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MINUTE MAN[®]
POWER TECHNOLOGIES

Entrepid Series UPS

User's Manual

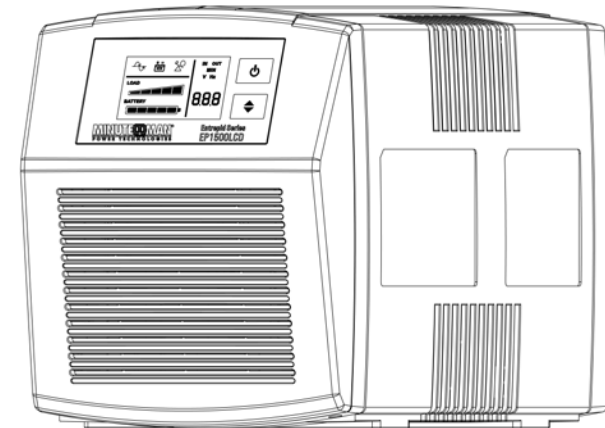


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Chapter 1: Introduction

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 [EP500LCD](#), [EP700LCD](#), [EP1000LCD](#), [EP1500LCD](#) 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 [EP500LCD](#), [EP700LCD](#), [EP1000LCD](#), [EP1500LCD](#). 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 grounding 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 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 as below:

EP500LCD	Total harmonic: 43.1%	Single harmonic: 30.7%
EP700LCD	Total harmonic: 46.5%	Single harmonic: 35.9%
EP1000LCD	Total harmonic: 36.3%	Single harmonic: 19.0%
EP1500LCD	Total harmonic: 33.6%	Single harmonic: 13.3%

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 battery test. Once the UPS has passed the battery test the UPS will reset to the normal AC mode and provide power to the connected load. 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 normal 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

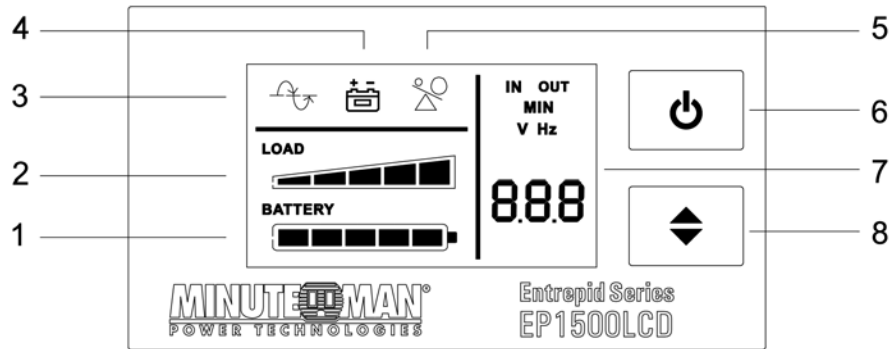
As a general policy, we do not recommend the use of any of our products in life support applications where failure or malfunction of the product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. We do not recommend the use of 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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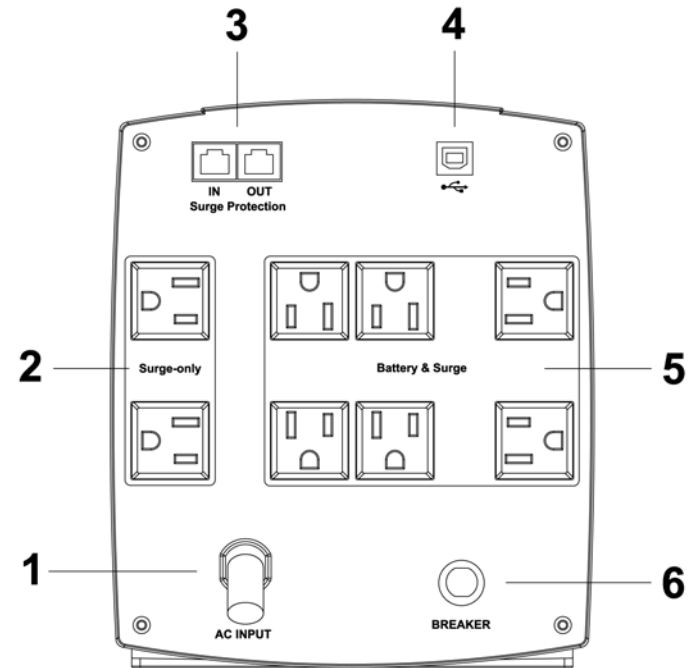
Chapter 2: Controls and Indicators

CONTROL PANEL



1. Battery Capacity Bar Graph: Displays the amount of Battery Capacity available in the AC and Battery mode.
2. Load Capacity Bar Graph: Displays the amount of load connected to the UPS in the AC and Battery mode.
3. AC normal and Boost/Buck mode Icon: Illuminates when the UPS is in the AC normal mode and flashes when the UPS is in the Boost or the Buck mode.
4. On-Battery Icon: Illuminates when the UPS is operating in the Battery mode.
5. Overload Icon: Illuminates when the amount of load attached to the UPS exceeds its power rating,
6. On/Off/Test Button: To turn the UPS On/Off and to perform a ten-second battery test.
7. UPS Parameters and Error codes:
Input - Voltage and Frequency.
Output - Voltage and Frequency.
Estimated Runtime (minutes) - AC normal and Battery mode.
S.L.F - A site wiring fault has been detected.
FAL - An internal fault has been detected.
8. Scroll Button: To scroll through the UPS parameters.

REAR PANEL

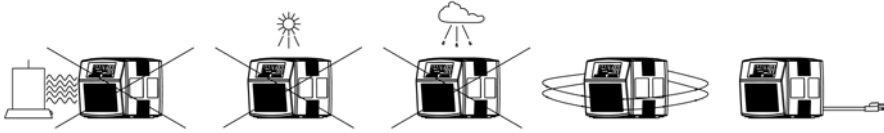


1. Input power cord: Connecting to the Utility Power.
2. Surge-only output receptacles: Noncritical equipment.
3. The RJ11/45: Phone/fax/network protection.
4. USB Communications Port: UPS monitoring and control.
5. Battery Backup & Surge output receptacles: Mission critical equipment.
6. Input circuit breaker: Protection against an excessive overload.

Model #	Input Power Plug	Output Power Receptacles
EP500LCD EP700LCD EP1000LCD EP1500LCD	NEMA 5-15P W/6 ft cord	6-NEMA 5-15R Battery Backup & Surge 2-NEMA 5-15R Surge Only

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. 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 1500m (0 to +5000 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. 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. Remove the UPS from the shipping box and set on the floor or a bench top.
2. Remove the front panel retaining screws on the bottom side of the front panel. (FIG. 1)
3. Slide the front panel downward, then outward, and then move it to the side.
4. Verify proper polarity. Connect the battery negative (black) wire to the battery negative (black) terminal. (FIG. 2)

NOTE: Some sparking might occur, this is normal.

5. Reinstall the front panel onto the UPS.
6. Reinstall the front panel retaining screws.
7. Continue with the rest of the Installation.

FIG. 1

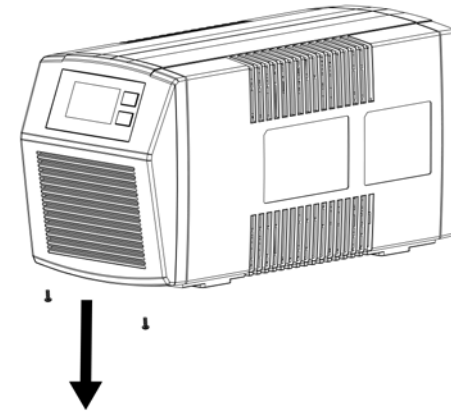
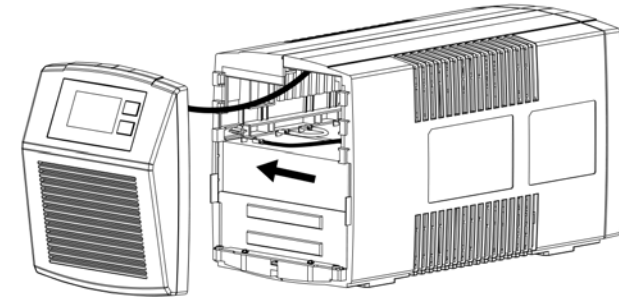


FIG. 2



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 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 wall outlet, check the LCD screen on the front panel of the UPS for a Site Wiring Fault (S.L.F). If the S.L.F is illuminated, the UPS is plugged into an improperly wired wall outlet. If the UPS indicates a Site Wiring Fault (S.L.F), 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 - 150VAC). 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, then look under Downloads, and then Software Download Center. Please download (Free of Charge) the latest version of the Minuteman SentryHD software.

PHONE/FAX/NETWORK PROTECTION CONNECTION (OPTIONAL)

Connect a 10/100 Base-T network, single line phone, or fax line to the RJ11/45 modular connectors on the rear panel of the UPS. This connection will require another length of telephone or network cable. The cable coming from the telephone service or networked system is connected to the port marked "IN". The equipment to be protected is connected to the port marked "OUT". **NOTE:** Connecting to the Phone/Fax/Network modular connectors is optional. The UPS works properly without this connection.

CAUTION! The TNV connector shall use the same type of RJ45.

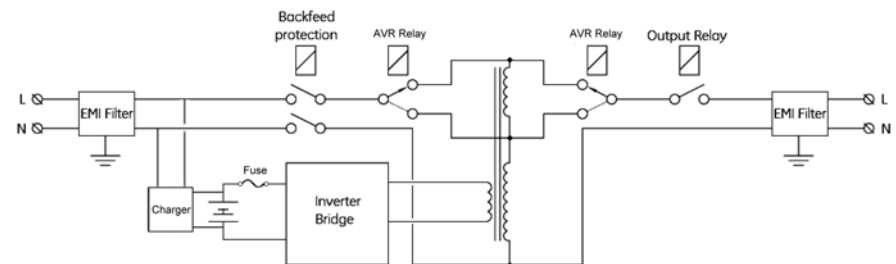
Chapter 4: Operation

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 - 150VAC), 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 - 150VAC). 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 five 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 battery test. Once the UPS has passed the battery test the UPS will reset to the normal AC mode and provide power to the connected load. 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 normal 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.

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 Capacity
- Battery Capacity
- Estimated runtime in the AC and DC mode

The LCD will include dedicated icons for the following information:

- AC Normal
- On Battery
- AVR Mode (Boost and Buck) – The AC Normal icon will flash
- Overload
- Weak/Bad Battery (Battery Capacity Bar Graph will flash)
- Site Wiring Fault (S.L.F. will be displayed)
- UPS Fault (FAL will be displayed)

The LCD does have a 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 start-up and user invoked tests are useful to verify the correct operation of the UPS and the condition of the batteries. The start-up and user invoked test will run for approximately ten-seconds to measure the battery's capability to support the output 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.

ALARMS

ON BATTERY

When the UPS is operating on the batteries, the AC normal icon will extinguish, the On-Battery icon will illuminate and the alarm will sound one beep every five 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 and the Battery Bar Graph will display the remaining battery capacity. 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 Battery Capacity Bar Graph will flash 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 a battery test.

UPS FAULT

When the UPS detects an internal fault, "FAL" 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 reset by turning the UPS off and then on. If the fault condition does not clear the UPS must be sent in for service.

BATTERY OVER CHARGE PROTECTION

If the charger is providing too much voltage to the battery the UPS will turn off the charger to protect the battery. When the charger voltage exceeds 14.52V/battery the charger will turn off. The alarm will sound three beeps every five seconds and the Battery Capacity Bar Graph will flash. In some instances, the charger may be reset by turning the UPS off and then on. When the charger voltage exceeds 15.0V/battery the charger will turn off. The alarm will sound three beeps every five seconds and the Battery Capacity Bar Graph will flash. The UPS will automatically transfer to the battery mode and operate until the UPS shuts down due to battery exhaustion. The UPS must be sent in for service.

Chapter 5: Troubleshooting

Symptom	Possible Cause	What To Do
UPS will not turn on	On/Off/Test button not pressed	Press, hold and then release the On/Off button to start UPS
UPS operates in battery mode only, even though there is normal AC present	Input AC circuit breaker is tripped	Reset circuit breaker by pressing the plunger back in. If the AC circuit breaker trips after UPS starts up, reduce the load on the UPS
"FAL" is displayed on the LCD	UPS has detected an internal fault	Call for service
The AC mode icon is illuminated, but there is no output	The UPS is being controlled via its communications port	Disconnect the computer cable from the UPS and press the On button. If UPS works normally, the software has control of the UPS
UPS does not provide expected runtime	The batteries may be weak or at the end of their useful service life	Charge the batteries for 8-hours and retest. If the runtime is still less than expected, the batteries may need to be replaced, even though the Weak/Bad Battery LED is not illuminated
The Battery Capacity Bar Graph is flashing	Loose connections at the batteries, Weak batteries, Bad batteries	Check battery connections, charge the batteries for 8-hours, replace the batteries
The Overload icon is illuminated	The output load has exceeded the UPS's capacity	Check the specifications (see section 8). Remove part of the load
The AC mode icon is flashing and the alarm is silent	The UPS is operating in the Boost or the Buck mode	The UPS is performing its intended function
"S.L.F" is displayed on the LCD	The UPS has detected an improperly wired wall outlet	Contact a Qualified Electrician to correct the problem

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 #	EP500LCD	EP700LCD	EP1000LCD	EP1500LCD
Battery Module Part #	BM0059	BM0060	BM0061	BM0062

BATTERY REPLACEMENT PROCEDURE

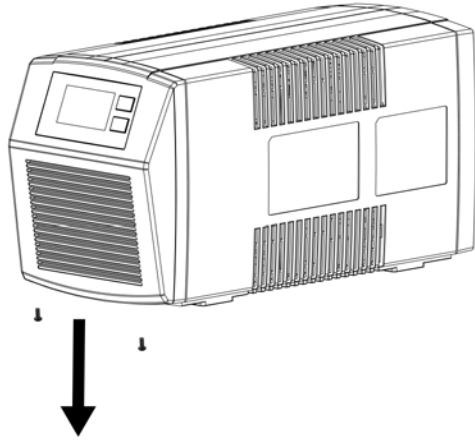
PLEASE READ THE CAUTIONS AND WARNINGS BEFORE ATTEMPTING TO REPLACE THE BATTERIES

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.

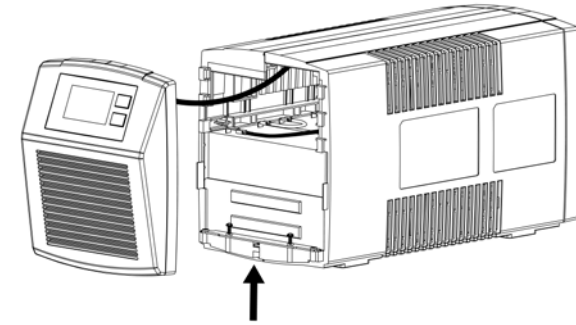
1. Turn off the equipment that is plugged into the output of the UPS.
2. Turn off the UPS.
3. Unplug the UPS's AC power cord from the AC wall outlet.
4. Unplug the equipment from the output receptacles of the UPS.
5. Unplug the computer interface cable from the rear panel of the UPS.
6. Remove the front panel retaining screws on the bottom side of the front panel. (FIG. 1)

FIG. 1



7. Slide the front panel downward, then outward, and then move to the side or lay it on the top of the unit. (FIG. 2)
8. Disconnect the battery negative (black) wire.
9. Disconnect the battery positive (red) wire.
- CAUTION:** Do not short the battery positive wire to the Battery negative wire.
10. Remove the two screws for the battery retaining bracket.
11. Slide the battery retaining bracket upwards and then remove from the unit.

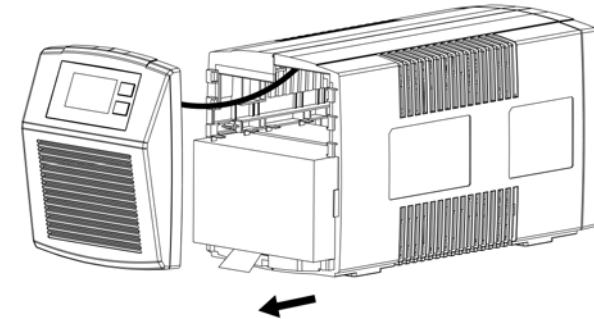
FIG. 2



12. 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.

FIG. 3



13. Slide the new battery module into the UPS.
14. Reinstall the battery retaining bracket.
15. Reinstall the two screws for the battery retaining bracket.
16. Verify proper polarity. Reconnect the battery positive (red) wire to the battery positive (red) terminal.
17. Verify proper polarity. Reconnect the battery negative (black) wire to the battery negative (black) terminal.
- NOTE:** Some sparking might occur, this is normal.
18. Reinstall the front panel on the UPS.
19. Reinstall the front panel retaining screws.
20. 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.
21. 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 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	EP500LCD	EP700LCD	EP1000LCD	EP1500LCD
Topology	Line-Interactive, Simulated Sine Wave			
Maximum Power Capacity	500VA 300W	700VA 420W	1000VA 600W	1500VA 900W
INPUT				
Number of Phase	Single (1Ø 2W +G)			
Nominal Voltage	120VAC			
Acceptable Input voltage	0 - 160VAC			
Voltage Range	90 - 150VAC			
Frequency Limits	50 or 60 Hz, +/-5Hz, autosensing			
Low Voltage Transfer Point	90V resets to Utility Power at 94V or higher			
High Voltage Transfer Point	150V resets to Utility Power at 146V or lower			
Input Protection	Resettable Circuit Breaker			
OUTPUT NON-BATTERY OPERATION				
Voltage Range	102 - 133VAC			
Voltage Regulation	120VAC: -15% - +10.9%			
Frequency Range	60Hz: 55 - 65Hz or 50Hz: 45 - 55Hz			
Efficiency (Line Mode)	>93% (Full Load)			
OUTPUT BATTERY OPERATION				
Waveform Type	Simulated Sine Wave			
Nominal Voltage	120VAC			
Voltage Regulation	Nominal +/-6% (until Low Battery Warning)			
Frequency	50/60Hz, +/-0.5Hz (unless synchronized to utility)			
Transfer Time	6 ms Typical			
Overload Capacity	AC Mode: 110% for 5-minutes then fault, 120% Shutdown Immediately DC Mode: 110% for 10-seconds then shutdown, 120% 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)			

BATTERY SYSTEM

Battery Type	Sealed, Non-Spillable, Maintenance Free, Value Regulated Lead Acid			
Typical Recharge Time	8-hours to 90% (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 #	BM0059	BM0060	BM0061	BM0062
Runtime: Half Load (minutes)	11	12	13	13
Runtime: Full Load (minutes)	3	3	3	3

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 C62.41-1991 Cat. A +/-6 kV)	< 5%			
10/100 Base-T surge protection let-through (as a percentage of an applied +/-6 kV 1.2/50 us, 500 a 8/20 uS test)	< 5%			
Telephone line surge protection let-through (as a percentage of an applied +/-6 kV 1.2/50 us, 500a 8/20 uS test)	< 1%			
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 degrees C (+32 to +104 degrees F) at			
Operating Elevation	0 to 1,500m (0 to +5,000 ft)			
Operating Temperature	0 to 35 degrees C (+32 to +95 degrees F) at			
Operating Elevation	1501 to 3,000m (0 to +10,000 ft)			
Storage Temperature	-15 to +45°C (+5 to +113°F)			
Operating/Storage Humidity	0 - 95% Non-Condensing			
Storage Elevation	0 to 15,000m (0 to +50,000 ft)			

PHYSICAL

Size - Net L X W X H	12.5 x 6.7 x 7.9"		15.3 x 6.7 x 7.9"	
	317.5 x 170 x 200.5 mm		387.5 x 170 x 200.5 mm	
Weight - Net	14.9 lbs	17.3 lbs	23.7 lbs	29.6 lbs
	6.78 Kgs	7.83 Kgs	10.74 Kgs	13.44 Kgs
Size - Shipping L X W X H	15.7 x 10.0 x 11.6"		18.5 x 10.0 x 11.6"	
	399 x 255 x 294 mm		469 x 255 x 294 mm	
Weight - Shipping	17.5 lbs	19.8 lbs	26.4 lbs	32.3 lbs
	7.92 Kgs	8.96 Kgs	11.98 Kgs	14.67 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

Notes:

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

Standard(s) to which Conformity is declared: EN55022, EN55024, EN61000-3-2, EN61000-3-3, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11, UL1778, 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: EP500LCD, EP700LCD, EP1000LCD, EP1500LCD

Year of Manufacture: Beginning May 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: May 1, 2015