Astro "Blinky"
123 Battery Balancer
p/n 106-123

- **This Battery Balancer is specially designed for 123 Batteries.**
- **The balancer accepts one to six cell 123 battery packs.**
- **Now you can see if all cells are above 2.8 volts before charging.**
- **Now you can Balance your pack while you are charging.**
- **Now you can Balance your pack after you are finished charging.**
- **Now you can Discharge individual cells that are over charged.**
- **Now you will know that your batteries are balanced.**
- **Connector has 0.100 in pin spacing with 0.025 square pins and fits Apogee and other brands. Pins should be in order of Voltage, for example on a 3 cell pack black = negative, 1st white = 3.6 volts, 2nd white = 7.2 volts, red = 10.8 volts. There should be no gaps or missing pins in the sequence.**

Using Your New Balancer

Low Voltage Check. First connect the Balancer to the Lithium pack. Connect the most negative connection on the battery to the most negative pin on the balancer. If all cells are 2.8 volts or more all LED's will turn on and remain lit for three seconds. If you have a three cell pack the first three LED's will turn on. If one cell in your pack is low and has less than 2.8 volts, then it's LED will not turn on. This means that your battery pack has been discharged too far. DO NOT CHARGE FAST!! Set your charge rate at 0.250 amps and wait until the LED's begin to blink again. This indicates that at least one cell has reached 2.8 volts or more. Disconnect balancer and then reconnect for another Low Voltage Test. Repeat as needed until all LED's turn on for three seconds indicating that all cells have at least 2.8 volts. Then you can proceed to charge normally.

Balancing While Charging Connect the balancer and wait for the low voltage check. If all cells show 2.8 volts you can proceed with a normal charge sequence. The LED lamps will remain off until one cell reaches a voltage of 3 volts. Then balancing will begin. By the time the charge is complete the pack should be balanced. If the cells blink at random the pack is closely balanced. Let balancing continue until all LED are off. Your pack is now totally balanced. If a few LED's remain on all the time these cells have a higher voltage than the other cells and your pack needs more balancing. When the charging is almost complete some or all of the LED's may blink as the charger turns on and off during near the end of charging. This is OK.

Balancing After Charging Connect the Balancer to the pack. The balancer will begin discharging every cell that has more than 3.6 volts. When all cells are 3.6 volts or less then the balancer will begin balancing to the lowest cell. When all the LED's turn off or when they occasionally blink at random, then the pack is balanced.

Blinky Operation at different voltages.

The Low Voltage Threshold is 2.8 Volts. When first connected, the Blinky will turn on one LED for every cell above 2.8 volts. The LED's will remain on for about 3 seconds. If there are fewer lit LED's then the number of cells in your battery pack DO NOT CHARGE FAST!! Charge at only 1/10 the rated cell capacity. For example charge a 2300 mahr pack at 250 milliamps.
The dormant Region is between 2.8 volts and 3 volts. After the first three seconds all the LED'S will be off if your cells are between 2.8 and 3.0 volts.
The Balancing region is between 3 volts and 3.6 volts. The Blinky will measure the voltage of each cell and repeat the measurement every 2 seconds. It will determine the lowest voltage cell and discharge the other cells at 150 milliamps until a balance is reached. As the pack gets close to balance the LED's will begin to blink and jump around. Finally when completely balanced all LED's will be turned off.
The Over Voltage region is 3.6 volts or more. If the Blinky detects any cell to be over 3.6 volts, that cell will be discharged down to 3.6 volts. This is indicated when one or more LED'S is turned on at the end of charge. Just disconnect your pack from the charger and let the Blinky discharge the high voltage cells.

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Balancing 123 Battery packs with standard connectors