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.

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

1. Introduction 2
2. Controls and Indicators 6
3. Installation 7
4. Operation 13
5. Troubleshooting 16
6. Replacing the Battery 17
7. Obtaining Service 21
8. Specifications 22
9. Limited Product Warranty 24
A1. Declaration of Conformity 25
Thank you for purchasing this power protection product. It has been designed and manufactured to provide many years of trouble free service.

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS!

Please read this manual before installing your PRO Rack/Tower Series UPS, models PRO1000RT, PRO1500RT as it provides important information that should be followed during installation and maintenance of the UPS and batteries 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 please refer to the Troubleshooting guide in this manual to correct the problem or collect enough information so that the Technical Support Department can rapidly assist you.

This symbol indicates "ATTENTION"

This symbol indicates "Risk of Electrical Shock"

This symbol indicates "Alternating Current Supply Phase"

This symbol indicates "Alternating Current Supply"

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: 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.
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 system. To minimize such risk, (a) the system in which the product is used must minimize the risk of failure of the life support system, (b) the customer assumes all such risks, and (c) our liability is adequately protected under the circumstances.

Examples of devices considered to be life support devices are neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief, or other purposes), auto transfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators for both adults and infants, anesthesia ventilators, and infusion pumps as well as any other devices designated as “critical” by the United States FDA.

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!

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.
1. Scroll Button: To scroll through the UPS parameters.
2. Battery Capacity Bar Graph: Displays the amount of Battery Capacity available in the AC and Battery mode.
3. Load Capacity Bar Graph: Displays the amount of load connected to the UPS in the AC and Battery mode.
4. 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.
5. On-Battery Icon: Illuminates when the UPS is operating in the Battery mode.
6. Overload Icon: Illuminates when the amount of load attached to the UPS exceeds its power rating.
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. On/Off/Test Button: To turn the UPS On/Off and to perform a ten-second battery test.

---

### INSTALLATION

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.

---

### OUTPUT POWER RECEPTACLES

<table>
<thead>
<tr>
<th>Model #</th>
<th>Input Power Plug</th>
<th>Output Power Receptacles</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRO1000RT</td>
<td>NEMA 5-15P W/10 ft cord</td>
<td>6-NEMA 5-15R Battery Backup &amp; Surge</td>
</tr>
<tr>
<td>PRO1500RT</td>
<td></td>
<td>2-NEMA 5-15R Surge Only</td>
</tr>
</tbody>
</table>

---

### CONTROL PANEL

1. RS232 Comminucations Port is for UPS monitoring and control.
2. USB Communications Port is for UPS monitoring and control.
3. The RJ11/45 are used for phone/fax/modem and network protection.
4. Accessory Slot is for option cards.
5. Battery Backup & Surge output receptacles for mission critical equipment.
7. Input power cord is for connecting to the Utility Power.
8. Input circuit breaker is for protection against an excessive overload.
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 the Connecting The Batteries procedure 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.
3. Lay the front panel on top of the UPS.
4. Verify proper polarity. Connect the battery connectors (red and black) together.
NOTE: Some sparking might occur, this is normal.
5. Re-install the front panel onto the UPS.
6. Re-install the front panel retaining screws.
7. Continue with the rest of the Installation.

RACKMOUNT CONFIGURATION
This UPS comes with mounting brackets for the standard 19" (46.5cm) rack. The mounting brackets to fit a 23" (59.2cm) standard rack are also available. The screws for mounting the UPS to the rack are not included (screw size varies with rack size).
1. Locate the mounting bracket screw holes on the side panels of the UPS, at the front of the UPS. NOTE: The mounting brackets can also be mounted in the middle of the UPS.
2. Align the mounting bracket with the mounting bracket screw holes.
3. Attach the mounting bracket with the retaining screws.
4. Mount the UPS into the rack and secure with the retaining screws.
WARNING: Use two or more people when installing the UPS. Use CAUTION, the UPS is extremely heavy. Do not move the rack after the units have been installed. The rack may be unstable due to the weight distribution.
5. The Rackmount Configuration is complete. See Connecting your Equipment

TOWER CONFIGURATION
The tower configuration allows the user to install the UPS in the up-right position next to the tower computer. The tower brackets are provided with the UPS.
WARNING: Use two or more people when installing the UPS. Use CAUTION, the UPS is extremely heavy.
1. Once the location of the UPS has been determined, place the tower brackets in the desired location.
WARNING: The UPS must be installed in the proper up-right position. If the UPS is not installed in the proper up-right position the Batteries will be damaged. Once the UPS is placed in the tower position, looking at the front panel the YELLOW Battery disconnected label on the top cover of the UPS MUST be on your left hand side.
2. The LCD face plate 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 face plate outwards the face plate will pop out. Position the LCD face plate so that it reads in the up-right position. Re-install the front panel on the UPS.
3. The two rackmount brackets are used for the two tower brackets. Remove the retaining screws and attached the tower brackets as shown. The tower brackets go on both sides of the UPS. Make sure that the UPS is stable.
4. The Tower Configuration is complete. See Connecting your Equipment.

WALLMOUNT CONFIGURATION

The wallmount configuration allows the user to mount the UPS on the wall. There is a wallmount bracket kit available for the UPS. The kit includes two wall mounting brackets, ten retaining screws, and the wallmount template. **WARNING:** Use two or more people when installing the UPS. Use **CAUTION,** the UPS is extremely heavy. The UPS's side panels have mounting bracket screw holes for attaching the wall mounting brackets.

1. Once the location and position of the UPS has been determined, lay the UPS down flat. **WARNING:** The UPS must be installed in the proper up-right position. If the UPS is not installed in the proper up-right position the Batteries will be damaged. Once the UPS is placed on the wall, looking at the front panel the YELLOW Battery disconnected label on the top cover of the UPS MUST be on your left hand side.
2. Align the mounting brackets with the mounting bracket screw holes and attach with the six retaining screws.
3. The LCD face plate 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 face plate outwards the face plate will pop out. Position the LCD face plate so that it reads in the up-right position. Re-install the front panel on the UPS.

4. Use the template to mark the screw hole position on the wall. **CAUTION,** you should always were protective gear for your hands and eyes when operating power tools.
5. Attach the four retaining screws to the wall and make sure that all of the retaining screws are screwed into structural material. Then clean the area of any loose material. Do not tighten the retaining screws all the way, leave approximately 3/8" of the retaining screws sticking out.
6. Position the UPS, so that the mounting bracket keyed holes line up with the four retaining screws. Slide the UPS down until its resting securely on the four retaining screws.
7. Tighten the four retaining screws to secure the UPS to the wall.
8. The Wallmount Configuration is complete. See Connecting your Equipment.

CONNECTING YOUR EQUIPMENT

Plug the mission critical equipment into the Battery Backup & Surge output receptacles on the rear panel of the UPS. Plug the non-critical 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.

COMMUNICATIONS PORT CONNECTION (OPTIONAL)
The power monitoring software and interface cables can be used with the UPS. Use only the interface cables that come with these UPSs. Connect the interface cable (Serial or USB) to the appropriate communications port on the rear panel of the UPS. Connect the other end of the cable to the device that will be monitoring/controlling the UPS. NOTE: Connecting to the Communications Port is optional. The UPS works properly without this connection.

ACCESSORY SLOT (OPTIONAL)
The Accessory slot on the rear panel of the UPS is for an SNMP Card or a Dry Contact Relay card. Contact your local dealer for the available option cards. NOTE: Connecting to the Accessory Slot is optional. The UPS works properly without this connection.

NETWORK/PHONE/FAX/MODEM PROTECTION CONNECTION (OPTIONAL)
Connect a 10/100 Base-T network, single line phone, Fax or Modem 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 Network/Phone/Fax/Modem modular connectors is optional. The UPS works properly without this connection.

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

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). During 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.

TURNING THE UPS ON / OFF
To turn the UPS on: press and hold the On/Off/Test Button until the alarm sounds once 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.

SCROLL BUTTON
Press the Scroll Button to scroll through the UPS parameters. The UPS parameters are displayed on the LCD screen.
**USB COMMUNICATIONS PORT**

This UPS series supports USB communications. Use the interface cable that comes with the UPS. The USB communications protocol is HID. The HID USB driver comes standard in the Windows OS. Simply plug the USB cable into the UPS and the computer then follow the prompts on the screen.

**POWER MONITORING SOFTWARE**

The UPS comes with power monitoring software. See the software CD for the installation of the power monitoring software.

**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/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.

**LOW BATTERY WARNING**

When the batteries reach the predetermined level, the alarm will sound two beeps every five seconds and the Battery Capacity 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.

**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 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 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.

**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 self-test feature is useful to verify the correct operation of the UPS and the condition of the batteries. The length of the test that is automatically performed every two weeks is longer than the start-up or user invoked test. This every two week test will run for approximately fifteen-seconds to measure the battery's capability to support the output load. The start-up and user invoked test will run for approximately ten-seconds. 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 and every two weeks.

**RS232 COMMUNICATIONS PORT**

The power monitoring software and interface cables can be used with the UPS. Use only the interface cables that come with these UPSs. The RS232 communication port is a standard DB9 female with both RS232 and simulated contact closure capability. The pinout for the port is depicted per the chart below:

- Pin 1: Simulated contact closure Low Battery Warning, NO
- Pin 2: /TXD
- Pin 3: /RXD and receive UPS shutdown command (connect a minimum of +5VDC to a maximum of +12VDC for 4-seconds to completely shutdown the UPS. The shutdown command is ONLY active in the battery mode)
- Pin 5: Ground
- Pin 8: Simulated contact closure AC fail, NO
- Pins 4, 6, 7, 9: Not Used

**ACCESSORY SLOT**

The Accessory slot on the rear panel of the UPS is for an SNMP Card or a Dry Contact Relay card. Contact your local dealer for the available option cards.
5 TROUBLESHOOTING

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

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.

<table>
<thead>
<tr>
<th>Model #</th>
<th>PRO1000RT</th>
<th>PRO1500RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Module Part #</td>
<td>BM0043</td>
<td>BM0044</td>
</tr>
</tbody>
</table>

**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 battery module start with step number 6.

1. Turn off the equipment that is plugged into the output of the UPS.
2. Press the On/Off/Test Button on the front panel to turn the UPS off.
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.

**FIG. 1**

6. Remove the front panel retaining screws. (FIG. 2)  
7. Lay the front panel on top of the UPS.

**FIG. 2**

8. Remove the two retaining screws for the battery retaining bracket. (FIG. 3)  
9. Remove the battery retaining bracket.

**FIG. 3**
IF THE UPS REQUIRES SERVICE

1. Use the TROUBLESHOOTING section to eliminate obvious causes.
2. Verify there are no circuit breakers tripped. A tripped circuit breaker is the most common problem.
3. Call your dealer for assistance. If you cannot reach your dealer, or if they cannot resolve the problem call or fax the Technical Support department at the following numbers; Voice phone (972) 446-7363, FAX line (972) 446-9011 or contact Minuteman UPS at mmsupport@minutemanups.com.

Please have the following information available BEFORE calling the Technical Support Department.
A. Your name and address.
B. Where and when the unit was purchased.
C. All of the model information about your UPS.
D. Any information on the failure, including LEDs that may be illuminated.
E. A description of the protected equipment, including model numbers if possible.
F. A technician will ask you for the above information and, if possible, help solve your problem over the phone. In the event that the unit requires factory service, the technician will issue you a Return Material Authorization Number (RMA #).
G. If the UPS is under warranty, the repairs will be done at no charge. If not, there will be a charge for repair.
4. Pack the UPS 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 UPS properly in the original packaging 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.
B. 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 UPS by insured, prepaid carrier to:

Para Systems Inc.
MINUTEMAN UPS
1455 LeMay Drive
Carrollton, TX 75007
ATTN: RMA #___________

NOTE: Use Caution, the battery module is heavy.

10. Disconnect the Battery connectors (red and black). (FIG. 4)
11. Grasp the battery pull tab and gently pull the battery module out of the UPS and set aside.

NOTE: Some sparking might occur, this is normal.

12. Slide the new battery module into the UPS.
13. Re-install the battery retaining bracket.
14. Re-install the two retaining screws for the battery retaining bracket.
15. Verify proper polarity. Reconnect the battery connectors (red and black).

NOTE: Some sparking might occur, this is normal.

16. Re-install the front panel on the UPS.
17. Re-install the front panel retaining screws.
18. 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.

19. The UPS is now ready for the normal operation.

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

10. Disconnect the Battery connectors (red and black). (FIG. 4)
11. Grasp the battery pull tab and gently pull the battery module out of the UPS and set aside.
### SYSTEM SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model Number</th>
<th>PRO1000RT</th>
<th>PRO1500RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topology</td>
<td>Line-Interactive, Simulated Sine Wave</td>
<td></td>
</tr>
<tr>
<td>Maximum Power Capacity</td>
<td>1000VA 700W</td>
<td>1500VA 1050W</td>
</tr>
</tbody>
</table>

### INPUT

<table>
<thead>
<tr>
<th>Number of Phase</th>
<th>Single (1∅ 2W +G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Voltage</td>
<td>120VAC</td>
</tr>
<tr>
<td>Acceptable Input voltage</td>
<td>0 - 160VAC</td>
</tr>
<tr>
<td>Voltage Range</td>
<td>90 - 150VAC</td>
</tr>
<tr>
<td>Frequency Limits</td>
<td>50 or 60 Hz, +/-5Hz, autosensing</td>
</tr>
<tr>
<td>Low Voltage Transfer Point</td>
<td>90V resets to Utility Power at 94V or higher</td>
</tr>
<tr>
<td>High Voltage Transfer Point</td>
<td>150V resets to Utility Power at 146V or lower</td>
</tr>
<tr>
<td>Input Protection</td>
<td>Retsettable Circuit Breaker</td>
</tr>
</tbody>
</table>

### OUTPUT NON-BATTERY OPERATION

<table>
<thead>
<tr>
<th>Voltage Range</th>
<th>104 - 132VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage Regulation</td>
<td>120VAC: -13.3% to +10.0%</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>60Hz: 55 - 65Hz or 50Hz: 45 - 55Hz</td>
</tr>
<tr>
<td>Efficiency (Line Mode)</td>
<td>&gt;90% (Full Load)</td>
</tr>
</tbody>
</table>

### OUTPUT BATTERY OPERATION

<table>
<thead>
<tr>
<th>Waveform Type</th>
<th>Simulated Sine Wave (Step Wave)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Voltage</td>
<td>120VAC</td>
</tr>
<tr>
<td>Voltage Regulation</td>
<td>Nominal +/-5% (until Low Battery Warning)</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60Hz, +/-0.5Hz (unless synchronized to utility)</td>
</tr>
<tr>
<td>Transfer Time</td>
<td>6 ms Typical</td>
</tr>
<tr>
<td>Overload Capacity</td>
<td>AC Mode: 110% for 5-seconds then fault, 120% Shutdown Immediately DC Mode: 110% for 10-seconds then shutdown, 120% Shutdown Immediately</td>
</tr>
<tr>
<td>Protection</td>
<td>Over-Current, Short-Circuit Protected and Latching Shutdown</td>
</tr>
</tbody>
</table>

### REGULATORY COMPLIANCE

<table>
<thead>
<tr>
<th>Safety and Approvals</th>
<th>cCTUVus (conforms to UL1778, CSA 22.2 standards)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMC Verification</td>
<td>FCC Class B, CE certified</td>
</tr>
</tbody>
</table>

### BATTERY SYSTEM

- **Battery Type**: Sealed, Non-Spillable, Maintenance Free, Value Regulated Lead Acid
- **Typical Recharge Time**: From Full load discharge: 4-hours to 80%, 8-hours to 90%
- **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 #**: BM0043, BM0044
- **Runtime**: Half Load (minutes) 17, Full Load (minutes) 5

### SURGE PROTECTION AND FILTERING

- **Surge Energy Rating**: 1140 J
- **Surge Current Capability**: 6500 Amps total
- **Surge Response Time**: 0 ns (instantaneous) normal mode; <5 ns common mode
- **Surge Voltage Let-through**: <5% (as a percentage of an applied +/-6 kV 1.2/50 us, 500A 8/20 uS test)
- **Telephone Line Surge Protection**: <1% (as a percentage of an applied +/-6 kV 1.2/50us, 500A 8/20 uS test)
- **Noise Filter**: >45db normal and common mode EMI/RFI suppression
- **Audible Noise at 1 m (3 ft.)**: <45 dBA

### ENVIRONMENTAL

- **Operating/Storage Temperature**: 0 to 40°C (+32 to +104°F) at 0 to 1,500m (0 to +5,000 ft)
- **Operating/Storage Humidity**: 95% Non-Condensing

### PHYSICAL

- **Size - Net**: 15.7 x 17.3 x 3.5" L X W X H 398 x 440 x 89 mm
- **Weight - Net**: 35.1 lbs 15.9 Kgs
- **Size - Shipping**: 20.7 x 21.9 x 8.5" L X W X H 526 x 555 x 215 mm
- **Weight - Shipping**: 40.8 lbs 18.5 Kgs

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English
A1. DECLARATION OF CONFORMITY


Standard(s) to which Conformity is declared: EN55022, EN55024, EN61000-6-1, EN61000-6-3, EN61000-4-5

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: PRO1000RT, PRO1500RT

Year of Manufacture: Beginning November 1, 2009

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: November 1, 2009