

深圳市嘉佰达储能科技有限公司

SHENZHEN JIABAIDA ELECTRONICS TECHNOLOGY.CO.,LTD

高压箱产品规格书

High Voltage Box Product Specification Book

客户名称 (customer name)		JBD01-JCHVB3U-M-100 (200) CA-LW-SF-V1.0	
客户型号 (Customer model)		JBD01-JCHVB3U-M-100 (200) CA-LW-SF-V1.0	
产品型号 (product model)		JBD01-JCHVB3U-M-100 (200) CA-LW-SF-V1.0	
硬件版本 (Hardware version)		主控 (BCMU01-V1.1) & 从控 (BMU03 V1.1)	
文件版本 (Documentation Edition)		A03	
嘉佰达储能科技 (Ji Baida Energy Storage Technology)		客户确认 (Customer confirmation)	
拟 定 (protocol) :	刘庭良	拟 定 (protocol) :	
核 准 (approval) :	刘 伟	核 准 (approval) :	
日 期 (date) :	2024-07-09	日 期 (date) :	
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修正记录 (Amended record)

版本号 (version number)	页码 (page number)	修订人 (Revisers)	修订日期 (Revision date)	修订内容 (Amendments)	备注 (remarks)
A01	全文	刘庭良	2024.07.09	全新拟制	
A02	全文	刘庭良	2024.12.01	增加产品命名规范	
A03	-	袁年川	2025.06.11	增加英文说明	

功能配置表

(Function configuration table)

项 目 (project)	名 称 (name)	型 号 (model)
基础功能 (Basic features)	电芯类型 (Cell type)	☒ 磷酸铁锂 (lithium iron phosphate) ☐ 三元锂电 (Ternary lithium battery)
	平台电压 (Platform voltage)	☒ 3.2V ☐ 3.7V
	电芯容量 (Cell capacity)	☐ 50AH ☒ 100AH (100A) ☒ 200AH (200A) ☐ 280AH ____AH
	系统平台 (system platform)	1000V_100/200A
	显示屏 (display screen)	☐ 无 ☒ LCD05 (4.3 寸-标品) (4.3 inch)
	LED	☐ 无 ☒ 有 (possess)
	继电器 (relay)	☒ 3 路 (充电、放电、预充) (Route 3 Charging, discharging, pre-charging) ☐ 3 路 (主正、主负、预充) (Route 3 Main positive, main negative, precharge) ☐ 4 路 (主正/主负) (Route 4 The master is positive and the mistress is negative)
	加热功能 (Heating function)	☒ 无 (no) ☐ 有 (possess)
	风扇功能 (Fan function)	☐ 无 (no) ☒ 有 (possess) 24V50W 注: 当电源功率不足时需考虑外部增加外部电源 Note: When the power supply is insufficient, it is necessary to consider adding an external power source.
	干接点 (Dry junction)	1 路: 正常时常开, 系统保护或故障时闭合。 (Line 1: normally open, closed when system protection or fault occurs.)
	二次保护 (Secondary protection)	☐ 无 (no) ☒ 分励脱口器 (Separate disc ejector)
	供电电源 (Power Supply Voltage)	☐ AC/DC ☐ DC12V ☒ DC24V

	电流传感器 (electric current trans)	☒ 分流器 75mV150A(current diverter 75mV150A) ☐ 分流器 75mV300A(current diverter 75mV300A) ☐ 霍尔(Hoare)
	存储记录 (stored record)	☒ 500 条(500slip) ☐ 其他 ____ 条(other)
电池包配置 (Battery pack configuration)	主控型号 (BCMU)	☒ BCMU01
	从控型号 (BMU)	☒ BMU03 (16S6T) ☐ BMU05 (32S12T)
	模组数量 (Number of modules)	默认: 2*16S
	模组短接 (Module short circuit)	无(no)
	单簇电芯个数 (Number of single cluster cells)	17*16
	单簇温度个数	17*6
驱动配置 (Drive configuration)	高边驱动 HSD1 (High side drive HSD1)	放电继电器 (Discharge relay)
	高边驱动 HSD2 (High side drive HSD2)	充电继电器 (Charging relay)
	高边驱动 HSD3 (High side drive HSD3)	预充继电器 (Precharge relay)
	高边驱动 HSD4 (High side drive HSD4)	分励脱扣器驱动 (Driven by a separate tripping device)
	高边驱动 HSD5 (High side drive HSD5)	告警灯 (guard lamp)
	高边驱动 HSD6 (High side drive HSD6)	故障灯 (trouble light)
	干接点控制 (Dry contact control)	<3A
	风扇控制 (Fan control)	<2A
通信接口 (communication interface)	RS485-1 隔离 (RS485-1 isolation)	JBD-串口通信协议 V3.3(JBD-Serial communication protocol V3.3) 派能-ModBus-Protocol-Pylon-high-voltage-V1.16-20181106 (pylon-ModBus-Protocol-Pylon-high-voltage-V1.16-20181106)
	CAN1 隔离 (CAN1 isolation)	派能-PYLON_CAN-Bus-Protocol-Pylon-high-voltage-V1.21-(默认 协议) (pylon-PYLON_CAN-Bus-Protocol-Pylon-high-voltage-V1.21 Default protocol)
		迈格瑞能-REVO series low voltage battery BMS communication protocol (V1.04) (Megraen-REVO series low voltage battery BMS communication protocol (V1.04))
		德业-德业高压通信协议-V1.17 (deye-deyeHigh Voltage Communication Protocol-V1.17)
	CAN2 隔离 (CAN2 isolation)	并机通讯接口 (Daisy chain communication interface)
簇并机通讯	485 并机 (485 parallel operation)	最大: 1~4 簇高压并机 Maximum: 1 to 4 clusters of high-voltage parallel machines

标准配件清单 (Standard Accessories List)

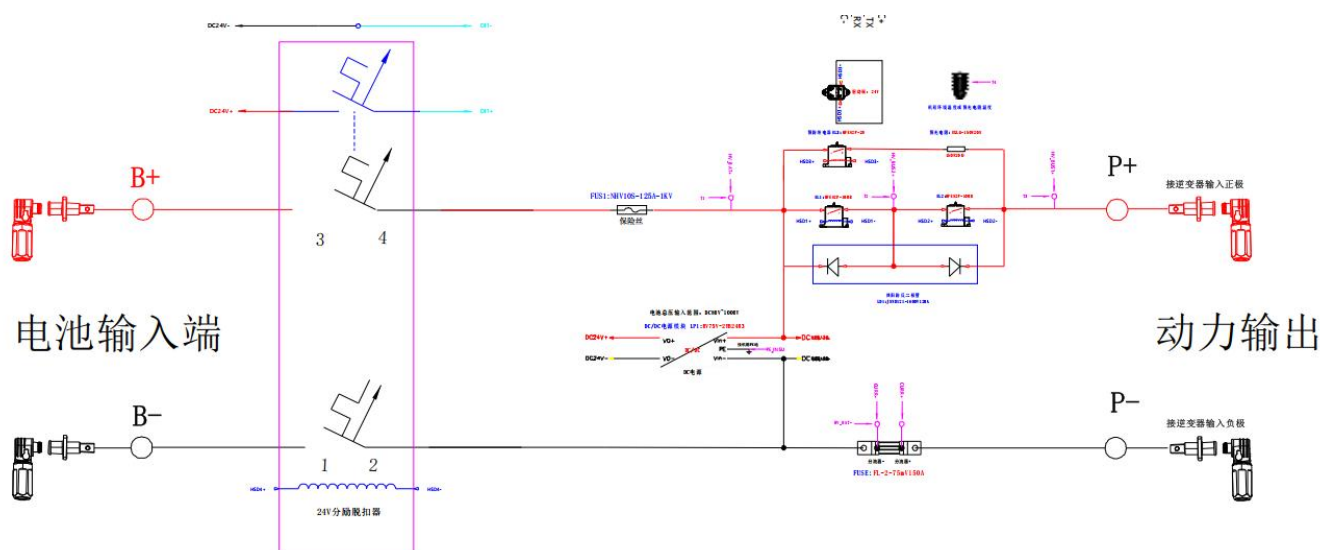
序 号 (Serial Number)	名 称 (name)		料 号 (Part Number)	物料型号 (Material model)	数 量 (number)
1	100A 高压箱 (100A high voltage box)	JCHVB3U-M-100CA	18370001	480*420*132mm 箱体（含主控/电气元件） (Box size: 480*420*132mm (including main control/electrical components))	1 个
2	200A 高压箱 (200A high voltage box)	JCHVB3U-M-200CA	18370002	520*420*132mm 箱体（含主控/电气元件） (Box size 520*420*132mm (including main control/electrical components))	1 个
3	箱体配件 (Box accessories)	100A 接线端子 (100A terminal)	30090064	ESQ-P06-025-YA/橙色 (ESQ-P06-025-YA/orange)	2 个
4		100A 接线端子 (100A terminal)	30090065	ESQ-P06-025-YA/黑色 (ESQ-P06-025-YA/black)	2 个
5		200A 动力端子 (200A power terminal)	30080849	ESQ-P08-050-YA	2 个
6		200A 动力端子 (200A power terminal)	30080850	ESQ-P08-050-YA	2 个
7		接线端子 (clamp)	30080794	LZ5X-5.08-4P-1Y-00A	1 个
8		接线端子 (clamp)	30080795	LZ5X-5.08-6P-1Y-00A	2 个
9	BMU03 【选配】 (BMU03 apolegamy)	16S 从控 (16S controlled)	18040001	JBD-BMU03-16S-6T V1.1/含钣金外壳 (JBD-BMU03-16S-6T V1.1/ sheet metal shell)	1 条
10		从控线束 A-通讯线 (Control harness A-communication line)	40033599	XHD-2x2/32P/双排 2.5MM/22AWG/800MM (XHD-2x2/32P/twin 2.5MM/22AWG/800MM)	1 条
11		从控线束 B-采样线 (Take samples from control harness B)	40033616	XHD-2x16/32P/双排 2.5MM/22AWG/800MM (XHD-2x16/32P/twin 2.5MM/22AWG/800MM)	1 条
12	BMU05 【选配】 (BMU05 apolegamy)	32S 从控 (The 32S is controlled)	13850001	JBD-BMU05-32S-12T V1.1/含钣金外壳 (JBD-BMU05-32S-12T V1.1/sheet metal shell)	1 条
13		从控线束 A-通信线 (Control harness A-communication line)	40033599	XHD-2x2/32P/双排 2.5MM/22AWG/800MM (XHD-2x2/32P/twin 2.5MM/22AWG/800MM)	1 条
14		从控线束 B-采样线	40033471	XHD-2x16/32P/双排 2.5MM/22AWG/800MM (XHD-2x16/32P/twin 2.5MM/22AWG/800MM)	1 条
15		从控线束 C-采样线	40033616	XHD-2x16/32P/双排 2.5MM/22AWG/800MM	1 条

1.产品简介(Product introduction)

储能高压控制箱适应于储能系统电池簇充放电管理,是介于电池簇及储能变换器 PCS 之间的动力控制回路(满足 1000V 以内系统,多用于高压户储、UPS、小型工商储等应用场景)。高压控制箱内置储能电池簇管理主控模块(BCU),具有电池簇总电压、总电流、绝缘电阻、高压箱内部温度的实时监测功能,同时汇总簇内的单体电池电压、温度等信息,从而实现电池簇的 SOC/SOH 估算,执行均衡策略判断和电池故障诊断和报警,并根据电池故障信息实现电池簇的自主保护,CAN 和 RS-485 通讯总线接口,可实现高压控制箱与 PCS、EMS 等上级设备信息通讯交互,保障储能系统高效稳定运行,机箱同时搭配 WIFI 远程和人机操作界面,为储能管理系统添彩赋能。

The high-voltage control box is designed for the charge and discharge management of battery clusters in energy storage systems. It serves as a power control loop between the battery cluster and the PCS (Power Control System), suitable for systems up to 1000V, particularly for high-voltage household storage, UPS, and small industrial and commercial storage applications. The high-voltage control box features an integrated main control module (BCU) for managing the battery cluster, which provides real-time monitoring of the total voltage, total current, insulation resistance, and internal temperature of the high-voltage box. It also aggregates information on the voltage and temperature of individual batteries within the cluster, enabling the estimation of the battery cluster's State of Charge (SOC) and State of Health (SOH), the execution of balancing strategies, and the diagnosis and alarm of battery faults. Based on the fault information, it can autonomously protect the battery cluster. The high-voltage control box is equipped with CAN and RS-485 communication interfaces, facilitating information exchange with higher-level devices such as PCS and EMS, ensuring the efficient and stable operation of the energy storage system. Additionally, the box includes a WIFI remote and human-machine interface, enhancing the functionality of the energy storage management system.

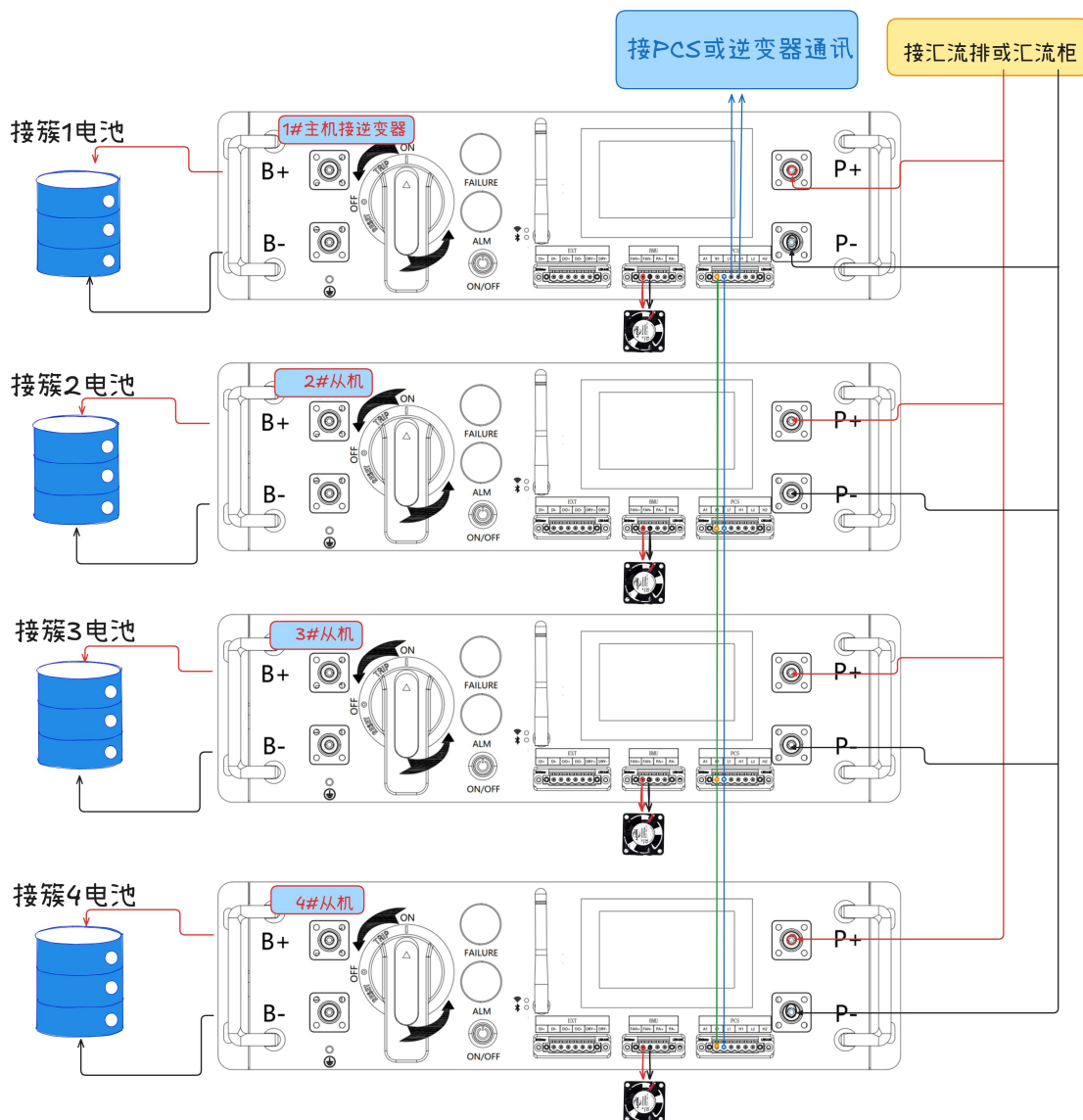
单机应用电气框图如下所示(The system application block diagram is shown below):



高压簇 4 并应用框图如下所示(The system application block diagram is shown below):

高压家储高压直流侧4并示意

注：并机前高压箱压之间压差需小于20V



2.功能描述(functional description)

➤ 高压箱系统支持 80~1000V 总压供电，无需外接市电激活；

(The high-voltage box system supports the total voltage supply of 80~1000V, and does not need external mains power activation;)

➤ 系统最大支持 18 个 BMU 从控管理，最多 288 串电池管理；

(The system supports up to 18 BMU from control management and up to 288 serial battery management;)

➤ 具有电池簇总电流采集功能：采集方式为分流器；

(It has the function of total current acquisition of battery cluster: the acquisition method is shunt;)

➤ 具有高边、低边驱动输出，持续带载≥1A，瞬态带载≥5A@100ms；

(It has high and low side drive output, continuous load is greater than or equal to 1A, transient load is greater than or equal to 5A@100ms;)

➤具有总压采集功能, 三路总压回采 BAT+、BUS1、BUS2, 采集范围 20~1000V;

(It has the function of total voltage acquisition, and three channels of total voltage return BAT+, BUS1 and BUS2, with a range of 20~1000V;)

➤具有机壳绝缘检测功能;

(It has the function of shell insulation detection;)

➤具有 4 路极柱温度采集, 从控 BMU 具有 6 路电芯温度采集;

(It has 4 channel pole temperature acquisition, and the controlled BMU has 6 cell temperature acquisition;)

➤具有 1 路干接点输出控制, 可以满足强弱电的有效隔离等多样化安全控制需求;

(It has one dry contact output control, which can meet the diversified safety control requirements such as effective isolation of strong and weak electricity;)

➤具有数字 DO/DI 功能, 可以实现系统高压互锁检测;

(It has digital DO/DI function, which can realize the high voltage interlock detection of the system;)

➤具有 2 路 CAN, 1 路 RS485 与 PCS、EMS、云平台等外部设备进行数据交互;

(It has two CAN and one RS485 to interact with PCS, EMS, cloud platform and other external devices;)

➤具有 WIFI 功能, 支持远程监控数据;

(WIFI function, support remote monitoring data;)

➤具有人机交互界面, 4.3 寸全彩屏;

(Human-computer interface, 4.3-inch full color screen;)

➤支持 RS485 本地升级或 WIFI 在线升级;

(Support RS485 local upgrade or WIFI online upgrade;)

➤支持电池簇 SOC/SOH 实时估算;

(Support real-time estimation of battery cluster SOC/SOH;)

➤支持故障检测功能, 可根据电压、电流、温度、SOC、SOH 等阈值报警功能, 以及严重报警阈值的回路切断保护功能;

(Support fault detection function, alarm function according to voltage, current, temperature, SOC, SOH and other threshold values, and circuit cutting protection function for serious alarm threshold values;)

➤支持数据存储功能, 支持系统运行数据的本地存储和掉电保存功能;

(Support data storage function, support local storage and power failure saving of system running data;)

➤支持自动寻址, 高压侧并机功能 (簇间压差需小于 20V);

(Support automatic addressing, high voltage side parallel function (cluster inter pressure difference should be less than 20V);)

3.应用环境要求 (Application environment requirements)

➤工作温度: $-40\sim 85^{\circ}\text{C}$ 。

(Working temperature: $-40\sim 85^{\circ}\text{C}$.)

➤存储温度: $-40\sim 85^{\circ}\text{C}$ 。

(Storage temperature: $-40\sim 85^{\circ}\text{C}$.)

➤相对湿度: $\leq 95\text{RH}$, 无凝露。

(Relative humidity: less than or equal to 95RH, no condensation.)

➤海拔高度: $\leq 3000\text{m}$ 。

(Elevation: less than 3000m.)

➤大气压力: $86\text{kPa}\sim 106\text{kPa}$ 。

(Atmospheric pressure: $86\text{kPa}\sim 106\text{kPa}$.)

➤污染等级: 2 级, 能耐受盐雾、油雾的影响。

(Pollution grade: 2, can withstand the influence of salt spray and oil mist.)

➤在无腐蚀性气体即导电尘埃、无严重霉菌、无强烈振动、冲击、无强电磁干扰, 外磁场感应强度不得超过 0.5mT , 外箱需有防御雨、雪、风、沙及防静电措施。

(In the absence of corrosive gas, i.e. conductive dust, no serious mold, no strong vibration, impact, no strong electromagnetic interference, the external magnetic field induction intensity shall not exceed 0.5mT , and the outer box shall have measures to protect against rain, snow, wind, sand and anti-static measures.)

4.电气性能参数 (Electrical performance parameters)

序号 (number)	项 目 (project)		额定规格 (Rated specifications)	备 注 (remark)
1	工作电压 (working voltage)		$9\text{V}\sim 24\text{VDC}$	典型值 12V、24V (representative value 12V、24V)
2	工作电流 (working current)		$<0.15\text{A}(24\text{V})$	/
3	工作温度 (working temperature)		$-20^{\circ}\text{C}\sim 85^{\circ}\text{C}$	/
5	休眠电流 (Hibernation current)		1mA	/
6	存储温度 (Storage temperature)		$-40\sim +125^{\circ}\text{C}$	/
7	通讯模组 (Communication)	CAN 通信 (CAN)	2 路隔离 CAN 通信 (Two-way isolation CAN communication)	/

	module)	communication)		
		RS485 通讯 (RS485 communication)	1 路隔离 RS485 通信 (RS485 communication between the two roads)	/
		UART 通讯 (UART communication)	2 路非隔离 UART 通讯 (Two-way non-isolated UART communication)	支持外扩显示屏、 蓝牙、WIFI 功能 (Supports external display, Bluetooth and WIFI functions)
		菊花链通讯 (Chains of communication)	级联从控可读取单体电压、温度等数据 (The cascade slave can read the data such as single voltage and temperature)	/
8	采集模组 (Collect modules)	总压检测 (Total pressure detection)	BAT+/BUS1/BUS2 (总正) 继电器粘连检测 (BAT+/BUS1/BUS2 (General) Relay adhesion detection)	/
		绝缘检测 (Insulation inspection)	支持 (电池组 B+/B-, 范围 0~20M Ω), 测量精度 ± 1 (Support (battery pack B+/B-, range 0~20M Ω), measurement accuracy ± 1)	/
		电流采样 (Current sampling)	采样精度 $\leq \pm 0.5\%$ F.S (Sampling accuracy is less than or equal to $\pm 0.5\%$ F.S)	300A/75mV
		电芯电压采样 (Cell voltage sampling)	$\leq \pm 10\text{mV}$	BMU 从控单元: BMU03 (16S)、 BMU05 (32S)
		电芯温度采集 (Cell temperature acquisition)	0~+50 $^{\circ}\text{C}$ 范围误差 $\leq \pm 2^{\circ}\text{C}$, 其它范围误差 $\leq \pm 3^{\circ}\text{C}$ (The error within the range of 0~+50 $^{\circ}\text{C}$ is $\pm 2^{\circ}\text{C}$, and the error within other ranges is $\pm 3^{\circ}\text{C}$)	单个 BMU 支持 6 路 温度采集 (A single BMU supports 6 temperature acquisition channels)
		数字量输入 (DI) (Digital input (DI))	9V~32VDC	4 路 (Route 4)
		主控温度检测 (Main temperature detection)	0~+50 $^{\circ}\text{C}$ 范围误差 $\leq \pm 1^{\circ}\text{C}$, 其它范围误差 $\leq \pm 2^{\circ}\text{C}$ (The error within the range of 0~+50 $^{\circ}\text{C}$ is $\pm 1^{\circ}\text{C}$, and the error in other ranges is $\pm 2^{\circ}\text{C}$)	1 路环境、3 路极柱 (1 road environment, 3 pole column)
		开关信号检测 (Switch signal detection)	1 路, 接工作电源正有效 (Line 1, connect the working power supply to the positive effective)	<36V
		光耦 OC 输出 (OC) (Optical coupler OC output (OC))	0~5mA	2 路 (Route 2)

		干接点控制 (Dry contact control)	0.2A(可控制风扇, 空调等) (0.2A (controllable fan, air conditioning, etc.))	2 路 (Route 2)
		SOH 估算 (SOH estimate)	0%~100%	≤±8%F.S
		故障数据记录 (Record fault data)	1000 条	/
		RTC	连接上位机或 WIFI 自动对时 (Connect to the upper computer or WIFI for automatic timing)	/

5.产品型号说明 (Product model description)

JBD01 – JCHVB-3U-M-100CA-LW-SF-V1.0

(1) (2) (3) (4) (5) (6) (7) (8)

(1) 公司简称: JBD 公司简称, 客户定制产品, 使用客户简称编码

(Company abbreviation: JBD Company abbreviation, customer customized products, use customer abbreviation code)

(2) 高压箱简称 (High pressure box abbreviation):

JCHVB: 高压家储 (High pressure home storage)

ICHVP: 工商储 (Commercial storage)

(3) 机箱尺寸: 3U2 (3U 机箱 2P 不带中性线)

(Case size: 3U2 (3U case 2P without neutral wire))

3U2

4U2

5U2

(4) 工作电压 (working voltage):

L: 400VDC

M: 1000VDC (平台配置)

H: 1500VDC

(5) 工作电流 (working current):

100CA: 100A 持续电流 (100A continuous current)

200CA: 200A 持续电流 (200A continuous current)

(6) 外挂模块 (Plug-in module):

L: LCD05 (4.3 寸触摸彩屏) (LCD05 (4.3 inch touch color screen))

W: WIFI (WIFI001)

LW: LCD05&WIFI

(7) 从控通讯方式 & 有无风扇接口 (Control communication mode & fan interface):

S: 菊花链从控通讯 (Chaos chain from controlled communication)

F: 预留风扇接口 (Leave the fan interface in place)

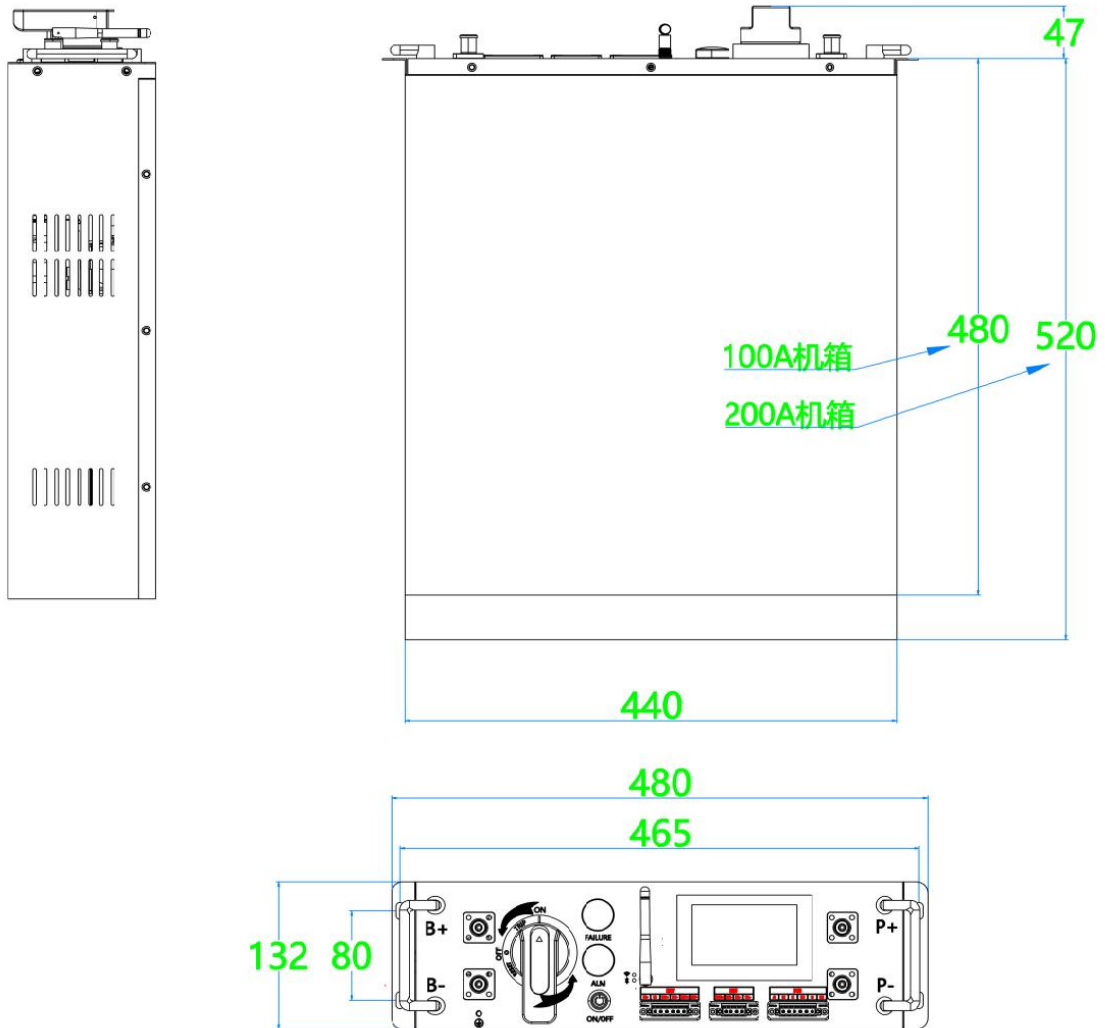
(8) 版本号 (Version number): V1.0

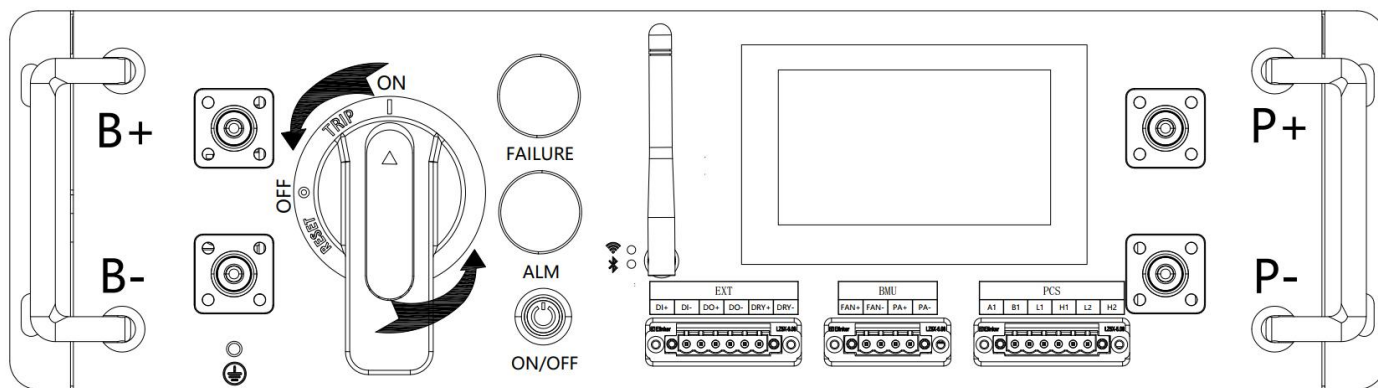
5.1. 高压箱模块 (High voltage box module)

5.1.1. 产品外观 (product appearance)



5.1.2. 产品尺寸 (product size)





PCS A1 B1 L1 H1 L2 H2 Elinter L25X5.08			间距（space between）：5.08mm 插座型号（Socket model）：LC10MG-5.08-6P-1Y-00A 插头型号（Plug model）：LC1M-5.08-6P-140-00A 线径要求（Wire diameter requirements）：20AWG~22AWG		
数字量输出/输入接口 (Digital output/input interface)					
PIN	端口定义 (Port definition)	功能说明 (function declaration)	PIN	端口定义 (Port definition)	功能说明 (function declaration)
1	DI+	数字量输入正极 (The positive terminal of the digital input)	4	DO-	数字量输出负极 (The digital output is negative)
2	DI-	数字量输入负极 (The digital input is negative)	5	DRY+	干接点正接口 (Dry contact positive connector)
3	DO+	数字量输出正极 (The positive pole of digital output is provided)	6	DRY-	干接点负接口 (Dry connection negative interface)
端口示意（Port indication）			备注（remark）		
EXT DI+ DI- DO+ DO- DRY+ DRY- Elinter L25X5.08			间距（space between）：5.08mm 插座型号（Socket model）：LC10MG-5.08-6P-1Y-00A 插头型号（Plug model）：LC1M-5.08-6P-140-00A 线径要求（Wire diameter requirements）：20AWG~22AWG 通信线束要求: 双绞或缠绕屏蔽层(Communication harness requirements: twisted or wound shielding layer)		
状态指示灯 (Status indicator light)					
FAILURE ALM ON/OFF			PIN	端口定义 (Port definition)	功能说明 (function declaration)
			1	FAILURE	故障指示灯
			2	ALM	告警指示灯
			3	ON/OFF	运行指示灯

6.电气特性 (electrical character,electrical specification)

6.1.告警参数 (Alarm parameters)

序号 (number)	类 型 (type)	项目名称 (project name)	一级告警 (Level 1 alarm)	二级告警 (Level 2 alarm)	三级告警 (Level 3 alert)	备 注 (remark)
1	单体过 压 (Monom er overpre ssure)	告警值 (Alarm value)	3600	3650	3700	mV
		告警延时 (Alarm delay)	2000	2000	2000	mS
		恢复值 (Restore values)	3380	3380	3380	mV
		恢复 SOC (recover SOC)	-	≤98%	≤98%	%
		执行策略 (Implementat ion strategy)	充电降流 50% (Charging reduces current by 50%)	充电降流 0A (Charging current drops to 0A)	切断充电继电器 (Disconnect the charging relay)	
		恢复条件 (Restore conditions)	1、最高单体低于恢复 (The highest individual was lower than recovery) 2、放电电流≥3A (Discharge current is greater than or equal to 3A)	1、最高单体低于恢复 (The highest individual was lower than recovery) 2、放电电流≥3A (Discharge current is greater than or equal to 3A) 3、SOC≤98%	1、最高单体低于恢复 (The highest individual was lower than the recovery) 2、放电电流≥3A (Discharge current is greater than or equal to 3A) 3、SOC≤98%	条件发生任一 一条即可解除 (The condition may be rescinded if any one of the conditions is met)
2	单体欠 压 (Monom er under voltage)	告警值 (Alarm value)	3000	2800	2700	mV
		告警延时 (Alarm delay)	2000	2000	2000	mS
		恢复值 (Restore values)	3100	3000	3000	mV
		执行策略 (Implementat ion strategy)	放电降流 50% (The discharge current is reduced by 50%)	放电降流 0A (The discharge current is reduced to 0A)	切断放电继电器 (Cut off the discharge relay)	
		恢复条件	1、最低单体高于恢复	1、最高单体高于恢	1、最高单体高于恢	条件发生任一

		(Restore conditions)	The lowest monomer is higher than the recovery 2、充电电流 $\geq 3A$ Charging current is greater than or equal to 3A	复 The highest individual was higher than recovery 2、充电电流 $\geq 3A$ Charging current is greater than or equal to 3A	复 The highest individual was higher than recovery 2、充电电流 $\geq 3A$ Charging current is greater than or equal to 3A	一条即可解除 The condition may be rescinded if any one of the conditions occurs
3	总压过压 (Total pressure overpressure)	告警值 (Alarm value)	3.60*S	3.65*S	3.70*S	mV
		告警延时 (Alarm delay)	2000	2000	2000	mS
		恢复值 (Restore values)	3.38*S	3.38*S	3.38*S	mV
		恢复 SOC (recover SOC)	-	$\leq 98\%$	$\leq 98\%$	%
		执行策略 (Implementation strategy)	充电降流 50% (Charging reduces current by 50%)	充电降流 0A (Charging current drops to 0A)	切断充电继电器 (Disconnect the charging relay)	
		恢复条件 (Restore conditions)	1、总压低于恢复 The total pressure is lower than the recovery 2、放电电流 $\geq 3A$ Discharge current is greater than or equal to 3A	1、总压低于恢复 The total pressure is lower than the recovery 2、放电电流 $\geq 3A$ Discharge current is greater than or equal to 3A 3、SOC $\leq 50\%$	1、总压低于恢复 The total pressure is lower than the recovery 2、放电电流 $\geq 3A$ Discharge current is greater than or equal to 3A 3、SOC $\leq 50\%$	条件发生任一条即可解除 The condition may be rescinded if any one of the conditions occurs
4	总压欠压 (Total pressure is under pressure)	告警值 (Alarm value)	3.00*S	2.80*S	2.7*S	mV
		告警延时 (Alarm delay)	2000	2000	2000	mS
		恢复值 (Restore values)	3.15*S	3.00*S	3.00*S	mV
		执行策略 (Implementation strategy)	放电降流 50% (The discharge current is reduced by 50%)	放电降流 0A (The discharge current is reduced to 0A)	切断放电继电器 (Cut off the discharge relay)	
		恢复条件	1、总压高于恢复	1、总压高于恢复	1、总压高于恢复	条件发生任一

		(Restore conditions)	The total pressure is higher than the recovery 2、充电电流 $\geq 3A$ Charging current is greater than or equal to 3A	The total pressure is higher than the recovery 2、充电电流 $\geq 3A$ Charging current is greater than or equal to 3A	The total pressure is higher than the recovery 2、充电电流 $\geq 3A$ Charging current is greater than or equal to 3A	一条即可解除 The condition may be rescinded if any one of them occurs
5	充电过流 (Overcurrent in charging)	告警值 (Alarm value)	108 (208)	118 (218)	128 (228)	A
		告警延时 (Alarm delay)	2000	2000	2000	mS
		恢复值 (Restore values)	42	45	48	A
		恢复延时 (Restore the delay)	-	60	60	S
		锁定次数 (Number of lock attempts)	-	10	10	次
		执行策略 (Implementation strategy)	充电降流 50% (Charging reduces current by 50%)	充电降流 0A (Charging current drops to 0A)	切断充电继电器 (Disconnect the charging relay)	
		恢复策略 (recovery policy)	1、充电电流 $\leq$ 告警值-5A, 持续 5S。 Charging current is less than alarm value-5A for 5S. 2、放电电流 $\geq 3A$ Discharge current is greater than or equal to 3A	1、延时恢复 (Delayed recovery) 2、放电电流 $\geq 3A$ Discharge current is greater than or equal to 3A	1、延时恢复 (Delayed recovery) 2、放电电流 $\geq 3A$ Discharge current is greater than or equal to 3A	条件发生任一条即可解除 The condition may be rescinded if any one of them occurs
		过流锁定 (Overcurrent lockout)	系统连续触发次数大于锁定次数, 系统锁定不自动恢复, 需要放电电流 $\geq 3A$ 恢复或系统重启 (If the number of continuous triggering times of the system is greater than the number of locking times, the system lock will not be automatically restored. It needs to discharge current greater than or equal to 3A to restore or restart the system)			
6	放电过流	告警值 (Alarm value)	108 (208)	118 (218)	128 (228)	A
		告警延时 (Alarm delay)	2000	2000	2000	mS

	(Overcurrent discharge)	恢复值 (Restore values)	42	45	48	A
		恢复延时 (Restore the delay)	-	60	60	S
		锁定次数 (Number of lock attempts)	-	10	10	次
		执行策略 (Implementation strategy)	放电降流 50% (The discharge current is reduced by 50%)	放电降流 0A (The discharge current is reduced to 0A)	切断放电继电器 (Cut off the discharge relay)	
		恢复策略 (recovery policy)	1、充电电流 $\leq$ 恢复值 (Charging current is less than the recovery value) 2、放电电流 $\geq 3A$ (Discharge current is greater than or equal to 3A)	1、 延时恢复 (Delayed recovery) 2、 放电电流 $\geq 3A$ (Discharge current is greater than or equal to 3A)	1、延时恢复 (Delayed recovery) 2、放电电流 $\geq 3A$ (Discharge current is greater than or equal to 3A)	条件发生任一条即可解除 (The condition may be rescinded if any one of the conditions is met)
		过流锁定 (Overcurrent lockout)	系统连续触发次数大于锁定次数，系统锁定不自动恢复，需要充电电流 $\geq 3A$ 恢复或系统重启 (If the number of continuous triggering times of the system is greater than the locking times, the system lock will not be automatically restored. Charging current should be greater than or equal to 3A for recovery or system restart)			
7	充电高温 (Charge at high temperature)	告警值 (Alarm value)	50	55	60	$^{\circ}C$
		告警延时 (Alarm delay)	3000	3000	3000	ms
		恢复值 (Restore values)	45	50	55	$^{\circ}C$
		执行策略 (Implementation strategy)	充电降流 50% (Charging reduces current by 50%)	充电降流 0A (Charging current drops to 0A)	切断充电继电器 (Disconnect the charging relay)	
		恢复条件 (Restore conditions)	1、最高温度低于恢复 (The maximum temperature is lower than the recovery) 2、放电电流 $\geq 3A$ (Discharge current is greater than or	1、最高温度低于恢复 (The maximum temperature is lower than the recovery) 2、放电电流 $\geq 3A$	1、最高温度低于恢复 (The maximum temperature is lower than the recovery) 2、放电电流 $\geq 3A$	条件发生任一条即可解除 (The condition may be rescinded if any one of the conditions

			equal to 3A)	(Discharge current is greater than or equal to 3A)	(Discharge current is greater than or equal to 3A)	is met)
8	充电低温 (Charge at low temperature)	告警值 (Alarm value)	5	2	0	℃
		告警延时 (Alarm delay)	3000	3000	3000	mS
		恢复值 (Restore values)	8	5	3	℃
		执行策略 (Implementation strategy)	充电降流 50% (Charging reduces current by 50%)	充电降流 0A (Charging current drops to 0A)	切断充电继电器 (Disconnect the charging relay)	
		恢复条件 (Restore conditions)	1、最低温度高于恢复 (The lowest temperature is higher than the recovery) 2、放电电流 $\geq 3A$ (Discharge current is greater than or equal to 3A)	1、最低温度高于恢复 (The lowest temperature is higher than the recovery) 2、放电电流 $\geq 3A$ (Discharge current is greater than or equal to 3A)	1、最低温度高于恢复 (The lowest temperature is higher than the recovery) 2、放电电流 $\geq 3A$ (Discharge current is greater than or equal to 3A)	条件发生任一条即可解除 (The condition may be rescinded if any one of the conditions is met)
9	放电高温 (High discharge temperature)	告警值 (Alarm value)	50	55	60	℃
		告警延时 (Alarm delay)	3000	3000	3000	mS
		恢复值 (Restore values)	45	50	55	℃
		执行策略 (Implementation strategy)	放电降流 50% (The discharge current is reduced by 50%)	放电降流 0A (The discharge current is reduced to 0A)	切断放电继电器 (Cut off the discharge relay)	
		恢复条件 (Restore conditions)	1、最高温度低于恢复 (The maximum temperature is lower than the recovery) 2、充电电流 $\geq 3A$ (Charging current is greater than or	1、最高温度低于恢复 (The maximum temperature is lower than the recovery) 2、充电电流 $\geq 3A$	1、最高温度低于恢复 (The maximum temperature is lower than the recovery) 2、充电电流 $\geq 3A$	条件发生任一条即可解除 (The condition may be rescinded if any one of the conditions

			equal to 3A)	(Charging current is greater than or equal to 3A)	(Charging current is greater than or equal to 3A)	is met)
10	放电低温 (Low discharge temperature)	告警值 (Alarm value)	-5	-15	-20	℃
		告警延时 (Alarm delay)	3000	3000	3000	mS
		恢复值 (Restore values)	0	-10	-15	℃
		执行策略 (Implementation strategy)	放电降流 50% (The discharge current is reduced by 50%)	放电降流 0A (The discharge current is reduced to 0A)	切断放电继电器 (Cut off the discharge relay)	
		恢复条件 (Restore conditions)	1、最低温度高于恢复 (The lowest temperature is higher than the recovery) 2、充电电流 $\geq$ 3A (Charging current is greater than or equal to 3A)	1、最高温度高于恢复 (The maximum temperature is higher than the recovery) 2、充电电流 $\geq$ 3A (Charging current is greater than or equal to 3A)	1、最高温度高于恢复 (The maximum temperature is higher than the recovery) 2、充电电流 $\geq$ 3A (Charging current is greater than or equal to 3A)	条件发生任一条即可解除 (The condition may be rescinded if any one of the conditions occurs)
11	环境高温 (High ambient temperature)	告警值 (Alarm value)	55	60	65	℃
		告警延时 (Alarm delay)	3000	3000	3000	mS
		恢复值 (Restore values)	50	55	60	℃
		执行策略 (Implementation strategy)	充放电降流 50% (Charging and discharging reduce the current by 50%)	充放电降流 0A (Charging and discharging reduce the current to 0A)	切断充、放电继电器 (Cut off the charging and discharging relay)	
		恢复条件 (Restore conditions)	环境温度低于恢复 (The ambient temperature is lower than the recovery)	环境温度低于恢复 (The ambient temperature is lower than the recovery)	环境温度低于恢复 (The ambient temperature is lower than the recovery)	
12	环境低温 (The environment is low temperature)	告警值 (Alarm value)	-5	-15	-20	℃
		告警延时 (Alarm delay)	2000	2000	2000	mS
		恢复值 (Restore values)	0	-10	-15	℃

	cold)	(Restore values)				
		执行策略 (Implementation strategy)	放电降流 50%, 充电 0A The discharge current is reduced by 50%, and the charge is 0A()	充放电降流 0A (Charging and discharging reduce the current to 0A)	切断充、放电继电器 (Cut off the charging and discharging relay)	
		恢复条件 (Restore conditions)	环境温度高于恢复 (The ambient temperature is higher than the recovery)	环境温度高于恢复 (The ambient temperature is higher than the recovery)	环境温度高于恢复 (The ambient temperature is higher than the recovery)	
13	温差过大 (excessive temperature difference)	告警值 (Alarm value)	10	12	15	℃
		告警延时 (Alarm delay)	3000	3000	3000	mS
		恢复值 (Restore values)	8	10	10	℃
		执行策略 (Implementation strategy)	充放电降流 50% (Charging and discharging reduce the current by 50%)	充放电降流 0A (Charging and discharging reduce the current to 0A)	切断充、放电继电器 (Cut off the charging and discharging relay)	
		恢复条件 (Restore conditions)	温差低于恢复 (The temperature difference is lower than the recovery)	温差低于恢复 (The temperature difference is lower than the recovery)	温差低于恢复 (The temperature difference is lower than the recovery)	
14	压差过大 (The pressure difference is too large)	告警值 (Alarm value)	300	500	800	℃
		告警延时 (Alarm delay)	3000	3000	3000	mS
		恢复值 (Restore values)	200	300	500	℃
		执行策略 (Implementation strategy)	充放电降流 50% (Charging and discharging reduce current by 50%)	充放电降流 0A (Charging and discharging reduce the current to 0A)	切断充、放电继电器 (Cut off the charging and discharging relay)	
		恢复条件 (Restore conditions)	压差低于恢复 (The pressure difference is lower than the recovery)	压差低于恢复 (The pressure difference is lower than the recovery)	压差低于恢复 (The pressure difference is lower than the recovery)	
15	温升过高	告警值 (Alarm value)	5	8	10	℃/S

	(The temperature rose too high)	告警延时 (Alarm delay)	3000	3000	3000	mS
		恢复值 (Restore values)	2	3	5	℃/S
		执行策略 (Implementation strategy)	充放电降流 50% (Charging and discharging reduce the current by 50%)	充放电降流 0A (Charging and discharging reduce the current to 0A)	切断充、放电继电器 (Cut off the charging and discharging relay)	
		恢复条件 (Restore conditions)	温升低于恢复 (The temperature rise is lower than the recovery)	温升低于恢复 (The temperature rise is lower than the recovery)	温升低于恢复 (The temperature rise is lower than the recovery)	
16	极柱高温 (High temperature of the pole)	告警值 (Alarm value)	80	90	100	℃
		告警延时 (Alarm delay)	3000	3000	3000	mS
		恢复值 (Restore values)	75	85	95	℃
		执行策略 (Implementation strategy)	充放电降流 50% (Charging and discharging reduce the current by 50%)	充放电降流 0A (Charging and discharging reduce the current to 0A)	切断充、放电继电器 (Cut off the charging and discharging relay)	
		恢复条件 (Restore conditions)	极柱温度低于恢复 (The pole temperature is lower than the recovery)	极柱温度低于恢复 (The pole temperature is lower than the recovery)	极柱温度低于恢复 (The pole temperature is lower than the recovery)	
17	绝缘过低 (The insulation is too low)	告警值 (Alarm value)	500	300	100	Ω/V
		告警延时 (Alarm delay)	3000	3000	3000	mS
		恢复值 (Restore values)	1000	500	500	Ω/V
		执行策略 (Implementation strategy)	充放电降流 50% (Charging and discharging reduce the current by 50%)	充放电降流 0A (Charging and discharging reduce the current to 0A)	切断充、放电继电器 (Cut off the charging and discharging relay)	
		恢复条件 (Restore conditions)	绝缘阻值高于恢复 (The insulation resistance is higher than the recovery)	绝缘阻值高于恢复 (The insulation resistance is higher than the recovery)	绝缘阻值高于恢复 (The insulation resistance is higher than the recovery)	
18	容量过低	告警值 (Alarm value)	15	10	5	%

	(Capacity is too low)	告警延时 (Alarm delay)	3000	3000	3000	mS
		恢复值 (Restore values)	20	15	10	%
		执行策略 (Implementation strategy)	-	-	-	
		恢复条件 (Restore conditions)	SOC 高于恢复值 (SOC is higher than the recovery value)	SOC 高于恢复值 (SOC is higher than the recovery value)	SOC 高于恢复值 (SOC is higher than the recovery value)	

6.1.1.配置参数(configuration parameter)

序号 (number)	类型 (type)	项目名称 (project name)	参数值 (parameter values)	单位 (unit)	配置类型 (Configuration type)	备注 (remark)
1	SOP	充电需求电压 (Charging demand voltage)	3.65*S	V	可设 (It can be set)	
		充电需求电流 (Charging demand current)	50	A	可设 (It can be set)	
		放电需求电压 (Discharge required voltage)	2.70*S	V	可设 (It can be set)	
		放电需求电流 (Discharge demand current)	100	A	可设 (It can be set)	
2	均衡功能 (Balance function)	开启电压 (cut-in voltage)	3.400	V	可设 (It can be set)	
		开启压差 (Open the pressure difference)	30	mV	可设 (It can be set)	
3	加热功能 (Heating function)	开启温度 (Turn on the temperature)	5	℃	可设 (It can be set)	外部加热电源 (External heating power supply)
		停止温度 (Stop the temperature)	10	℃	可设 (It can be set)	
4	风扇功能 (Fan function)	开启温度 (Turn on the temperature)	40	℃	可设 (It can be set)	
		关闭温度 (Close the temperature)	35	℃	可设 (It can be set)	

5	满充校准 (Fully charged and calibrated)	满充校准电压 (Charge the calibration voltage fully)	3.60*S	V	可设 (It can be set)	总电压大于满充电压且充电电流小于满充校准电流, 校准 SOC 为 100%, 充电限流为 0A。 (The total voltage is greater than the full charging voltage and the charging current is less than the full charging calibration current. The calibrated SOC is 100% and the charging current limit is 0A.)
		满充校准电流 (Charge the calibration current fully)	2	A	可设 (It can be set)	

6.1.2. 可靠性参数(Reliability parameters)

序 号 (number)	参数名称 (Parameter name)	检测规格 (Test specifications)
1	采样精度 (Sampling accuracy)	电流精度: $\pm 2\%$ 单体电压精度: $\pm 10\text{mV}$ 温度精度: $\pm 3^\circ\text{C}$ (Current accuracy: $\pm 2\%$ single cell voltage accuracy: $\pm 10\text{mV}$ temperature accuracy: $\pm 3^\circ\text{C}$)
2	电流阈值 (Current threshold)	充电电流: 1A 放电电流: 1A (Charging current: 1A Discharging current: 1A)
3	失效类型 (Type of failure)	电压检测失效、温度检测失效、从控掉线、继电器粘连、继电器开路、电流采样失效、总压采样失效 (Voltage detection failure, temperature detection failure, slave disconnection, relay adhesion, relay open circuit, current sampling failure, total pressure sampling failure)
4	运行功耗 (Operating power consumption)	36W
5	休眠模式功耗 (Sleep mode power consumption)	<10W
6	储运模式功耗 (Storage and transportation mode power consumption)	<3W
7	通信接口 (communication)	CAN1 通信: 支持多种逆变器协议, 默认波特率 500K。 (CAN1 communication: supports a variety of inverter protocols, default baud rate 500K.)

	interface)	CAN2 通信: 支持多种逆变器协议, 默认波特率 250K。 (CAN2 communication: supports a variety of inverter protocols, default baud rate 250K.) RS485-1 通信: 上位机通信接口, 默认波特率 9600。 (RS485-1 communication: upper computer communication interface, default baud rate 9600.) RS485-2 通信: 并机通信接口, 可连接上位机, 默认波特率 9600。 (RS485-2 communication: parallel communication interface, which can be connected to the upper computer, and the default baud rate is 9600.)
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7. 关键功能描述(Description of key functions)

7.1. 上下电逻辑策略(Up and down power logic strategy)

7.2. 系统电压上电逻辑(System voltage power-on logic)

系统电源正常, 闭合自锁开关, 系统低压上电, 正常运行。

(The system power supply is normal, the self-locking switch is closed, the system is powered on at low voltage and runs normally.)

7.3. 系统电压下电逻辑(Power down logic at system voltage)

1) 断开自锁开关, 主控断开低压供电, 系统关机。

(Disconnect the self-locking switch, disconnect the low-voltage power supply of the main control, and shut down the system.)

2) 系统触发欠压保护后, 持续 60S 未恢复, 系统进入休眠状态。

(After the system triggers the under-voltage protection, if it does not recover for 60S, the system enters the sleep state.)

7.4. 高压上电逻辑(High voltage power on logic)

系统低压上电后, BMS 内部检测, 系统自检无故障后, 闭合充电继电器, 闭合预充继电器, 预充成功后, 闭合放电继电器, 断开预充继电器, 高压上电成功。

(After the system is powered on at low voltage, the BMS performs internal detection. After the system self-test is fault-free, the charging relay is closed and the pre-charging relay is closed. After the pre-charging is successful, the discharge relay is closed and the pre-charging relay is disconnected. The high voltage is successfully powered on.)

7.5. 高压下电逻辑(High voltage electrical logic)

1) 系统低压电突然断开, 继电器断电, 直接断开。

(The low voltage of the system is suddenly disconnected, and the relay is directly disconnected.)

2) 系统检测到失效类型故障, 继电器全部断开, 系统关闭对外高压输出。

(The system detects the failure type fault, all relays are disconnected, and the system shuts down the external high voltage output.)

3) 系统进入低压休眠状态, 继电器全部断开。

(The system enters the low voltage hibernation state, and all relays are disconnected.)

7.6. 预充策略 (Precharge strategy)

1) 预充成功判断条件 (Conditions for successful precharge are determined) :

预充回踩电压 $\geq 0.9 \times$ 电池总电压。(The precharge backstep voltage is greater than or equal to $0.9 \times$ the total battery voltage.)

预充延时超过预充时间。(The precharge delay exceeds the precharge time.)

7.7. SOP 策略 (SOP policy)

充电 SOP 策略			
(Charging SOP strategy)			
NO.	电压范围/V (voltage range /V)	最大电流/A (maximum current /A)	备 注 (remark)
1	【1.0~2.0】	0.05*充电需求电流 (0.05 * charging demand current)	最低单体电压 (Minimum cell voltage)
2	【2.0~一级过压】 (Level 2.0 to level 1 overpressure)	0.5*充电需求电流 (0.5 * charging demand current)	最高单体电压 (Minimum cell voltage)
3	【一级过压~二级过压】 (Level 1 overpressure ~ Level 2 overpressure)	5A	最高单体电压 (Minimum cell voltage)
4	≥二级过压 (More than grade II overpressure)	0A	最高单体电压 (Minimum cell voltage)
5	限流策略说明 (Description of the rate limiting policy)	每次触发一级过压告警，限流原来值的 50%，延时 30S 后检测，直到限流值小于 5A 后，一直保持限流 5A 充电，直到充到触发二级过压告警。 (Each time the first level overvoltage alarm is triggered, the current limiting value is reduced to 50%, and the detection is delayed for 30S until the current limiting value is less than 5A. Then the current limiting value is kept at 5A charging until the second level overvoltage alarm is triggered.)	
		如果触发告警参数表中的充电限流策略，优先触发告警值，两者取其小值。 (If the charging current limiting policy in the alarm parameter table is triggered, the alarm value is triggered first, and the smaller value is taken.)	
		最小限流值为 5A。(The minimum current limiting value is 5A.)	
放电 SOP 策略			
(Discharge SOP strategy)			
No.	电压范围/V (voltage range /V)	最大电流/A (maximum current /A)	备注 (remark)
1	≦一级欠压 (≥ Level 1 under-voltage)	0.5*充电需求电流 (0.5 * charging demand current)	最低单体电压 (Minimum cell voltage)
2	≦二级欠压 (≥ Secondary under-voltage)	0A	最低单体电压 (Minimum cell voltage)
3	限流策略说明	如果触发告警参数表中的放电限流策略，优先触发告警值，两者取其小值	

	(Description of the rate limiting policy)	(If the discharge current limiting strategy in the alarm parameter table is triggered, the alarm value is triggered first, and the smaller value is taken)
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7.8. SOC 策略(SOC policy)

7.9.满充校准策略(Full charge calibration strategy)

- 1) 系统触发单体过压二级告警、单体过压三级告警，校准 SOC 为 100%。

(The system triggers the secondary and tertiary alarms of single overvoltage, and calibrates the SOC to 100%.)

- 2) 系统触发总压过压二级告警、总压过压三级告警，校准 SOC 为 100%。

(The system triggers the secondary alarm of total pressure overpressure and the third-level alarm of total pressure overpressure, and calibrates the SOC to 100%.)

- 3) 系统总压大于满充校准电压，且平均电压大于三级告警电压值，电流大于满充校准电流，则校准 SOC 为 100%。

(If the system total voltage is greater than the full charge calibration voltage, the average voltage is greater than the three-level alarm voltage value, and the current is greater than the full charge calibration current, then the calibrated SOC is 100%.)

7.10. 满放校准策略(Full calibration strategy)

- 1) 系统触发单体欠压二级告警、单体欠压三级告警，校准 SOC 为 0%。

(The system triggers the secondary and tertiary alarms of single battery under-voltage, and calibrates the SOC to 0%.)

- 2) 系统触发总压欠压二级告警、总压欠压三级告警，校准 SOC 为 0%。

(The system triggers the secondary and tertiary alarms of total pressure under-voltage, and calibrates the SOC to 0%.)

7.11. SOH 策略(SOH policy)

- 1) 系统进行一次满放，然后充满，自学习一次容量。(温度低于 10℃不执行)

(The system performs a full discharge, then fills up, and learns the capacity once. (It is not performed when the temperature is below 10℃))

- 2) 系统按照循环 150 次衰减 1%，按照放电累计 80%容量计算一次循环。

(The system is reduced by 1% in a cycle for 150 times, and one cycle is calculated according to the discharge of 80% capacity.)

7.12. 二次保护策略(Secondary protection strategy)

触发条件(Trigger conditions)

- 1) 充电继电器断开且最高单体电压 $\geq 3.40V$ 且充电电流 $> 3A$ ，持续 10S。

(The charging relay is disconnected and the maximum cell voltage is greater than or equal to 3.40V and the charging current is greater than 3A for 10S.)

- 2) 放电继电器断开且最低单体电压低于 3.0V，且放电电流 $> 3A$ ，持续 10S。

(The discharge relay is open and the minimum cell voltage is less than 3.0V, and the discharge current is $> 3A$ for 10S.)

- 3) 最低单体电压低于 2.0V，持续 30S。

(The minimum single cell voltage is less than 2.0V and lasts for 30S.)

恢复条件(Restore conditions)

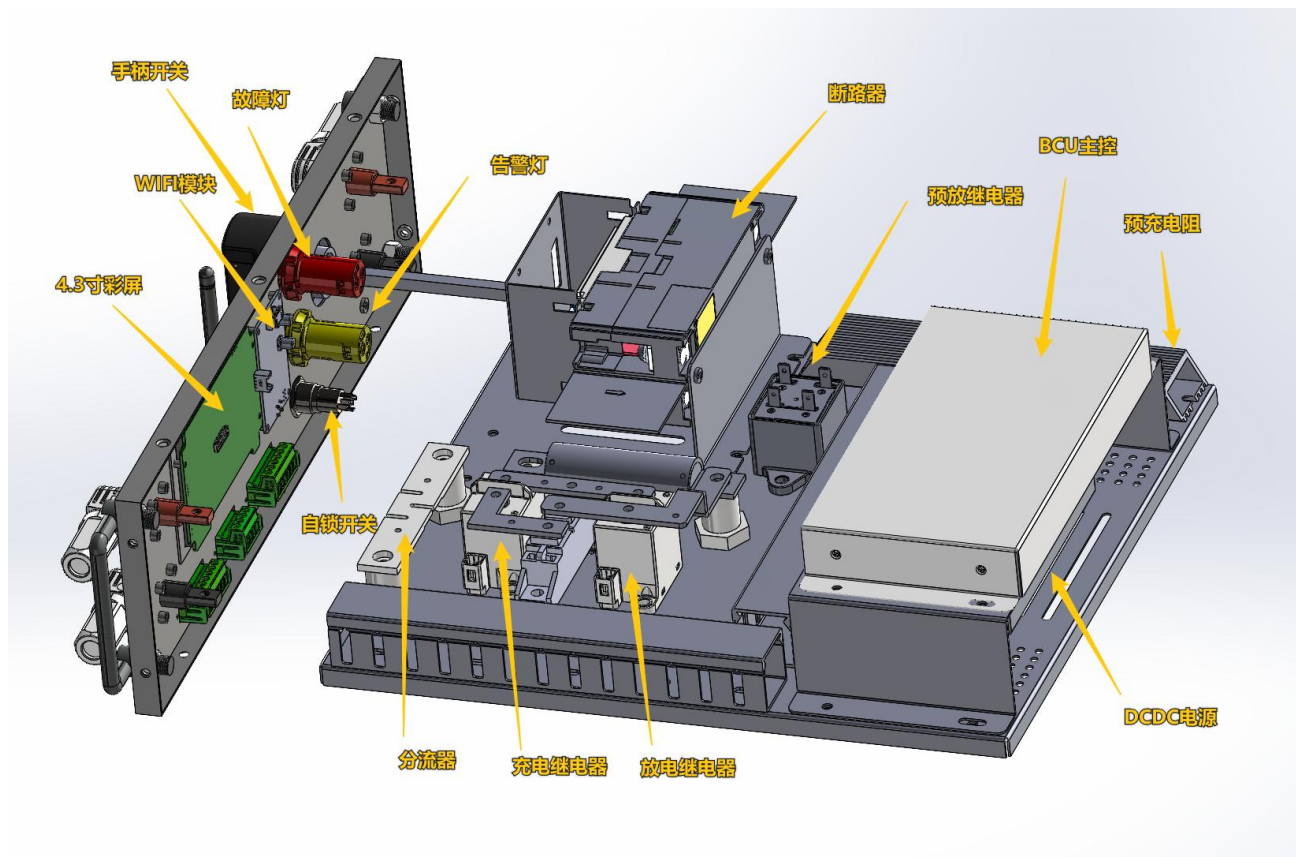
手动闭合(manual closing)

注意事项(matters needing attention)

分励脱扣器切断空开后，无 DC 低压输出，系统处于完全掉线状态，需要人为手动重新闭合。

(After the isolating switch is cut off by the differential tripping device, there is no DC low voltage output, and the system is in a completely offline state, which needs to be manually closed again.)

8.电气元件清单(List of electrical components)



100A 高压箱-主要电气配件清单 (High voltage box-list of main electrical accessories)						
注：仅适用于 DC1000V 以下系统，其它电压等级需定制使用 (Note: It is only applicable to systems below DC1000V. Other voltage levels need to be customized for use)						
序号 (number)	所属 (belong to)	名称 (name)	料 号 (Part Number)	物料型号 (Material model)	数 量 (number)	备注 (remark)
1	高压箱 部件 (High pressure box component)	4.3 寸彩屏 (4.3 inch color screen)	19040035	HV-LCD05\V1.3	1PCS	
2	box component	状态指示灯 (Status indicator)	30030293	ND16-22DS/4 \24V\红 (ND16-22DS/4 \24V\red)	1PCS	

		light)				
3		电源 (source)	39990463	电源模块/PV75-2YB24R3 (power-supply module/PV75-2YB24R3)	1PCS	DCIN:80~1000 V
4		断路器 (switch)	39990464	断路器\NXM-125S (switch)	1PCS	额定电流: 125A (Rated current: 125A)
5		检流器 (current dectectory)	39990465	检流器\HYCS150A75mVD00\150A75mV (current dectectory\HYCS150A75mVD00\150A75mV)	1PCS	
6		预充电阻 (Precharge resistance)	30010333	功率铝壳电阻\RXLG-150W-20R\20R (Power aluminum shell resistor\RXLG-150W-20R\20R)	1PCS	
7		保险丝 (fuze)	39990508	熔断保险丝\NHV10S-125A (Fuses blow\NHV10S-125A)	1PCS	
8		主继电器 (main relay)	39990459	继电器\HFE82P-100B\1000-24-H-C5 (relay\HFE82P-100B\1000-24-H-C5)	2PCS	
9		预充继电器 (Precharge relay)	39990460	继电器\HFE82V-20/1000-24-H-Q2J-1 (relay\HFE82V-20/1000-24-H-Q2J-1)	1PCS	

200A 高压箱-主要电气配件清单 (High voltage box-list of main electrical accessories)						
注: 仅适用于 DC1000V 以下系统, 其它电压等级需定制使用 (Note: It is only applicable to systems below DC1000V. Other voltage levels need to be customized for use)						
序 号 (numb er)	所属 (belong to)	名称 (name)	料 号 (Part Number)	物料型号 (Material model)	数 量 (number)	备注 (remark)
1	高压箱 部件 (High pressure box componen t)	4.3 寸彩屏 (4.3 inch color screen)	19040035	HV-LCD05\V1.3	1PCS	
2		状态指示灯 (Status indicator light)	30030293	ND16-22DS/4 \24V\红 (ND16-22DS/4 \24V\red)	1PCS	
3		电源 (source)	39990463	电源模块/PV75-2YB24R3 (power-supply module/PV75-2YB24R3)	1PCS	DCIN:80~1000V
4		断路器 (switch)	39990464	断路器\NXM-250S (switch)	1PCS	额定电流: 250A (Rated current: 125A)
5		检流器 (current)	39990465	检流器\HYCS300A75mVD00\300A75mV (current	1PCS	

		dectectory)		dectectory\HYCS300A75mVD00\300A75 mV)		
6		预充电阻 (Precharge resistance)	30010333	功率铝壳电阻 RXLG-1000W-75R\75R (Power aluminum shell resistor\RXLG-1000W-75R)	1PCS	
7		保险丝 (fuze)	39990508	熔断保险丝\NHV10S-350A (Fuses blow\NHV10S-350A)	1PCS	
8		主继电器 (main relay)	39990459	继电器\HFE82P-250C\1000-24-H-C5 (relay\HFE82P-250C\1000-24-H-C5)	2PCS	
9		预充继电器 (Precharge relay)	39990460	继电器\HFE82V-60B (relay\HFE82V-60B)	1PCS	

9.包装运输 (Packaging and transportation)

1.1.标志 (mark)

BMS 保护板应有下列清晰耐久标志 (The BMS protection board shall have the following clear and durable marks) :

- 产品名称、型号 (Product name and model)
- 电芯类型 (Cell type)
- 出厂日期及编号 (Date and number of production)

9.1.包装 (package)

- 包装应符合防潮、防振动的要求, 包装箱应牢固可靠, 箱内应衬有防潮材料, 产品 在箱内不应窜动。

(The packaging shall meet the requirements of moisture-proof and vibration-proof, the packing box shall be firm and reliable, the box shall be lined with moisture-proof material, and the product shall not move in the box.)

- 外部纸箱包装箱, 单板防静电气泡棉包装。

(External cardboard box packaging, single board anti-static electrical foam packaging.)

9.2.运输 (transport)

- 在运输中, 产品不得受剧烈机械冲撞、暴晒、雨淋、化学腐蚀性物品及有害气体侵蚀。在装卸过程中, 产品轻搬轻放, 严禁摔掷、重压。

(In the transportation, the products shall not be subjected to violent mechanical impact, exposure to the sun, rain, chemical corrosive articles and harmful gases. In the loading and unloading process, the products shall be moved lightly and placed lightly, and it is strictly prohibited to throw or press heavily.)

- 包装箱码放高度小于 5 层。

(The height of the packing box is less than 5 layers.)

10.注意事项 (matters needing attention)

本产品适用的家庭高压储能系统, 往往由多节电芯串联使用, 系统电压可高达几百或上千伏, 因此在安装及使用过程中需遵守相关安全规定, 做好安全保障措施, 以避免安全事故的发生。

(The high-voltage energy storage system suitable for this product is often used in series by multiple cells, and the system voltage can be as high as hundreds or thousands of volts. Therefore, relevant safety regulations should be observed during installation and use, and safety measures should be taken to avoid safety accidents.)

严禁事项 (Prohibited matters)	➤本系统电路中含有高压部分电路，严禁私自拆装该产品，安装及维护需在断线状态下进行，避免短路风险，防拆标签损坏，本司有权不予维修及售后。 (The circuit of this system contains high voltage part. It is strictly prohibited to disassemble and install the product privately. Installation and maintenance should be carried out under the condition of disconnection to avoid short circuit risk and damage to the anti-tear label. The company has the right to refuse maintenance and after-sales service.)
	➤出线端口的使用需严格参照操作说明，应避免触碰电池的正负端，以免造成短路损坏电路，未使用的端口功能应做好绝缘处理。 (The use of the outlet port should be strictly referred to the operation instructions, and the positive and negative terminals of the battery should be avoided to avoid short circuit damage to the circuit. The unused port function should be insulated.)
	➤裸板安装需自行评估安全间距及做好绝缘处理。 (The bare board installation should be evaluated for safety spacing and insulation treatment.)
	➤本产品不可私自进行水浸实验。 (Do not conduct water immersion test on this product without permission.)
安全规范 (safety specification)	尽量避免长期在下列工作环境中使用 (Try to avoid long-term use in the following working environment): ➤超过规格书规定的温度或湿度范围的场所。 (A place that exceeds the temperature or humidity range specified in the specification.) ➤有强烈震动或易受撞击的场所。 (Places with strong vibrations or prone to impact.) ➤有粉尘、强腐蚀性物质、易燃易爆物、高盐雾场所。 (There are dust, strong corrosive substances, inflammable and explosive materials, high salt fog places.)
	➤阳光直射或靠近热源的场所。 (A place where the sun shines directly or near a heat source.)
	➤安装及调试人员所使用的工具须有绝缘防护。 (The tools used by the installation and commissioning personnel shall be insulated.)
	➤根据项目需求的不同，电池管理系统的充放电电流和充放电电压等参数在初次安装调试时已设定，不得擅自更改参数，否则可能会缩短电池的使用寿命或造成电池损伤，进而诱发安全事故，若有更改需求可联系原厂获取技术支持。 (According to the different requirements of the project, the parameters such as charge and discharge

	current and charge and discharge voltage of the battery management system have been set during the initial installation and debugging. The parameters shall not be changed without authorization, otherwise it may shorten the service life of the battery or cause battery damage, and then induce safety accidents. If you need to change the parameters, please contact the original factory for technical support.)
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