

MINUTE MAN[®]
Power Technologies
From Para Systems, Inc.

MM-AVR UPS Series
User's Manual



TABLE OF CONTENTS

Safety Instructions	2
Description	2
Determining Power Requirements	3
Hardware Installation Guide.....	3
Battery Replacement Instructions	4
LED Indicators	6
Troubleshooting Guide.....	6
Specifications.....	7
Obtaining Service.....	9
Limited Product Warranty	10

Thank you for purchasing a MINUTEMAN UPS Product. To enjoy all the features and benefits of this Uninterruptible Power Supply (UPS), please read and follow all installation and operation instructions completely. This UPS is designed to provide power protection for connected electronic equipment.

Please read this manual before installing your MM-AVR Series UPS, models MM-AVR600, MM-AVR800, MM-AVR1200 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.

CAUTION: Any changes or modifications not expressly approved by the guarantee of this device could void the user's authority to operate the equipment.

IMPORTANT SAFETY INSTRUCTIONS **(SAVE THESE INSTRUCTIONS)**

This manual contains important safety instructions. Please read and follow all instructions carefully during installation and operation of UPS. Read this manual thoroughly before attempting to unpack, install, or operate.

CAUTION! To prevent the risk of fire or electric shock, install in a temperature and humidity controlled indoor area, free of conductive contaminants. (Please see specifications for acceptable temperature and humidity range).

CAUTION! To reduce the risk of electric shock, do not remove the cover. Qualified Service Personnel must perform repairs and maintenance. No user serviceable parts inside.

CAUTION! Hazardous live parts inside can be energized by the battery even when the AC input power is disconnected.

CAUTION! UPS must be connected to an AC power outlet with fuse or circuit breaker protection. Do not plug into an AC wall outlet that is not grounded. If you need to de-energize this equipment, turn off and unplug the UPS.

CAUTION! To avoid electrical shock, turn off the UPS and unplug it from the AC power source before servicing the battery or installing a computer component.

DO NOT USE FOR MEDICAL OR LIFE SUPPORT EQUIPMENT! MINUTEMAN UPS does not sell products for life support or medical applications. **DO NOT** use in any circumstance that would affect operation or safety of any life support equipment or with any medical applications or patient care.

DO NOT USE WITH OR NEAR AQUARIUMS! To reduce the risk of fire or electric shock, do not use with or near an aquarium. Condensation from the aquarium can cause the UPS to short out.

DESCRIPTION

Battery/Surge Outlets

Provides battery-powered/surge outlets for the connected equipment and insures uninterrupted operation of your equipment during a power failure.

Power Switch

Can be used as a master on/off switch for equipment connected to the battery-powered outlets.

Power On Indicator

This LED is illuminated when the utility condition is normal and the UPS outlets are providing power, free of surges and spikes.

Fuse

The fuse provides overload and fault protection.

RJ 11 Phone Jacks

Protects any standard modem, fax or single line telephone.

HOW TO DETERMINE THE POWER REQUIREMENTS OF YOUR EQUIPMENT

1. Make sure that the total Volt-Amp (VA) requirements of your computer, monitor and peripheral equipment does not exceed the maximum VA rating for the MM-AVR600, MM-AVR800 and MM-AVR1200. The maximum VA values would be 600VA, 800VA and 1200VA, respectively.
2. Ensure that the equipment plugged into the battery-powered outlets does not exceed the UPS's rated capacity. If UPS's rated capacities are exceeded, an overload condition may occur and cause the UPS to shut down and trip the circuit breaker.
3. If the power requirements of your equipment are listed in values other than Volt-Amps (VA), convert Watts (W) or Amps (A) into VA by doing the calculations below. **Note:** The equation below only calculates the maximum amount of VA that the equipment can use, not what is typically used by the equipment at any given time. Users should expect usage requirements to be approximately 60% of below value to estimate power requirements:

$$\underline{\hspace{2cm}} \text{ Watts (W)} \times 1.82 = \underline{\hspace{2cm}} \text{ VA or } \underline{\hspace{2cm}} \text{ Amps (A)} \times 120 = \underline{\hspace{2cm}} \text{ VA}$$

Add the totals for all of the equipment and multiply this total by 0.65 to calculate actual requirements.

Note: Many factors can affect the amount of power that your computer system will require. The total load that you will be placing on the battery-powered outlets should not exceed 90% of the UPS's capacity.

Hardware Installation Guide

1. Your new UPS may be used immediately upon receipt. However, **charging the battery for at least 4-hours** is recommended to ensure that the battery's maximum charge capacity is achieved. Charge loss may occur during shipping and storage. To recharge the battery, plug the power cord into the AC wall outlet and turn the power switch on. **Note:** MM-AVR units will charge the battery with the power switch on or off.
2. With the UPS off and unplugged, connect your computer, monitor, and any externally powered data storage device (Zip drive, Jazz drive, Tape drive, etc...) into the battery power supplied outlets. **DO NOT plug a laser printer, copier, space heater, vacuum or other large electrical device into the UPS. The power demands of these devices will overload and possibly damage the UPS.**
3. To protect a fax, single line phone or modem, connect a telephone cable from the wall jack outlet to the IN jack of the UPS. Connect a telephone cable from the OUT jack to the modem port on your computer. The OUT jack can be used to protect a single line telephone or fax machine.
4. Plug the UPS into a 2 pole, 3 wire grounding receptacle (AC wall outlet). Make sure the wall branch outlet is protected by a fuse or circuit breaker and does not service equipment with large electrical demands (e.g. refrigerator, copier, etc...). **Note:** DO NOT use extension cords, power or surge strips on the input or the output of the UPS.
5. Depress the power switch to turn the UPS on. The power on LED indicator will illuminate and the UPS will "beep" once.
6. If an overload is detected, an audible alarm will sound and the UPS will emit one long beep. To correct this, turn the UPS off and unplug at least one piece of equipment from the battery-powered outlets. Wait 10-seconds. Make sure the circuit breaker is depressed and then turn the UPS on.
7. Your UPS is equipped with an auto-charge feature (all units). When the UPS is plugged into an AC wall outlet and there is an acceptable AC voltage present, the battery will automatically recharge.
8. To maintain optimal battery charge, leave the UPS plugged into an AC wall outlet with the power switch turned on at all times.
9. To store your UPS for an extended period, cover and store it with the battery fully charged. Recharge the battery every three months to ensure battery life.

REPLACING THE BATTERY

(QUALIFIED SERVICE PERSONNEL ONLY)

CAUTION! Read and follow the IMPORTANT SAFETY INSTRUCTIONS before servicing the battery. Service the battery under the supervision of Qualified Service Personnel knowledgeable of batteries and their precautions.

CAUTION! Use only the specified type of battery. See your dealer for replacement batteries.

CAUTION! The battery may present risk of electrical shock. Do not dispose of battery in a fire, as it may explode. Follow all local ordinances regarding proper disposal of batteries.

CAUTION! Do not open or mutilate the batteries. Released electrolyte is harmful to skin and eyes and may be toxic.

CAUTION! Although the battery system voltage is only 12VDC and 24VDC, the battery can present a high risk of short circuit current and electrical shock. The short circuit current capability of the battery is sufficient to burn wire or tools very rapidly producing molten metal. Observe these precautions when replacing the battery:

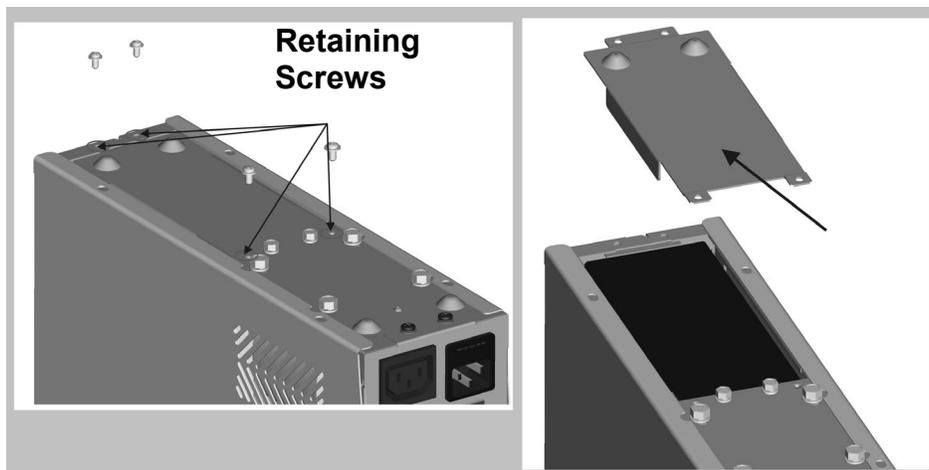
1. Remove all watches, rings or other metal objects.
2. Only use tools with insulated handles.
3. Do not lay tools or metal parts on top of battery or any terminals.
4. Wear protective eye gear (goggles), rubber gloves and boots.
5. Disconnect the charging source before connecting or disconnecting the battery terminals.
6. Determine if the battery is inadvertently grounded. If inadvertently grounded, remove the source of ground. Contact with a grounded battery can result in electrical shock! The likelihood of such shock will be reduced if; such grounds are removed during installation and maintenance (applicable to a UPS and a remote battery supply not having a grounded circuit).

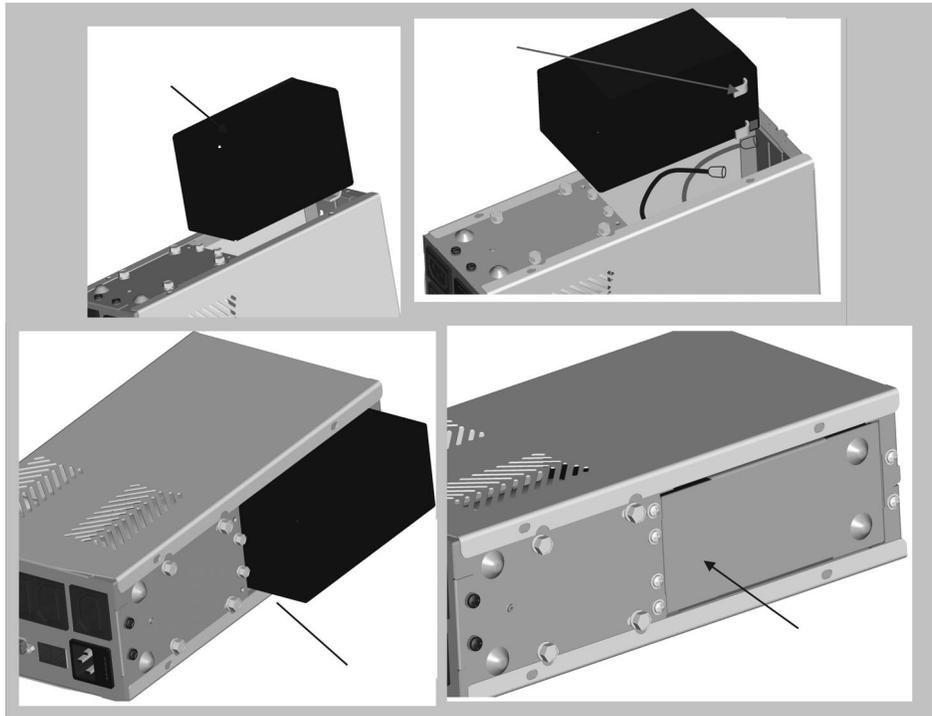
BATTERY REPLACEMENT PROCEDURE

(QUALIFIED SERVICE PERSONNEL ONLY)

Note: The MM-AVR600 and the MM-AVR800 have user replaceable batteries. The MM-AVR1200 does not allow for user replacement of the batteries.

1. Turn off and unplug all connected equipment.
2. Turn the UPS off and unplug the UPS's power cord from the AC wall outlet.
3. Turn the UPS upside down.
4. Remove the retaining screws from the battery compartment door.
5. Remove the battery compartment door.





6. Remove the defective battery from the battery compartment.
 7. Disconnect the battery positive (red) wire from the battery positive (+) terminal.
 8. Turn the power switch on, to discharge the UPS.
 9. Disconnect the battery negative (black) wire from the battery negative (-) terminal.
 10. Set the defective battery aside.
 11. Connect the battery negative (black) wire to the battery negative (-) terminal on the new battery.
 12. Connect the battery positive (red) wire to the battery positive (+) terminal on the new battery.
- Note:** Some sparking may occur, this is normal.
13. Install the new battery into the battery compartment. DO NOT pinch the battery wires in between the battery and the case.
 14. Reinstall the battery compartment door and the retaining screws.
 15. 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.
 16. The UPS is now ready for normal operation.

Note: Batteries are consider **HAZARDOUS WASTE** and must be disposed of properly at an appropriate recycling facility or return them to the supplier. Contact your local government for more information about proper disposal and recycling of batteries.

Note: Replace the batteries with the same number and type as originally installed in the UPS. These batteries have pressure-operated vents. These UPS contain sealed non-spillable lead-acid batteries.

Model #	MM-AVR600	MM-AVR800	MM-AVR1200
Battery QTY/Rating	1 x 12V 7AH	1 x 12V 9AH	2 x 12V 7AH

MM-AVR600, MM-AVR800, MM-AVR1200 User's Manual
Uninterruptible Power Supply (UPS)

DEFINITIONS FOR LED INDICATORS

Indicator	Sound/Alarm	Situation
LED 1 (Green) Illuminated	No sound	Mains normal, Input power source is supplying the load
LED 2 (Yellow) Illuminated	No sound	Mains normal, Battery is charging
LED 3 (Red) Illuminated	Beeps every two seconds	Mains abnormal, Battery is supplying the load
LED 3 (Red) Illuminated	Beeps every one second	Mains abnormal, Battery is low
LED 3 (Red) Illuminated	Continuous beeping	Battery exhausted, UPS will protect itself and switch off
No LED's Illuminated	No sound	UPS shutdown, In sleep mode

TROUBLESHOOTING

Problem	Possible Cause	Solution
Full-time surge protection outlets stop providing power to equipment.	Fuse has tripped due to an overload.	Turn the UPS off and unplug at least one piece of equipment. Wait 10-seconds, replace the fuse with a fuse of like size and rating, and then turn the UPS on.
The UPS does not perform expected runtime.	Battery not fully charged.	Recharge the battery for at least 4-hours.
	The Battery is defective.	Contact MINUTEMAN UPS about replacement batteries at mmsupport@minutemanups.com
The UPS will not turn on.	The on/off switch is designed to prevent damage by rapidly turning it off and on.	Turn the UPS off. Wait 10-seconds and then turn the UPS on.
	The UPS is not plugged into an AC wall outlet.	Connect the UPS to an 110/120V 60Hz AC wall outlet.
	The battery is defective.	Contact MINUTEMAN UPS about replacement batteries at mmsupport@minutemanups.com
	Mechanical problem.	Contact MINUTEMAN UPS at mmsupport@minutemanups.com
The UPS shuts down when there is a loss of AC power.	The UPS is not providing battery power.	Shutdown your computer and turn the UPS off. Wait 10-seconds and turn the UPS back on. This should reset the UPS.

SPECIFICATIONS

Model		MM-AVR 600	MM-AVR 800	MM-AVR 1200
Capacity		600VA/300W	800VA/480W	1200VA/600W
Input	Phase	Single phase		
	Voltage Range	95V-145V \pm 3V		
	Frequency	60HZ \pm 5HZ		
Output	Voltage (battery mode)	120V \pm 10%		
	Waveform	AC mode - follow utility Battery mode - Step Sine Wave		
	Frequency	AC mode - follow utility, Battery mode - 60Hz \pm 5Hz		
	Frequency	<0.5HZ (battery operation)		
	Transfer Time	Typical 4ms, max 10ms		
Protection	Surge Protection	320 Joules		
	Input Protection	Compliance with IEEE 587		
	Short Circuit	Fuse		
Battery	Type	12V Sealed non-spillable lead acid, maintenance free		
	Recharge	After full discharge, 8 hours to 90% capacity		
	Backup Time (full load)	\geq 3 min		
	Charge Current	350mA~1A		
	Battery Configuration	1x12V/7AH	1x12V/9AH	2x12V/7AH
Indication	AC Mode	Green and Orange LED on, Red LED off, No Alarm		
	Charging Battery	Orange LED on		
	Battery Mode	Green and Orange LED off, Red LED flash, Alarm slow beep		
	Battery Low	Green and Orange LED off, Red LED flash, Alarm fast beep		
Environment	Audible Noise at 1 m (3 ft)	<45dB		
	Temperature	0 to 40°C (+32 to +104°F)		
	Humidity	0% - 90% Non- Condensing		

MM-AVR600, MM-AVR800, MM-AVR1200 User's Manual
Uninterruptible Power Supply (UPS)

Physical	Net Weight	15.4Lbs (7.0 Kgs)	16.5Lbs (7.5 Kgs)	28.7Lbs (13 Kgs)
	Net Dimension (W×D×H)	3.7x12.6x6.4" 94×320×162mm	3.7x12.6x6.4" 94×320×162mm	4.9x15.0x8.9" 124×382×225mm
	Shipping Weight	17Lbs (7.5 Kgs)	18Lbs (8.0 Kgs)	31Lbs (13.7 Kgs)
	Shipping Dimension (W×D×H)	5.7x14.8x9.6" 145×375×245mm	5.7x14.8x9.6" 145×375×245mm	7.5x18.1x11.8" 190×460×300mm
Outlets		3: NEMA 5-15R		4: NEMA 5-15R

OBTAINING SERVICE

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 Minuteman Technical Support 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 not 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 order to avoid damage in transit. Never use Styrofoam beads for a packing material.
 - A. Include a letter with your name, address, daytime phone number, RMA number, a copy of your original sales receipt, and a brief description of the problem.
5. Mark the RMA # on the outside of all packages. The factory cannot accept any package without the RMA # marked on the outside.
6. Return the UPS by insured, prepaid carrier to:

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

MM-AVR600, MM-AVR800, MM-AVR1200 User's Manual Uninterruptible Power Supply (UPS)

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 two years from the date of purchase. Para Systems Inc. (Para Systems) warrants the Batteries for a period of one year from the date of purchase. For equipment sites within the United States and Canada, this warranty covers repair or replacement of defective equipment at the discretion of Para Systems. Repair will be from the nearest authorized service center. 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 repaired or replaced pursuant to this warranty shall 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's equipment is furnished without charge and on the basis that it represents Para Systems's 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 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's products and the only obligation of Para Systems hereunder, shall be the repair or replacement of defective equipment, components, or parts; or, at Para Systems's option, refund of the purchase price or substitution with an equivalent replacement product. This warranty gives you specific legal rights and you may have other rights, which vary from state to state.

Longer-term warranties are available at an extra cost. Contact Para Systems (1-972-446-7363) for details.

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