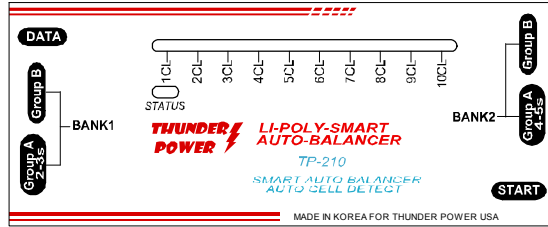


TP-210V LITHIUM POLYMER BALANCER

User's Guide

TP-210V advance balancing technology provides active balancing and safer charging for your Li-Poly batteries, it is important to read the manual and use the balancer correct. Use this balancer for 2 to 10 cell pack.



Features:

- 1 Auto cell detect for any 2 to 10 cells pack
- 2 Check and display battery conditions
- 3 Imbalance voltage warning
- 4 Over voltage warning
- 5 LED(s) display each cell in bleeding/balancing
- 6 Alerts full and over charge status
- 7 Provided data port to interface to TP-charger or other options

Auto Checking battery pack conditions:

- 1 Plug Li-poly Pack into the Balancer connector.
 - A. Must connect either Bank 1 Group or Bank 2 group.
 - B. If higher than 5 cell pack, the group A and B used for single multi connector pack.
 - C. If the pack has dual 6pin connector, please find which is group A or B.
- 2 Press "START" button to displays battery pack conditions as below:

A: Imbalance under 0.03V: yellow status LED "on", red LED(s) "on" for 5 seconds
Proceed with normal charging
If yellow status LED "flashes", pack average voltage is below 3.6V

B: Imbalance 0.03 to 0.2V: yellow status LED "off", red LED(s) flash for 5 seconds
Charge at 0.3A to balance the pack or proceed carefully with 0.5C charge.
If yellow status LED "flashes", pack average voltage is below 3.6V
Proceed with normal charging

C: Imbalance over 0.2V: yellow status LED "off", red LED(s) flash for 60 seconds
Battery may require repair (Keep battery plug into the balancer for auto self balance, do not charge battery until bleeding/balancing stop)
If imbalance remain $>0.2V$, balancer continues beeping every minute for 10 seconds.

If yellow status LED begins flashing, pack average voltage has dropped to below 3.6V
You may charge the battery at 0.3A and monitor charging for one hour, if the beeping stop but bleeding continue, unplug the charger and balancer to retest the pack with balancer.
If beeping continue, you need professional help.

Additional audio alert:
Cell voltage below 3.2V, audio beeps for 5 seconds

** Note: when the "START" button pressed again, the checking display will be repeated.

<Charging battery pack>

- 1 After checking the battery, connect the battery power lead to the charger, select charge rate according to battery capacity and battery condition (see previous page)
- 2 Full charge alerts: Double beeps 6 times, repeats 2 times every 30 seconds, "STATUS LED" solid on (Stop charge or wait until charge is completed)
- 3 Over charge warning (Any cell voltage over 4.3V): Double beep and "STATUS LED" flash (**Please stop charging immediately**)
- 4 Imbalance over 0.2V while charging: Cell LED(s) are flashing and beeping for 10sec, this will be repeated every minute until conditions change(reduce charge rate to 0.3A and carefully monitor charging condition)

<Charging with pulse charger (Astro 109)

1. Charge completion alerts may be activated during phase 3 (double beeps 6 times)
2. Verify the cell count setting, if correct, you may continue charging until charge finish

<Auto self Balancing>

1. Plug balancer connector to balancer- do not charge battery
2. Balancer will bleed/balance if balancing is necessary(LEDs flashing)

<Precautions>

1. **Do not connect BANK-1 and BANK-2 connectors at a same time**
2. **Do not connect 2 balancers to a single pack**
3. Do not use in a vehicle
4. Do not use in direct sun light
5. Do not use when ambient temperature is extremely high
6. Use and store in a dry environment
7. Un-plug balancer from the Li-poly pack when not in use.
8. Do not use both bank groups

<Specifications>

- 1 0.1% reference voltage controlled by micro-computer chip
- 2 Balance cells: 2 to 5 cells in series
- 3 Balance start voltage:4.1V or 3.2V for >0.03V imbalance
- 4 Bleeding current: Max 450mA
- 5 Imbalance control voltage:+/- 0.005V
- 6 Under voltage warning: 3.3V +/- 0.01V
- 7 Over voltage warning: 4.3V
- 8 Full charge indicator: One or more cell 4.2V and all others within 0.01V
- 9 Size:4.0" x 1.72" X 0.72"(102 x 44mm x 20mm)
- 10 Auto self balance +/- 0.005V(cell voltage >4.1V/cell)
- 11 Auto self balance +/- 0.015V(cell voltage <4.1V/cell)

BANK 1 and BANK2

Both bank groups shared internal pin connections. **Do not use both BANK 1 and 2 at a time.**

Please label Group-A and Group-B to your pack when the pack has multi-connectors. (Labels include).

If swapped GROUP connection will make an error message. (flashing GROUP-A connected cell # LED)

The more details are shown Fig-1.

Warning: Do not connect both Bank 1 and Bank 2 any battery pack. (IBank1 & bank2 share pin connections internally).

Table-1:

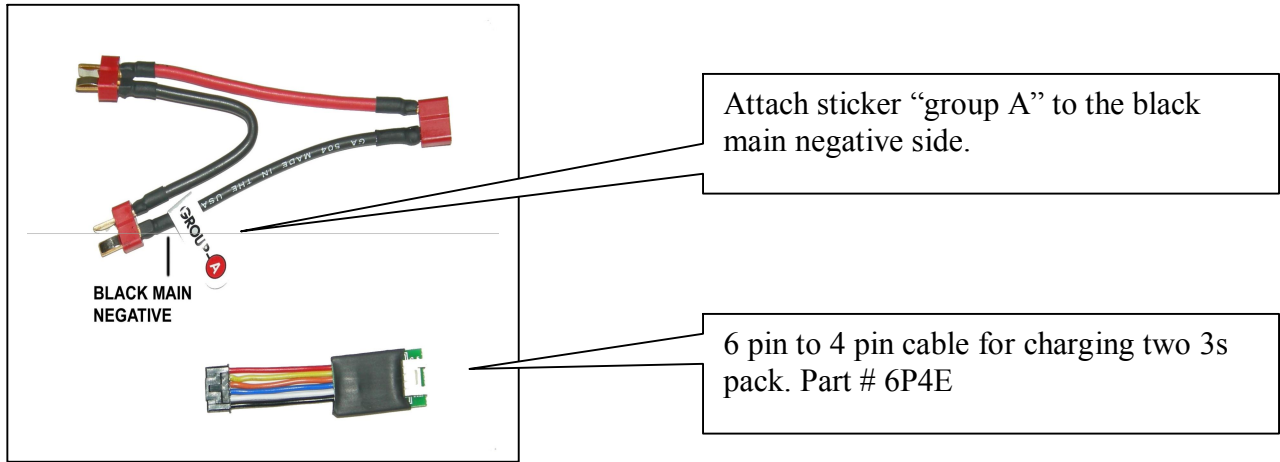
Bank #1	Group-A	4 pin header	Used with 2s & 3s pack s	Used for 6s,7s,8s packs (multi-connector pack)
	Group-B	6 Pin header	Must used in conjunction with Group-A	
Bank #2	Group-A	6 pin header	used 2s to 5s pack	Used for 9s,10s packs (multi-connector pack)
	Group-B	6 pin header	Only used with Group-A	

WARNING !!!

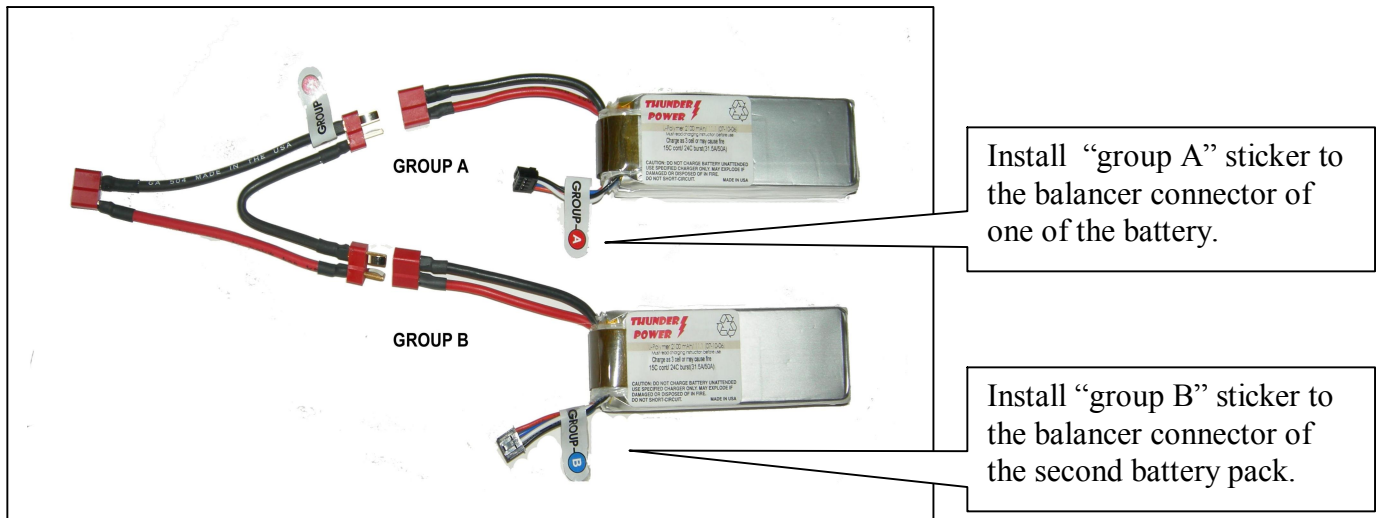
When charging 2 battery packs in series, you must use a marked Y-series connector. Both power leads and balancer leads must be wired correctly every connection.

If wire connection is incorrect, it will cause damage to balancer.

1) Attach a “group A” sticker to the black main negative lead of your Y-series connector(not the negative jumper wire) See picture below.



2) Install stickers provided from your balancer package to battery packs to be used in series. Provided from you balancer package.



Proper connection (if connected incorrectly you will damage the balancer)

Both battery packs intended to charge in series must be connected to the y-series harness first.

Connect battery pack “group A” to “group A” of the y-series connector, connect “group B” pack to “group B” of the y-series connector.

Make sure the “group A” balancer connector is connected to “group-A of the balancer.

Make sure the “group B” balancer connector is connected to “group-B of the balancer.

(Fig-1) Bank and groups wiring diagram

