



RoHS Compliant 

This product complies with the Restriction of certain Hazardous Substances (RoHS) Directive as conceived by the European Union committee in 2002. Products that meet the RoHS standard have been redesigned to remove the lead, mercury, cadmium, hexavalent chromium where applicable. As part of our efforts to maintain a healthy environment, Para Systems has proactively adopted these standards for our Minuteman® brand products.

Endeavor 5 - 10KVA RTXL UPS Series

User's Manual

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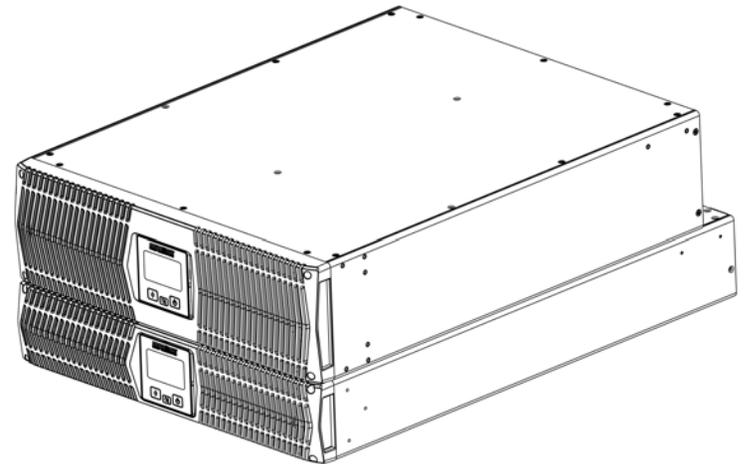


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Chapter 1: Introduction

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 Series UPS, models [ED5000RT-CU](#), [ED6000RT-CU](#), [ED8000RT-CU](#) and [ED10000RT-CU](#) as it provides important information that should be followed during installation and maintenance of the UPS system allowing you to correctly set up your system for the maximum safety and performance. Included is information on customer support and factory service if it is required. 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 !**

CAUTION! 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.

CAUTION! The maximum ambient operating temperature for this UPS series is 40°C (“0 ~ 40°C” for Ambient Operation).

- The external vents and openings on the UPS are provided for ventilation. To ensure reliable operation of the UPS and to protect the UPS from overheating, these vents and openings must not be blocked or covered. Do not insert any object into any of the vents or openings that may hinder the ventilation.
- Install the UPS system in a well ventilated area, away from excess moisture, heat, dust, flammable gas or explosives.
- Leave adequate space (at least 15cm) around all sides of the UPS system for proper ventilation.
- Do not mount the UPS system with its front or rear panel facing down at any angle.
- Before usage, you must allow the UPS system to adjust to room temperature (20°C~25°C or 68°F~77°F) for at least one hour to avoid moisture condensing inside the UPS.

WARNING: 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.**

CAUTION! The ED5000RT-CU and ED6000RT-CU come with an input power cord in the box. Connect the UPS to a two pole, three wire, grounded AC wall outlet. The outlet must be connected to the appropriate branch protection (circuit breaker). Connection to any other type of outlet may result in a shock hazard and violate local electrical codes. The AC wall outlet shall be installed near the UPS and shall be easily accessible. The plug on the input power cord on this UPS series is intended to serve as a disconnect device. Do not use extension cords, adapter plugs, or surge strips. The installation of upstream and downstream protective devices is highly recommended when the UPS is connected to the mains and the load.

CAUTION! The ED8000RT-CU and ED10000RT-CU are hardwire input only. The pins for the input and output cables are included. The UPS must be connected to the appropriate branch protection (circuit breaker) to avoid shock hazard and violation of any local electrical codes. The branch protection (circuit breaker) shall be installed near the UPS and shall be easily accessible. The installation of upstream and downstream protective devices is highly recommended when the UPS is connected to the mains and the load.

CAUTION! To reduce the risk of electrical shock with the installation of this UPS equipment and the connected equipment, the user must ensure that the UPS is properly grounded due to a possible risk of AC current leakage.

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

WARNING: Qualified Service Personnel ONLY must perform the Installation and Servicing of these UPS systems. MINUTEMAN accepts no liabilities and is not limited to: injury to the Service Personnel, or damages to; the UPS, the Battery Pack, or the connected equipment caused by the incorrect installation or servicing of the UPS system. There are optional isolation step-down transformers (XFR) and Maintenance Bypass Switches (MTBS) for these UPS systems. These UPSs **MUST** be operated with their respective Battery Packs, see the table below:

UPS	ED5000RT-CU ED6000RT-CU	ED8000RT-CU ED10000RT-CU
BP	BP192RTXL	BP240RTXL
XFR	ED5000RT-XFR ED6000RT-XFR	ED8000RT-XFR ED10000RT-XFR
MTBS	ED-MTBS12K	ED-MTBS12K

CAUTION! To de-energize the outputs of the UPS:

1. If the UPS is on press and release the On/Off/Test button after the second beep.
2. Turn off the input circuit breaker on the rear panel of the UPS.
3. Turn off the DC breaker(s) on the rear panel of the Battery Pack(s).
4. Disconnect the UPS from the AC source.
5. To completely de-energize the UPS, disconnect the battery cable.

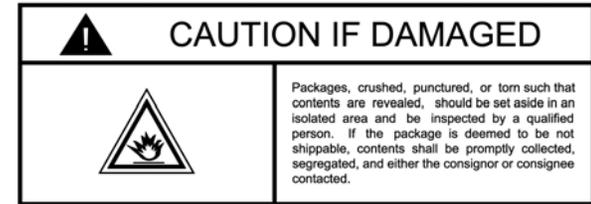


ON / OFF / TEST BUTTON: Turning the input circuit breaker (on the rear panel) to the on position will put the UPS in the Bypass mode and supply power to the load. Press, hold and then release the On/Off/Test Button during the audible alarm's first beep to turn the inverter on and transfer the UPS to the On-Line mode. When the UPS is On, press, hold and then release the On/Off/Test Button during the audible alarm's second beep to turn the inverter off and transfer the UPS to the Bypass mode. To turn the UPS off turn off the input circuit breaker on the rear panel, wait for approximately 1-minute until the LCD and the fans turn off, and then turn off the DC breaker(s) on the rear panel of the Battery Pack(s). When the UPS is in the On-Line mode or the Economy mode, press, hold and then release the On/Off/Test Button during the audible alarm's fourth beep. The UPS will perform a 10-second Self Test. During the test, the UPS will switch to the Battery mode, the On-Battery icon will illuminate and the audible alarm will sound. If the UPS fails the test, one of the icons will remain illuminated indicating the type of problem. The UPS will charge the batteries while the UPS is in the Bypass mode, the On-Line mode or the Economy mode when there is acceptable AC voltage present.

NOTICE: This equipment has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules and the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference of the Canadian Department of Communications. These limits are designed to provide reasonable protection against such interference in a residential installation. This equipment generates and uses radio frequency and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, this equipment may cause interference to radio and television reception. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient the receiving antenna.
- Relocate the computer with respect to the receiver.
- Move the computer away from the receiver.
- Plug the computer into a different outlet so that the computer and receiver are on different branch circuits.
- Shielded communications interface cables must be used with this product.

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



RECEIVING INSPECTION

Once you receive the product it should be visually 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 by the manufacturer. The packing materials that the product was shipped in were carefully designed to minimize any shipping damage. In the unlikely case that the product needs to be returned to the manufacturer, use the original packing material. Since the manufacturer is not responsible for shipping damage incurred when the product is returned, the original packing material is inexpensive insurance. **PLEASE SAVE THE PACKING MATERIALS!**

LIFE SUPPORT POLICY

As a general policy, Para Systems does 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.

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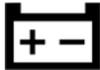
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Chapter 2: Controls and Indicators

CONTROL PANEL



The AC normal icon illuminates when the UPS is on and operating in the AC normal mode. The AC normal icon will extinguish when operating in the Battery mode.



The On-Battery icon illuminates when the UPS is operating in the Battery mode. The On-Battery icon will extinguish when operating in the AC normal mode.



The Weak/Bad Battery icon illuminates when the UPS detects a weak battery, bad battery or if the battery is disconnected. The Weak/Bad Battery icon is extinguished when the battery's condition is good.



The Fault icon illuminates when the UPS detects an internal fault. The Fault icon is extinguished when the UPS is operating properly.



The Load Level Bar Graph operates as follows:

LED #1: When the attached load is $\geq 20\%$ the LED will illuminate.

LED #2: When the attached load is $\geq 40\%$ the LED will illuminate.

LED #3: When the attached load is $\geq 60\%$ the LED will illuminate.

LED #4: When the attached load is $\geq 80\%$ the LED will illuminate.

LED #5: When the attached load is $\geq 100\%$ the LED will illuminate.



When the amount of load attached to the UPS exceeds 110% of its power rating; the Overload icon will flash Off and On, all of the LEDs in the Load Level Bar Graph will be illuminated and the UPS will sound a constant alarm to indicate an Overload condition.



The Battery Capacity Bar Graph operates as follows:

LED #1: When the battery capacity is $\geq 20\%$ the LED will illuminate.

LED #2: When the battery capacity is $\geq 40\%$ the LED will illuminate.

LED #3: When the battery capacity is $\geq 60\%$ the LED will illuminate.

LED #4: When the battery capacity is $\geq 80\%$ the LED will illuminate.

LED #5: When the battery capacity is $\geq 100\%$ the LED will illuminate.



The Multi-Function On/Off/Test Button functions as follows:

Turning the input circuit breaker (on the rear panel) to the on position will put the UPS in the Bypass mode and supply power to the load. Press, hold and then release the On/Off/Test Button during the audible alarm's first beep to turn the inverter on and transfer the UPS to the On-Line mode.

When the UPS is On, press, hold and then release the On/Off/Test Button during the audible alarm's second beep to turn the inverter off and transfer the UPS to the Bypass mode. To turn the UPS off turn off the input circuit breaker on the rear panel, wait for approximately 1-minute until the LCD and the fans turn off, and then turn off the DC breaker(s) on the rear panel of the Battery Pack(s).

When the UPS is in the On-Line mode or the Economy mode, press, hold and then release the On/Off/Test Button during the audible alarm's forth beep. The UPS will perform a 10-second Self Test. During the test, the UPS will switch to the Battery mode, the On-Battery icon will illuminate and the audible alarm will sound. If the UPS fails the test, one of the icons will remain illuminated indicating the type of problem.



Pressing the Alarm Silencer Button while the unit is operating in Battery mode, will silence the audible alarm. Once the UPS reaches the LBW (Low Battery Warning) threshold the alarm will be re-activated. The alarm cannot be silenced during the LBW alarm. Once the UPS transfers to the AC mode the alarm will be reset to default.



The Scroll Button allows the user to scroll through the UPS parameters that are available on the LCD screen.

The LCD will report the following information:

INPUT: Voltage, frequency, KVA, KW.

OUTPUT: Voltage, frequency, KVA, KW.

Estimated Runtime: In the normal AC mode and the Battery mode.

Error codes: The UPS will display error codes if an error occurs.

bPS: The UPS is operating in the Bypass mode.

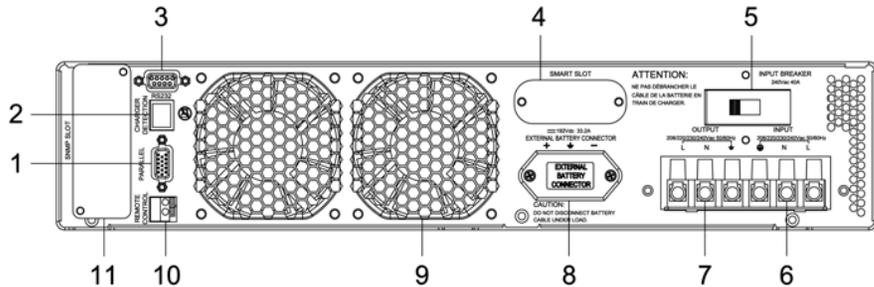
EPO: The Emergency Power Off function is being performed.

ECO: The UPS is operating in the Economy mode.

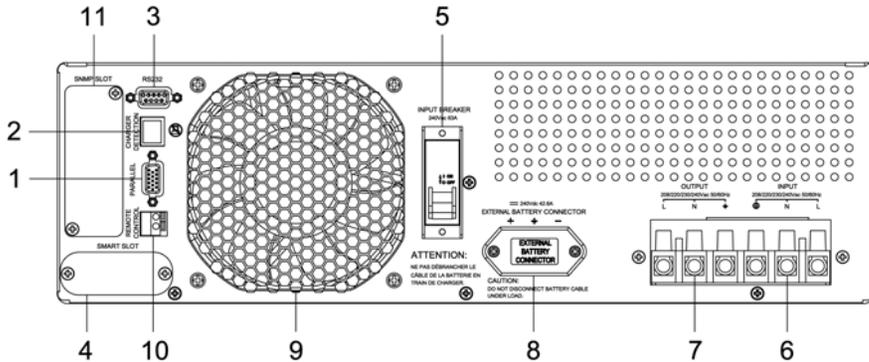
NOTE: The LCD backlight will illuminate for 1-minute when the UPS switches to the Battery mode. When the UPS has an event and/or an error code the LCD backlight will turn on and remain on to alert the user that an event has occurred.

REAR PANELS

ED5000RT-CU / ED6000RT-CU



ED8000RT-CU / ED10000RT-CU



1. The Parallel port is used for communication between two UPSs and the Maintenance Bypass Switch (MTBS) for parallel operation.
2. The Charger Detection port connects to an external charger.
3. The RS232 communications port is for UPS monitoring and control.
4. The Smart slot is used for mini option cards.
5. The Input Circuit Breaker will trip in the event the load exceeds the UPS's power rating.
6. The Input Terminal Block is for connecting the input utility power.
7. The Output Terminal Block is for connecting the load.
8. The External Battery Connector is for connecting the Battery Packs.
9. The Fan provides airflow for the UPS.
10. The Remote Control port is used to remotely shutdown the UPS.
11. The SNMP slot is used for option cards.

Chapter 3: Installation

INSTALLATION PLACEMENT



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.

- Operating Temperature (Maximum): 0 to 40°C (+32 to +104°F)
- Operating Elevation: 0 to 2,000m (0 to +6,562 ft)
- Operating and Storage Relative Humidity: 95%, non-condensing
- Storage Temperature: -15 to +50°C (+5 to +122°F)
- Storage Elevation: 0 to 15,000m (0 to +49,213 ft)

INSTALLATION

Be sure to read the installation placement and all the cautions before installing the UPS system. Place the UPS in the final desired location and complete the rest of the installation procedure. These UPSs do not have internal batteries and must be connected to at least one Battery Pack to operate properly. See the "Rackmount Configuration" to install the UPS into the rack and see the "Connecting the Battery Pack" procedure to connect the Battery Pack. **USE CAUTION:** The UPS and Battery Pack are extremely heavy. Use the appropriate number of personnel when installing the UPS system.

NOTE: If you are using more than one 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. See the Power Monitoring software or the SNMP card's User's Manual to configure the UPS.

CAUTION! DO NOT USE THE MOUNTING BRACKETS TO LIFT THE UPS. The mounting brackets are **ONLY** for securing the UPS to the rack.

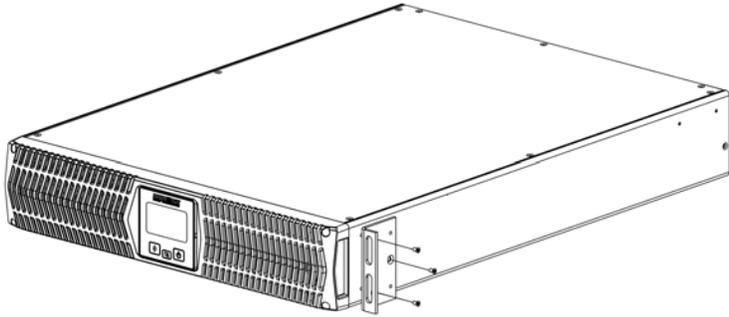
RACKMOUNT CONFIGURATION

Use the included rackmount brackets and screws to mount the UPS in a rack by following the steps below.

USE CAUTION: The UPS system is heavy. Use the appropriate number of personnel when installing the UPS system.

CAUTION! DO NOT USE THE MOUNTING BRACKETS TO LIFT THE UPS. The mounting brackets are **ONLY** for securing the UPS to the rack.

1. Attach the rackmount brackets to the mounting holes on the side panel of the UPS as shown below.



2. Follow steps 1 through 4 to install the UPS into the Rail kit. See the figure below.

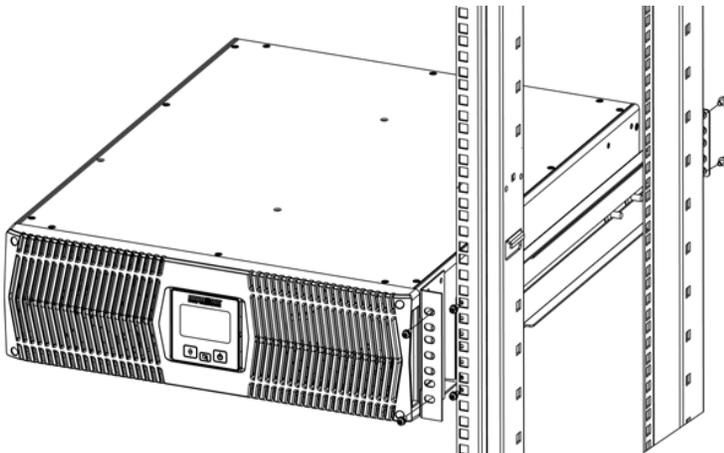
Step 1: Adjust the length of the rail according to the rack.

Step 2: Securely tighten the wing nuts.

Step 3: Secure the rail to the rack with the enclosed screws.

Step 4: Slide the UPS onto the rail and secure to the rack with the enclosed screws.

NOTE: See the Battery Packs User's Manual to install the Battery Pack.



TOWER CONFIGURATION

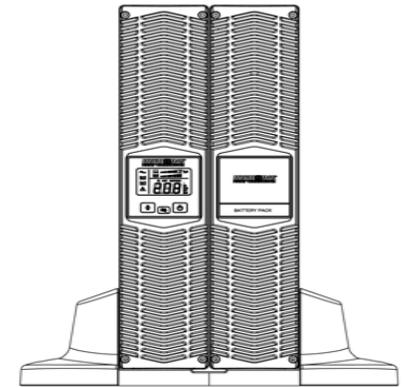
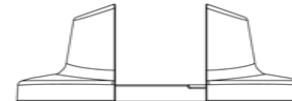
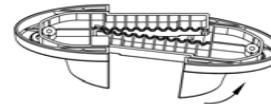
The tower configuration allows the user to install the UPS in the up-right position. The tower stands are provided with the UPS. **WARNING:** Use two or more people when installing the UPS. Use **CAUTION**, the UPS system is extremely heavy.

1. Once the location of the UPS has been determined, place the tower stands in the desired location.

WARNING: The UPS must be installed in the proper up-right position. Once the UPS is placed in the tower stands, looking at the front panel the top cover of the UPS **MUST** be on your left hand side.

2. Slide the UPS into the tower stands. Make sure that the UPS is stable.
3. The LCD panel can be rotated to read in the up-right position. Remove the front panel from the UPS. On the backside of the front panel, push the LCD panel outwards, the panel will pop out. Rotate the LCD panel counter clockwise so that it reads in the upright position. Re-install the front panel on the UPS.

NOTE: See the Battery Pack User's Manual to install the Battery Pack.



CONNECTING THE BATTERY PACK

(QUALIFIED SERVICE PERSONNEL ONLY)

Please read all of the **WARNINGS** and **CAUTIONS** before attempting to connect or service the batteries or the Battery Pack. The installation and servicing of the batteries and the Battery Pack must be performed by **Qualified Service Personnel ONLY**.

Replace the batteries and/or Battery Pack with the same number and type as originally installed.

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.

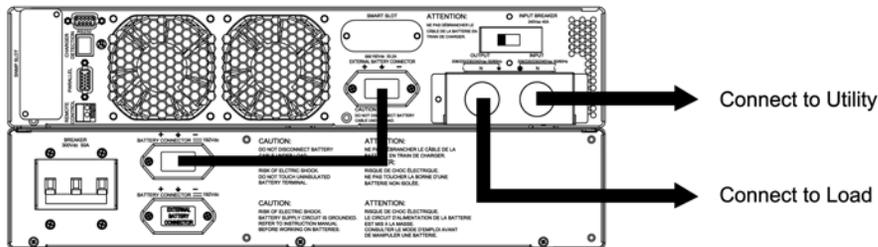
CAUTION: The battery can present a risk of electrical shock. These batteries produce sufficient current to burn wire or tools very rapidly, producing molten metal. Observe these precautions when installing or replacing the batteries:

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.

WARNING: This UPS series does not have internal batteries. A Battery Pack **MUST** be connected to these UPSs so that they will provide battery backup for the connected load.

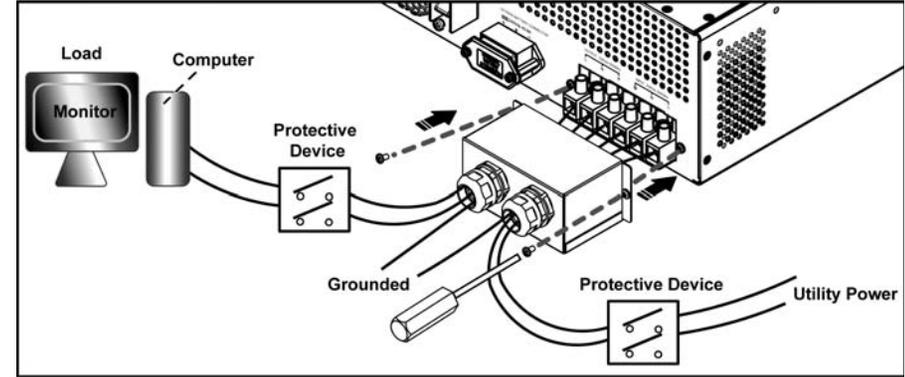
NOTE: See the Battery Pack User's Manual for more detailed information.

1. The UPS **MUST** be in the off position.
2. The DC breaker(s) on the rear panel of the Battery Pack(s) **MUST** be in the off position.
3. Remove the External Battery Connector's cover plate from the rear panel of the UPS (requires a phillips screwdriver).
4. Remove the top External Battery Connector's cover plate from the rear panel of the Battery Pack.
5. Connect the one end of the #8 AWG premolded battery cable to the External Battery Connector on the rear panel of the UPS and secure with the retaining screws.
6. Connect the other end of the #8 AWG premolded battery cable to the External Battery Connector on the rear panel of the Battery Pack and secure with the retaining screws.
7. See the Battery Pack User's Manual for more detailed information.



CONNECTING THE UPS TO AN AC SOURCE

1. When connecting the UPS to the utility power and the load, it is recommended that you install the protective devices. The protective devices should be approved components that meet safety certifications.
2. Prior to applying power to the UPS, ensure the UPS is properly grounded.
3. The utility power for the UPS must be single-phase in accordance with its rating label and the specifications in this manual.



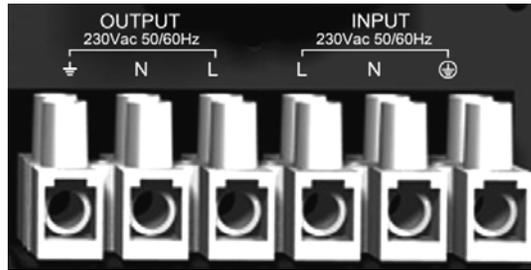
Model #	Power Rating	Suggested Protection Device
ED5000RT-CU	5KVA	C curve- 40Amp
ED6000RT-CU	6KVA	C curve- 40Amp
ED8000RT-CU	8KVA	D curve- 63Amp
ED10000RT-CU	10KVA	D curve- 63Amp

The ED5000RT-CU and ED6000RT-CU come with an input power cord in the box. The #10 AWG input power cord is 10ft long and has an L6-30P plug on it. Connect the UPS to a two pole, three wire, grounded AC wall outlet. The outlet must be connected to the appropriate branch protection (circuit breaker). Connection to any other type of outlet may result in a shock hazard and violate local electrical codes. The AC wall outlet shall be installed near the UPS and shall be easily accessible. The plug on the input power cord on this UPS series is intended to serve as a disconnect device. Do not use extension cords, adapter plugs, or surge strips. The installation of upstream and downstream protective devices is highly recommended when the UPS is connected to the utility power and the load.

The ED8000RT-CU and ED10000RT-CU are hardwire input only. The pins for the input cable are included. The UPS must be connected to the appropriate branch protection (circuit breaker) to avoid shock hazard and violation of any local electrical codes. The branch protection (circuit breaker) shall be installed near the UPS and shall be easily accessible. The installation of upstream and downstream protective devices is highly recommended when the UPS is connected to the utility power and the load.

INPUT / OUTPUT CONNECTIONS:

1. Remove the terminal block cover box from the rear panel of the UPS (requires a phillips screwdriver). Refer to the figure below for the input / output connections.



2. Input / Output cable selection:

Temperature Rating	5/6KVA	8/10KVA
60°C / 75°C	#10 AWG (Cu)	#6 AWG (Cu)

(In accordance with National Electrical Code (NEC), install suitable conduit and bushing.) **NOTE:** Use copper wire only.

3. Before connecting to the input / output terminals read all of the Cautions and Warning, then observe the following:
 - a) Ensure that the UPS is turned off and not connected to the AC source or the battery source before any connections are made.
 - b) Calculate the power consumption of the load to ensure that an overload condition does not occur.
 - c) Ensure that the terminal block screws are secured after connecting the input / output wires. The terminal block screws should be torque to 18±2Kgf.cm (requires a 3/16" flat-head screwdriver).
 - d) Ensure that the UPS is properly grounded.
4. Connect the input utility wires and/or input power cord to the input terminal block and secure.
5. Connect the load wires to the output terminal block and secure.
6. Re-install the terminal block cover box.

Chapter 4: Operation

SYSTEM OVERVIEW

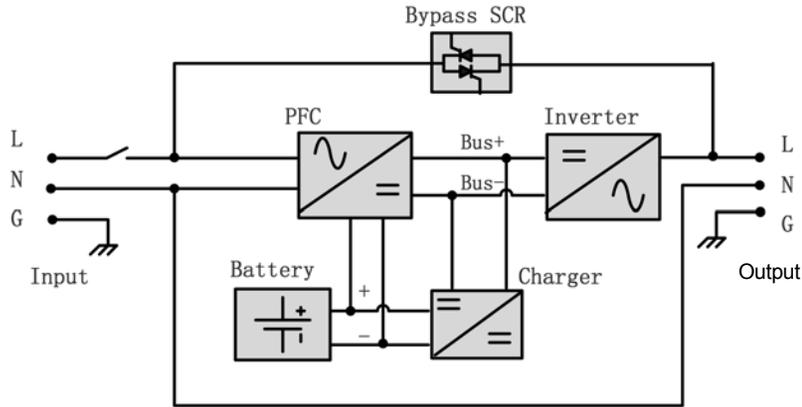
This double conversion On-Line UPS protects computers, servers, telecommunications and electronic equipment from blackouts, brownouts, overvoltages, and surges. This On-Line UPS converts the input AC to DC and then back to a true sine wave AC output. The true sine wave output is regulated within 2% of the nominal output voltage. The Power Factor Correction (PFC) circuitry corrects the input power factor to within 99% of unity and blocks the load generated harmonic distortion from getting back on the input AC line. This On-Line UPS provides a continuous true sine wave output with zero transfer time and great regulation to protect your mission critical equipment. The UPS will quietly and confidently protect your system from power anomalies.

The UPS will charge the batteries when the UPS is in the On-Line, the Bypass, or Economy modes as long as the UPS is connected to utility power and there is an acceptable AC voltage present. When a blackout, brownout, or an overvoltage condition occurs while the UPS is in the On-Line mode or the Economy mode; the UPS will transfer to the battery mode, the On-Battery indicator will illuminate and the audible alarm will sound once every ten-seconds indicating that the utility power is lost or unacceptable. When the utility power returns or is at an acceptable level, the UPS will automatically transfer back to the On-Line mode or the Economy mode and start recharging the batteries. During an extended outage when there is approximately two-minutes of backup time remaining the audible alarm will sound twice every five-seconds. This Low Battery Warning is letting the user know that they should save all open files and turn off their equipment. When the batteries reach the predetermined level the UPS will automatically shutdown protecting the batteries from over discharging. Once the utility power returns the UPS will automatically restart providing safe usable power to the connected equipment and start recharging the batteries.

The Bypass mode operation: The input utility power 'bypasses' the inverter circuit and is connected directly to the output of the UPS powering the connected equipment while simultaneously charging the batteries. When a blackout, brownout, or an overvoltage condition occurs while the UPS is in the Bypass mode the connected equipment will not be backed up. When utility power returns the UPS will automatically startup in the Bypass mode powering the connected equipment and resume charging the batteries.

The Economy mode operation: The input utility power 'bypasses' the inverter circuit and is connected directly to the output of the UPS powering the connected equipment while simultaneously charging the batteries. When a blackout, brownout, or an overvoltage condition occurs the UPS will transfer to the battery mode, the inverter will turn on powering the connected equipment, the On-Battery indicator will illuminate and the audible alarm will sound once every ten-seconds indicating that the utility power is lost or unacceptable. When the utility power returns or is at an acceptable level, the UPS will automatically transfer back to the Economy mode and start recharging the batteries.

Block Diagram of the Basic Wiring and Internal Circuit Configuration



ON / OFF / TEST BUTTON

Turning the input circuit breaker (on the rear panel) to the on position will put the UPS in the Bypass mode and supply power to the load. Press, hold and then release the On/Off/Test Button during the audible alarm's first beep to turn the inverter on and transfer the UPS to the On-Line mode. When the UPS is On, press, hold and then release the On/Off/Test Button during the audible alarm's second beep to turn the inverter off and transfer the UPS to the Bypass mode. To turn the UPS off turn off the input circuit breaker on the rear panel, wait for approximately 1-minute until the LCD and the fans turn off, and then turn off the DC breaker(s) on the rear panel of the Battery Pack(s).

When the UPS is in the On-Line mode or the Economy mode, press, hold and then release the On/Off/Test Button during the audible alarm's fourth beep. The UPS will perform a 10-second Self Test. During the test, the UPS will switch to the Battery mode, the On-Battery icon will illuminate and the audible alarm will sound. If the UPS fails the test, one of the icons will remain illuminated indicating the type of problem. The UPS will charge the batteries while the UPS is in the Bypass mode, the On-Line mode or the Economy mode when there is acceptable AC voltage present.

START-UP IN THE AC MODE:

The UPS must be connected to utility power and there must be an acceptable AC voltage present. The Battery Pack(s) must be connected to the UPS and the DC breaker(s) on the rear panel of the Battery Pack(s) must be in the on position.

1. Turn on the input circuit breaker on the rear panel of the UPS. The fans will turn on, the AC normal icon will flash off/on and the LCD will display 'bPS'. The UPS is now in the Bypass mode. **NOTE:** If there is a power interruption while the UPS is in the Bypass mode the load will not be backed up.

2. Turn on the connected equipment one at a time.
3. Press, hold and then release the On/Off/Test Button during the audible alarm's first beep to transfer the UPS to the On-Line mode.
4. The UPS will start-up and perform a self-diagnosis for approximately 10-seconds. The following items will be checked:
 - a) The UPS will auto detect the input frequency to determine the output frequency (the default value is 60Hz).
 - b) Displays input voltage, load capacity and battery capacity.
 - c) Auto checks the rectifier.
 - d) Auto checks the charger.
 - e) Auto checks the battery.
 - f) Auto checks the DC BUS voltage.
 - g) Auto tests the inverter.
 - h) If all the test pass successfully then the UPS will transfer to the On-Line mode. **NOTE:** If any of the test fail an error code will be displayed and the UPS will remain in the Bypass mode or the UPS will shut-down depending on the type of error.

TURNING OFF THE UPS IN THE AC MODE:

1. Press, hold and then release the On/Off/Test Button during the audible alarm's second beep to transfer the UPS to the Bypass mode.
2. Turn off all of the connected equipment.
3. Turn off the input circuit breaker on the rear panel of the UPS.
4. Wait for approximately 1-minute until the LCD and the fans turn off.
5. Turn off the DC breaker(s) on the rear panel of the Battery Pack(s).

START-UP IN THE BATTERY MODE:

The Battery Pack(s) must be connected to the UPS and the DC breaker(s) on the rear panel of the Battery Pack(s) must be in the on position.

1. Turn on the input circuit breaker on the rear panel of the UPS.
2. Press, hold and then release the On/Off/Test Button during the audible alarm's first beep to transfer the UPS to the Battery mode.
3. The fans will turn on, then the UPS will start-up and perform a self-diagnosis for approximately 10-seconds. The following items are checked:
 - a) Since there is no input voltage present, the UPS will automatically select the default value for the output frequency (the default value is 60Hz). **NOTE:** If the UPS had been previously connected to an input source of 50Hz then the output frequency will be 50Hz.
 - b) The LCD displays input voltage, battery capacity bar graph, and the battery mode icon will be flashing.
 - c) Auto checks the rectifier.
 - d) Auto checks the charger.
 - e) Auto checks the battery.
 - f) Auto checks the DC BUS voltage.
 - g) Auto tests the inverter.

- h) If all the test pass successfully (takes approximately 15-seconds to complete) then the UPS will transfer to the Battery mode. **NOTE:** If any of the test fail an error code will be displayed and then UPS will shutdown.
4. Turn on the connected equipment one at a time.

TURNING OFF THE UPS IN THE BATTERY MODE:

1. Turn off all of the connected equipment.
2. Press, hold and then release the On/Off/Test Button during the audible alarm's second beep to turn the UPS off.
3. Turn off the input circuit breaker on the rear panel of the UPS.
4. Wait for approximately 1-minute until the LCD and the fans turn off.
5. Turn off the DC breaker(s) on the rear panel of the Battery Pack(s).

START-UP IN THE ECONOMY MODE (ECo):

The UPS must be connected to utility power and there must be an acceptable AC voltage present. The Battery Pack(s) must be connected to the UPS and the DC breaker(s) on the rear panel of the Battery Pack(s) must be in the on position. The Economy mode must be Enabled by using either the SNMP card or the Power Monitoring software.

1. Turn on the input circuit breaker on the rear panel of the UPS. The fans will turn on, the AC normal icon will flash off/on and the LCD will display 'bPS'. The UPS is now in the Bypass mode. **NOTE:** If there is a power interruption while the UPS is in the Bypass mode the load will not be backed up.
2. The Economy mode option must be Enabled through the SNMP card or the Power Monitoring software.
3. Turn on the connected equipment one at a time.
4. Press, hold and then release the On/Off/Test Button during the audible alarm's first beep to transfer the UPS to the Economy mode.
5. The UPS will start-up and perform a self-diagnosis for approximately 10-seconds. If all the test pass successfully then the UPS will transfer to the Economy mode and the LCD will display ECo. **NOTE:** If any of the test fail an error code will be displayed and the UPS will remain in the Bypass mode or the UPS will shutdown depending on the type of error.

TURNING OFF THE UPS IN THE ECONOMY MODE (ECo):

1. Press, hold and then release the On/Off/Test Button during the audible alarm's second beep to transfer the UPS to the Bypass mode.
2. Turn off all of the connected equipment.
3. Turn off the input circuit breaker on the rear panel of the UPS.
4. Wait for approximately 1-minute until the LCD and the fans turn off.
5. Turn off the DC breaker(s) on the rear panel of the Battery Pack(s).

NOTE: If you are using more than one 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. See the Power Monitoring software or the SNMP card's User's Manual to configure the UPS.

RS232 COMMUNICATIONS PORT

The RS232 communication port is a standard DB9 female. The pinout for the port is depicted below:

Pin 2: /TXD

Pin 3: /RXD

Pin 5: Ground

All of the other pins are not used.

NOTE: Connecting to the RS232 port is optional. The UPS works properly without this connection.

POWER MONITORING SOFTWARE

The UPS comes with a Power Monitoring Software CD. See the software CD for the installation of the Power Monitoring Software.

OPTION SLOT

The option slot on the rear panel of the UPS is for option cards. Contact your local dealer for the available option cards.

RJ11 REPO (Remote Emergency Power Off) PORT

Connect one end of the RJ11 cable to the REPO port and the other end of the RJ11 cable to the EPO switch. In the AC or the Battery mode short pin4 to pin5 for approximately 0.5-seconds to shutdown the UPS. The UPS must be turned off and then back on again to restart the UPS. **NOTE:** Connecting to the REPO port is optional. The UPS works properly without this connection. This connection is not for Telecommunication use.

PARALLEL PORT

The Parallel port is used for communication between two UPSs and the Maintenance Bypass Switch (MTBS) for parallel operation. Only two UPSs can be paralleled together. The paralleled UPSs MUST have the same; model number, VA/Watt rating, voltage and frequency. The total load will be shared equally by the two units. See the MTBS User's Manual for the configuration and the setup for paralleling the units. **NOTE:** Connecting to the Parallel port is optional. The UPS works properly without this connection. Contact your local dealer for more information.

CHARGER DETECTION PORT

The Charger Detection port on the rear panel of the UPS is for detecting an external charger that is used to charge the Battery Packs. **NOTE:** Connecting to the Charger Detection port is optional. The UPS works properly without this connection. Contact your local dealer for the available options.

ALARMS

ON BATTERY

When the UPS is operating on the batteries, the On-Battery icon will illuminate, the audible alarm will sound once every ten-seconds. The alarm will stop once the UPS returns to the AC normal mode.

LOW BATTERY WARNING

When the battery reserve runs low, the audible alarm will sound two beeps every five-seconds and an error code will be displayed. This condition will continue until either the AC returns or the UPS shuts down from battery exhaustion.

WEAK/BAD BATTERY

The UPS automatically tests the battery's condition and will illuminate the Weak/Bad Battery icon, an error code will be displayed and the audible alarm will sound. This alarm will be repeated until the batteries pass a self test. If the battery is weak, bad or disconnected, the Weak/Bad Battery icon will illuminate, an error code will be displayed and the alarm will beep three times every five-minutes until the battery is either reconnected or replaced. It is recommended that the UPS be allowed to charge overnight before performing a battery test to confirm a Weak/Bad Battery condition.

OVERLOAD

When the amount of load attached to the UPS exceeds its power rating; the Overload icon will flash Off and On, all of the LEDs in the Load Level Bar Graph will be illuminated an error code will be displayed and the UPS will sound a constant alarm. This alarm will remain on until the excess load is removed or the UPS's self protection circuit shuts the UPS down. If the UPS shuts down because of an Overload condition, the UPS must perform an Inverter function or a Self Test to clear the Overload Alarm.

UPS FAULT

When the UPS detects a fault, the Fault icon will illuminate, the audible alarm will sound a constant alarm, and an error code will be displayed. The fault condition, in some instances, may be reset by turning the UPS off and then on again. **NOTE:** See the Troubleshooting section for a list of the error codes.

NOTE: The LCD backlight will illuminate for 1-minute when the UPS switches to the Battery mode. When the UPS has an event and/or an error code the LCD backlight will turn on and remain on to alert the user that an event has occurred.

Chapter 5: Configurable Parameters and Settings

(These items may require optional software or hardware)

Function	Factory Default	User Choices	Description
UPS ID	Endeavor Series	Up to 64 characters to define the UPS	Use this function to uniquely identify the UPS in your network configuration.
Battery install date	Date of manufacture	Date of battery replacement - month/day/year XX/XX/XXXX	Enter the current date when replacing batteries.
Battery life in days	1826	Up to 5 characters	At first battery replacement, reset to reflect actual number of days experience in your environment or leave factory default.
Enable/Disable auto restart	Enabled	Enable or Disable	When <u>enabled</u> , the UPS will automatically restart from a low battery shutdown when normal AC returns.
Set audible alarm state	Enabled	Enabled, at low battery, disabled	<u>Enabled</u> - the UPS will emit a short beep when in the battery mode. <u>At Low Battery</u> the UPS will emit two beeps from low battery warning until shutdown. <u>Disabled</u> - Use only when software is controlling the UPS or to silence the alarm.
Shut-down Type	Entire UPS	Entire UPS or UPS output	<u>Entire UPS</u> - Turns off the entire UPS. <u>UPS Output</u> - Turns off the UPS's output receptacles only.
Set inverter output voltage	208VAC	220, 230, 240VAC)	Changes output voltage.
Enable/Disable REPO	Disabled	Enable or Disable	<u>Enabled</u> - the UPS will be powered off and remain off until the UPS is reset.
Enable/Disable ECO	Disabled	Enable or Disable	<u>Enabled</u> - the UPS will operate in the Economy mode.
Set External Battery Pack	1	2 - 10	Configures the UPS so that it will report the correct estimated runtime on the LCD screen and in the Power Monitoring software and/or the SNMP card.

Chapter 6: Troubleshooting

Symptom / Error Code	Cause / What To Do
UPS will not turn on.	Press the On/Off/Test button and release during the first beep.
UPS operates in battery mode only, even though there is AC present.	Reset the input circuit breaker. If the input circuit breaker trips after UPS restarts, reduce the load on the UPS.
The AC normal icon is illuminated, but there is no output.	Disconnect the computer cable from the UPS, press the On button. If UPS works normally, the software has control of the UPS.
UPS does not provide expected runtime.	Charge the batteries overnight and then retest. If the runtime is still less than expected, the batteries may need to be replaced.
Fault icon is illuminated and a constant alarm.	The UPS has an internal problem. Call for service.
Error Code: E01. UPS is shutdown.	The UPS has detected a short-circuit on its output. Check the attached load.
Error Code: E02. Overload icon is illuminated and a constant alarm.	Check the specifications and remove part of the load. If the UPS shuts down because of an Overload, the UPS must perform an Inverter function or a Self Test to clear the Overload Alarm.
Error Code: E03. UPS is shutdown.	The internal or ambient temperature has exceeded the temperature ratings. Check the specifications.
Error Code: E04. Input Over Current Protection Warning.	Check the specifications and remove part of the load.
Error Code: E05. Input voltage or frequency is out of range.	The input voltage or frequency is out of range when the UPS is in the Bypass mode. Check the input source.
Error Code: E06. Ambient Over Temperature Protection.	The internal temperature of the UPS has exceeded the safe operating range for the UPS. Check the specifications.
Error Code: E07. Ambient Under Temperature Protection.	The internal temperature of the UPS has exceeded the safe operating range for the UPS. Check the specifications.
Error Code: E08. Manual Bypass is on.	The external Maintenance Bypass Switch (MTBS) is in the on position. Check the MTBS.
Error Code: E11: Inverter/Output failure shutdown.	The UPS has an internal fault. Call for service.
Error Code: E12. DC BUS OVP Shutdown.	The UPS has an internal fault. Call for service.
Error Code: E13. Fan Fail Warning.	The fan has either failed or has stopped due to excessive dirt. If the fan has failed, call for service. If the fan is dirty, use a can of "Canned Air" to clean the fan.
Error Code: E14. Charger Failure Warning.	The charger has failed, call for service.
Error Code: E15. The battery needs to be replaced.	Charge the batteries overnight and then retest. If the runtime is still less than expected replace the batteries and/or call for service.
Error Code: E17. Low Battery Warning.	The UPS's battery reserve is low. This condition will continue until AC returns or the UPS shuts down from battery exhaustion.
Error Code: E18. Low Battery Capacity.	The UPS's battery capacity is low. Charge the batteries overnight.

Symptom / Error Code	Cause / What To Do
Error Code: E19. Bad Battery.	This could be a disconnected battery, a weak battery or a bad battery. Check the battery connections. Charge the batteries overnight and if the error code is still there replace the batteries and/or call for service.
Error Code: E20. DC BUS (high/low) failure.	The UPS has an internal fault. Call for service.
Error Code: E21. Bypass SCR Shorted Failure.	The UPS has an internal fault. Call for service.
Error Code: E22. Bypass SCR Opened Failure.	The UPS has an internal fault. Call for service.
Error Code: E23. Input SCR Failure.	The UPS has an internal fault. Call for service.
Error Code: E24. Output SCR Failure.	The UPS has an internal fault. Call for service.
Error Code: E25. Input HVP Relay Shorted Failure.	The UPS has an internal fault. Call for service.
Error Code: E26. Input HVP Relay Opened Failure.	The UPS has an internal fault. Call for service.
Error Code: E27. NTC Opened Failure.	The UPS has an internal fault. Call for service.
Error Code: E28: Input Fuse Failure.	The UPS has an internal fault. Call for service.
Error Code: E29. Output Fuse Failure.	The UPS has an internal fault. Call for service.
Error Code: E30. Charger and Battery Failure.	The UPS has an internal fault. Call for service.
Error Code: E31. System Clock Failure.	The UPS has an internal fault. Call for service.
Error Code: E32. Parallel Communications Loss.	Check the parallel cable connections at the UPS and the MTBS.
Error Code: E33. Parallel UPS Not Compatible.	Trying to parallel two different UPS models. When paralleling the UPSs they must be the same model and VA ratings. Call for service.

Chapter 7: Obtaining Service

IF THE UPS REQUIRES SERVICE

1. Use the Troubleshooting section to eliminate obvious causes.
2. Verify there are no tripped circuit breakers and that the batteries are good. A tripped circuit breaker and defective batteries are the most common issues.
3. Call your dealer for assistance. If you cannot reach your dealer, or if they cannot resolve the issue call or fax the Technical Support department at the following numbers; Voice phone (972) 446-7363, FAX line (972) 446-9011 or visit our Web site at www.minutemanups.com the "Discussion Board". Before calling the Technical Support Department have the following information available:
 - a) Contact name and address.
 - b) Where and when the unit was purchased.
 - c) All of the model information about your unit.
 - d) The serial number of your unit.
 - e) Any information on the failure, including LEDs that may be illuminated or error codes displayed.
 - f) A description of the protected equipment including model numbers, if possible.
 - g) A technician will ask you for the above information and if possible, help solve the issue over the phone. In the event that the unit requires factory service, the technician will issue you a Return Material Authorization Number (RMA #).
 - h) If the unit is under warranty, the repairs will be done at no charge. If the unit is not under warranty there will be a charge for the repair.
4. Pack the unit in its original packaging. If the original packaging is no longer available, ask the Technical Support Technician about obtaining a new set. It is important to pack the unit properly in order to avoid damage in transit. Never use Styrofoam beads for a packing material.
 - a) Include a letter with your name, address, day time phone number, RMA number, a copy of your original sales receipt, and a brief description of the problem.
5. Mark the RMA # on the outside of all packages. The factory cannot accept any package without the RMA # marked on the outside.
6. Return the unit by insured, prepaid carrier to:

Para Systems Inc.
 MINUTEMAN UPS
 1809 W. Frankford Road, Suite 150
 Carrollton, TX 75007
 ATTN: RMA# _____

Chapter 8: Specifications

SYSTEM SPECIFICATIONS				
Model Number	ED5000RT-CU	ED6000RT-CU	ED8000RT-CU	ED10000RT-CU
Maximum Power Capacity	5000VA 4500W	6000VA 5400W	8000VA 7200W	10000VA 9000W
Topology	Double Conversion On-Line, True Sine Wave			
INPUT				
Number of Phase	Single (1Ø 2W +G)			
Nominal Voltage	208VAC			
Acceptable Input voltage	0 - 300VAC			
Voltage Range	156 - 280VAC	180 - 280VAC		
Power Factor Correction	≥99% at Full Load			
Frequency Limits	40 to 70 Hz, autosensing			
Low Voltage Transfer Point	156/180V resets to Utility Power at 166/190V or higher			
High Voltage Transfer Point	280V resets to Utility Power at 270V or lower			
Input Protection	Resettable Circuit Breaker			
OUTPUT ON-LINE OPERATION				
Voltage Range	208VAC: 204 - 212VAC			
Voltage Regulation	Nominal +/-2%			
Frequency Range	50/60Hz, +/-0.1Hz (unless synchronized to utility)			
Efficiency (On-Line Mode)	>90% (Full Load)			
OUTPUT BATTERY OPERATION				
Waveform Type	True Sine Wave			
Nominal Voltage	Default: 208VAC, User selectable: 220/230/240VAC			
Voltage Regulation	Nominal +/-2% (until Low Battery Warning)			
Frequency	50/60Hz, +/-0.1Hz			
Voltage T.H.D.	≤2% (Linear Load)			
Dynamic Response	+/-5% @ 100% Load change in 30 ms			
Transfer Time	0 ms			
Slew Rate	≤1Hz / second			
Crest Factor	3 : 1	2.7 : 1		
Overload Capacity	≥106% - ≤110% for 10-minutes ≥111% - ≤125% for 5-minutes ≥126% - ≤150% for 30-seconds			
Protection	Over-Current, and Short-Circuit Protected			

NOTE: Specifications are subject to change without notice.

ECONOMY MODE OPERATION

Output Voltage Range	208VAC: 187 - 228VAC (240VAC: 216 - 264VAC)
Low Voltage Transfer Point	At -10% of the rated input voltage transfers to the On-Line mode 8-Volt hysteresis to reset to the Economy mode
High Voltage Transfer Point	At +10% of the rated input voltage transfers to the On-Line mode 8-Volt hysteresis to reset to the Economy mode
Transfer Time	8 ms (Typical)
Efficiency (Economy Mode)	>96% (Full Load)

BATTERY SYSTEM

System Voltage	192VDC	240VDC		
Runtime: Full Load (minutes)	4	3	5	4
Runtime: Half Load (minutes)	12	11	14	12
Typical Recharge Time	8-hours to 90% after a full load discharge			

SURGE PROTECTION AND FILTERING

Surge Energy Rating	1050 J
Surge Current Capability	6500 Amps total
Surge Response Time	1.2 μ s normal mode; <50 μ s common mode
Surge voltage let-through (as a percentage of an applied ANSI C62.41 Cat. B +/-4 kV)	<10%
Noise Filter	normal and common mode EMI/RFI suppression
Audible Noise at 1 m (3 ft.)	<60 dBA

ENVIRONMENTAL

Operating Temperature (max)	0 to 40°C (+32 to +104°F)
Storage Temperature	-15 to +50°C (+5 to +122°F)
Operating/Storage Humidity	0 ~ 95% Non-Condensing
Operating Elevation	0 to 2,000m (0 to +6,562 ft)
Storage Elevation	0 to 15,000m (0 to +49,213 ft)

PHYSICAL

Size - Net L X W X H	26.0 x 17.3 x 3.5" 660 x 440 x 88.5 mm	24.6 x 17.3 x 5.14" 625 x 440 x 130.6 mm
Weight - Net	35.3 lbs 16.0 Kgs	46.5 lbs 21.1 Kgs
Size - Shipping L X W X H	39.4 x 23.6 x 8.7" 1000 x 600 x 222 mm	39.4 x 23.6 x 9.8" 1000 x 600 x 246 mm
Weight - Shipping	52.9 lbs 24.0 Kgs	65.0 lbs 29.5 Kgs

REGULATORY COMPLIANCE

Safety and Approvals	cTUVus (Conforms to UL1778 4th Edition & CSA 22.2 no. 107.3-05)
EMC Verification	FCC Class B, CE certified

Chapter 9: 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 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 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.

A1. DECLARATION OF CONFORMITY

Notes:

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

Standard(s) to which Conformity is declared:

EN 50091-2:1995 Class A, IEC61000-4-2: level4, IEC61000-4-3: level3, IEC61000-4-4:level4, IEC61000-4-5:level4, IEC61000-4-6: level3, IEC61000-4-8: level3, IEC 62040-1-1, IEEE C62.41 Category A1

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: ED5000RT-CU, ED6000RT-CU, ED8000RT-CU, ED10000RT-CU

Year of Manufacture: Beginning April 1, 2014

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: April 1, 2014