产品规格承认书

Product Specification Approval

产品名称（Product Name）	硬件板 3~13 串 15~20A 同口带均衡 3~13S 15~ 20A Common port with Balance	
产品型号（Product Number）	DL-J13G3-TJ	
客 户 名（Customer Name）		
客户料号（Customer P/N）		
送样日期 Sample delivery date	**版次 Version**	**文件编号 Document No.**
	A5	
编制(Prepared by)	**核准(Approved)**	**审核(Audit)**
Jianghuiming	**YangFeigui**	**Thomas**
客户确认栏 Customer Confirmation Column		
确认意见 Confirm opinion： **客户签章 Customer signature:** **日期 Date:**		

注意（Notice）：

1.收到样机确认 OK 后请及时回签，7 天内没有回签及问题反馈，我司默认客户测试合格；规格书中的图片为通用机型图片，可能与送样样机有差异，此份规格书达锂电子保留最终解释权

After receiving the prototype confirmation, please sign back in time. If there is no sign back and problem feedback within 7 days, our company defaults that the customer test is qualified; Supplier reserves the right of final interpretation of this specification.

2.客户批量前，请在规格书中签字回传，并说明详细功能说明，我司才安排批量

Before the customer batches, please sign the specification and return it, and explain the detailed function description, and our company will arrange the batch

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1.简介 Introduction

随着锂电池在锂电行业的广泛应用，对电池管理系统也提出了高性能、高可靠性及高性价比等要求。本产品是专门针对锂电池设计的 BMS，它能够实时采集、处理和存储电池组在使用过程中的信息数据，保证电池组的安全性、可用性和稳定性。

With the wide application of lithium batteries in the lithium battery industry, requirements for high performance, high reliability and high cost performance are also put forward for battery management systems. This product is a BMS specially designed for lithium batteries. It can collect, process and store the information and data of the battery pack in real time during use to ensure the safety, availability and stability of the battery pack.

2.产品概述及特点 Product Overview and Features

- 使用专业大电流走线设计及工艺，能经受超大电流冲击
  Using professional high-current trace design and technology, it can withstand the impact of ultra-large current
- 外观采用注塑密封工艺，提升防潮，防元器件氧化程度，延长产品使用寿命
  The appearance adopts the injection molding sealing process to improve moisture resistance, prevent the oxidation of components, and prolong the service life of the product
- 具有防尘、防震、防挤压等防护功能
  dust proof, shockproof, anti-squeezing and other protective functions
- 有完整的过充、过放、过流、短路、均衡功能
  There are complete overcharge, over-discharge, over-current, short circuit, balance functions
- 采用集成化的设计，将采集、管理、通信等功能集成于一体
  The integrated design integrates acquisition, management, communication and other functions into one

3.产品选型 Product Selection

产品选型表 Product Selection list											
电池类型 Battery Type	☐三元 Li-ion ☐铁锂 LiFePO4										
电池串数 Battery Strings	☐3	☐4	☐5	☐6	☐7	☐8	☐9	☐10	☐11	☐12	☐13
放电电流 Discharge current	☐20A ☐15A										
软开关 Control switch	☐有 yes ☐无 no										

注：仅三元类型电池支持 3 串（Note：Only Li-ion can select 3 strings）

4.技术参数 Technical parameter

4.1 参数对应 1 Parameter correspondence 1

参数名称（单位） Name of Parameter(unit)	内容 content						
电池类型 Battery Type	三元 Li-ion				铁锂 LiFePO4		
串数 Battery Strings	3~4	5~7	8~10	11~13	4~7	8~10	11~13
充电电压(V)　Charge voltage(V)	=4.2*串数　=4.2*Battery Strings				=3.65*串数　=3.65*Battery Strings		
均衡开启电压(V) balance turn-on voltage(V)	4.125	4.125	4.075	4.125	3.525	3.475	3.525
均衡电流（mA) Balance current(mA)	100±25	100±25	75±25	100±25	70±25		
单体过充保护电压(V) Single Cell over-charge protection voltage(V)	4.25±0.05				3.65±0.05		
单体过充保护解除电压(V) Single Cell over-charge protection release voltage(V)	4.15±0.05	4.15±0.05	4.10±0.05	4.15±0.05	3.55±0.05	3.50±0.05	3.55±0.05
单体过放保护电压(V) Single Cell over-discharge protection voltage(V)	2.7±0.05	2.8±0.05	2.7±0.05	2.8±0.05	2.3±0.05		
单体过放保护解除电压(V) Single Cell over-discharge protection release voltage(V)	3.0±0.05				2.7±0.05		
充电高温保护温度 Charging high temperature protection temperature（℃）	55						
充电高温保护解除温度 Charging high temperature protection release temperature（℃）	50						
充电低温保护温度 Charging low temperature protection temperature（℃）	-20						
充电低温保护解除温度 Charging low temperature protection release temperature（℃）	-15						
放电高温保护温度 Discharge high temperature protection temperature（℃）	75						
放电高温保护解除温度 Discharge high temperature protection release temperature（℃）	65	65	70	65	65	70	65
放电低温保护温度 Discharge low temperature protection temperature（℃）	-40						
放电低温保护解除温度 Discharge low temperature protection release temperature（℃）	-35						

4.2 参数对应 2 Parameter correspondence 2

参数名称（单位） Name of Parameter(unit)	内容 content	
额定放电电流（A） Rated discharge current (A)	15	20
额定充电电流(A) Rated charging current(A)	15	20
放电过流保护电流(A) Discharge over-current protection current(A)	50±10	60±10
充电过流保护电流(A) Charge over-current protection current(A)	20±3	25±3

4.3 基本参数 Basic parameters

检测内容 Test content		默认参数 default parameters	单位 Unit
被动均衡功能 Passive balance function	均衡开启电压 balance turn-on voltage	表 4.1 Sheet4.1	V
	均衡电流 Balance current	表 4.1 Sheet4.1	mA
	均衡开启条件：达到设定均衡开启电压 Balancer On Condition：Achieving the set turn-on voltage		
	均衡停止条件：1.所有单体电压大于均衡开启电压或者所有单体电压小于均衡开启电压； 2.11S 以上系统中出现跨芯片的电压分布不均（例如连续多串电池电压分别处于均衡开启电压的上下限）时，系统可能提前触发均衡保护机制并停止均衡操作。 Balance stop conditions: 1. All individual cell voltages are higher than the balance activation voltage or all individual cell voltages are lower than the balance activation voltage; 2. In systems of 11S or above, if a cross-chip voltage distribution imbalance occurs (for example, when consecutive battery cells' voltages are respectively at the upper and lower limits of the balance activation voltage), the system may prematurely trigger the balance protection mechanism and stop the balancing operation.		
单体过充保护 Single Cell over-charge protection	单体过充保护电压 Single Cell over-charge protection voltage	表 4.1 Sheet4.1	V
	单体过充保护延时 Single Cell over-charge protection delay	1±0.5	S
	单体过充保护解除电压 Single Cell over-charge protection release voltage	表 4.1 Sheet4.1	V
	单体过充保护解除延时 Single Cell over-charge protection release delay	1±0.5	S
单体过放保护 Single Cell	单体过放保护电压 Single Cell over-discharge protection voltage	表 4.1 Sheet4.1	V

over-discharge protection	单体过放保护延时 Single Cell over-discharge protection delay	1±0.5	S
	单体过放保护解除电压 Single Cell over-discharge protection release voltage	表 4.1 Sheet4.1	V
	单体过放保护解除延时 Single Cell over-discharge protection release delay	1±0.5	S
充/放电过流保护 Charge/discharge over-current protection	放电过流保护电流 Discharge over-current protection current	表 4.2 Sheet4.2	A
	放电过流保护延时 Discharge over-current protection delay	1±0.5	S
	解除条件：移除负载解除 Release condition：Removing the load is lifted		
	充电过流保护电流 Charge over-current protection current	表 4.2 Sheet4.2	A
	充电过流保护延时 Charge over-current protection delay	0.5±0.5	S
	解除条件：移除充电器解除 Release condition：Remove the charger to release		
短路保护 Short circuit protection	短路保护条件：外部负载短路 Short circuit protection conditions：External load short circuit		
	短路保护延时 Short circuit protection delay	10~500	uS
	短路保护解除：移除负载或者插入充电器解除 Short circuit protection released：Remove the load or insert the charger to release it		
	注意：实际以客户电池寄回我司测试为准 Note：The actual test is subject to the customer's battery sent back to our company for testing.		
温度保护 Temperature protection	充电高温保护温度 Charging high temperature protection temperature	表 4.1 Sheet4.1	℃
	充电高温保护解除温度 Charging high temperature protection release temperature	表 4.1 Sheet4.1	℃
	充电低温保护温度 Charging low temperature protection temperature	表 4.1 Sheet4.1	℃
	充电低温保护解除温度 Charging low temperature protection release temperature	表 4.1 Sheet4.1	℃
	放电高温保护温度 Discharge high temperature protection temperature	表 4.1 Sheet4.1	℃
	放电高温保护解除温度 Discharge high temperature protection release temperature	表 4.1 Sheet4.1	℃
	放电低温保护温度 Discharge low temperature protection temperature	表 4.1 Sheet4.1	℃
	放电低温保护解除温度 Discharge low temperature protection release temperature	表 4.1 Sheet4.1	℃
	温度保护解除条件：达到恢复温度且断开负载 Temperature protection release conditions：The release temperature is reached and the load is disconnected		
内阻 Internal impedance	主回路导通内阻 Main circuit on-resistance	<20	mΩ

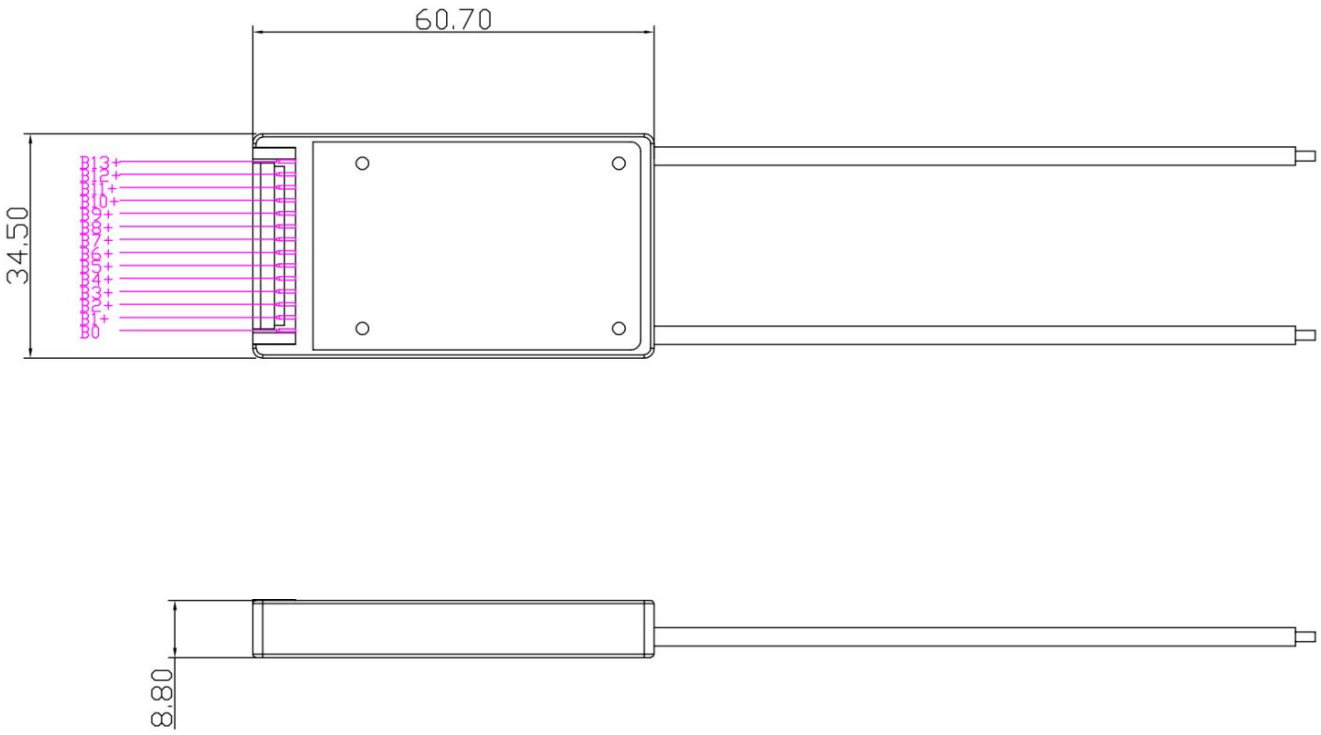
消耗电流 Current consumption	工作时自耗电电流 Self-consumption current during operation	<400	uA
保护板尺寸 BMS size	长*宽*高（mm）L * W * H (mm)=61±1*35±1*9±1		
重量 weight	60g±35g		

4.4 可靠性参数 Reliability parameters

项　目 Project	条　件 Condition
检测精度 Detection accuracy	电压检测精度 voltage detection accuracy：≤±15mV 温度检测精度 Temperature detection accuracy：≤2℃（常温下 Room temperature）
工作环境条件 Working environment conditions	工作温度:-40℃～85℃ Operating temperature:-40℃~85℃
	相对湿度:5%～90%RH Relative humidity: 5%～90%RH
存储环境条件 Storage environment conditions	存储温度:-40℃～85℃ Storage temperature: -40℃~85℃
	相对湿度:5%～75%RH Relative humidity:

5.结构参数 Structural parameter

5.1 保护板尺寸图 Dimensional drawing of BMS



注:此尺寸不包括线束/配件尺寸，请预留合适的空间安装线束/配件

Note: This size does not include the wiring harness/fitting size, please reserve the appropriate space for installing the wiring harness/fitting

5.2 接口引脚说明 Interface pin instructions

接口名称 Interface name	Pin 脚	标号 Label	定义说明 Definition description
B-接口（标配）B-interface Standard Parts	/	B-	电池总负，接电池总负 connect to battery total negative
P-接口（标配）P-interface Standard Parts	/	P-	保护板充放电负极，接充放电负端 the BMS is connected to the negative terminal of the charge and discharge
采样线接口（标配） collecting cable interface Standard Parts	1	B0	接第 1 节电池负级 Connect to the negative terminal of the first battery
	2	B1+	接第 1 节电池正级 Connect to the positive terminal of the first battery
	3	B2+	接第 2 节电池正级 Connect to the positive terminal of the second battery
	...	...	接最后 1 节电池正级 Connect the positive terminal of the last battery
	采集线接口规格请参考表 5.4 collecting cable interface specification please refer to Sheet5.4		

5.3 线材说明 Cable instructions

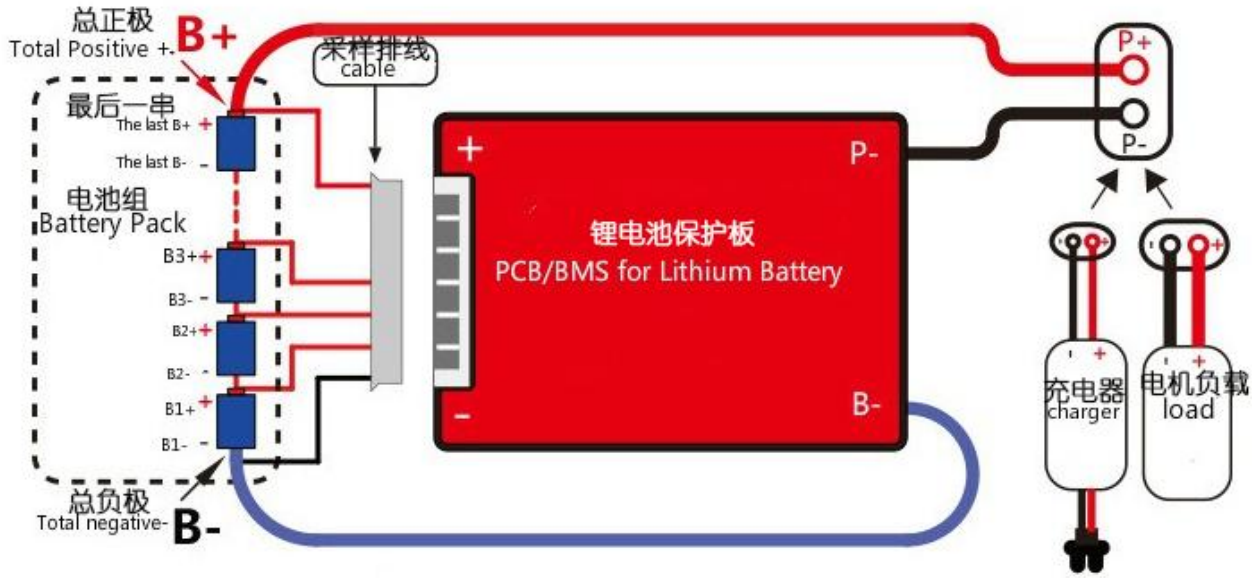
名称 Name	默认规格 Default specification	数量/Pcs Quantity/Pcs
P-连接线 P- Cable	14AWG / 16AWG（15A 为 16AWG，20A 为 14AWG）3135 _100mm_Black	1
B-连接线 B- Cable	14AWG / 16AWG（15A 为 16AWG，20A 为 14AWG）3135_100mm_Blue	1
采集线（Sampling cable）	参考表 5.4 Refer to Sheet5.4	1

5.4 采集与串数对应表 Collection and string number mapping sheet

串数 Strings	采集线接口规格 collecting cable interface specification	采集线规格 collecting cable specification	采集线抽线 collecting cable cutting
3	PHB2.0 4pin with buckle	1007 24AWG L=300mm（4PIN）with buckle	/
4	PHB2.0 5pin with buckle	1007 24AWG L=300mm（5PIN）with buckle	/
5	PHB2.0 7pin with buckle	1007 24AWG L=300mm（7PIN）with buckle	抽掉 7P 中最后 1P 线 cutting the last cable of the 7PIN cable
6	PHB2.0 7pin with buckle	1007 24AWG L=300mm（7PIN）with buckle	/
7	PHB2.0 8pin with buckle	1007 24AWG L=350mm（8PIN）with buckle	/
8	PHB2.0 9pin with buckle	1007 24AWG L=450mm（9PIN）with buckle	/
9	PHB2.0 11pin with buckle	1007 24AWG L=450mm（11PIN）with buckle	抽掉 11P 中最后 1P 线 cutting the last cable of the 11PIN cable
10	PHB2.0 11pin with buckle	1007 24AWG L=450mm（11PIN）with buckle	/
11	PHB2.0 13pin with buckle	1007 24AWG L=450mm（13PIN）with buckle	抽掉 13P 中最后 1P 线 cutting the last cable of the 13PIN cable
12	PHB2.0 13pin with buckle	1007 24AWG L=450mm（13PIN）with buckle	/
13	PHB2.0 14pin with buckle	1007 24AWG L=450mm（14PIN）with buckle	/

6.接线 Wiring

6.1 接线示意图 Wiring diagram



6.2 接线说明 Wiring Instructions

- 先将保护板 B-线（蓝色粗线）到电池组总负极；
  First connect the B-cable of the BMS (thick blue cable) to the total negative pole of the battery pack
- 排线从细黑线连接 B-开始，第 2 根线连接第 1 串电池正极，后面依次连接每一串电池的正极；再把排线插入保护板；
  The cable starts from the thin black wire connected to B-, the second wire is connected to the positive electrode of the first string of batteries, and the positive electrode of each string of batteries is connected in turn; then insert the cable into the BMS
- 线完成后，测量电池 B+，B-电压与 P+，P-电压值是否相同，相同即保护板工作正常；否则请按照上面重新操作；
  After the cable is completed, measure whether the voltages of battery B+ and B- are the same as those of P+ and P-. The same means that the BMS is working normally; otherwise, please re-operate according to the above;
- 拆卸保护板时，先拔排线（如果有两个排线，先拔高压排线，再拔低压排线），再拆动力线 B-.
  When removing the BMS, first unplug the cable (if there are two cables, first pull out the high-voltage cable, then pull out the low-voltage cable), and then disconnect the power cable B-.

7.保修 Warranty

本公司生产的所有锂电池保护板，质保一年；人为因素导致损坏的，有偿维修

All lithium battery BMS produced by our company has a one-year warranty; if the damage caused by human factors, paid maintenance

8.注意事项 Precautions

1.不同电压平台的保护板不能混用，如三元类保护板不能使用铁锂电池上；

BMS of different voltage platforms cannot be mixed. For example, NMC BMSs cannot be used on LFP batteries.

2.不同厂家的排线不通用，请确保使用我们公司配套排线；

The cables of different manufacturers are not universal, please make sure to use our company's matching cables

3.在测试、安装、接触和使用保护板时，要做好放静电措施；

Take measures to discharge static electricity when testing, installing, touching and using the BMS

4.不要使保护板的散热面直接接触电芯，否则热量会传送到电芯，影响电池的安全；

Do not let the heat dissipation surface of the BMS directly contact the battery cells, otherwise the heat will be transferred to the battery cells and affect the safety of the battery

5.不可自行拆卸、更改保护板元器件；

Do not disassemble or change BMS components by yourself

6.本公司保护板金属散热片进行了阳极氧化绝缘处理，氧化层破坏后仍会导电，组装作业

中避免散热片与电芯、镍带接触；

The company's protective plate metal heat sink has been anodized and insulated. After the oxide layer is damaged, it will still conduct electricity. Avoid contact between the heat sink and the battery core and nickel strip during assembly operations.

7.如果保护板出现异常，请停止使用，等问题解决了再使用；

If the BMS is abnormal, please stop using it and use it after the problem is solved

8.不要让两个保护板串联或并联使用。

Do not use the two BMS in series or in parallel

9.特别说明 Special Note

我司产品进行严格的出厂检验测试，但是因为客户使用的环境不同（特别是在高温、超低温、太阳下等），难免会出现保护板故障，所以客户在选择和使用保护板时，需要在友好的环境下使用，及选择一定冗余量的保护板。

Our products undergo strict factory inspection and testing, but due to the different environments used by customers (especially in high temperature, ultra-low temperature, under the sun, etc.), it is inevitable that the BMS will fail. Therefore, when customers choose and use BMS, they need to be in a friendly environment, and select a BMS with a certain redundancy capability.

如客户对文档内容和单板使用有问题，请及时与对应销服人员联系，我司愿为各位客户提供完善的服务。

If customers have any questions regarding the document content or the use of the boards, please contact the corresponding sales and service personnel promptly. Our company is willing to provide comprehensive services to all customers.

10.修订记录 revision record

版本 (Version)	更改内容 (Change content)	更改日期 (Change date)	备注 (Remarks)
A0	初版发布 Initial release	2024-02-27	
A1	1、硬件版本升级到 V3.3 版本，增加支持定制软开关功能； The hardware version was upgraded to V3.3, and the customized control switch function was added. 2、V3.2 的硬件版本&V3.3 的硬件版本可共用此份规格书； Hardware versions of V3.2 & hardware versions of V3.3 can share this specification;	2024-07-08	
A2	1、增加温度保护释放温度；Added temperature protection release temperature 2、保护板尺寸增加公差范围；The size of the BMS increases the tolerance range; 3、优化规格书模板；Optimize the specification template;	2024-08-22	
A3	调整 15A 产品对应的电流值 Adjust the current value corresponding to the 15A product	2024-09-15	
A4	更改 5 串的采集接口规格、采集线规格&抽线规则 Change 5 strings of collection interface specifications, collection line specification & cable cutting method	2024-10-23	
A5	新增均衡停止条件： 1.所有单体电压大于均衡开启电压或者所有单体电压小于均衡开启电压； 2.11S 以上系统中出现跨芯片的电压分布不均（例如连续多串电池电压分别处于均衡开启电压的上下限）时，系统可能提前触发均衡保护机制并停止均衡操作。 New balance stop conditions: 1. All individual cell voltages are higher than the balance activation voltage or all individual cell voltages are lower than the balance activation voltage;2. In systems with more than 11 series (11S), if there is an uneven voltage distribution across chips (for example, multiple consecutive series cells have voltages at the upper and lower limits of the balance activation voltage), the system may trigger the balance protection mechanism in advance and stop the balancing operation.	2025-09-28	蒋慧明

	新增特殊说明： 1.如客户对文档内容和单板使用有问题，请及时与对应销服人员联系，我司愿为各位客户提供完善的服务。 If customers have any questions regarding the document content or the use of the boards, please contact the corresponding sales and service personnel promptly. Our company is willing to provide comprehensive services to all customers.		