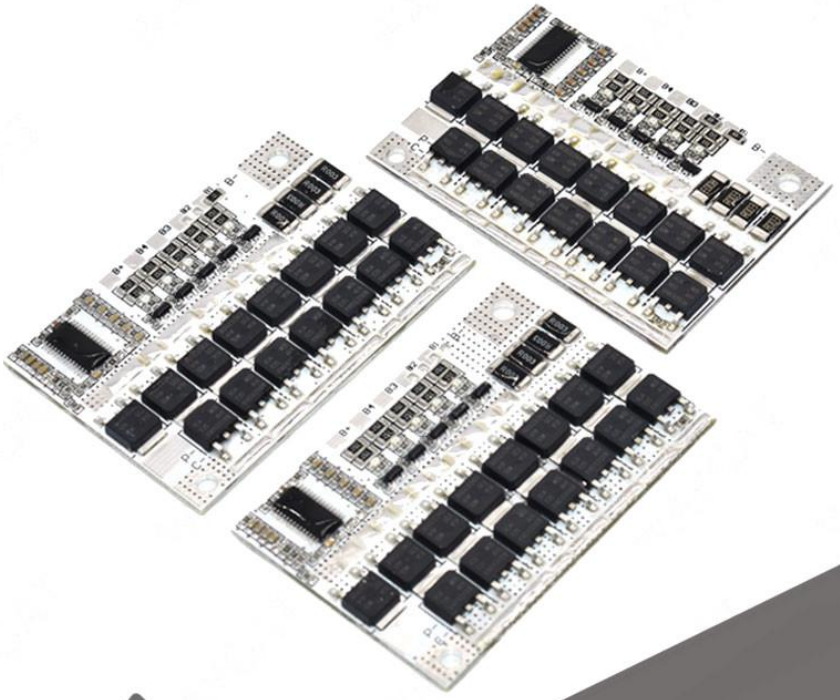
# 3-5 series 12V lithium battery protection plate

- ✔ 3~5 serial protection plate
- ✔ 50~100A high current band is balanced



## Product overview

Product structure: Lithium battery protection plate

Scope of application: lithium iron phosphate, ternary lithium batt ery, lithium cobalt acid, lithium manganese acid battery pack.

For lithium phosphate, ternary lithium battery, lithium cobalt acid , lithium manganese acid battery pack specially designed lithium

battery protection plate.The protection plate includes three strings, four series, five series of lithium battery protection board (gm) according to the actual demand to adjust the corresponding components, USES the mature protection circuit, a dedicated IC break protection and support, to import large current ultra-low resistance MOS (single MOS resistance as low as 3 milliohm), has a perfect stable charge and discharge protection function, batteries balance hardware processing, balance current appropriate, reasonable, balanced fever does not affect battery performance.

## Function is introduced

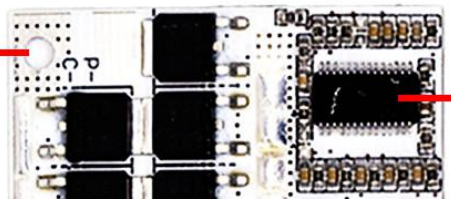
(1).The user is free to set 3 strings, 4 strings, or 5 strings. The default delivery is the number of strings taken by the customer when placing an order.If you need other string number, you can adjust it to the required string number according to our following operation guide after receiving the goods.

(2). General purpose, 15 high-power ultra-low internal resistance MOS tubes (8 for discharge and 7 for charge) are used for this protection plate at the cost. In the same port mode, the discharge current is 60A, charging current is 80A and charging current is 60A.By no means small power MOS on the market.Our single MOS tube has an internal resistance bottom up to 3 milliohms.

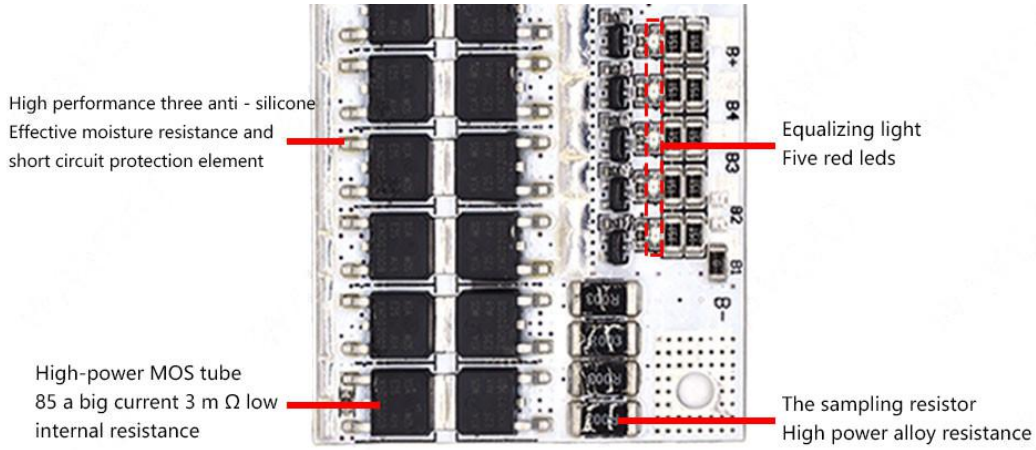
## Technical parameters

| Polymer ternary Lithium manganate protection plate parameters (3.6V/3.7V) | | | | |
|---|---|---|---|---|
| Protect the project | Min | Max | Typ | 单位 |
| Charging pressure | 4.21 | 4.25 | 4.29 | V |
| Overcharge recovery voltage | 4.14 | 4.19 | 4.24 | V |
| Overcharge voltage protection delay | 500 | 1000 | 1500 | mS |
| Discharge voltage | 2.72 | 2.8 | 2.88 | V |
| Over discharge recovery voltage | 2.9 | 3 | 3.1 | V |
| Overvoltage protection delay | 500 | 1000 | 1500 | mS |
| Overdischarge protection current | | 100 | | A |
| Discharge current (continuous) | | 50 | 80 | A |
| In-port discharge current (continuous) | | 40 | 60 | A |
| Overcurrent protection delay | 100 | 200 | 300 | mS |
| Overcharge protection current | | 100 | | A |
| Charging current (continuous) | | 40 | 60 | A |
| Overcharge current protection delay | 10 | 20 | 30 | mS |
| The static current | | 17 | 25 | μA |
| Temperature protection | There is a temperature control interface | | | |
| Break line protection | | There are | | |
| Short circuit protection | | There are | | |
| Short time delay | 100 | 300 | 600 | μS |
| Overcurrent protection recovery mode | | Break off load release | | |
| Balancing | | There are | | |
| The equilibrium voltage | | 4.18 | | V |
| The equilibrium current | | 60 | | mA |
| The fuselage size | | 62*42*4 | | mm |
| The fuselage color | | White (PCB) | | |
| Body weight | | 17 | | g |
| Standard accessories | | Circuit board | | |
| Standard packing | | Electrostatic bag | | |
| Wire specifications | | There is no | | |
| Wire length | | There is no | | cm |
| Working temperature | | -20℃~+65℃ | | ℃ |
| Storage temperature | | -40℃~-85℃ | | ℃ |

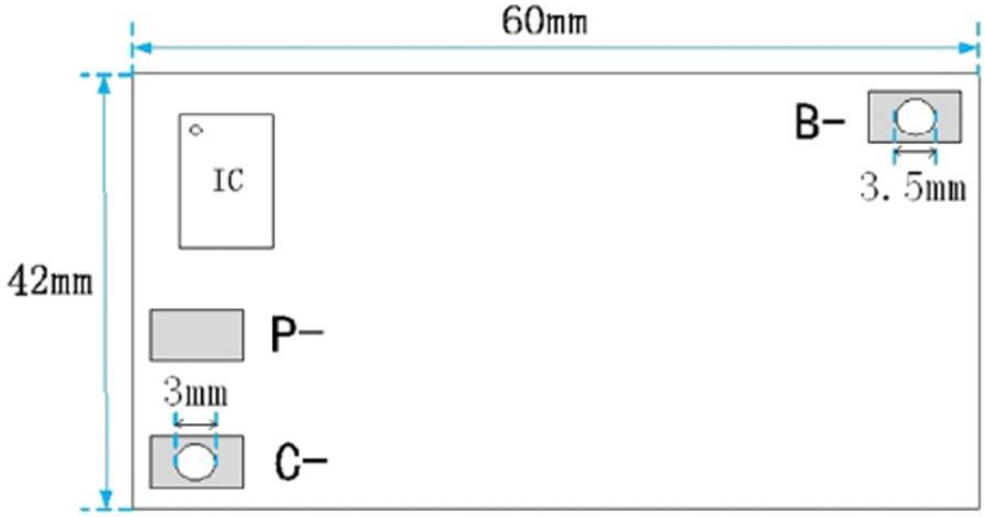
2 Oz thick copper PCB
Low internal resistance
and low fever



Special protection IC
With the function of balance
and disconnect protection




## Product size




## Operational guidelines for school official cites use

**Practical operation guide**

Output current: split 80A;With a 60

Note: Lithium batteries should be charged with special charger fo
r lithium batteries, do not use lead-acid battery charger, lead-acid
There may be a high voltage breakdown of the protection board

MOS tube, causing the protection board overcharged without pro tection.

**(1) The wiring method of the three-string branch (refer to the wiring diagram of the three-string branch)**

① Connect the three battery packs in series according to the conn ection method of the battery in the three serial connection diagra m.

② Connect the anode of the charger to the C- of the protection p late, and the cathode of the load to the P-.

③ Connect the charger and the positive pole of the load to the po sitive pole of the 3 series batteries.

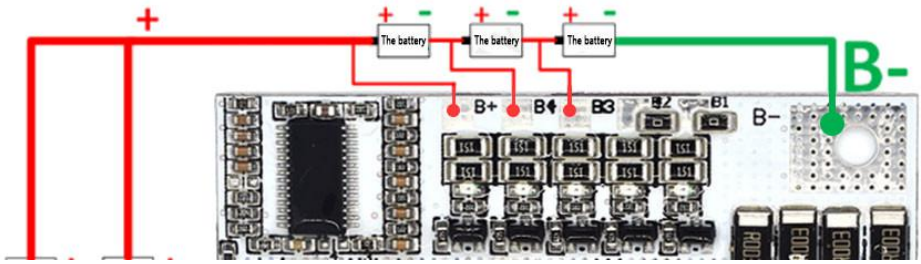
④ Refer to the three-series junction wiring diagram, use three wire s to separate the positive poles of the three battery packs with B+ in order.B4, B3 connection.

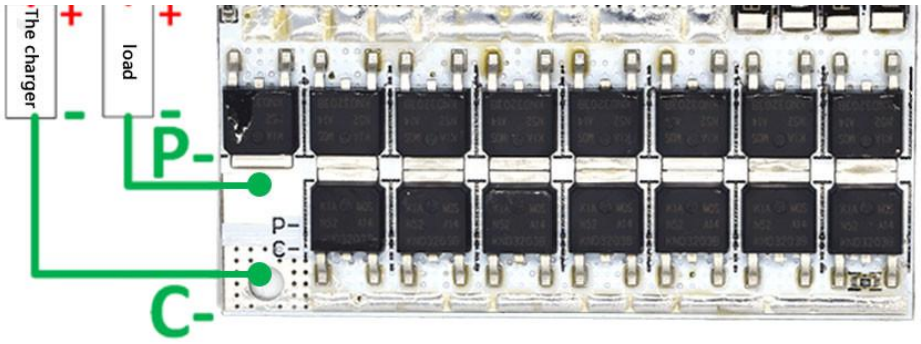
⑤ Connect the negative electrode and B- of 3 series of batteries.B 1,B2, and B- short.

⑥ After all the wires are connected in accordance with the 3 series splitter wiring diagram, check whether it is correct and confirm it i s correct can begin to use only after.

⑦ During use, the indicator light on the protection board is on, in dicating that its corresponding battery pack is in uniformBalance the working state (that is, the battery is unbalanced at this point).

## 3 Series splitter wiring diagram






**(2) 3-String in-port wiring method (refer to 3-string in-port wiring diagram)**

① Connect the three battery packs in series according to the connection method of the battery in the three serial connection diagram.

② Connect the charger's negative pole and the load's negative pole and C-, P- suspension.

③ Connect the charger and the positive pole of the load to the positive pole of the 3 series batteries.

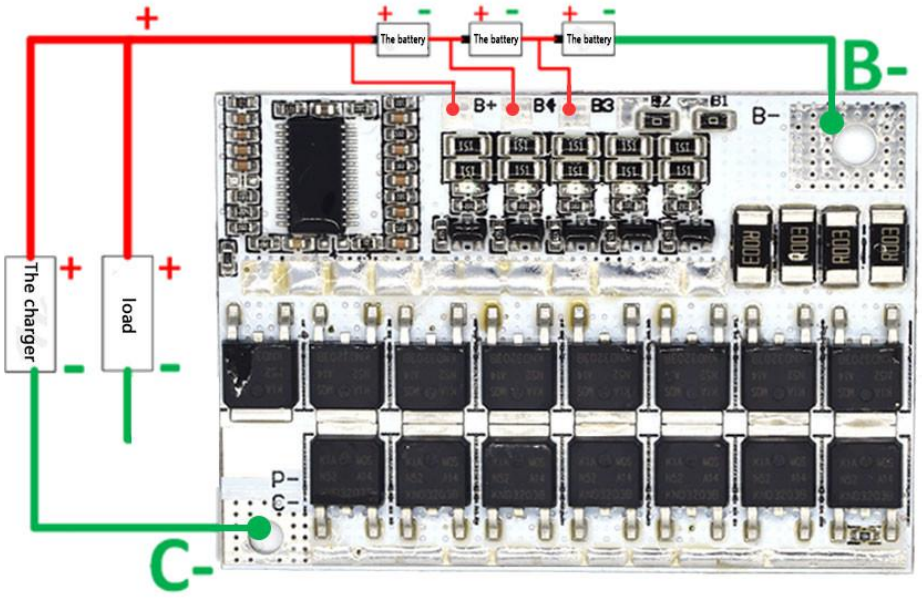
④ Referring to the 3 serial con-port wiring diagram, use 3 wires to respectively sum the positive poles of the 3 battery packs in order B plus B4, B3.

⑤ Connect the negative electrode and B- of 3 series of batteries.B1,B2, and B- short.

⑥ After all the wires are connected in accordance with the 3 serial con-port wiring diagram, check whether it is correct and confirm it is correct can begin to use only after.

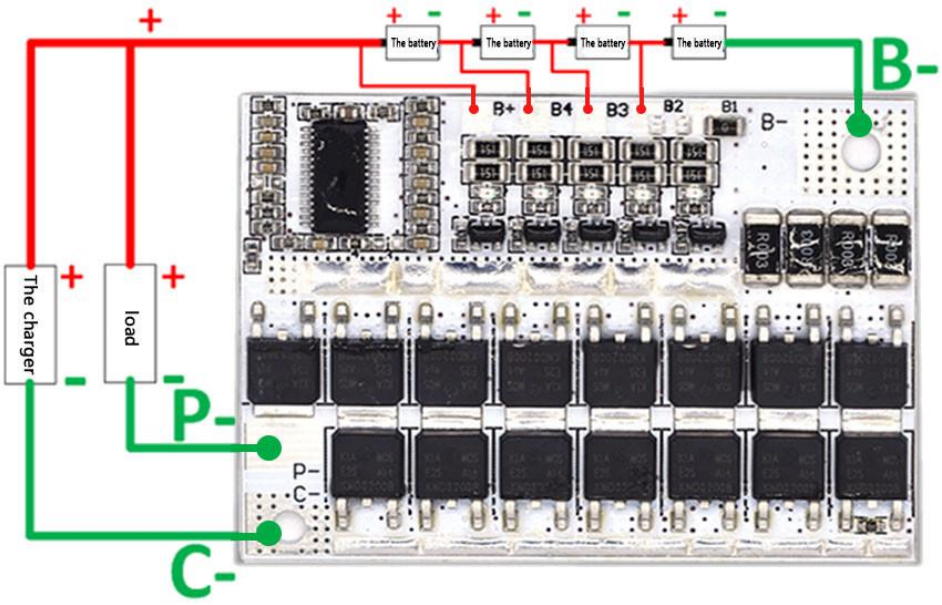
⑦ During use, the indicator light on the protection board is on, indicating that its corresponding battery pack is in uniform balance the working state (that is, the battery is unbalanced at this point).

## 3 Serial concentric wiring diagram

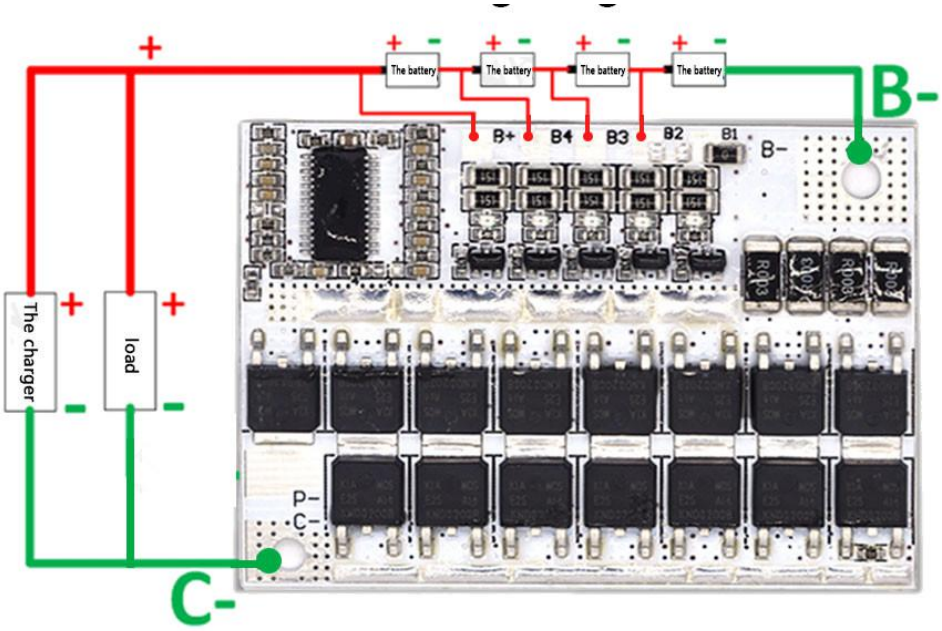



The wiring methods of 4 strings of the same port and 5 strings of the same port are similar to those of 3 strings of the same port, ju st refer to the corresponding wiring diagram.

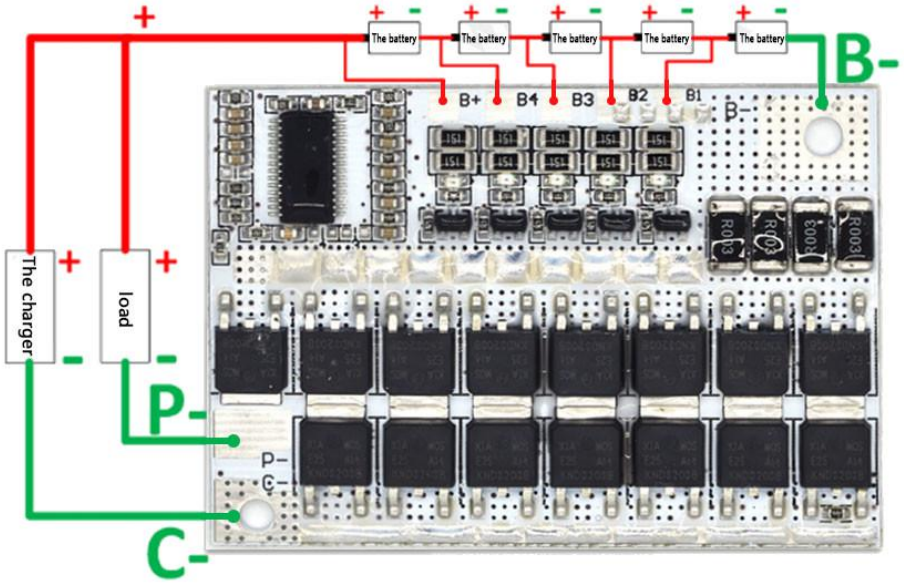
## 4 Series splitter wiring diagram



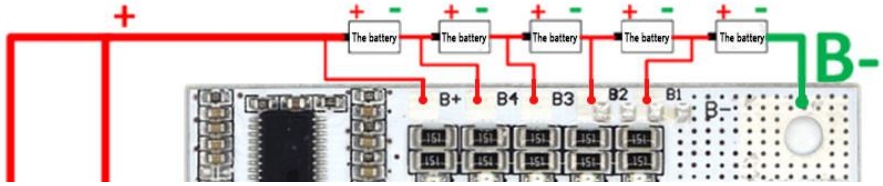

## 4 Serial concentric wiring diagram

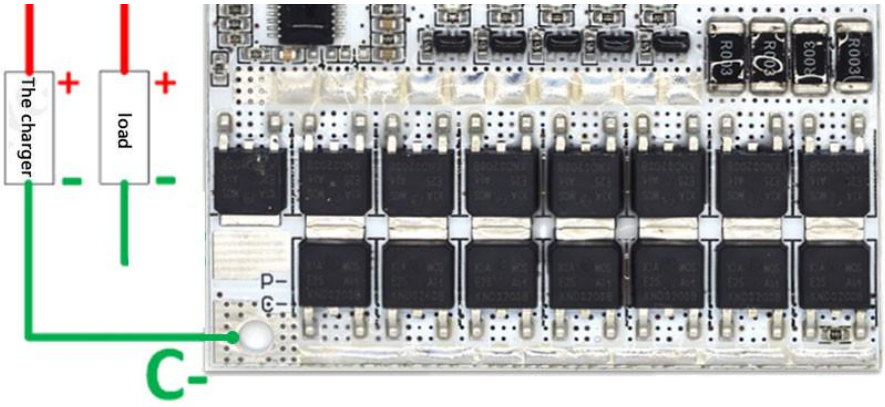



5 Series splitter wiring diagram




5 Serial concentric wiring diagram






## The number of the protection board series diagram

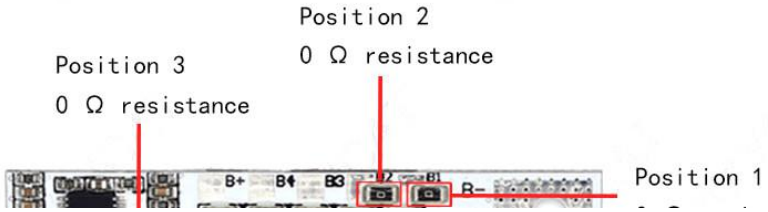
Modify string number operation guide:

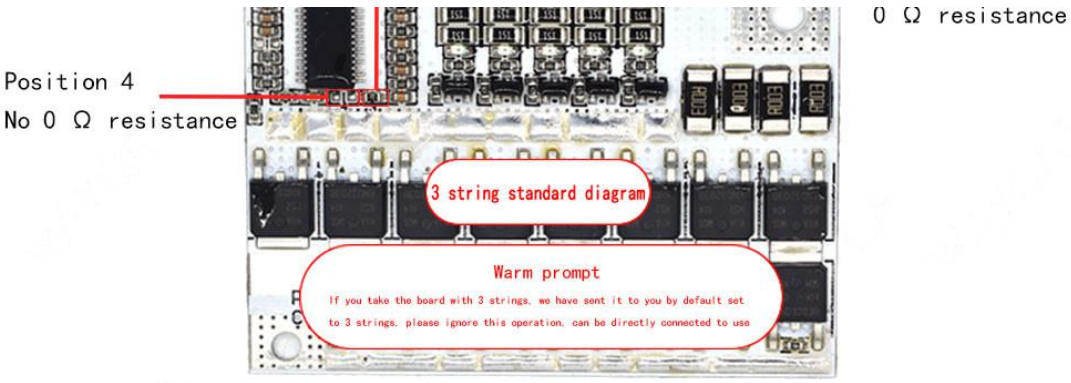
This protection board is of serial type of 3, 4 and 5, but the conversion between different serial Numbers requires the customer to modify the components on the board by himself before wiring according to the wiring diagram of corresponding serial Numbers.

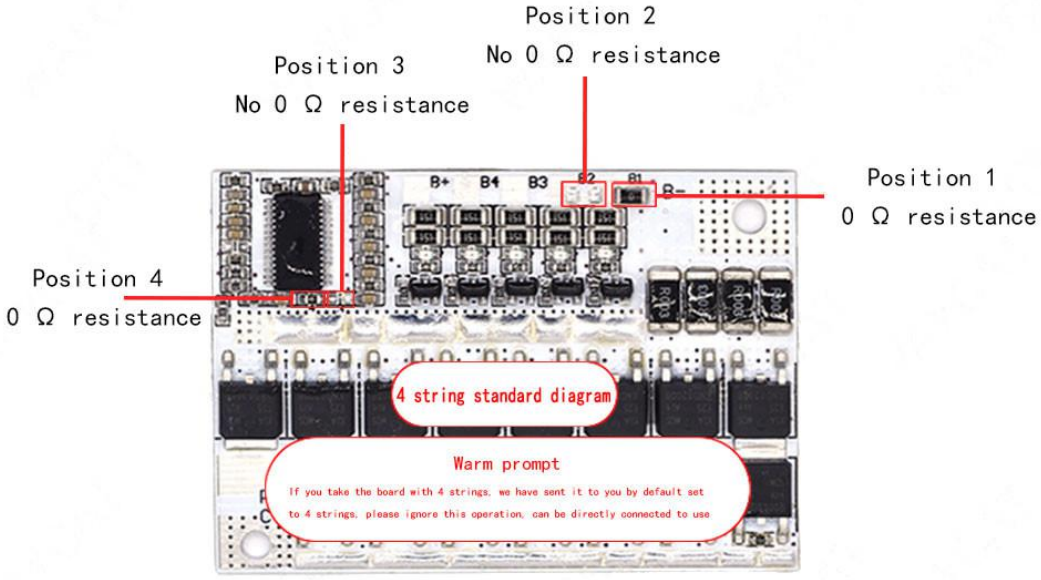
For example, if the customer buys a board with 3 strings and wants to use the battery with 4 strings, I can change it by myself (i.e., 3 strings to 4 strings).

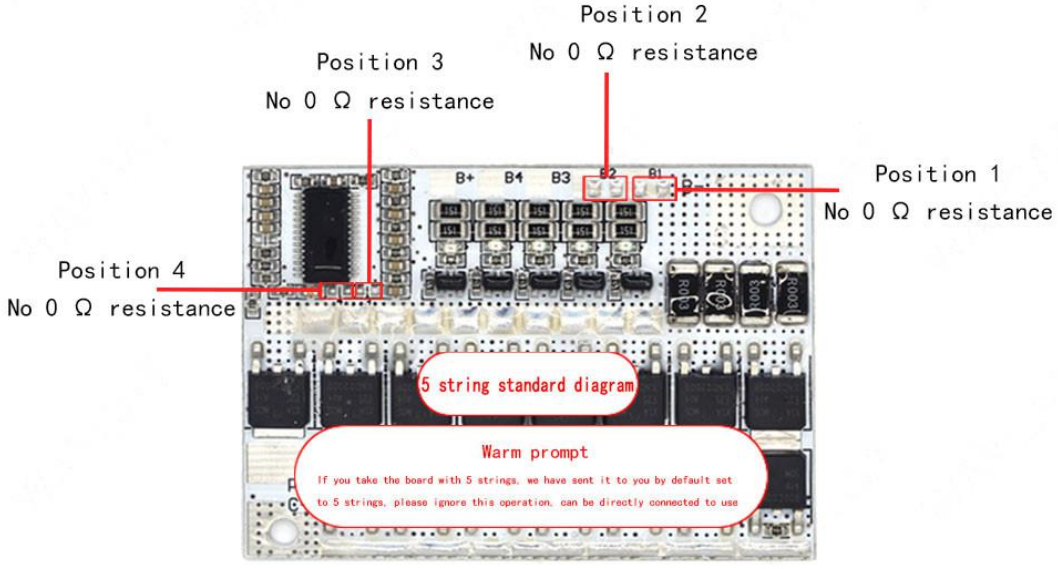
Step 1: First remove the OR resistance of "position 3" and "position B2".

Step 2: Short circuit the "position 4" with OR resistance OR soldering tin (the position of the modified element should be the same as the "4-string standard diagram"), and then make the connection by referring to the 4-string wiring diagram.(Warm tip: If the customer buys a board with 3 strings and USES it on a battery with 3 strings, there is no need to change anything, please ignore this guide).



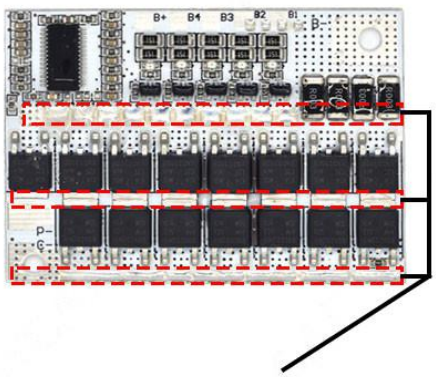

0 Ω resistance
Position 4
No 0 Ω resistance
3 string standard diagram
Warm prompt
If you take the board with 3 strings, we have sent it to you by default set to 3 strings, please ignore this operation, can be directly connected to use


Position 2
No 0 Ω resistance
Position 3
No 0 Ω resistance
Position 1
0 Ω resistance
Position 4
0 Ω resistance
B+ B4 B3 B2 B1 B-
4 string standard diagram
Warm prompt
If you take the board with 4 strings, we have sent it to you by default set to 4 strings, please ignore this operation, can be directly connected to use

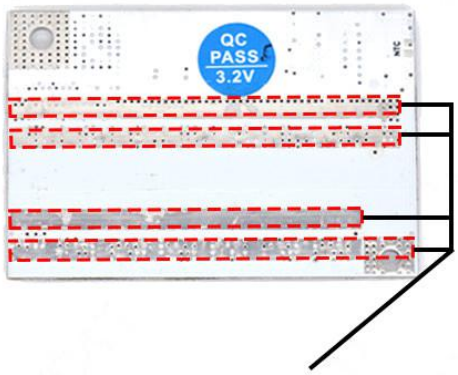

Position 2
No 0 Ω resistance
Position 3
No 0 Ω resistance
Position 1
No 0 Ω resistance
Position 4
No 0 Ω resistance
B+ B4 B3 B2 B1 B-
5 string standard diagram
Warm prompt
If you take the board with 5 strings, we have sent it to you by default set to 5 strings, please ignore this operation, can be directly connected to use

The continuous current exceeding 50A shall be welded with copp er wire as shown in the figure below

Copper wire is needed to last 100A

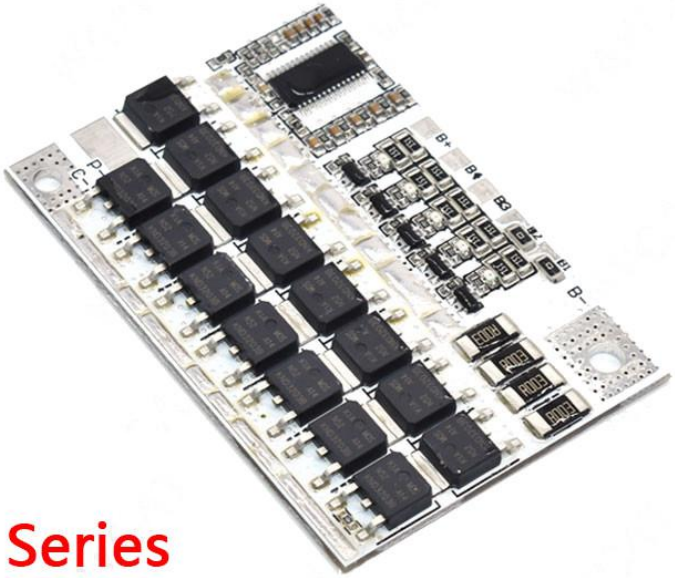



1.5mm2 copper wire *3 pieces

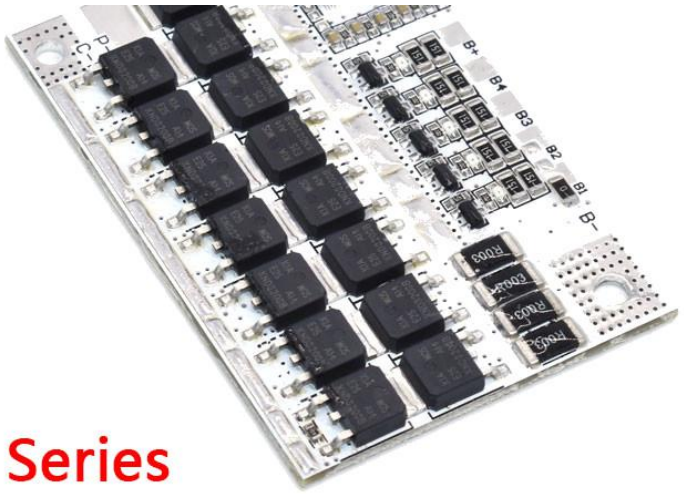



1.5-2.5mm2 copper wire *4 pieces

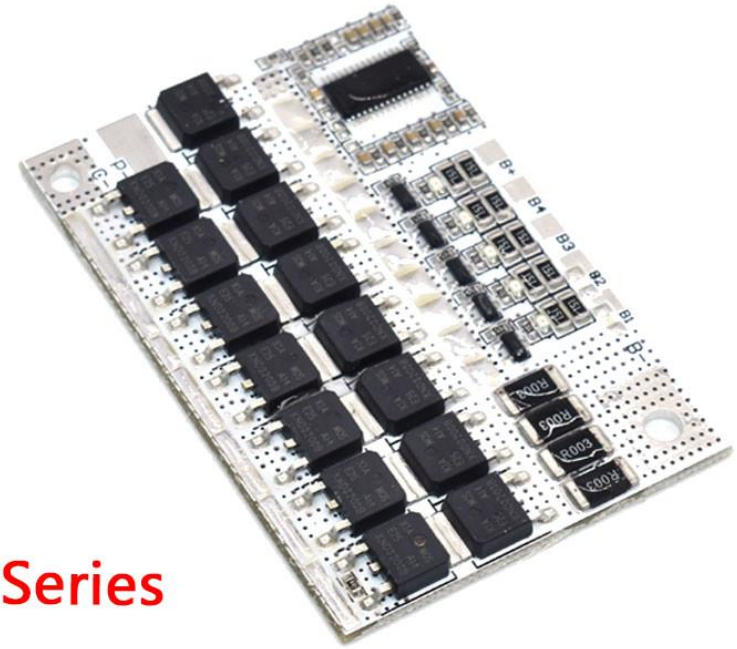
## The product will




3 Series

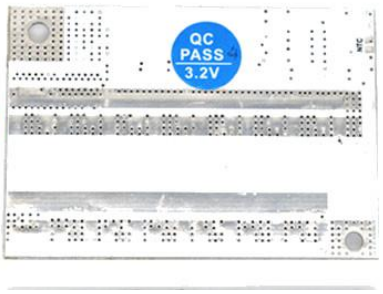


4 Series

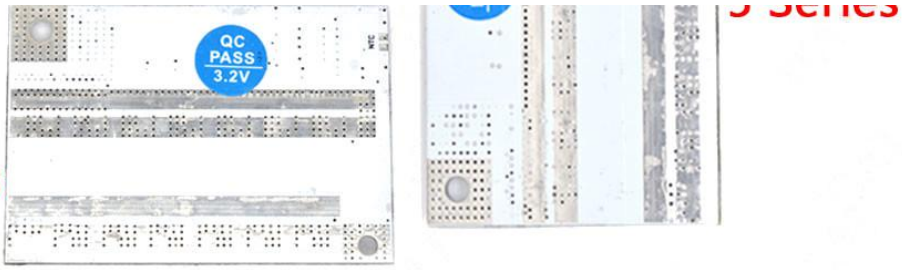


5 Series

4 Series




5 Series




## The product will

1. Can I use this protection plate for my battery?

A: Can you use this protection plate has two questions to consider;How many strings do you have, you need to buy the corresponding number of protection plate.Second, what is your battery made of?We have protection plates with two parameters, lithium iron phosphate and polymer. If your battery is lithium iron phosphate single unit nominal 3.2V, select lithium iron phosphate 3.2V in the classification. If it is polymer (ternary, cobalt acid, lithium manganese acid battery) single unit nominal 3.6V (or 3.7V), please select polymer 3.7V classification.

2. How can I tell what my battery is made of?

A: You can have a look at the nominal voltage of your battery. Lithium iron phosphate batteries are generally labeled as 3.2V, while other batteries are generally labeled as 3.6V or 3.7V. You can also directly ask the seller of the battery what is the material of the battery.We are not able to determine your battery protection parameters based on this.

3. How many safety plates should I choose?

A: Choose how much of the protection plate depends on your load power, our protection plate, if you use a separate output, the output current is about 70A, the power is about 800W, if you use the

same output, the output current is 50A, the power is about 600W.

4. My battery is 20AH. Can I use this protection board?

A: The size of your battery capacity is not directly related to the size of the current with this board, the large capacity is not the large battery, mainly to see the continuous current, that is to say, the larger your load, the larger the current of the protection board you choose will be, there is no direct relationship with the battery capacity.

5. How to set the charger voltage?

A: Lithium battery must be charged with a special charger for lithium battery, do not use lead-acid battery charger, lead acid charging may have a high voltage breakdown of the protection plate MOS tube, causing the protection plate overcharged without protection.

Charger voltage setting: Use the number of battery clusters *4.2V, which is the charging voltage of non-lithium iron batteries. The charging voltage of lithium iron batteries is the number of battery clusters *3.60V, which is the charging voltage of lithium iron batteries. The charging current standard is 0.2 times of the capacity.

Equilibrium: The significance of the battery pack is made of many pieces of batteries in parallel together again, the batteries can't be the same, so can only put in group with performance, put into a set of similar but because at the time of charging the batteries performance inconsistency will lead to after the completion of the charging voltage, equilibrium is at the time of rechargeable batteries with high voltage discharge resistance, waiting for the low voltage batteries voltage high, in order to achieve the batteries voltage, improve the battery performance for the whole group.