



## PARALLEL FLOAT CHARGING A LEAD ACID BATTERY

### INTRODUCTION

ICT power supplies have been designed primarily for powering two-way communications equipment. Due to the nature of the electronic design, however, these products will charge batteries without adding any external relays or diodes.

### CHARGING

The method described here is float charging, which is a very simple and effective method of charging a lead-acid or gel cell battery. To float charge a battery, a fixed DC voltage is applied. The more discharged the battery is, the more charging current it will draw. As the battery charges, the current it draws will start to decrease. When charged, only a small current will be drawn.

The voltage applied to float charge the battery is very important. If the voltage is too high, the battery will overcharge and heat up, possibly damaging the battery and shortening the service life. If the voltage is too low, the battery will not charge fully. The correct float voltage varies by manufacturer, and will be provided in the battery specification literature. If this information is unavailable, the general guideline for float charging a standard lead acid battery is to apply 2.275 Volts per cell. For a 12V battery, this works out to 13.65VDC. ICT power supplies can be trimmed to this voltage by adjusting the internal potentiometer.

When the power is off, the battery will directly power the load. The user may want to add a fuse to the battery or load connection for additional protection. When AC power is restored, the power supply will float charge the battery while powering the load. As the battery and load are connected in parallel, there is no interruption in power to the load.

### CONNECTION

Make sure that the output voltage of the power supply is set to the correct level for the battery as described above. To hook up the battery and radio, connect both of them to the plus and minus terminals. This allows an instantaneous back-up in the event of AC power failure.

### IMPORTANT

**Always unplug the power supply before removing the cover. Dangerous internal voltages may be present for several minutes after the power supply has been turned off due to stored energy in capacitors. Servicing should only be done by a qualified technician.**





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### FLOAT CHARGING SUMMARY

Advantages:

- ▾ Low Cost – the only equipment required is a standard power supply.

Disadvantages:

- ▾ Float charging is also the slowest method of charging a battery. The battery will have to be sized to take into account how long the charge cycle can be.
- ▾ The battery is never charged to 100% capacity. Applying a fixed float voltage to a battery will typically charge it to 90–95% in a reasonable time period depending on capacity.
- ▾ There is no control over the amount of charging current going into a battery. Battery manufacturers have recommendations for maximum charge currents to avoid improperly charging and possibly damaging the battery. By connecting a battery directly to the power supply terminals, it will draw a current based on how discharged it is. A severely discharged battery will draw excessive currents that may exceed maximum charge currents. This problem is usually resolved by specifying a battery (or battery bank) large enough that it will not discharge fully during a typical power failure.

**ICT's Battery Backup Series offer a cost effective way to add battery backup capability to your existing system. Any 12 Volt source can be used. These modules limit charging current, provide instantaneous switchover, and feature low voltage disconnect to protect the batteries.**

**ICT's Charger Series offers a complete battery charging and battery backup solution.**

Contact us for more information about our ICT Charger Series and our ICT Battery Backup Series.

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