

Parallel charging and balance boards

These made no sense to me at all. How can several batteries be charged and balanced off one lead? Surely each must be charged and balanced to its own voltages. But people assure me that a board like this from Hobby King actually works. So I decided to see if I could figure it out.



Charging

Let's say we have four 3S batteries. When connected each will have different overall voltages, say 11.00, 11.32, 11.20 and 12.01. Plug them all in and what happens? Two effects. First the charger will start to pump charge into all of them. Secondly the higher voltage batteries will discharge into the lower voltage ones. That makes sense. All eventually will settle to the same voltage.

Balancing

Is the same thing going on at balance level? Can we extend the above argument to the four sets of three cells. I suppose the higher voltage cells will discharge into the lower until they are the same.

How long does it take?

So I can now see how it can happen. However logic tells me that this is all going to take a long time as the current produced by small voltage differences will be small. Is there an optimum number of cells? Maybe with two batteries it would be quicker to charge them separately. Maybe not for three. Does anyone know? I'm not asking for a scientific study but an impression.

Peter Scott © 2020

Last edit 19 November 2020