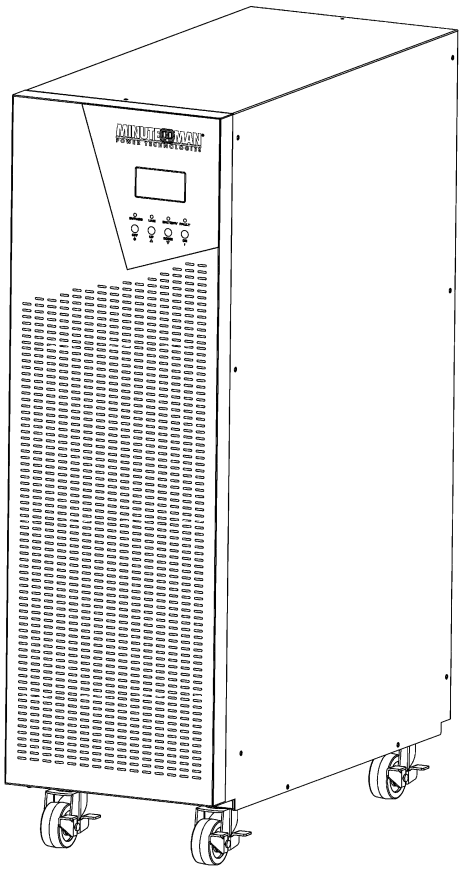
MINUTEMAN®
POWER TECHNOLOGIES
by Para Systems, Inc.

Endeavor 6K/10K On-line Tower UPS with Isolation Output Transformer

User's Manual



Thank you for purchasing this power protection product. It has been designed and manufactured to provide many years of trouble free service. Please read this manual before installing your Endeavor UPS, models ED6KTF, ED10KTF as it provides important information that should be followed during the installation and the maintenance of the UPS system allowing you to correctly set up your system for the maximum safety and performance. If you experience a problem with the UPS system please refer to the Troubleshooting guide in this manual to correct the problem or collect enough information so that the Technical Support Department can assist you.

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS!

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1. Safety and EMC instructions

Please carefully read the following user manual and the safety instructions before installing the unit or operating the unit!

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS!

1-1. Transportation and Storage

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

 The UPS must be stored in a ventilated and dry location.

1-2. Preparation

 Condensation may occur if the UPS system is moved 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 the environment.

 Do not install the UPS system near water or in moist environments or where it would be exposed to direct sunlight or a nearby heater.

 Do not block the ventilation holes on the UPS.

1-3. Installation

 This UPS series is **ONLY** intended to be installed in an indoor temperature controlled environment that is free of conductive contaminants. This UPS series is not intended for use in a computer room as defined in the Standard for the Protection of Electronic Computer/Data Processing Equipment ANSI/NFPA 75.

 Do not connect appliances or devices which would overload the UPS (e.g. big motor-type equipment) to the UPS output.

 Route cables in such a way that no one can step on or trip over them.

 Do not block the air vents on the UPS. The UPS must be installed in a location with good ventilation. Ensure enough space on each side for ventilation.

 UPS has provided an earthed terminal, in the final installed system configuration, equipotential earth bonding to the external UPS battery cabinets.

 The UPS can be installed only by qualified service personnel.

 An appropriate disconnect device for short-circuit protection should be provided in the building wiring installation.

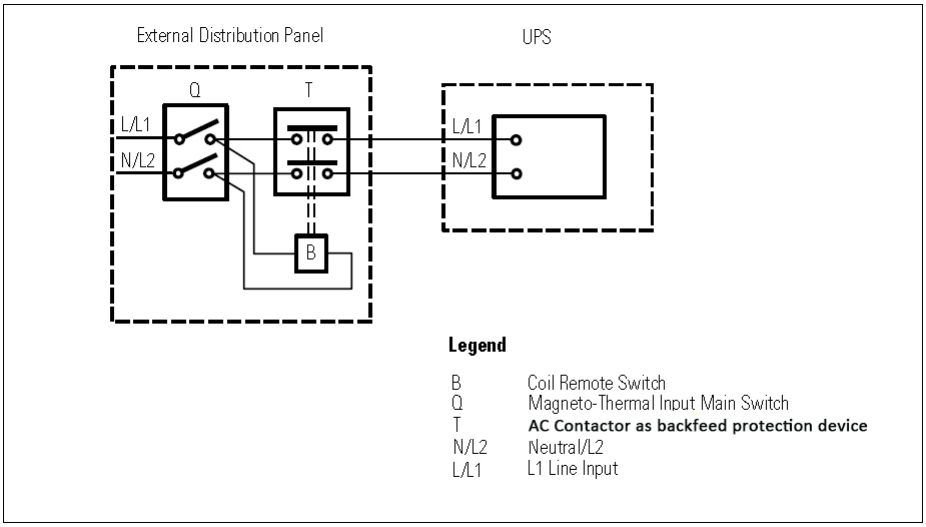
 An integral single emergency switching device which prevents further supply to the load by the UPS in any mode of operation should be provided in the building wiring installation.

 Connect to the earth grounding before connecting to the building wiring terminal.

 Installation and Wiring must be performed in accordance with the local electrical codes and regulations.

1-4. Connection Warnings

- In accordance with safety standard EN-IEC 62040-1, installation has to be provided with a Backfeed Protection system, as for example a contractor, which will prevent the appearance of voltage or dangerous energy in the input mains during a mains fault. There is no standard backfeed protection inside of the UPS. Please isolate the UPS before working according to below diagram. The isolation device must be able to carry the UPS input current.



External backfeed protection wiring

⚠ There can be no derivation in the line that goes from the «Backfeed Protection» to the UPS.

- Warning labels should be placed on all primary power switches installed in places away from the device to alert the electrical maintenance personnel of the presence of a UPS in the circuit. The label will bear the following or an equivalent text:

Before working on this circuit
- Isolate the Uninterruptible Power System (UPS)
- Then check for Hazardous Voltage between all terminals including the protective earth.

⚡ **Risk of Voltage Backfeed**

- This UPS should be connected with **TN** earthing system.
- The mains for this unit must be single-phase rated in accordance with the equipment nameplate. It also must be suitably grounded.

WARNING
HIGH LEAKAGE CURRENT
EARTH CONNECTION ESSENTIAL
BEFORE CONNECTING SUPPLY

- The UPS is connected to a DC source (battery). The output terminals may be live when the UPS is not connected to an AC supply.

1-5. Operation

 Do not disconnect the earth conductor cable on the UPS or the building wiring terminals since this would cancel the protective earth of the UPS system and of all connected loads.

 The UPS system features its own, internal current source (batteries). The UPS output may be electrically live even if the UPS system is not connected to the building wiring.

 In order to fully disconnect the UPS system, first press the “OFF” button and then disconnect the mains.

 Ensure that no liquid or other foreign objects can enter into the UPS system.

 Life Support Policy: As a general policy, we do not recommend the use of any of our products in life support applications where failure or malfunction of the product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. We do not recommend the use of any of our products in direct patient care. We will not knowingly sell our products for use in such applications unless it receives in writing assurances satisfactory to us that (a) the risks of injury or damage have been minimized, (b) the customer assumes all such risks, and (c) our liability is adequately protected under the circumstances.

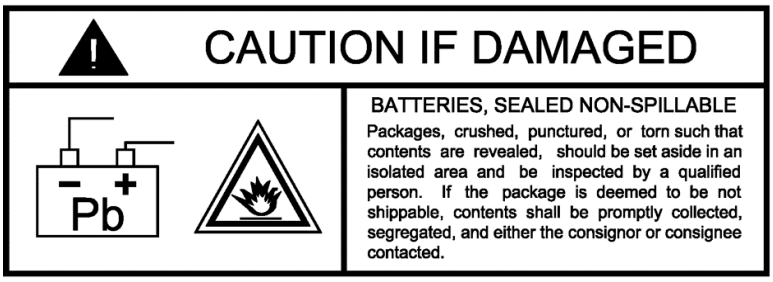
2. Installation and Operation

This UPS series is **ONLY** intended to be installed in an indoor temperature controlled environment that is free of conductive contaminants. DO NOT operate the UPS in: extremely dusty and/or unclean areas, locations near heating devices, water or excessive humidity, or where the UPS is exposed to direct sunlight. Select a location, which will provide good air circulation for the UPS at all times. Route power cords so they cannot be walked on or damaged. This UPS series is not intended for use in a computer room as defined in the Standard for the Protection of Electronic Computer/Data Processing Equipment ANSI/NFPA 75. Typical battery life is 3 to 5 years. Environmental factors do affect battery life. High temperatures, poor utility power, and frequent, short duration discharges have a negative impact on battery life.

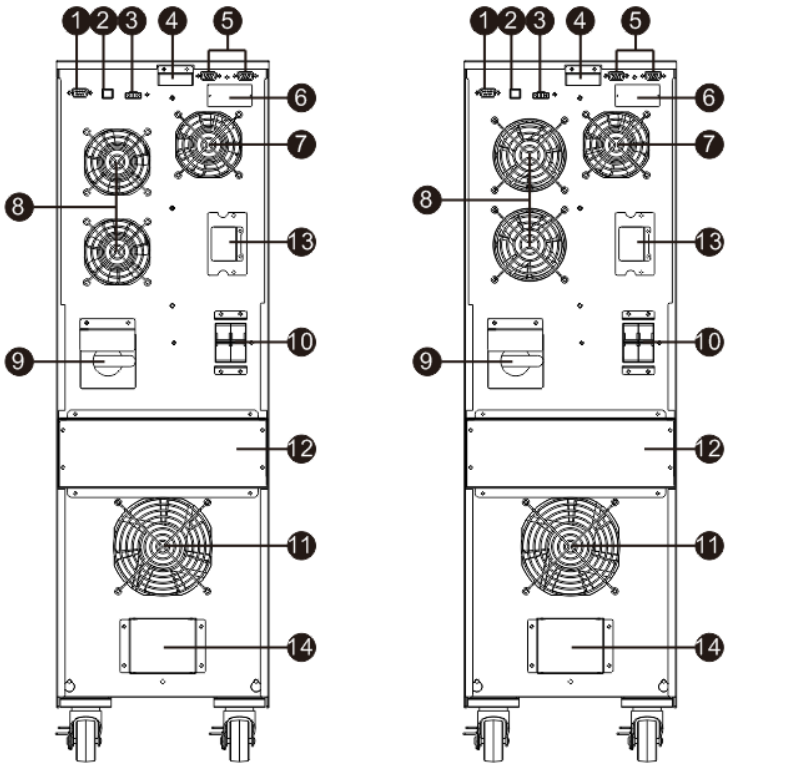
Operating Temperature (Maximum): 0 to 40°C (+32 to +104°F)
Operating Elevation: 0 to 1,000m (0 to +3,280 ft)
Operating and Storage Relative Humidity: 5% to 95%, non-condensing
Storage Temperature: -25 to +45°C (-13 to +113°F)
Storage Elevation: 0 to 15,000m (0 to +50,000 ft)

2-1. Unpacking and Inspection

After removing your UPS from its carton, it should be inspected for damage that may have occurred in shipping. Immediately notify the carrier and place of purchase if any damage is found. Warranty claims for damage caused by the carrier will not be honored. The packing materials that your UPS was shipped in are carefully designed to minimize any shipping damage. In the unlikely case that the UPS needs to be returned to the manufacturer, please use the original packing material. Since the manufacturer is not responsible for shipping damage incurred when the system is returned, the original packing material is inexpensive insurance. **PLEASE SAVE THE PACKING MATERIALS!**



2-2. Rear Panel View



6K 10K

Diagram 1: Rear Panel Overlook

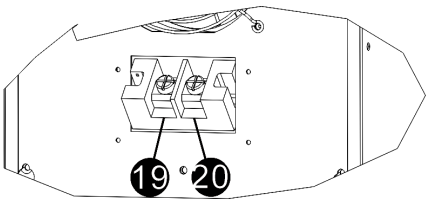


Diagram 2: Non-isolated neutral terminal

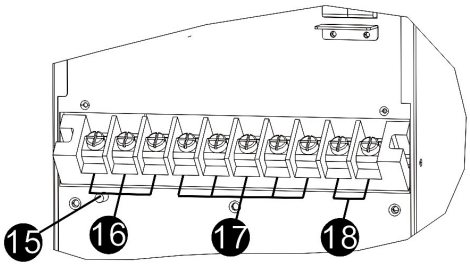


Diagram 3: Input / Output Terminal

1. RS-232 communication port
2. USB communication port
3. Emergency power off function connector (EPO connector)
4. N/A
5. N/A
6. Option slot
7. Charger fan
8. Power stage fan
9. Maintenance bypass switch
10. Input circuit breaker
11. Isolation transformer fan
12. Input/output terminal (Refer to Diagram 2 for the details)
13. External battery connector
14. Non-isolated neutral terminal
15. Output ground
16. ISO TAP selections
17. Output terminals
18. Input terminals
19. Non-isolated neutral
20. Input ground

2-3. UPS Installation

Installation and wiring must be performed in accordance with the local electric codes/regulations by qualified service personnel.

1) Make sure the mains wire and breakers in the building are rated appropriately for the 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 to the UPS before installation.

3) Turn off all the connected devices before connecting to the UPS.

4) Use the following wire sizes for the UPS wiring:

Model	Wiring spec (AWG)			
	Input	Output	Non-isolated Neutral	Ground
6K	6	6	6	6
10K	4	4	4	4

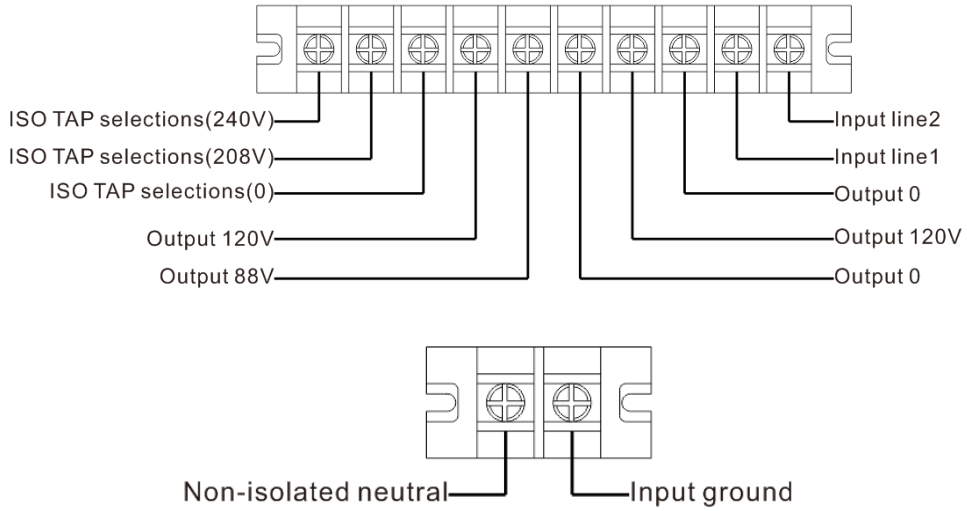
NOTE 1: The cable for 6K should be able to withstand over 40A current. It is recommended to use 6 AWG or thicker wire for safety and efficiency.

NOTE 2: The cable for 10K should be able to withstand over 63A current. It is recommended to use 4 AWG or thicker wire for safety and efficiency.

NOTE 3: For single model, it's not necessary to connect the Non-isolated Neutral terminal.

NOTE 4: The selections for color of wires should be followed by the local electrical codes and regulations.

5) 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 the rest of the wire connections. (Disconnect the earth wire last when disconnecting the wires!)



Terminal block wiring diagram of 6K/10K

NOTE 1: Make sure that the wires are connected tightly to the terminals.

NOTE 2: There are two output terminals to meet customers' requirements.

NOTE 3: Please install the output breaker between the output terminal and the load. The breaker should be qualified with a leakage current protective function if necessary.

6) Put the terminal block cover back on the rear panel of the UPS

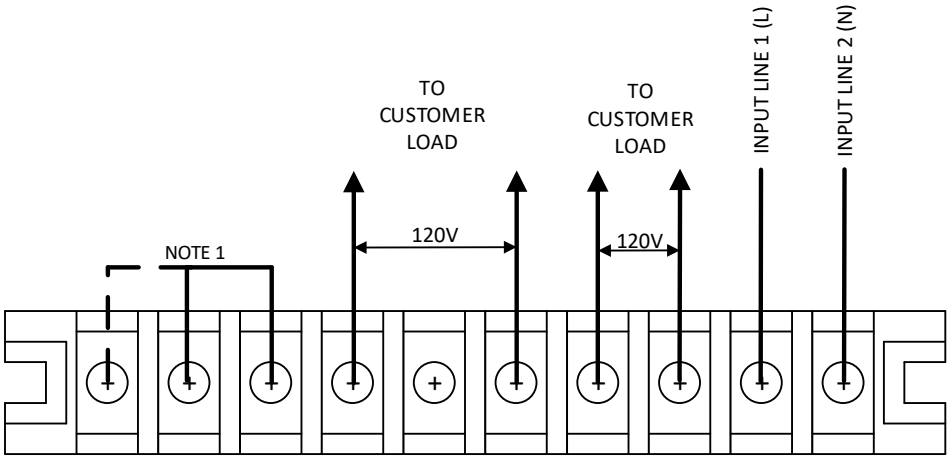
Warning:

- Make sure the Battery Pack DC breaker is in the OFF position before connecting the battery cable.
- Pay attention to the rated battery voltage marked on the rear panel. If you want to change the numbers of the battery pack, please make sure you modify the setting simultaneously. The connection with wrong battery voltage may cause permanent damage of the UPS. Make sure the voltage of the battery pack is correct.
- Pay attention to the polarity marking on external battery terminal block, and make sure the correct battery polarity is connected. Wrong connection may cause permanent damage of the UPS.
- Make sure the protective earth ground wiring is correct. The wire current spec, color, position, connection and conductance reliability should be checked carefully.
- Make sure the utility input & output wiring is correct. The wire current spec, color, position, connection and conductance reliability should be checked carefully. Make sure the L/N connections are correct and not reverse or short-circuited.

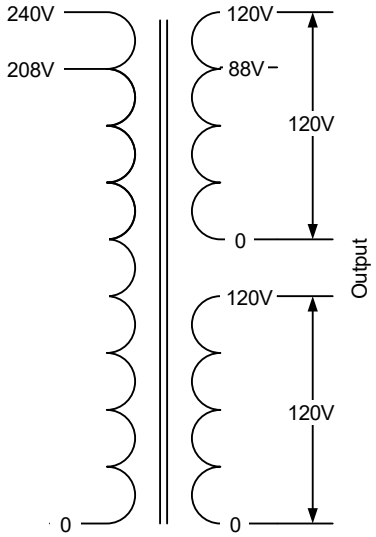
2-4. Output Configuration

1) 120V Outputs

There are 2 sets of 120V outputs. Each set can carry half of the total UPS capacity.



ISO TAP SELECTION			OUTPUT~					INPUT~	
240V	208V	0V	120V	88V	0V	120V	0V	L1	L2



Output wiring – 120V

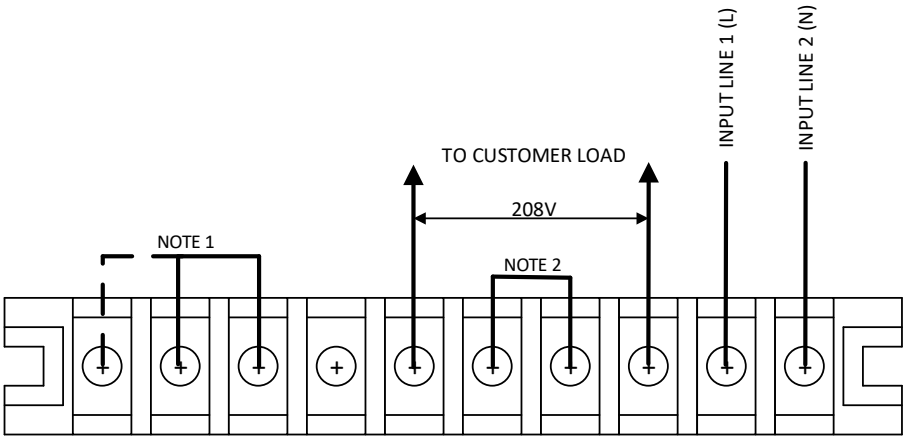
NOTE 1: ISO Tap Selection needs to be set to match the input voltage. Install a jumper between 0-208V or 0-240V.

NOTE 2: Make sure that the wires are connected tightly to the terminals.

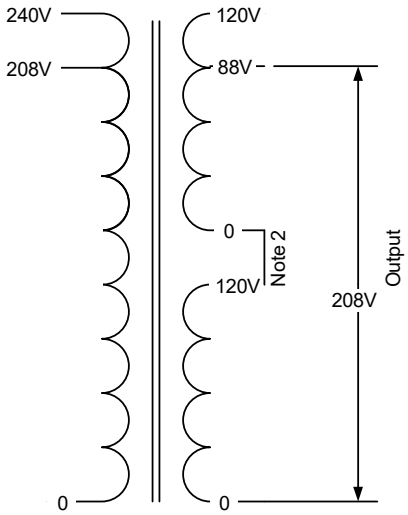
NOTE 3: Install the output breaker between the output terminal and the load. The breaker should be qualified with leakage current protection if necessary.

2) 208V Output

A jumper wire must be connected between <u>0V and 120V</u> as shown below.



ISO TAP SELECTION			OUTPUT~					INPUT~	
240V	208V	0V	120V	88V	0V	120V	0V	L1	L2



Note 2: Full rated jumper must be installed

Output wiring– 208V

NOTE 1: ISO Tap Selection needs to be set to match the input voltage. Install a jumper between 0-208V or 0-240V.

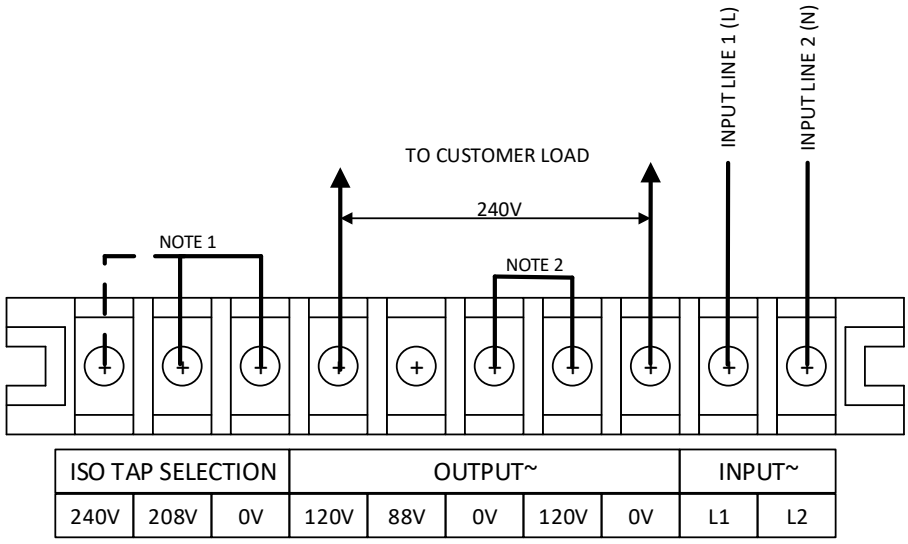
NOTE 2: A full rated jumper wire must be installed.

NOTE 3: Make sure that the wires are connected to the terminals.

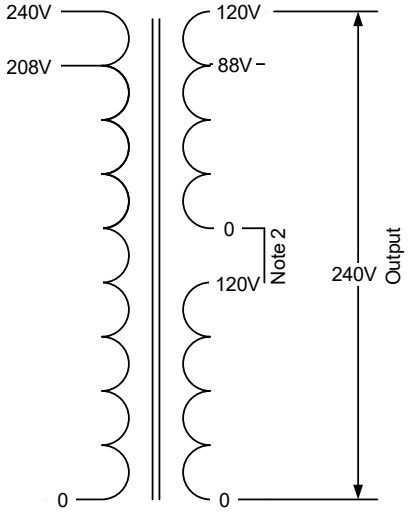
NOTE 4: Install the output breaker between the output terminal and the load. The breaker should be qualified with leakage current protection if necessary.

3) 240V Output

A jumper wire must be connected between 0V and 120V as shown below.



ISO TAP SELECTION			OUTPUT~					INPUT~	
240V	208V	0V	120V	88V	0V	120V	0V	L1	L2



Note 2: Full rated jumper must be installed

Output wiring– 240V

NOTE 1: ISO Tap Selection needs to be set to match the input voltage. Install a jumper between 0-208V or 0-240V.

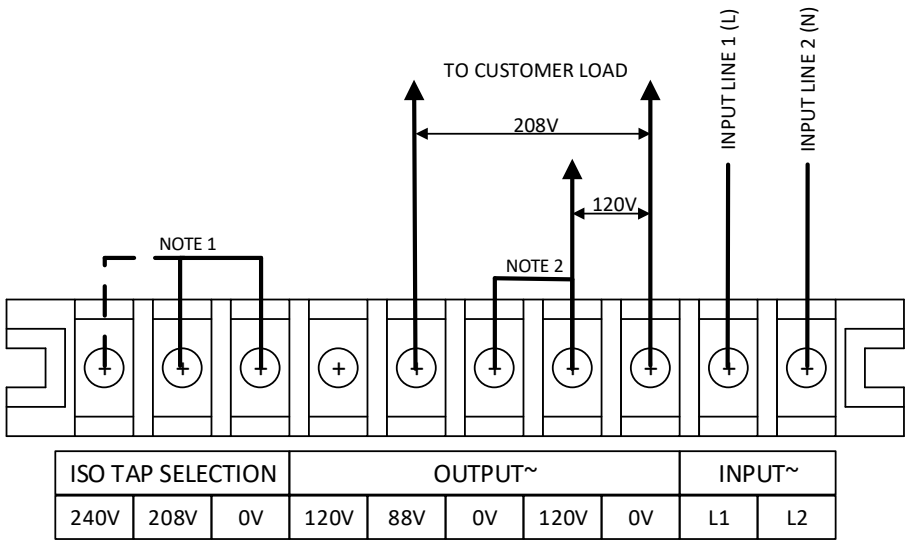
NOTE 2: A full rated jumper must be installed.

NOTE 3: Make sure that the wires are connected tightly to the terminals.

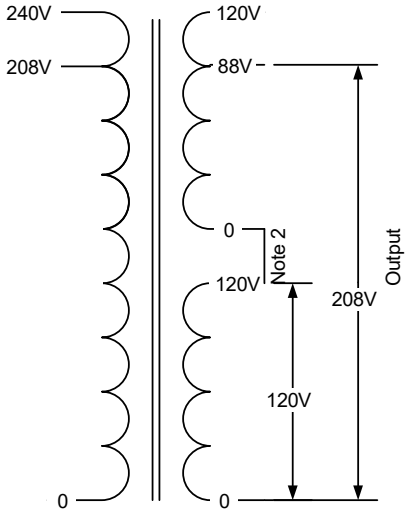
NOTE 4: Install the output breaker between the output terminal and the load. The breaker should be qualified with leakage current protection if necessary.

4) 120V and 208V Output

A jumper wire must be connected between 0V and 120V as shown below.



ISO TAP SELECTION			OUTPUT~					INPUT~	
240V	208V	0V	120V	88V	0V	120V	0V	L1	L2



Note 2: Full rated jumper must be installed

Output wiring – 208V & 120V

NOTE 1: ISO Tap Selection needs to be set to match the input voltage. Install a jumper between 0-208V or 0-240V.

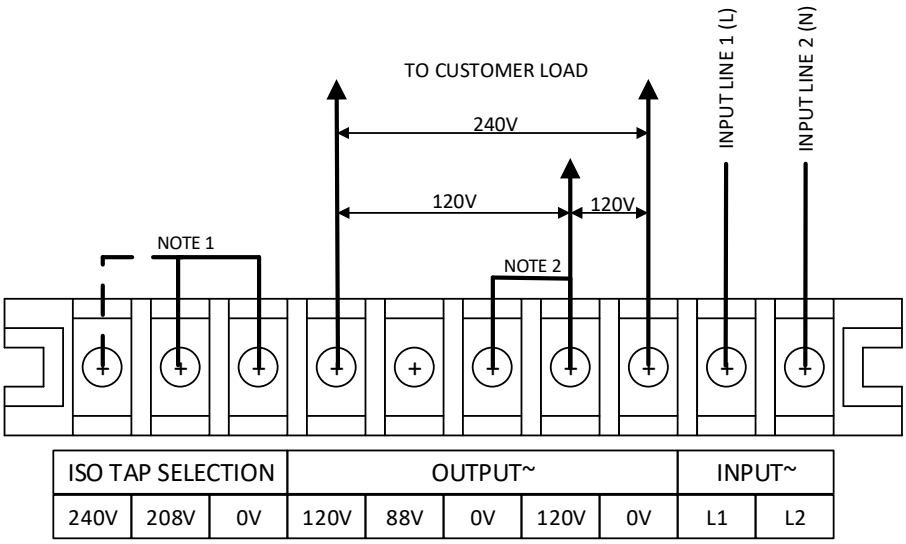
NOTE 2: A full rated jumper must be installed.

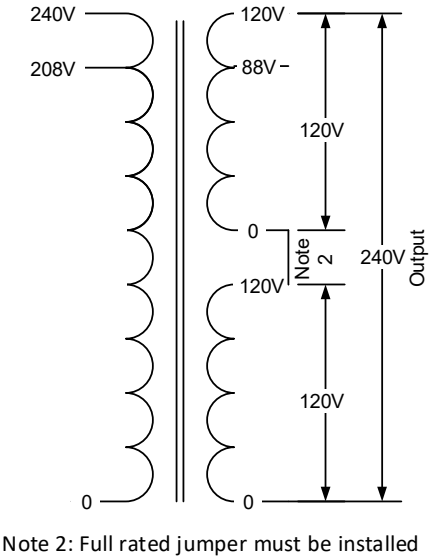
NOTE 3: Make sure that the wires are connected tightly to the terminals.

NOTE 4: Install the output breaker between the output terminal and the load. The breaker should be qualified with leakage current protection if necessary.

5) 120V and 240V Output

A jumper wire must be connected between 0V and 120V as shown below.





Note 2: Full rated jumper must be installed

Output wiring – 240V & 120V

NOTE 1: ISO Tap Selection needs to be set to match the input voltage. Install a jumper between 0-208V or 0-240V.

NOTE 2: A full rated jumper must be installed.

NOTE 3: Make sure that the wires are connected tightly to the terminals.

NOTE 4: Install the output breaker between the output terminal and the load. The breaker should be qualified with leakage current protection if necessary.

2-5. Software Installation

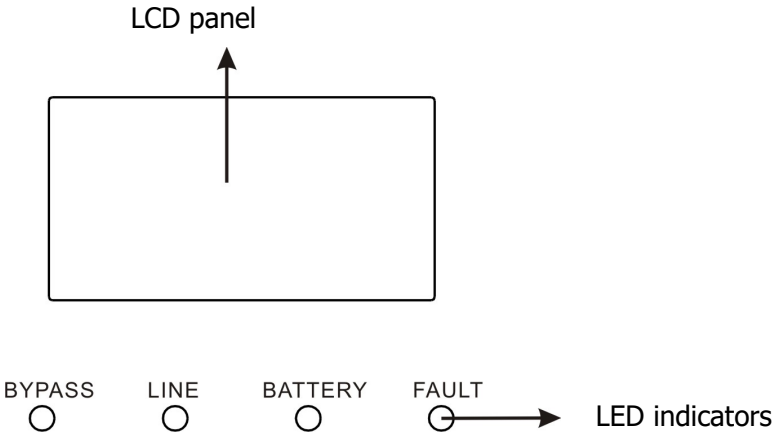
For optimal computer system protection, install UPS monitoring software to monitor and control the UPS.

3. Operations

3-1. Button Operation

Button	Function
ON/Enter Button	➢ Turn on the UPS: Press and hold the button for more than 0.5s to turn on the UPS. ➢ Enter Key: Press this button to confirm the selection in setting menu.
OFF/ESC Button	➢ Turn off the UPS: Press and hold the button for more than 0.5s to turn off the UPS. ➢ Esc key: Press this button to return to last menu in setting menu.
Test/Up Button	➢ Battery test: Press and hold the button for more than 0.5s to test the battery while in AC mode. ➢ UP key: Press this button to display next selection in setting menu.
Mute/Down Button	➢ Mute the alarm: Press and hold the button for more than 0.5s to mute the buzzer. Please refer to section 3-4-9 for details. ➢ Down key: Press this button to display previous selection in setting menu.
Test/Up + Mute/Down Button	➢ Press and hold the two buttons simultaneous for more than 1s to enter/escape the setting menu.

3-2. LED Indicators and LCD Panel



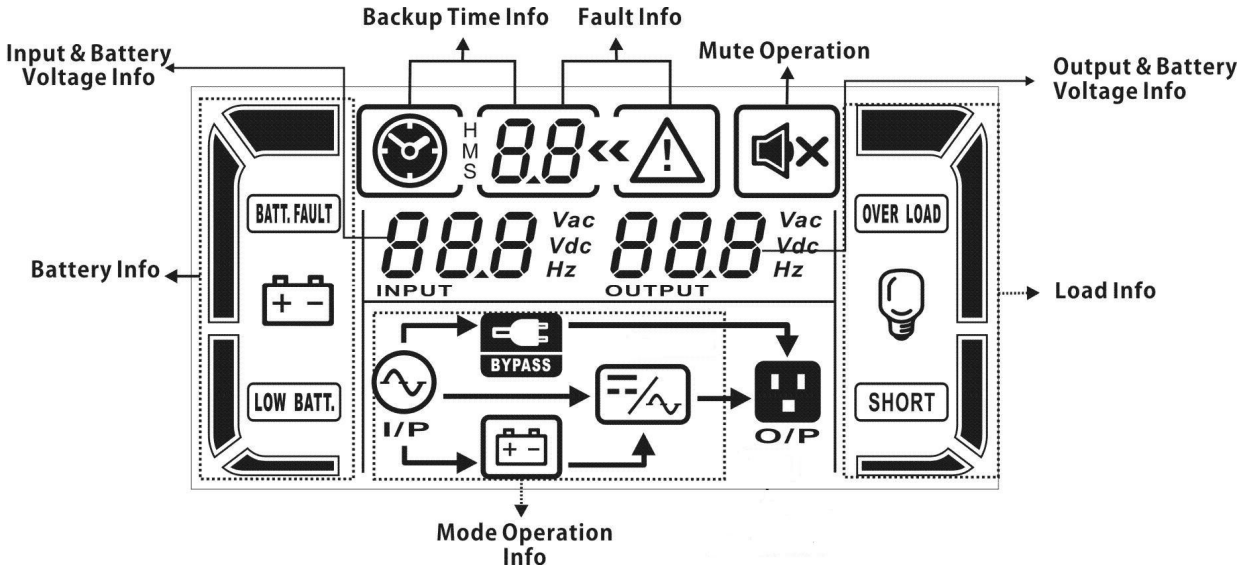
LED Indicators:

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

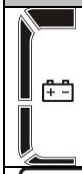
Mode / LED	Bypass	Line	Battery	Fault
UPS Startup	●	●	●	●
No Output mode	○	○	○	○
Bypass mode	●	○	○	○
AC mode	○	●	○	○
Battery mode	○	○	●	○
Battery Test	●	●	●	○
ECO mode	●	●	○	○
Fault	○	○	○	●

Note: ● means LED is ON, and ○ means LED is OFF.

LCD Panel:



Display	Function
Backup time information	
	Indicates battery discharge time. H: hours, M: minutes, S: seconds
Fault information	
	Indicates that a warning and/or a fault has occurred.
	Indicates the fault codes. The codes are listed in detail in section 3-9.
Mute operation	
	Indicates that the UPS alarm is disabled.
Output & Battery voltage information	
	Indicates the output voltage, frequency or battery voltage. VAC: output voltage, VDC: battery voltage, Hz: frequency
Load information	
	Indicates the load level by 0-25%, 26-50%, 51-75%, and 76-100%.
	Indicates overload.
	Indicates the load or the output is short.
Mode operation information	
	Indicates the UPS is connected to the mains.
	Indicates the battery is working.
	Indicates the bypass circuit is working.
	Indicates the ECO mode is enabled.
	Indicates the Inverter circuit is working.

	Indicates the output is working.
Battery information	
	Indicates the Battery capacity by 0-25%, 26-50%, 51-75%, and 76-100%.
	Indicates the battery is not connected or bad.
	Indicates low battery warning and low battery voltage.
Input & Battery voltage information	
	Indicates the input voltage or frequency or battery voltage. VAC: Input voltage, VDC: battery voltage, Hz: input frequency

3-3. Audible Alarm

Description	Buzzer status	Muted
UPS status		
Bypass mode	Beeps once every 2 minutes	Yes
Battery mode	Beeps once every 4 seconds	
Fault mode	Beeps continuously	
Warning		
Overload	Beeps twice every second	Yes
Others	Beeps once every second	
Fault		
All	Beeps continuously	Yes

3-4. Operation

1. Startup in the AC mode

1) Turn the breaker on the battery pack to the “ON” position (if using a battery pack). Then turn the UPS’s input breaker on the rear panel to the “ON” position. The fans will start and the UPS will be operating in the Bypass mode. Turn on the connected equipment one device at a time.

NOTE: When UPS is operating in the Bypass mode, the output will be powered from utility. In the Bypass mode, the load is not battery backed up by UPS.

2) Press and hold the “ON” button on the front panel for 0.5s to turn the inverter on. The buzzer will beep once.

3) After a few seconds, the UPS will transfer to the On-Line mode. The UPS is ready for normal operation.

2. Startup in the Battery Mode

1) Turn the breaker on the battery pack to the “ON” position (if using a battery pack).

2) Press the “ON” button on the front panel to initialize the UPS, UPS will enter into the power on mode. After initialization UPS will enter to the No Output mode, then Press and hold the “ON” button on the front panel for 0.5s to turn on the UPS, the buzzer will beep once.

3) After a few seconds, the UPS will start up in the Battery mode. Turn on the connected equipment one device at a time.

3. Charge the batteries

1) The UPS will charge the batteries whenever the UPS is connected to an AC source and there is an acceptable AC voltage present.
2) It is recommended that the UPS's batteries be charged for a minimum of 4 hours before use. The UPS may be used immediately however, the “On-Battery” runtime may be less than normally expected. **NOTE:** If the UPS is going to be out of service or stored for a prolonged period of time, the batteries must be recharged for at least twenty-four hours every ninety days.

4. Battery mode operation

1) When the UPS is operating in Battery mode, the buzzer will beep according to the different battery capacities. If the battery capacity is more than 25%, the buzzer will beep once every 4 seconds. If the battery voltage drops to the low level, the buzzer will beep once every second to remind users that the battery is at low level and the UPS will shutdown soon. Users can turn off some of the non-critical loads to prolong the backup time. Once the batteries have been exhausted the UPS will automatically shutdown.
2) In Battery mode press the Mute button to silence the buzzer.

5. Test the batteries

1) If you want to check the battery status while the UPS is operating in AC or the ECO mode, you can press the “Test” button on the front panel and the UPS will perform the battery self-test.
2) The UPS will perform the battery self-test automatically periodically. The default setting period is once per week.
3) Users also can set the battery self-test through monitoring software.
4) When the UPS is performing the battery self-test, the LCD display and buzzer indication will be the same as at Battery mode operation except that the battery LED will be flashing.

6. Turning off the inverter in AC mode

1) Turn off the inverter by pressing “OFF” button on the front panel for at least 0.5s. The buzzer will beep once. The UPS will transfer to the Bypass mode.

   NOTE 1: When UPS is operating in the Bypass mode, the output will be powered from utility. In the Bypass mode, the load is not battery backed up by UPS.
2) In the Bypass mode, output voltage of the UPS is still present. In order to completely turn off the output, turn off the input breaker on the rear panel. After few seconds the LCD display will turn off.

7. Turning off the UPS in the Battery mode

1) Turn off the UPS by pressing “OFF” button on the front panel for at least 0.5s. The buzzer will beep once.
2) Then UPS will completely turn off. After few seconds the LCD display will turn off.

8. Mute the buzzer

1) To mute the buzzer, press the “Mute” button on the front panel for at least 0.5s. If you press it again after the buzzer is muted, the buzzer will beep again.
2) Warning alarms can be muted. Please refer to section 3-3 for the details.

9. Operation during Warning status

1) When Fault LED flashes and the buzzer beeps once every second, it means that there are some problems with the UPS. Users can get the fault code from LCD panel. Please check the trouble shooting table in chapter 4 for details.
2) Warning alarms can be muted. Please refer to section 3-3 for the details.

10. Operation during Fault mode

1) When Fault LED illuminates and the buzzer beeps continuously, it means that there is an internal fault with the UPS. Users can get the fault code from display panel. Please check the trouble shooting table in chapter 4 for details.
2) Please check the loads, the wiring, the ventilation, the utility, the battery and so on after the fault occurs. Do not try to turn on the UPS before solving the problem. If the problem cannot be corrected, contact your local distributor or qualified service personnel.
3) Turn off the breaker on the battery pack and disconnect the external battery cable. Turn off the breaker at the service panel. Disconnect the input and output wires from the terminal block on the rear panel.

11. Configuring the UPS for an External Battery Pack:

NOTE: If you are using an External Battery Pack with this UPS series, the UPS must be configured so that the UPS will report the correct estimated runtime on the LCD screen and in the Power Monitoring software and/or the SNMP card.

1) In bypass mode, press “Test/UP” and “Mute/Down” buttons simultaneous for more than 1s to enter the setting menu.
2) Press the “Mute/Down” button until it shows 18 in parameter 1. Then press the “Enter” button to adjust the Battery Capacity. (Check 3-6 LCD setting for the details.)
3) In the parameter 3, you can set up the total battery Amp-hour by pressing “Test/UP” or “Mute/Down” button to configure the number. Confirm the setting by pressing “ON/Enter” button.
4) For example, when adding 1 External Battery Pack (BP240TWR) to the 6kVA you would enter the number 25. Then, confirm the setting by pressing “ON/Enter” button. Press the “Test/UP” and “Mute/Down” buttons at the same time to exit the setting mode.

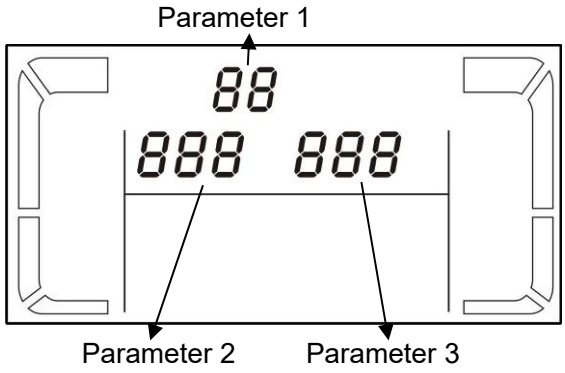
Number of Battery Packs	Parameter 3 setting for 6kVA	Parameter 3 setting for 10kVA
1	25	27
2	43	45
3	61	63
4	79	81
5	97	99

3-5. Abbreviation Meaning in LCD Display

Abbreviation	Display content	Meaning
ENA	ENA	Enable
DIS	dIS	Disable
ATO	AtO	Auto
BAT	bAt	Battery
SUB	SUb	Subtract
ADD	Add	Add
ON	On	On
OFF	OFF	Off
FBD	Fbd	Not allowed
OPN	OPN	Allow
RES	rES	Reserved
OP.V	OP.U	Output voltage

3-6. LCD Setting

There are three optional settings for the UPS. Refer to following diagram.



Parameter 1: There are 3 options that can be setup. Refer to below table.

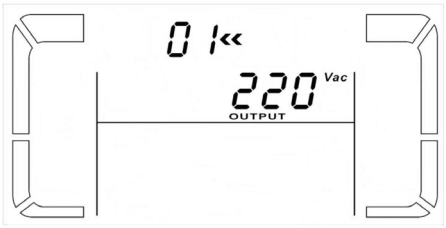
Parameter 3 is the setting option or value for each setting.

Parameter 1 options:

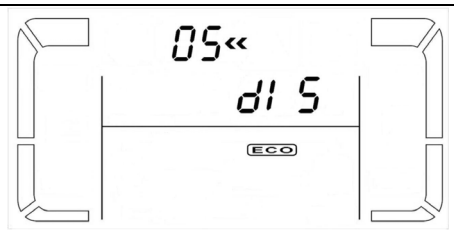
Code	Description
01	Output voltage
05	ECO mode enable/disable
18	Battery Capacity

Parameter 1 options can only be set in the Bypass mode.
Note: Once settings have been selected the UPS MUST be turned completely OFF and then turned back ON to save the settings. The Input breaker on the rear panel must be turned OFF while the UPS is in the Bypass mode to completely turn OFF the UPS.

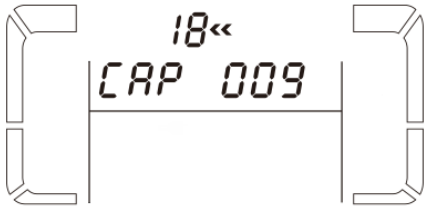
- **01: Output voltage**

Interface	Setting
	**Parameter 3: Output voltage** You may choose the following output voltages in parameter 3: **208VAC** **220VAC** **230VAC** **240VAC (Default setting)** **NOTE:** The UPS MUST be in the Bypass mode to make these changes. The UPS be turned OFF and then turned back ON to Save the changes.

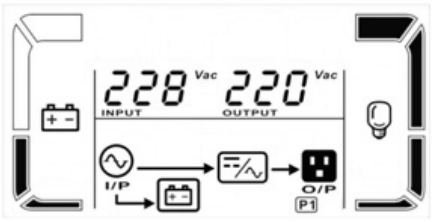
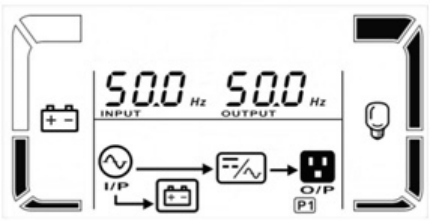
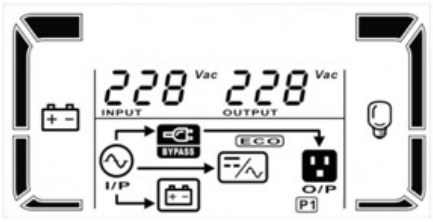
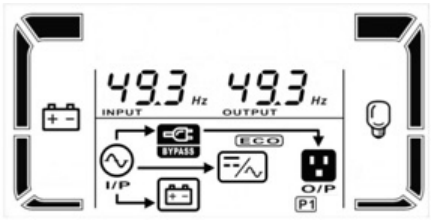
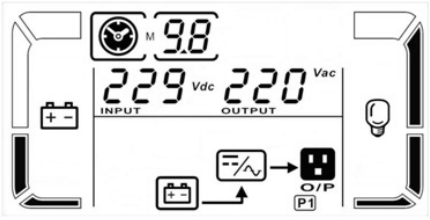
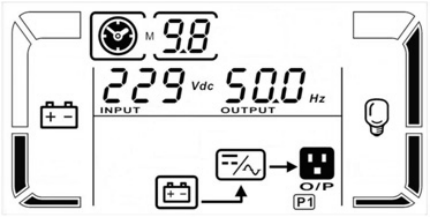
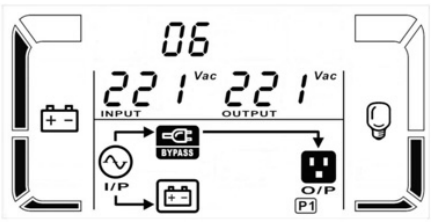
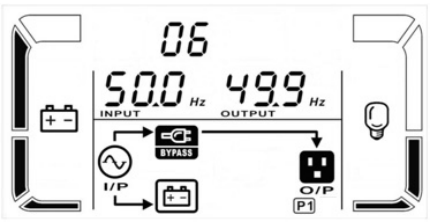
- **05: ECO mode enable/disable**

Interface	Setting
	**Parameter 3:** Enable or disable ECO function. You may choose following two option: **DIS:** Disable the ECO function (Default setting) **ENA:** Enable the ECO function **NOTE:** The UPS MUST be in the Bypass mode to make these changes. The UPS be turned OFF and then turned back ON to Save the changes.

- **18: Battery Capacity setting**

Interface	Setting
	**Parameter 3:** Set up the total battery Amp-hour, **NOTE:** The UPS MUST be in the Bypass mode to make these changes. The UPS be turned OFF and then turned back ON to Save the changes.

3-7. Operating Mode/Status Description

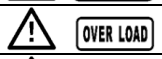
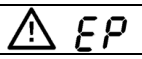
<table>
<tr><th colspan="3">Operating mode/status</th></tr>
<tr><td rowspan="2">AC mode</td><td>Description</td><td colspan="2">When the input voltage is within an acceptable range, the UPS will operate in the AC mode and charge the batteries.</td></tr>
<tr><td>LCD display</td><td> 
</td><td> 
</td></tr>
<tr><td rowspan="2">ECO mode</td><td>Description</td><td colspan="2">When the input voltage is within voltage regulation range and ECO mode is enabled, UPS will bypass the input voltage to the connected load for energy saving.</td></tr>
<tr><td>LCD display</td><td> 
</td><td> 
</td></tr>
<tr><td rowspan="2">Battery mode</td><td>Description</td><td colspan="2">When the input voltage is beyond the acceptable range or power failure, UPS will provide battery backup power to the connected load. The buzzer will beep once every 4 seconds.</td></tr>
<tr><td>LCD display</td><td> 
</td><td> 
</td></tr>
<tr><td rowspan="2">Bypass mode</td><td>Description</td><td colspan="2">When input voltage is within an acceptable range and bypass mode is engaged, the UPS will bypass the input voltage to the connected load. The buzzer will beep once every two minutes. NOTE: Pressing the Off button on the front panel will transfer the UPS to the Bypass mode.</td></tr>
<tr><td>LCD display</td><td> 
</td><td> 
</td></tr>
</table>

Battery Test	Description	When the UPS is in the AC mode, press the “Test” button for more than 0.5s. The buzzer will beep once and then the “Battery Test” will start. The line between the Input and inverter icons will blink to indicate the UPS is performing the “Battery Test’. This operation is used to check the battery status.	
	LCD display		
Fault status	Description	When a fault condition occurs there will be an Error code and the Fault icon displayed on the LCD screen.	
	LCD display		

3-8. Error Code

Fault event	Error code	Icon	Fault event	Error code	Icon
DC Bus start failure	01	None	Battery SCR shorted	21	None
DC Bus over voltage	02	None	Inverter relay shorted	24	None
DC Bus under voltage	03	None	Charger shorted	2a	None
DC Bus unbalance	04	None	Can communication fault	31	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	SHORT	Overload	43	OVER LOAD
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 current detection error	6D	None	DC Bus voltage changes too fast	6C	None
Transformer over temperature	77	None	SPS 12V abnormal	6E	None

3-9. Warning Indicator

Warning	Icon (flashing)	Buzzer
Low Battery Warning		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
Input fuse open		Beeping every second
Overload 3 times in 30min		Beeping every second

3-11 Warning Code

Warning code	Warning event	Warning code	Warning event
01	Battery disconnected	0E	Charger failure
07	Over charge	10	L1 Input fuse open
08	Low battery	33	Locked in bypass after overload 3 times in 30min
09	Overload	3A	The cover for maintenance bypass switch is off
0A	Fan failure	3D	Bypass unstable
0B	EPO enable	3E	Boot loader is missing
0D	Over temperature	42	Over-temperature on transformer

4. Trouble Shooting

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

Symptom	Possible cause	Remedy
The LCD display is not illuminated even though the mains are normal.	The input power is not connected.	Check if the input cable is firmly connected to the mains.
Icon ⚠ is on and the warning code EP flashes on the LCD display and the alarm beeps every second.	The EPO function is enabled.	Short pin1 to pin2 on the EPO connector to disable the EPO function.
Icons ⚠ and BATT. FAULT are flashing and the alarm beeps every second.	The batteries are not connected.	Check if all the batteries are connected.
Icons ⚠ and OVER LOAD are flashing and the alarm beeps twice every second.	The UPS is overload.	Remove the excess load from UPS output.
	After repetitive overloads, the UPS is locked in the Bypass mode.	Remove the excess load from UPS output. Then shutdown the UPS and restart it.
The Error code 43 is displayed. The OVER LOAD icon is on and the alarm beeps continuously.	UPS is in overload too long and then shuts down automatically.	Remove excess loads from UPS output and restart it.
Error code 14 is displayed. Icon SHORT is on and the alarm beeps continuously.	The UPS shuts down due to a short circuit on the output.	Check the output wiring and the connected devices for shorts.
One of the following Error codes is displayed 01, 02, 03, 04, 11, 12, 13, 14,1A, 21, 24, 35, 36, 41, 42 or 43 and the alarm beeps continuously.	The UPS has detected an internal fault.	Contact your dealer.
The battery backup time is shorter than nominal.	The batteries are not fully charged.	Charge the batteries for at least 24-hours and then retest. If the problem still persists, consult your dealer.
	The batteries are defective or at the end of their normal service life.	Contact your dealer to replace the battery.
Icons ⚠ and ⚠ are flashing and the alarm beeps every second.	The fan is locked or not working; or the UPS's internal temperature is too high.	Check the fans.

5. Storage and Maintenance

5-1. Storage

Before storing, charge the UPS for at least 24-hours. Store the UPS covered and upright in a dry, cool location. If the UPS is going to be out of service or stored for a prolonged period of time, the batteries must be recharged for at least 24-hours every 90 days.

5-2. Maintenance

 This Uninterruptible Power Supply contains potentially hazardous voltages. Do not attempt to disassemble the UPS beyond the battery replacement procedure. This UPS contains no user serviceable parts. Repairs and battery replacement must be performed by **QUALIFIED SERVICE PERSONNEL ONLY.**

 Risk of Electrical Shock. Hazardous live parts inside these power supplies are energized from the battery even when the AC input is disconnected.

 Before carrying out any kind of service and/or maintenance, disconnect the batteries and verify that there is no hazardous voltage on the DC BUS-capacitors.

 Only persons that are adequately familiar with batteries and with the required precautionary measures may replace batteries. Repairs and battery replacement must be performed by **QUALIFIED SERVICE PERSONNEL ONLY.**

 The battery system can present a risk of electrical shock. These batteries produce sufficient current to burn wire or tools very rapidly, producing molten metal. Observe these precautions when replacing the batteries:

1. Remove watches, rings, or other metal objects.
2. Use hand tools with insulated handles.
3. Wear protective eye gear (goggles), rubber gloves and boots.
4. Do not lay tools or other metal parts on top of batteries.
5. Disconnect the charging source prior to connecting or disconnecting the battery terminals.
6. Determine if the battery is inadvertently grounded. If the battery is, remove the source of the grounding. Contact with any part of a grounded battery can result in an electrical shock. The likelihood of such shock will be reduced, if such grounds are removed during installation and maintenance.

 Replace batteries with the same number and type as originally installed in the UPS. These batteries have pressure operated vents. These UPSs contain sealed non-spillable maintenance-free lead acid batteries.

 Do not dispose of batteries in a fire. The batteries may explode. The batteries in this UPS are recyclable. Dispose of the batteries properly. The batteries contain lead and pose a hazard to the environment and human health if not disposed of properly. Refer to local codes for proper disposal requirements or return the battery to the supplier.

 Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes and may be toxic.

 Please replace the fuse only with the same type and amperage in order to avoid fire hazards.

6. Replacing the Battery

QUALIFIED SERVICE PERSONNEL ONLY

Please read all of the **WARNINGS** and **CAUTIONS** before attempting to service the batteries. Typical battery life is 3 to 5 years. Environmental factors do affect battery life. High temperatures, poor utility power, and frequent, short duration discharges have a negative impact on battery life.

WARNING! This UPS contains potentially hazardous voltages. Do not attempt to disassemble the UPS beyond the battery replacement procedure. This UPS contains no user serviceable parts. Repairs and battery replacement must be performed by **QUALIFIED SERVICE PERSONNEL ONLY.**

CAUTION: Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes and may be toxic.

CAUTION: Do not dispose of batteries in a fire. The batteries may explode. The batteries in this UPS are recyclable. Dispose of the batteries properly. The batteries contain lead and pose a hazard to the environment and human health if not disposed of properly. Refer to local codes for proper disposal requirements or return the battery to the supplier.

CAUTION: The battery system can present a risk of electrical shock. These batteries produce sufficient current to burn wire or tools very rapidly, producing molten metal. Observe these precautions when replacing the batteries:

1. Remove watches, rings, or other metal objects.
2. Use hand tools with insulated handles.
3. Wear protective eye gear (goggles), rubber gloves and boots.
4. Do not lay tools or other metal parts on top of batteries.
5. Disconnect the charging source prior to connecting or disconnecting the battery terminals.
6. Determine if the battery is inadvertently grounded. If the battery is, remove the source of the grounding. Contact with any part of a grounded battery can result in an electrical shock. The likelihood of such shock will be reduced, if such grounds are removed during installation and maintenance.

CAUTION: Replace batteries with the same number and type as originally installed in the UPS. These batteries have pressure operated vents. These UPSs contain sealed non-spillable maintenance-free lead acid batteries.

Model	ED6KTF	ED10KTF
Battery Quantity / Type	20 – 12V7.2Ah	20 – 12V9Ah
Battery Part Number	CSB - GP1272 F2 BB – BP7-12	CSB - HR1234W F2 BB – HR9-12

6-1. Battery Replacement Procedure

(QUALIFIED SERVICE PERSONNEL ONLY)

This UPS system does not have Hot-swappable batteries. The UPS system must be turned Off to perform the Battery Replacement Procedure.

1. Turn Off all the equipment that is connected to the UPS.
2. Press the Off button on the front panel of the UPS for approximately 5-seconds.
3. Turn the input circuit breaker on the rear panel of the UPS to the Off position.
4. Turn the utility power circuit breaker at the service panel to the Off position.
5. Disconnect all of the communications and network cables from the rear panel of the UPS.

NOTE: If you are using an External Battery Pack, turn ALL of the DC circuit breaker(s) on the rear panel of the Battery Pack(s) to the Off position. Disconnect the all of the battery cables from the UPS and the Battery Pack(s) rear panels.

6. Remove the retaining screws for the top cover.
7. Remove the top cover and set aside. **(FIG. 1)**
8. Remove the retaining screws for the side panels.
9. Remove the side panels and set aside.

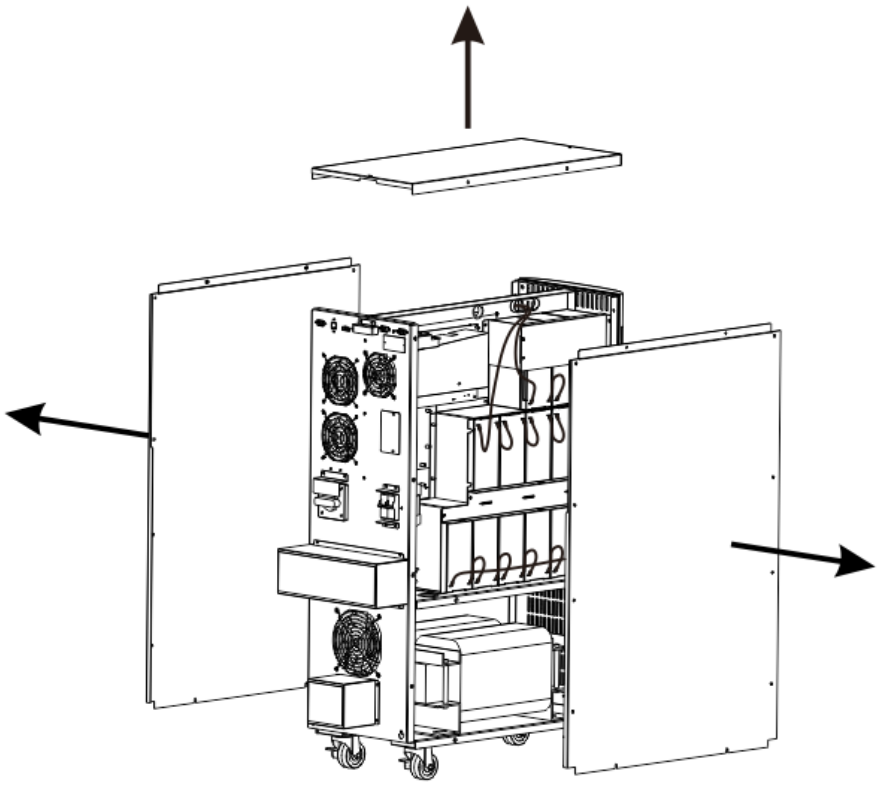


FIG. 1

10. Looking from the rear of the UPS on the right-hand side **(FIG. 2)**, disconnect the battery positive (Red) wire. Place a piece of electrical tape over the end of battery positive (Red) wire.
11. Looking from the rear of the UPS on the right-hand side disconnect the battery negative (Black) wire. Place a piece of electrical tape over the end of battery negative (Black) wire.
12. Disconnect all of the battery jumper wires on the right hand side.

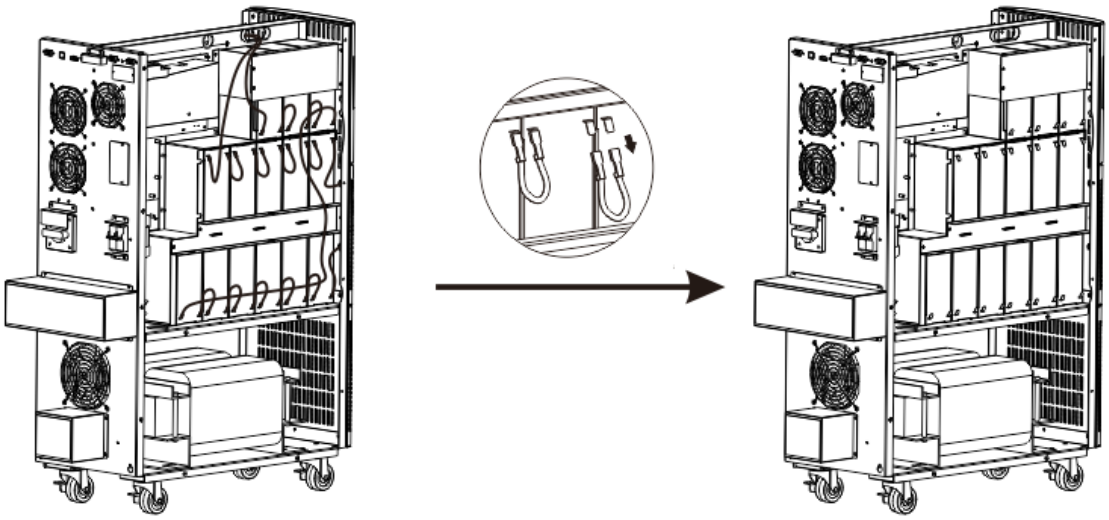


FIG. 2

13. Disconnect all of the battery jumper wires on the left hand side **(FIG. 3)**.

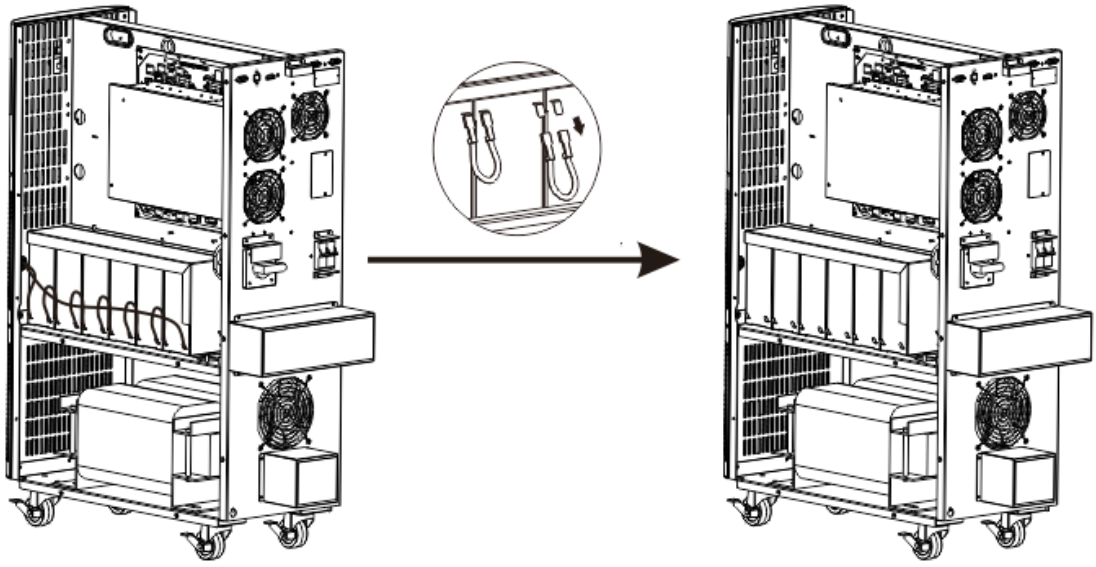


FIG. 3

14. Remove the battery retaining bracket retaining screws and the battery retaining brackets on the right hand side **(FIG. 4)**.

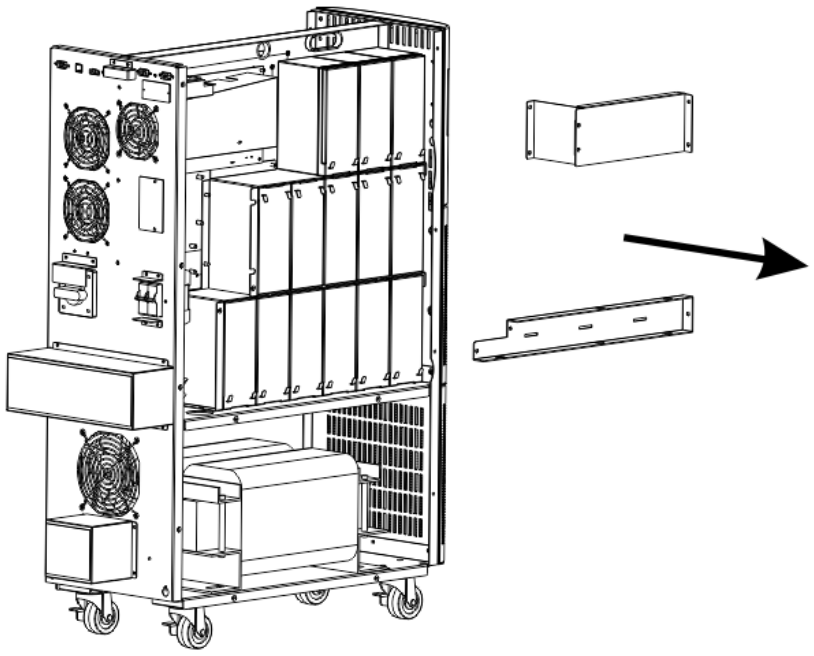


FIG. 4

15. Remove the batteries from the top row and set aside **(FIG. 5)**.

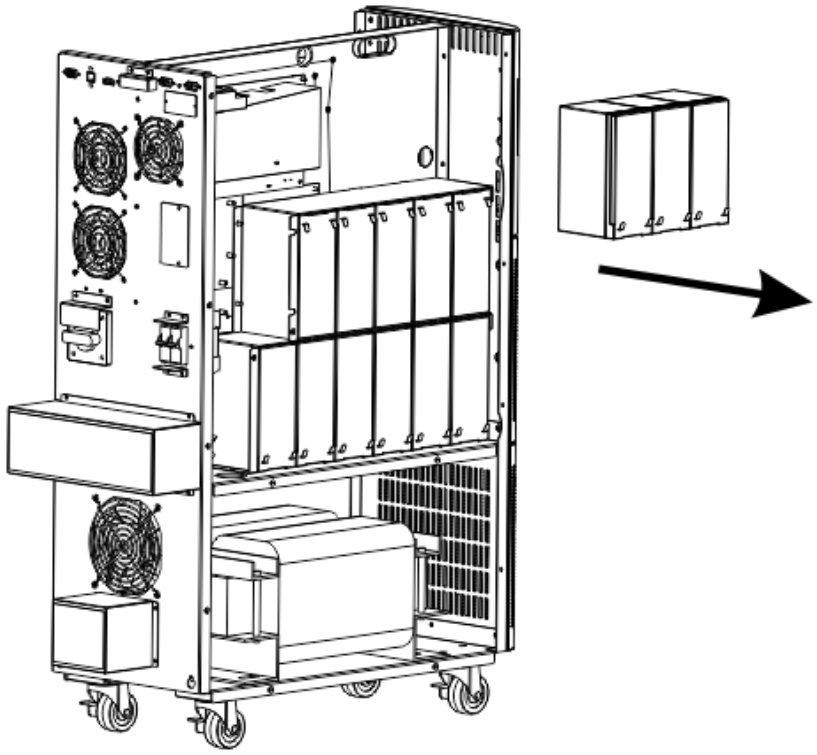


FIG. 5

16. Remove the battery retaining bracket from the second row of batteries and set aside **(FIG. 6).**

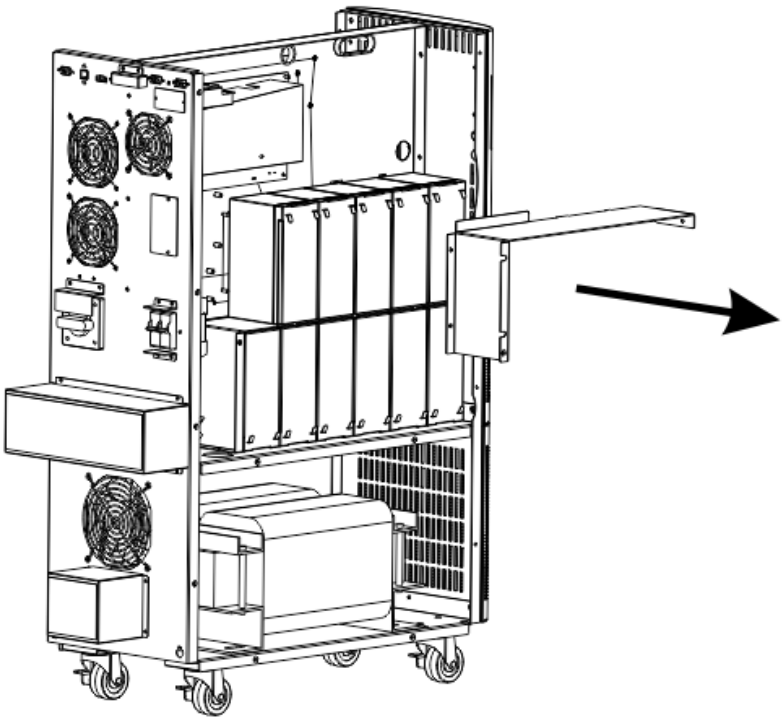


FIG. 5

17. Remove the batteries from the second row and set aside **(FIG. 6)**.

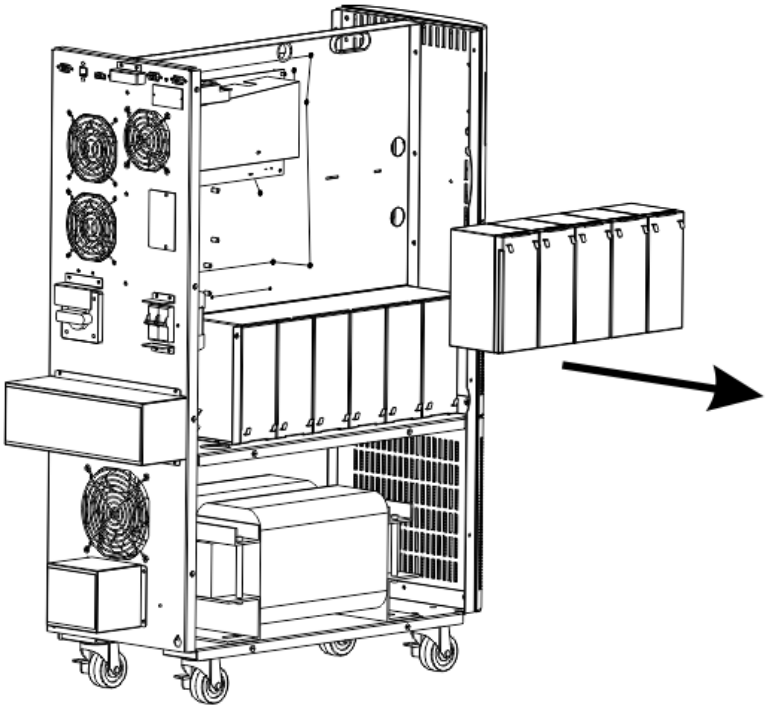


FIG. 6

18. Remove both sets of batteries from the third row and set aside **(FIG. 7)**.

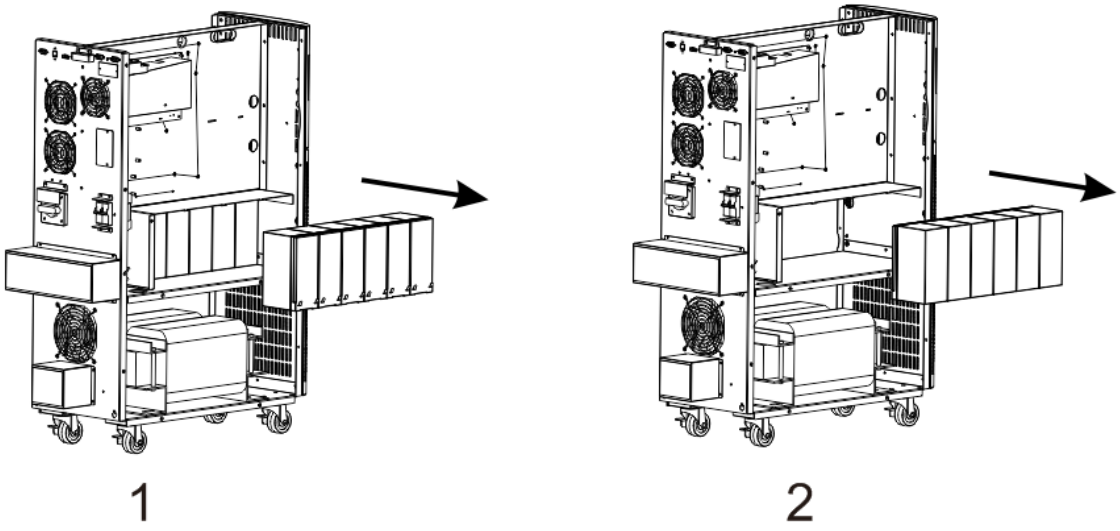


FIG. 7

19. Install both sets of the new batteries on the third row **(FIG. 8).** **NOTE:** The battery terminals MUST be on the bottom side.

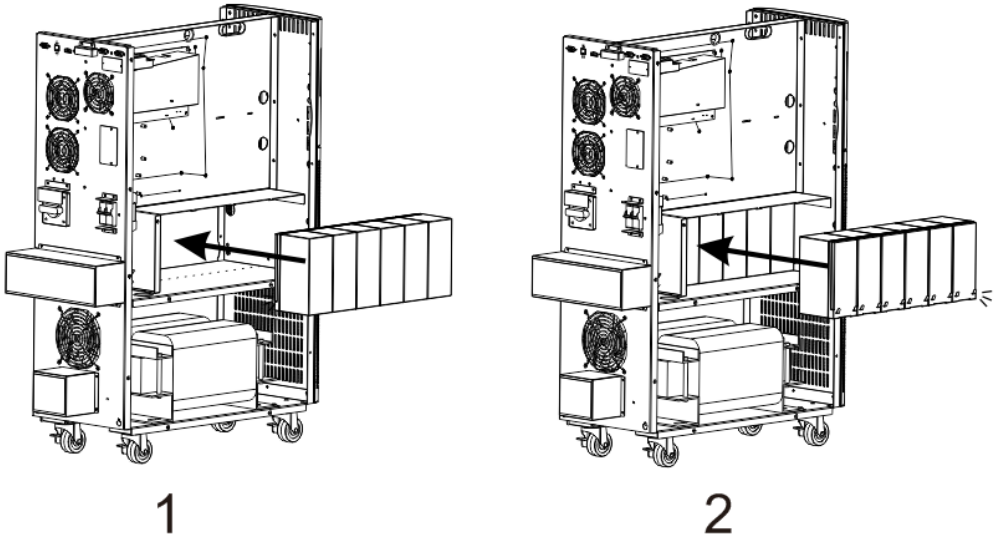


FIG. 8

20. Install the new batteries on the second row **(FIG. 9). NOTE:** The battery terminals MUST be on the top side.

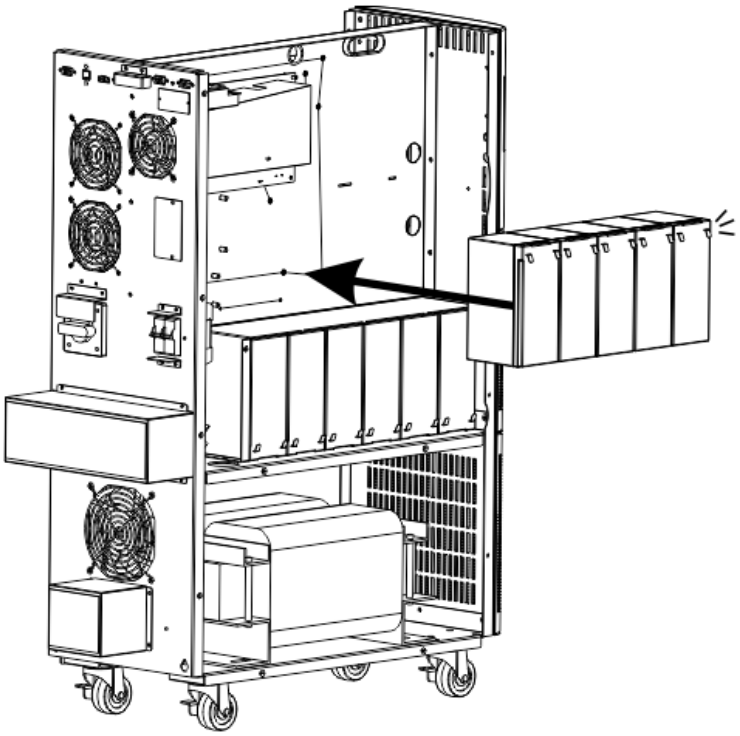


FIG. 9

21. Install the battery retaining bracket on the second row of batteries **(FIG. 10)**

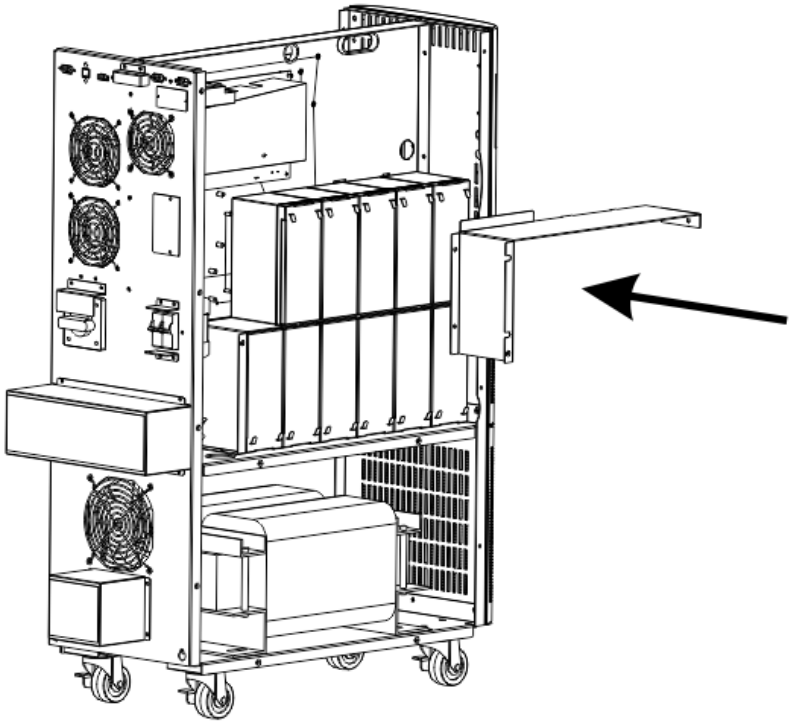


FIG. 10

22. Install the new batteries on the top row **(FIG. 11). NOTE:** The battery terminals MUST be on the bottom side.

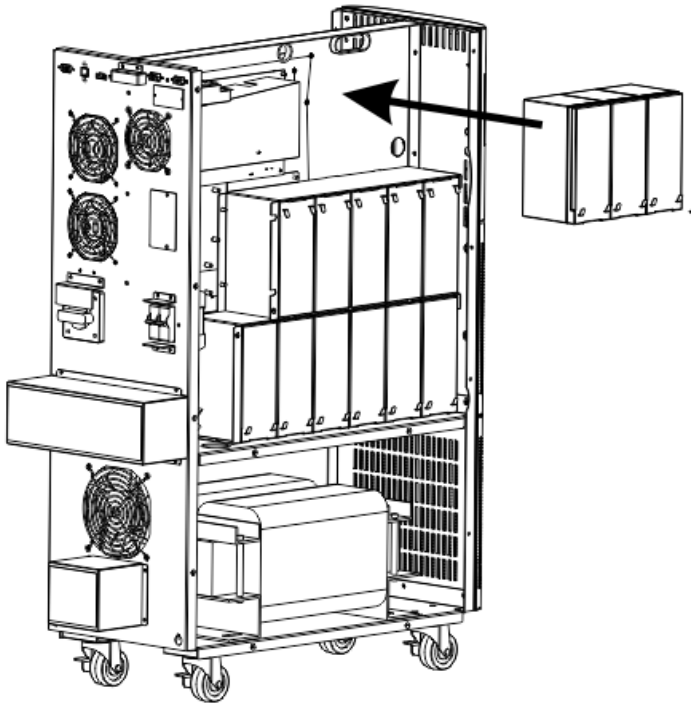


FIG. 11

23. Re-install the battery-retaining brackets with the retaining screws on the right hand side **(FIG. 12).**

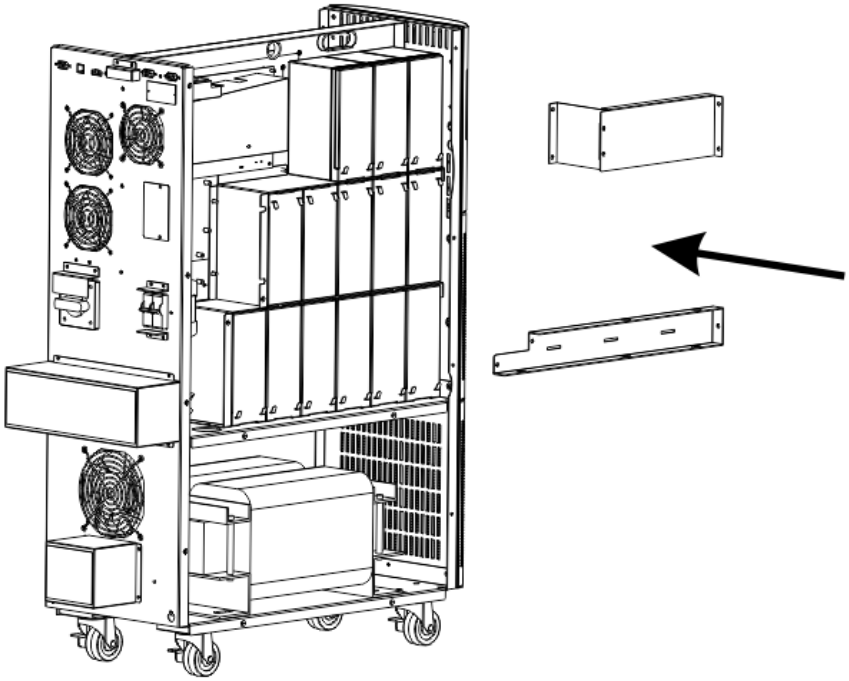


FIG. 12

24. Observer polarity. Re-install all of the battery jumper wires on the left hand side **(FIG. 13).**

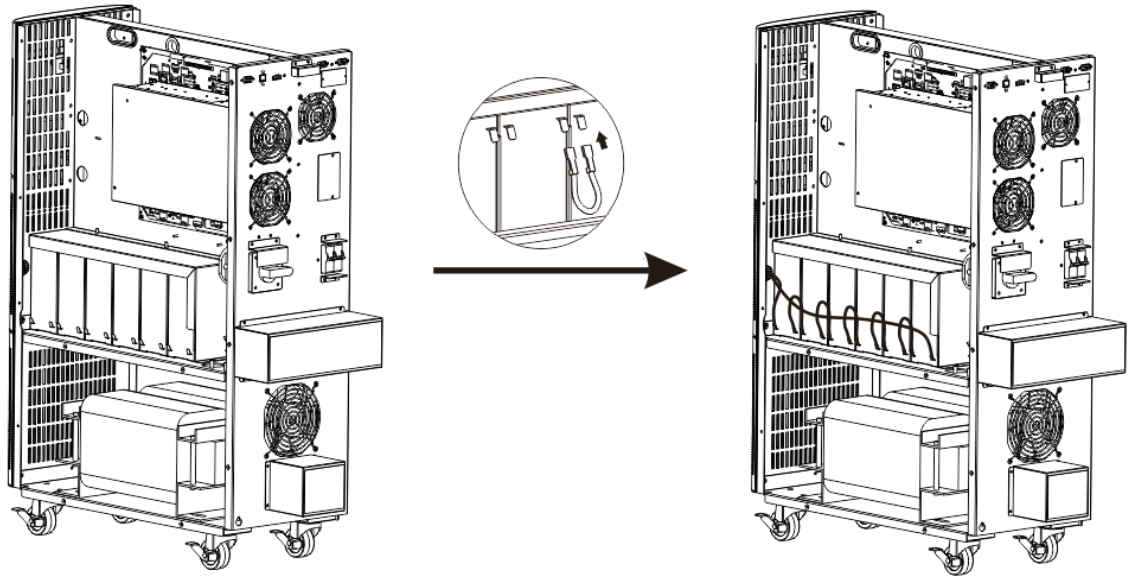


FIG. 13

25. Observer polarity. Re-install all of the battery jumper wires on the right hand side **(FIG. 14).**
26. Remove the piece of electrical tape from the end of battery negative (Black) wire.
27. Observer polarity. Reconnect the battery negative (Black) wire to the battery negative (Black) terminal.
28. Remove the piece of electrical tape from the end of battery positive (Red) wire.
29. Observer polarity. Reconnect the battery positive (Red) wire to the battery positive (Red) terminal. **NOTE:** Some sparking might occur, this is normal. To avoid the sparking applied the input source to the UPS. Turn the input breaker on the rear panel of the UPS to the On position. Connect the battery positive (Red) wire to the battery positive (Red) terminal. Turn the input breaker on the rear panel of the UPS to the Off position. Turn off the input source and continue with the rest of the procedure.

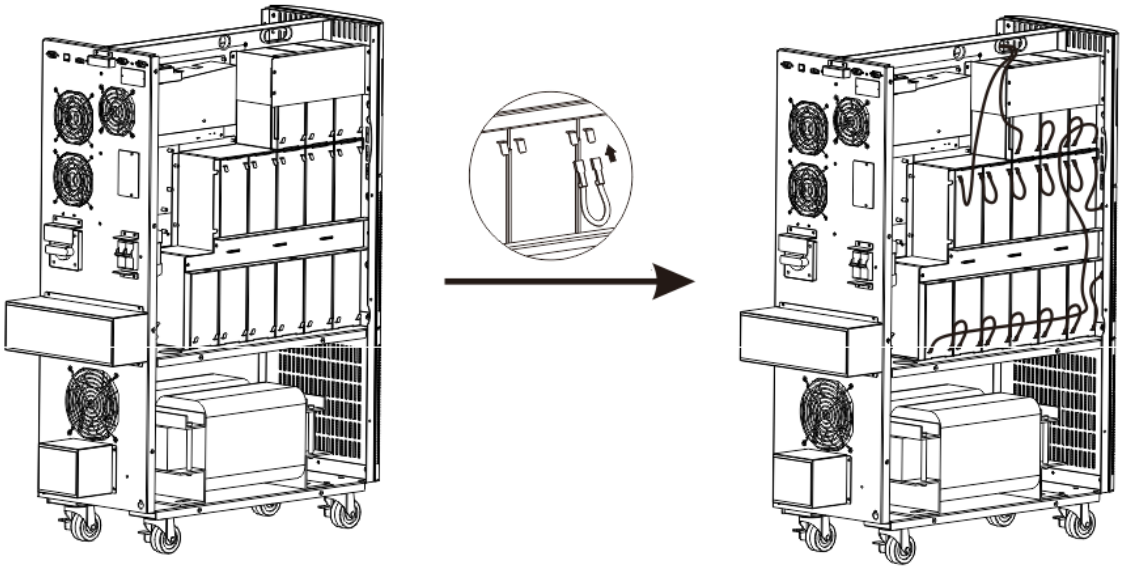


FIG. 14

30. Re-install the side panels and the retaining screws **(FIG. 15).**
31. Re-install the top cover and the retaining screws.

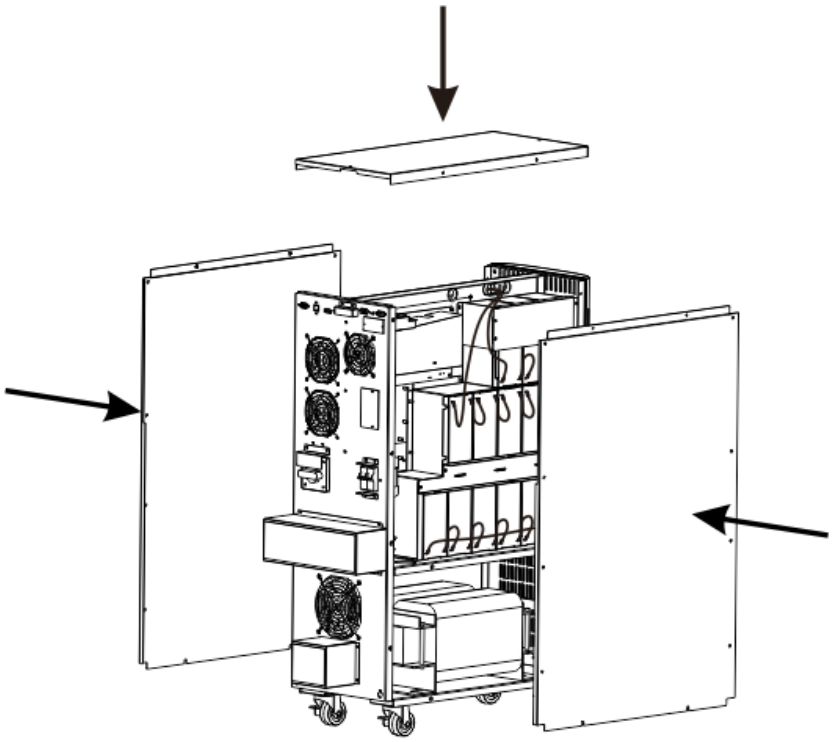


FIG. 15

32. Reconnect all of the communications and network cables.
    NOTE: If you are using an External Battery Pack, reconnect the all of the battery cables to the UPS and the Battery Pack(s) rear panels. Turn ALL of the DC circuit breaker(s) on the rear panel of the Battery Pack(s) to the On position.
33. Turn the utility power circuit breaker at the service panel to the On position.
34. Turn the input circuit breaker on the rear panel of the UPS to the On position, the UPS will be in the Bypass mode.
35. Turn On the equipment that is connected to the UPS.
36. Press and hold the On button (on the front panel) for approximately 3-seconds, then release. The UPS will transfer to the On-Line mode.
37. The UPS system is now ready for the normal operation.
38. Properly dispose of the old batteries at an appropriate recycling facility or return them to the supplier in the packing material for the new batteries.

7. Specifications

MODEL		ED6KTF	ED10KTF
CAPACITY*		6000 VA / 6000 W	10000 VA / 10000 W
INPUT			
Voltage Range	Low Line Loss	110 VAC (L-N) ± 3 % at 0-60% Load 176 VAC (L-N) ± 3 % at 60%-100% Load	
	Low Line Comeback	Low Line Loss Voltage + 10V	
	High Line Loss	300 VAC (L-N) ± 3 %	
	High Line Comeback	Low Line Loss Voltage - 10V	
Frequency Range		50/60Hz ±4Hz Auto Sensing 46Hz ~ 54 Hz @ 50Hz 56Hz ~ 64 Hz @ 60Hz	
Phase		Single (1Ø 2W +G)	
Power Factor Correction		≧ 0.99 at 100% Load	
OUTPUT			
Output voltage* (Selectable)		Default: 240 / 120VAC (208VAC)	
AC Voltage Regulation		± 2% (until Low Battery Warning)	
Frequency Range (Synchronized Range)		50/60Hz ±4Hz 46Hz ~ 54 Hz @ 50Hz 56Hz ~ 64 Hz @ 60Hz	
Frequency Range (Batt. Mode)		50 Hz ± 0.1 Hz or 60Hz ± 0.1 Hz	
Overload	AC mode	100%~110%: 10min; 110%~130%: 1min; >130%: 1sec	
	Battery mode	100%~110%: 30sec; 110%~130%: 10sec; >130%: 1sec	
Current Crest Ratio		2.6:1 max	
Harmonic Distortion		≦ 2 % @ 100% Linear Load; ≦ 8 % @ 100% Non-linear Load	
Transfer Time	Line←→Battery	0 ms	
	Inverter←→Bypass	0 ms	
	Inverter←→ECO	<10 ms (Typical)	
EFFICIENCY			
AC Mode		89%	
Battery Mode		87%	
BATTERY			
Type		Sealed, Non-Spillable, Maintenance Free, Value Regulated Lead Acid	
Typical Recharge Time		9-hours to 90% after a full load discharge	
Quantity / Rating		20 - 12V/7.2Ah	20 - 12V/9Ah
Charging Current		1 A ± 10% (max.)	
Charging Voltage		273 VDC ± 1%	
Runtime (Full / Half load) minutes		4 / 12	3 / 9
PHYSICAL			
Size Net (LXWXH)		22.09 x 9.84 x 32.54” 561.1 x 250 x 826.5 mm	22.09 x 9.84 x 32.54” 561.1 x 250 x 826.5 mm
Weight Net		237.0 lbs 107.5 kgs	274.48 lbs 124.5 kgs
Size Shipping (LXWXH)		28.54 x 14.57 x 37.01” 725 x 370 x 940 mm	28.54 x 14.57 x 37.01” 725 x 370 x 940 mm
Weight Shipping		272.27 lbs 123.5 kgs	309.75 lbs 140.5 kgs
ENVIRONMENT			
Operation Temperature		0 ~ 40°C (+32 to +104ºF)	
Operation Humidity		5% to 95% non-condensing	
Operation Altitude**		<3280 ft (<1000 m)	
Acoustic Noise Level		Less than 55dB @ 1 Meter	Less than 58dB @ 1 Meter
SURGE PROTECTION AND FILTERING			
Surge Energy Rating		972 Joules	
Surge Energy Capability		6500 Amps Total	
Regulatory Compliance			
Safety and Approvals		cTUVus (UL1778 5th Edition & CSA 22.2 no. 107.3-14 / R: 2014), FCC Class A, CE certified, RoHS2 (EU Directive 2011/65/EU & 2015/863/EU)	

* De-rate the capacity to 90% when the output voltage is adjusted to 208VAC.
**If the UPS is installed or used in a place where the altitude is above than 1000m, the output power must be de-rated one percent per 100m.

Product specifications are subject to change without prior notice.

8. Limited Product Warranty

Para Systems, Inc. (Para Systems) warrants this equipment, when properly applied and operated within specified conditions, against faulty materials or workmanship for a period of three (3) years from the date of purchase. For equipment sites within the United States and Canada, this warranty covers depot repair or replacement of defective equipment at the discretion of Para Systems. Depot repair will be from the nearest authorized service center. The customer pays for shipping the product to Para Systems. Para Systems pays ground freight to ship the product back to the customer. Replacement parts and warranty labor will be borne by Para Systems. For equipment located outside of the United States and Canada, Para Systems only covers faulty parts. Para Systems products that are depot repaired or replaced pursuant to this warranty shall only be warranted for the unexpired portion of the warranty applying to the original product. This warranty applies only to the original purchaser who must have properly registered the product within ten (10) days of purchase.

The warranty shall be void if (a) the equipment is damaged by the customer, is improperly used, is subjected to an adverse operating environment, or is operated outside the limits of its electrical specifications; (b) the equipment is repaired or modified by anyone other than Para Systems or Para Systems approved personnel; or (c) has been used in a manner contrary to the product's User's Manual or other written instructions.

Any technical advice furnished before or after delivery in regard to use or application of Para Systems' equipment is furnished without charge and on the basis that it represents Para Systems' best judgment under the circumstances, but it is used at the recipient's sole risk.

EXCEPT AS PROVIDED HEREIN, PARA SYSTEMS MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation of implied warranties; therefore, the aforesaid limitation(s) may not apply to the purchaser.

EXCEPT AS PROVIDED ABOVE, IN NO EVENT WILL PARA SYSTEMS BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF THIS PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. Specifically, Para Systems is not liable for any costs, such as; labor for on-site installation, on-site maintenance or on-site service, lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, cost of substitutes, claims by third parties, or otherwise. The sole and exclusive remedy for breach of any warranty, expressed or implied, concerning Para Systems' products and the only obligation of Para Systems hereunder, shall be depot repair or replacement of defective equipment, components, or parts; or, at Para Systems' option, refund of the purchase price or substitution with an equivalent replacement product. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

No employee, salesman, or agent of Para Systems is authorized to add to or vary the terms of this warranty.

Please go to our web site at www.minutemanups.com/support to fill out the Warranty Registration.

A1. DECLARATION OF CONFORMITY

Application of Council Directive(s): 2004/108/EC

Standard(s) to which Conformity is declared:
IEC/EN 61000-2-2, IEC/EN 61000-4-2: level 4, IEC/EN 61000-4-3: level 3, IEC/EN 61000-4-4: level 4, IEC/EN 61000-4-5: level 4, IEC/EN 61000-4-6: level 3, IEC/EN 61000-4-8: level 4, IEC/EN 62040-1-1, IEC/EN 62040-2, IEEE C62.41 Category A1, FCC PART15 CLASS A

Manufacturer's Name: Para Systems, Inc. (MINUTEMAN UPS)

Manufacturer's Address: 1455 LeMay Drive, Carrollton, Texas 75007 USA

Type of Equipment: Uninterruptible Power Supplies (UPS)

Model No: ED6KTF, ED10KTF

Year of Manufacture: Beginning March 1, 2019

I hereby declare that the equipment specified above conforms to the above Directive(s).

Robert Calhoun (Name)

Manager Engineering (Position)

Place: Carrollton, Texas, USA

Date: March 1, 2019

Para Systems, Inc.
1455 Lemay Dr.
Carrollton, TX 75007
Phone: 1-972-446-7363
Fax: 1-972-446-9011
Internet: minutemanups.com
UPS Sizing: sizemyups.com

PN: 34000535 R2