

# Guide for BMS Replacement - Ecity Lithium Iron Phosphate Renaissance Bicycle Company

November 2008

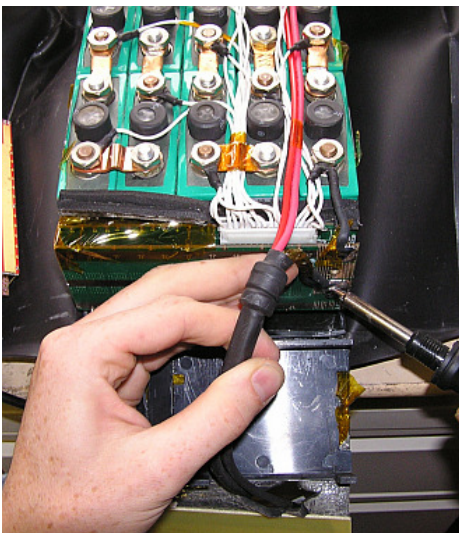
This guide is intended for customers having problems with their Ecity lithium iron phosphate packs.

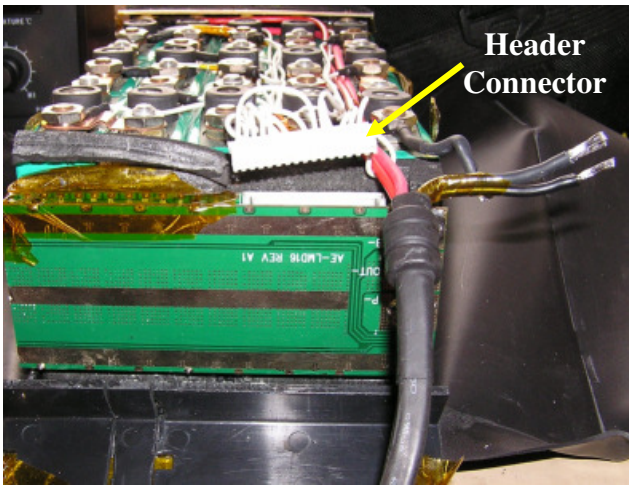
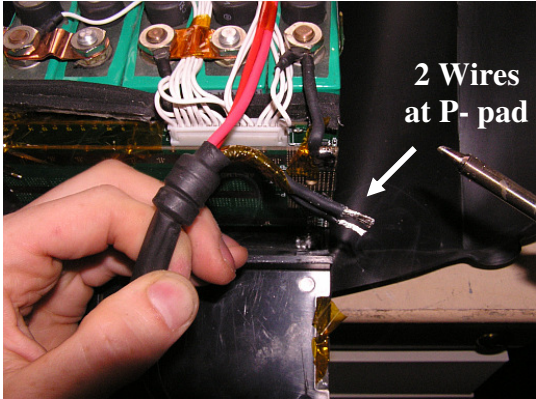
1. Use scissors or a utility knife to cut battery heat shrink open. To avoid slicing through battery cells or shorting metal with your cutting tool, orient the battery so that you are cutting against the fibreglass cover.



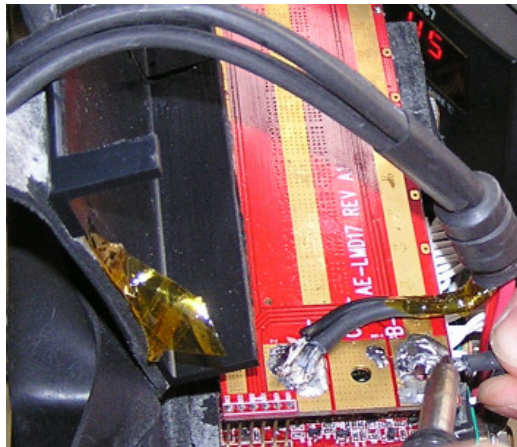
2. With the pack open, verify using a voltmeter that all cells are at least 1 volt. Cells less than 1 volt may recover fine but they may also be at risk of damage, in which case a cell replacement is necessary.

3. Locate the BMS at the end of the pack and disconnect the white header connector. De-solder both the B- (battery minus) and P- (pack output minus) leads from the BMS. Remove the BMS and make sure to leave the protective foam on the battery cells for the new circuit.





4. Pre-tin the pads on the new BMS and place the new BMS on the pack and re-solder the P- and B- leads to the BMS. Reinforce the traces that run to the bank of mosfets with heavy wire or additional solder. This is particularly important if you are using a 35A or higher amperage controller.



5. After soldering is complete, connect the white cell connector to the BMS.

6. Verify all nuts on the tops of the battery cells are tight with a socket set. Loose nuts can cause battery pack problems down the road. Avoid using a wrench to tighten nuts since it is quite easy to accidentally short battery cells through the wrench handle.

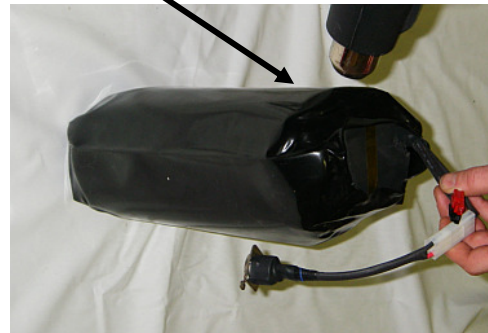
**Tighten Nuts  
using a socket set,  
not a wrench.**



7. Apply heatshrink. Here are a couple of useful techniques:

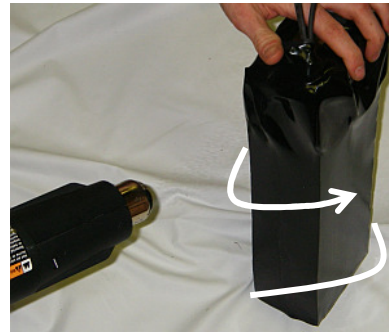
- a. Slide the heatshrink over the pack and heat one end of the pack. Once it begins to shrink turn the pack on its end and allow the weight of the pack to seat heatshrink at that end.
- b. Next, apply heat to the opposite end of the pack to anchor it in place as well.

**First, apply heat at  
both ends to anchor  
the heatshrink**





- c. After the heatshrink is anchored on both ends, apply heat to the body of the pack by starting at the bottom and spiraling your way upwards towards the opposite end. This will ensure a uniform and tight shrink job.
- d. Finally, trim excess heatshrink at either end if necessary.



**Spiral from  
bottom to top**

8. After the new BMS is connected, charge your battery up. With regular use it will automatically balance the cells. Balancing occurs fastest at the end of the charge cycle when the pack voltage is highest, but will occur all the time.

**Caveat** - Remember that the replacement BMS circuit will self-discharge the pack so do not let it sit in a flat state. If your battery is not in use, charge it about once a month to prevent self-discharge from bleeding the cells all the way down to zero volts.