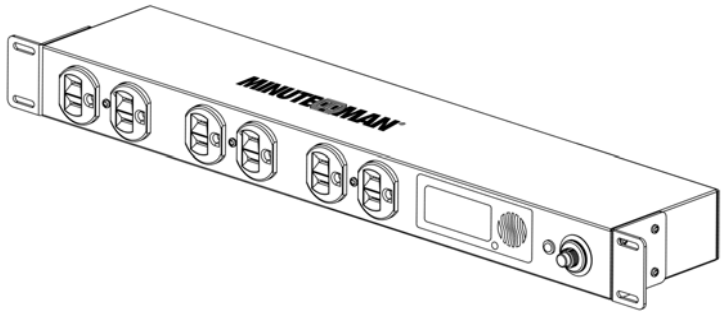
MINUTEMAN®
Power Technologies
From Para Systems, Inc.

MMPD (PDU) SERIES
MMS (PDU Surge) SERIES

User's Manual



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English

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IMPORTANT SAFETY INSTRUCTIONS

This manual contains important instructions that should be followed during the installation and the operation of the Power Distribution Unit (PDU).

SAVE THESE INSTRUCTIONS

An Important Notice

- To ensure safety in all applications where a PDU is hardwired to the Electrical Supply, ensure that a Qualified Service Personnel installs the system.
- The PDU systems supplied with a power cord can be safely connected to the wall outlet by the user.
- Make sure that the AC Utility outlet is properly grounded.
- Do not open the unit there are no serviceable parts inside. This will void the warranty.
- Do not try to repair the unit yourself, see Obtaining Service.
- Please make sure that the input voltage of the PDU matches the supply voltage.
- Use a certified input power cord with the correct plugs and sockets for the appropriate voltage system.
- Make sure the PDU is installed in the proper environment as specified. (0-40°C and 30-90% non-condensing humidity)
- Do not install the PDU in direct sunlight.
- Install the PDU indoors as it is not designed for outdoor use.
- Dusty, corrosive and salty environments will damage the PDU.
- Install the PDU away from; objects which give off excessive heat and areas, which are excessively wet.
- This PDU supports electronic equipment in offices, telecommunications, process control, medical, security, and IT applications.
- This PDU is intended for use in a Controlled Environment.
- Servicing of PDU should be performed by Qualified Service Personnel Only.
- **CAUTION** – To reduce the risk of fire, connect only to a branch circuit with over current protection in accordance with the National Electric Code, ANSI/NFPA 70 (3KVA)
- **CAUTION** - Connect the PDU 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 electrical shock with the installation of this PDU 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 de-energize the outputs of the PDU:
  Disconnect the PDU from the AC wall outlet.

English

Receiving Inspection

After removing your MINUTEMAN PDU 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 PDU was shipped in are carefully designed to minimize any shipping damage. In the unlikely case that the PDU needs to be returned to MINUTEMAN, please use the original packing material. Since MINUTEMAN is not responsible for shipping damage incurred when the system is returned, the original packing material is inexpensive insurance. **PLEASE SAVE THE PACKING MATERIALS!**

Para Systems Life Support Policy

As a general policy, Para Systems Inc. (Para Systems) does not recommend the use of any of its products in life support applications where failure or malfunction of the Para Systems product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. Para Systems does not recommend the use of any of its products in direct patient care. Para Systems will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to Para Systems that (a) the risks of injury or damage have been minimized, (b) the customer assumes all such risks, and (c) the liability of Para Systems Inc. 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.

Hospital grade wiring devices may be ordered as options on many Para Systems PDU systems. Para Systems does not claim that units with this modification are certified or listed as Hospital Grade by Para Systems or any other organization. Therefore, these units do not meet the requirements for use in direct patient care.

English

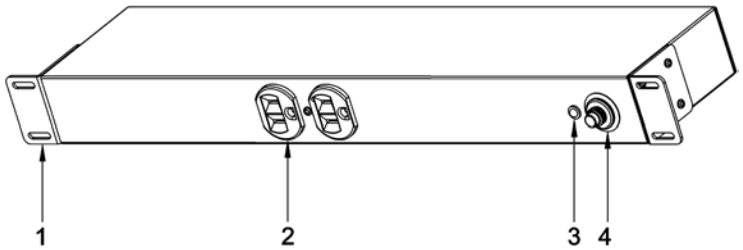
Chapter One: Introduction

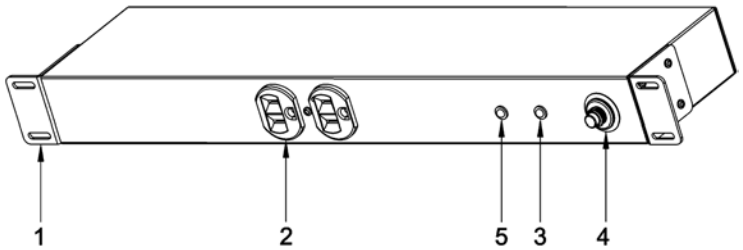
Thank you for purchasing a MINUTEMAN Power Distribution Unit (PDU) product. It has been designed and manufactured to provide many years of trouble free service.

Please read this manual before installing your MMPD or MMS Series, PDU models MMPD815HV, MMPD81530H, MMPD1415HV, MMPD1415HVA, MMPD1815V48, MMPD2415V62, MMPD1020HV, MMPD1020HVL, MMPD1420HV, MMPD1420HVL, MMPD2420V62, MMPD2420V62L, MMPD2420VA62, MMPD240VA62L, MMS1015HV, MMS1020HV, MMS1020HVL as it provides important information that should be followed during installation and operation of the PDU 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 PDU please refer to the Troubleshooting guide in this manual to correct the problem or collect enough information so that the MINUTEMAN Technical Support Department can rapidly assist you.

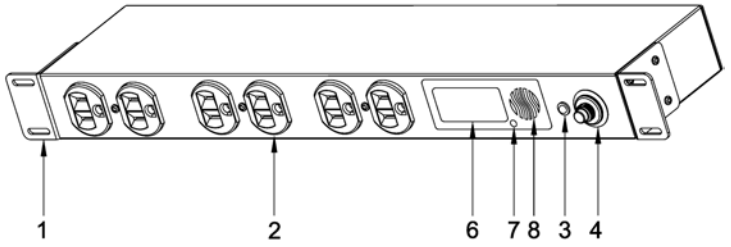
Chapter Two: Introduction to the Front and Rear Panel

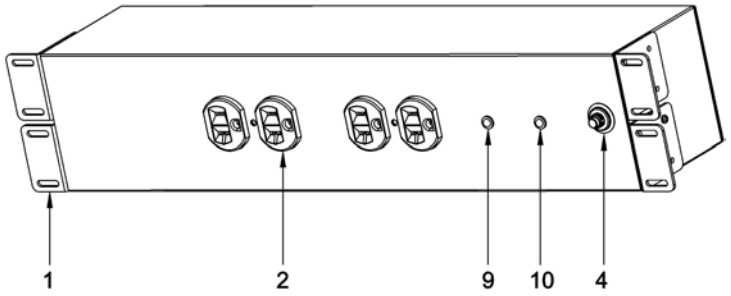
2.1. Front Panel Display Explanation





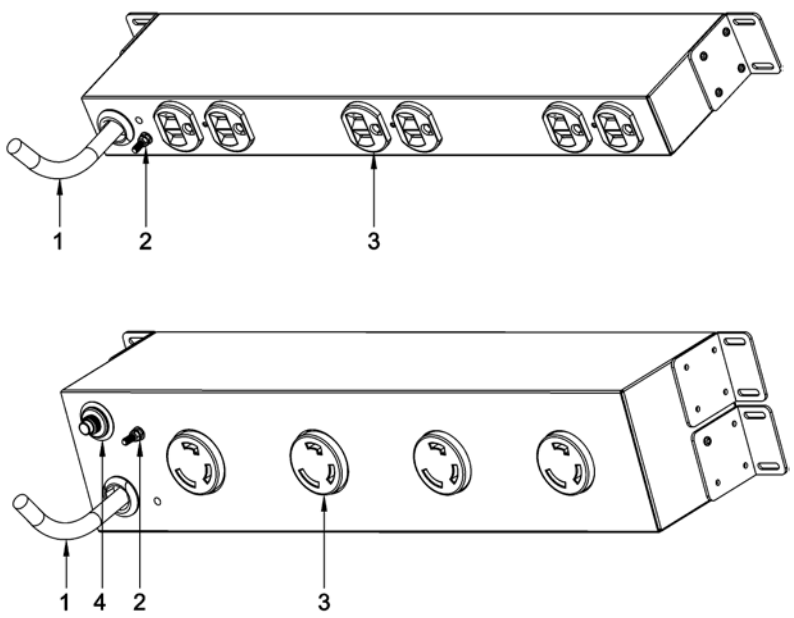
English





1.	Rackmount brackets	To mount the PDU into the rack.
2.	Output receptacles	To connect the equipment.
3.	Power On LED (green)	The LED is illuminated when the utility power is present. The LED is off when the utility power is not present.
4.	Circuit breaker	Over current protection.
5.	Surge LED (green)	The LED is illuminated when providing Surge protection. The LED is off when the Surge protection devices are damaged or if the utility power is not present.
6.	Amp-meter	Displays the amount of the load in Amps.
7.	Alarm silencer button	Silences the audible alarm.
8.	Overload Audible alarm	Sounds when the load reaches 90% of the rated capacity can be silenced. Sounds again at 101% of the rated capacity cannot be silenced.
9.	Power On LED (green) 15Amp circuit	The LED is illuminated when the utility power is present. The LED is off when the utility power is not present.
10.	Power On LED (green) 30Amp circuit	The LED is illuminated when the utility power is present. The LED is off when the utility power is not present.

2.2. Rear Panel Explanation



1.	Input power cord	To connect to utility power.
2.	External ground stud	To connect an external ground wire from the rack to the PDU.
3.	Output receptacles	To connect the equipment.
4.	Circuit breaker	Over current protection.

Chapter Three: Installation and Operation

The packing condition and the external outlook of the PDU should be inspected carefully before installation. Retain the packing material for future use.

3.1. Unpacking

1. Take the PDU out of the box.
2. Remove the PDU from the plastic bag. **Use CAUTION** the plastic bag holding the PDU is very slippery so be careful in unpacking and handling the PDU.

3. Standard Package includes:
   a. PDU
   b. Standard 19” rack, mounting hardware (if applicable)
   c. Vertical Mount (0U), mounting hardware (if applicable)
   d. User's Manual
   e. Warranty Document
   f. Platinum Protection Document (if applicable)

3.2. Selecting Installation Position

The Minuteman PDU Series is intended to be install in a temperature controlled environment that is free of conductive contaminants. Avoid locations near heating devices, water or excessive humidity, or where the PDU is exposed to direct sunlight. Route power cords so they cannot be walked on or damaged.

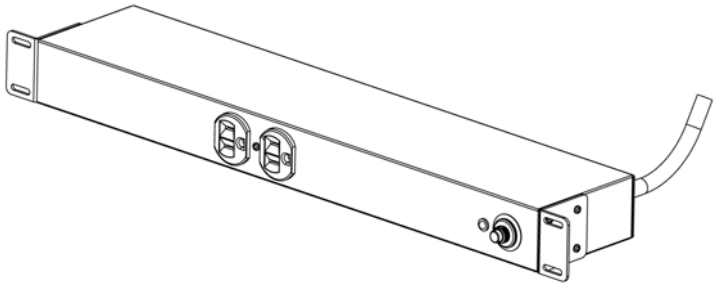
Operating Temperature (Max): 0 to 50 degrees C (+32 to +122 degrees F)
Operating Elevation: 0 to 3,000m (0 to +10,000 ft)
Operating and Storage Relative Humidity: 0 - 90%, non-condensing
Storage Temperature: 0 to 65 degrees C (+32 to +149 degrees F)
Storage Elevation: 0 to 15,000m (0 to +50,000 ft)

Rack Mount Instructions - The following or similar rackmount instructions are included with the installation instructions:

a. Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
b. Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
c. Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
d. Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
e. Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

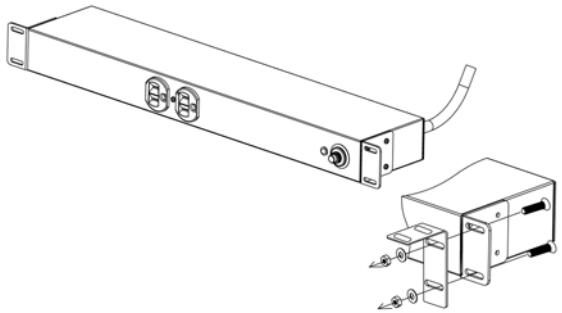
3.3. Installation

3.3.1. Horizontal Mounting



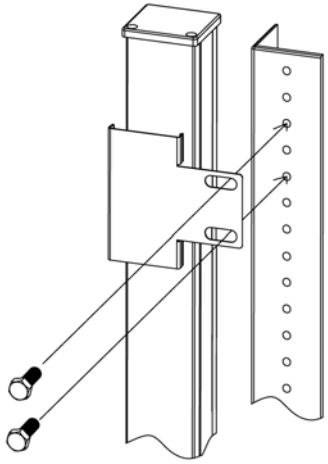
1. Install the PDU into the rack and attach with the retaining screws (not provided).
2. The installation is complete. See Connecting the Equipment.

3.3.2. Vertical Mounting



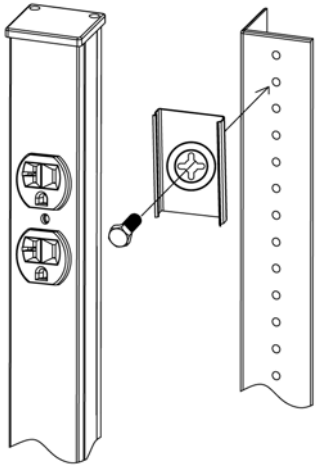
1. Attach the Vertical mounting brackets to the Horizontal rackmount brackets on each end of the PDU with the retaining screws (provided) as shown.
2. Attach the PDU to the side of the rack with the retaining screws (not provided).
3. The installation is complete. See Connecting the Equipment.

3.3.3. Vertical Mounting 0 (zero) U



Side Mounting:

1. Snap on the 0U mounting brackets to the backside of the PDU as shown.
2. Orient the PDU to the desire position and then attach the PDU to the rack with the retaining screws (not provided) as shown.
3. The installation is complete. See Connecting the Equipment.



Flush Mounting:

1. Align the center hole of the 0U mounting brackets (backside) to the mounting hole on the rack. Attach the 0U mounting bracket to the rack with the retaining screws (not provided).
2. Snap the PDU into the 0U mounting bracket.
3. The installation is complete. See Connecting the Equipment.

3.4. Connecting the Equipment

Plug the equipment into the output receptacles on the PDU. Do not use extension cords, adapter plugs or surge strips on the output of the PDU. Ensure that the load does not exceed the maximum output rating of the PDU (refer to the information label on the PDU or the Electrical Specifications in this manual).

3.5. Connecting to the Power Source

1. Verify that the voltage and frequency ratings match that of the Utility power, and then connect the AC Input power cord into a two-pole, three -wire grounded receptacle only. The receptacle shall be installed near to the PDU and shall be easily accessible. Do not use extension cords, adapter plugs, or surge strips. The PDU has an external ground stud for attaching an external ground wire from the rack to the PDU.
2. The Power On LED (green) will illuminate indicating that the PDU is on and providing power to the connected equipment.
3. Turn on the connected equipment.
4. The installation is complete the PDU is ready for normal operation.

Chapter Four: Troubleshooting

If the PDU malfunctions, check the list below to resolve the problem. Should the problem persist, call for service.

Situation	Check Items	Solution
Power On LED is not on and there is no output power.	1.Input power cord not plugged in to the wall outlet. 2.Input circuit breaker is tripped. 3.The circuit breaker at the service panel is tripped. 4.No Utility power available.	1.Connect the Input power cord to the wall outlet. 2.Unplug the input power cord and reset the input circuit breaker. Connect the Input power cord to the wall outlet. 3.Unplug the input power cord and reset the circuit breaker at the service panel. Connect the Input power cord to the wall outlet. 4.Contact your local Utility company.
The Power On LED is off, but there is output power.		The Power On LED is defective or there is an internal fault, call for Service.
One of the connect equipment does not turn On.	With a voltmeter, check the output receptacle for an AC voltage.	1.If there is an AC voltage at the output receptacle, check the connected equipment. 2.If there is not an AC voltage at the output receptacle, there is an internal fault, call for Service.
The Overload audible alarm is sounding continuously.	Verify that the combined total of the connected equipment is not exceeding the power rating of the PDU.	Remove part of the load. If this does not correct the problem, call for Service.
The Surge Protection LED is Off.		The Surge Protection LED is defective or the surge protection devices are blown, call for Service.

Appendix

A.1. Specifications

English

Model Number	OEPD815HV	OEPD1415HV
Maximum Load Capacity	12Amps	
INPUT PARAMETERS		
Number of Phases	Single (1∅2W +G)	
Nominal Voltage	120VAC	
Frequency	50/60Hz	
Input Protection	Re-settable circuit breaker	
OUTPUT PARAMETERS		
Nominal Voltage	120VAC	
Frequency	50/60Hz	
Branch Circuit Protection	UL 60950-1	
Circuit Quantity	One	
ENVIRONMENTAL		
Operating Temperature	+32° - +122°F (0° - 50°C)	
Storage Temperature	+32° - +149°F (0° - 65°C)	
Operating/Storage Humidity	0 - 90%, non-condensing	
Operating Elevation	0 to 3,000m (0 to +10,000 ft)	
Storage Elevation	0 to 15,000m (0 to +50,000 ft)	
PHYSICAL		
Input Power Cord	15-feet	
Input Plug	NEMA 5-15P	
Total Output Receptacles	8	14
Front Output Receptacles	2 NEMA 5-15R	6 NEMA 5-15R
Rear Output Receptacles	6 NEMA 5-15R	8 NEMA 5-15R
Rack Mounting Format	Horizontal (1U) Vertical (Zero U)	
Net Dimension (L x W x H)	17.0 x 3.5 x 1.74” (431.8 x 90 x 44.2 mm)	
Net Weight Lbs (Kgs)	4.47 (2.03)	4.93 (2.24)
Ship Dimensions (L x W x H)	20.5 x 7.8 x 2.6” (520 x 198 x 65 mm)	
Ship Weight Lbs (Kgs)	6.0 (2.47)	6.0 (2.67)
REGULATORY COMPLIANCE		
Safety/Approvals	UL 60950-1, cUL (CSA 22.2), CE	

Model Number	OEPD1815V48	OEPD2415V62
Maximum Load Capacity	12Amps	24Amps
INPUT PARAMETERS		
Number of Phases	Single (1∅2W +G)	
Nominal Voltage	120VAC	
Frequency	50/60Hz	
Input Protection	Re-settable circuit breaker	
OUTPUT PARAMETERS		
Nominal Voltage	120VAC	
Frequency	50/60Hz	
Branch Circuit Protection	UL 60950-1	
Circuit Quantity	One	
ENVIRONMENTAL		
Operating Temperature	+32° - +122°F (0° - 50°C)	
Storage Temperature	+32° - +149°F (0° - 65°C)	
Operating/Storage Humidity	0 - 90%, non-condensing	
Operating Elevation	0 to 3,000m (0 to +10,000 ft)	
Storage Elevation	0 to 15,000m (0 to +50,000 ft)	
PHYSICAL		
Input Power Cord	15-feet	
Input Plug	NEMA 5-15P	
Total Output Receptacles	18	24
Front Output Receptacles	18 NEMA 5-15R	24 NEMA 5-15R
Rear Output Receptacles	N/A	N/A
Rack Mounting Format	Vertical (Zero U)	
Net Dimension (L x W x H)	48.0 x 1.63 x 1.5” (1219 x 41.4 x 38 mm)	62.0 x 1.63 x 1.5” (1575 x 41.4 x 38 mm)
Net Weight Lbs (Kgs)	5.51 (2.50)	6.59 (2.99)
Ship Dimensions (L x W x H)	49.2 x 3.7 x 2.8” (1250 x 95 x 70 mm)	64.2 x 3.7 x 2.8” (1630 x 95 x 70 mm)
Ship Weight Lbs (Kgs)	7.0 (3.08)	8.0 (3.43)
REGULATORY COMPLIANCE		
Safety/Approvals	UL 60950-1, cUL (CSA 22.2), CE	

English

English

Model Number	OEPD1020HV OEPD1020HVL	OEPD2420V62 OEPD2420V62L
Maximum Load Capacity	16Amps	
INPUT PARAMETERS		
Number of Phases	Single (1∅2W +G)	
Nominal Voltage	120VAC	
Frequency	50/60Hz	
Input Protection	Re-settable circuit breaker	
OUTPUT PARAMETERS		
Nominal Voltage	120VAC	
Frequency	50/60Hz	
Branch Circuit Protection	UL 60950-1	
Circuit Quantity	One	
ENVIRONMENTAL		
Operating Temperature	+32° - +122°F (0° - 50°C)	
Storage Temperature	+32° - +149°F (0° - 65°C)	
Operating/Storage Humidity	0 - 90%, non-condensing	
Operating Elevation	0 to 3,000m (0 to +10,000 ft)	
Storage Elevation	0 to 15,000m (0 to +50,000 ft)	
PHYSICAL		
Input Power Cord	15-feet	
Input Plug	NEMA 5-20P NEMA L5-20P	
Total Output Receptacles	10	24
Front Output Receptacles	2 NEMA 5-15/20R	24 NEMA 5-15/20R
Rear Output Receptacles	8 NEMA 5-15/20R	N/A
Rack Mounting Format	Horizontal (1U) Vertical (Zero U)	Vertical (Zero U)
Net Dimension (L x W x H)	17.0 x 3.5 x 1.74” (431.8 x 90 x 44.2 mm)	62.0 x 1.63 x 1.5” (1575 x 41.4 x 38 mm)
Net Weight Lbs (Kgs)	5.47 (2.48)	6.99 (3.17)
Ship Dimensions (L x W x H)	20.5 x 7.8 x 2.6” (520 x 198 x 65 mm)	64.2 x 3.7 x 2.8” (1630 x 95 x 70 mm)
Ship Weight Lbs (Kgs)	7.0 (2.86)	9.0 (3.64)
REGULATORY COMPLIANCE		
Safety/Approvals	UL 60950-1, cUL (CSA 22.2), CE	

English

Model Number	OES1015HV	OES1020HV OES1020HVL
Maximum Power Capacity	12Amps	16Amps
INPUT PARAMETERS		
Number of Phases	Single (1∅2W +G)	
Nominal Voltage	120VAC	
Frequency	50/60Hz	
Input Protection	Re-settable circuit breaker	
Surge Energy	2000 Joules	
OUTPUT PARAMETERS		
Nominal Voltage	120VAC	
Frequency	50/60Hz	
Branch Circuit Protection	UL 60950-1	
Circuit Quantity	One	
ENVIRONMENTAL		
Operating Temperature	+32° - +122°F (0° - 50°C)	
Storage Temperature	+32° - +149°F (0° - 65°C)	
Operating/Storage Humidity	0 - 90%, non-condensing	
Operating Elevation	0 to 3,000m (0 to +10,000 ft)	
Storage Elevation	0 to 15,000m (0 to +50,000 ft)	
PHYSICAL		
Input Power Cord	15-feet	
Input Plug	NEMA 5-15P	NEMA 5-20P NEMA L5-20P
Total Output Receptacles	10	10
Front Output Receptacles	2 NEMA 5-15R	2 NEMA 5-15/20R
Rear Output Receptacles	8 NEMA 5-15R	8 NEMA 5-15/20R
Rack Mounting Format	Horizontal (1U) Vertical (Zero U)	
Net Dimension (L x W x H)	17.0 x 3.5 x 1.74” (431.8 x 90 x 44.2 mm)	
Net Weight (Lbs)	4.70 (2.13)	5.53 (2.51)
Ship Dimensions (L x W x H)	20.5 x 7.8 x 2.6” (520 x 198 x 65 mm)	
Ship Weight (Lbs)	6.0 (2.51)	7.0 (2.89)
REGULATORY COMPLIANCE		
Safety/Approvals	UL 1449, UL 60950-1, cUL (CSA 22.2), CE	

Specifications are subject to change without prior notice.
Models ending in “L” indicate a Locking Input Plug.

A.2. Obtaining Service

If the PDU 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 visit our Web site at www.minutemanups.com the "Discussion Board". 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 PDU.
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 PDU is under warranty, the repairs will be done at no charge. If not, there will be a charge for repair.

4. Pack the PDU 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 PDU 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 PDU by insured, prepaid carrier to:

A.3. Limited Lifetime Product Warranty

Para Systems Inc. (Para Systems) warrants this equipment, when properly applied and operated within specified conditions, against faulty materials or workmanship for Lifetime from the date of purchase (certain conditions apply). 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 Lifetime 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 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 the 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.

A.4. Declaration of Conformity

Application of Council Directive(s):
UL

Standard(s) to which Conformity is declared:
UL 60950-1, cUL, UL1449 (UL1449 is for Surge models only)

Manufacturer's Name:
Para Systems, Inc. (MINUTEMAN UPS)

Manufacturer's Address:
1455 LeMay Drive, Carrollton, Texas 75007 (USA)

Type of Equipment:
Information Technology Equipment

Model No:
OEPD815HV, OEPD1415HV, OEPD1815V48, OEPD2415V62,
OEPD1020HV, OEPD1020HVL, OEPD2420V62, OEPD2420V62L,
OES1015HV, OES1020HV, OES1020HVL

Year of Manufacture:
Beginning April 1, 2006

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s).

Robert Calhoun
(Name)

Robert Calhoun
(Signature)

Manager Engineering
(Position)

Date: April 1, 2006

Place:
Carrollton, Texas, USA

NOTES:

English