产品规格书

Product specification

锂电池主动均衡器
Lithium Battery Active Equalizer

MK-B5A16V2C

版本：1.0

成都极空科技有限公司

Chengdu Jikong Technology Co., Ltd

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版本修改记录

修订日期	版本号	修订概要	作者
2025.08.29	V1.0	首次发布	任凯

1. 产品概述(Product Overview)

电池主动均衡器（MK-B5A16V2C）是为大容量12V电池组量身打造的均衡管理系统。均衡器以高频变压器为媒介，实现主动式能量转移均衡。

The MK-B5A16V2C Battery Active Equalizer is a tailored equalization management system designed specifically for high-capacity 12V battery packs. It achieves active energy transfer equalization through high-frequency transformers as the medium.

均衡器适用于5～17V电池组之间的均衡，具备电压采集和均衡功能。均衡器工作时均衡电流和电池组的压差成正比关系。电压采集范围5V～17V，精度±0.1V。均衡器可应用于2-4串三元锂电池组、4串磷酸铁锂电池组或12V铅酸电池等电池组之间的电压均衡。

This equalizer is suitable for voltage balancing between 5V-17V battery packs, equipped with both voltage acquisition and equalization functions. During operation, the equalization current of the equalizer is proportional to the voltage difference of the battery pack. The voltage acquisition range is 5V-17V with an accuracy of ±0.1V. It can be applied to voltage balancing of various battery packs, such as 2-4 series ternary lithium battery packs, 4 series lithium iron phosphate battery packs, or 12V lead-acid battery packs.

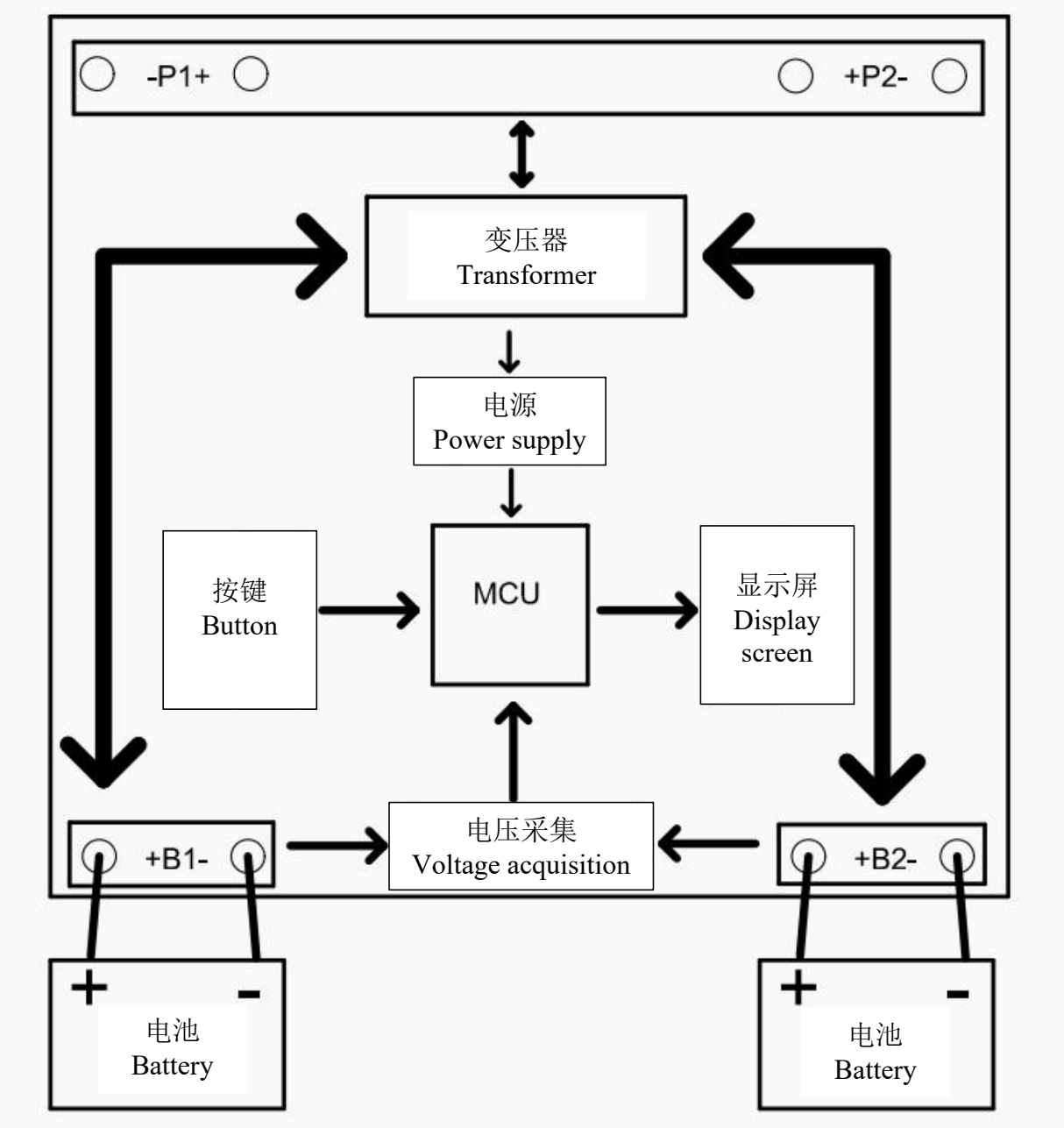
均衡器配套显示屏功能。可以通过显示屏查看电池电压和电量。均衡器内置5个模式分别对应不同的电池组。

The equalizer comes with a supporting display screen, through which users can check battery voltage and power. It has 5 built-in modes corresponding to different types of battery packs.

1.1. 功能特性(Functional characteristics)

- 电池组电压采集(±0.1V)
- 主动均衡
- Battery pack voltage acquisition (±0.1V)
- Active equalization

1.2. 结构框图(Structural block diagram)



MK-B5A16V2C 结构框图

MK-B5A16V2C structure block diagram

2. 产品适配指南(Product adaptation guide)

序号 (Serial number)	产品规格 （Product specification）	电池类型 （Battery type）	适配串数 （Number of adaptive battery strings）
1	MK-B5A16V2C	三元锂电池 (Ternary lithium battery)	2～4
		铁锂电池 (Lithium iron battery)	4
		铅酸电池 (lead-acid battery)	1

3. 功能介绍及使用说明(Function introduction and usage instructions)

主动均衡器采用主动均衡技术，均衡的原理是将高电压的电池组能量转移到低电压的电池组中，通过主动均衡器这一媒介实现能量转移。用户若只需要使用均衡功能可无需任何设置，将均衡器按接线图正确连接电池即可进行均衡和电压采集。

The active equalizer adopts active equalization technology. The principle of equalization is to transfer the energy from the battery pack with higher voltage to the one with lower voltage, and the energy transfer is achieved through the active equalizer as a medium. If users only need to use the equalization function, no settings are required. They just need to correctly connect the equalizer to the battery according to the wiring diagram, and then the equalization and voltage collection can be carried out.

均衡器可根据采集到的电压计算当前电池电量，若用户需要使用此功能，需要正确的设置均衡器的模式，均衡器当前模式会显示在屏幕右下角。长按5秒屏幕下方的SET按键，屏幕右下角的模式会闪烁，此时短按SET可以向上切换模式，短按DOWN可以向下切换模式，一共有B01-B05五个模式可循环切换，分别对应5种电池类型。

The equalizer can calculate the current battery power based on the collected voltage. If users need to use this function, they need to correctly set the mode of the equalizer. The current mode of the equalizer will be displayed in the lower right corner of the screen. Press and hold the SET button at the bottom of the screen for 5 seconds, and the mode in the lower right corner of the screen will flash. At this time, short-press SET to switch modes upward, and short-press DOWN to switch modes downward. There are five modes from B01 to B05 for cyclic switching, corresponding to five types of batteries respectively.

模式 Mode	电池 Battery Type	SOC-0%电压(V) SOC-0% Voltage (V)	额定电压(V) Rated Voltage (V)	SOC-100%电压(V) SOC-100% Voltage (V)
B01	2串三元锂电池 2-cell Li-ion Battery (Ternary)	5.7	7.4	8.4
B02	3串三元锂电池 3-cell Li-ion Battery (Ternary)	8.5	11.1	12.6
B03	12V铅酸电池 12V Lead-Acid Battery	10.5	12	14.8
B04	4串铁锂电池 4-cell $LiFePO_4$ Battery	10.2	12.8	14.4
B05	4串三元锂电池 4-cell Li-ion Battery (Ternary)	11.4	14.8	16.8

需要注意的是均衡器的均衡电流和设置的模式无关，均衡电流和电池压差成正比例关系,电流和电压的关系大致符合公式$I = \Delta U \div 0.4$

It should be noted that the balancing current of the equalizer is independent of the set mode. The balancing current is proportional to the battery voltage difference, and the relationship between current and voltage roughly conforms to the formula $I = \Delta U \div 0.4$

I代表均衡电流，单位安培（A）；

I Represents the balancing current, with the unit of ampere (A);

ΔU代表电池压差，单位伏特（V）。

ΔV Represents the battery voltage difference, with the unit of volt (V).

4. 主要参数 (Main parameter)

序号 (Serial number)	项目 (Project)	具体参数 (argument)	单位 (Unit)
1	供电电压(Supply voltage)	5～17	V
2	运行功耗(Operating power consumption)	≤1200	mW
3	工作温度(Operating temperature)	-30-70	℃
4	最大均衡电流(Maximum balancing current)	5	A
5	开机门限电压(Shutdown threshold voltage)	3V±0.2V	V
6	主动均衡器尺寸(Active equalizer size)	83.68*74.36*29.2	mm
7	成品重量(Finished weight)	190	g

5. 接口定义(Interface definition)

5.1. 产品外形(Product Appearance)





5.2. 产品连接器定义(Product connector definition)

接口定义(Interface definition)

连接器 (coupler)	连接器型号 (Type of connector)	接口名称 (Interface name)	管脚号 (Pin number)	MK-B5A16V2C	
				名称 （Name）	定义 (definition)
P1	KF301-5.0-2P	均衡与采集接口 (Balance with Acquisition interface)	1	B1+	电池组1正极 Positive pole of Battery Pack 1
			2	B1-	电池组1负极 Negative pole of Battery Pack 1
			3	B2+	电池组2正极 Positive pole of Battery Pack 2
			4	B2-	电池组2负极 Negative pole of Battery Pack 2
P2	KF301-5.0-2P	级联接口 (Cascaded Interface)	1	P1-	模块1负极 Negative pole of Module 1
			2	P1+	模块1正极 Positive pole of Module 1
			3	P2+	模块2正极

					Positive pole of Module 2
			4	P2-	模块2负极 Negative pole of Module 2

5.3. 线缆图(Cable diagram)

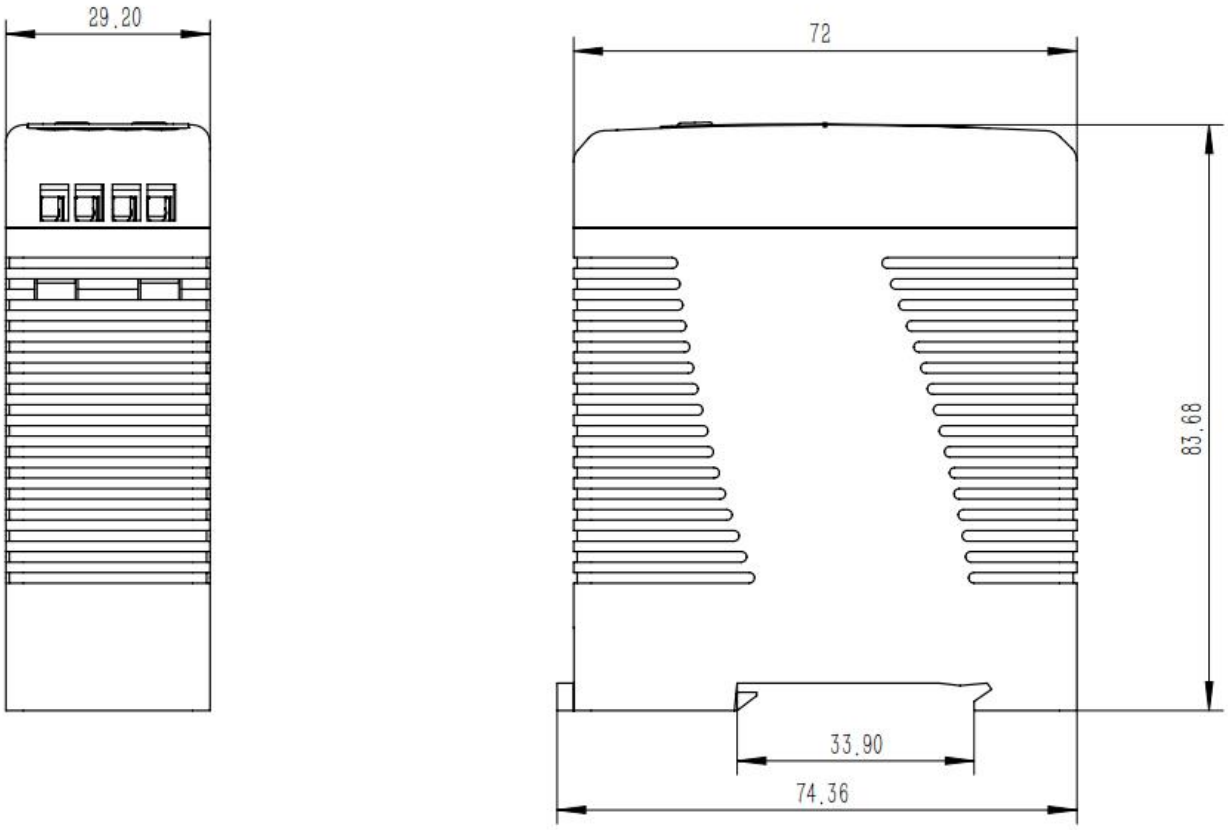


MK-B5A16V2C 线缆图
MK-B5A16V2C Cable Diagram

5.4. 产品尺寸(Product size)

MK-B5A16V2C系列主动均衡器尺寸为 83.68mm×74.36mm×29.2mm如下图所示：

The size of MK-B5A16V2C series active equalizer is 83.68mm×74.36mm×29.2mm as shown in the following figure：



MK-B5A16V2C 外形尺寸

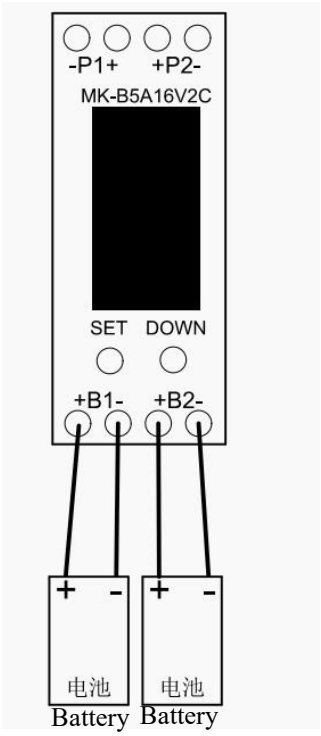
Dimensions of MK-B5A16V2C

6. 安装方法 (Installation method)

6.1. 单个均衡器安装(Install a single equalizer)

单个MK-B5A16V2C型均衡器适用于两组5～17V电池组之间。

A single MK-B5A16V2C equalizer is suitable for use between two groups of 5-17V battery packs.



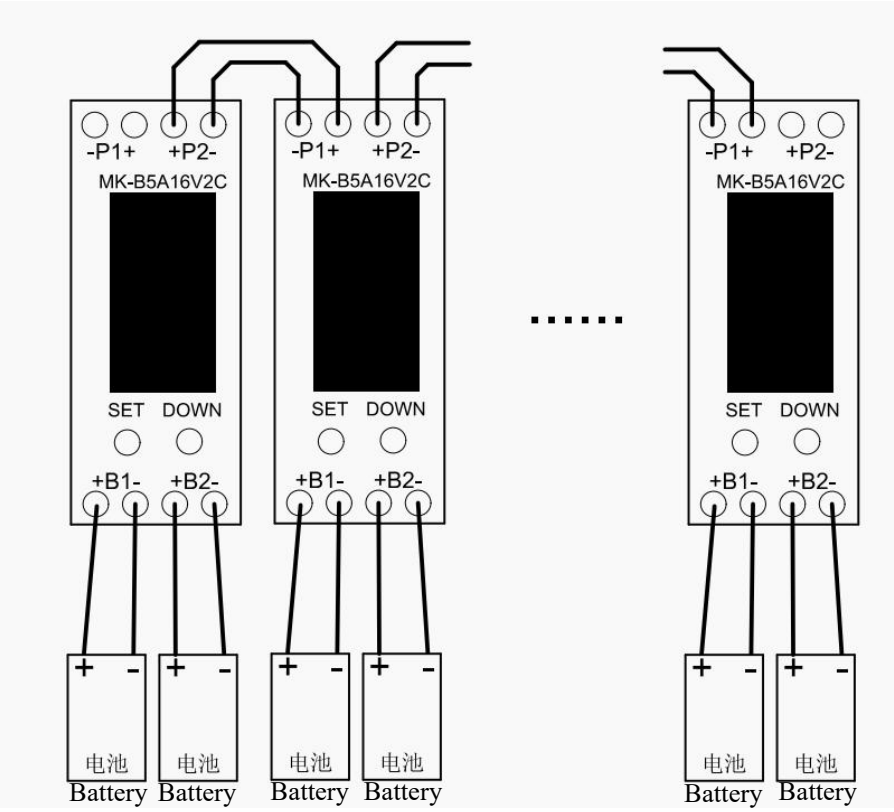
MK-B5A16V2C接线图

MK-B5A16V2C Wiring Diagram

6.2. 多个均衡器级联安装(Multiple equalizers are installed in cascading mode)

MK-B5A16V2C型均衡器支持级联使用，这样可以将均衡器应用到多个电池组。级联安装接线方式如下图 所示。

The MK-B5A16V2C equalizer supports cascaded use, allowing it to be applied to multiple battery packs. The wiring method for cascaded installation is shown in the figure below.



均衡器级联接线图

Equalizer Cascaded Wiring Diagram