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Ultra-Balancer

2-6 CELL LITHIUM POLYMER BATTERY PACK BALANCER

Part# UB-26

Overview

The basic function of the Ultra-Balancer is to identify the voltage of each cell within a Lithium Polymer battery pack and to bleed voltage off the higher voltage cells until they are equal to the lower voltage cells. When used as a balancer during charging, this "bleeding voltage" process slows the charging rate of the higher voltage cells so the lower voltage cells can "catch up" to the higher voltage cells.

Features

1. The Ultra-Balancer is designed to balance the voltages of the individual cells in a Lithium Polymer pack comprised of 2-6 cells.

2. The Ultra-Balancer functions include: measuring lithium battery voltage range, determining whether "fast charge" or "slow charge" rate is needed and performs balance functions to protect battery pack life.

3. The Ultra-Balancer can detect individual cell voltages of the battery pack, and perform balancing functions during charging or it can operate as a stand-alone balancer used prior to charging.

4. The Ultra-Balancer connector pin spacing fits most brands of Lithium Polymer packs in the marketplace.

5. You can use the Ultra-Balancer prior to charging to balance the voltages in the individual cells (provided the cells are above 3.7 volts).

6. The Ultra-Balancer can be used for balancing "during" charging by plugging the Ultra-Balancer onto the charge / balance connector at the same time that you are charging the pack through the batteries discharge leads.

7. The Ultra-Balancer has two sets of LED's. There are six discharging indicator LED's. One for each cell in the pack. When the LED is lit for a specific cell, that cell is being discharged at a rate of 150mAh. There are also three voltage status indicator LED's that display the following information:

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1) Yellow light on - means that the voltage of at least one cell in the pack is below 3.2 volts, therefore, the battery pack should be charged at a slow charge rate of .3 amps or less.

2) Green light on - means that all the cells in the pack have a voltage level between 3.2V - 3.7V, and therefore, a normal charging rate of up to 1C is acceptable;

3) Red light on - means that all the cells in the pack have a voltage level between 3.7V - 4.15V.

4) All status indicator lights are off--- means that the voltage of at least one cell in the pack has a voltage level above 4.15V.

Operation

Connection – The Ultra-Balancer has positive (Red) and negative (Black) signs marked clearly on the circuit board near the connection pins. Always attach the balance connector on the battery pack to the Ultra-Balancer with the negative wire on the battery pack positioned closest to the negative sign on the Ultra-balancer circuit board as shown in the example below.

You can attach the Ultra-Balancer to your battery pack prior to charging. When you first plug the Ultra-Balancer onto your pack, all cells that are 3.2 volts or higher, will have their corresponding LED lit for 5 seconds. Look at the status indicator lights and determine whether slow charging (below .3 amps) is required (Yellow light on). If the green or red status indicator light is on, it is indicating that it is OK to charge at a "normal" charge rate of up to 1C.

After this initial connection, it is always a good idea to disconnect the Ultra-Balancer and take a reading of the individual cell voltages to determine the degree of imbalance in your pack if any. If there is no imbalance (cells are within .05 volts of each other), proceed to charge with or without the Ultra-Balancer attached.

If an imbalance condition exists, plug the Ultra-Balancer back onto your pack and let it perform it's balancing function during charging. During balancing, the discharge LED(s) for the higher voltage cells will stay lit or cycle on and off indicating that the Ultra-Balancer is reducing the voltage of those cells. When the pack is balanced, all the discharge LEDs will be off and only once in a while will an LED light up.

Remove the Ultra-Balancer from your pack and again take a reading with your digital voltmeter to now confirm that the pack is in balance. Proceed to charge the pack with or without the Ultra-Balancer attached.