

软件主动均衡 规格书

Software active equalization
specification

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1.概述

因电池的容量、内阻和电压等参数值不能完全一致，这种差异导致充电时容量最小的电池容易过充，过放，受损后最小的电池容量变得更小，进入恶性循环。单体电池性能的优劣直接影响到整组电池的充放电特性及电池组容量降低。没有均衡功能的BMS只是一个数据采集器，很难称得上是管理系统。BMS主动均衡功能，可以实现最大持续 1A 的均衡电流。将单体能量高的转移到单体能量低的电池，或用整组能量补充到单体最低电池，在实施的过程中通过储能环节把能量重新进行分配，最大程度的保证电池一致性、提高电池续航里程、延缓电池衰老。

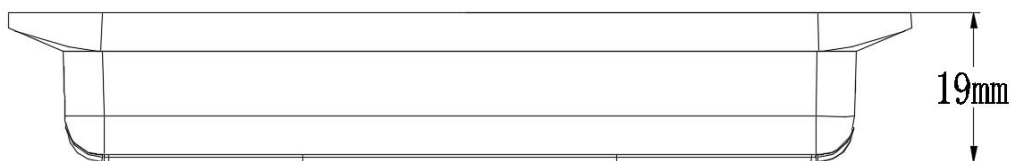
Because the battery capacity, internal resistance, voltage and other parameter values are not completely consistent, this difference causes the battery with the smallest capacity to be easily overcharged and discharged during charging, and the smallest battery capacity becomes smaller after damage, entering a vicious cycle. The performance of single battery directly affects the charge and discharge characteristics of the whole battery and the reduction of battery capacity. BMS without balance function is just a data collector, which is hardly a management system. BMS active equalization function can realize the maximum continuous 1A equalization current. Transfer the high-energy single battery to the low-energy single battery, or use the whole group of energy to supplement the lowest single battery. During the implementation process, the energy is redistributed through the energy storage link, so as to ensure the battery consistency to the greatest extent, improve the battery life mileage and delay the battery aging.

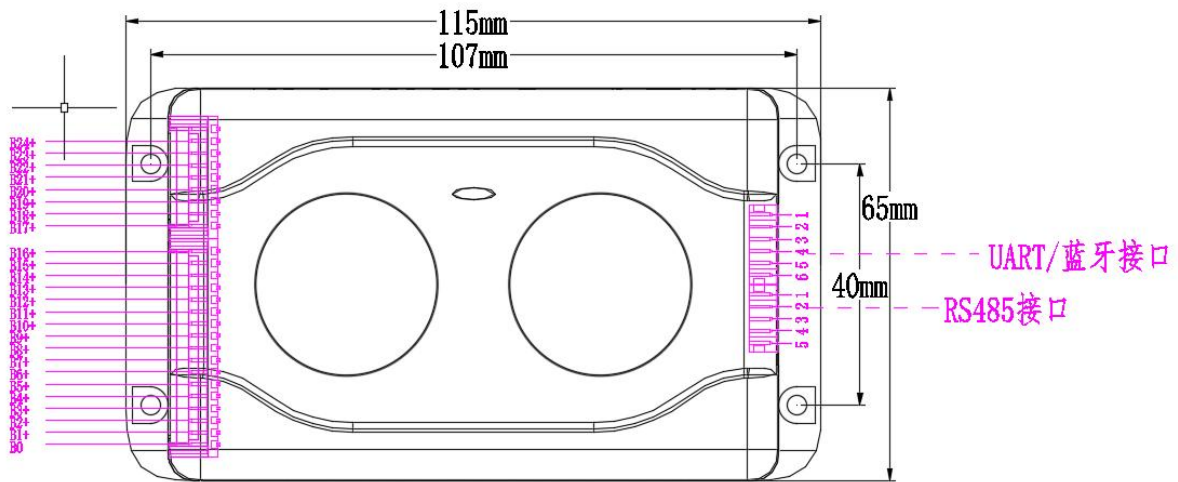
2.主要参数技术指标 Technical indicators of the main parameters

技术指标 qualification	数据说明 data specification	备注 remarks
电池组类型 Battery pack type	三元、铁锂、钛酸锂Li-ion.LiFePO4.LTO	
电池组串数 Number of battery pack strings	16串	
均衡电流Balance current	0.5~1A	
均衡方式Balance mode	主动均衡Active equilibrium	
均衡开启条件 Balance on condition	达到自定义设定开启电压及压差 单串最低电压 $\geq 3.2V$ （出厂默认） 且均衡开启压差： $\geq 50mV$ （出厂默认）	电压及压差可设置($\geq 20mV$)Voltage and differential pressure can be

	Reach the user-defined opening voltage and differential pressure Minimum voltage of single unit $\geq 3.2V$ (factory default) and equalizing opening differential pressure: $\geq 50mV$ (factory default)	set ($\geq 20 MV$)
均衡关闭条件 Balance closing condition	达到自定义设定关闭电压及压差 单串最低电压 $<3.2V$ (出厂默认) 且均衡压差: $<50mV$ (出厂默认) Closing voltage and differential pressure reaching the user-defined setting Minimum voltage of single unit $< 3.2V$ (factory default) and equalizing differential pressure: $< 50mV$ (factory default)	电压及压差可设置($< 20mV$) Voltage and differential pressure can be set($< 20 MV$)
工作功耗 Working power consumption	$<11mA$	
休眠电流 Sleep current	$300\mu A$	
工作温度 working temperature	$-20^{\circ}C \sim 60^{\circ}C$	
尺寸 size	$115*65*19$	
线束 Harness	与BMS兼容	
通讯方式 Means of communication	UART/RS485	
数据监控 Data Monitoring	蓝牙APP/上位机	
均衡指示灯 Balance Indicator Light	亮/闪: 均衡开启 灭: 未开启均衡、故障 On / Flash: equalization on off: equalization not on, fault	

3. 尺寸图 dimensional drawing





4. 接口定义说明 Interface definition description

保护板 Interface name	主动均衡 Active equilibrium	Pin脚	标号	定义说明 Description of definition
共用 采样线接口Connecting wire (标配) Standard Parts PHB 2.0 17Pin带扣		1	B0	接第1节电池负级Connect Section 1 Battery negative grade
		2	B1+	接第1节电池正级Connect section 1 battery level
		3	B2+	接第2节电池正级Connect section 2 battery level
		接最后1节电池正级Connect the last 1 positive battery level
蓝牙/UART接口 (选配) Optional accessories PH2.0 6Pin		1	GND	地GND
		2	3.3V	供电电源3.3V Power supply is 3.3V
		3	15V	供电电源15V Power supply is 15V
		4	S1	灯板按键Lamp button
		5	TX	通讯发送端Communication sending end
		6	RX	通讯接收端Communication receiving end
RS485 (选配) Optional accessories PH2.0 5Pin		1	485_B	485通讯接收端485 Communication receiving terminal
		2	485_A	485通讯发送端485 Communication sender
		3	GND	地GND
		4	/	/
		5	/	/

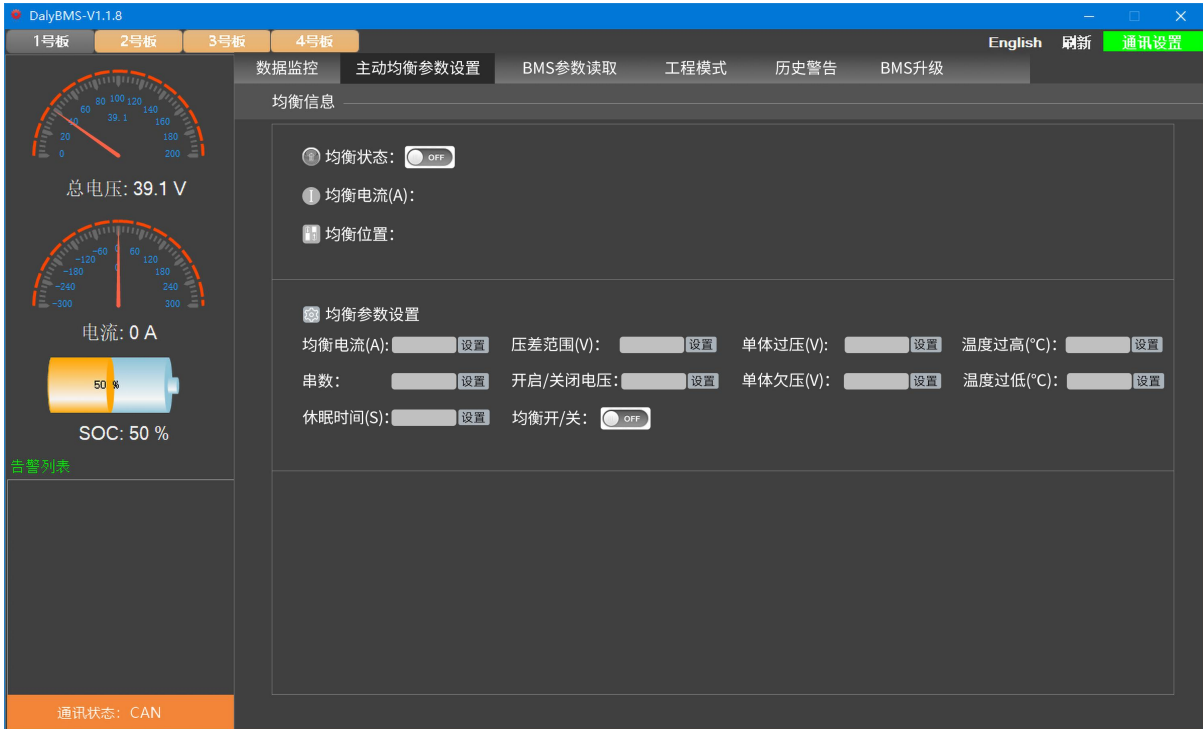
5.主要线材说明Main wire description

线材名称Line name	默认规格Default specification
采集线Collecting line	1007 24AWG L=450mm (17PIN)

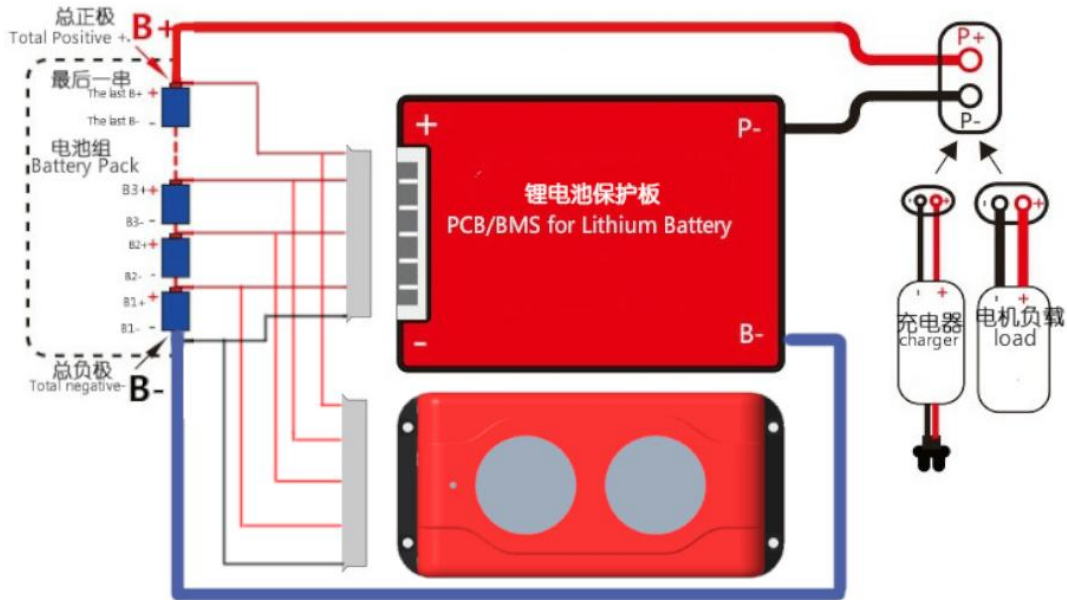
6. 蓝牙显示界面Bluetooth Display Window



7.上位机显示界面PC Display Window



8. 接线说明 Terminal description



9. 操作说明 operation notice :

主动均衡需匹配相同串数的BMS,不同串数的不可混用,

1. BMS组装完成后焊接好所有的连接线

2.插上BMS排插

3.插上主动均衡排插

BMS排插和主动均衡排插相互可用不用区分，在保护板开机之前，请确认均衡线连接是否正常，检查保护板是否已经稳妥的与电芯固定，确认无误后才可以接通给保护板上电，否则可能造成工作异常、甚至烧毁等严重后果。

Active equalization must match the same series number of BMS, different series number can not be mixed, 1. BMS Assembly completed after welding all the connections 2. INSERT BMS INSERT 3. Before the Protection Board is turned on, please make sure the connection of the balance cable is normal, and check whether the protection board has been securely fixed with the battery, after confirming that no error can be connected to the protection board power, otherwise may cause abnormal work, or even burn and other serious consequences.

10. 保修warranty

本公司生产的所有锂电池保护板配件，质保一年；人为因素导致损坏的，有偿维修
All lithium battery protection board accessories produced by the company are guaranteed for one year; If the damage is caused by human factors, it shall be repaired with compensation