

MOS 管是控制充电和放电的电子开关，所以必须装配

选项中不带管的是不包含功率 mos 管的，需要买家自行购买安装

选项中带 MOS 管的是我们已经安装好 mos 管，买回去接线可用

所有保护板都自带蓝牙，无需另外购买

保护板接线视频 <http://www.bilibili.com/video/av8458280/>

The MOS tube is the electronic switch that controls charging and discharging, so it must be assembled

The option does not contain tubes that do not contain the power MOS, which requires the buyer to purchase the installation himself

The option with the MOS tube is that we have installed the MOS tube and buy back wiring available

All protection boards come with Bluetooth without additional purchase

小蚂蚁 BMS 电池组保护板功能说明:

- 1.保护板支持 8-24 串任意电池组（钛酸锂、铁锂、三元等）（大于 18v）
- 2.电池组单体电压检测，电压检测范围 1-5v（低于 1v 和高于 5v 无法检测），高精度，综合误差小于 5mv，适用于所有电压在此范围内的电池组使用，过冲保护，过放保护电压可以在此范围内任意设置。
3. 采用受控的均衡方式，充电时候可以通过检测到的压差大于设定的值后开始均衡。
- 3.电流测量（支持 300a 以内电流测量）
- 4.高精度库仑计功能，基于电流对时间积分，准确计算电池剩余容量，充入电量等。
- 5.支持安卓手机设置不同电池参数，查看单体电压电流等信息
- 6.支持屏幕显示电池组状态，参数，每节单体电压
- 7.基于电机霍尔脉冲检测速度，并可计算剩余续航里程
- 8.独立的 6 路温度测量，可以设置温度过温保护值
- 9.设双独立看门狗实时监测程序加二级保护，永不死机！

Ant BMS battery protection board function:

The 1. protection board supports 8-24 sets of arbitrary batteries (lithium titanate, iron lithium, three yuan, etc.) (greater than 18V)

2. the single battery voltage detection, voltage detection range of 1-5V (lower than 1V and higher than 5V cannot detect), high precision, comprehensive error is less than 5mv, applicable to all voltage in this range of battery use, overshoot protection, overdischarge protection voltage can be set arbitrarily within this range.

3. controlled by a balanced manner, charging time can be detected by the pressure difference is greater than the set value after the start of balance.

3. current measurement (support for current measurement within 300A)

4. high-precision coulomb meter function, based on current integration of time, accurate calculation of the remaining capacity of batteries, charging power, etc..

5., support Android mobile phone set different battery parameters, view voltage, current and other information monomer

6. support screen display battery status, parameters, individual voltage per section

7., based on the motor Holzer pulse detection speed, and calculate the remaining mileage

8. independent 6 way temperature measurement, you can set the temperature over temperature protection value

9. set dual independent watchdog real-time monitoring procedures, plus two protection, never dead!

**Note: the protection board has many connections and is sensitive and fragile. Each step of the wiring shall be carefully checked and shall not be careless. Every step must be well insulated so as to prevent any short circuit! (there are many careless customers who short-circuit the boards) and the temperature sensors must be insulated again before loading into the battery pack!!! Otherwise, any consequences will be borne by the customer**

蚂蚁BMS 日志

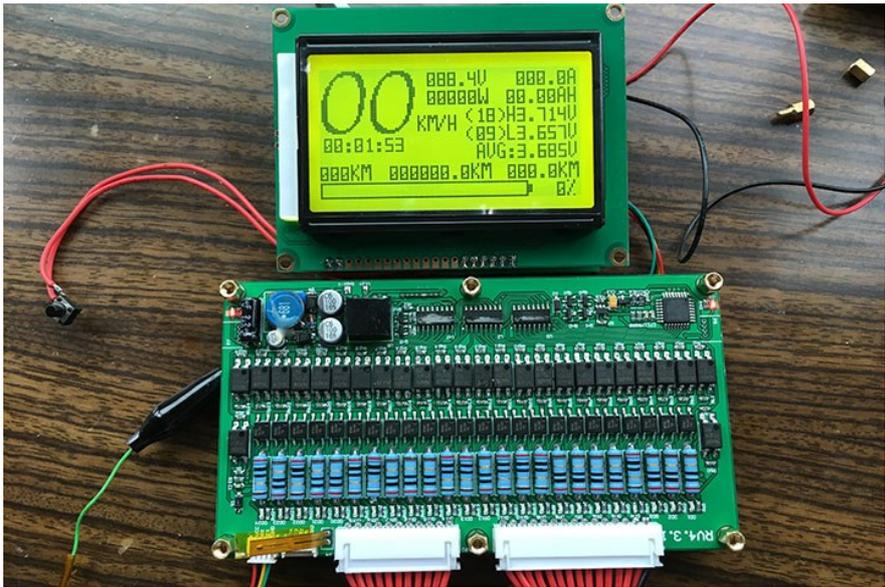
实时状态 参数 系统 爱好

已设置设备BMS-ANT  
AA:BB:CC:11:22:44  
电压 78.9V  
电流 0.0A  
剩余容量 17.295 AH  
功率0 W

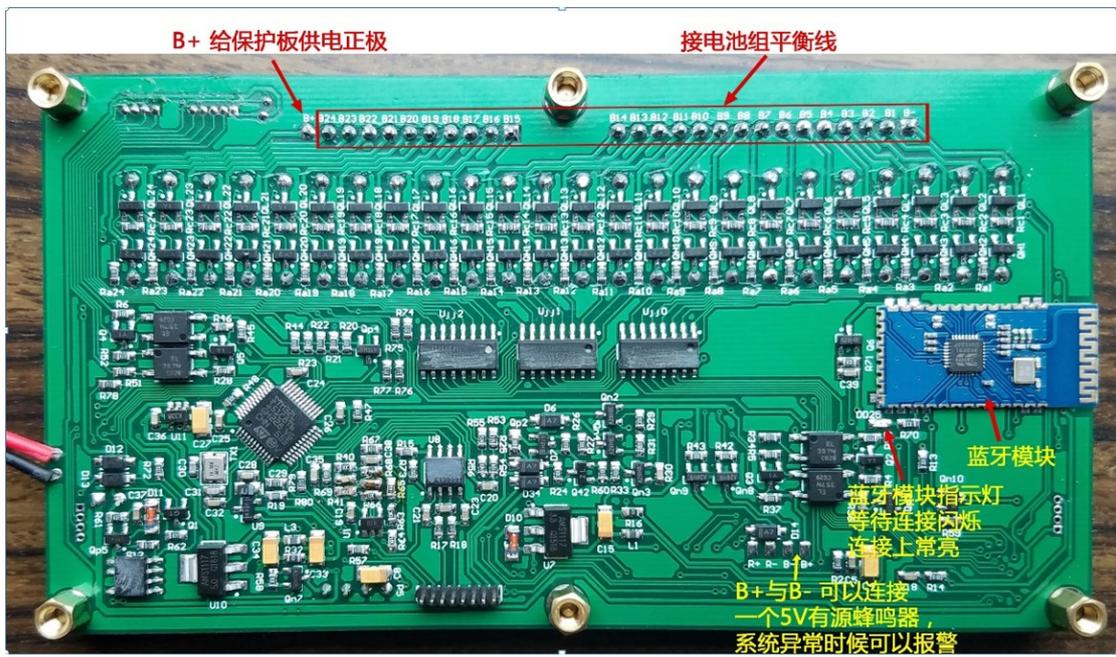
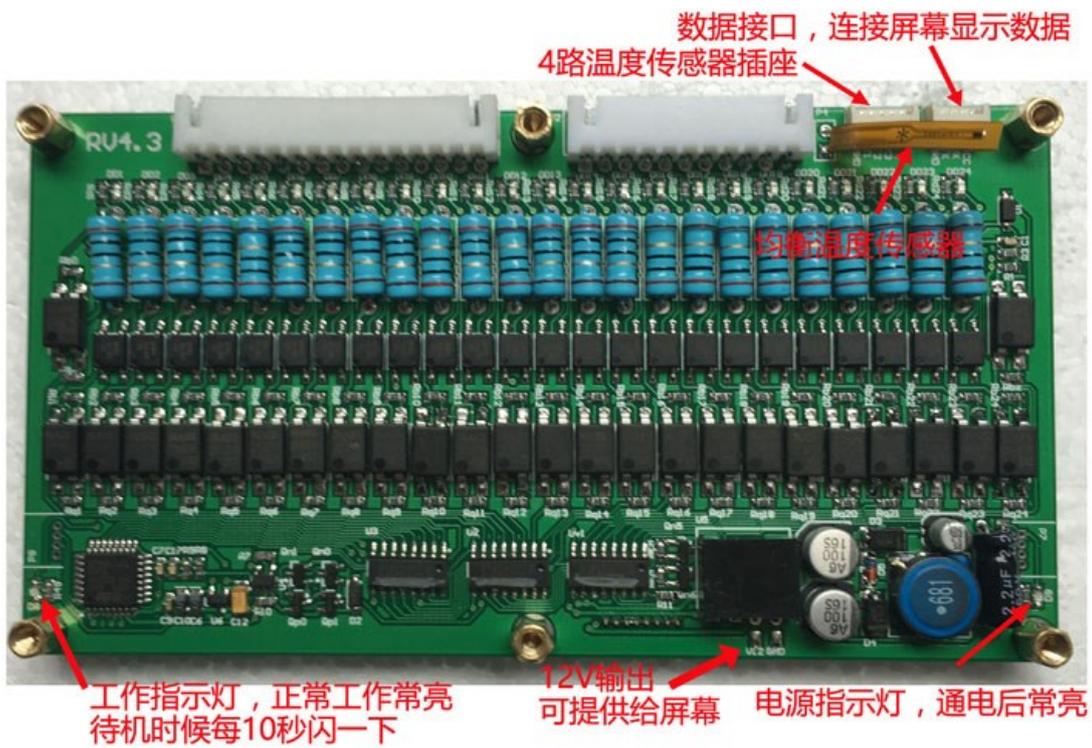
总循环容量: 12.40AH,单体压差: 0.007V  
最高:[07],最低:[15],平均: 3.289V  
充电MOS:开启  
放电MOS:开启  
均衡状态: **自动均衡**

[1] 12°C[2] 13°C[3] -°C[4] -°C[5] -°C[6] -°C

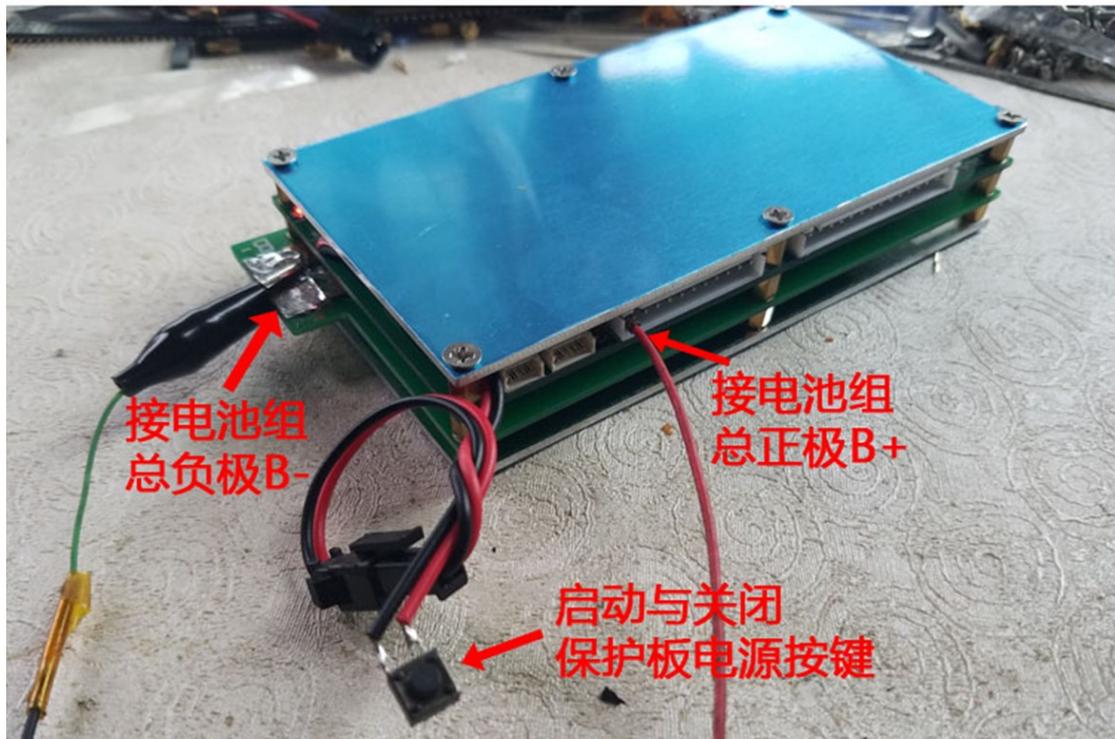
[01]	3.288V	[02]	3.290V
[03]	3.290V	[04]	3.288V
[05]	3.287V	[06]	3.292V
[07]	3.293V	[08]	3.290V
[09]	3.289V	[10]	3.290V
[11]	3.289V	[12]	3.292V
[13]	3.287V	[14]	3.287V
[15]	3.286V	[16]	3.290V
[17]	3.286V	[18]	3.288V
[19]	3.290V	[20]	3.289V
[21]	3.288V	[22]	3.290V
[23]	3.290V	[24]	3.291V



The green, represented by a balanced electric core, can be seen as a balanced light



## 保护板可以正常工作最简单的接线方式



让保护板正常工作，只需给保护板接上供电，如上图B-与B+为供电口，保证电压大于24V,长按启动按键3秒，保护板即可正常工作，接入均衡线即可查看电压。

Caution: the board is prohibited from separating the main board from the power board in the case of live electricity. Disconnect the main board from the power panel before disconnecting the B+ or B- and unplug the equalizer line! Otherwise, it will burn the protective plate!!!

About start and turn buttons:

- 1., if the protection plate is abnormal power failure caused by shutdown, only need to press short to start BMS normal work
- 2., the protection board in normal operation, long press this button for more than 5 seconds, and then release the button, the protection board will automatically shut down the power supply, stop working, zero power consumption, short press, you can switch the protection board matching screen display.
3. protective plate if the discharge tube does not open for more than 5 minutes, the protection board will automatically shut down the total power supply, stop working, zero power consumption.
4. if the BMS power is turned off for second or third reasons, it will take 3 seconds to press the power button to start the normal operation.
- 5., if you have a matching screen, press this button to switch the screen display.
6. power button, please ensure good insulation, otherwise it may not automatically shut down the BMS power supply.

About onboard bluetooth;

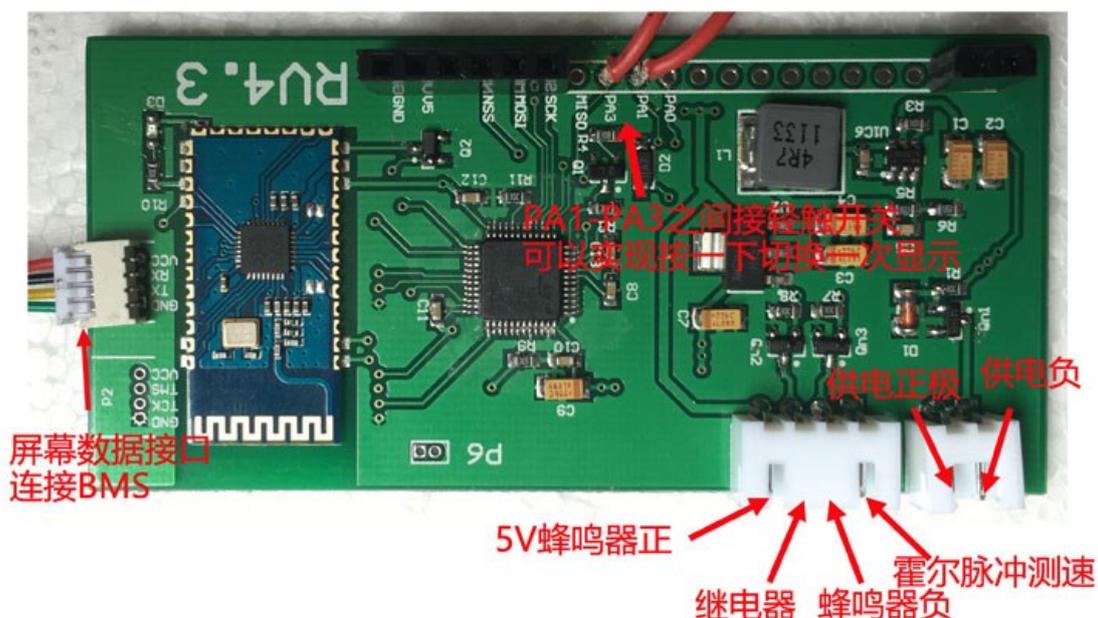
When 1.BMS is working, Bluetooth is activated, and you can search and connect at this time:

Name: BMS\_ANT pairing password: 1234

Idea: BMS standby, Bluetooth power will be closed automatically (if not already connected)

Bluetooth, Bluetooth, close) cannot connect at this time (the default is no automatic standby current after 3 minutes), can be used to discharge or charge current is detected after BMS will automatically terminate standby, Bluetooth will be re opened. Before you search for Bluetooth, make sure that BMS is not waiting, and if you do not search once, please try again.

屏幕主板供电电压需要 ( 6V-20V ) 之间, 可以从电车上的12VDC转换器取电, 也可以直接从BMS主板上面的12V取电



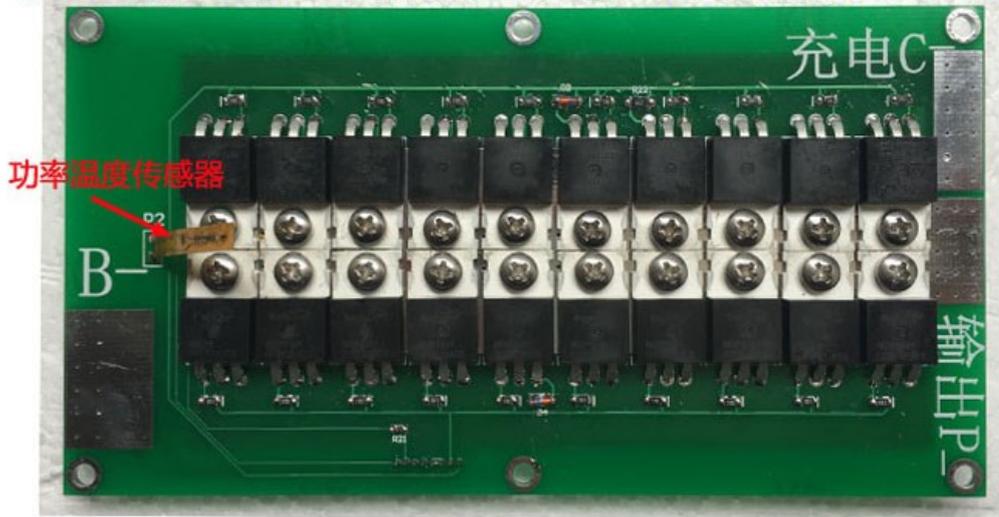
Note: the screen power supply, please try to use the external power supply (between 6-20v), electric car users please use the DC converter DC output voltage, non electric car users had better use a separate transformer to screen power supply! If you use the motherboard, the 12V above will cause the motherboard to work unstable!

Here is the latest screen driver board: RV4.8, which changes as compared to the previous screen driver board:

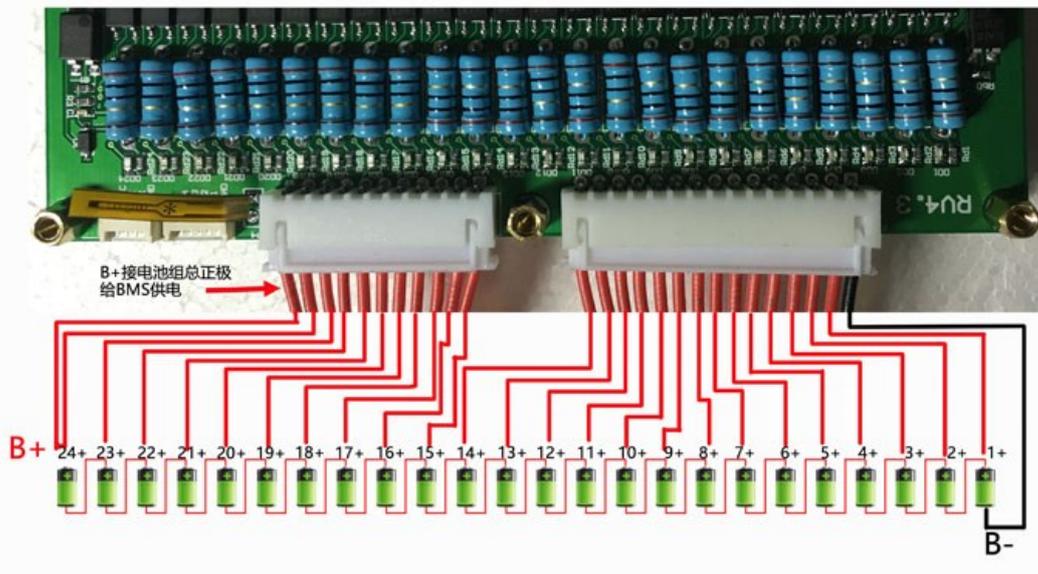
1. power supply is changed to wide voltage 24-100V and can be supplied directly to the battery pack
- 2., after the power supply, you can press the boot button to boot
- 3., press the button to cut the screen button, switch the screen, press the button to close the screen, and then close the screen
4. Holzer velocimetry on the motherboard on a round hole, you can weld a line to the motor Holzer line

**B-** : 接电池总负极 (粗线)  
**输出P-** : 分口放电负极 (粗线)  
**充电C-** : 充电口负极/同口放电负极 (粗线)

备注: 每颗MOS管对应一颗驱动电阻, 焊接MOS管前先焊接驱动电阻51R



均衡线从总负极开始依次往后接, 有多少串电池接多少即可  
最后将均衡线最后一根 ( B+ ) 接到电池组总正极给BMS供电!



All connections are properly connected. The screen displays the voltage of the body properly

1. to ant BMS protection board, 398879781 official group, Download Android app client and install

2. search and connect BMS (Name: SPP or BMS-ANT default password: 1234)

3., the protection board default is three yuan core parameters, according to their own core type set parameters

4. if less than 24 strings, please put the actual number of batteries set in, the protection board can have output

The temperature sensor is yellow slice, without positive and negative pole, it is connected to the temperature sensor socket. The common foot of the temperature sensor is GND, and the other foot is connected with T1, T2, T3, T4

Protective plate calibration:

1. monomer voltage calibration: you can adjust the "system reference voltage" (default 3 or so), with 0.001 of the amplitude of slow, big, small, you can change the monomer voltage value, until accurate!

2. total pressure calibration: you can adjust the total pressure calibration parameter (default 3330 or so), slowly adjust the size of this value, you can change the total pressure until accurate!

3. current calibration: by adjusting the current sensor range, slowly adjust the size of this value, you can change the current until accurate!

Note: parameter setting in the "power start current" project, please do not change, too large may cause the MOS tube burning and discharging!!!

About automatic equalization function:

Automatic balancing function mainly for the battery too big difference and set a function, users must be in full battery, or close to it with the use of electricity, unplug the charger in battery basically full power down, click "automatic balance", the protection board will automatically balanced, until the battery pressure is less than 0.001 close, or the user click "automatic balancing" to close, whether open or close automatically balanced can the screen to switch to the "state system" view "equilibrium", if "automatic balance" while in self balancing!