



1 BalAd-Ko4, BalAd-TP4

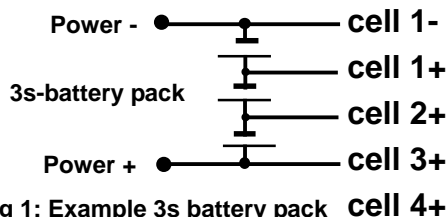


Fig 1: Example 3s battery pack

Hint: All balancing sockets must be connected with the most neg. wire (- battery, i.e. identical to the neg. power lead) connected left aligned (i.e. in the picture above top-aligned) to cell 1-.

1.1 Balancing-adaptor for NextGeneration or LiPo(Profi)Balxx

Solder bridges 2, 3, 4, 5 open, resistor 6 not placed. The battery parameters battery type and current value must be selected on the Schulzechargers - but not the cell count.

1.2 Balancing-adaptor for the LiPoCard(II)

1.2.1 When you charge via the normal charge leads the configuration must be selected at the LiPoCard(II) as described in chapter 1.1.

1.2.2 However when you will charge via the balancing leads (only possible with the LiPoCards), then the cell count has to be configured on the BalAd-xx: Bridge 2 must be soldered for a 2s pack, bridge 3 for a 3s-pack. Bridges 2 and 3 will remain open for a 4s pack.

1.3 Fixed assignment of a BalAd-xx to (only/exactly) one battery pack

If you want to use the automatic battery type configuration in our *nextGeneration*, the *LiPoCards* or the *LiPo(Profi)-Balancers* it is recommended to fix the *BalAd-xx* tight to the concerning battery.

Additional to the cell count configuration via solder bridge 2 or 3 (see chapter 1.2) the solder bridges 4 or 5 and the resistor 6 must be placed:

Bridge 4 for Li-Po cells, bridge 5 for Li-Io cells, bridges 4 and 5 open: Li-FePO4 cells.

The resistor 6 is should be in size 0805, the resistor value is equivalent to the capacity value of the battery in mAh (battery with 1500 mAh => 1500 Ohm -> 1,5 A charge current).



Necessary accessories: Fig. 1.2: BalCab10-Verl

Example: BalAd-Ko4-classic configured to 2 cells Li-Po 360 mAh => 360 mA => 360 Ω The nearest standard resistor value is 390 Ω

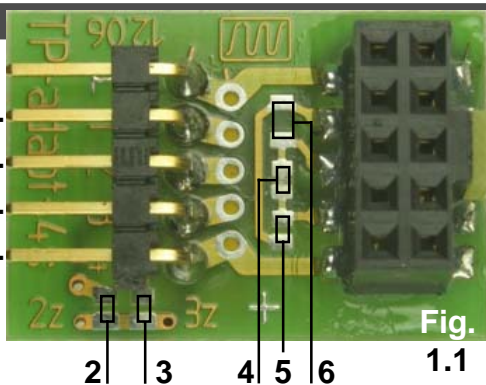
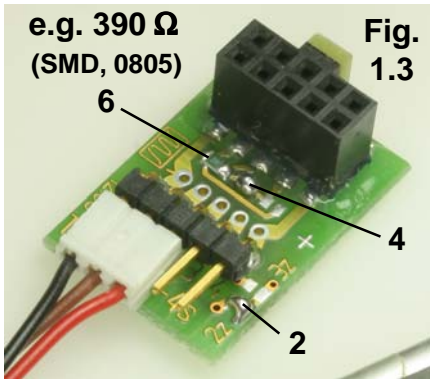


Fig. 1.1



e.g. 390 Ω (SMD, 0805) Fig. 1.3

Hint: The picture shows the „classic“ variant of the adaptor. The standard-version has its balancing connector on the bottom side.



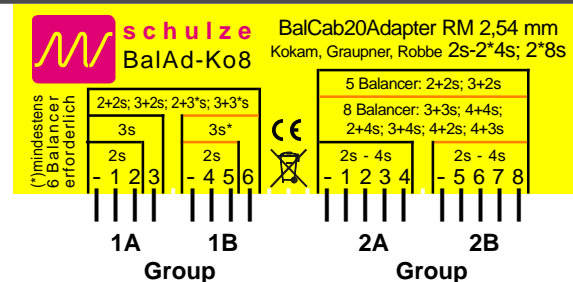
2 BalAd-Ko8

2.1 **Connectable** to items with **5 balancers** are packs with the following cell counts:
 2s to 1A, 3s to 1A,
 4s:2A, 4s(1A:2s+2s:1B),
 5s(1A:3s+2s:1B).

2.2 **Connectable** to items with **8 balancers** are packs with the following cell counts:
 2s to 1A, 3s to 1A, 4s to 2A,
 4s(1A:2s+2s:1B), 5s(1A:3s+2s:1B),
 6s(1A:3s+3s:1B, 2A:2s+4s:2B, 2A:4s+2s:2B),
 7s(2A:3s+4s:2B, 2A:4s+3s:2B) sowie 8s(2A:4s+4s:2B).

2.3 Hints:

- All balancing sockets must be plugged in **left aligned** (i.e. referred to „-“) and it must always be connected one of the „A“-groups (1A or 2A).
- It is allowed to use either group 1 or group 2, never use both groups simultaneously!
- Pins of an unused group conduct voltage! Danger of short circuit! Please cover unused pins when your charge cables e.t.c are not perfectly isolated.
- **Necessary software versions: LiPo(Profi)Bal:** higher or equal than **V15**. **nextGeneration:** higher or equal than **V1.12** when two packs are connected to the groups A+B and the group A is not completely connected (gap to group B).



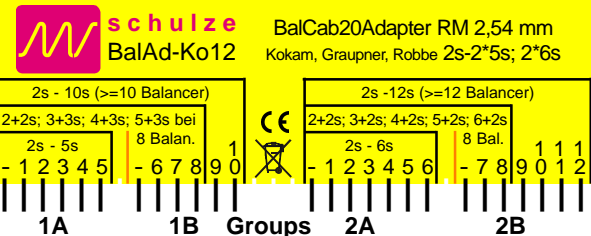
3 BalAd-Ko12

3.1 **Connectable** to items with **5 balancers** are packs with the following cell counts:
 2s, 3s, 4s, 5s - all to group 1A or 2A.

3.2 **Connectable** to items with **8 balancers** are packs with the following cell counts:
 2s to 1A, 3s to 1A, 4s to 1A; 4s(1A:2s+2s:1B),
 5s to 1A, 5s(1A:2s+3s:1B, 1A:3s+2s:1B), 6s to 2A, 6s(1A:3s+3s:1B, 2A:4s+2s:2B),
 7s(1A:4s+3s:1B, 1A:5s+2s:1B) and 8s(2A:6s+2s:2B).

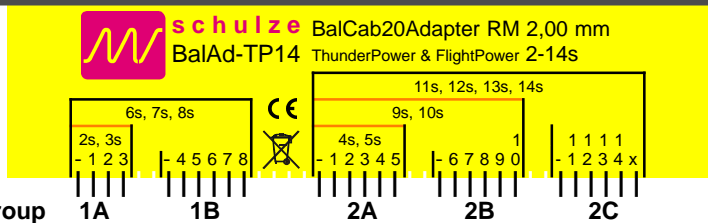
3.3 **Connectable** to items with **12/14 balancers** are packs with the following cell counts:
 2s:1A, 3s:1A, 4s:1A; 4s(1A:2s+2s:1B), 5s:1A, 5s(1A:2s+3s:1B, 1A:3s+2s:1B),
 6s:2A, 6s(1A:3s+3s:1B, 1A:2s+4s:1B, 1A:4s+2s:1B),
 7s(1A:4s+3s:1B, 1A:3s+4s:1B, 1A:2s+5s:1B, 1A:5s+2s:1B),
 8s(1A:4s+4s:1B, 1A:5s+3s:1B, 1A:3s+5s:1B, 2A:6s+2s:2B, 2A:2s+6s:2B),
 9s(1A:5s+4s:1B, 1A:4s+5s:1B, 2A:6s+3s:2B, 2A:3s+6s:2B),
 10s(1A:5s+5s:1B, 2A:6s+4s:2B, 2A:4s+6s:2B),
 11s(2A:5s+6s:2B, 2A:6s+5s:2B), 12s(2A:6s+6s:2B).

3.4 Hints: see hints in chapter 2.3





4 BalAd-TP14

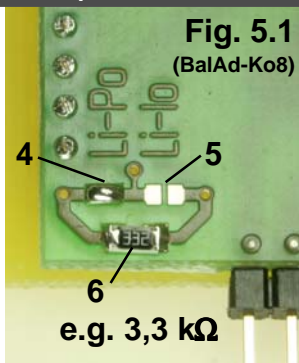


- 4.1 **Connectable** to items with **5 balancers** are packs with the following cell counts: **2s** to group 1A, **3s** to group 1A, **4s** to group 2A, **5s** to group 2A.
- 4.2 **Connectable** to items with **8 balancers** are packs with the following cell counts: **2s** to 1A, **3s** to 1A, **4s** to 2A, **5s** to 2A, **6s** to 1A+1B, **7s** to 1A+1B, **8s** to 1A+1B.
- 4.3 **Connectable** to items with **12 balancers** are packs with the following cell counts: **2s** to 1A, **3s** to 1A, **4s** to 2A, **5s** to 2A, **6s** to 1A+1B, **7s** to 1A+1B, **8s** to 1A+1B, **9s** to 2A+2B, **10s** to 2A+2B, **11s** to 2A+2B+2C, **12s** to 2A+2B+2C.
- 4.3 **Connectable** to items with **14 balancers** are packs with the following cell counts: **2s** to 1A, **3s** to 1A, **4s** to 2A, **5s** to 2A, **6s** to 1A+1B, **7s** to 1A+1B, **8s** to 1A+1B, **9s** to 2A+2B, **10s** to 2A+2B, **11s** to 2A+2B+2C, **12s** to 2A+2B+2C, **13s** to 2A+2B+2C, **14s** to 2A+2B+2C.
- 4.4 **Hints:**
 - **Necessary software versions:** *LiPo(Profi)Bal*: higher or equal than **V15**.
 - Depending on the cell count it is necessary to use either group 1 or group 2, never use both groups simultaneously and you have to connect always the „A“ group (1A or 2A) - i.e. the „A“ group must contain cell 1).
 - The balancing plugs must be connected in ascendant order. When i.e. the sockets are not connected fitting on the pins but shifted or i.e. at 12s-packs the sockets of the groups exchanged 2B for 2C, then copper leads on the PCB could be damaged.
 - Pins of an unused group conduct voltage! Danger of short circuit!
Please cover unused pins when your charge cables e.t.c are not perfectly isolated. i.e. is a 7s-pack connected to group 1 leads to voltages on pins 1-7 of group 2.

5 Fixed assignments of the BalAd-xx to a battery pack of chapters 2, 3 and 4

If you want to use the automatic battery type configuration in our *nextGeneration* or the *LiPo(Profi)-Balancers* it is recommended to fix the *BalAd-xx* tight to the battery.

You have to solder bridges 4 or 5 and to place and solder the resistor 6 on the back side of the PCB:
Bridge 4 for Li-Po cells, bridge 5 for Li-Io cells, bridges 4 and 5 have to remain open for Li-FePO4 cells. The resistor 6 should be size 0805, the resistor value is equivalent to the capacity value of the battery in mAh.
Example: A battery with 3200 mAh => 3200 Ohm => 3,2 A charge current.
Next standard value for the resistor is 3.3 kiloOhm



6 Examples and explanations



Fig. 6.1: Connection of 2s...4s-packs via a BalAd-TP4 or BalAd-Ko4 and a BalCab10-Verl to the nextGeneration, LiPoCard, LiPoProfiBal...

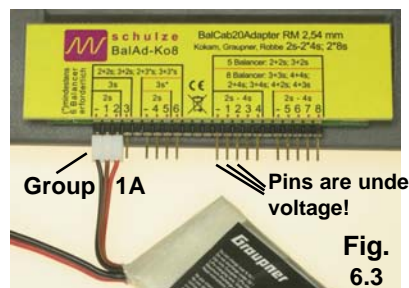
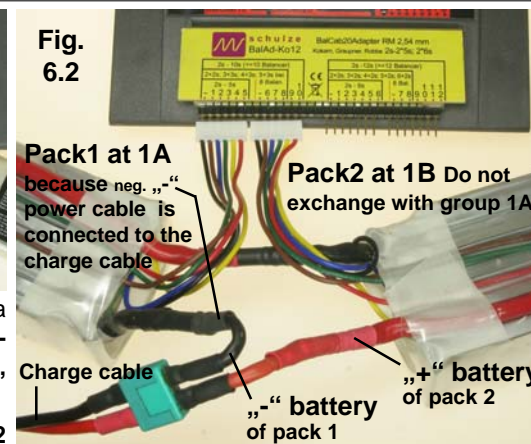


Fig. 6.3 and 6.4: Both connection positions are e.g. allowed for 2s and 3s packs

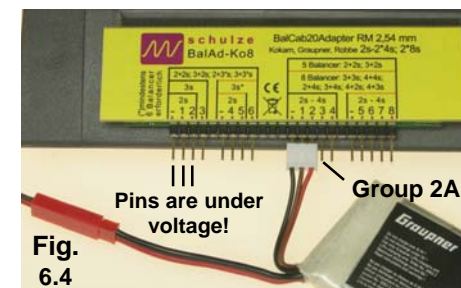
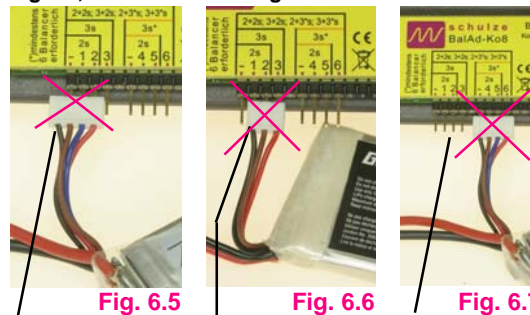


Fig 6.5, 6.6 and 6.7: Wrong connections



The principle of connection of Schulze Balancers

(cell arrangement as the storeys in a high-rise building)

- + cell 8 (eighth storey) = + battery
- + cell 7 (seventh storey) = - cell 8
- + cell 6 (sixth storey) = - cell 7
- + cell 5 (fifth storey) = - cell 6
- + cell 4 (fourth storey) = - cell 5
- + cell 3 (third storey) = - cell 4
- + cell 2 (second storey) = - cell 3
- + cell 1 (first storey) = - cell 2
- cell 1 (ground floor) = earth = - battery