

# Charger/Controller Optimizes Solar Panel Output and Battery Life!

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## Solar Charger Controllers, Desulphators, Panels

When solar panels are used to charge storage batteries (as in recreational vehicles, boats, remote monitoring and many home installations), their limited output under low sunlight conditions leads to seriously shortened battery life and performance. Trying to protect against this creates higher costs, as the typical solution is to increase the size / number of both the panels and batteries. In addition, typical solar controllers, although able to protect batteries from under/over charge, fail to optimize the charge rate capabilities of the solar panels. They also do not remove sulphate\* build-up on the battery's storage plates, causing longer recharge time, boil out and significantly shortened life.

VDC Electronics, Inc. has developed a "Smart" Pulse Width Modulated (PWM) solar charge controller-desulphator known as the BatteryMINDer® model SCC005. In addition to protecting batteries from over-charge, its unique circuitry optimizes the solar panels charge rate, ensuring



batteries are charged in the shortest possible time, keeping them at full-charge indefinitely, without ever overcharging. A patented\*\* high frequency pulse circuit continually desulphates the battery's storage plates, allowing batteries to safely accept the highest possible rates of charge in the shortest time.

Because of its pulse type output and hi-lo temperature compensation, model SCC005 BatteryMINDer® can be used on all types and brands of solar panels and lead acid batteries including deep cycle, and sealed agm.

Model SCC005 is part of a complete battery maintenance system with both the SolarGuard battery condition monitor and a high efficiency 5-watt amorphous silicon solar panel.

\* Sulphate is considered to be the major cause of reduced performance and early battery failure. (Battery Council International [BCI] January 1998)

\*\* U.S. Patent Granted February 6, 2000- Additional patents pending and applied for.

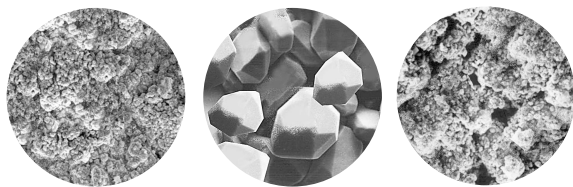
## Scientific basis for de-sulphation process / circuitry

Every element known to man has a magnetic moment at a resonant frequency ie, a point at which the chemical bonds that hold the molecules together to form a crystal can be broken. Sulphation, the number one cause of early battery failure, is simply crystals of lead sulphate (PbSO4) which have formed on the lead storage plates in a lead-acid type battery.

When a battery is improperly charged (over/under) or allowed to self discharge as occurs during storage/non-use, these crystals build up on the battery's storage plates preventing the battery from ever being fully charged and therefore able to deliver their full power/capacity.

VDC Electronics, Inc. has created a simple method of generating the required resonant frequency (3.26 megahertz pulse) to breakdown the lead sulphate crystals, allowing the molecules to return to the battery's electrolyte. By creating a wave form with the required 3.26 Hz frequency, coupled with a very fast rise time and a high amplitude pulse, more energy is developed to breakdown sulphation than by any other method believed to exist. On February 6, 2001 this unique approach was granted a U.S. Patent

Note: Not every battery is a candidate for re-conditioning due to mechanical damage, due to vibration or contamination, which has caused its cells to be "shorted". If however a 12 volt battery has a resting voltage of at least 10.5V and none of the 6 cells are shorted, de-sulphation of its plates can be accomplished.



1. New battery.  
2. Sulphated plates - (note large crystals).  
3. After desulphation using high frequency pulses.