Customer Service - Tech Notes

TechNote #400003

Nov. 19/97

Frequently Asked Questions - TRUEcharge

1) Q. Why does the charger stop every 15 minutes?

A. This is normal. The TRUEcharge will stop charging to calibrate internal current measuring circuit and check for new or disconnected batteries. The TRUEcharge stops for 5-30 seconds, and then resumes charging where it left off.

2) Q. How accurate are the specified absorption/float voltages from unit to unit?

A. Manufacturing tolerance allows +/- 0.15V at no load. Expect up to 0.5V at full output current.

3) Q. Is it possible to use two TRUEcharge's (12V) connected in series to charge two 12V batteries in series (24V system)?

A. Yes, two units having isolated outputs can operate in series to charge a 24V system made up of two 12V batteries.

4) Q. What is the maximum length I can extend the TRUEcharge remote panel wire?

A. Using regular telephone cord wiring you may extend it up to 100ft provided that the environment is not electrically noisy (EMI). A heavier gauge shielded 4 conductor phone style cable would improve the remote panel operation in noisy and/or long distance applications.

5) Q. How vulnerable is the TRUEcharge software/microcomputer to environmental factors such as internal/external noise?

A. So far only a rare nearby lightning strike has been known to damage a TRUEcharge. Occasional glitches from power sources should merely reset the TRUEcharge automatically.

6) Q. Can you adjust the maximum output current, or various voltage settings?

A. The set points and maximums are predetermined, selectable only by changing the battery type/temp switch positions. All settings are stored in the microcomputer, which is not accessible to the end user.

7) Q. What happens during extreme temperature operation?

A. At High temperature (over 110 F/ 44 C) the TRUEcharge cycles on; and off (this is normally noticeable only at higher charge currents). At Low temperature the TRUEcharge will not begin charging until above -5 F /-20 C, although the warranted minimum operating temperature is 32 F / 0 C.

8) Q. When the charger stops charging in the periodic (15 minute) test mode does the orange charging light stay on, or do all lights go off for the no charge time?

A. The lights blink a pattern with 2 current lights on for 1 second, and then another 2 for 1 more second. The Charging LED then re-lights and charging resumes as before.

9) Q. For an "over discharged battery" with terminal voltage below 10.0V, will the charger go into bulk mode (10 / 20 / 40A)? or will it trickle charge to bring the battery up to 11V?

A. Once AC power is connected the TRUEcharge will go straight into Bulk mode.

10) Q. Will a TRUEcharge 20 remote panel work with a TRUEcharge 40, is the label the only difference?

A. The label current indicators markings are the only difference.

11) Q. What do the TRUEcharge 10hw LED's indicate?

A. Bulk mode light on indicates 8 - 10 A charge current.

Absorption mode light on indicates 1 - 8 A charge current.

Float/Ready mode light on indicates 0 - 1 A charge current.

12) Q. Can a battery charger be powered from an inverter so the system can generate 115 VAC, and charge the battery at the same time without shore, or generator power being connected?

A. No, the inverter, wiring, and charger all waste power as the current is moved around the system loop, resulting in quickly discharged batteries. Batteries must be charged from an external source of energy such as an engine alternator, shore powered battery charger, fuel or wind powered generator operating a battery charger, or solar panels.

13) Q. How can I charge a third battery/bank with my two bank TRUEcharge?

A. Although you cannot run the charger output through a "battery isolator diode" as it will interfere with the charger's sensing of the battery charge condition, you could use a "battery combiner" available at WestMarine. A battery combiner is a charge voltage controlled relay which connects two battery banks together when the applied voltage is higher than 13.1V, i.e. when a charger is connected.

14) Q. Why should I mount my TRUEcharge 20 vertically versus horizontally?

A. The TRUEcharge 20 has no fan for cooling, but it does have ventilation holes. If mounted vertically, cool air will enter the bottom vents, be heated by the

charger's internal components, and naturally rise up to exit the top vents, thereby creating a natural air convection which actually improves airflow/cooling. This natural "hot air rising" convection will not occur to the same level if the TRUEcharge is mounted horizontally as the air will not pass through the length of the unit. The improvement would however only be noticeable when operating the TRUEcharge at higher currents, and at elevated ambient temperatures, ie. >90 F / 30 C.

15) Q. Equalization is only up to 5 hrs according to the manual, why did my battery take longer?

A. When you press the Equalization button the TRUEcharge first goes back into a standard charge cycle to ensure a normally fully charged battery. Then it switches into the actual Equalization charge raising the battery voltage to approximately 15.3V with a 5 or 10 A limited charge current. The top up normal charge can take a few hours depending on the battery condition/charge status.

16) Q. The "Charging Current" lights on the charger are dimly lit and seem to flicker, is something wrong with my charger?

A. The charger is operating normally. The charger's microcomputer sends a narrow pulsed signal to the display circuitry 15 times per second when the lights are in the OFF condition. Under low ambient light conditions (in a darkened room down in your boat) the lights may appear dimly lit even though they are actually off. The chargers microcomputer sends a wide pulsed signal to the display circuitry at 15 Hz when the lights are in the ON condition, these lights are brightly light and unmistakably on. The flicker when the TRUEcharge is off is because the computer updates the light status 15 times per second, and our human eyes need at least 30Hz to appear as a "continuous" state.

17) Q. How do I start the equalization charge on my TRUEcharge 20 /40 ?

A. The equalization button is a recessed button, look for a small hole just below the charging light, use a toothpick, hair pin, or plastic pointed pencil through the hole and gently press the button and hold down for 5 seconds until the Ready and Charging lights both light simultaneously. Equalization is a controlled overcharge,

check battery manufacturers recommendations for how often you should equalize your battery.

18) Q. I want to charge a battery that's been sitting in the basement for a few months, but my TRUEcharge 10 won't go out of bulk mode?

A. TRUEcharge 10 amp charger is recommended for batteries in the 25-200 Ahr range. A relatively large battery (or bank), or one which is partially sulfated can exceed the 10A chargers ability to bring the battery to full charge. The charger normally applies 10 amps in bulk mode until the battery's terminal voltage approaches 14.4V (until the FLOODED battery charges up). This point normally corresponds to approximately 70-95% charge state depending on battery capacity and condition. Once 14.4V is reached the charger goes into absorption in which the battery no longer requires the full 10A to maintain the 14.4V, i.e. the charge current drops below 10A until it reaches only 1A or 6 hours laps, then goes into float mode.

If the battery bank is large (e.g. 200-800 Ahr) it will usually reach full charge. However, it will take much longer (perhaps day's in an extreme case) for the battery to reach a 90% charged state. At that point the charge current would drop below 10A and the charger would go into absorption phase to complete the charge to 100%.

If the battery is very large (e.g. over 800 Ahrs) the charger may never approach 14.2V, nor drop below 10A, nor get the battery to the 90% state, since 10A may only be enough to "float" the battery (rather than properly recharge it).

If the battery is partially sulfated (i.e. has been resting in a partially discharged state for more than a week) it may never approach 14.2V, due to sulfation damage, in which case the battery may need to be replaced.

The drawbacks of too small a charger for a given battery are:

- battery may not reach full charge
- very long time to reach full charge
- battery held at higher voltage for longer than necessary, accelerating electrolyte loss.

Ensure battery capacity is within design range of 25-200 Ahr then leave the charger on for 24 hours while monitoring electrolyte and specific gravity levels. If the battery is recoverable the charger will eventually reach full charge, and go into float mode.

19) Q. Does the TRUEcharge drain the battery when there is no AC power available?

A. The TRUEcharge 20, 40 and TRUEcharge 10hw (two bank) use isolation diodes for the two banks which results in drawing less than 1 micro amp drain from the battery, insignificant. This is far less than the self discharge rate of the battery.

The TRUEcharge 10 one bank portable model does not use isolation diodes and draws 12 milliamps when no AC is present. This is comparable to the self discharge rate of the battery. If the charger/battery is disconnected from any other charge source or load the charger will typically drain the battery by 2 Ahr in 1 week, therefore we recommend disconnecting the charger after a week if there is no AC power available for extended periods.

20) Q. Will the TRUEcharge charge a battery that has been discharged to less than 10V?

A. The TRUEcharge 10/hw, 20, 40 will all proceed into bulk mode and attempt to charge at their respective bulk rates (10, 20, 40 amp) regardless of the state of the battery. The TRUEcharge 10 one bank portable model will go into bulk mode with a discharged battery above approximately 3V terminal voltage. Below 3V it will pulse charge current into the battery to attempt to raise voltage above 3V after which it will continue into bulk mode to attempt to finish the charge. If the battery will not accept a bulk charge within 8 hrs it is likely defective and should be replaced.

If you have any questions please call Statpower Tech Support 9 am-5 pm PST (604) 420 1585, or fax in your questions (604) 420 1591.