

Dongguan DALY Electronics Co., Ltd.

BMS Manual



(BMS)

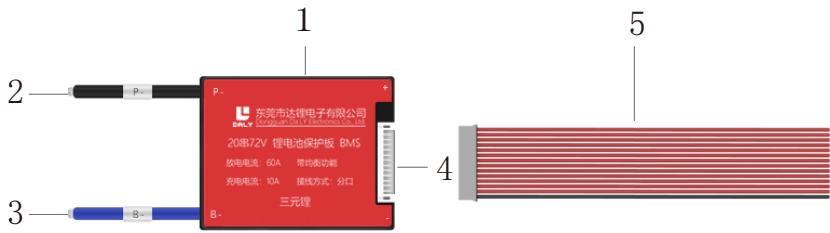


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1. Wiring Tutorial for Hardware BMS

1.1 Hardware BMS Parts Description



1.BMS

2.P-line (connected to the negative terminal of the output terminal)

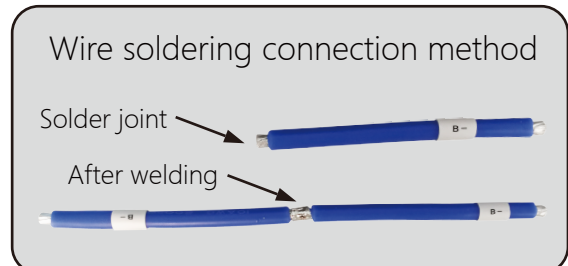
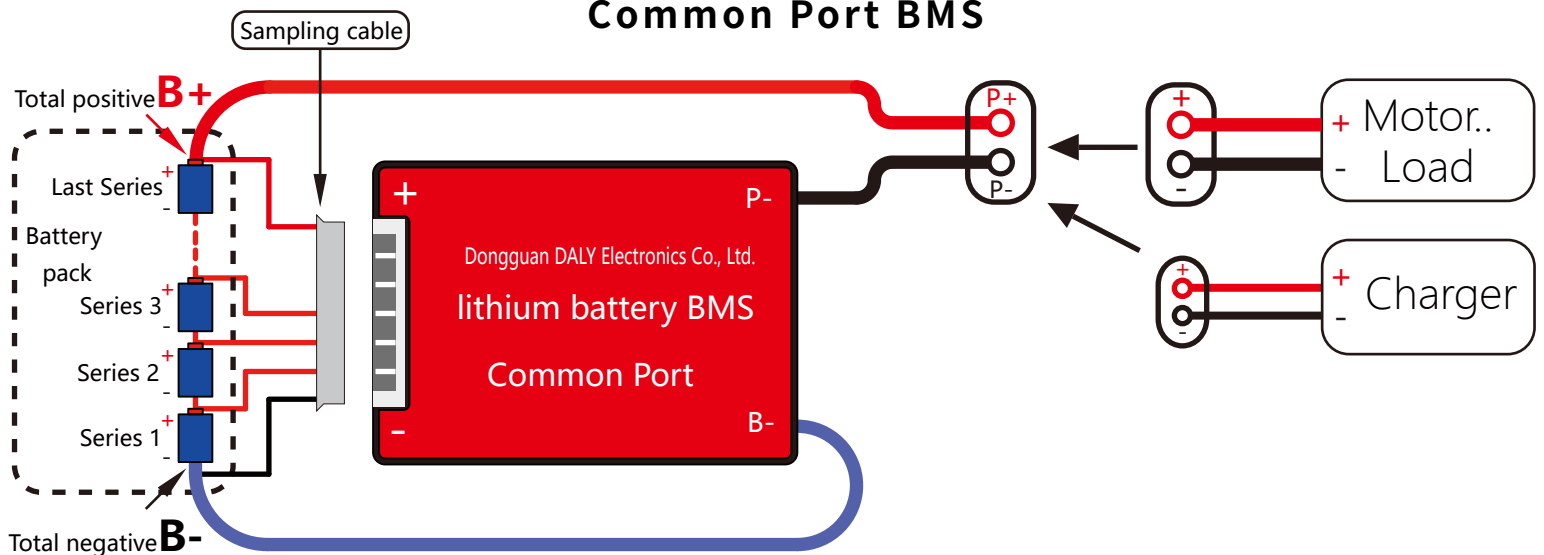
3.B-line (connected to the total negative pole of the battery pack)

4.Cable socket.

5. Sampling cable.

1.2 Hardware BMS Circuit Wiring Diagram

Wiring Instructions for the Common Port BMS

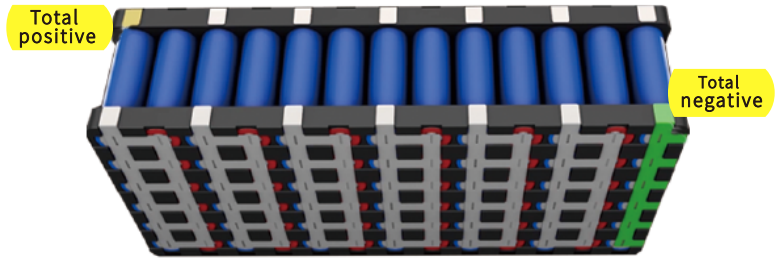


1.3 Specific Steps for Wiring the Hardware BMS

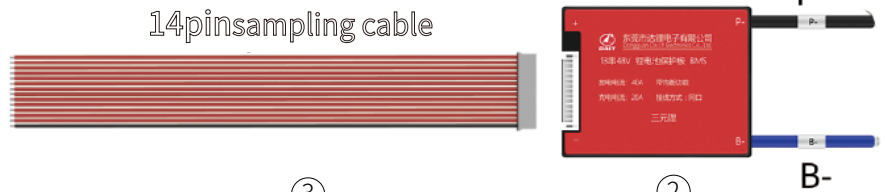
(Below we take 13 strings of protection boards as an example)

A Preparation before wiring

1. 13 strings of lithium battery pack
2. 13 strings of BMS
3. 14pin sampling cable
4. Electric soldering iron
5. Multimeter



①



③

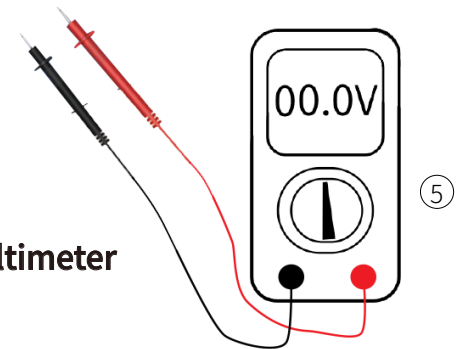
②

Electric Soldering iron



④

Multimeter



⑤

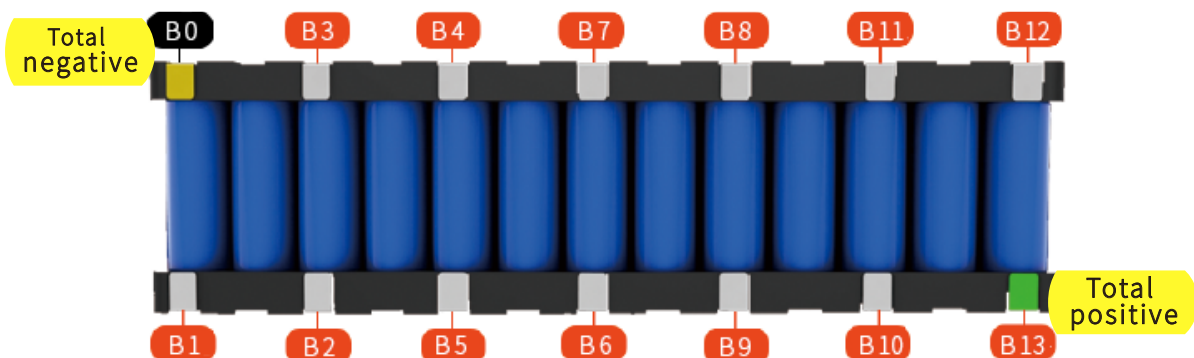
☆ BMS series need to match the number of battery pack series. The number of series of protection boards cannot be greater or less than the number of strings of batteries pack. (Current matching is explained in detail on our official website.)

☆ Do not insert the BMS when soldering the cable of the BMS, otherwise the BMS will be damaged (especially important)

B Welding cable

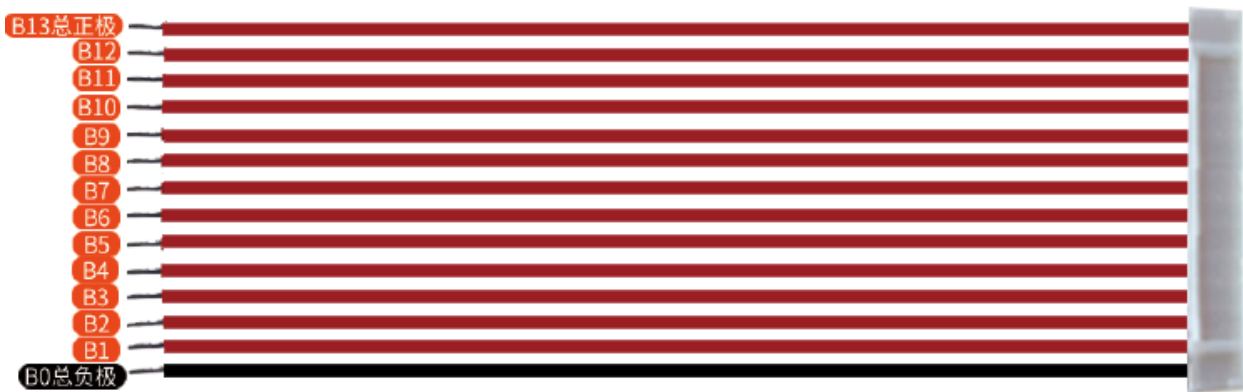
1. Firstly, pls find the total negative pole of our battery pack which is not connected to any other positive poles), we mark it as B0, the connection point between the positive pole of the first string and the negative pole of the second string is marked as B1, and so on. The positive pole of the string is the total positive pole (the positive pole is not connected to any other negative poles), marked as B13. (as the picture shows)

13 strings battery pack



2. Connect the first cable (black) B0 to the total negative pole B0 of the battery pack, connect the second (red) B1 to B1 of the battery pack, and connect the third cable (red) B2 to the B2 of the battery pack, and so on, until the last red cable B13 is connected to B13 of the battery pack. (See the figure below for the marking sequence of the cable)

3-14Pin sampling cable



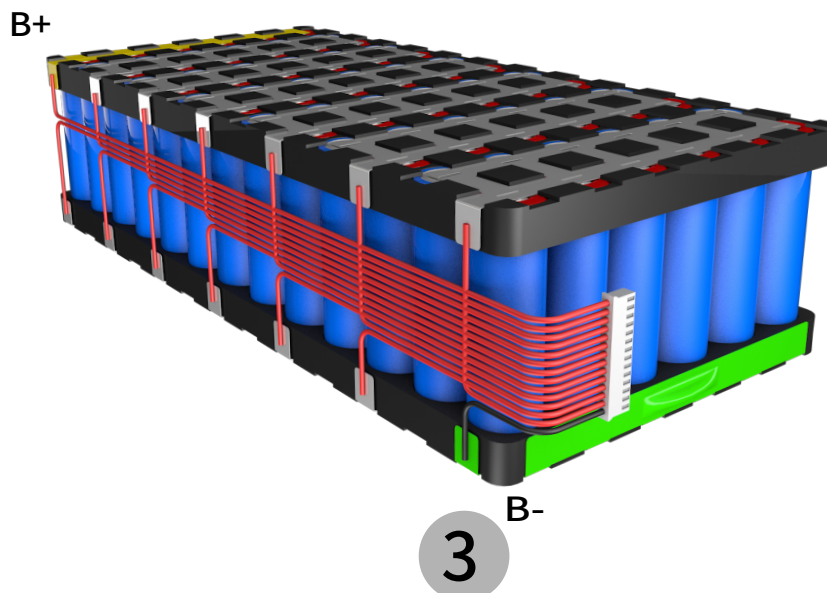
3. After soldering the cable, check again whether the welding sequence is correct.

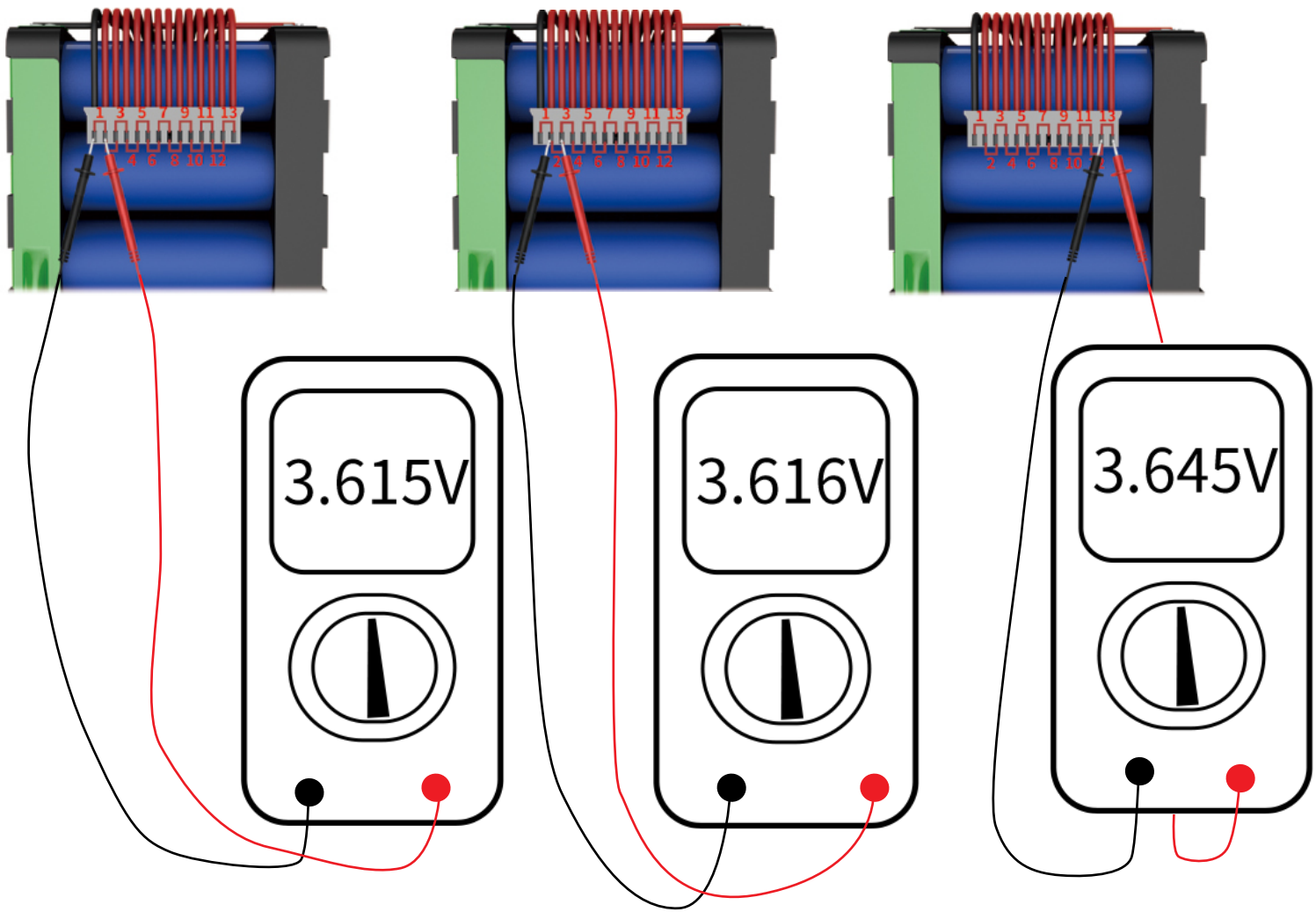
4. Welding methods for other strings of BMS is the same as above

C Verify that the cable welding is correct

1. After the battery pack is welded, we can use a multimeter to check the voltage to confirm whether the wire is welded correctly. Set the multimeter to the DC voltage range and test the voltage between the two cables corresponding to the number of strings. (As shown)

Welded battery pack





The voltages collected in turn through the cable port in the above figure:

The first string:3.615V second string:3.616V The third string:3.615V The fourth string: 3.614V

The fifth string:3.615V The 6th string:3.616V The 7th string:3.615V The 8th string:3.615V

The 9th string:3.616V The 10th string: :3.616V The 11th string:3.614V The 12th string:3.615V

The 13th string: 3.645V

Note: According to the above measurement results, the voltage of each string is almost the same and the error is within 0.003V. If the value of the voltage is twice or more than the average value, it means that the wiring is wrong.

- D** After confirming that the cable is connected correctly, connect the BMS to the soldered cable (if the cable is connected incorrectly, the BMS will burn out, which is particularly important)

1.4 Method to judge whether the BMS is normal or Not before installation by voltage measurement.

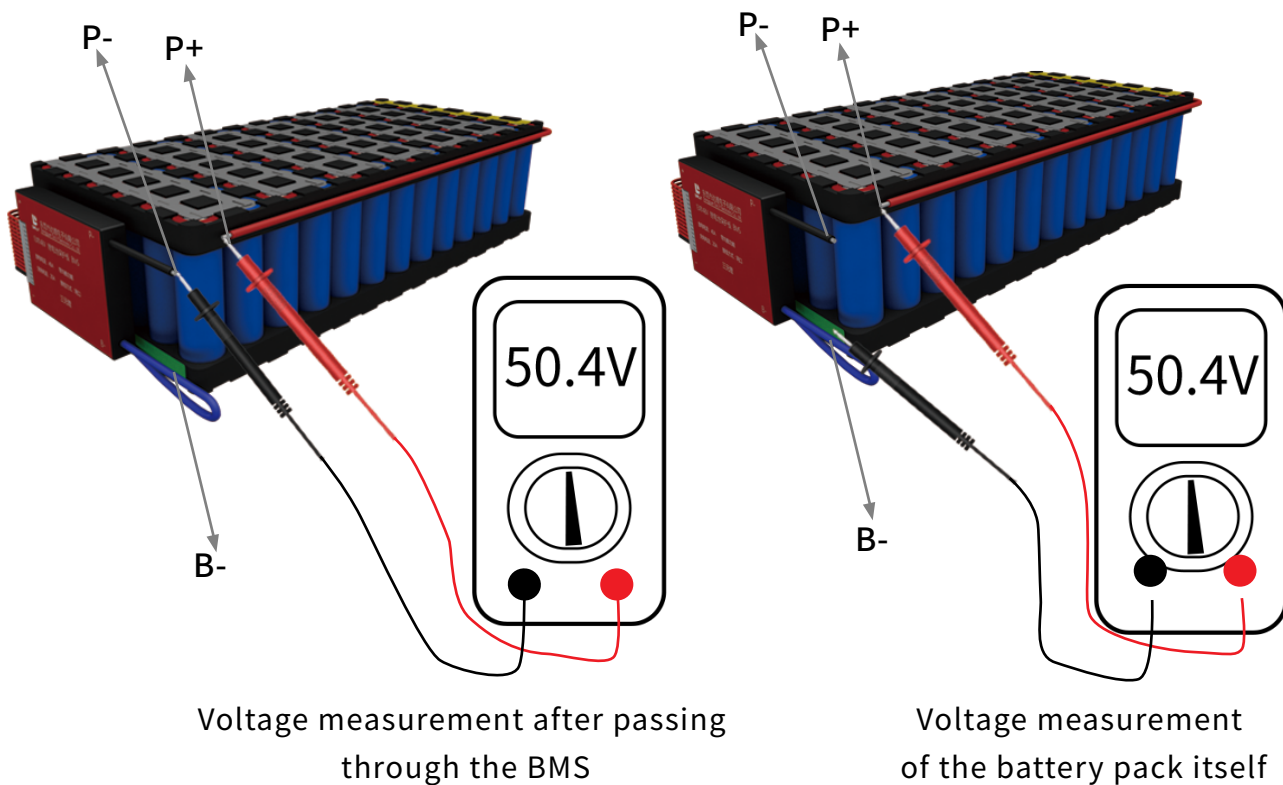
1. Weld the B-wire of the BMS to the total negative electrode of the battery pack.

2. Use a multimeter to measure the 2 voltage as following and check if 2 voltage is the same

A. battery pack voltage , the total positive pole of the battery pack B+ to the total negative pole B-The voltage between (as shown in the picture)

B. the voltage from the total positive electrode B+ of the battery pack to the BMS P- (as shown in the picture)

if The value error is within 0.6V, which means that the BMS can output normally



3. If the measured voltage error is above 0.6V, the BMS cannot work normally, please check whether the voltage of each string of the battery pack is within the normal voltage range)

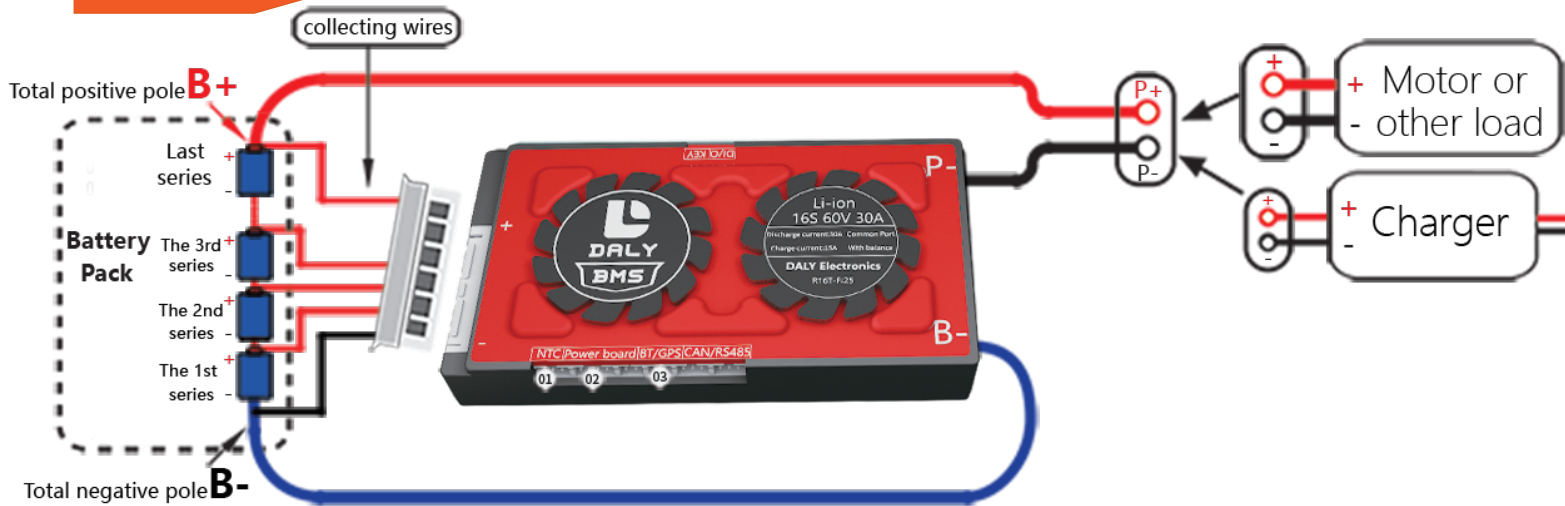
☆After the assembly is completed, Pls perform charge and discharge test to see if the overcharge and overdischarge of the BMS is normal, and then install the battery pack for use.

☆The total positive pole of the battery pack is directly connected to the positive pole of the output terminal, and the BMS is connected in series between the total negative pole of the battery pack and the negative output terminal, which is equivalent to the BMS is an intelligent switch that controls the output negative pole of the lithium battery.

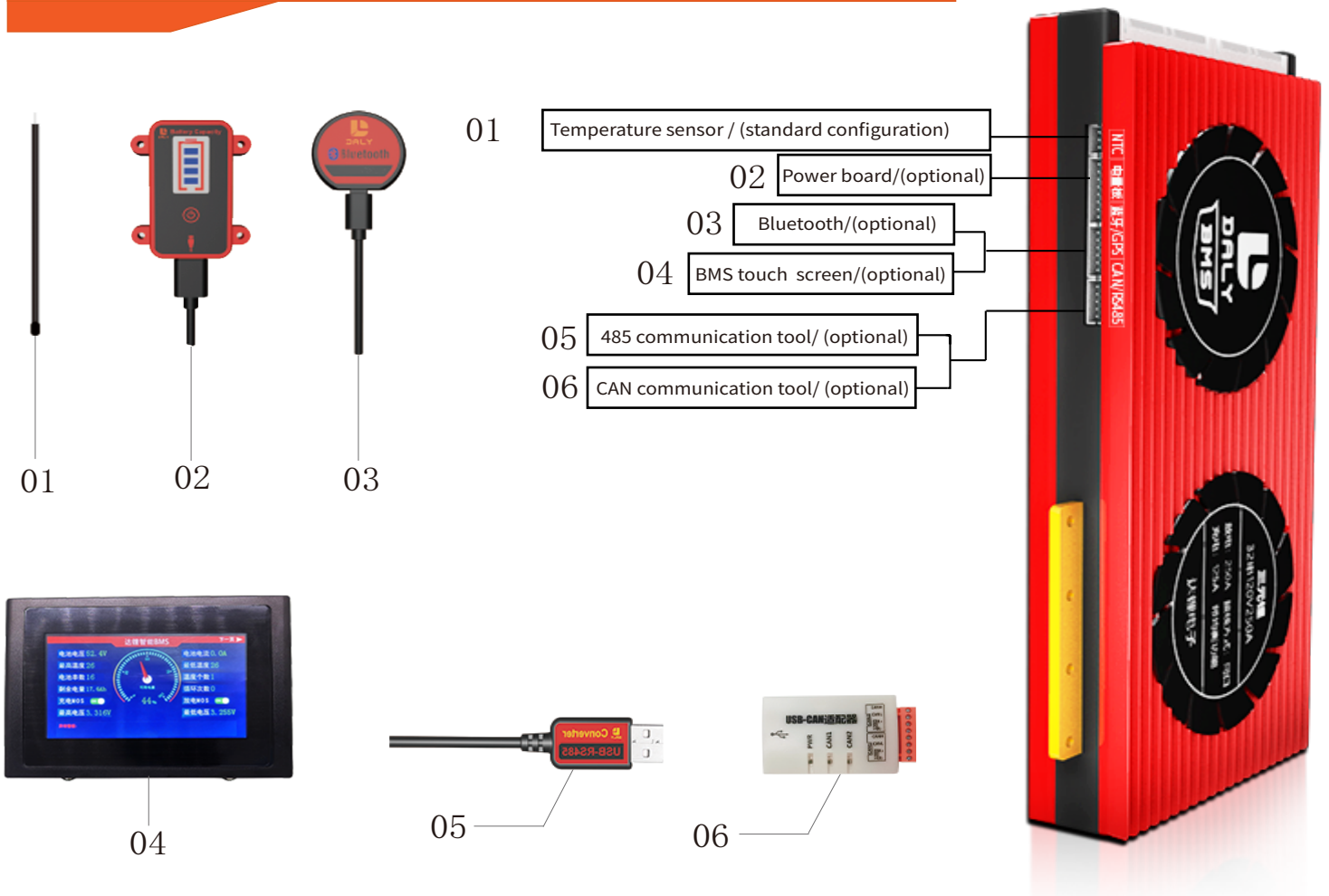
2、Smart BMS Wiring Tutorial

2.1 The wiring connection of the software BMS completely refers to the process wiring of the hardware BMS.

2.2 Schematic Diagram of the Wiring Circuit of the Smart BMS



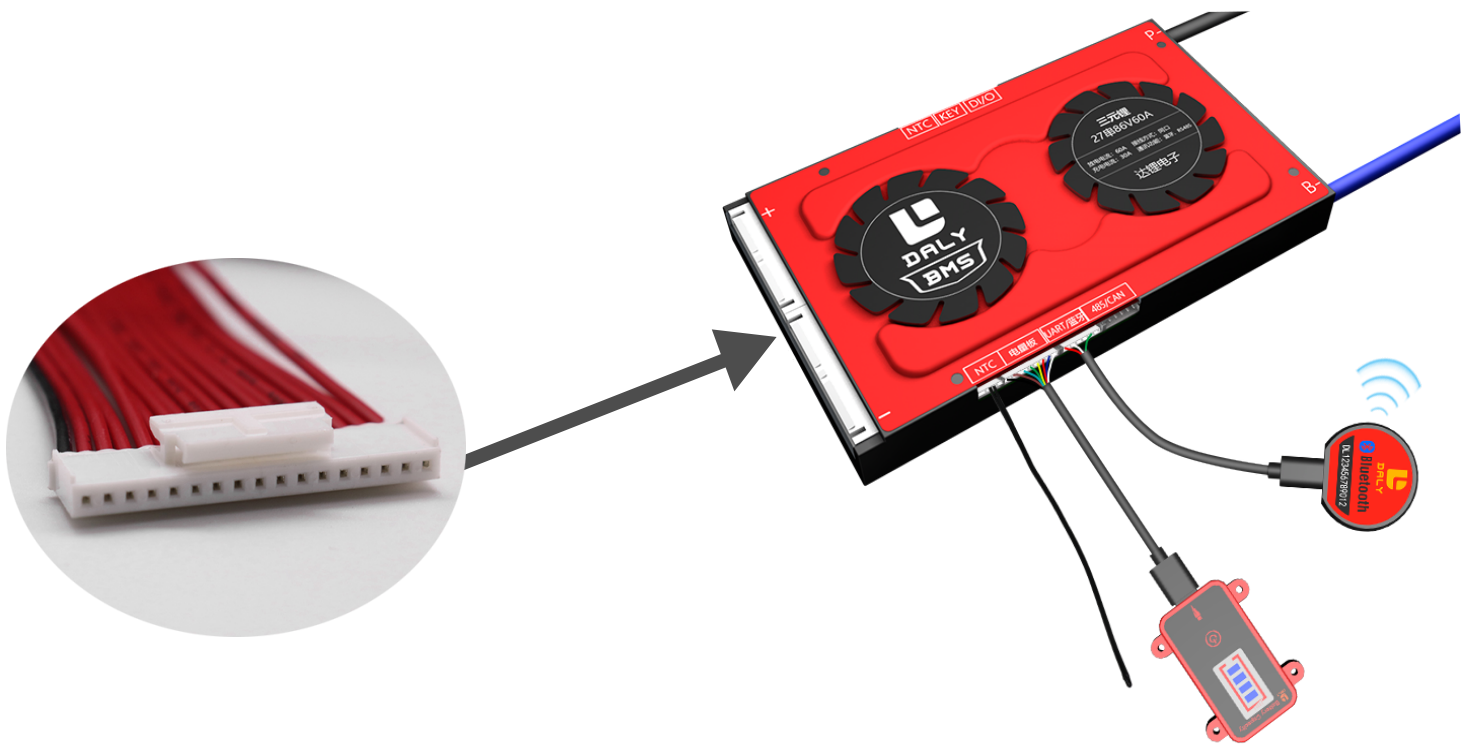
2.3 Smart BMS Function Port and Accessories Introduction



2.4 The Specific Steps of the Smart BMS Accessories connection

1. After confirming that the cable is soldered correctly, please install the BMS accessories (Such as: temperature control standard configuration/electricity board option/Bluetooth option/BMS display option/GPS option/communication tool option) in the corresponding function port of the BMS.
2. Insert the sampling cable into the BMS
3. The software BMS must be equipped with a temperature control line. It cannot work normally without temperature control or the temperature control is damaged

(Let's take 13 series of BMS connected with accessories as an example)

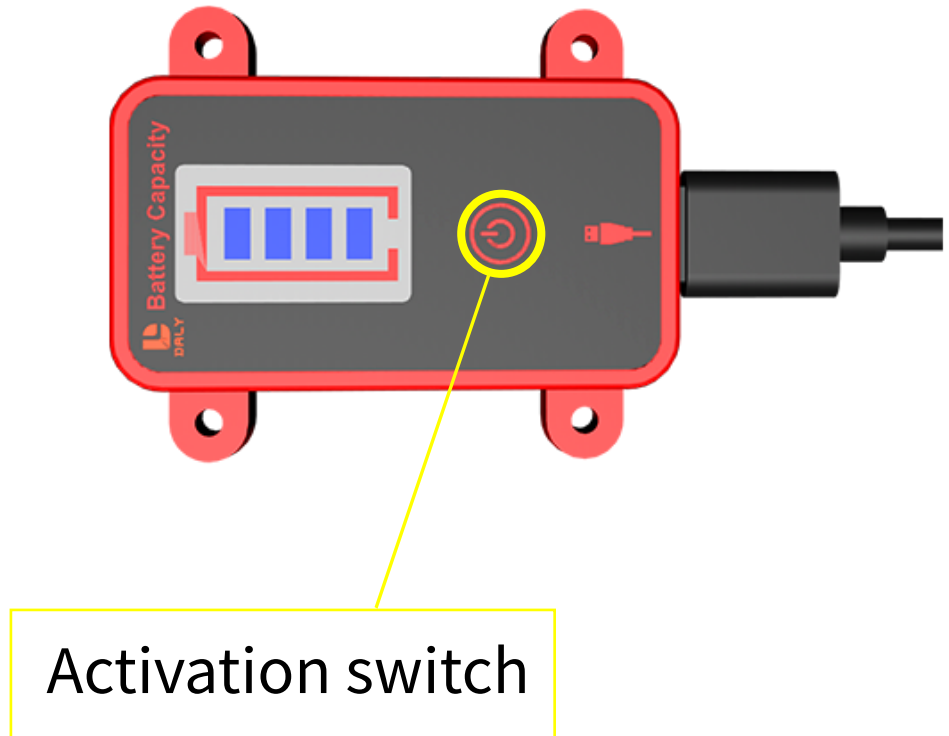


2.5 The Activation of the Software BMS

After the software version of the BMS cable is inserted into the protection board, the BMS must be activated by following 2 method before using it.

Method ①: Purchase the power board and There is an activation switch on the board and click the button.

Method ②: Charge activation, B-line must be connected to the total negative pole of the battery pack when charging . 3S~5S, J series (10J, 16J) BMS only can be activated by this way.



2.6 The Method to Judge Whether the BMS is Normal before Installation

1. After confirming that the BMS is activated, we can use our host computer by UART /US485 USB cable or Bluetooth mobile phone APP display to check whether the charging and discharging MOS is turned on. If it is not turned on, it cannot be charged and discharged normally. we can check the “History warning ” section on PC screen to understand what caused it to fail to charge and discharge normally.
2. Pls refer to the 4 step of the wiring procedure of the hardware BMS to make sure the wiring is correct.

2.7 Smart bms Tutorial Video :

<https://www.dalyelec.cn/newsshow.php?cid=25&id=78&lang=1>

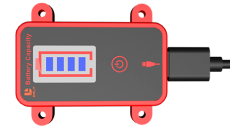
1. Daly Smart BMS Touch screen Connection Tutorial

<https://www.youtube.com/watch?v=uVzdiTusfK4>



2. Daly Smart BMS SOC light board Connection Tutorial

<https://www.youtube.com/watch?v=SxJWjg5Geic&t=96s>



3. Daly Smart BMS PC screen Connection Tutorial

<https://www.youtube.com/watch?v=IIDImJAK5F0>



4. Daly Smart BMS CANBUS Connection Tutorial

<https://www.youtube.com/watch?v=nZnDJsilcr4>



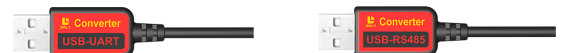
5. Daly Smart BMS Bluetooth APP Connection Tutorial

<https://www.youtube.com/watch?v=xnHunhNvrTg&t=6s>



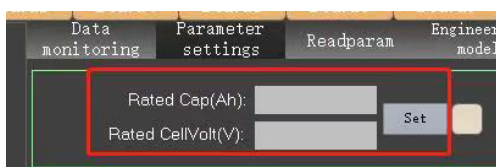
6. Daly Smart BMS UART、RS485 Connection Tutorial

<https://www.youtube.com/watch?v=iwdChhE1NIY>

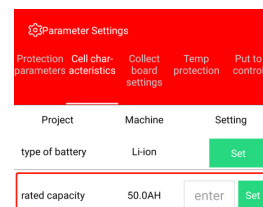


2.8 Attention items for the Parameter Modification of the Smart BMS

1. The number of series and the parameters of the BMS (Li-ion, Lifepo4 ,LTO) have default values before shipping, but the battery pack capacity needs to be set by the customer according to the actual capacity AH of the battery pack. Only the BMS parameters setting is correctly based on the lithium battery capacity, the SOC of the lithium battery collected by the software BMS will be accurate.



PC software setting capacity



Mobile APP setting capacity

2. Other parameters of BMS can be set according to the customer's needs (but it is not recommended to modify the parameters randomly).

Note: The smart phone APP/BMS display screen requires a password to modify the parameters.

Factory Default password:123456

You can modify the password by yourself

Safety Precautions During Use



1. Pay attention to the sampling cable sockets to prevent loosening, plug the cable into the BMS, you can use 704 waterproof fixing glue to fix it.
2. For wire welding, Pls pay attention to the welding firmly to avoid false welding and flat wire squeezing
3. The use environment of the BMS:
 - ① Pay attention that the heat dissipation surface of the BMS should not be close to the battery cell and reserve some space.
 - ② Pay attention to waterproof .

Safety Precautions During Use

Problem status	Check items
The output voltage is low, there is a pressure difference	<ol style="list-style-type: none"> 1. Check each sampling line if it is connected to the battery in turn and use a multimeter to measure the superimposed voltage of the line to determine if connection is correct or Not. 2. Test each string of batteries to see if it is overcharged or overdischarged 3. Check the cable if it is dropped, damaged, or connected improperly. 4. If the pressure difference is within 0.67, it is normal. If the pressure difference is above 1-27, please stop charging and discharging to avoid burning the BMS. 5. for the first time assembling, the sampling cable maybe trigger the drop protection. At this time, pls unplug sampling cable and disconnect the load from bms about a minute, and then plug it in again and then bms will wor normally.
Power off when BMS is connected with the load or inventor	<ol style="list-style-type: none"> 1.1. Please confirm whether there is a voltage difference between the voltage passing through the BMS and the voltage not passing through the BMS. 2. Please confirm whether a certain string voltage of the battery pack is lower than others strings (lower voltage is likely to cause over-discharge protection when discharging with a slightly higher current) 3. Whether the specifications of the BMS match your requirement or Not 4. Some loads and inverters take a long time to start up. Pls check if the delay timing of BMS can meet your requirement.
Plug in the sampling line, the sampling line gets hot	<ol style="list-style-type: none"> 1. Confirm whether each sampling cable is connected to the battery pack in turn and use a multimeter to measure the superimposed voltage of the line to determine if connection is correct or not. 2. Check whether the sampling cable is disconnected, damaged, or connected improperly.
Can't charge and discharge	<ol style="list-style-type: none"> 1. Confirm whether each sampling cable is connected to the battery pack in turn and use a multimeter to measure the superimposed voltage of the line to determine if connection is correct or not. 2. Check if each string of battery is overcharged or over-discharged. 3. Check whether the cable is dropped, damaged, or connected improperly. 4. Check whether the load or charger is wired according to the instructions. 5. Disconnect the load, unplug the sampling line, and reconnect it after one minute.
How to judge whether the BMS is damaged	<ol style="list-style-type: none"> 1. Connect the sampling cable and test whether the B-voltage and P-voltage are consistent (the same is OK, if not, it is IGC) 2. Connect the sampling cable, use a multimeter to test whether B- and P- are connected (connected to OK, non-conductive) is NC) 3. Visually inspect the protective plate for cracks, sols, and collision scars.
Battery Pressure Difference Occurs after Using for a Period of Time	<ol style="list-style-type: none"> 1. Confirm whether the battery performance is genuine. The BMS is only used for data collection and will not affect the performance of the battery itself..
Over-discharge is not protected, B-P-appears pressure difference	<ol style="list-style-type: none"> 1. Confirm whether the battery performance is genuine. The protection board is only used for collection and cannot affect the performance of the battery itself.

Special statement: The BMS is a high precision accessory . For DIY users ,if the bms have been welded the BMS B-/P- line ,we will not accept return or replacement request , and the damage needs to be repaired with charge . Please read the operation steps carefully to check whether the bms is good or bad without welding the protection board B-/P- line. If you do not agree to this clause, please return the original packaging.