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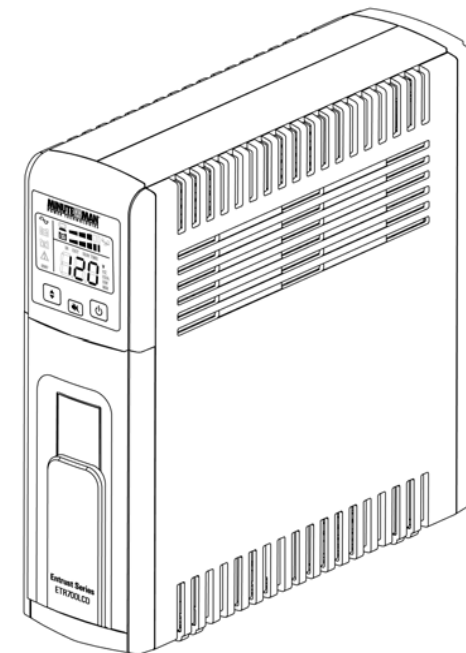
## Entrust-LCD Series UPS

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### User's Manual



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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 Entrepid Series UPS, models [ETR550LCD](#), [ETR700LCD](#), [ETR1000LCD](#), [ETR1500LCD](#) 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. 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 !**  
**CONSIGNES DE SÉCURITÉ IMPORTANTES**  
**SAUVEGARDEZ CES CONSIGNES!**

Veuillez lire ce manuel avant l'installation de l'onduleur modèles [ETR550LCD](#), [ETR700LCD](#), [ETR1000LCD](#), [ETR1500LCD](#). Il contient de l'information importante qui doit être respectée au cours de l'installation et de l'entretien de l'onduleur et des batteries. Cette information vous permettra de correctement installer le système pour atteindre son rendement maximum en toute sécurité.

**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 20cm) 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.

**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!** Connect the UPS to a two pole, three wire grounded AC wall outlet. The receptacle must be connected to the appropriate branch protection (circuit breaker or fuse). Connection to any other type of receptacle may result in a shock hazard and violate local electrical codes. Do not use extension cords, adapter plugs, or surge strips.

**CAUTION!** To reduce the risk of fire, connect only to a utility powered circuit provided with 20 amperes maximum branch circuit over-current protection in accordance with the National Electric Code, ANSI/NFPA 70.

**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 combined sum of the AC leakage current does not exceed 3.5mA.

**CAUTION!** To reduce the risk of electrical shock in conditions where the load equipment grounding cannot be verified, disconnect the UPS from the AC wall outlet before installing a computer interface cable. Reconnect the power cord only after all signaling connections are made.

**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**.

**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, or the connected equipment caused by the incorrect installation or servicing of the UPS system.

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

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

1. If the UPS is on press and release the On/Off/Test Button.
2. Disconnect the UPS from the AC wall outlet.
3. To de-energize the UPS completely, disconnect the battery.

**NOTICE!** The output of this device is not sinusoidal. It has a total harmonic distortion and maximum single harmonic distortion as below:

Model	ETR550LCD	ETR700LCD	ETR1000LCD	ETR1500LCD
Total harmonic	42.6%	45.4%	51.6%	39.0%
Single harmonic	20.3%	21.1%	24.3%	24.1%

**ON / OFF / TEST BUTTON:** To turn the UPS on: press and hold the On/Off/Test Button until the alarm sounds one beep and then release. The UPS will perform a five second self-test. Once the UPS has passed its self-test the UPS will provide an output and the load will be powered. To turn the UPS off: press and hold the On/Off/Test Button until the alarm sounds one beep and then release. To perform a ten-second battery test: With the UPS in the AC mode, press and hold the On/Off/Test Button until the alarm sounds four beeps, and then release. During the test, the UPS will switch to the Battery mode, the On-Battery icon will illuminate and the alarm will sound.



**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:

- Reorient 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.

**NOTE:** These UPSs are shipped with the batteries disconnected. The batteries must be connected before putting these UPSs into service. Refer to Section 3 "Installation" for connecting the batteries.

## Receiving 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!**



## Life Support Policy

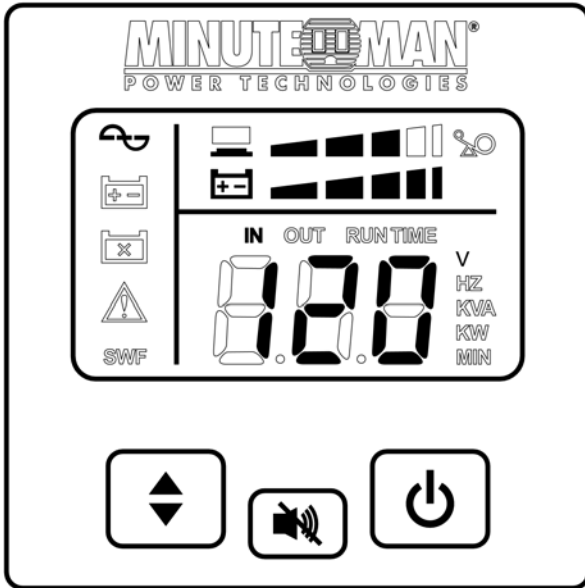
As a general policy, we do not recommend the use of any of our products in life support applications where failure or malfunction of the product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. We do not recommend the use of 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.

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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 AC normal icon will blink when the UPS is operating in the Boost 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 and the Boost 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.



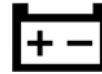
The Site Wiring icon (120V models) illuminates when the UPS detects a site wiring problem. The SWF icon is extinguished when the UPS is connected to proper site wiring.



Load Capacity Bar Graph: Displays the amount of load connected to the UPS in the AC and Battery mode as 20%, 40%; 60%, 80%, 100%.



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 that there is an Overload condition.



Battery Capacity Bar Graph: Displays the amount of Battery Capacity available in the AC and Battery mode as 20%, 40%; 60%, 80%, 100%.

#### UPS Parameters:

Input - Voltage and Frequency.

Output - Voltage and Frequency.

KVA - Kilo Volt Amperes

KW - Kilowatts

Estimated Runtime (minutes) - AC normal and Battery mode.

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

When the UPS is Off, press and release the On/Off/Test button after one beep to turn the UPS On.



When the UPS is On, press and release the On/Off/Test Button after one beep to turn the UPS Off.

When the UPS is in the Normal AC mode, press and hold the On/Off/Test button for four beeps, then release the button. The UPS will perform a 10-second Self Test.



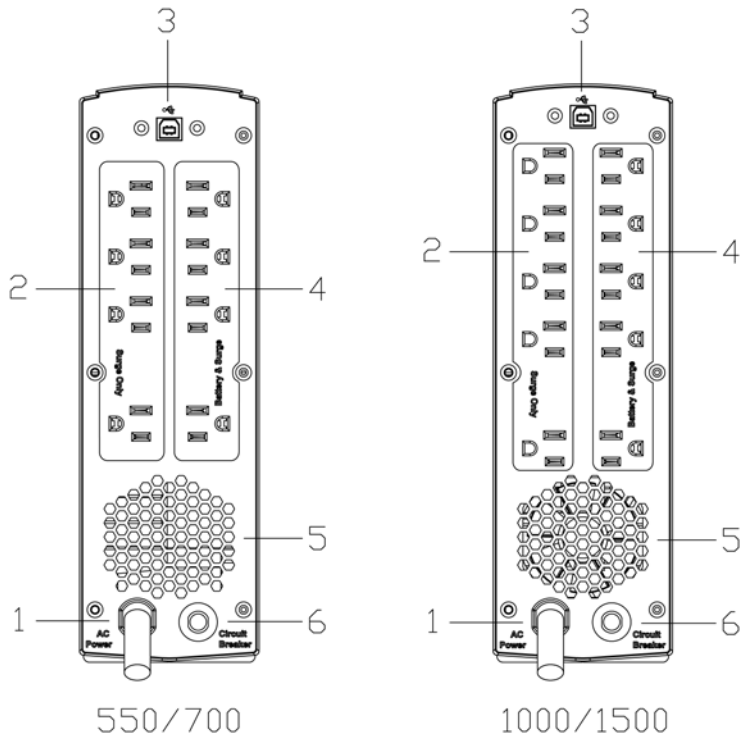
When the unit is operating in Battery mode, pressing the Alarm Silencer Button will silence the audible alarm. Once the UPS reaches the LBW (Low Battery Warning) threshold the alarm will be re-activated. The alarm cannot be silenced during the LBW alarm. Once the UPS transfers to the AC mode the alarm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



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

**NOTE:** The LCD backlight will illuminate for 20-seconds when the UPS switches to the Battery mode and then turn off. 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 PANEL**

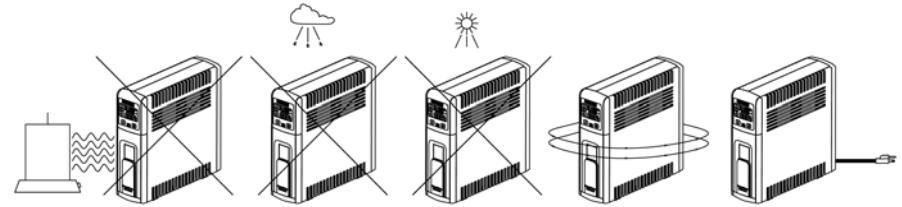


1. Input power cord: Connecting to Utility Power.
2. Surge-only output receptacles: Noncritical equipment.
3. USB Communications Port: UPS monitoring and control.
4. Battery Backup & Surge output receptacles: Mission critical equipment.
5. 550/700: Vent only. 1000/1500: Vent and fan.
6. Input circuit breaker: Protection against an excessive overload.

Model #	Input Power Plug	Output Power Receptacles
ETR550LCD ETR700LCD	NEMA 5-15P W/6 ft cord	4-NEMA 5-15R Battery Backup & Surge 4-NEMA 5-15R Surge Only
ETR1000LCD ETR1500LCD	NEMA 5-15P W/6 ft cord	5-NEMA 5-15R Battery Backup & Surge 5-NEMA 5-15R Surge Only

**Chapter 3: Installation**

**INSTALLATION PLACEMENT**



This UPS series is **ONLY** intended to be install 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. 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. 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 3,000m (0 to +10,000 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 +50,000 ft)

**INSTALLATION**

Be sure to read the installation placement and all the cautions before installing the UPS. Place the UPS in the final desired location and complete the rest of the installation procedure. These UPSs are shipped with the internal batteries disconnected. The batteries must be connected before putting these UPSs into service. See Connecting the Batteries to connect the batteries.

**CONNECTING THE BATTERIES**

(QUALIFIED SERVICE PERSONNEL ONLY)

Please read all of the **WARNINGS** and **CAUTIONS** before attempting to connect the batteries.

1. Use **CAUTION**, the UPS is heavy. Remove the UPS from the shipping box and set on a desk or a bench top.

**NOTE:** No tools are required for removing or installing the front panel.

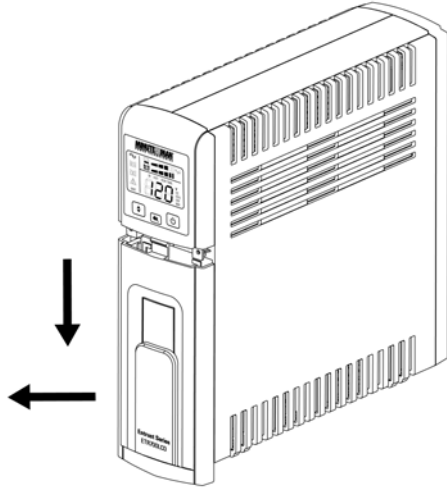
2. Slide the front panel downward, then outward, and then set it aside. (FIG. 1)

3. Verify proper polarity. Connect the battery connectors together. (FIG 2)

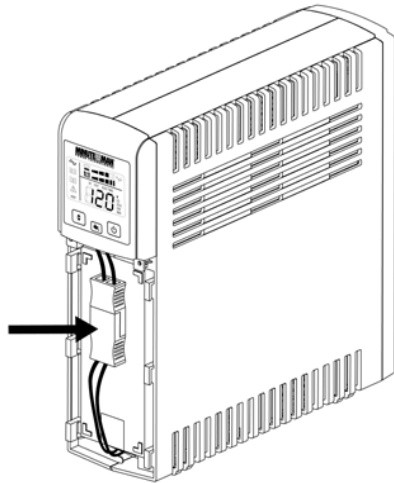
**NOTE:** Some sparking might occur this is normal.

4. Reinstall the front panel onto the UPS.
5. Continue with the rest of the Installation.

**FIG. 1**



**FIG. 2**



**CONNECTING YOUR EQUIPMENT**

Plug the mission critical equipment into the Battery Backup & Surge output receptacles on the rear panel of the UPS. Plug the noncritical equipment into the Surge Only output receptacles on the rear panel of the UPS. Ensure that the connected equipment does not exceed the maximum output rating of the UPS (refer to the information label on the UPS or the electrical specifications in this manual). **DO NOT PLUG EXTENSION CORDS, ADAPTER PLUGS, SURGE STRIPS OR POWER STRIPS INTO THE OUTPUT RECEPTACLES OF THE UPS. NOTE:** Risk of damaging the UPS and/or connected equipment.

**CAUTION! DO NOT** connect a laser printer to the output of the UPS.

**CONNECTING THE UPS TO AN AC SOURCE**

**CAUTION -** To reduce the risk of fire, connect only to a utility powered circuit provided with 20 amperes maximum branch circuit over-current protection in accordance with the National Electric Code, ANSI/NFPA 70. Plug the UPS into a two pole, three wire, grounded receptacle only. **DO NOT PLUG THE UPS INTO EXTENSION CORDS, ADAPTER PLUGS, SURGE STRIPS OR POWER STRIPS. DO NOT CUT THE INPUT PLUG OFF AND ATTEMPT TO HARDWIRE THIS UPS, DOING SO WILL VOID THE WARRANTY.**

**CHECKING THE SITE WIRING FAULT**

After plugging the UPS into the AC wall outlet, check the Site Wiring Fault (SWF) icon on the front panel of the UPS. If the SWF icon is illuminated and the LCD is displaying error code E08, the UPS is plugged into an improperly wired AC wall outlet. If the UPS indicates a Site Wiring Fault (SWF), have a Qualified Electrician correct the problem.

**CHARGING THE BATTERY**

The UPS will charge the internal batteries whenever the UPS is connected to an AC source and there is an acceptable AC voltage present (90 - 140VAC). 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. 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. **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.

**USB COMMUNICATIONS PORT CONNECTION (OPTIONAL)**

This UPS series supports USB communications. The power monitoring software and interface cable can be used with the UPS. Use only the interface cable that come with these UPSs. The USB communications protocol is HID. The HID USB driver comes standard in the Windows OS. Simply connect the USB cable to the USB communications port on the rear panel of the UPS. Connect the other end of the USB cable to the device that will be monitoring/controlling the UPS and then follow the prompts on the screen. **NOTE:** When using the UPS's USB port with Windows XP, 7 or 8 the Power Options in the Control Panel may need to be configured. Connecting to the Communications Port is optional. The UPS works properly without this connection.

**POWER MONITORING SOFTWARE**

This UPS supports Minuteman's SentryHD power monitoring software. Please go to our web site at [www.minutemanups.com/support](http://www.minutemanups.com/support), then look under Downloads, and then Software Download Center. Please download (Free of Charge) the latest version of the Minuteman SentryHD software.

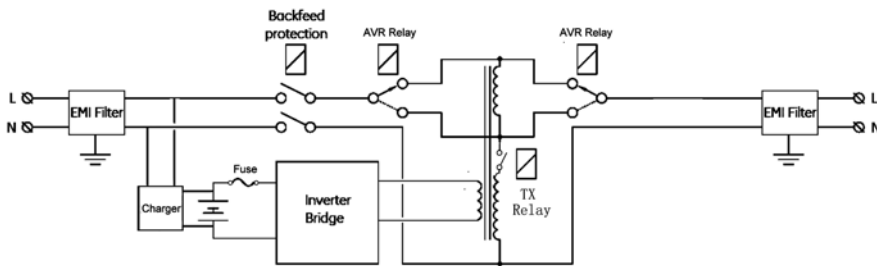
## Chapter 4: Operation

### SYSTEM OVERVIEW

This Line-Interactive UPS protects computers, servers, telecom systems, VoIP systems, security systems, and a variety of electronic equipment from blackouts, brownouts, overvoltages, and surges. The AVR function continuously corrects the voltages, in-between the brownout and overvoltage transfer points (90 - 140VAC), to a safe usable level. When the UPS is operating in the AVR mode the audible alarm will remain silent and the AC normal mode indicator will blink. During normal AC operation, the UPS will quietly and confidently protect your system from power anomalies.

The UPS will charge the batteries with the UPS in the on or off position when the UPS is plugged into the wall outlet and there is an acceptable AC voltage present (90 - 140VAC). When a blackout, brownout, or an overvoltage condition occurs; 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 commercial power is lost or unacceptable. When the commercial power returns or is at an acceptable level, the UPS will automatically transfer back to the AC normal 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 informing the user that they should save all open files and turn off their computer. When the batteries reach the predetermined level the UPS will automatically shutdown protecting the batteries from over discharging. Once the commercial power returns the UPS will automatically restart, providing safe usable power to the connected equipment and start recharging the batteries.

### Block Diagram of the Basic Wiring and Internal Circuit Configuration



### TURNING THE UPS ON / OFF

To turn the UPS on: press and hold the On/Off/Test Button until the alarm sounds one beep and then release. The UPS will perform a five second internal self-test. Once the UPS has passed its internal self-test the UPS will provide an output and the load will be powered. To turn the UPS off: press and hold the On/Off/Test Button until the alarm sounds one beep and then release.

### TEST BUTTON

To perform a ten-second user invoked battery test: With the UPS in the AC normal mode, press and hold the On/Off/Test Button until the alarm sounds four beeps, and then release. During the test, the UPS will switch to the Battery mode, the On-Battery icon will illuminate and the alarm will sound.

### ALARM SILENCER BUTTON

When the unit is operating in Battery mode, pressing the Alarm Silencer Button 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 or any fault condition. Once the UPS transfers to the AC mode the alarm will be reset to default.

### SCROLL BUTTON

Press the Scroll Button to scroll through the UPS parameters. The UPS parameters are displayed on the LCD screen.

### LCD SCREEN

The LCD provides the user with a variety of useful information. The LCD has a real-time meter to display, in numeric fashion, the following data:

- Input Voltage and Frequency
- Output Voltage and Frequency
- Connected Load KVA and KW
- Estimated runtime in the AC and DC mode
- Connected Load Capacity Bar Graph
- Battery Capacity Bar Graph

The LCD will include dedicated icons for the following information:

- AC Normal / AVR Mode (Boost: The AC Normal icon will flash)
- On Battery
- Weak/Bad Battery
- UPS Fault
- Site Wiring Fault
- Overload

The LCD backlight that will turn on when the UPS is turned on. After approximately 20-seconds the backlight will turn off to conserve energy. When an event (alarm) occurs, such as going to the battery mode, the backlight will turn on for approximately 20-seconds to alert the user that an event has occurred and then the backlight will turn off. While the Scroll button is in use the backlight will remain on. Approximately 20-seconds after the Scroll button has stopped being used the backlight will turn off to conserve energy.

### SELF-TEST

The self-test feature is useful to verify the correct operation of the UPS and the condition of the batteries. The start-up and user invoked test are used to measure the battery's capability to support the connected load. If the UPS fails one of these tests, one of the icons or the information displayed on the LCD will remain illuminated indicating the type of problem. **NOTE:** The UPS will automatically perform a self-test on start-up.



## **ALARMS**

### **ON BATTERY**

When the UPS is operating on the batteries, the AC normal icon will extinguish, the On-Battery icon will illuminate, the LCD will display the estimated runtime remaining and the alarm will sound one beep every 10 seconds. Once the UPS returns to the normal AC mode, the alarm will stop, the On-Battery icon will extinguish and the AC normal icon will illuminate.

### **LOW BATTERY WARNING**

When the batteries reach the predetermined level, the alarm will sound two beeps every five seconds, the Battery Bar Graph will display the remaining battery capacity and the LCD will display error code E07. This information is to inform the user that there is approximately two minutes of runtime remaining before the UPS shuts down. This condition will continue until either AC returns or the UPS's self protection circuit shuts the UPS down to protect the battery from over discharging.

### **WEAK/BAD BATTERY**

The UPS automatically tests the battery's condition. If the battery is weak, bad or disconnected, the Weak/Bad Battery icon will illuminate and the Battery Capacity Bar Graph will turn off and the alarm will sound three beeps every five minutes until the battery is either reconnected or replaced. This alarm will be repeated until the batteries pass a self-test. 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 illuminate and the alarm will sound continuously (AC and Battery modes). This alarm will remain on until the excess load is removed or the UPS's self protection circuit shuts the UPS down.

To clear the overload alarm when the UPS has shutdown requires that the UPS perform a battery test. First remove part of the load, then turn the UPS on, the Overload icon and the alarm will be on. Second either use the Test Button or unplug the input power cord to perform the battery test.

### **UPS FAULT**

When the UPS detects an internal fault, the Fault icon will illuminate and an error code will be displayed on the LCD screen, the alarm will sound continuously and the output will be turned off. The fault condition, in some instances, may be cleared by turning the UPS off and then on. If the fault condition does not clear the UPS must be sent in for service. See the Troubleshooting section.

## **Chapter 5: Troubleshooting**

Symptom / Error Code	Cause / What To Do
UPS will not turn on.	Press the On/Off/Test button and release after one beep.
UPS operates in battery mode only, even though there is AC present.	Reset the input circuit breaker by pressing the plunger back in. If the input circuit breaker trips after UPS restarts, reduce the load on the UPS.
The AC Normal icon is blinking and the alarm is silent.	The UPS is in Boost mode. It is performing its intended function.
UPS does not provide expected runtime.	Charge the batteries for 8-hours and retest. If the runtime is still less than expected, the batteries may need to be replaced.
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.
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. Over Temperature Shutdown.	The internal or ambient temperature has exceeded the safe operating range for the UPS. Check the specifications.
Error Code: E04: Inverter/Output Failure Shutdown.	The UPS has an internal fault. Call for service.
Error Code: E05. Charger Failure Warning.	The charger has failed, call for service.
Error Code: E06. Weak/Bad Battery icon is illuminated.	Check the battery connections, charge the batteries for 8-hours and retest, or replace the batteries.
Error Code: E07. 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: E08. SWF icon is illuminated.	Have a qualified electrician correct the service wiring.

## Chapter 6: Replacing the Battery

### 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 #	ETR550LCD	ETR700LCD	ETR1000LCD	ETR1500LCD
Battery Module Part #	BM0063	BM0064	BM0065	BM0066

### BATTERY REPLACEMENT PROCEDURE

**PLEASE READ THE CAUTIONS AND WARNINGS BEFORE ATTEMPTING TO REPLACE THE BATTERIES**

Hot-swappable batteries mean that the batteries can be replaced without powering down the whole UPS system.

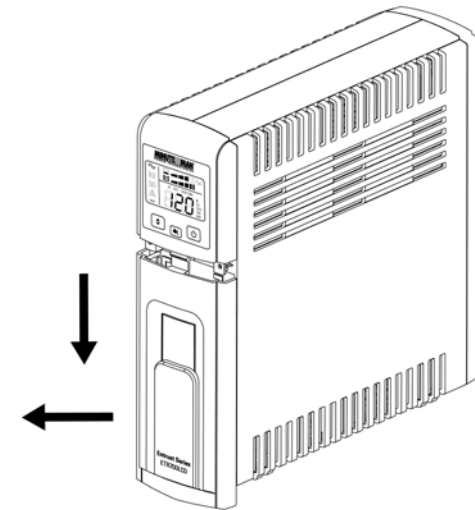
**NOTE:** If there is a power interruption while replacing the hot-swappable batteries, with the UPS on, the load will not be backed up. To hot-swap the batteries start with step number 6.

1. Turn off the equipment that is plugged into the output of the UPS.
2. Turn off the UPS.
3. Unplug the UPS's AC power cord from the AC wall outlet.
4. Unplug the equipment from the output receptacles of the UPS.
5. Unplug the computer interface cable from the rear panel of the UPS.

**NOTE:** No tools are required for removing or installing the front panel.

6. Slide the front panel downward, then outward, and then set it aside. (FIG. 1)

**FIG. 1**



7. Disconnect the battery connectors. (FIG. 2)

**CAUTION:** Do not short the Battery positive wire to the Battery negative wire.

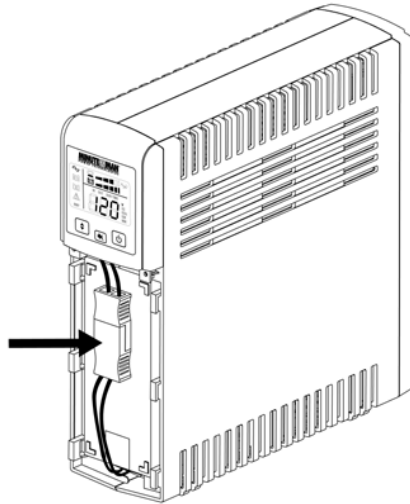
8. Grasp the battery pull tab and gently pull the battery module out of the UPS and set aside. (FIG. 3)

**CAUTION:** DO NOT pull the battery module out by pulling on the battery wires.

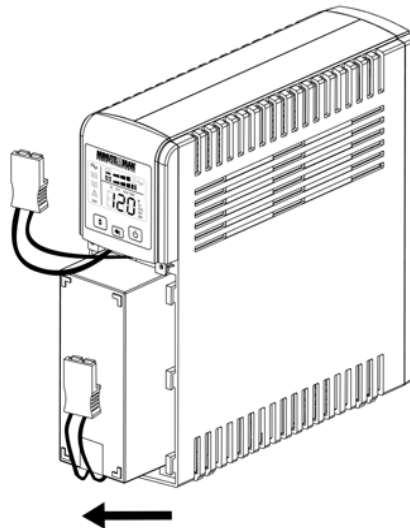
9. Slide the new battery module into the UPS.
10. Verify proper polarity. Reconnect the battery connectors together.

**NOTE:** Some sparking might occur this is normal.

**FIG. 2**



**FIG. 3**



11. Reinstall the front panel on the UPS.
12. 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.
13. The UPS is now ready for the normal operation.

**NOTE:** If the UPS has a Weak/Bad Battery Alarm after replacing the battery module, a user invoked battery test must be performed to clear the Weak/Bad Battery Alarm. To initiate a user invoked battery test see section 4 "**TEST BUTTON**".

## 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](http://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 Technical Support Representative will issue you a Return Material Authorization Number (RMA #). **NOTE: We must have the model number and the serial number of the product to issue an 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 Representative 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 of the package.
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	ETR550LCD	ETR700LCD	ETR1000LCD	ETR1500LCD
Topology	Line-Interactive, Simulated Sine Wave			
Maximum Power Capacity	550VA 330W	700VA 420W	1000VA 600W	1500VA 900W

## INPUT

Number of Phase	Single (1Ø 2W +G)
Nominal Voltage	120VAC
Acceptable Input voltage	0 - 150VAC
Voltage Range	90 - 140VAC
Frequency Limits	60 Hz, +/-6Hz
Low Voltage Transfer Point	90V resets to Utility Power at 94V or higher
High Voltage Transfer Point	140V resets to Utility Power at 136V or lower
Input Protection	Resettable Circuit Breaker

## OUTPUT NON-BATTERY OPERATION

Voltage Range	104 - 140VAC
Voltage Regulation	120VAC: -13.3% - +16.7%
Frequency Range	60Hz: 54 - 66Hz
Efficiency (Line Mode)	>96% (Full Load)

## OUTPUT BATTERY OPERATION

Waveform Type	Simulated Sine Wave (Step Wave)
Nominal Voltage	120VAC
Voltage Regulation	Nominal +/-5% (until Low Battery Warning)
Frequency	60Hz, +/-0.5Hz (unless synchronized to utility)
Transfer Time	6 ms Typical
Overload Capacity	AC Mode: 110% for 1-minute then shutdown, 150% Shutdown Immediately DC Mode: 110% for 20-seconds then shutdown, 150% Shutdown Immediately
Protection	Over-Current, Short-Circuit Protected and Latching Shutdown

## REGULATORY COMPLIANCE

Safety and Approvals	cTUVus (Conforms to UL1778 5th Edition & CSA 22.2 no. 107.3-14 / R: 2014), FCC Class B, CE certified, Energy Star certified, RoHS2 (EU Directive 2011/65/EU)
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## BATTERY SYSTEM

Battery Type	Sealed, Non-Spillable, Maintenance Free, Value Regulated Lead Acid			
Typical Recharge Time	8-hours to 90% capacity from a full load discharge			
Typical Battery Life	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.			
Battery Module Part #	BM0063	BM0064	BM0065	BM0066
Runtime: Full Load (minutes)	3	3	3	3
Runtime: Half Load (minutes)	12	12	12	12

## SURGE PROTECTION AND FILTERING

Surge Energy Rating	320 J
Surge Current Capability	10000 Amps total (one time 8 to 20us waveform)
Surge Response Time	0 ns (instantaneous) normal mode; <5 ns common mode
Surge voltage let-through (as a percentage of an applied ANSI C62.41 Cat. A +/-6 kV)	< 14%
Noise Filter	>45db normal and common mode EMI/RFI suppression
Audible Noise at 1 m (3 ft.)	<45 dBA

## ENVIRONMENTAL

Operating Temperature	0 to 40°C (+32 to +104°F)
Operating Elevation	0 to 3000m (0 to +10,000 ft)
Operating/Storage Humidity	0 - 95% Non-Condensing
Storage Temperature	-15 to +45°C (+5 to +113°F)
Storage Elevation	0 to 15,000m (0 to +50,000 ft)

## PHYSICAL

Size - Net L X W X H	11.3 x 3.4 x 11.0"	16.1 x 3.4 x 11.0"		
	288 x 87 x 280 mm	410 x 87 x 280 mm		
Weight - Net	13.9 lbs	15.7 lbs	22.0 lbs	26.0 lbs
	6.3 Kgs	7.1 Kgs	10.0 Kgs	11.8 Kgs
Size - Shipping L X W X H	14.2 x 6.2 x 14.4"	19.5 x 6.5 x 14.5"		
	360 x 158 x 365 mm	495 x 164 x 369 mm		
Weight - Shipping	15.0 lbs	16.8 lbs	23.4 lbs	27.3 lbs
	6.8 Kgs	7.6 Kgs	10.6 Kgs	12.4 Kgs

## Chapter 9: Limited Product Warranty

Para Systems, Inc. (Para Systems) warrants this equipment, when properly applied and operated within specified conditions, against faulty materials (excluding the batteries) or workmanship for a period of three years from the date of purchase. Para Systems Inc. (Para Systems) warrants the batteries for a period of two 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

Application of Council Directive(s): 2004/108/EC, 2006/95/EC, cTUVus (for UL1778)

Standard(s) to which Conformity is declared: EN61000-3-2, EN61000-3-3, EN62040-2, IEC61000-2-2 IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8, IEEE C62.41 Category A1, UL1778, CSA 22.2 no. 107.3-14 / R: 2014, FCC Class B

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: ETR550LCD, ETR700LCD, ETR1000LCD,  
ETR1500LCD

Year of Manufacture: Beginning June 1, 2015

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: June 1, 2015

Notes:

Notes: