

AC to DC Converter/Charger

AC to DC CONVERTER/CHARGER

PM4 models 15, 35, 45, 55, 60, 65, 75, 100 and 120 Amp with Built-in 4 Stage Smart Charging and Fixed Output Modes

Installation & Maintenance Instructions

SAFETY ALERT

FOR YOUR SAFETY, READ ALL INSTRUCTIONS BEFORE INSTALLATION AND OPERATION.

INSTALLER: Provide these instructions to the end user or consumer.
CONSUMER: Keep these instructions for future reference.

NOTICE: Products are not to be used nor are warranted in aerospace, medical or life safety applications.

WARNING – Avoid Possible Injury or Death

120 VAC is present. This Converter/Charger is designed to convert **120 VAC** to **12 VDC**. It also provides low voltage power for charging on-board **12 VDC** batteries. The Converter/Charger is a "*switch mode*" type and is designed to be maintenance-free with no user serviceable components. The Converter/Charger power output is "*current limiting*" by design.

WARNING – Avoid Personal Injury or Product Damage

NEVER store electrical devices in compartments where flammable liquids (such as gasoline) exist.
DO NOT mount/install unit in compartments designed for storage of batteries of flammable liquids.

1. **DISCONNECT DC POWER.** Disconnect the battery POS (+) wire at the battery end before connecting this Converter/Charger to any vehicle/device wiring.

2. **LOCATION.** The mounting location may be on any interior (out of direct weather) surface. Location chosen must be accessible after installation. When mounted inside a cabinet, the cabinet must be large enough to allow dissipation of heated air. Make sure that there is a minimum of 1" (one inch) free air space at each end of the unit so that cooling air can move through the unit properly. AVOID foreign contaminants such as dirt, metal particles or moisture.

3. **MOUNTING.** Flanges with holes are provided for ease of mounting using standard fasteners. Confirm that the surface that the converter is mounted to is solid and will hold the weight (6 lbs) during vehicle operation.

4. **ELECTRICAL REQUIREMENTS.** A **120 VAC** receptacle needs to be located within 36 inches of the Converter/Charger to supply power. Electrical consideration should also be given to mounting near the locations of the batteries and the **12-volt DC** distribution panel.

5. **ELECTRICAL CONNECTIONS**. Be sure to tighten all connections securely. A loose connection can quickly cause terminals and wires to overheat. Review unit labels for recommended terminal torque values.

6. **THE FAN WILL NOT RUN ALL THE TIME. THE FAN IS TEMPETUR CONTROLD AND WILL ONLY RUN WHEN NEEDED**
Never Leave the PowerMax PM4-XX unattended when plugged in.

7. All PM4 Products must be installed by a certified electrician.

WARNING – Avoid Possible Injury or Death

120 VAC Connection – First confirm that the **120 VAC** power source AC circuit breaker(s) are in the off position. **DO NOT** turn-on AC circuit breakers until installation is complete.

- Using an 8 AWG minimum size copper wire, attach from the vehicle/device chassis to the Converter/Charger Bonding Lug.
- Using the attached power cord on the Converter/Charger, connect firmly to the **120 VAC** receptacle

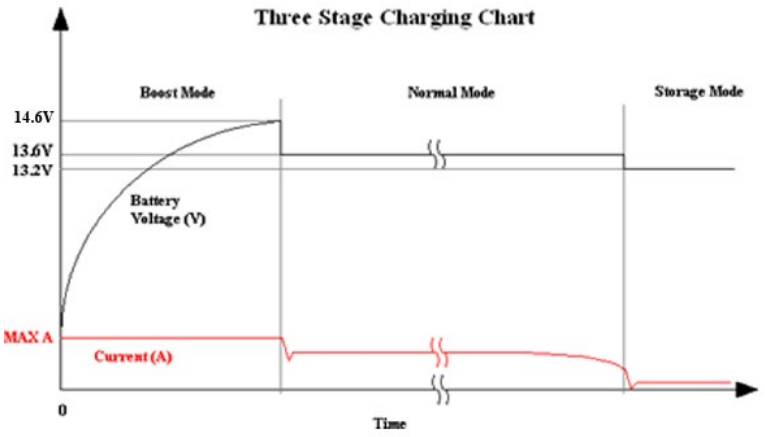
12 VDC Wiring– It is important to use the correct wire gauge. Use a minimum of 8 AWG size copper wire.

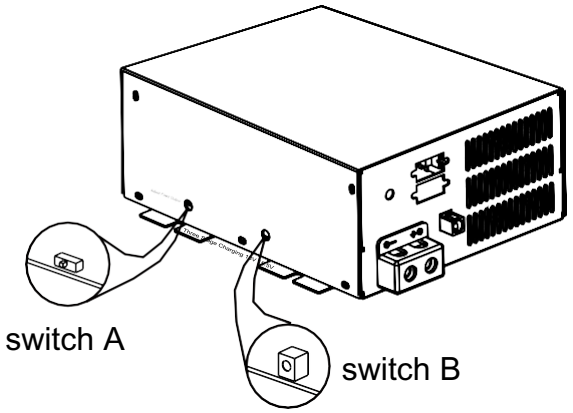
- The terminal marked + or **POS** is for the RV **12 VDC positive** connection.
- The terminal marked – or **NEG** is for the RV **12 VDC negative** connection.
- The **12 VDC** output wiring does not require over-current protection because the Converter/ Charger limits current output. However, all electrical connections need to comply with the appropriate NEC code.

8. **4 STAGE CHARGING MODE:**

This is the Factory Settings with the Smart Charging mode 'ON' with the Output Voltages preset to 14.6V / 13.6V and 13.2V.

DESCRIPTION: This mode provides an automatic charging system in three steps. 1. A fast charge to bring a good, drained battery back up to full voltage rapidly ("Boost"). 2. A standard charge to bring the battery up to a full charge at a safe rate to prolong the life of the battery and provide power to run 12V lighting and appliances in the vehicle/device ("Normal"). 3. A trickle charge to keep the battery fresh during times of load inactivity ("Storage"). The charger automatically changes modes to accommodate changes in conditions. The chart below is for reference only, voltages may vary.





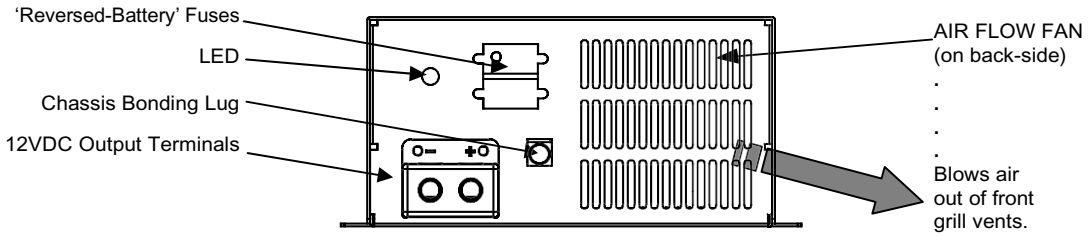
9. **FIXED VOLTAGE Mode:**
DESCRIPTION: This mode can be used to directly power 12 Volt equipment and or maintain the battery at that voltage.
To set in fixed mode, with the unit off, move switch A, right to "Fixed Voltage" then plug the unit into 110V power. Turn switch B gently up or down to adjust the voltage between 13~16.5V until reaching your required output. **NOTE:** The output voltage you set is now fixed constantly at this level every time the unit is powered ON. To return the unit to its Factory Settings, power down the unit then move switch A, left to "Four Stage". Power up the unit and with a voltage meter attached to the output terminals, use switch B to gently turn the voltage up or down until you reach 14.6V. The unit is now back to the standard " 4 Stage Charging" Factory Setting

10. **TEST.** First, disconnect all loads and battery on the Converter/Charger by removing all **12 VDC** connections from + or **POS**. Second, attach a multimeter instrument between the positive and negative terminals of the Converter/Charger. Then energize the **120 VAC** converter circuit. Test for proper output power using the multimeter. Measure the output voltage from the positive and negative terminals. The voltage should read **14.6 +/- 0.2 VDC**. Add **12 VDC** load connections to about 2/3 of the rated capacity of the converter. Recheck the voltage, which should remain approximately the same as at no load. **NOTE**: If the chargers output voltage is set below the battery voltage the charge will not charge plus the LED will not come on.

11. **BATTERY.** With the **120 VAC** disconnected, reconnect the + or **POS** positive terminal to a known good battery. With the converter **120 VAC** energized, measure the voltage at the converter and at the battery. The voltage should be about the same in both locations. As with any battery it is important that the fluid level be checked on a regular basis. When continuously connected to any charging source all batteries will "Gas" and lose some fluid.

⚠ **WARNING – Avoid Personal Injury / Product Damage**

12. **HI-POT TESTING.** (Vehicle/device Manufacturing Facilities Only) DO NOT Hi-Pot DC wiring with the Converter/Charger connected to the vehicle/device wiring in order to prevent serious injury and/or damage.



TROUBLESHOOTING

NOTE: Before removing and replacing the Converter/charger, perform the following checks:

a. Disconnect the AC power from the vehicle/device.
b. Disconnect the wiring and Battery from the Converter Positive [+] output terminal.
c. Re-connect the AC power to energize the Converter.
d. Using a voltmeter, measure the voltage at the Converter [–] and [+] Output terminals.
> The Converter is OK if the voltage reading is between 13 VDC and 14 VDC (typically 13.6 VDC).
> Otherwise check the table below:

CONDITION	POSSIBLE CAUSE
No 12 VDC output	· 120 VAC not connected to coach or the coach AC circuit breaker is in the off position. · Reversed battery fuses blown. (Battery wiring connections are reversed), · Severe overload or shorted load. Remove all loads and retest per above instructions. · Converter/Charger internal failure.
Converter cycles On & Off	· Fan air flow is inadequate or blocked. (1" minimum free air space at each end required) · Converter/Charger internal failure.
Reversed Battery fuses blown	· Battery wiring connections are reversed. Defective · battery, possible bad cells.
12 VDC output is too low	· Attached load exceeds rating of the Converter/Charger. · Defective battery, possible bad cells. · Converter/Charger internal failure.
LED light is not on	· The output voltage of the charger has dropped below the battery voltage. If charging a battery the unit is best to be in its factory starting at 14.6V, unless the Battery Manufacturer recommends otherwise. - Charger internal failure

TWO YEAR LIMITED WARRANTY

Limited Warranty and Remedy: Fieldstone Products, Inc ("Supplier") warrants products it sells against faulty workmanship or the use of defective materials and that such products will conform to published specifications, drawings and other descriptions for a period of two years.

This warranty is the only warranty made by Supplier and is in lieu of all other warranties, express or implied, except as to title, and can be amended only by a written instrument signed by an officer of Supplier.

The liability of Supplier under this warranty is limited solely to replacing, repairing or, at Supplier's discretion, issuing credit for any devices which are returned by Buyer during the schedule period, provided that (a) Supplier is promptly notified in writing upon discovery of any defect by Buyer with a detailed explanation of any alleged deficiencies; (b) the defective product is returned to Supplier, transportation charges prepaid by Buyer; and (c) Supplier's examination of such product discloses to its satisfaction that such defect was not caused by misuse, neglect, improper installation, repair, alteration or accident. In no event shall Supplier be liable to Buyer for loss of profits, loss of use, or damages of any kind based upon a claim for breach of warranty. All PowerMax products must be installed by a certified electrician.

GENERAL DISCLAIMER

In accordance with our policy of continuous product improvement, Supplier reserves the right to make changes or improvements to the products and specifications at any time without prior notice. Prices are also subject to change without notice.

Supplier makes every effort to ensure information provided in our technical literature is accurate and reliable. We cannot, however, assume responsibility for inadvertent errors, inaccuracies, omissions or subsequent changes. We assume no responsibility for the use of this information, and any and all such use of this information shall be entirely at the user's own risk. No patent rights or licenses applicable to any of the products of Supplier's intellectual property described herein are granted to any third party, either directly or by implication, or any other means. Furthermore, despite efforts to ensure otherwise, we make no representation that the information and/or circuitry described herein is free of infringement on any intellectual property rights or any other rights of third parties.

LIMITATION ON THE USE OF PRODUCTS

Products are not designed for and should not be used in any life-support systems, nuclear facility applications, aircraft control applications, or any other applications in which failure of the product, in any way, could reasonably result in harm to life, property or the environment, without the specific prior written consent of an officer of Supplier.

A life support system is defined as a product or system intended to support or sustain life and whose failure can be reasonably expected to result in significant personal injury or death. Nuclear facility applications are defined as any application involving a nuclear reactor or the handling and processing of radioactive materials in which the failure of equipment, in any way, could reasonably result in harm to life, property or the environment.

Fieldstone Products PMB 103 • 11161 E SR 70 STE 110 • Lakewood Ranch, FL 34202
Phone: 941-201-8041 • Fax: 941-405-4930
www.powermaxconverters.com