



广东轩璟实业有限公司

Guangdong xuanjing Industrial Co., Ltd

产品承认书

SPECIFICATION

客户名称 Customer Name			
产品型号 Product Type	XJ-HJ-24S-2A 三元 铁锂主动均衡模块/24S LFP 主动均衡模块 XJ-HJ-24S-2A Ternary lithium, iron lithium active balancing module/24S LFP active balancing module		
客户型号 Customer Type			
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Vo	2024/12/24		

1 概述

Outline

本规格书描述了锂电池线路的应用范围，电性能参数，接线说明，尺寸规格，等项目的相关内容。本规格书所描述的所有项目标准可作为品质检验标准及依据。

This specification describes the scope of lithium battery protection circuit, electrical Page 2 of 6



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performance parameters relevant content, wiring instructions, sizes, and other projects. All project standards described in this specification can be used as quality inspection standards and basis.

2 产品应用范围

Product Applications

可充电锂电池

Rechargeable lithium batteries

3 产品外观及工艺指标

Product appearance and process indicators

序号 No.	项目 Project	检验方法及手段 Test methods and tools	检验标准 Inspection standard
1	产品外观 Product appearance	目视 Visually	保护板外观应达到以下要求：布线合理，元件排列整齐，各焊盘及焊接点无氧化，无色泽异常，元件及PCB板表面干净，无污渍，不影响其商业价值。 Protective plate appearance should meet the following requirements: a reasonable wiring, components arranged in neat rows, each pad and welding point no oxidation, no abnormal color, components and PCB board surface clean, no stains, does not affect its commercial value
2	产品工艺 Product Process	焊接工艺 Welding Technology	目视，借助放大镜 Visually, with a magnifying glass 焊点圆滑，焊接牢固可靠，无假焊、虚焊、毛刺等焊接缺陷。 Joints sleek, solid and reliable welding, no false welding, Weld, burrs and other welding defects.
		板材材质 Sheet material	FR-4
		PCB制作工艺 PCB production process	无铅松香工艺 Lead rosin process
		成品板焊接工艺 Finished plate welding process	无铅焊接制程 Lead welding process

4 产品电气性能指标

Product electrical performance

测试条件：常温25℃；均衡板属于动态均衡，在机器没有充电，放电都会产生均衡的效果，此产品属于主动均衡，能量高的转移到能量低的电芯，属于相邻电芯压差大于45MV，产生平衡效果

Test conditions: room temperature 25 °C; The balancing board belongs to dynamic balancing, which produces a balancing effect when the machine is not charged or discharged. This product belongs to active balancing, transferring high-energy cells to low-energy cells, and producing a balancing effect when the voltage difference between adjacent cells is greater than 45MV



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项目 Project	符号 Symbol	详细内容 The detailed content	标准 Standard
输入电压范围 input voltage range	VDET1	单节电池电压 Single battery voltage	2.8V-4.20V
	tVDET1	24 串总电压 24 series total voltage	67.2V—100.8V
电量平衡启动条件 Power balance start condition	VBU	相邻电池间电压差大于（同时要满足均衡停止条件） The voltage difference between adjacent batteries is greater than (and the balancing stop condition must be met)	压差Voltage difference $\geq 45\text{mV} \pm 15\text{mV}$
	tVDET2	单节电池电压小于 The voltage of a single battery is less than	2.8V $\pm 15\text{mV}$
	VREL2	相邻电池压差值 Voltage difference between adjacent batteries	小于40MV
均衡电流 equalizing current	IDP1	单节电流(均衡电流和电池间电压差成正比) Single node current(The balance current is proportional to the voltage difference between cells)	2A(MAX)
均衡精度电 accuracy of equalization	tVDET1	电池间电压差 Voltage difference between batteries	30mV $\pm 15\text{mV}$
均衡静态功耗 Balanced static power consumption	IDP	（均衡开起时自身功耗） (Power consumption during balanced startup)	15uA
环境要求 Environmental requirements	℃	工作/储存温度 Operating/storage temperature	-15℃-65℃
	0%RH	工作/储存湿度 Operating/storage humidity	10%RH—70%RH
PCB尺寸 PCB Size		PCM长、宽、高 PCB Length, Width, Thickness	174X63X1.6MM $\leq m$ m

5 接线说明:

Wiring instructions:

二、电压均衡采集线:

Voltage acquisition wires:

保护板焊盘依次为:

PCM Board PCB Pads

B0、B1.....(B+)

1.电芯连接顺序为:先接B-,再按顺序从B1到B+连接电芯电压检测线,拆下时顺序相反。

The order of connecting the battery cells is: first connect B-, then connect the battery cell voltage detection wires from B1 to B+. When removing, the order is reversed.

2.电芯电压检测线使用标准的排线,推荐使用 $\leq 24\text{AWG}$ 的导线(如 22AWG),建议2A电流损耗不超过50mv.

The battery voltage detection line uses a standard cable. It is recommended to use a wire $\leq 24\text{AWG}$ (such as 22AWG). It is recommended that the 2A current loss does not exceed 50MV.

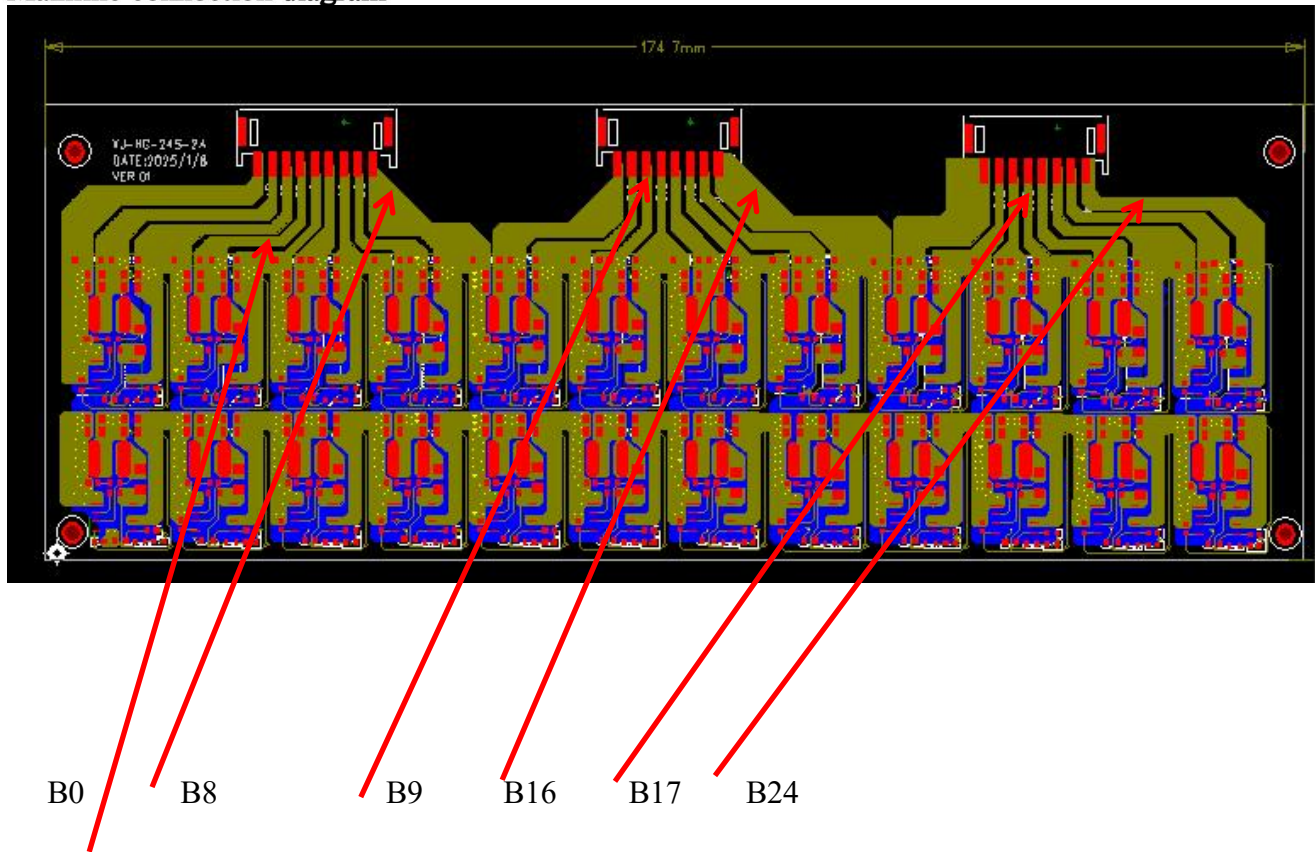
3. 电池的正负极及每节电池的引线不能与外部安装盒短路

The positive and negative poles of the battery and the leads of each battery cannot be short-circuited with the external installation box

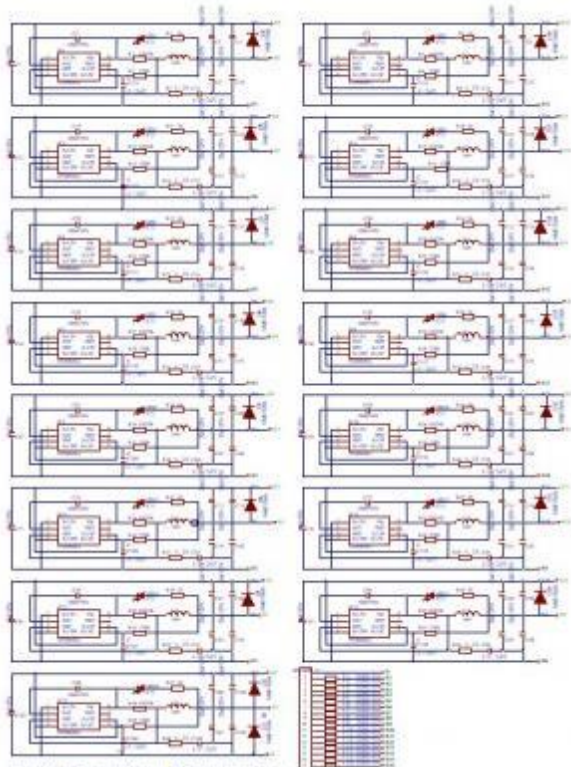


6产品实物图

Mainline connection diagram



7 产品原理图



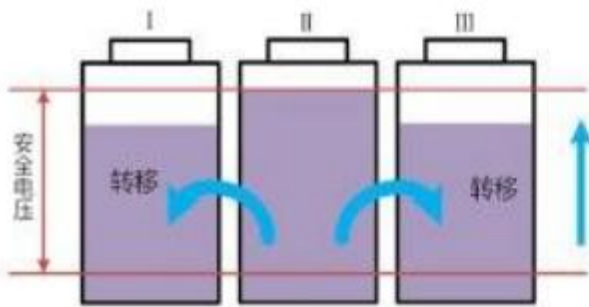


8 均衡原理 Equilibrium Principle:

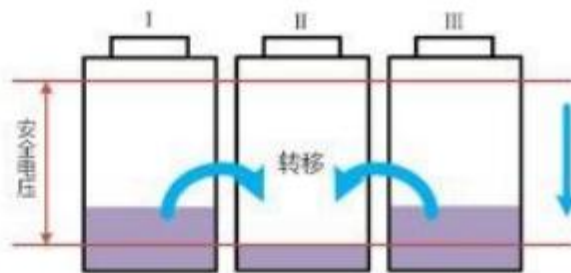
如下示意图 The following diagram:

均衡模组采用专利结构的均衡电感实现每串电池的“等效并联连接”，在基于“等效并联连接”状态下，各串电压高低不一的电池实现能量传输分配，最终实现电池组的高效率精密均衡。

The balancing module uses a patented balancing inductor to achieve "equivalent parallel connection" for each battery string. Based on the "equivalent parallel connection" state, batteries with different voltages in each string can achieve energy transmission and distribution, ultimately achieving high-efficiency and precise balancing of the battery pack.

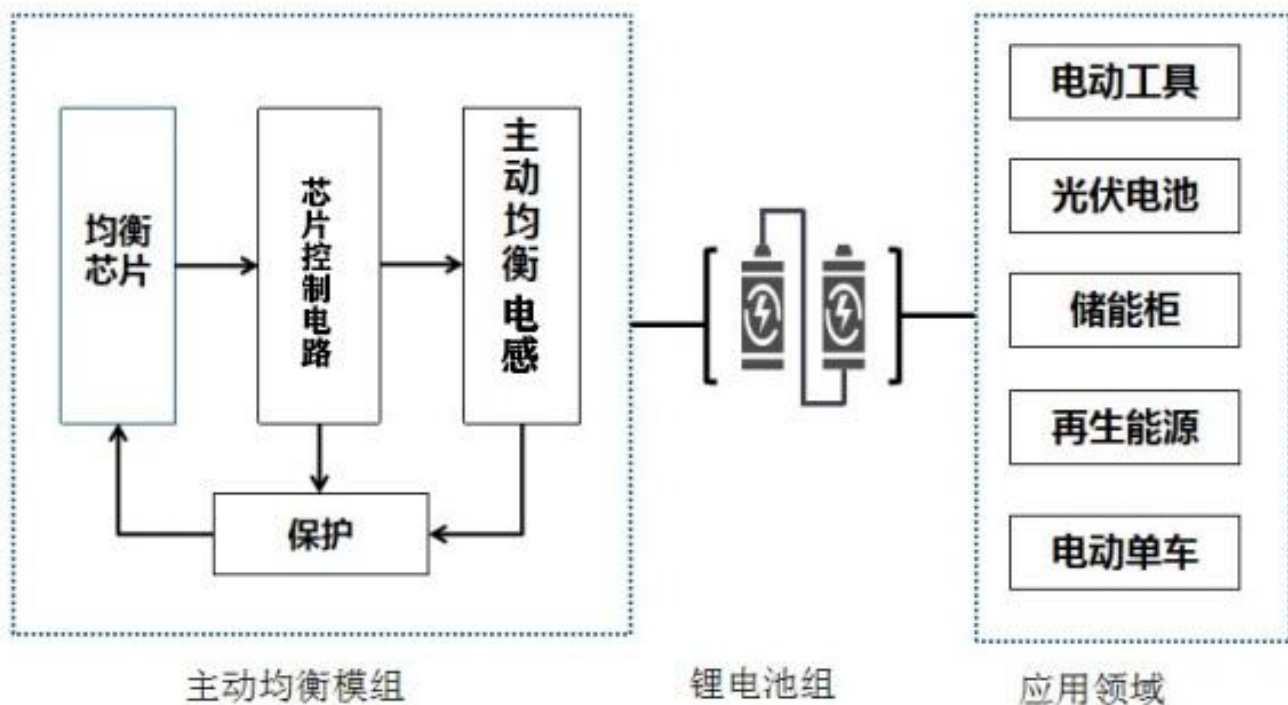


主动均衡充电时工作原理



主动均衡放电时工作原理

系统框图 System Block Diagram:





9 警告及注意事项 Warnings and Precautions

1. 请避免机械损伤均衡板，在规范内使用产品！
2. 使用中的铅、锡渣、铁屑等请勿落入均衡板，否则可能损坏均衡板！
3. 使用中有问题，请联系我们！

1. Avoid mechanical damage to the balancing board and use the product within specifications.

2. Do not allow lead, tin slag, iron filings, etc. to fall onto the balancing board during use, as this may damage it.

3. If you have any problems during use, please contact u

10 包装 Package

1. 运输过程中，应注意防潮、防湿，避免挤压、碰撞等，以免保护板变形。
2. 用快递或派专人送货到客户仓库。

1. During transportation, be careful to prevent moisture and humidity, and avoid squeezing and collisions to prevent deformation of the protective plate.

2. Deliver to the customer's warehouse by courier or by a designated person.

