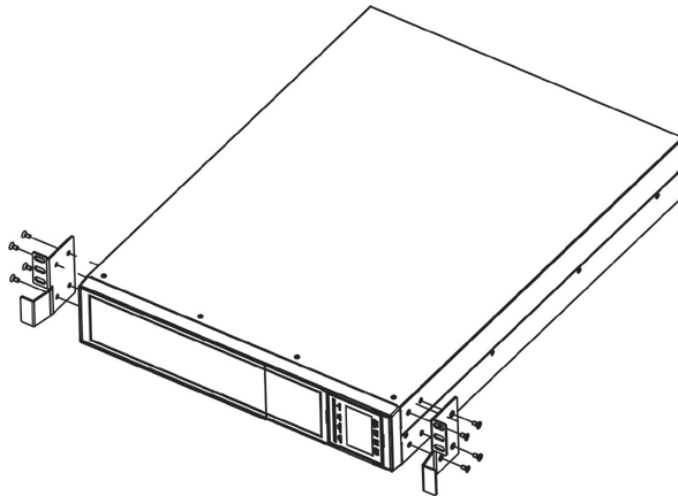
Step 3: Put the UPS module on the stands.



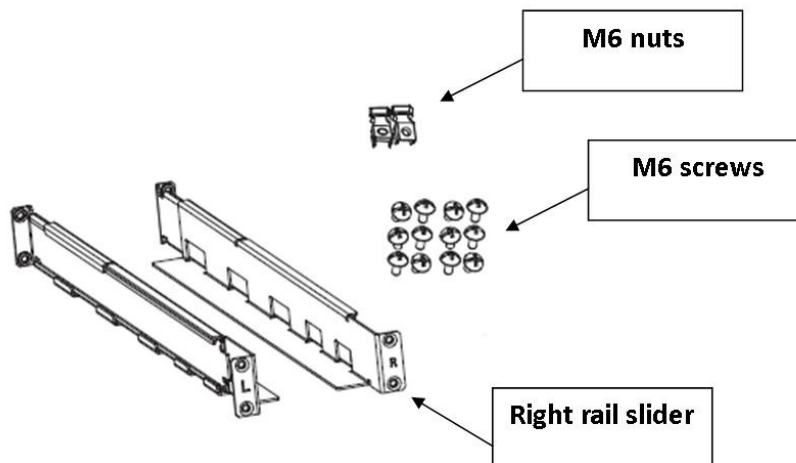
2.5 Rack-Mount Installation

Please follow the below steps to mount UPS into a 19" (482 mm) rack or rack enclosure.

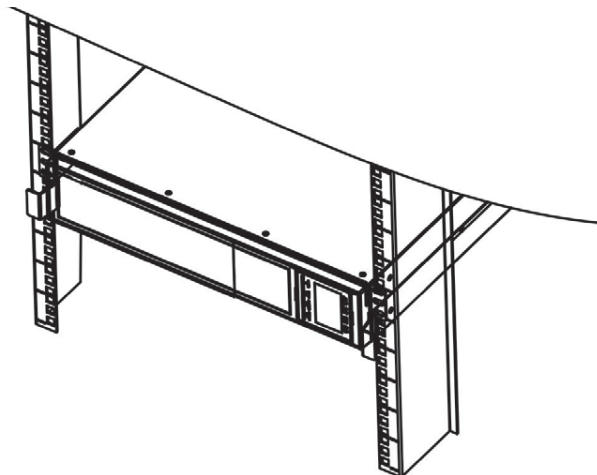
Step 1: Attach mounting ears to the side mounting holes of UPS using the screws provided, and the ears should face forward.



Step 2: Install the optional rack rail kits into the rack to support the UPS, Iso transformer module, and battery pack (one rail kit is required for each piece).



Step 3: Lift the UPS module and slide it into the rack enclosure. Attach the UPS module to the rack with screws, nuts, and washers (user-provided) through its mounting ears and into the rack rails.



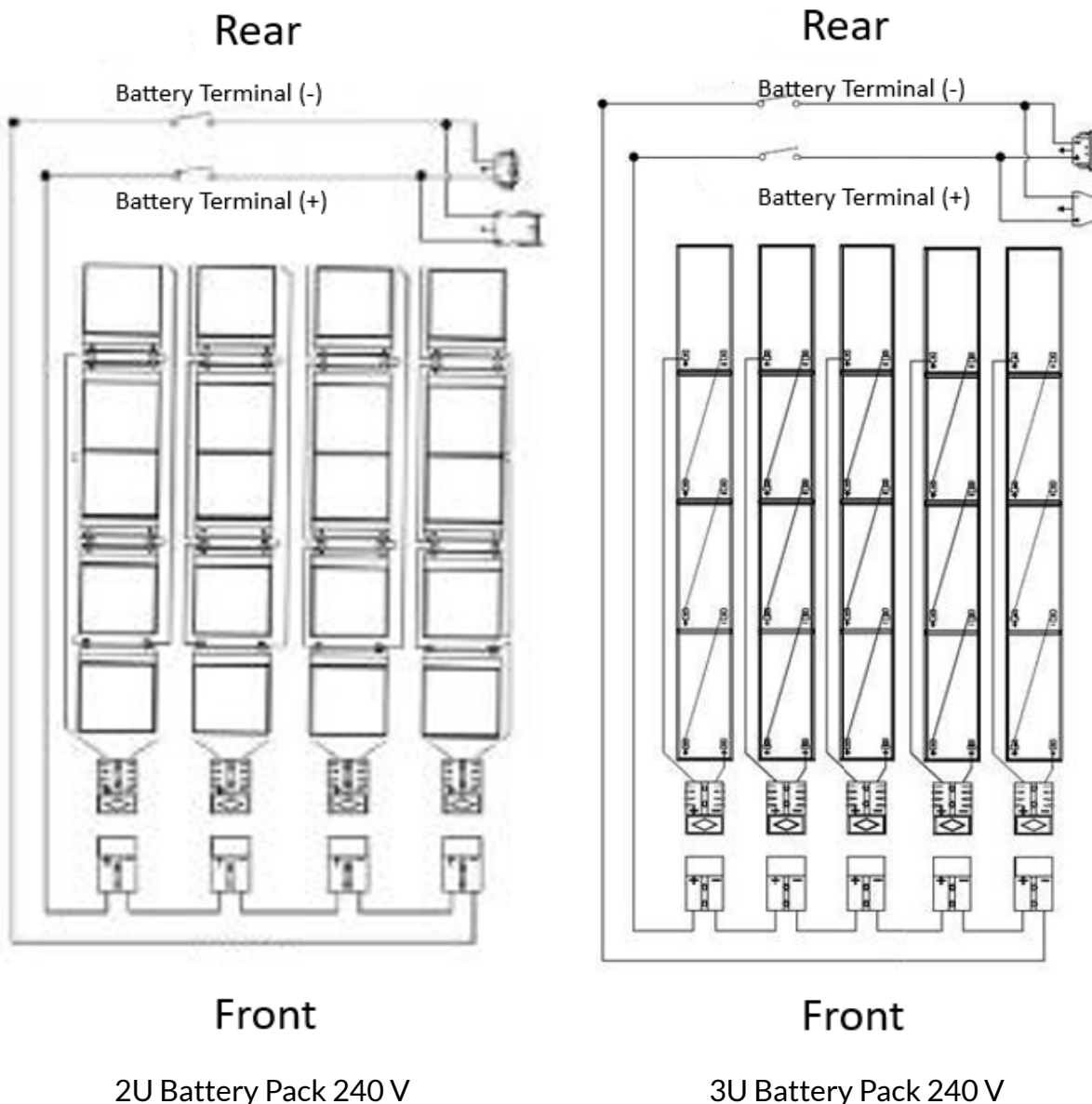
Step 4: Install the IT60A Iso Transformer module (if included) in the rack directly below the UPS, duplicating the UPS module instructions above.

Step 5: Mount the PM6KA or PM10KB (if included) to the rear of the 1st external battery pack, using the included mounting bracket and screws.

Step 6: Install the External Battery Pack into the rack directly below the Iso Transformer module (if included), or directly below the UPS if the Iso Transformer module is not included. duplicating the UPS module instructions above.

Step 7: Install additional External Battery Packs (if included).

2.6 Battery Wiring Diagram



Type of Battery Required

These battery packs have been designed to operate with the following types of batteries:

- 2U battery pack: 240 V/5 Ah Version, 20 pieces of 12 V 5 Ah batteries
- 3U battery pack: 240 V/580 W Version, 20 pieces of 12 V 580 W batteries

2.7 Storage and Maintenance

These battery packs have been designed to operate with the following types of batteries:

The unit contains no user-serviceable parts. If the battery service life (3~5 years at 77°F (25°C) ambient temperature) has been exceeded, the batteries must be replaced. In this case, please contact your dealer.

Storage

Before storing, charge the unit for 4 hours. Store the unit covered and upright in a cool, dry location. During storage, recharge the battery per the following table:

Storage Temperature	Recharge Frequency	Charging Duration
-13°F - 104°F (-25°C - 40°C)	Every 3 months	1-2 hours
104°F - 113°F (40°C - 45°C)	Every 2 months	1-2 hours

2.8 UPS Electrical Connections/Installation

Note: These instructions are for units whose inputs connect directly to the utility.

Installation and wiring must follow the local electric laws/regulations, and the following instructions must be performed by qualified personnel:

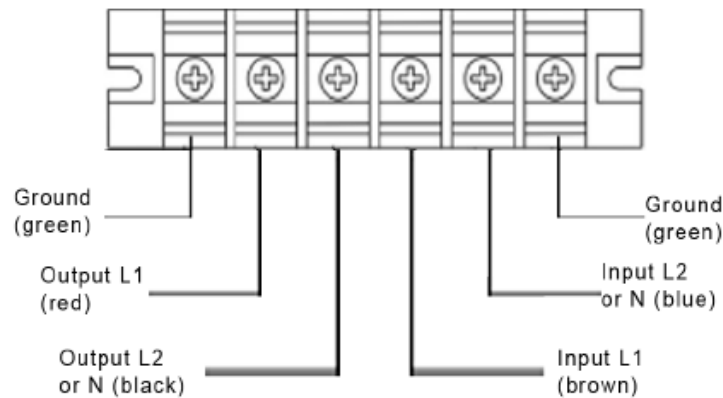
1. Ensure the mains wire and breakers in the building are sized for the rated capacity of UPS to avoid the hazards of electric shock or fire.
2. Switch off the mains switch in the building before installation.
3. Turn off all the connected devices before connecting to the UPS.
4. Prepare wiring based on the following table:

Model	Nominal Input Currents			
	Input @208 V in/out	Recommended Input OCP	Input @240 V in/out	Recommended Input OCP
5k	25.8 A	35 A	22.4 A	30 A
6k	31.0 A	40 A	26.7 A	35 A
10k	51.7 A	65 A	44.8 A	60A

It is recommended that the installation use 208V as the basis in case the voltages used ever change.

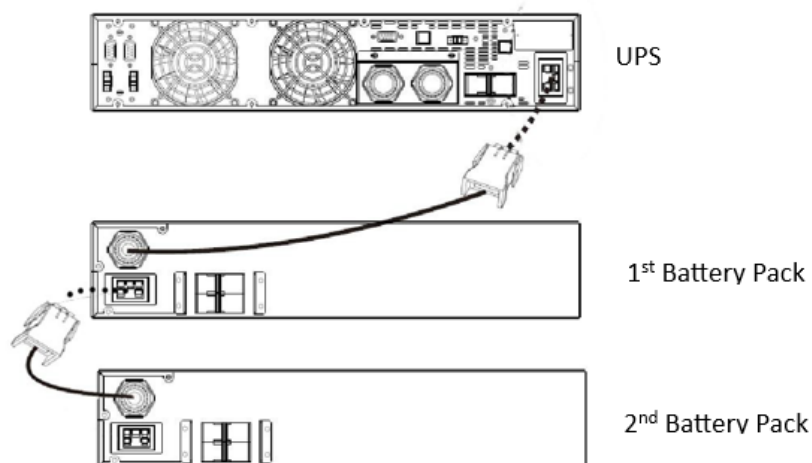
Note: The selections for size and color of wires should follow the local electrical laws and regulations.

5. Remove the terminal block cover on the rear panel of the UPS, connect the ground wire first, then connect the wires according to the following terminal block diagram: (Disconnect the ground wire last when making wire disconnection)

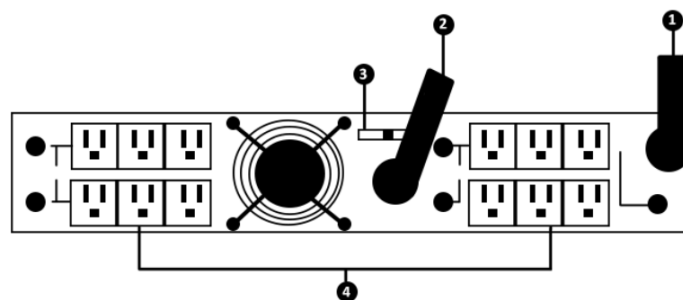


UPS Terminal Block to Anderson Connector wiring diagram

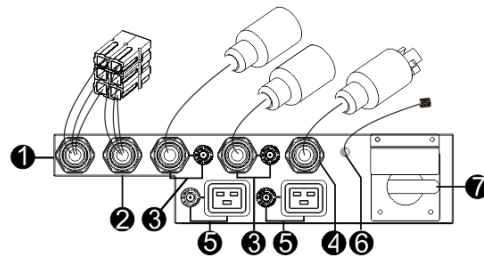
6. After connecting the wires, replace the terminal block cover on the rear panel of the UPS.
7. Ensure the battery pack breaker is in the "OFF" position. Then, connect the battery pack cable to the battery pack connector on the rear of the UPS. For additional battery packs, plug the battery pack cable into the empty connector on the rear of the previous battery pack.



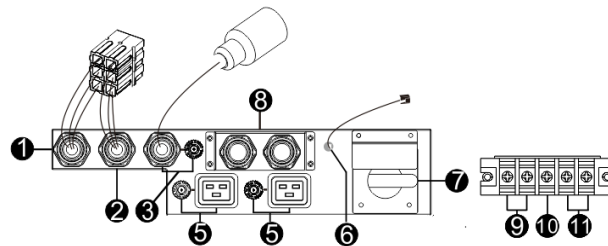
8. Place the red switch on the IT-60A Iso Transformer module (if used) in the correct position—208 for 208 V installations and 240 for 240 V installations. Refer to section 2.3.



9. Plug the power cord for the IT60A iso transformer module (if supplied) into one of the L6-30R receptacles on the PM6KA or PM10KB. Refer to section 2.3.

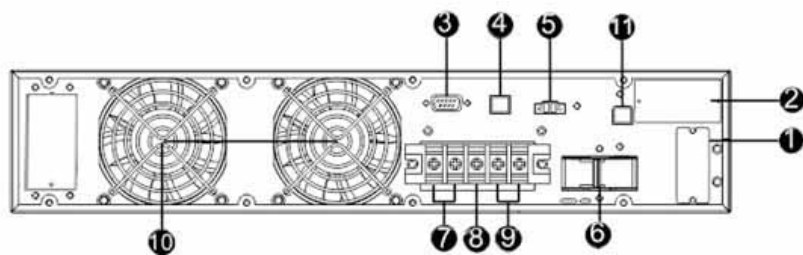


PM6KA



PM10KB

10. Connect the External maintenance bypass switch wire on the PM6KA or PM10KB to the External maintenance bypass switch port on the UPS. Refer to section 2.3.



Note 1: Make sure all wires are connected securely.

Note 2: Please install the output over the current protection breaker between the output terminal and the load on hardwired systems. The breaker should be qualified with leakage current protective function if necessary.



Warning:

For the standard battery pack, there is one DC breaker to disconnect the battery pack and the UPS. Switch off the battery breaker before installation. Make sure the utility input & output wiring is correct. The wire current spec, color, position, connection, and conductance reliability should follow local and national electrical codes.

Software Installation

For optimal computer system protection, install UPS monitoring software to fully configure the UPS shutdown process. Refer to the Viewpower CD.

3. Operation

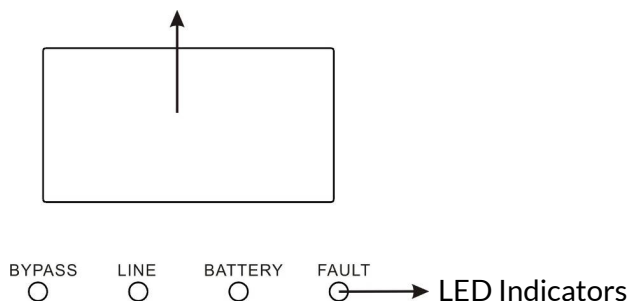
3.1 User Interface

3.1.1 Button Operation

Button	Function
ON/Enter Button	Turn on the UPS: Press and hold for more than 0.5 seconds to turn on the UPS. Enter Key: Press to confirm the selection in the settings menu.
OFF/ESC Button	Turn off the UPS: Press and hold for more than 0.5 seconds to turn off the UPS. Esc key: Press to return to the last menu in the settings menu.
Test/Up Button	Test/Up Button Battery test: Press and hold for more than 0.5 seconds to test the battery while in AC mode or *CVCF mode. UP key: Press to display the next selection in the settings menu.
Mute/Down Button	Mute the alarm: Press and hold for more than 0.5 seconds to mute the buzzer. Please refer to section 4 for alarm details. Down key: Press to display the previous selection in the settings menu.
Test/Up + Mute/Down Button	Press and hold the two buttons simultaneously for more than 1 second to enter/exit the settings menu.

* CVCF mode means converter mode.

3.1.2 LED Indicators



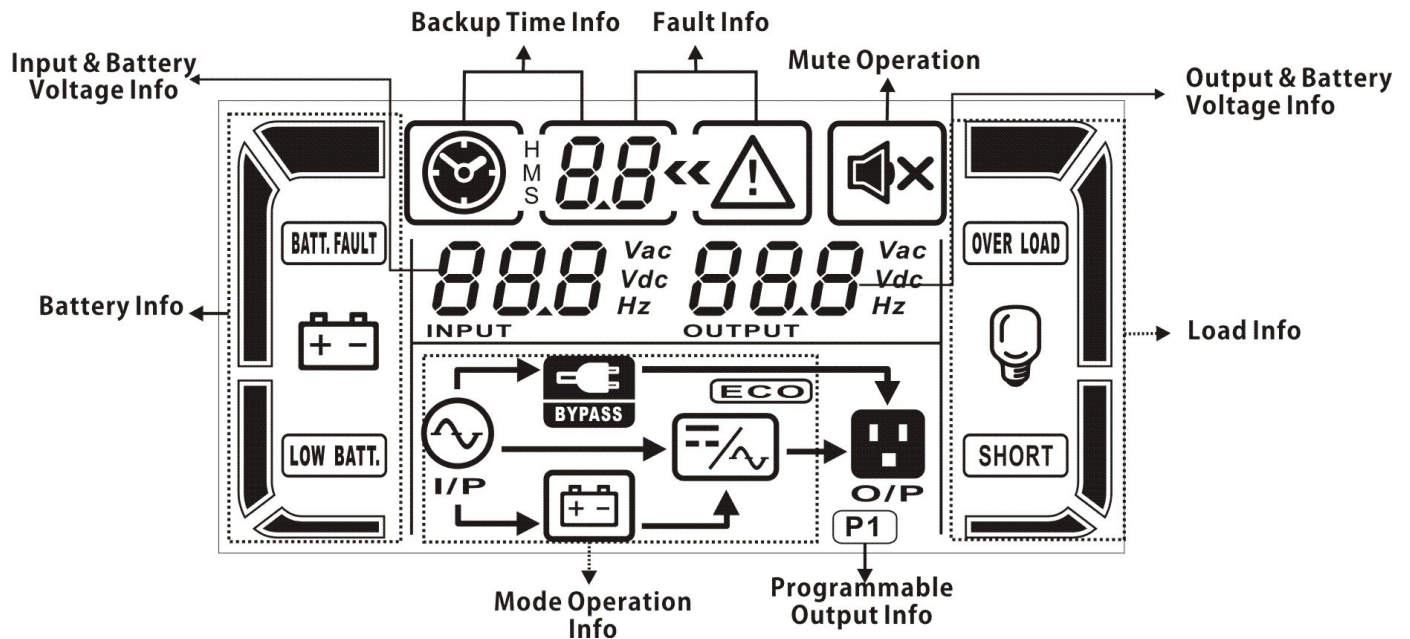
There are four LEDs on the front panel to show the UPS status:






Mode LED	Bypass	Line	Battery	Fault
UPS Startup	●	●	●	●
Bypass Mode	●	○	○	○
AC Mode	○	●	○	○
Battery Mode	○	○	●	○
CVCF Mode	○	●	○	○
Battery Test	●	●	●	○
ECO Mode	●	●	○	○













Fault	○	○	○	●
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Note: ● Means the LED is lighting, and ○ means the LED is faded.

3.1.3 LCD Panel:

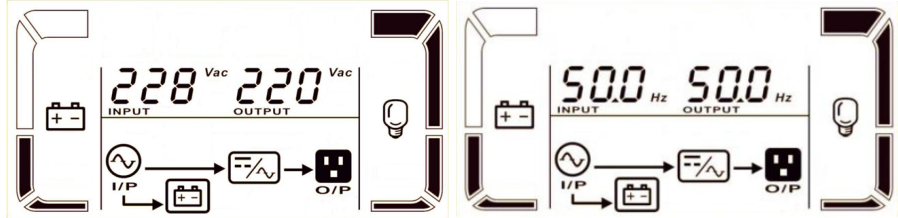
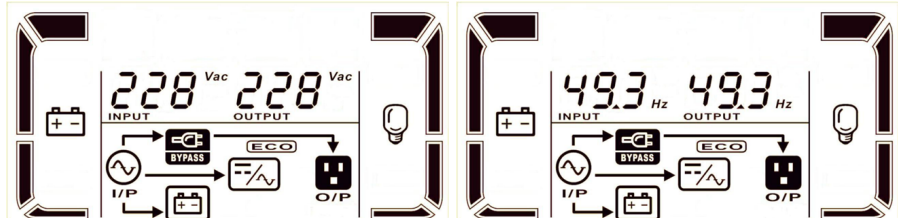
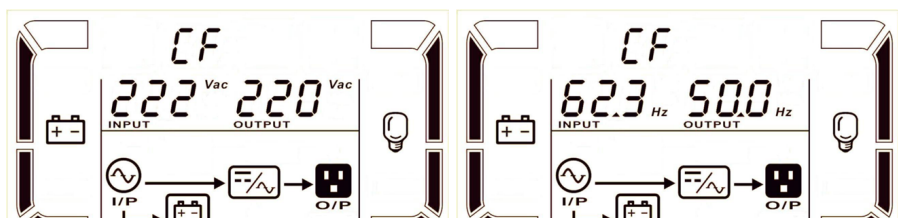
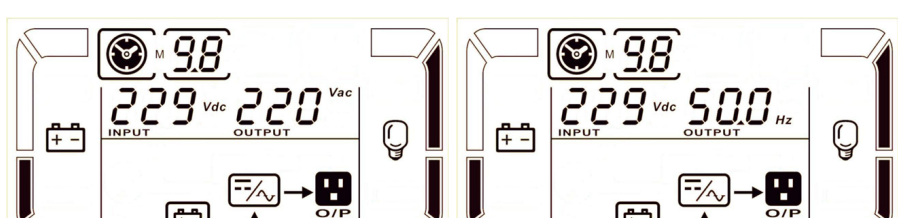


Display	Function
Backup Time Information	
 HMS 88	The remaining battery runtime H: hours, M: minutes, S: seconds.
Fault Information	
	Warnings and faults.
88	Fault codes.
Mute Operation	
	The UPS alarm is disabled.
Output & Battery Voltage Information	
 Vac Vdc Hz OUTPUT	Output voltage, frequency, or battery voltage. Vac: output voltage, Vdc: battery voltage, Hz: frequency
Load Information	
	Load level by 0-25%, 26-50%, 51-75%, and 76-100%.

	Overload.
	The load or output is short.
Mode Operation Information	
	The UPS is connected to the mains.
	The battery is working.
	The bypass circuit is working.
	ECO mode is enabled.
	The inverter circuit is working.
	The output is working.
Battery Information	
	The battery capacity by 0-25%, 26-50%, 51-75%, and 76-100%.
	The battery is not connected.
	Low battery and voltage level.
Input & Battery Information	
	Input voltage, battery voltage, or frequency. Vac: Input voltage, Vdc: battery voltage, Hz: input frequency

3.1.3 Operating Mode/Status Description

If parallel UPS systems are successfully set up, it will show one more screen with “PAR” in parameter 2 and be assigned a number in parameter 3 as in the below parallel screen diagram. The master UPS will be default assigned as “001” and slave UPSs will be assigned as either “002” or “003”. The assigned numbers may be changed dynamically in the operation.

Operating Mode/Status		
AC Mode	Description	When the input voltage is within acceptable range, UPS will provide pure and stable AC power to output. The UPS will also charge the battery in AC mode.
	LCD Display	
ECO Mode	Description	When the input voltage is within the voltage regulation range and ECO mode is enabled, UPS will bypass voltage to output for energy saving.
	LCD Display	
CVCF Mode	Description	When the input frequency is within 46 to 64 Hz, the UPS can be set at a constant output frequency, 50 Hz or 60 Hz. The UPS will still charge the battery under this mode.
	LCD Display	
Battery Mode	Description	When the input voltage is beyond the acceptable range or power failure, UPS will back up power from the battery, and the alarm will beep every 4 seconds.
	LCD Display	
Bypass Mode	Description	When the input voltage is within the acceptable range and bypass is enabled, turn off the UPS, and it will enter Bypass mode. The alarm beeps every two minutes.

	LCD Display	
Battery Test	Description	When UPS is in AC or CVCF mode, press the “Test” button for more than 0.5 seconds. Then, the UPS will beep once and start the “Battery Test.” The line between I/P and inverter icons will blink to remind users. This operation is used to check the battery status.
	LCD Display	
Fault Status	Description	When UPS has a fault occur, it will display fault messages in the LCD panel.
	LCD Display	

3.2 UPS Operation

Turn on the UPS with utility power supply (in AC mode)

1. After the power supply is connected correctly, set the breaker of the battery pack to the “ON” position. Then, set the input breaker at the “ON” position. At this time, the fan is running, and 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 the utility after you switch on the input breaker. In Bypass mode, the load is not protected by UPS. To protect your precious devices, you should turn on the UPS. Refer to the next step.

2. Press and hold the “ON” button for 0.5s to turn on the UPS, and the buzzer will beep once.
3. A few seconds later, the UPS will enter AC mode. If the utility power is abnormal, the UPS will operate in Battery mode without interruption.

Note: When the UPS runs out of battery power, it will shut down automatically in Battery Mode. When the utility power is restored, the UPS will auto-restart.

Turn on the UPS without the utility power supply (in Battery mode)

1. Ensure that the battery pack's breaker is in the “ON” position.
2. Press and hold the “ON” button for 0.5s to turn on the UPS, and the buzzer will beep once.
3. A few seconds later, the UPS will be turned on and enter Battery mode.

Connect devices to UPS

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

1. Turn on the UPS first and then switch on the devices individually. The LCD panel will display the total load level.
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 load is too big.
3. If the UPS is overloaded, the buzzer will beep twice every second.
4. When the UPS is overloaded, 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.
5. If the overload time exceeds the 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.

Charge the Batteries

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.
2. Suggest to charge batteries at least 10 hours before use. Otherwise, the backup time may be shorter than the expected time.
3. Ensure the battery numbers setting on the control board is consistent to a secure connection.

Battery Mode Operation

When the UPS is in Battery mode, the buzzer will beep according to different battery capacities. If the battery capacity exceeds 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 second) to remind users that the battery is at a 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 (the UPS would automatically cut off the programmable output terminal when the programmable timer function is enabled). If no more load is to be switched off, you must shut down all loads as soon as possible to protect the devices or save data. Otherwise, there is a risk of data loss or load failure.

Test the Batteries

1. If you need to check the battery status when the UPS is running in AC mode/CVCF mode/ECO mode, press the "Test" button to let the UPS do battery self-test.
2. To keep the system reliable, the UPS will periodically perform the battery self-test. The default setting period is once per week.
3. Users also can set battery self-tests through monitoring software.
4. If the UPS is at battery self-test, the LCD and buzzer indication will be the same as at Battery Mode, except the battery LED is flashing.

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

1. Turn off the inverter of the UPS by pressing the "OFF" button for at least 0.5 seconds, and then the buzzer will beep once. The UPS will turn into Bypass mode.

Note 1: If the UPS has been set to enable the bypass output, it will bypass voltage from utility power to output sockets and terminal even though you have turned off the UPS (inverter).

Note 2: After turning off the UPS, please be aware that the UPS is working in Bypass mode, and there is a risk of power loss for connected devices.

2. In Bypass mode, the output voltage of the UPS is still present. To cut off the output, switch off the input breaker. A few seconds later, no display is shown on the display panel, and UPS is completely off.

Turn off the UPS without the utility power supply in Battery mode

1. Turn off the UPS by pressing the “OFF” button for at least 0.5 seconds, and then the buzzer will beep once.
2. Then UPS will cut off power to output, and no display is shown on the display panel.

Mute the buzzer

1. To mute the buzzer, press the “Mute” button for at least 0.5 seconds. If you press it again after the buzzer is muted, it will beep again.
2. Some warning alarms can't be muted unless the error is fixed.

Operation in warning status

1. When the Fault LED flashes and the buzzer beeps once every second, it means that there are some problems with the UPS operation. Users can get the fault code from the LCD panel. Please check the troubleshooting table for details.

Operation in Fault Mode

1. When the 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 the display panel. Please check the troubleshooting table for details.
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 customer service immediately.
3. For emergency cases, please cut off the connection from the utility, external battery, and output immediately to avoid more risk or danger.

Adjusting charging current

1. In bypass mode, press the “Test/UP” and “Mute/Down” buttons simultaneously for more than 1 second to enter the settings menu.
2. Press the “Mute/Down” button until it shows 17 in parameter one, and press the “Enter” button to adjust the charging current.

	Recommended Charge Current Setting		
# of battery packs	Quantity (1)	Quantity (2)	Quantity (3)
2U Battery Pack	1	1.5	2
3U Battery Pack	1.5	3	4

3. In parameter 2, you can select the charging current from 1A to 4A by pressing the “Test/UP” or “Mute/ Down” buttons. Please confirm the setting by pressing the “ON/Enter” button.
4. In parameter 3, you can adjust the charging current according to the deviation between the actual charging current and the setting value of the current.

For example, if you want to have the charging current at 4A, but the charging current is measured only at 3.6 A, you need to select “+” and change the number to 4 in parameter 3.. Then, confirm this modification by pressing the “ON/Enter” button. Now, you may press “Test/UP” and “Mute/Down” buttons simultaneously to exit the setting mode.

Note 1: Be careful that the maximum charging current does not exceed the acceptable battery charging current.

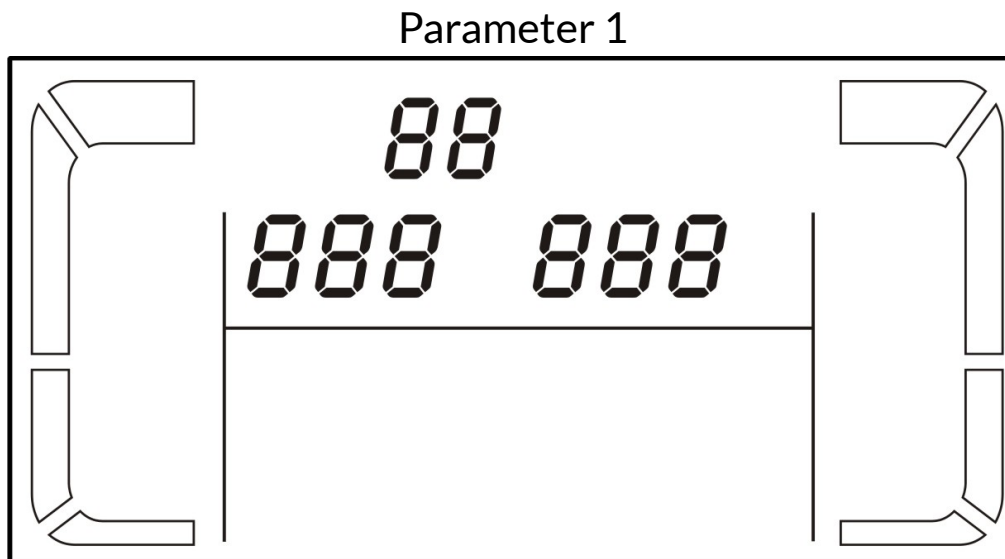
Note 2: All parameter settings will be saved only when UPS shuts down normally with an internal or external battery connection. (Normal UPS shutdown means turning off the input breaker in bypass/no output mode).

Abbreviation Meaning in LCD Display

Abbreviation	Display	Meaning
ENA	<i>ENR</i>	Enable
DIS	<i>di S</i>	Disable
ATO	<i>AtO</i>	Auto
BAT	<i>bAt</i>	Battery
NCF	<i>nCF</i>	Normal mode (not CVCF)
CF	<i>CF</i>	CVCF mode
SUB	<i>SuB</i>	Subtract
ADD	<i>AdD</i>	Add
ON	<i>On</i>	On
OFF	<i>OFF</i>	Off
FBD	<i>Fbd</i>	Not allowed
OPN	<i>OPN</i>	Allow
RES	<i>rES</i>	Reserved
OP.V	<i>OPU</i>	Output voltage
PAR	<i>PAR</i>	Parallel

3.3 LCD Settings

There are three parameters to set up the UPS. Refer to the following diagram.



Parameter 1: Displays program alternatives.

Parameter 2 and Parameter 3: Setting options or values for each program.

How to set parameters:

1. Put the UPS in Bypass mode by pressing and holding the OFF/ESC button for over 5 seconds.
2. Press and hold the Test/Up + Mute/Down buttons simultaneously. To enter setting mode.
3. Use the Up or Down button to find the ups parameter you wish to set.
4. Press the Enter button to confirm the selection
5. Use the Up or Down button to select the desired value.
6. Press the Enter button to confirm the selection
7. Press and hold the Text/Up + Mute/Down buttons simultaneously. To exit the setting mode.
8. Cycle UPS input power to save settings.

Program list for Parameter 1:


Code	Descriptions	Bypass/ No Output	AC	ECO	CVCF	Battery	Battery Test
01	Output voltage	Y					
02	Output frequency	Y					
03	Voltage range for bypass	Y					
04	Frequency range for bypass	Y					
05	ECO mode enable/disable	Y					
06	Voltage range for ECO mode	Y					
07	ECO mode frequency range setting	Y					
08	Bypass mode setting	Y	Y				

09	Battery backup time setting	Y	Y	Y	Y	Y	Y
10	Reserved	Reserved for future					
11	Reserved	Reserved for future					
12	Hot standby function enable/disable	Y	Y	Y	Y	Y	Y
13	Battery voltage adjustment	Y	Y	Y	Y	Y	Y
14	Charger voltage adjustment	Y	Y	Y	Y	Y	Y
15	Inverter voltage adjustment		Y		Y	Y	
16	Output voltage calibration		Y		Y	Y	
17	Charging current setting	Y	Y	Y	Y	Y	Y


*Y means that this program can be set in this mode.



Note: All parameter settings will only be saved when the UPS shuts down normally with an internal or external battery connection. (Normal UPS shutdown means turning off the input breaker in bypass/no output mode.)

01. Output voltage

Interface	Setting
	<p>Parameter 3: Output voltage You may choose the following output voltage in parameter 3:</p> <p>208: Presents output voltage is 208 Vac</p> <p>220: Presents output voltage is 220 Vac</p> <p>230: Presents output voltage is 230 Vac</p> <p>240: Presents output voltage is 240 Vac</p>


02. Output frequency

Interface	Setting
	<p>Parameter 2: Output Frequency Setting the output frequency. You may choose the following three options in parameter 2:</p> <p>50.0Hz: The output frequency is set to 50.0 Hz.</p> <p>60.0Hz: The output frequency is set to 60.0 Hz.</p> <p>ATO: If selected, the output frequency will be decided according to the latest normal utility frequency. If it is from 46 Hz to 54 Hz, the output frequency will be 50.0 Hz. If it is from 56Hz to 64Hz, the output frequency will be</p>


<p>50 Hz, Normal mode</p>  <p>ATO</p> 	<p>60.0 Hz. ATO is the default setting.</p> <p>Parameter 3: Frequency mode Setting output frequency at CVCF mode or not CVCF mode. You may choose the following two options in parameter 3:</p> <p>CF: Setting UPS to CVCF mode. If selected, the output frequency will be fixed at 50 Hz or 60 Hz according to the setting in parameter 2. The input frequency could be from 46 Hz to 64 Hz.</p> <p>NCF: Setting UPS to normal mode (not CVCF mode). If selected, the output frequency will synchronize with the input frequency within 46~54 Hz at 50 Hz or 56~64 Hz at 60 Hz according to the setting in parameter 2. If 50 Hz is selected in parameter 2, UPS will transfer to battery mode when the input frequency is not within 46~54 Hz. If 60Hz is selected in parameter 2, UPS will transfer to battery mode when the input frequency is not within 56~64 Hz.</p> <p>*If Parameter 2 is ATO, the Parameter 3 will show the current frequency.</p>
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Note: If the UPS is set to CVCF mode, the bypass function will be disabled automatically. But when a single UPS is powered on with mains and before the UPS has finished the startup, there will be a few seconds of voltage pulse (same as the input voltage) on the bypass output. If you need to remove the pulse on this mode to protect your load better, you could contact the dealer for help.


03. Voltage range for bypass

Interface	Setting
	<p>Parameter 2: Set the acceptable low-voltage for bypass. The setting range is 110 V to 209 V, and the default value is 110 V.</p> <p>Parameter 3: Set the acceptable high-voltage for bypass. The setting range is from 231 V to 276 V, and the default value is 264 V.</p>


04. Frequency range for bypass

Interface	Setting
	<p>Parameter 2: Set the acceptable low-frequency for bypass. 50 Hz system: The setting range is from 46.0 Hz to 49.0 Hz. 60 Hz system: The setting range is from 56.0 Hz to 59.0 Hz. The default value is 46.0 Hz/56.0 Hz.</p> <p>Parameter 3: Set the acceptable high frequency for bypass. 50 Hz: The setting range is from 51.0 Hz to 54.0 Hz. 60 Hz: The setting range is from 61.0 Hz to 64.0 Hz. The default value is 54.0 Hz/64.0 Hz.</p>


05. ECO mode enable/disable

Interface	Setting
	<p>Parameter 3: Enable or disable the ECO function. You may choose the following two options:</p> <p>DIS: Disable the ECO function ENA: Enable the ECO function If the ECO function is disabled, the voltage range and frequency range for ECO mode still can be set, but has no effect unless the ECO function is enabled.</p>


06. Voltage range for ECO mode

Interface	Setting
	<p>Parameter 2: Low-voltage point in ECO mode. The setting range is from 5% to 10% of the nominal voltage.</p> <p>Parameter 3: High-voltage point in ECO mode. The setting range is from +5% to +10% of the nominal voltage.</p>


07. Frequency range for ECO mode

Interface	Setting
	<p>Parameter 2: Set low-frequency point for ECO mode. 50 Hz system: The setting range is from 46.0 Hz to 49.0 Hz. 60 Hz system: The setting range is from 56.0 Hz to 59.0 Hz. The default value is 48.0Hz/58.0Hz.</p> <p>Parameter 3: Set high-frequency point for ECO mode. 50 Hz: The setting range is from 51.0 Hz to 54.0 Hz. 60 Hz: The setting range is from 61.0 Hz to 64.0 Hz. The default value is 52.0Hz/62.0Hz.</p>


08. Bypass mode setting

Interface	Setting
	<p>Parameter 2: OPN: Bypass allowed. UPS will run in bypass mode when selected, depending on the bypass enabled/disabled setting. FBD: Bypass not allowed. When selected, it's not allowed to run in bypass mode under any situation.</p> <p>Parameter 3: ENA: Bypass enabled. When selected, Bypass mode is activated. DIS: Bypass disabled. When selected, automatic bypass is acceptable, but manual bypass is not allowed. Manual bypass means users manually operate UPS for bypass mode. For example, pressing the OFF button in AC mode to turn into Bypass mode.</p>

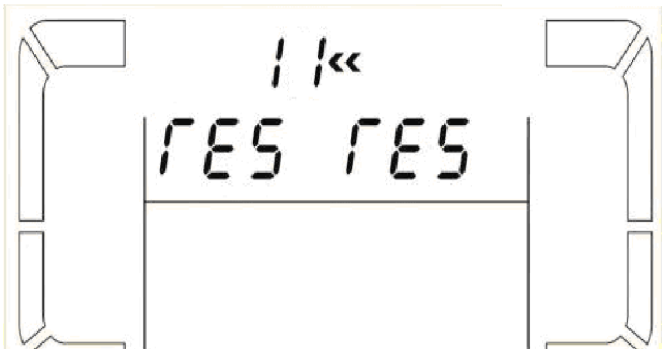
09. Battery backup time setting

Interface	Setting
	<p>Parameter 3: 000~999: Set the maximum backup time from 0 min to 999 min. UPS will shut down to protect the battery after backup time arrives. The default value is 990 min.</p> <p>DIS: Disable the battery discharge protection and backup time will depend on the battery capacity.</p>

10. Reserved

Interface	Setting
	Reserved

11. Voltage range for ECO mode

Interface	Setting
	Reserved.

12. Hot standby function enable/disable

Interface	Setting
<p>The LCD display shows '12<<' at the top and 'HSH YES' in the center. The display is framed by a yellow border.</p>	<p>Parameter 2: HS.H Enable or disable the hot standby function. You may choose the following two options in Parameter 3:</p> <p>YES: The hot standby function is enabled. It means that the current UPS is set to host the hot standby function, and it will restart after AC recovery even without the battery connected.</p> <p>NO: Hot standby function is disabled. The UPS is running in normal mode and can't restart without the battery connected.</p>

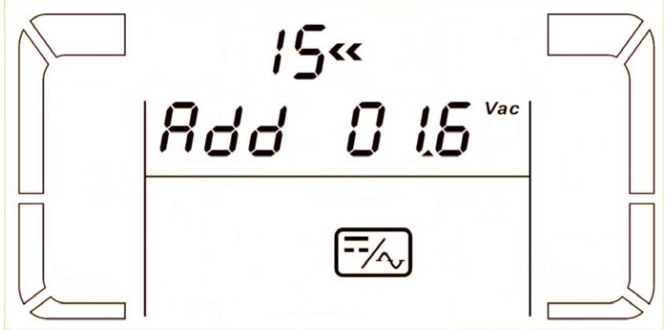
13. Battery voltage adjustment

Interface	Setting
<p>The LCD display shows '13<<' at the top and 'Add 0.18 Vdc' in the center. Below the text is a battery icon with a '+' and '-' sign. The display is framed by a yellow border.</p>	<p>Parameter 2: Select the "Add" or "Sub" function to adjust the battery voltage to the real figure.</p> <p>Parameter 3: The voltage range is from 0 V to 5.7 V, and the default value is 0 V.</p>

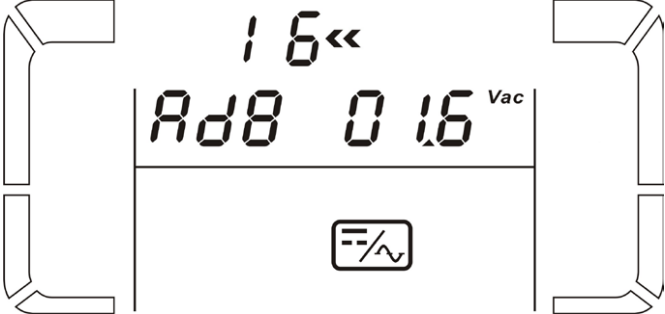
14. Charger voltage adjustment

Interface	Setting
<p>The LCD display shows '14<<' at the top and 'Add 0.26 Vdc' in the center. Below the text is a battery icon with a '+' and '-' sign, and a charging symbol (a circle with a tilde) and 'I/P' with an arrow pointing to the battery. The display is framed by a yellow border.</p>	<p>Parameter 2: Choose Add or Sub to adjust the charger voltage.</p> <p>Parameter 3: The voltage range is from 0 V to 9.9 V. The default value is 0 V.</p> <p>Note: *Before making voltage adjustments, disconnect all batteries first to get the accurate charger voltage. *We strongly suggest to use the default value (0). Any modification should be suitable to battery specifications.</p>

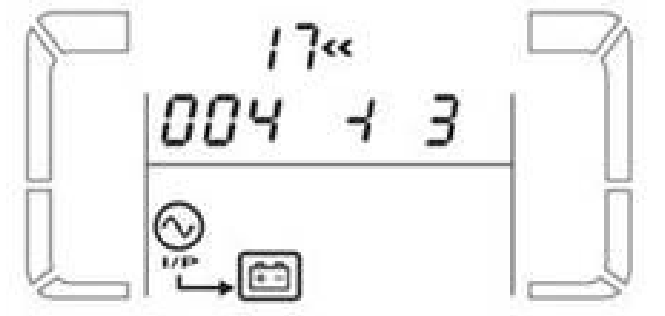
15. Inverter voltage adjustment

Interface	Setting
	<p>Parameter 2: Choose Add or Sub to adjust inverter voltage</p> <p>Parameter 3: The voltage range is from 0 V to 6.4 V. The default value is 0 V.</p>

16. Output voltage adjustment

Interface	Setting
	<p>Parameter 2: Add or Sub to adjust the output voltage.</p> <p>Parameter 3: The voltage range is from 0 V to 6.4 V and the default value is 0 V.</p>

17. Charging current setting

Interface	Setting
	<p>Parameter 2: Set up the charging current of the charger 001~004: Set the charging current of the charger from 1 A to 4 A.</p> <p>Parameter 3: Calibrate the charging current. $\pm 0 \sim \pm 5$: You may choose '+' as add or '-' as Sub to adjust charging current. This setting number is the first number after the decimal point.</p> <p>For example, if the setting value is "+" and "3", the calibrated formula is to add 0.3 A. The setting charging current on the left screen is 4.3 A. (4 A + 0.3 A = 4.3 A.)</p>


















4. Troubleshooting

4.1 Audible Alarm

If the UPS system is not functioning correctly, please reference the tables below to isolate the issue.

Description	Buzzer Status
UPS Status	
Bypass mode	Beeping once every 2 minutes.
Battery mode	Beeping once every 4 seconds.
Fault mode	Beeping continuously.
Warning	
Overload	Beeping twice every second.
Others	Beeping once every second.
Fault	
All	Beeping continuously.



4.2 Warning Indicators

Warning	Icon (flashing)	Alarm
Low battery	 	Beeping every second.
Overload	 	Beeping twice every second.
Battery disconnected	 	Beeping every second.
Over charge	 	Beeping every second.
EPO enable	 	Beeping every second.
Fan failure/Over temperature	 	Beeping every second.
Charger failure	 	Beeping every second.
I/P fuse broken	 	Beeping every second.
Overload 3 times in 30min		Beeping every second.






4.3 Warning Code Descriptions

Warning Code	Warning Event	Warning Code	Warning Event
01	Battery disconnected	10	L1 IP fuse broken
07	Over-charge	21	Line situations are different in parallel system
08	Low-battery	22	Bypass situations are different in parallel systems
09	Overload	33	Locked in bypass overload 3 times in 30 min
0A	Fan failure	3A	Cover of PM module is open
0B	EPO enable	3D	Bypass unstable
0D	Over-temperature	3E	Boot loader is missing
0E	Charger failure		

4.4 Fault Code Descriptions

Fault Event	Fault Code	Icon	Fault Event	Fault Code	Icon
Bus start failure	01	None	Battery SCR short circuited	21	None
Bus over	02	None	Inverter relay short circuited	24	None
Bus under	03	None	Charger short circuited	2a	None
Bus unbalance	04	None	Can communication fault	31	None
Inverter soft start failure	11	None	Parallel output current unbalance	36	None
High Inverter voltage	12	None	Over-temperature	41	None
Low Inverter voltage	13	None	CPU communication failure	42	None
Inverter output short circuited	14		Overload	43	
Negative power fault	1A	None	Battery turn-on failure	6A	None
Inverter over current	60	None	PFC current failure in battery mode	6B	None
Inverter waveform abnormal	63	None	Bus voltage changes too fast	6C	None

4.5 Troubleshooting Chart

Symptom	Possible Cause	Remedy
The icon  and the warning code EP flash on LCD display and alarm beeps every second.	EPO function is enabled.	Set the circuit in closed position to disable EPO function.
The icon  and BATT. FAULT flash on LCD display and alarm beeps every second.	The external or internal battery is incorrectly connected.	Check if all batteries are properly connected.
The icon  and OVER LOAD flash on LCD display and alarm beeps twice every second.	The UPS is overloaded.	Remove excess loads from UPS output.
	The UPS is overloaded. Devices connected to the UPS are fed directly by the electrical network via the bypass.	Remove excess loads from UPS output.
	After repetitive overloads, the UPS is locked in the Bypass mode. Connected devices are fed directly to the mains.	Remove excess loads from UPS output. Then, shut down the UPS and restart.
Fault code is shown as 43. The icon OVER LOAD lights on LCD display and alarm beeps continuously.	UPS is overloaded too long and becomes fault. Then UPS shuts down automatically.	Remove excess loads from UPS output and restart it.
Fault code is shown as 14. The icon SHORT lights on LCD display, and alarm beeps continuously.	The UPS shuts down automatically because short circuits occurs on the UPS output.	Check output wiring and if connected devices are in short circuit status.
Fault code is shown as 01, 02, 03, 04, 11, 12, 13, 14, 1A, 21, 24, 35, 36, 41, 42 or 43 on LCD.	A UPS internal fault has occurred. There are two possible results: 1. The load is still supplied, but directly from AC power via bypass. 2. The load is no longer supplies but power.	Contact your dealer.
Battery backup time is shorter than nominal value.	Batteries are not fully charged.	Charge the batteries for at least 7 hours and then check capacity. If the problem persists, consult your dealer.
	Battery is defective.	Contact your dealer to replace the battery
The icon  and  flash on the LCD display and alarm beeps every second.	Fan is locked or not working; or the UPS temperature is too high.	Check fans and notify your dealer.

5. Specifications

PHYSICAL SPECIFICATIONS				
Part Number	DX5000N	DX6000N	DX10KN	
Dimensions (WxDxH)	17.2" x 23.6" x 3.5" (436.88 mm x 599.44 mm x 88.9 mm)			
Weight	33.1 lb (15.01 kg)		39.7 lb (18.00 kg)	
POWER				
Power Capacity	5 kVA (5 kW)	6 kVA (6 kW)	10 kVA (10 kW)	
Input (Voltage/Frequency)	110-300 VAC* / 50/60Hz			
Output (Voltage)	208/220/230/240 VAC (208/120V or 240/120V with optional transformer)***			
Output (Frequency)	50/60Hz ± 0.1Hz			
THD (full load)	< 4%			
Overload Capacity	110% 10 min; 130% 1 min; > 130% 1 sec			
Output (Efficiency)	Up to 94% online mode or 99% ECO mode			
BATTERY				
Type	Sealed, maintenance-free lead-acid			
Charging Current	1-4 A			
Nominal/Float Voltage	240/273 VDC			
BYPASS DISTRIBUTION MODULE				
Part Number	PM6KA (5 or 6 kVA)	PM10KB	PM10KC	PM10KD
Input Connection	6" (1.82 m) L6-30P	Terminal blocks or optional line cord		
Output Connection	(2) L6-30R + (2) C19** each with breaker	Terminal block + L6-30R + (2) C19** each with breaker	Terminal block + L6-30R with breaker	(2) L6-30R each with breaker
INCLUDED				
Communications Interface	RS-232, USB, EPO, intelligent slot for optional cards (Web/SNMP, Relay/dry contact, Modbus)			
Included in Box	ViewPower software, horizontal brackets, tower pedestals, and user manual			
OPTIONAL				
Available Options	Bypass distribution (PM series), 4-post rail kit, 2-post shelf kit, wall-mount bracket			
Optional Battery Packs PN	See "Battery Pack and Runtimes" table in table below.			

ENVIRONMENTAL		
Operating Temperature	32-104°F (0-40°C)	
Audible Noise	< 55 dBA	< 58 dBA
Elevation, Above MSL	11,500 ft (3,500 m)	
COMPLIANCE/STANDARDS		
EMC Compliance	CE, EN62040-2:2006+AC:2006 & EN61000 (as applicable), FCC Class A, FCC Class B (as applicable)	
Safety Compliance	CE, EN62040-1:2008+A1:2013, TUV certified to UL-1778 and CSA-C22.2no107.3-14	
Environmental	RoHS	
TAA Compliant	Yes (UPS only)	

BATTERY PACK DATA & RUNTIMES

		Qty	1 kW	2 kW	3 kW	4 kW	5 kW	6 kW	7 kW	8 kW	9 kW	10 kW
Part Number	BX240D2	1 BP	53	27	15	11	7	5	4	4	3	2
Dimensions	17.2" x 27.4" x 3.5" (436.88 x 695.96 x 88.9 mm)	2 BP	117	61	38	27	20	15	13	11	9	7
Type/Quantity	(20) 12V 5AH Lead-Acid	3 BP	171	100	62	43	33	27	22	18	15	13
Part Number	BX240D3	1 BP	92	46	29	30	15	12	10	8	7	6
Dimensions	17.2" x 27.4" x 5.2" (436.88 x 695.96 x 132.08 mm)	3 BP	182	106	66	47	36	29	24	20	18	15
Type/Quantity	(20) 12V 580W Lead-Acid	3 BP	287	151	107	76	58	47	39	33	29	25

Runtimes are shown in minutes and will vary based on battery age and site conditions.

6. Obtaining Service

If the UPS requires Service:

1. Use the TROUBLESHOOTING section in this manual to eliminate obvious causes.
2. Verify there are no circuit breakers tripped.
3. Call your dealer for assistance. If you cannot reach your dealer, or if they cannot resolve the problem, call Enconnex Technical Support at +1 (775) 562-2138 or toll-free at +1 (833) 825-5329. Technical support inquiries can also be made at info@enconnex.com. Please have the following information available BEFORE calling the Technical Support Department:
 - Your name and address.
 - The serial number of the unit.
 - Where and when the unit was purchased.
 - All of the model information about your UPS.
 - Any information on the failure, including LEDs that may or may not be illuminated.
 - A description of the protected equipment, including model numbers, if possible.
 - A technician will ask you for the above information and, if possible, help solve your problem over the phone. If the unit requires factory service, the technician will issue you a Return Material Authorization number (RMA).

If you are returning the UPS to Enconnex for service, please follow these procedures:

1. Pack the UPS in its original packaging. If the original packaging is no longer available, ask the Technical Support Technician about obtaining a replacement set of packaging materials. It is important to pack the UPS properly to avoid damage in transit. Never use Styrofoam beads for a packing material.
2. Include a letter with your name, address, daytime phone number, RMA number, a copy of your original sales receipt, and a brief description of the problem.
3. Mark the RMA number on the outside of all packages. Enconnex cannot accept any package without the RMA number marked on the outside of the boxes.
4. Return the UPS by an insured, prepaid carrier to the address provided by the Technician.
5. Refer to the Warranty statements in this manual for additional details on what is covered.

Customer Service: sales.usa@enconnex.com or +1 (833) 825-5329

Technical Support: info@enconnex.com or +1 (775) 562-2138

7. Enconnex Limited Warranty

Enconnex warrants Enconnex equipment when properly applied and operated within specified conditions, against faulty materials or workmanship for a period of three years for DXN series products from the date of purchase. Enconnex warrants internal batteries for a period of three years from the date of purchase. For equipment sites within the United States and Canada, this warranty covers repair or replacement at the sole discretion of Enconnex. The customer is responsible for the costs of shipping the defective product to Enconnex. Enconnex will pay for ground shipment of the repaired or replacement product. This warranty applies only to the original purchaser.

If equipment provided by Enconnex is found to be Dead-on-Arrival (DOA), Enconnex will be responsible for the costs of shipping product to and returning equipment from the customer in a timely manner as agreed to with the customer once the customer has requested and received a Return Material Authorization (RMA) number. DOA equipment is defined as equipment that does not properly function according to user documentation when initially received and connected in conjunction with proper procedures as shown in the user documentation or via support provided by Enconnex personnel or authorized agents.

This warranty shall be void if (a) the equipment is repaired or modified by anyone other than Enconnex or an Enconnex approved third party; (b) the equipment is damaged by the customer, is improperly used or stored, is subjected to an adverse operating environment, or is operated outside the limits of its electrical specifications; or (c) the equipment has been used or stored in a manner contrary to the equipment's operating manual, intended use or other written instructions. Any technical advice furnished by Enconnex or an Enconnex authorized representative before or after delivery with regard to the use or application of Enconnex equipment is furnished on the basis that it represents Enconnex's best judgment under the situation and circumstances, but it is used at the recipient's sole risk.

EXCEPT AS STATED ABOVE, Enconnex DISCLAIMS ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

EXCEPT AS STATED ABOVE, IN NO EVENT WILL Enconnex BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF Enconnex EQUIPMENT, including but not limited to any costs, lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, cost of substitutes, or claims by third parties. Purchaser's sole and exclusive remedy for breach of any warranty, expressed or implied, concerning Enconnex equipment, and the only obligation of Enconnex under this warranty, shall be the repair or replacement of defective equipment, components, or parts; or, at Enconnex's sole discretion, refund of the purchase price or substitution of an equivalent replacement product.