

Deligreen Battery Balancer Specification

Overview

Deligreen Battery Balancer module is a mutual way energy transfer system .

With advantage of high efficiency and low power consumption, it will discharge the cells once it detected any cell whose voltage is above the average value. Thus it can let all the batteries voltage keep balanced and share power among all the cells.

Deligreen battery balancer use the balance way of dispersion, parallel, dynamic, bidirectional.

Through this way, It maintains the batteries in the long term running so that the lifespan of the battery pack is prolonged.

Deligreen Battery Balancers are widely used for lithium-ion batteries, lead acid batteries, NiMH batteries and Super capacitors. the balancer module prevents the lead acid batteries from vulcanization and also has capability to repair vulcanization.



Why Should We Choose Deligreen Battery Balancer?

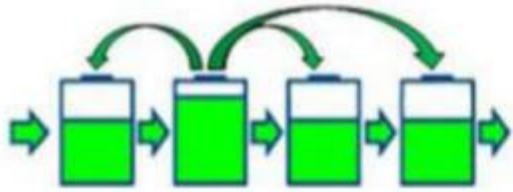
Three factors that cause the batteries decay or defective :
Over discharge, over charge, under charge



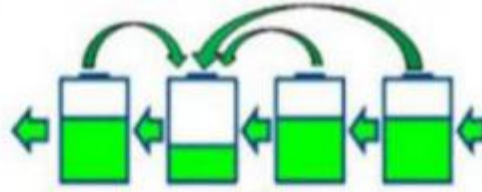
When they are assembled in a pack, how many cycles can it be?
1000 times or 500times or lower? How to solve the problem?

Before using Deligreen Balancer

Charging



Discharging

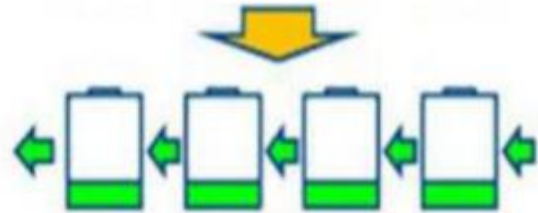
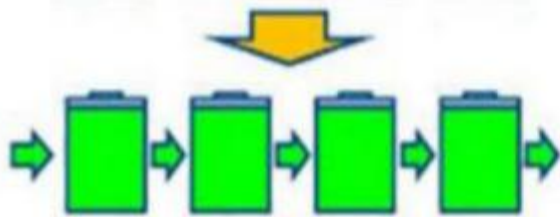


Battery voltages are different with each other.

So some cells can't be charged fully.

During discharging, the capacity can't be fully used.

After using Deligreen Balancer



Each cell voltage equal to each other.

All the cells can be fully charged.

They can share power with each other.

The capacity can be fully used.

Deligreen Battery Balancers can Keep battery volt difference within 10mV(30mV for 12V lead acid battery).

Help prolong battery's lifespan 3~4times!

More Details about the Features

1 Online working	balance during charge, discharge, and storage
2 Dynamic equalizing	Prevent batteries out of balancing all the time
3 Energy transfer	Transfer energy from higher voltage cells to the lower ones
4 Maintenance and recovery	Keep normal batteries at good condition, recover the backward ones
5 Sharing capacity	The power will flow from one cell to another and share them among all the cells
6 Simple installation	Connect the balancers together and then connect to battery+ and battery-
7 Independent	No affect to battery pack wiring, no impact to charging or discharging

How is the balancer working?

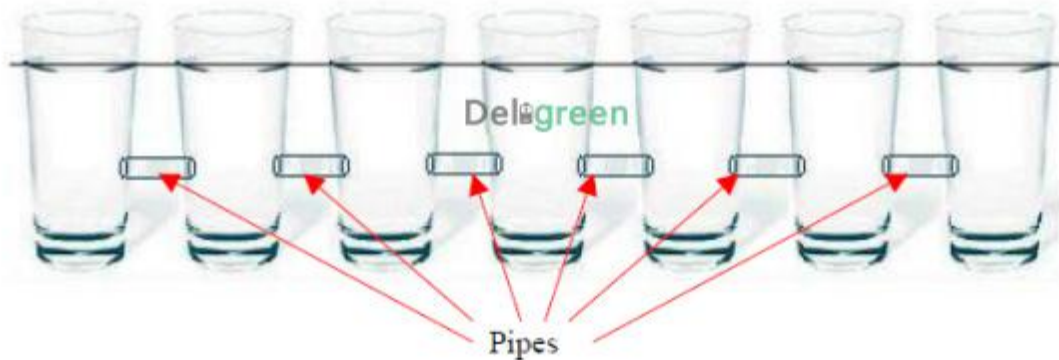
This diagram tell you how the balance work.

Each battery is compared to a cup. Each balancer is like a pump. with the pumps, all the cups will have the same level of water.

The water level in each cup is different

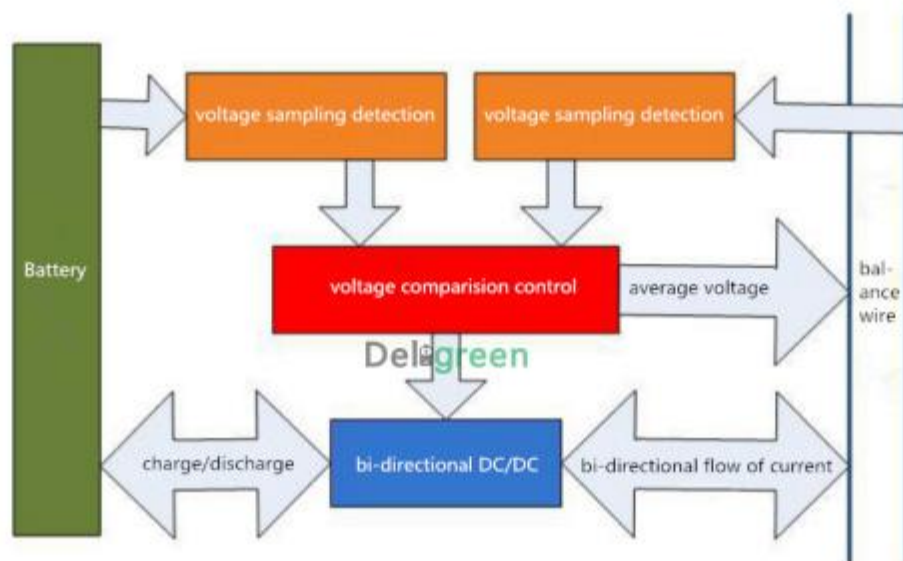


But when the cups are connected with pipes,
the water level of each cup is become the same



Deligreen Battery Balancer Schematic Diagram

BBM Circuit Schematic Diagram



Main Technical Parameters

Battery capacity limited	unlimited
Battery count limited	2S~unlimited At least balance 2 cells
Battery type limited	battery:Lifepo4,LiMnO4 etc AGM,Gell,Flooded battery and so on
Working voltage	2V~5V(2V lead acid battery and lithium battery) 4V~9V (6V lead acid battery) 9V~15V (12V lead acid battery)
Power consumption	<50mW
Balance method	Energy transfer &Dynamic
Voltage difference after using the balancer	<10mv <30mv(12V lead acid)
Voltage difference VS Balance current	300mV-1A; 1V-3A
Working efficiency when balance current is 1A	>94%
working temperature	-40~+80°C;
storage temperature	-40~+100°C
BMS limited	can work with BMS Or can work independently

Size and weight

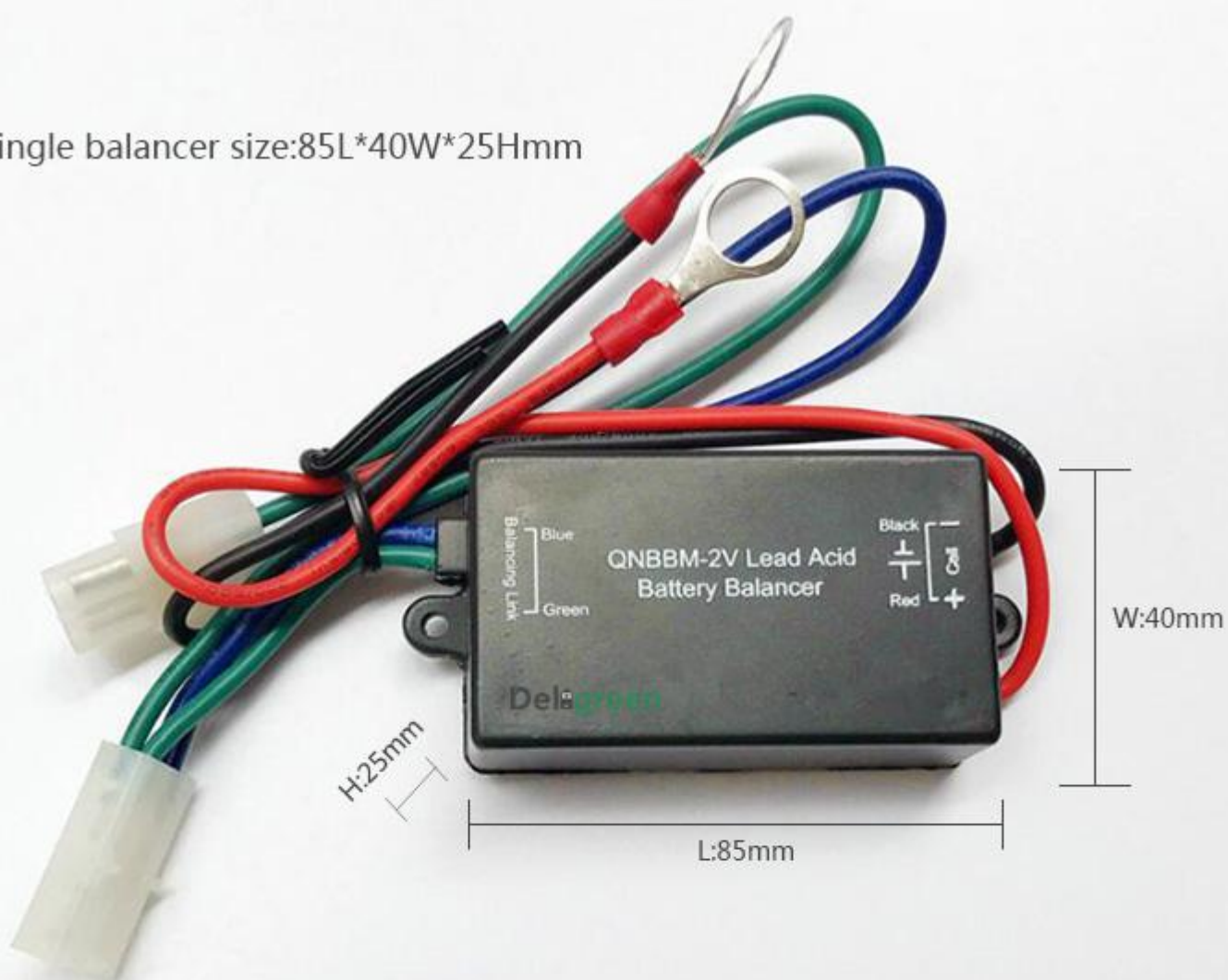
Delgreen



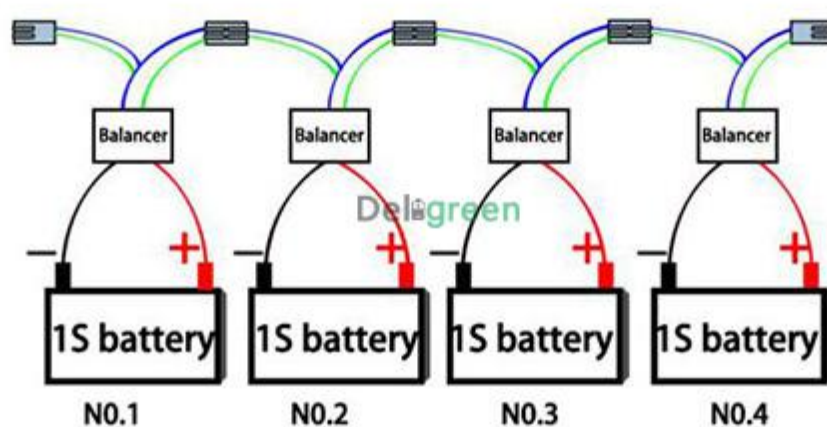
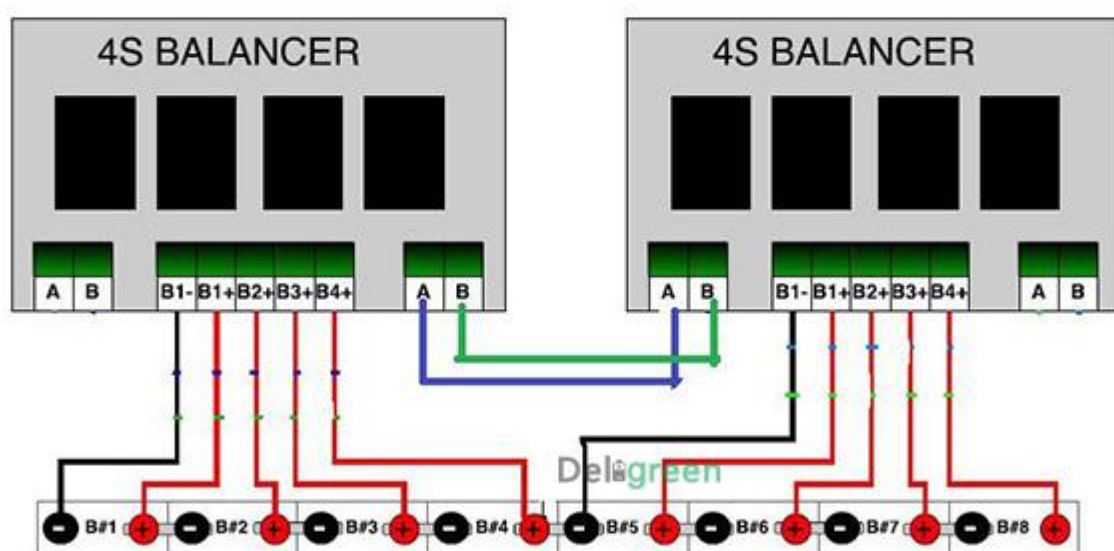
4S module size:150L*70W*20H(mm)

Besides 4S,we have 5S,6S,8S modules for options.

1S single balancer size:85L*40W*25Hmm



Wiring Diagram



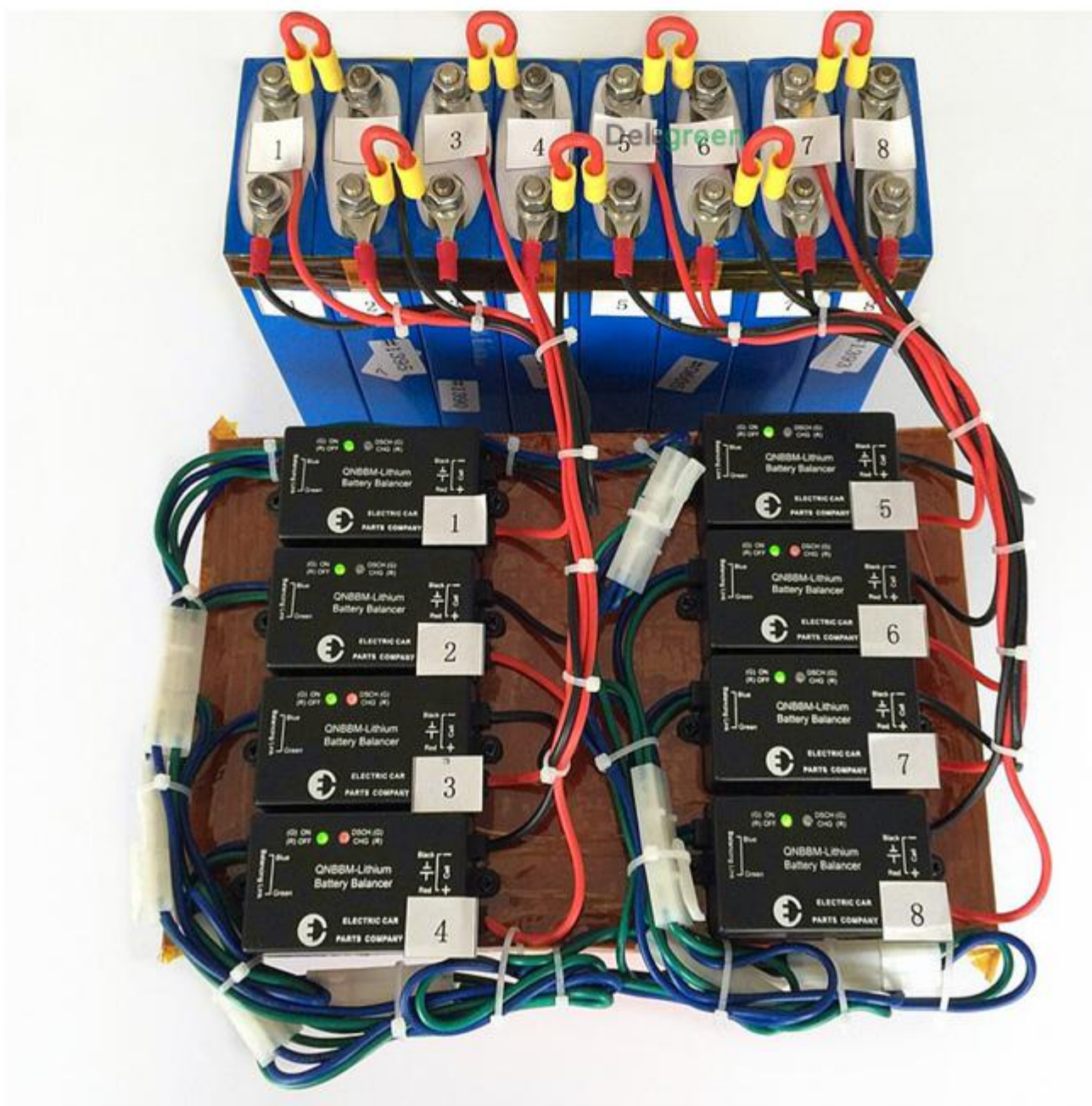
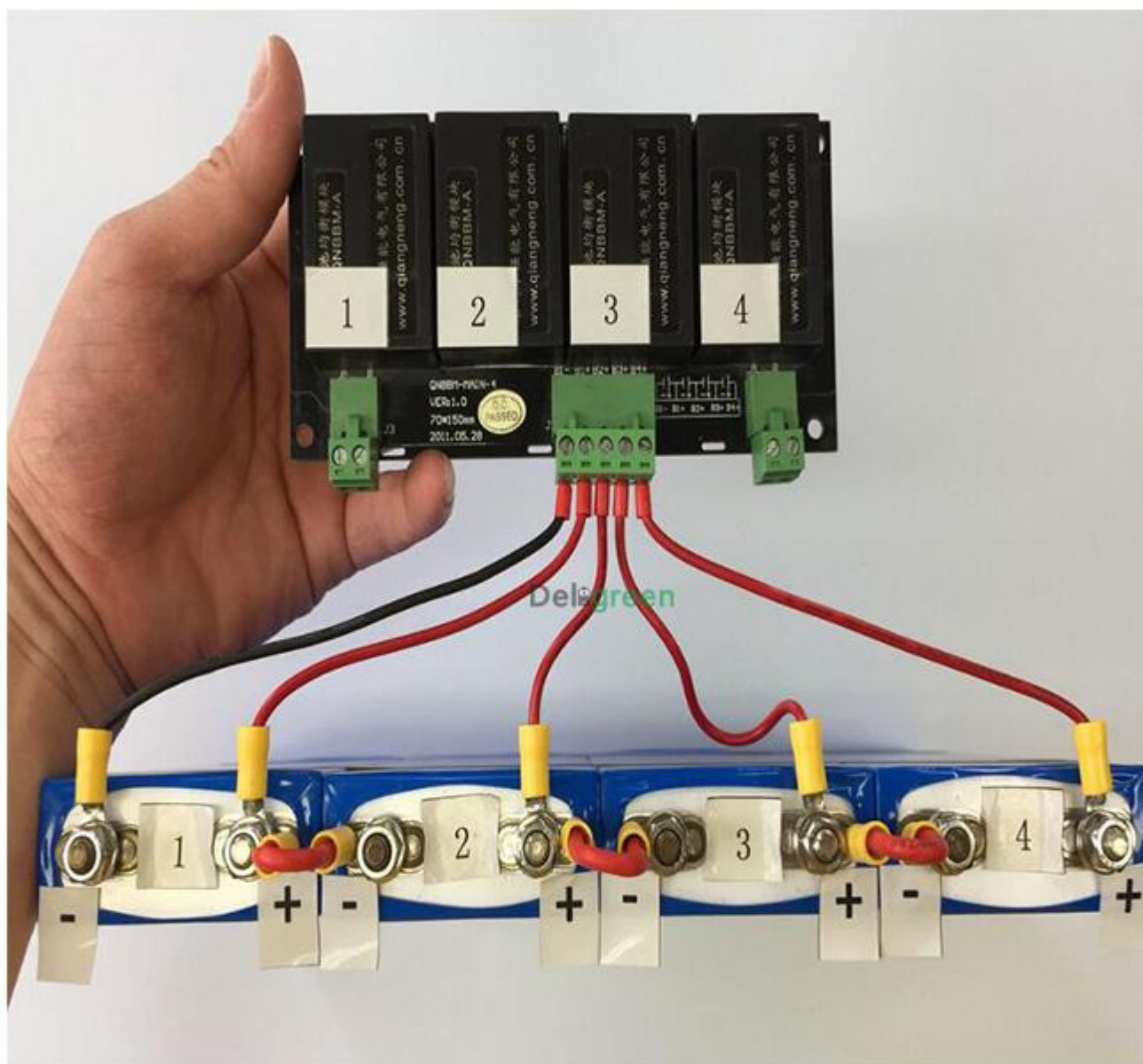
Warning:

Connect the balancers together first. And then connect to batteries.

Don't do it oppositely.

If the modules or cells become warm or hot disconnect the module(s) from the pack.

Real Photo Show for Installation



User Attention

First,if you order 1S balancers,we have 20cm wires on the balancers with M8 terminals as default

If you need other size of terminals and different length of wires,please tell us.

If you order balance modules,**no terminals or wires**

Second,The balance power consumption is less than 50mW.

If you don' t use the battery for over 2months,please either disconnect the balancers, or recharge the battery once a month or once two months.

Recharging the batteries occasionally is better for your batteries as well.

Third, we have wiring diagram on the balance modules. Don' t make any mistakes. If you are unsure of installation, please contact our sales person.we will be glad to help you.

Here are several ways of making a judgment where you install them correctly or not

1,**Measure** voltage of the batteries with a multi-meter after you finish installation. See if all the batteries voltage is normal or not.

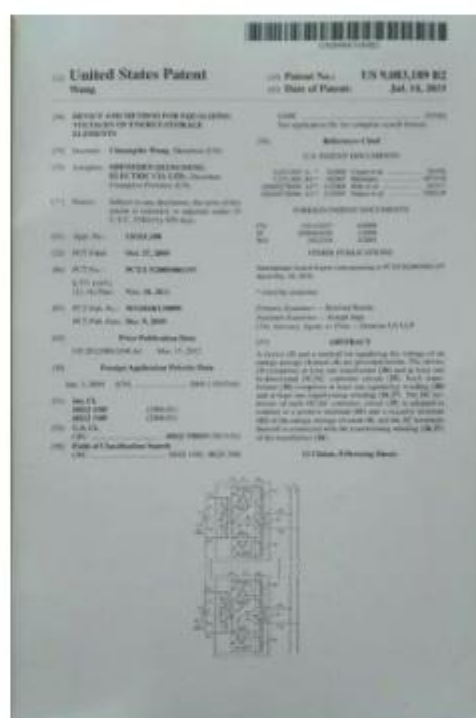
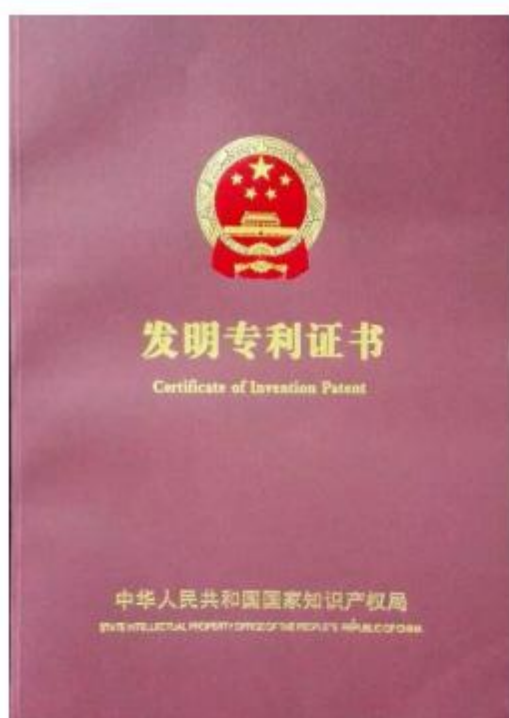
2,**Touch** the batteries.if any battery get hot quickly,disconnect the balancers soon.this means you install them in the wrong way.

If you find the mistake in a few minutes,the battery won' t be broken.

3,**Listen**. If the balancers are connected correctly,they will produce a high-frequency voice.the voice is small.you need to get close to the balancers.

The more balanced the batteries are,the smaller the balance current it will have,and the smaller voice there will be.and vice versa. if you connect them in wrong way,you can' t hear any voice.

We get United State patent and China patent



Application

- 1) Power battery: electric car,/bus/scooter/truck/golf cart /boat and so on.
- 2) Storage battery: storage power station,wind power,solar power and so on.
- 3) Communication power: communication base stations, substations, etc.



Typical case

Project name: Communication base in Shenzhen.

Time: March 2013~ 2017.

1st pack without balancer.

2nd pack with balancer.

We measure the two packs 4 times.

1st pack without balancer volt difference is : 87mV, 83mV, 83mV, 91mV.

2nd pack without balancer voltage difference is:101mV, 105mV, 9mV, 8mV.

Test result: After 4years, the 2nd pack are in good condition. The 1st pack capacity only left 50%.



Voltage with and with out Balancer Comparison Diagram

