

## 1 Amp Smart Charger Operation / Notes

This charger has a CHARGE ENABLE function. If you connect a battery that has less than 6 V, the charger assumes there is a defect in the battery and it will not attempt to charge. Likewise if you turn the charger on without a battery connected, the charger will not output any voltage /current.

There are two LED's on the front panel. One labeled **CHARGING** and the second labeled **FINAL CHARGE**. Operation is as follows:

**Always turn the AC off before connecting the charger to the battery.**

- 1) With the AC off, connect the charger to a 12V battery that has a voltage of at least 6V.
- 2) Turn on the AC via the front panel, lighted rocker switch.
- 3) The charger will enter the **BULK** mode and the **CHARGING LED** will light. The current will be limited to 1 Amp max. Depending on the battery and state of charge, this current could be less.
- 4) When the battery voltage reaches about 95% of Voc (about 13.7 VDC), the charger will enter the **ABSORPTION MODE** and the **FINAL CHARGE LED** will also light. In this mode, both LED's are lit and the charger elevates the battery to Voc, about 2.4V per cell nominal, 14.4 V total.
- 5) When the current tapers down to about 1/10 Amp, the charger will enter the **MAINTENANCE MODE** and both LEDs will go out. The charger will then issue a charge of 0 (yes, ZERO) to 1 Amp of current as required to maintain the battery at Vf, about 2.3 V per cell nominal, 13.8 V total. Note that the current must decrease to 1/10 A or less for the charger to reach the **MAINTENANCE MODE**.

**CAUTION NOTE:** If you have a battery system with a load current in excess of 1/10A, the charger will never reach the **MAINTENANCE MODE**.

- 6) You may leave the charger connected indefinitely. It will not overcharge (or trickle charge) your battery. If you apply a load in excess of 1 Amp, the charger will self limit and simply contribute 1 Amp to the load. If the load is removed, the 1 Amp will then flow into the battery.

If you plan to use this charger with a constant or varying load in excess of 1/10 Amp, let the charger cycle through the BULK and ABSORPTION modes first without any load. After the charger reaches the **MAINTENANCE MODE**, the load can be applied.

**Always turn the AC off before disconnecting the battery from the charger.**

All voltages values stated are typical at 77°F. The charger compensates for temperature variations. At elevated temperatures, all the voltages are lower. Likewise at colder temperatures, all the voltages are higher. Normal operation assumes the battery and charger are in the same environment.

The Smart Charger **does not** have any timers. All decisions are based on the battery voltage / current. May stay in either of the first two states as long as necessary to achieve a proper battery charge. **Large battery banks may require BULK or ABSORPTION cycles of 100+ hours (days) or longer.**

The charger presents a DC load of **only 175µA**. If the input AC is lost and not restored for a while, the charger will not drain the battery severely.

Both fuses are standard, fast acting, 3AG (1.25L X .25D) fuses. Input is **1/2** Amp. Output is 2 Amp.

**REPLACE FUSES ONLY WITH SAME SIZE AND RATING**