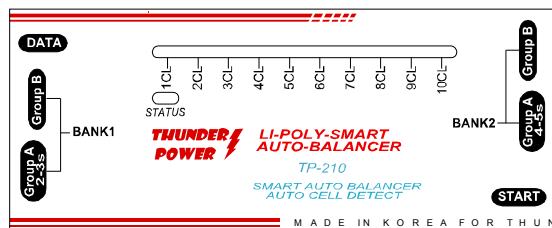


## TP-210V LITHIUM POLYMER BALANCER

### User's Guide

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



#### Features:

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

Auto Checking battery pack conditions:

- 1 For 2 or 3 cell packs, connect battery to bank 1/group A
- 2 For 4 or 5 cell packs, use bank 2/group A
- 3 For a single 6, 7 or 8 cell pack with two balancer connectors, connect battery to bank 1/group A & B
- 4 For 10 cell pack with two 6-pin connectors, connect both connectors to Bank 2/group A & B

\*\* To Identify Group A and Group B for a 10 cells pack:

First connect one of the balancer connectors to Bank 2/group A and press start button, 5 Leds "on", then connect the second balancer connector to Bank 2/group B, if all 10 Leds "on"(you just select the correct port, please use the provided sticker to label the pack connectors)

If only 5 Leds "on" and balancer beeps, please reverse the connection

- 5 For two 5 cell packs in series: A Y-series connector must be used, please attached a group A sticker to its negative terminal, the pack connected to it will become group A (you must connect its balancer connector to group A)

Press "START" button to display battery pack condition 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 for 5 seconds, pack average voltage has dropped to below 3.6V

**You should avoid deep discharge to this level.**

**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.

**C: Imbalance over 0.2V:** yellow status LED "off", red LED(s) flash for 60 seconds

**\*\*If the average cell voltage is above 3.6V**

Battery may require repair (Keep battery plugged into the balancer for auto self balance, do not charge battery until bleeding/balancing stops)

**\*\*If the average cell voltage is below 3.6V,** charge the pack at 300mAh

If imbalance remains >0.2V, balancer continues beeping every minute for 10 seconds.

**Additional audio alert:**

Cell voltage below 3.2V, audio beeps for 5 seconds

\*\* Note: when the "START" button is 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 (you may stop charge or wait until charge is completed)
- 3 Over charge warning: Any cell voltage is over 4.3V, double beep continue and "Status LED" flashes (**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 (LED's flashing)

### <Precautions>

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

### <Specifications>

- 1 0.1% reference voltage controlled by micro-computer chip
- 2 Balance cells: 2 to 10 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 cells 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)

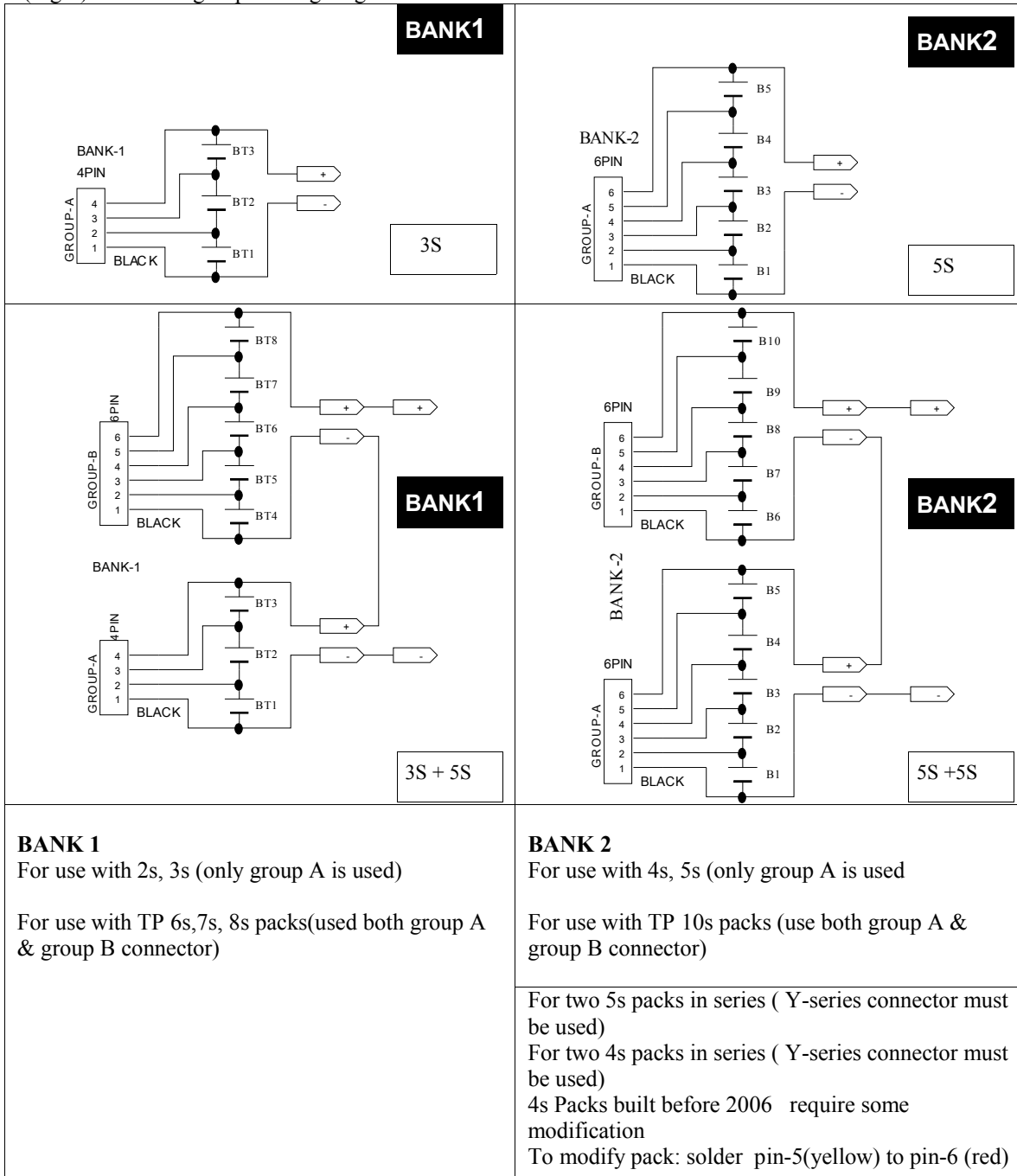
BANK 1 and BANK2

**Warning:** Do not connect both BANK 1 and BANK 2 to any battery pack (Bank 1 & bank 2 share pin connections internally).

Table-1:

Bank #1	Group-A	4 pin header	For 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	For used with 4s & 5s pack s	Used for 9s, 10s packs ( multi-connector pack)
	Group-B	6 pin header	Must used in conjunction with Group-A	

(Fig-1) Bank and groups wiring diagram



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