

PowerMax Converter/Charger Operations

Converter Performance – RV

Most RVs are sold with at least one 12 VDC accessory battery installed. The battery is typically a Lead Acid, Gel Cell, or Lithium deep-cycle battery that could sustain a slower power drain. This allows the RV owner to operate the 12 VDC loads in the coach. Examples are lights, pumps, and refrigerators when no shore power is available.

When the RV is connected to AC power, the converter/charger starts charging the battery as needed while at the same time providing clean power to 12V DC loads for use like any normal AC household operation. The PowerMax converter/charger charges the battery as explained below to ensure that the battery is fully charged and ready to go when the RV is disconnected from AC power, or the generator is off.

PowerMax 3-Stage Smart Charging converter/chargers automatically provide Absorption, Bulk, and Float modes, plus a Fixed Mode option.

Bulk Mode

PowerMax converters automatically switch to Bulk mode when a battery is significantly discharged, charging the battery in less time than absorption mode. The 3-Stage Smart Charging monitors the DC line voltage, and when the converter detects the low voltage level, it will automatically boost the converter voltage to 14.4 VDC. Even though the converter has increased voltage to charge the battery faster, it still provides clean 12 VDC power to the equipment in the RV.

When the converter is in bulk mode, the output may not always be at 14.4 VDC output. To measure the 14.4 VDC, reduce some DC loads until 14.4 VDC (nominal) is shown on the meter.

The current from the converter will decrease as the battery charges. When the battery is charged, the PowerMax converter will automatically switch out of bulk mode. To protect and extend the battery life, the converter will only remain in bulk mode for a maximum of four hours.

Absorption Mode

Absorption mode is the default mode, with an output of 13.6 VDC. When the PowerMax converter is connected to a battery in absorption mode, power is available for charging the battery whenever the converter output is greater than the voltage level of the battery. The current draw from the converter to the battery is dependent on the status of the battery. A fully charged battery will draw a minimal amount of current, while a discharged battery will draw a higher amount of current.

While in Absorption mode, the time to charge a battery is also dependent on the DC load in use. For example, a 20 Amp load will allow the battery to charge in about 3 hours, while any additional DC loads will lengthen the time to charge the battery.

Voltage and amperage are relational, once the converter reaches its maximum-rated operating current, an increase in the DC load will decrease the voltage output. The converter will automatically switch to Bulk mode when the 3-Stage Smart Charging senses the need for a higher charging voltage.

Float Mode

Float mode is designed to provide a trickle charge to the battery. If the converter senses no significant changes in the current draw for approximately 44 continuous hours, it will automatically decrease the voltage from 13.6 VDC to 13.2 VDC. This lower voltage will keep the battery charged while the RV is not in use and helps preserve the battery's life while keeping it charged and ready to use. When the PowerMax converter senses a change in DC current, the converter will automatically switch from Float mode to the default Absorption mode.

Fixed Output Mode

PowerMax converters are provided with a selector switch, which allows the converter to be set to a specific output voltage. Once the fixed output mode is selected, this mode can be used to directly power 12 Volt equipment and/or maintain the battery at that voltage. To set it in fixed mode, with the unit off, move the selector switch, right to "Fixed Voltage" then plug the unit into 110 VAC power. Turn the voltage switch gently up or down to adjust the voltage between 13~16.5 Volts 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 the selector switch left to "Three Stage". Power up the unit, and with a voltage meter attached to the output terminals, use the voltage switch to gently turn the voltage up or down until you reach 14.6 VDC. The unit is now back to the standard 3-Stage Smart Charging Factory Setting.