MINUTEMAN®
UNINTERRUPTIBLE POWER SUPPLIES

ALLIANCE SERIES

OWNER'S MANUAL

TABLE OF CONTENTS

INTRODUCTION

The MINUTEMAN ALLIANCE Series Uninterruptible Power Supply (UPS) has been designed to be maintenance-free, and to provide years of excellent service. It will provide superior power protection for personal computers, telephone systems and other critical electronic equipment against all commercial power anomalies. Output waveform is a synchronized, simulated sinewave. Both LED and audible alarms indicate UPS and commercial power status at all times. Other features include:

- Light weight and small footprint.
- Quiet operation.
- Excellent non-linear current capability.
- LAN communications port (except A300).
- Automatic UPS test at turn-on.
- Site wiring fault indication (120 VAC models).
- Low voltage boost to facilitate low commercial voltage operation without battery utilization (except A300/A425).
- Transfer voltage adjustment switches (except A300/A425).

RECEIVING INSPECTION
SAVE THE PACKING MATERIALS!

Remove and inspect the unit for shipping damage. If damage is found, immediately notify the carrier and your dealer. If no damage is found, save both the shipping container and the packing foam in case of a later need to return the unit to the factory, or ship it to another location.

WARRANTY REGISTRATION

Complete the warranty registration card provided in the back of this manual and mail it within ten days of receipt to register your warranty. **Failure to register your warranty renders it non-valid.**

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

- Read this manual carefully before operating the UPS. All instructions should be followed during installation and maintenance of the UPS and batteries.

- These UPS units are intended for use in a temperature-controlled, indoor area free of conductive contaminants. Select a location, which will provide good air circulation for the UPS at all, times. Avoid locations near heating devices, water or excessive humidity, or where unit is exposed to direct sunlight. Route power cords so they cannot be walked on or damaged.

- **CAUTION** -- The UPS uses batteries for generating AC voltages, so output receptacles may be electrically hot even when the UPS is not connected to commercial power. Trained service personnel should perform all repairs, since an electrical shock hazard exists.

- **CAUTION** -- Do not remove the cover -- there are no user-serviceable parts inside.

- **CAUTION** -- To prevent electrical shock, the 3-wire plug provides earth ground for the UPS chassis. Plug the UPS into a 3-wire grounding type, commercial receptacle with the grounding conductor connected to earth ground at the service equipment. Removal of the ground pin from the plug or use of a 3-wire-to-2-wire adapter will defeat this safety feature and may result in a shock hazard. Additionally, if the plug is removed to simulate a power failure (not recommended), do not touch the plug conductors or the chassis while the plug is removed. On 120-volt models, improperly connected power will indicate a Site Wiring Fault.

- **CAUTION** -- Do not allow water or any foreign object to enter the UPS. In case this occurs, immediately turn the unit power switch off and unplug the MINUTEMAN from the commercial receptacle.

- Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from the batteries.

- When replacing UPS batteries, use the same number of sealed lead-calcium rechargeable batteries with the same voltage and ampere-hour ratings as those in the UPS. These batteries have pressure operated safety vents.

- **CAUTION** -- Do not dispose of batteries in a fire. They may explode.

- **CAUTION** -- Do not open or mutilate batteries. Release electrolyte is harmful to the skin and eyes and may be toxic.

- **CAUTION** -- Although battery system voltages are only 12 VDC, 24 VDC and 36 VDC, the battery system can still present a risk. The current capability of a battery is sufficient to burn wire or tools very rapidly, producing molten metal. Observe these precautions when working on batteries:

    1. Turn the UPS off and disconnect it form the wall outlet prior to connecting or disconnecting battery terminals;

    2. Remove watches, rings or other metal objects;

    3. Use tools with insulated handles;

    4. Wear protective gloves and eyewear;

    5. Do not lay tools or other metal parts on top of batteries.

ELECTRICAL SPECIFICATIONS								
MODEL #	RATED VA	OUTPUT WATTS	FREQ Hz	INPUT VAC/A	OUTPUT VAC/A	BATTERY SYSTEM VDC	MAX. HEAT DISSIPATION BTU/Hr INVERTER MODE	AC MODE
A300	300	190	60	120/2.6	120/2.5	12	160	10
A300/2	300	190	50	220/1.5	220/1.4	12	160	10
A425	425	275	60	120/3.6	120/3.5	12	235	10
A425/2	425	275	50	220/2.0	220/1.9	12	235	10
A500	500	325	60	120/4.3	120/4.2	12	275	65*
A500/2	500	325	50	220/2.6	220/2.3	12	275	65*
A750	750	500	60	120/6.5	120/6.3	24	425	105*
A750/2	750	500	50	220/3.4	220/3.4	24	425	105*
A900	900	630	60	120/8.8	120/7.5	24	540	130*
A900/2	900	630	50	220/4.2	220/4.1	24	540	130*
A1250	1250	900	60	120/12.1	120/10.4	24	770	185*
A1250/2	1250	900	50	220/5.8	220/5.7	24	770	185*
A2000	1440	1400	60	120/12	120/12	36	1200	300*
A2000-41	1900	1400	60	120/16	120/15.8	36	1200	300*
A2000-43	1900	1400	60	120/16	120/15.8	36	1200	300*
A2000-44	2000	1400	60	120/20	120/16.7	36	1200	300*
A2000/2	2000	1400	50	220/10	220/9.1	36	1200	300*

* With maximum boost and maximum charge current.

NOTE: 220VAC, 50 Hz models supply an output voltage of 220VAC, making them compatible with 220VAC, 230VAC and 240VAC utility systems. UPS inverter output supplies 225 VAC. Other output voltages can be factory-set on a special-order basis.

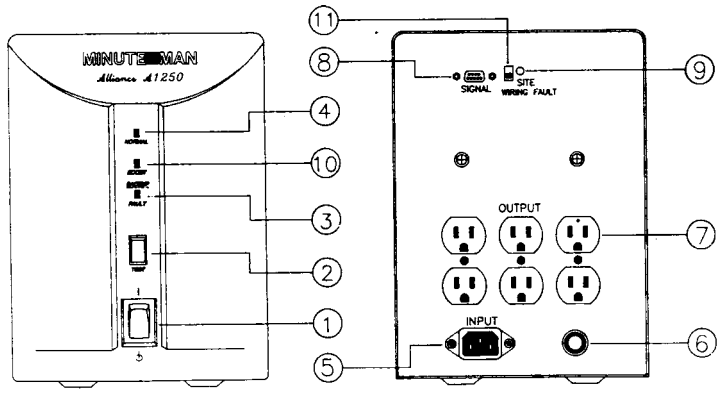
Input Voltage (AC Mode Function)	
120 VAC Models	95-135 VAC (w/ boost)
	102-135 VAC (w/o boost)
220 VAC Models	175-260 VAC (w/ boost)
	190-260 VAC (w/o boost)
Boost Capability (AC Mode Function)	+ 12 %
Transfer Voltage Adjustment	5VAC per SW, (120VAC models)
	10VAC per SW (220VAC models)
Transfer Time	2 msec typical
Input Frequency Deviation for Synchronization	± 10 %
Inrush Current	1.5x rated
Surge Protection	3 way, meets IEEE STD. 587
RFI/EMI Filtering	Both Common and Normal Modes
Inverter mode (Backup Operation)	
Waveform	Synchronized Simulated
	Sinewave Approximation
Crest Factor (Non-Linear Load)	3:1
Overload Capacity (50 msec Maximum)	3x rated
Voltage Regulation	± 5%
Frequency Regulation	± 1%
DC-to-AC Efficiency (Full Load)	75%
Overload/Short Circuit Protection	Electronic and Fused
Discharged Battery Recharge Time	8 hours (95% of full charge)
Run Time	See Chart

TYPICAL RUN TIME vs. TYPICAL COMPUTER LOAD							
Computer Load	**A300**	**A425**	**A500**	**A750**	**A900**	**A1250**	**A2000**
100VA	30m	38m	68m	86m	122m	133m	379m
150VA	19m	22m	38m	48m	72m	79m	211m
200VA	12m	15m	25m	32m	50m	54m	139m
250VA	8m	11m	19m	24m	37m	41m	101m
300VA	5m	8m	14m	18m	29m	32m	78m
425VA	---	5m	9m	11m	19m	20m	47m
500VA	---	---	6m	9m	15m	16m	37m
600VA	---	---	---	7m	12m	13m	28m
700VA	---	---	---	6m	10m	11m	23m
750VA	---	---	---	5m	9m	10m	21m
800VA	---	---	---	---	8m	9m	19m
900VA	---	---	---	---	7m	8m	16m
1000VA	---	---	---	---	---	7m	14m
1100VA	---	---	---	---	---	6m	12m
1250VA	---	---	---	---	---	5m	10m
1400VA	---	---	---	---	---	---	8m
1600VA	---	---	---	---	---	---	7m
1800VA	---	---	---	---	---	---	6m
2000VA	---	---	---	---	---	---	5m

PHYSICAL SPECIFICATIONS			
Model	Net Wt. (lbs.)	Shipping Wt. (lbs.)	Dimensions (L x W x H) (inches)
A300	15	18	13.5 x 3.3 x 6
A425	15	18	13.5 x 3.3 x 6
A500	23	25	13 x 4.6 x 6.6
A750	29	30	16 x 4.6 x 6.6
A900	46.5	49.6	18.4 x 6.3 x 9.8
A1250	49.2	52.3	18.4 x 6.3 x 9.8
A2000	70.8	77.9	19.9 x 6.3 x 9.9

Operating Temperature	0ºC to 40ºC (32ºF to 104ºF)
Storage Temperature	-15ºC to 40ºC (5ºF to 104ºF)
Relative Humidity	95% Max., Non-Condensing
Maximum Altitude without Derate	15,000 Ft.
Acoustic Noise	Less than 40dB @ 3'

UNIT DESCRIPTION



FRONT VIEW REAR VIEW

MODEL 1250

1. **Main Power Switch**: Turns on all UPS functions except the internal battery charger. Charger operates when UPS is connected to commercial power.

2. **Test Button**: Depressing this button causes the UPS to switch to the Inverter mode (backup) for test.

3. **Backup/Fault LED**: In Inverter mode, LED illuminates momentarily along with the audible alarm. If UPS goes to low battery, overload or software-generated shutdown while in Inverter mode, UPS shuts down. On AC return, UPS goes to AC mode, and Fault and Alarm operate continuously. The Fault is reset either by pressing Test or any subsequent loss of power and successful return to AC. During normal Inverter mode, alarm sounds once every 15 seconds, changing to once every two seconds at low battery warning.

4. **Normal LED**: On in normal AC mode when commercial power is present; otherwise off.

5. **Input Power Cord**: A300, A425 and A2000 use a standard strain relieved power cord. Other models use IEC 320 male socket and a cord set.

6. **Input Fuse/Breaker**: A300, A425, A900 and A1250 use a separate fuse holder for the input fuse; A2000 models use an input breaker. Other models have the input fuse located in the IEC 320 socket.

7. **Output Receptacles**: All 120VAC models use NEMA 5-15R receptacles (standard). The A2000 120VAC model has one receptacle position, which can be converted, to a locking receptacle. 220VAC models use IEC 320 female receptacles.

8. **LAN Communications Port**: All models except A300.

9. **Site Wiring Fault**: 120VAC models only. Indicator warns of improper service wiring, lost ground or hot/ neutral reversed. Have a qualified electrician correct the service wiring if this lamp lights.

10. **Boost LED:** On when unit goes to boost mode; off otherwise.

11. **Transfer Voltage Adjustment Switches**: Each switch decreases brownout, over-voltage and boost transfer voltages by 5VAC (120VAC models) or 8VAC (220VAC models).

220VAC models: Each unit is supplied with 2 output power cords for connection from the UPS IEC 320 female receptacles to computer equipment. An input line cord is not provided because of the many different plug configurations used in the countries served. In most cases, the existing input line cord for the computer can be used for connection to the UPS input. If an input line cord is needed, these are available through your supplier. Units ordered from the factory with an input line cord provided contain only 1 output power cord.

INSTALLATION AND TEST

1. Ensure that the UPS power switch is off ("  " position). On models with an IEC 320 input socket, insert the cord-set supplied or the computer cord-set into the UPS socket, then plug the UPS power plug into a grounded commercial power receptacle, with proper supply voltage and frequency.

2. Leave the UPS plugged in, but turned off for two hours to permit the internal batteries to re-charge. The charger operates when the UPS is plugged in, regardless of power switch position.

3. Turn on the UPS power switch ("|" position) and it will immediately power up in the Inverter (Backup) mode. If commercial power is available and within proper range, the UPS will transfer to commercial power in about four seconds, and the AC Normal LED will light. Verify that the site wiring fault lamp (on 120VAC models) does not light.

4. Press and hold the Test Button. After about 30 seconds, there will be a short Alarm and Backup LED indication. Release the Test Button, and the UPS will return to normal AC mode (in about four seconds).

5. Verify that the power requirements (VA and Watts) of the equipment to be protected are within the capacity of the UPS. Plug in and turn on the various loads. Momentarily press the Test Button and verify proper UPS operation.

NOTE: If any condition experienced during the above test procedure was not as described, refer to

the UPS problem chart in the back of this manual.

OPERATION

The UPS loads may be controlled by the UPS power switch. Since the UPS powers up in the Inverter mode, a functional test is provided every time it is turned on (or the TEST Button is pushed). The battery charger operates with the power switch on or off.

If a low voltage condition (brownout), power outage or over-voltage occurs, the UPS will switch to the Inverter mode, and the AC Normal LED will go out. The Backup LED and Alarm will operate briefly after about 25 seconds, and then every 15 seconds. For long duration power outages, a Low Battery Warning is provided about two minutes prior to low battery shutdown. The LED and Alarm will operate every two seconds. At low battery shutdown the UPS will shut off automatically to protect the internal batteries form excessive discharge. All LED's, alarm and output power will be turned off. When commercial power returns, the UPS will return to the AC Normal mode; the Fault LED and Alarm will operate continuously. Press the Test Button to effect an inverter test and silence the alarm.

During normal AC mode function, the UPS will quietly protect the load from power surges, voltage spikes and noise interference. Commercial power outages are usually of a short duration; thus sounding of the alarm is delayed so as not to be a nuisance.

If the low voltage condition above can be corrected by the boost winding in all models except A300 and A425, the Boost LED will light, signifying the Boost mode is operative and the output voltage has been corrected.

SYSTEM BATTERIES

The internal batteries used in the MINUTEMAN ALLIANCE UPS UNITS are sealed maintenance-free, lead-acid batteries with electrolyte totally absorbed in the plates and separator material. For maximum battery like, temperature should be kept as cool as practical indoors, and at proper trickle charge voltage. Expected battery life is 3 to 6 years at 85ºF. For optimum performance, batteries should be replaced after about 3 years. Replacement batteries can be purchased from Para Systems or from your local distributor or dealer. If the UPS is to be stored, allow the batteries to fully charge for 24 hours; then store in a cool, dry location. For extended storage, recharge the UPS batteries for 24 hours every 4 months.

When the batteries are replaced, provide the used batteries to recycler for proper disposal and reclamation of the lead.

BATTERY/SYSTEM CHECKOUT

To verify proper system function and battery condition, the user is encouraged to engage the test switch periodically. Normal indications as specified should be observed. If the system goes immediately to the low battery warning mode, the batteries should be replaced.

UPS MONITORING CONFIGURATIONS

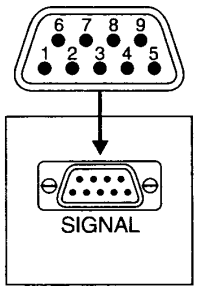
All models except A300 provide a UPS monitoring capability which will allow direct interface with many different computer operating systems. This capability permits an unattended, orderly shutdown of the computer system when commercial power is lost for a long period. Some configurations also provide for a shut down of the UPS after the computer has been shut down, thereby conserving UPS battery capability.

Para Systems also offers its own software package, which functions with Novell, Unix-based, OS/2, Windows and Macintosh operating systems. This package offers many advantages over existing UPS monitoring packages.

Finally, for systems which do not have UPS interface capabilities, user software can be written to read UPS status and provide for system shut down. Software specialists should contact Para Systems, Inc. for more information. The standard UPS DB9 PIN out is provided below for your information.

COMMUNICATIONS PORT

The communications port on the back of the UPS (DB9 Female Connector labeled "Signal") can be connected by a cable to a computer to provide the UPS monitoring capability described above. Following are the pin connections of this connector.



UPS DB9 PIN OUT

PIN 1 N.C.

PIN 2 UPS simulates a relay closing (open collector transistor) between Pins 2 and 4 when it switches to Inverter mode.

PIN 3 Not used

PIN 4 Common ground return (for Pins 2, 5, 6 and 8).

PIN 5 UPS simulates a relay closing (open collector transistor) between Pins 5 and 4 at low battery warning.

PIN 6 User sends a RS232 high level (9-12VDC) to turn off the UPS (works only during Inverter operation). UPS returns to AC mode when commercial power is restored.

PIN 7 Common with Pin 4.

PIN 8 A500 and larger units: When this pin is shorted to ground, UPS output turns off. Output returns when commercial power is available and the short is removed. On units smaller than the A500, this pin has no connection.

PIN 9 Reserved.

SERVICE

If any problem is encountered with your MINUTEMAN ALLIANCE UPS, contact your supplier or Para Systems customer service department. Prior to calling, please write down and be prepared to discuss UPS status indications and if the UPS supplies power in any mode. Following is a guide to assist you in locating some common problems.

Do not remove the UPS cover or attempt any service. There are no user-serviceable components inside. Unauthorized service will void the warranty.

Fuse replacement and breaker reset (A200) are UPS owner responsibilities. Please do no return a unit for service before verifying that that the fuse is good or the breaker is properly set.

UPS PROBLEM CHART		
PROBLEM	**POSSIBLE CAUSE**	**ACTION TO TAKE**
When main power switch is turned on, UPS comes on, but does not go to the AC Normal Mode.	Input fuse blown (breaker tripped on A2000). No commercial power at wall receptacle, or commercial voltage is too low or too high.	Check fuses and replace if blown (see below). Reset A2000 breaker. Verify proper available commercial voltage.
When main power switch is turned on, UPS comes on, goes to AC Normal mode; Fault LED and Alarm operate continuously.	UPS batteries are Low/Weak UPS is overloaded.	Turn UPS off and allow batteries to recharge. Check connected loads and remove least critical item.
Backup time is considerably less than expected; battery charge condition is unknown.	Load is greater than estimated. Batteries are not fully charged or weak.	Check and verify connected load. Recharge batteries for 8 hours and repeat backup test.
Backup time is considerably less than expected at the end of a battery recharge cycle (8 hours), and load is verified.	Charger has failed, or batteries are bad.	Call Para Systems for service.
Site wiring fault lamp lights	Improper service wiring.	Have a qualified electrician correct the service wiring.

FUSE REPLACEMENT (All Models except A2000)

A300, A300/2, A425, A425/2, A900 and A1250 models: Turn off the UPS and unplug the power cord from the wall receptacle before removing the fuse cap. Remove and inspect the fuse and replace, if blown.

Other models: turn off the UPS and unplug the power cord plug from the UPS IEC 320 socket. Locate the fuse drawer opening and insert a flat-blade screwdriver into the opening, pry the drawer outward and remove it from the IEC 320 socket. Inspect the active fuse and replace, if blown.

NOTE: Replacement fuses can be obtained from Para Systems or any electronic parts distributor who stocks Bussman or Littlefuse fuses.

POLICY AND INSTRUCTION
FOR RETURN OF PRODUCT TO PARA SYSTEMS

Call Technical Support if you experience any problems with MINUTEMAN ALLIANCE Units.

1. If you wish to file a Platinum Protection Plan claim, request a claims packet from the Technical Support Representative.

2. If a UPS unit must be returned to Para Systems for any other reason:

    a. Describe the problem or reason for the return and you will be given a Return Material Authorization Number (RMA #). This number **must** be placed on the shipping carton, preferably on the return shipping label. The RMA # on the carton will ensure prompt handling when received at Para Systems, Inc.

    b. Pack the UPS for shipment in the original carton and foam. Other packaging methods can result in damage to the UPS.

    c. Be sure to enclose the name and telephone number of the person who can authorize repair charges. Also, include the address for product return.

    d. Send the UPS freight prepaid to Para Systems headquarters. C.O.D. shipments will not be accepted.

    e. If repair is Para Systems' responsibility, per the warranty statement, there will be no repair charge. The UPS will be repaired and returned freight prepaid, provided the UPS was returned in the original shipping carton and foam. If other packing methods used result in shipping damage, this repair will be at your expense. If the packaging is not deemed usable for UPS return, there will be a charge for the cost of a new box and foam.

    f. If UPS repair is not Para Systems' responsibility, you will be advised of the estimated repair charges by telephone for your authorization. Should you choose not to have the UPS repaired, there will be a repair estimate charge of $40. The UPS will be returned C.O.D. for either the repair amount or estimate plus shipping and handling.

NOTE: Units returned for repair are found to have no function problem other than a blown, replaceable input fuse, tripped, re-settable input breaker (a2000) or discharged batteries will incur charges as stated in the above paragraph, even if these units are under warranty.

PARA SYSTEMS, INC. Tel: (972) 446-7363
1455 LeMay, Carrollton, TX 75006 Fax: (972) 446-9011

LIMITED PRODUCT WARRANTY

PARA SYSTEMS, INC. (PARA SYSTEMS) warrants that this product will be free from defective material and workmanship for a period of two years from the date of the original retail purchase by the end user provided that the warranty registrations card is completed and returned PARA SYSTEMS within ten (10) days of purchase. PARA SYSTEMS or its designated representative will repair, or at PARA SYSTEMS' option, replace any product that has been returned by the purchaser and is confirmed by PARA SYSTEMS to be defective.

This warranty shall be null and void if this product has been altered, opened without authorization, misused or damaged by accident, misapplication, abuse, fire, flood or other disaster.

PARA SYSTEMS SHALL NOT BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR OTHER TYPES OR DAMAGES RESULTING FROM THE USE OF THIS PRODUCT OTHER THAN THE LIABILITY STATED ABOVE. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MECHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

MINUTEMAN PLATIMUM PROTECTION PLAN
LIMITED WARRANTY

In addition to the Product Warranty stated above, Para Systems, Inc. also warrants to the original purchaser of the Minuteman products that all equipment connected to and powered by the UPS and registered under the Minuteman Platinum Protection Plan shall be protected from damage caused by AC power surges, subject to the following terms and conditions. Para Systems or its designated representative will, at Para Systems' option, repair or replace any equipment so damaged, provided the cost of repair or replacement of the equipment does not exceed twenty-five thousand dollars ($25,000).

TERMS AND CONDITIONS

1. The UPS and connected equipment must be properly installed per the UPS Owner's Manual and in compliance with all applicable electrical and safety code. Extension cords and power adapters are not to be used.

2. This warranty applies only to the original end user purchaser, who must register the UPS and connected equipment within then (10) days of receipt.

3. This warranty gives the purchaser specific legal rights, and the purchaser may also have other unspecified rights which may vary from state to state.

4. A finding will be issued by Para Systems within sixty (60) days or receipt of the affected Minuteman unit/units and all documentation contained in the Minuteman Platinum Protection Plan Claims Packet. A notice of the finding will be provided to the purchaser.

5. This warranty does not cover: a.) any damage to any connected equipment resulting from any cause other than AC power surge, as defined by IEEE Standard 587, which was transmitted through the UPS to the connected equipment; b.) loss of data, software, business profits, claims by third parties and other incidental damages even if Para Systems is advised of the possibility of such damages in advance.

6. This warranty shall be null and void if the Minuteman product is altered, opened without authorization, misused or damaged by accident, misapplication, abuse, fire, flood or other disaster.

PLEASE KEEP THIS DOCUMENT FOR YOUR RECORDS

Model # _____ Date Purchased _____

UPS PRODUCT AND MINUTEMAN PLATINUM PROTECTION PLAN LIMITED WARRANTY REGISTRATION

UPS Model # _____ Serial # _____

Date Purchased _____

Dealer's Name _____

City/State _____ Zip _____

Your Name _____ Tel. _____

Company Name (if applicable) _____

Address _____

City/State _____ Zip _____

CONNECTED EQUIPMENT (Necessary for Platinum Protection)

1. MFG. _____ Model # _____ Serial # _____
2. MFG. _____ Model # _____ Serial # _____
3. MFG. _____ Model # _____ Serial # _____
4. MFG. _____ Model # _____ Serial # _____

To be valid, this registration must be returned within ten (10) days after purchase of equipment to Para Systems, Inc.