



东莞市达锂电子有限公司

Dongguan Daly Electronics Co.,Ltd

产品规格承认书

Product Specification Confirmation

产品型号 (Product Model) : DL-R16A-F16S100ATJ-MM00
客户名 (Customer Name) : _____
客户料号 (Customer P/N) : _____
产品名称 (Product Name) : 铁锂 16 串 48V100A 同口带均衡+UART
LiFePO4 16S 48V100A Common port with Balance+UART
版 次 (Version) : Rev 1.0
公司料号 (Company P/N) : _____
送样日期 (Sample send date) : _____

承认签章 Confirmation		
核准 (Verified)	审核 (Approved)	拟定 (Operation)
		颜立花 (Lihua yan)



客户确认栏 Customer Acknowledgement	
确认意见(Remarks):	
签章(Sign):	日期(Date):

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注意 (Note) :

- 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
Please respond us timely after receiving the sample boards and confirm the samples whether they are ok or not There is no feedback given to us within 7 days., then we regard our customers' test is qualified;The attached picture in this specification is a common model picture,which may be different from the shipped sample. This specification is belong to Daly Electronics property, Who keep the final interpretation right on these parameters.
- 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
Please sign and return it to Daly on the specification before starting mass production, and remark the detailed function description in this specification.

一. 产品概述及特点 (Product Summary) :

- ◆ 使用专业大电流走线设计及工艺, 能经受超大电流冲击
Professional high current wiring design & workmanship, thus can withstand the shock of high current high .
- ◆ 使用全封闭散热胶及双面散热设计, 热量及时导出, 散热效果优于同行
Use full enclosed heat-dissipating glue and double-sided heat dissipation design, heat is dissipated in time, and the heat dissipation effect is better than others
- ◆ 具有防尘、防震、防挤压等防护功能
dust proof, shockproof, anti-squeezing and other protective functions
- ◆ 具有完整的过充、过放、过流、短路、均衡功能
Complete overcharge, over discharge, over current, short circuit, and equalization functions.

二. 电气参数 (室温 25°C 湿度 55%) :

Electrical Parameters:(Room temperature 25°C, humidity 55%)

序号 (NO)	检测内容 (Description)		规格 (Specification)	单位 (Unite)	备注 (Remarks)
1	放电(Discharge)	放电电流 (Continue discharge current)	100	A	
2	充电(Charge)	充电电压 (Charge voltage)	58.4	V	
		持续充电电流 (Charge current)	50	A	
3	过充电保护 (Over charge protection)	过充电检测电压 (Over charge detect voltage)	3.75±0.05	V	
		过充电保护延时 (over charge protection delay)	1	S	
		过充电解除电压 (over charge release voltage)	3.65±0.05	V	

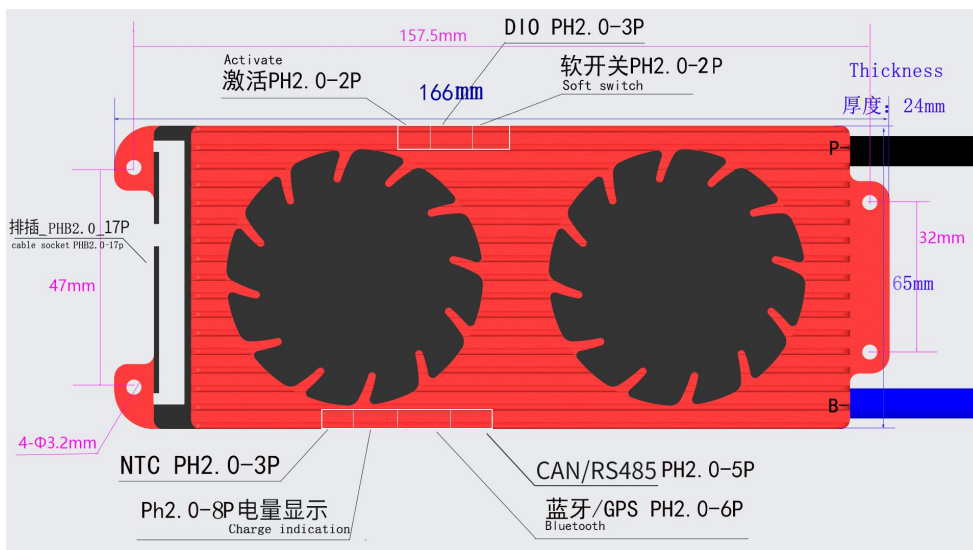
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4	电量平衡 (Balance)	平衡开启电压 (Balance detect Voltage)	3.20	V	
		电量平衡电流 (Balance current)	30±5	mA	
		平衡开启条件 (Balanced opening condition)	1. 充电情况下 On a charge 2. 达到设定平衡开启压差 achieve set balance opening differential pressure 3.达到 50mv achieve50mv		
5	过放电保护 (Over discharge) protection	过放电检测电压 (Over discharge detect)	2.2±0.1	V	
		过放电检测延时 (Over discharge detect delay)	1	S	
		过放解除电压 (Over discharge release voltage)	2.3±0.1	V	
6	充电过流保护 (Charging over current protection)	充电过流保护值 (Charging over current protection current)	150±15	A	可按要求设定 (Can set as required)
		充电过流保护延时 (Over Charge current detect delay)	1	S	可按要求设定 (Can set as required)
		充电过流保护解除条件 (Over Charge current protection release condition)	断开充电器 (Off load)		
7	放电过流保护 (Discharge over current protection)	放电过流保护值 (Discharge over current protection current)	150±15	A	可按要求设定 (Can set as required)
		放电过流保护延时 (Over discharge current detect delay)	1	S	可按要求设定 (Can set as required)
		放电过流保护解除条件 (Over discharge current protection release condition)	断开负载 (Off load)		
8	短路保护 (Short Circuit protection)	短路保护条件 (Short Circuit protection condition)	外部负载短路 (Short circuit of external load)		
		短路检测延时 (Short circuit detect delay)	320	uS	
		短路保护解除条件 (Short circuit protection release)	断开负载 (Off load)		
9	温度保护 (Temp Protect)	充电温度保护值 (Charge Temperature protection degrees)	-40~65	℃	恢复 Recover-35 恢复 Recover 60

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		放电温度保护值 (discharge Temperature protection degrees)	-40~70	°C	恢复 Recover-35 恢复 Recover 65
		温度保护解除条件 Release Condition of temperature protection	达到恢复温度且断开负载 Recovery temperature reached and load disconnected		
10	通讯方式 (Means of communication)	UART			
11	内阻 (Inner Resistance)	主回路导通内阻 (Main Circuit Conduct Inner resistance)	<20	mΩ	
12	自耗电 Self Consumption	工作电流 (Working current)	35	mA	
		休眠电流 (电池过放) Sleeping current(over-discharge)	800	uA	
13	工作温度 (Working Temp)	温度范围 (Temp range)	-20~70	°C	
13	存储温度 (Storing Temp)	温度范围 (Temp range)	-40~80	°C	

三. 保护板接线 (BMS wiring Connection)

(1). 产品图片 (Product picture)



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接口定义：（Interface definition）接口正面朝向自己，右边第 1P 为 1 脚 The interface faces forward towards itself, with the 1P on the right being the 1st foot

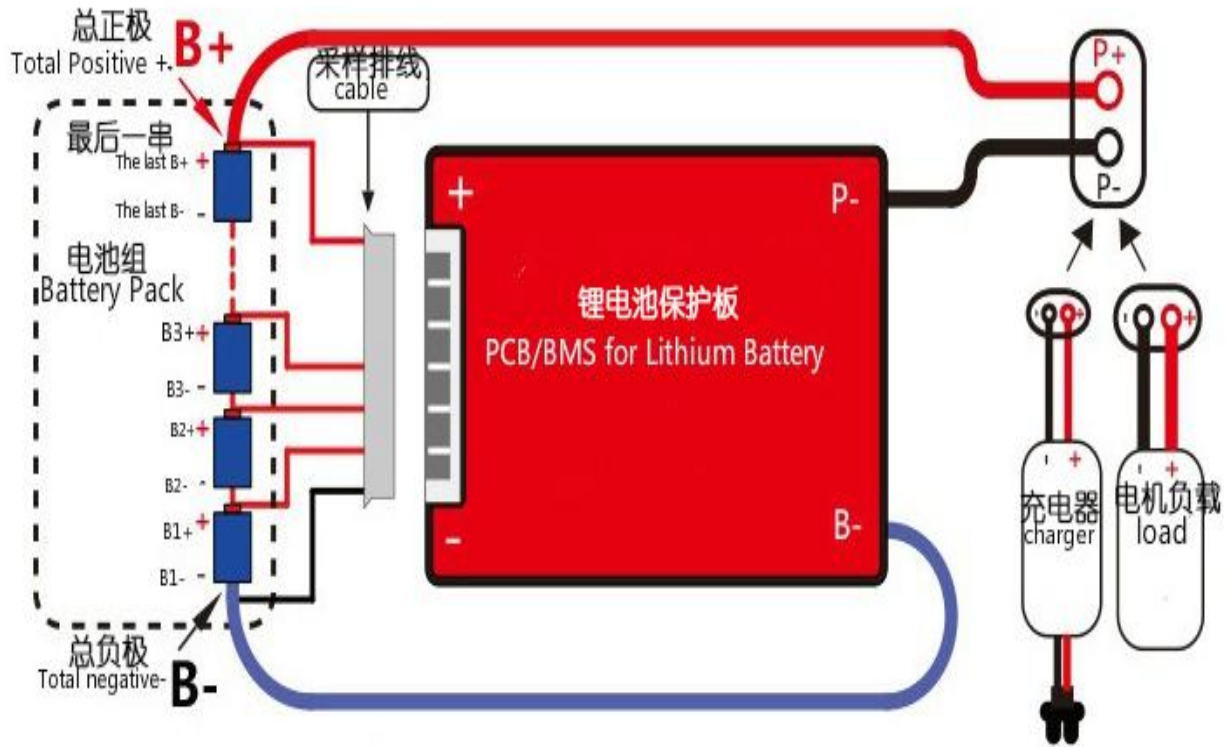
接口	功能	PI N	描述	备注
（电池采集 均衡接口） Battery acquisition equalizer interface	B00	1	电池总负极 Battery Total Negative	
	B01	2	第 1 个电池正极 Battery positive electrode 1	
	B02	3	第 2 个电池正极 Battery positive electrode 2	
	
	B14	15	第 14 个电池正极 Battery positive electrode 14	
	B15	16	第 15 个电池正极 Battery positive electrode 15	
	B16	17	第 16 个电池正极 Battery positive electrode 16	
（温度传感 器输入端 口） Temperature sensor input port	NTC1	1	1#温度线 1# Temperature Line	
	GND	2	地 GND	
	NTC2	3	2#温度线 2# Temperature Line	
（外置电量 显示灯板端 口） External power indicator panel port	GND	1	地 GND	
	POW_3.3 V	2	灯板供电电源 3.3V 3.3 V of lamp board power supply	
	S1	3	灯板按键 Keyboard	
	LED_51	4	第 5 盏灯 Fifth lamp	
	LED_41	5	第 4 盏灯 Fourth lamp	
	LED_31	6	第 3 盏灯 Third lamp	
	LED_21	7	第 2 盏灯 Lamp 2	
LED_11	8	第 1 盏灯 Lamp 1		

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(蓝牙/GPS 模块接口) Bluetooth / GPS module interface	GND	1	地 GND	
	POW_3.3 V	2	蓝牙模块供电电源 3.3V Bluetooth module power supply 3.3 V	
	15V	3	GPS 模块供电电源 15V Power supply 15 V GPS module	
	BLU_DRV	4	GPS 控制断电/恢复 GPS control of power outages/recovery	
	URAT_TX 2	5	蓝牙通讯发送端 Bluetooth communication sender	
	URAT_RX 2	6	蓝牙通讯接收端 Bluetooth communication receiver	
(485/CAN 通讯接口) 485 / CAN communication interface	485-B	1	485 通讯 B 485 Communications B	
	485-A	2	485 通讯 A 485 Communications A	
	ABGND	3	地 GND	
	CAN_H	4	CAN 通讯高 High CAN communications	
	CAN_L	5	CAN 通讯低 CAN communication low	
(钥匙开 关) key switch	TRIG+	1	激活输入脚 Activate input pin	短接 1 脚和 2 脚, 即可 激活 BMS Short one and two feet, Activate BMS
	TRIG-	2	激活输出脚 Activate output pin	
预留 DIO 口 Reserve the DIO interface	DO1	1	开关量信号 Switching signal	
	GND	2	地 GND	
	DI2	3	开关量信号 Switching signal	
软开关 Soft switch	DI1	1	开关量信号 Switching signal	
	3.3VCC	2	软开关供电电源 3.3V Soft-switching power supply 3.3 V	

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(2) . 接线示意图 (Wiring diagram)



3. 接线操作 (Wiring operation) :

(1) 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 protection board to the total negative pole of the battery pack

(2) 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 one connecting B-, the second red cable connects the positive pole of the first string of batteries, and the next string is connected in turn. The positive pole of the pool; then insert the cable into the protection board;

(3) 接线完成后, 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 finishing the wiring soldering, measure whether the battery B+, B-voltage and P+, P-voltage values are the same, only same, the protection board works positively. otherwise please follow the above re-operation;

(4) 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 protection board, first pull out the cable (if there are two cables, pull the high-voltage cable first, then pull the low-voltage cable), then remove Power cable B-.

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4. 上位机效果图 (Effect diagram of upper computer)

读取参数 (Read the parameter)



数据监控 (Data monitor)



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参数设置 (Set parameter)

The screenshot shows the BMS-V10.0 software interface. On the left, there are three gauges: '总电压 SumVolt' (Total Voltage) ranging from 0 to 200V, '电流 Curr' (Current) ranging from -300 to 300A, and 'SOC' (State of Charge) at 0%. Below the gauges is an '告警列表 Alarm list' (Alarm list) and 'Comm status: disconnect'. The main area is titled '参数设置 Parameter settings' and contains several sections:

- Capacity and Balance:** Rated Cap (Ah), Rated Volt (V), Balance start Volt (V), and Balance start diff Volt (V).
- Protection:** Cumulative charge (Ah), Cumulative discharge (Ah), Short Current (A), and Current sampling Res (mΩ).
- Acquisition Boards:** No. of acquisition board, board 1~3 Cell No., board 1~3 temperature No., and board 1~3 NTC No.
- Fixed Index:** Firmware index No., Battery code, SOC, and RTC.
- Thresholds:** A table for setting various thresholds like cell voltage, sum voltage, discharge/charge current, voltage difference, temperature difference, and SOC levels.

At the bottom, there are buttons for '加载配置 Load config', '保存配置 Save config', and '一键写入 Set all'.

四. 保修 (Warranty)

本公司生产的所有锂电池保护板，质保三年；人为因素导致损坏的，有偿维修
 All our produced Lithium battery BMS, we guarantee 3 years warranty in quality, if the damage is caused by human improper operation, we will conduct repair with charge

五. 注意事项 (Attention Items)

- 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；
 Lithium battery BMS with different voltage range which can not be mixed using., Life Po4 BMS can not be used for Li-ion battery.
- 不同厂家的排线不通用，请确保使用我们公司配套排线；
 Cables from different manufacturers are not common ones, please make sure to use Daly's matching cable.
- 在测试、安装、接触和使用保护板时，要做好防静电措施；

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.When testing, installing, contacting, and using the protective board, take measures to put static electricity on it;

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；

Mustn't let the heat dissipation surface of the protection board directly contact the battery core, otherwise the heat will be transmitted to the battery core, which will 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 the components of the protection board 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 metal heat sink of the protection board of the company is anodized and insulated, and the oxide layer will still be conductive after being destroyed. Avoid contact between the heat sink and the battery core and the nickel strip

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 protection board is abnormal, please stop using it. Then use it again after it is checked with OK;

8. 不要让两个保护板串联或并联使用。

Do not use the two protective boards in series or in parallel

六. 说明 (Description):

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 is tested by our tester & 100% visual inspection before shipping. But the BMS board is used in the different environment by customers (especially at high temperatures, Ultra-low temperature, under the sun, etc.), it is inevitable that there are BMSs which will fail. Please use it in a good environment, and choose a certain amount of protection board