



AC to DC Converter/Charger

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**PM3 models 55, and 100 Amp and 3 Stage
Charging Option**

Dual AC Input:100-135VAC/190-240VAC

**Dual Battery Type: AGM & Lithium
battery**

Installation & Maintenance



SAFETY ALERT

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



WARNING – Avoid Possible Injury or Death

This Converter/Charger is designed to convert **120 VAC/220VAC** 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

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/220 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. Never Leave the PowerMax PM3-XX unattended when plugged in.
7. All PM3 Products must be installed by a certified electrician.



WARNING – Avoid Possible Injury or Death

120 VAC/220 VAC Connection – First confirm that the **120 VAC/220 VAC** power source AC circuit ☐ position. **DO NOT** turn-on AC circuit breaker(s) are in the 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/220 VAC** receptacle

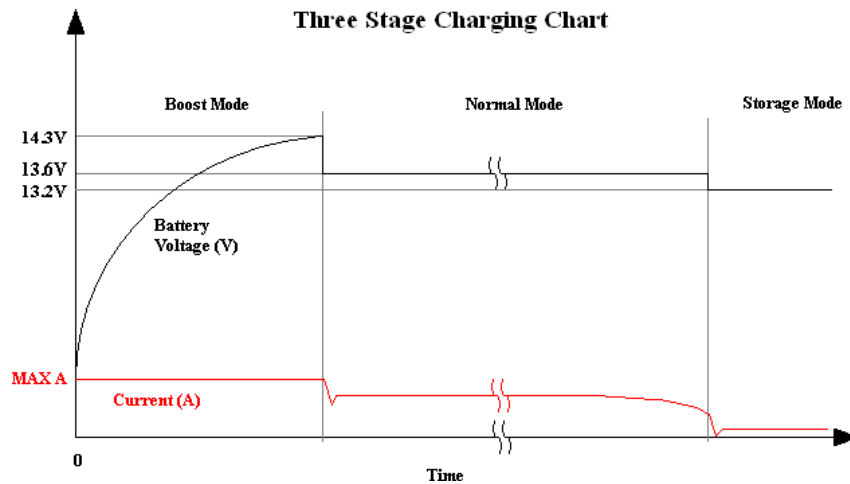
12 VDC Wiring– It is important to use the correct wire gauge. Use a minimum of 8 AWG size copper wire.

- 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.



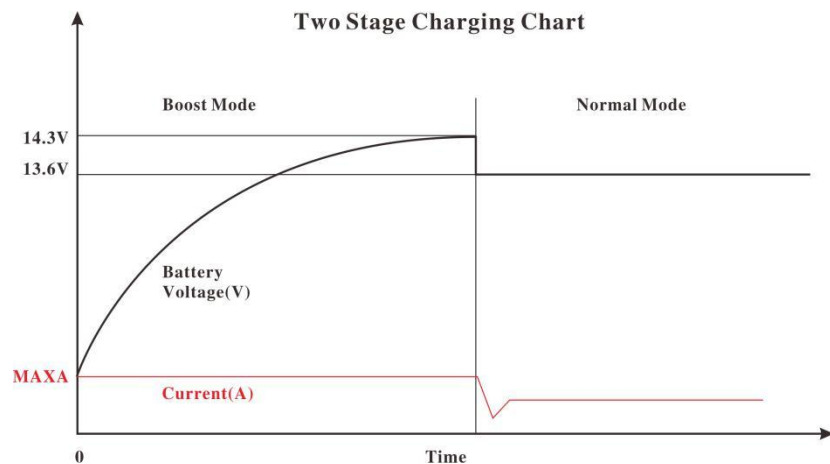
8. 3 STAGE CHARGING MODE – Factory Setting. (Lead-acid battery, AGM battery and Green LED Indicator)

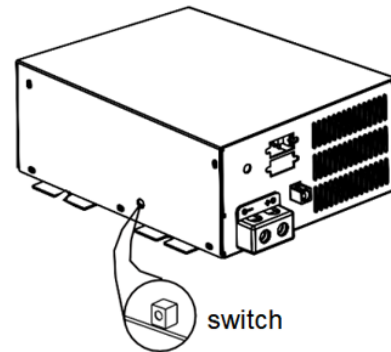
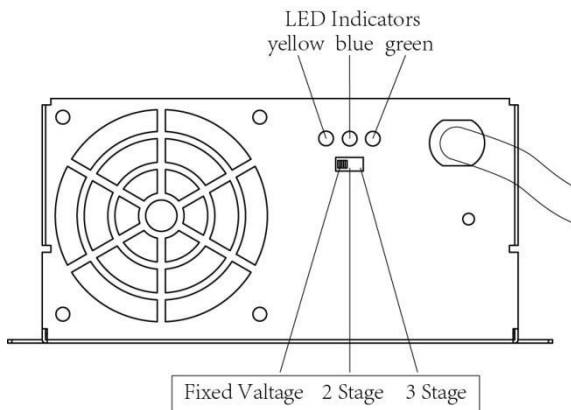
This mode provides an automatic charging system in three steps. 1. A fast charge (Boost 14.6V) to bring a good, drained battery back up to full voltage rapidly. 2. A standard charge (Absorption 13.6V) to bring the battery up to a full charge at a safe rate to prolong the life of the battery and provide power to run 12V lighting and appliances in the vehicle/device 3. A trickle charge (Float 13.2V) to keep the battery fresh during times of load inactivity. The charger automatically changes modes to accommodate changes in conditions. The chart below is for reference only, voltages may vary.



9. 2 STAGE CHARGING MODE. (Lithium battery: LiFePO4 battery and Blue LED indicator)

This option provides an automatic charging system in two steps. 1. A fast charge (Boost 14.6V) to bring a good, drained battery back up to full voltage rapidly. 2. A trickle charge (Float 13.6V) to keep the battery both fresh during times of load inactivity to safely prolong the life of the battery and provide power to run 12V lighting and appliances in the vehicle/device. The charger automatically changes modes to accommodate changes in conditions. The chart below is for reference only, voltages may vary.





10. FIXED VOLTAGE MODE (Yellow LED Indicator)

The option provides a single fixed voltage that can be set between 13V to 16.5V, this provides power to run 12V lighting and appliances in the vehicle/device with or without a battery in-line. To set the unit to FIXED VOLTAGE before powering on the unit move the rear switch left (see diagram above) to "Fixed Voltage", then power up the unit. To change the output voltage gently turn up or down the adjuster on the side of the unit to required voltage. **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 rear switch, right to "Three Stage". Power up the unit and with a voltage meter attached to the output terminals, use side switch to gently turn the voltage up or down until you reach 14.6V. The unit is now back to the standard 3 Stage Charge mode, the Factory Setting.

11. **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/220V AC 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.
12. **BATTERY.** With the 120 VAC/220V AC disconnected, reconnect the + or positive terminal to a known good battery. With the converter 120 VAC/220V AC 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



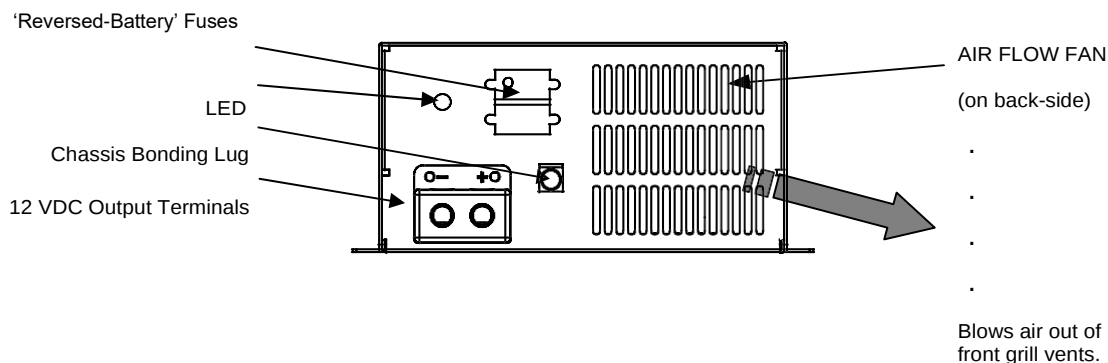
WARNING – Avoid Personal Injury / Product Damage

batteries will "Gas" and lose some fluid.

13. **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:

- Disconnect the AC power from the vehicle/device.
- Disconnect the wiring and Battery from the Converter Positive output terminal.
- Re-connect the AC power to energize the Converter.
- 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.



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