

INSTRUCTION SHEET

# SERIES PROTECTION™

POWER DISTRIBUTION WITH SERIES  
CIRCUIT PROTECTION

U.S. Patent No. 8,947,844



(PD-915R-SP Shown)

## THANK YOU

Thank you for purchasing this Series Protection™ Product.

## PRODUCT FEATURES

- Non-sacrificial surge technology protects equipment without compromising system ground.
- No MOVs or other degrading parts
- Voltage protection automatically powers outlets off during over/under voltage conditions and automatically restores power when voltage returns to normal
- Thermal circuit breaker overload protection
- Advanced EMI / RFI filtering
- Automatic self-test circuit with front panel indicators
- Universal mounting brackets



# IMPORTANT SAFETY INSTRUCTIONS

READ AND SAVE THESE INSTRUCTIONS!  
*CONSERVER CES INSTRUCTIONS!*

- Contains switched receptacle(s). To reduce risk of shock, disconnect the device from the power source before servicing any connected equipment

*Contient de(s) receptacle(s) commuté(s). Pour réduire les risques d'électrocution, débranchez l'appareil de la source d'alimentation avant l'entretien de tout équipement connecté*

- Do not overload the wall outlet where this device is being connected. Do not overload this device. Ensure the total load to this device does not exceed that which is listed in the specifications section of this manual

*Ne sursurchargez pas le réceptacle de mur ou le circuit qui fournit l'énergie à ce appareil. Ne pas sursurcharger cette appareil. S'assurer que la charge totale à cet appareil ne dépasse pas celle qui est répertoriée dans la section des spécifications de ce manuel*

- Ensure this device is connected to a properly grounded AC power source. Ensure the device is plugged into a source providing the required 120V. Do not use a plug adapter that defeats the ground pin of the AC plug

*Assurez-vous cet appareil est connecté à une source d'alimentation C/A avec mise à la terre. Assurez-vous cet appareil est branché sur une source d'alimentation fournissant les nécessaires 120V. Ne pas utiliser un adaptateur qui contrecarre la broche de terre de la prise du cordon d'alimentation*

- There are no user-serviceable components within this device. Removal of the cover from this device may present a shock hazard, and void the warranty

*Il n'y a pas de composants réparables par l'utilisateur au sein de cet appareil. Retrait de la couverture de cet appareil peut présenter un danger d'électrocution et annuler la garantie*

- To be used indoors in a dry location only

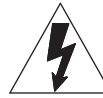
*Pour être utilisé en intérieur dans un endroit sec seulement*

- Do not operate with a damaged cord or plug

*Ne pas faire fonctionner avec un cordon ou une prise endommagée*

- Clean only with dry cloth

*Nettoyer avec un chiffon sec seulement*



## DANGER HAZARDOUS VOLTAGE/DANGER HAUTE TENSION

The lightning flash with the arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

L'éclair avec le symbole de flèche dans un triangle équilatéral est destiné à alerter l'utilisateur de la présence d'une tension dangereuse non isolée dans l'enceinte du produit qui peut être d'une ampleur suffisante pour constituer un risque de choc électrique pour les personnes.



## CAUTION/ATTENTION

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Le point d'exclamation dans un triangle équilatéral est destiné à alerter l'utilisateur de la présence d'importantes instructions d'opération et de maintenance (entretien) dans la documentation accompagnant l'appareil.



**WARNING!** Failure to read, understand and follow the following information can result in serious personal injury, damage to the equipment or voiding of the warranty.



**WARNING!** This equipment is not intended to be used in conjunction with life support systems or life saving devices.



**WARNING!** Do not install a 3-to-2 prong adapter or defeat the grounding capability of the three-wire grounded-type AC plug.



**WARNING!** Do not place power cord in high traffic areas (e.g. hallways, doorways, etc) or where placement would create a trip hazard.



**CAUTION -** Do not install this device near high heat sources such as stoves, radiators, wall heaters or inside any enclosed space without adequate ventilation.



**CAUTION -** Ungrounded power systems are inherently unstable and can produce excessively high line-to-ground voltages during certain fault conditions. During these fault conditions any electrical equipment, including an SPD, may be subjected to voltages which exceed their designed ratings. This information is being provided to the user so that an informed decision can be made before installing any electrical equipment on an ungrounded power system.

For all models except PD-HW15-SP:



**CAUTION:** Do not install this device if there is not at least 10 meters (30 feet) or more of wire between the electrical outlet and the electrical service panel.

## REGULATORY COMPLIANCE

The product meets the requirements of the following standards:

- UL 1283 and UL 1449, 3rd Ed.
- CSA C22.2 No.8-M1986, R2000



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### Federal Communications Commission (FCC) Compliance Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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### Industry Canada (IC) Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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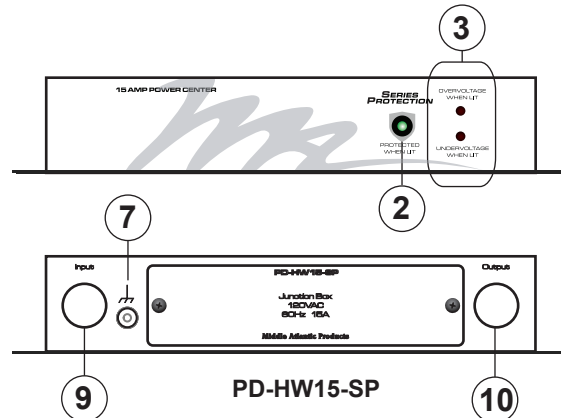
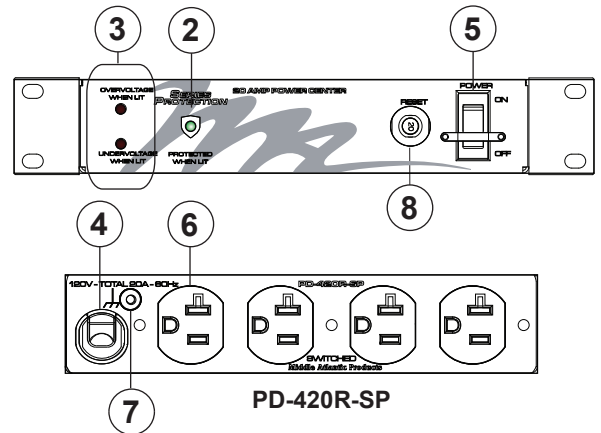
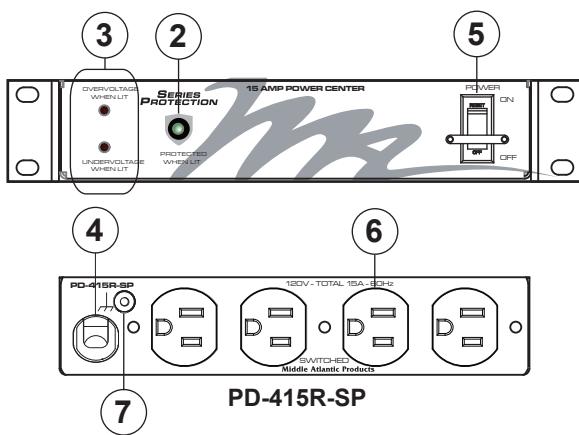
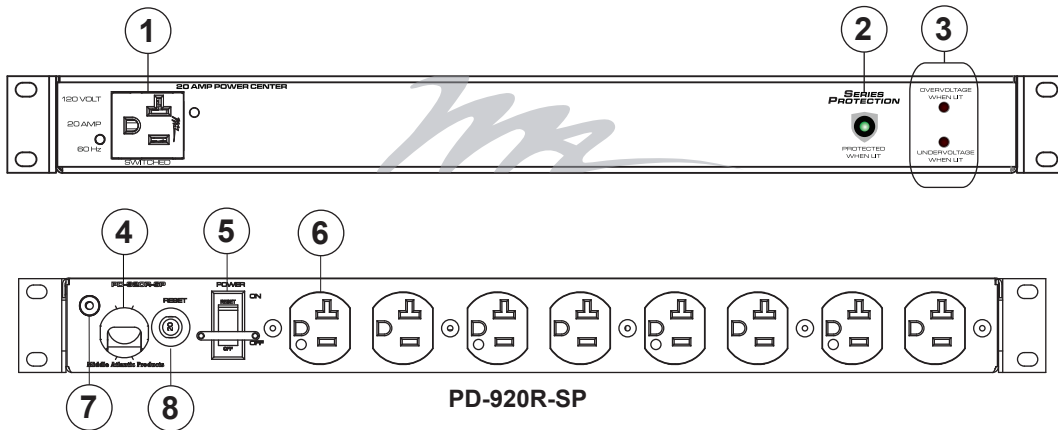
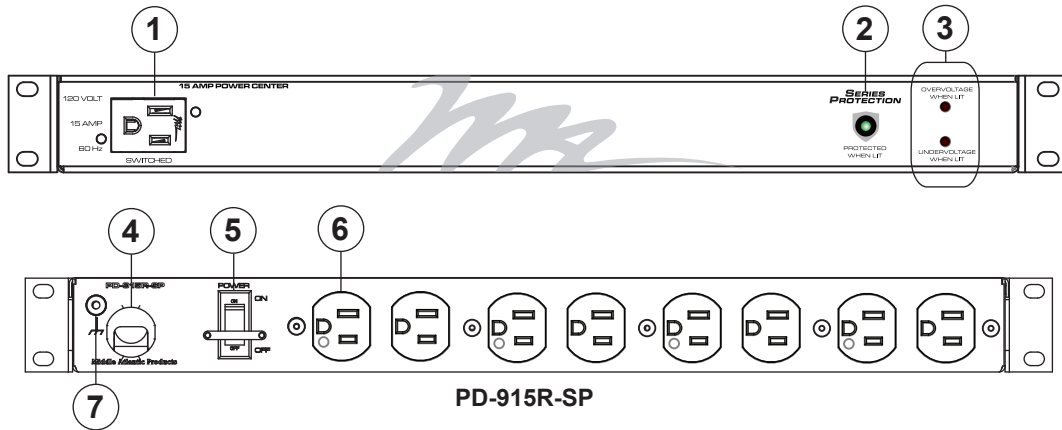
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## INTRODUCTION

Available in 15A or 20A models, and in rackmount, half-rack or hard-wired form factors (15A only), Series Protection™ products provide instantaneous protection of AV systems against damaging surges without contaminating system ground, while also providing automatic recovery after both over- and under-voltage events.

All models are 100% MOV-free and utilize all non-degrading and no sacrificial components.

## CONNECTIONS, CONTROLS AND INDICATORS



## CONNECTIONS, CONTROLS AND INDICATORS (CONTINUED)

### DESCRIPTION

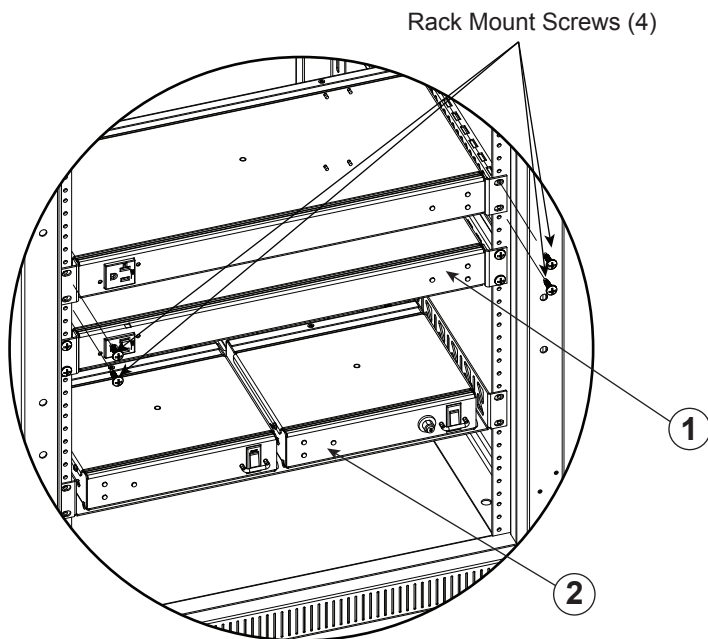
- ① **FRONT CONVENIENCE POWER OUTLET** (REFER TO *MODELS* FOR AMPERAGE RATING)
- ② **POWER LED:** Illuminates green to indicate operational status.
- ③ **OVERVOLTAGE / UNDERVOLTAGE LEDS** Overvoltage LED indicates red when overvoltage condition is present. Undervoltage LED indicates red when undervoltage condition is present.
- ④ **9FT POWER CORD** (EXCEPT PD-HW15-SP)
- ⑤ **POWER SWITCH** (INTEGRATED CIRCUIT BREAKER INCLUDED ON PD-915R-SP and PD-415R-SP ONLY)
- ⑥ **REAR POWER OUTLET** (REFER TO *MODELS* FOR AMPERAGE RATING)
- ⑦ **SUPPLEMENTAL GROUNDING AND BONDING STUD**
- ⑧ **RESETABLE 20 AMP CIRCUIT BREAKER** (PD-420R-SP and PD-920R-SP ONLY)
- ⑨ **ELECTRICAL FITTING OPENING INPUT** (PD-HW15-SP ONLY)
- ⑩ **ELECTRICAL FITTING OPENING OUTPUT** (PD-HW15-SP ONLY)

### MODELS

MODEL NUMBER	CHASSIS	INPUT	OUTLETS	RATING	OVER/UNDER VAC PROTECTION	SURGE MODE	SUPPLEMENTAL OVERCURRENT PROTECTION	SPD TYPE
PD-915R-SP	RACKMOUNT	9ft CORD	9	15A	YES	DIFFERENTIAL (L-N)	YES	3
PD-920R-SP	RACKMOUNT	9ft CORD	9	20A	YES	DIFFERENTIAL (L-N)	YES	3
PD-415R-SP	HALF RACK	9ft CORD	4	15A	YES	DIFFERENTIAL (L-N)	YES	3
PD-420R-SP	HALF-RACK	9ft CORD	4	20A	YES	DIFFERENTIAL (L-N)	YES	3
PD-HW15-SP	STAND ALONE	INT. J-BOX	INT. J-BOX	15A	YES	DIFFERENTIAL (L-N)	NO	2

## INSTALLATION

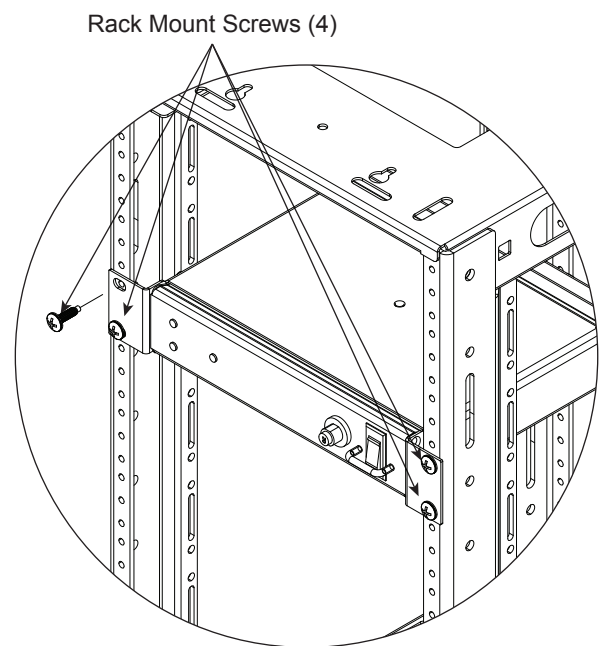
**NOTE:** Any attachment-plug receptacles in the vicinity of Series Protection™ products are to be of a grounding type, and ground conductors serving these receptacles are to be connected to earth ground at the service entrance or other acceptable building earth ground.



1) PD-915R-SP / PD-920R-SP MOUNTED IN A STANDARD 19" RACK

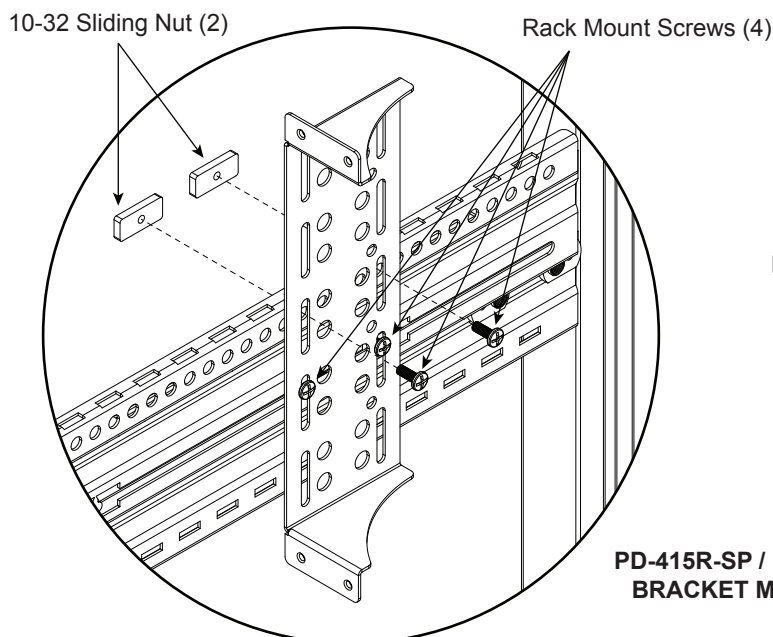
2) PD-415R-SP / PD-420R-SP MOUNTED SIDE-BY-SIDE WITH RACK EARS REMOVED

**NOTE: RACK EAR SCREWS MUST BE RE-INSTALLED IN CHASSIS AFTER RACK EAR REMOVAL**

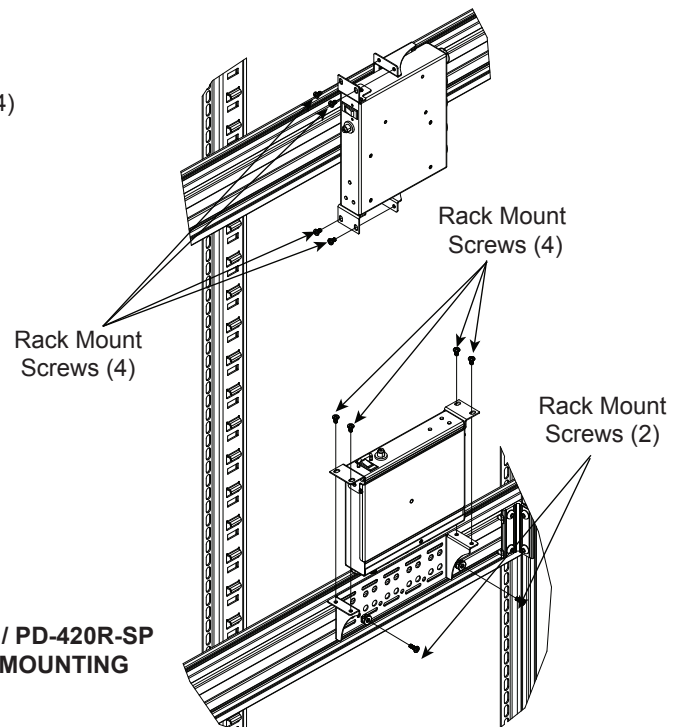


PD-415R-SP / PD-420R-SP

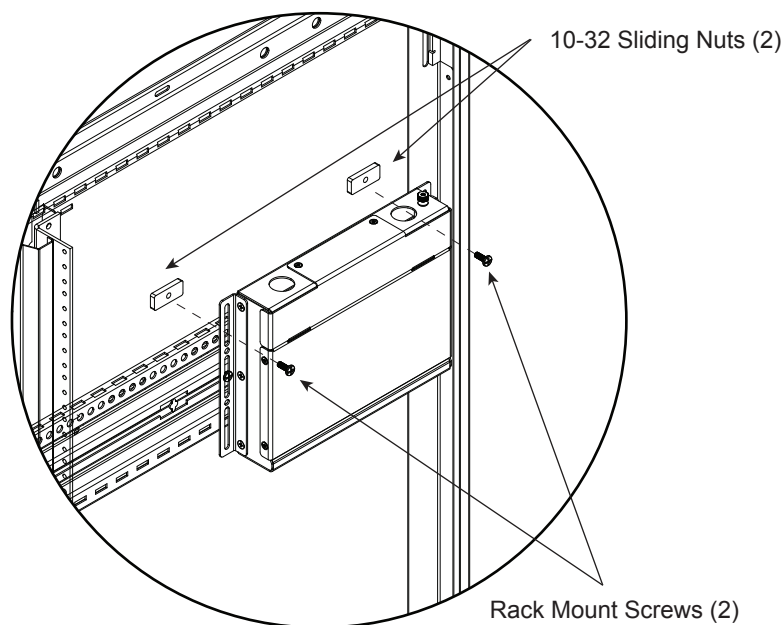
MOUNTED IN A HALF RACK



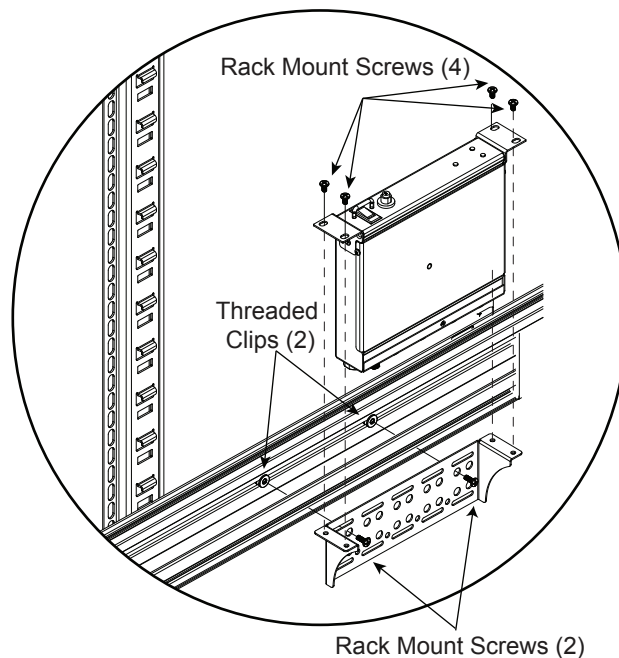
PD-415R-SP / PD-420R-SP  
BRACKET MOUNTING



## INSTALLATION (CONTINUED)



**PD-HW15-SP MOUNTED  
IN A STANDARD 19" RACK**



**PD-415R-SP / PD-420R-SP MOUNTED  
TO VISIONFRAME™ MONITOR WALL**

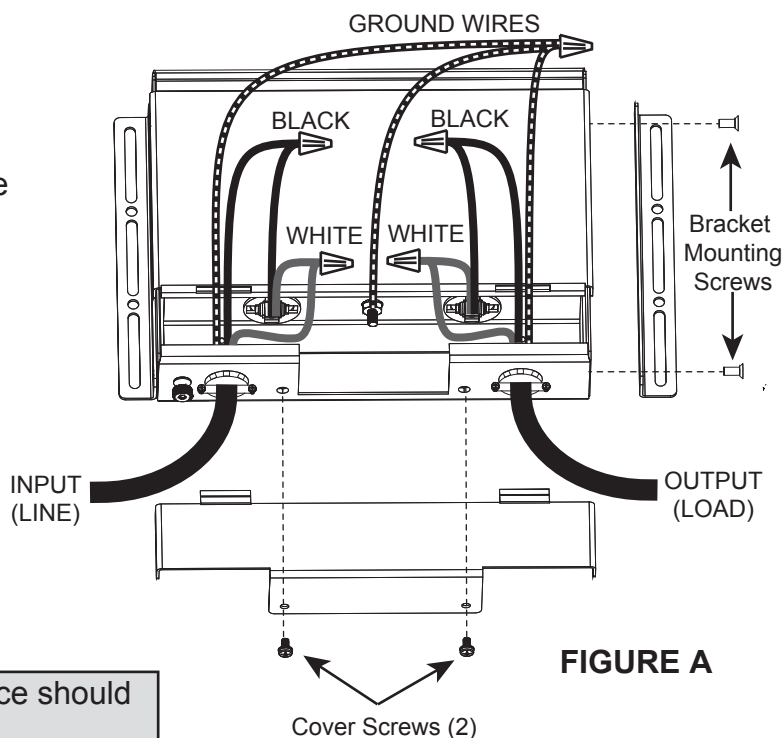
### PD-HW15-SP COVER REMOVAL AND WIRING

**Must be installed by Qualified Electrical Personnel (Licensed Electrical Contractor)**

- 1) Remove two (2) cover screws to access wiring. **(FIGURE A)**
- 2) Wire the device through electrical fitting openings as shown. **(FIGURE A)**

- The input (line) of the PD-HW15-SP must be hardwired directly to an electrical distribution panel.
- The output (load) of the PD-HW15-SP must be hardwired directly to an electrical junction box or other AHJ-approved connection.
- Cord and plug type connections to the PD-HW15-SP are explicitly prohibited.
- Ground conductor must be green with or without yellow stripe(s) and must be connected to earth ground at the service equipment or other acceptable building earth ground.

- 3) Replace cover prior to restoring power.



**FIGURE A**

**CAUTION:** Conductors used to connect device should be as short as possible.

**CAUTION:** To be installed with a minimum of 14 AWG (2.5 mm<sup>2</sup>) wire that complies with local electrical codes.

## SPECIFICATIONS

SPECIFICATION	DETAILS
<b>Load rating @ 120 VAC</b> PD-915-SP, PD-415R-SP, PD-HW15-SP PD-920-SP, PD-420R-SP	15 Amp RMS load @ 120 VAC 20 Amp RMS load @ 120 VAC
<b>Operating Voltage Range</b>	90-150V
<b>Power Requirement (no load)</b>	5 watts
<b>Maximum Ambient Temperature</b>	35°C
<b>Voltage Protection Rating</b>	330V
<b>Clamping Voltage</b>	186V for a nominal line voltage of 132V
<b>UL 1449 Adjunct Classification Test Results</b>	1000 surges, 6000 volts, 3000 amps, B3 pulse. Measured suppressed voltage: 170V, no failures
<b>EMI/RFI Filter</b> Normal Mode (50-ohm load) Common Mode (50-ohm load)	40 dB @ 100 kHz; 50 dB @ 300 kHz; 50 dB @ 3 MHz; 50 dB @ 30 MHz 18 dB @ 300 kHz; 30 dB @ 1 MHz; 50 dB @ 5 MHz; 50 dB @ 20 MHz
<b>SCCR Rating</b>	5000 amps <sup>1</sup>
<b>Maximum Applied Surge Voltage</b>	6000 volts <sup>2</sup>
<b>Maximum Applied Surge Current</b>	Unlimited, due to current limiting <sup>2</sup>
<b>Maximum Applied Surge Energy</b>	Unlimited, due to current limiting <sup>2</sup>
<b>Endurance (662.41-1991 Category B3 pulses)</b>	3 kV > 10,000; 6kV > 1000
<b>Overvoltage Threshold (Outlets only)</b> Upper Limit Cutoff Upper Limit Restore	135V RMS <sup>3</sup> 126V RMS <sup>3</sup>
<b>Undervoltage Threshold (Outlets only)</b> Lower Limit Cutoff Lower Limit Restore	100V RMS <sup>3</sup> 105V RMS <sup>3</sup>

<sup>1</sup> SCCR rating of 5000 amps when protected by a circuit breaker rated: 15 Amps and 120 Volts

<sup>2</sup> 1.2 x 50 µs pulse, industry standard combination wave surge, as per IEEE C62.41

<sup>3</sup> All measurements taken with 0.8 power factor load

## **WARRANTY**

Middle Atlantic Products (the "Company") warrants the Series Protection Power Distribution with Series Circuit Protection to be free from defects in material or workmanship under normal use and conditions for a period of (12) twelve years from date of shipment by the Company.

The Company's entire liability to the purchaser, and the purchaser's (or any other party's) sole and exclusive remedy, under this warranty shall be limited, at the Company's option, to either (a) return of and refund of the price paid for, or (b) repair or replacement at the Company's factory of the products purchased, or any part or parts thereof, which the Company has determined to be defective after inspection thereof at the Company's factory.

This warranty does not cover damage due to acts of God, accident, misuse, abuse or negligence by parties other than the Company, or any modification or alteration of the products. In addition, this warranty does not cover damage due to improper handling, assembly, installation or maintenance.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF THE PRODUCTS PURCHASED, EVEN IF THE COMPANY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE COMPANY'S LIABILITY TO THE PURCHASER (OR ANY OTHER PARTY) HEREUNDER, IF ANY, SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE PRODUCTS PAID TO THE COMPANY.

### **Corporate Headquarters**

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**At Middle Atlantic Products we are always listening. Your comments are welcome.**

**Middle Atlantic Products is an ISO 9001 and ISO 14001 Registered Company.**



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what great systems are built on™

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