30S-75S Integrated BMS Specification

30 串-75 串 BMS 一体机产品规格书

湖南群控能源科技有限公司

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版本记录 Version record

版本号 Version number	修订内容 modify the content	修订日期 Revision date	修订人 Revised by
1.0	初版（3U 高度） First version (3U height)	2019.6.22	
2.0	整机结构和硬件优化，改成 2U The structure and hardware of the whole machine are optimized, and the height is changed to 2U.	2021.8.10	YYQ

一. 应用场景 APPLICATION SCENARIO

- 家庭储能 Home storage
- 孤岛离网储能 Island off-grid energy storage
- 微电网应用 Micro-grid applications
- UPS 电源 UPS power supply
- 电力系统 220V 直流电源 Power System 220V DC power supply

二. 概述 OVERVIEW

- 一体机 BMS 组件由 BMS 主控板、BMU 采样板、高压板、开关电源、霍尔传感器、直流接触器、微断开关、功率接线端子、结构箱体和线束等组成；特点是将主控板和采样板及其他功率器件集成一体，保持系统为二级架构。具有结构紧凑，安装灵活，成本较低等特点，适合与小容量电池集成安装。一体机 BMS 组件主要适用于磷酸铁锂电池（LFP）的充放电管理，若用其他电池需要修改参数，请与我司联系确认。

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- BMS integrated machine components are composed of BMS main control board, BMU sampling board, high voltage board, switching power supply, Hall sensor, DC contactor, micro switch, power terminal, structural box and wiring harness, etc.; the characteristic is that the main control board Integrate with sampling board and other power devices to keep the system as a secondary architecture. It has the characteristics of compact structure, flexible installation and low cost, and is suitable for integrated installation with small capacity batteries. The BMS integrated machine component is mainly suitable for the charge and discharge management of lithium iron phosphate batteries (LFP). If you need to modify the parameters with other batteries, please contact our company for confirmation.
- 每 15 串为一个电池采集单元，60 串电池共 4 个采集单元；75 串电池共 5 个采集单元；
- Each 15 strings is a battery collection unit, and 75 series batteries have 5 acquisition units.
- 每 15 串 3 个温度采集探头，60 串共计 12 个；75 串共计 15 个
- 15 probes for every 15 strings, for a total of 15
- 电流采集采用霍尔传感器，安全可靠，无发热；
- current collection uses Hall sensor, safe and reliable, no heat;
- SOC 估算误差≤ 5 %；SOC estimation error ≤ 5%;
- 3 位地址拨码设置 BMS 地址；3-digit address dialing to set the BMS address;
- 3 通道继电器干接点输出；3-channel relay dry contact output;
- 4 通道接触器扩展与辅助触点检测；
- 4-channel contactor expansion and auxiliary contact detection;
- 提供上位机软件，方便客户调试电池系统，也可通过上位机修改系统参数；
- Provide PC software to facilitate the customer to debug the battery system, or modify the system parameters through the host computer;
- 支持并机使用（最大 7 台并机）；Support for parallel use (maximum 7 units);

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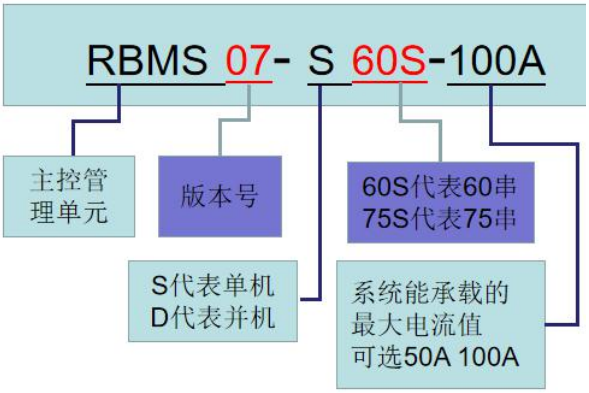
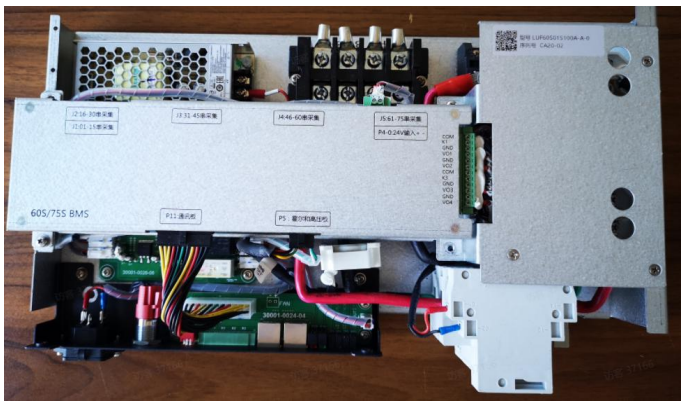
三．命名规则，实拍图 NAMING RULES, REAL SHOTS





例如：RBMS07-S60S-50A,代表一体机为单机，适配 60 串磷酸铁锂电池，支持最大 50A 电流

E.g.RBMS07-S60S-50A，It means that the integrated machine is a single machine, which is compatible with 60 series of lithium iron phosphate batteries and supports a maximum current of 50A.

四．BMS 组件规格参数 BMS COMPONENT SPECIFICATIONS

4.1 技术参数表 Technical Data Sheet

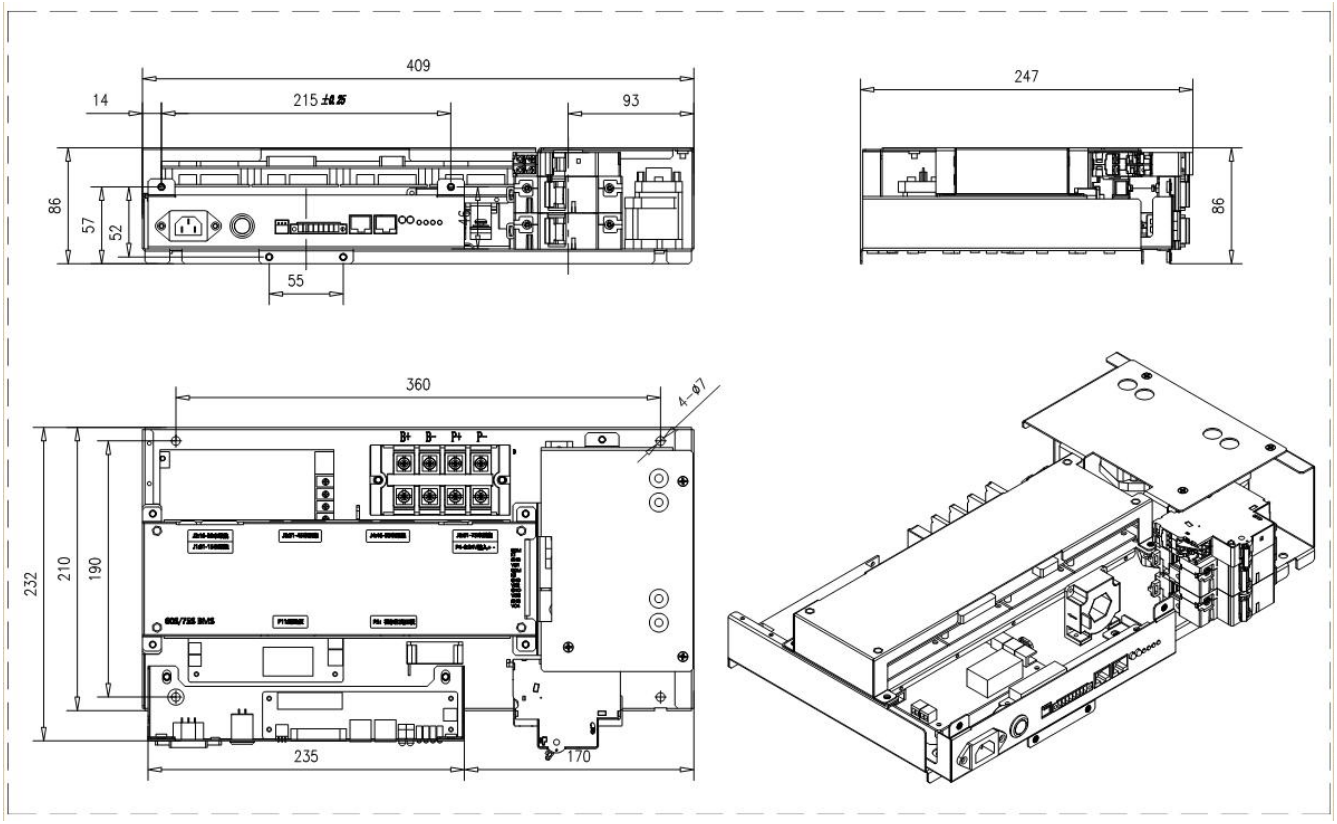
项目 Item		规 格 与 参 数 Specifications and
系统运行电压范围 System operating		120 - 370 VDC
启动方式 Startup mode		直流启动 DC start
均衡 balance	均衡类型 Equilibrium type	被动式电阻均衡 Passive resistance equalization
	均衡电流 Balanced current	100mA ± 10mA （单体 3.50V 时） （single cell 3.50V 时）
	采样精度 Sampling accuracy	± 2℃
电压采样 Voltage sampling	采样精度 Sampling accuracy	单体电芯±20mV single cell ±20mV
通讯方式 Communication mode		CAN ：1 路 （与 PCS/UPS 通讯） Can: 1 channel (communication with PCs /

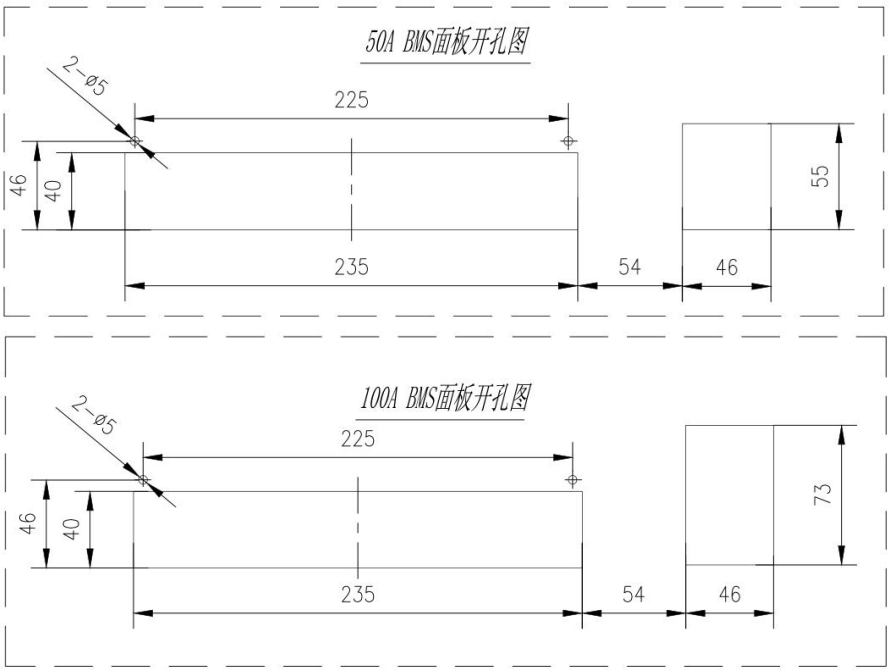
	UPS) RS485 ： 1 路 （与上位机/PCS/UPS 通讯） RS485: 1 channel（communication with uppercomputer / PCS / UPS)
显示方式 Display mode	6 位 LED 指示灯，其中包括 1 位故障指示，1 位运行指示，4 位 SOC 电量指示 6-digit LED indicator, including 1-bit fault indication, 1-bit operation indication,4-bit SOC power indication HMI 显示屏：可选件 3.5 寸 HMI display: optional 3.5 inch
额定电流 Rated current	50A/100A（可根据客户需求选择） (be selected according to customer needs)
短路保护 Short circuit protection	支持 7.5KA 20ms Support 7.5KA
最大过载能力 Maximum overload capacity	50A 系统瞬态：70A/10S 50A system transient: 70A/10S 100A 系统瞬态：150A/10S 100A system transient: 150A/10S
告警等级 Alarm level	1 级 one Level
保护等级 Protection level	2 级：two levels 1 级 切断充电/放电 Level 1 cut off charge / discharge 2 级 切断微断开关，系统下电 Level 2 micro cut-off switch, system power down

功耗 Power consumption	≤10W
重量 Weight	4.5kg
耐压等级 Withstand voltage rating	1800VDC 1mA 1min
安规认证 Safety certification	符合 CE 认证标准 Comply with CE certification standards
运行温度 Operating temperature	- 20～60℃
操作湿度范围 Operating humidity range	<90 RH(40℃±2℃)

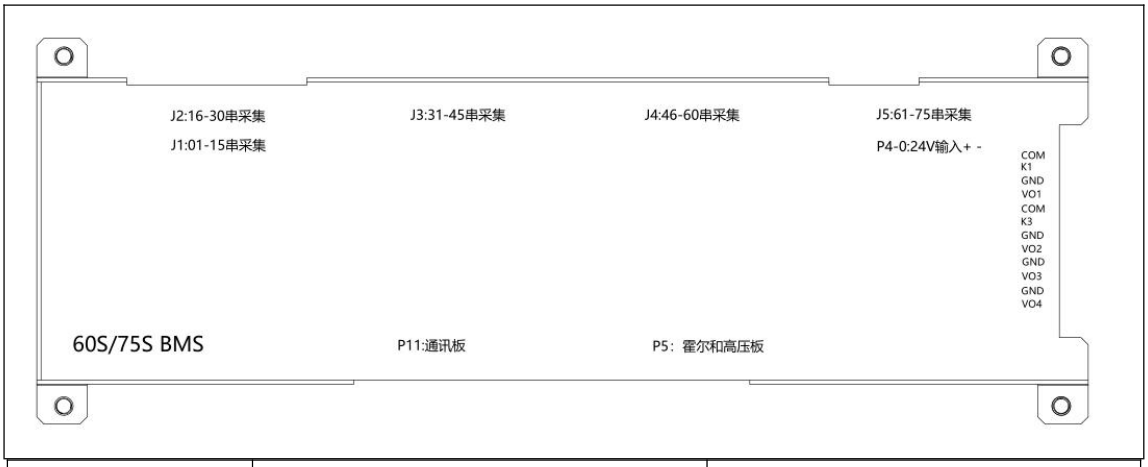
五、BMS 组件尺寸与接口 BMS COMPONENT SIZE AND INTERFACE

5.1 组件尺寸安装图（建议与电池模组集成安装）Component size installation drawing (recommended to be integrated with the battery module)





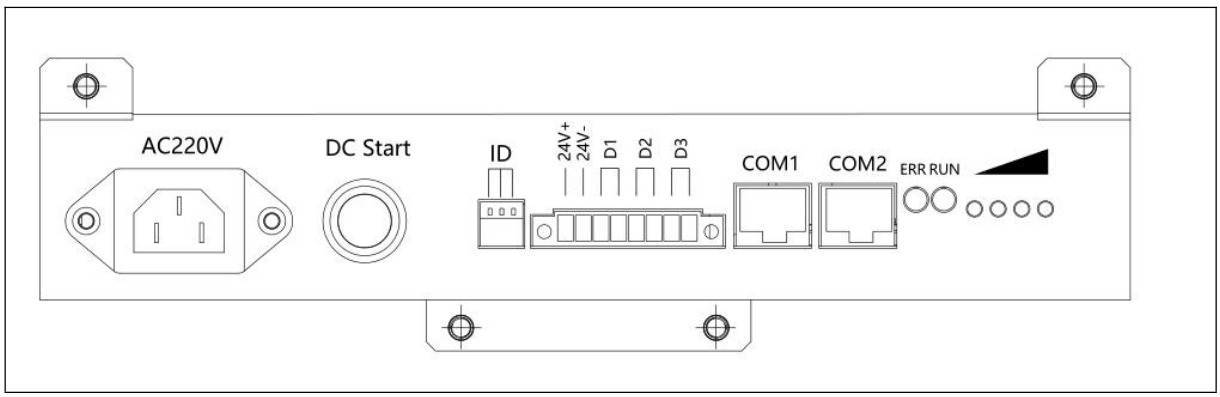
5.2 BMS 盒子接口图表 BMS box interface diagram：



标号 Label	描述 Description	备注 Remarks
J1	1-15 串电压温度采集插座 1-15 series of voltage and temperature collection sockets	
J2	16-30 串电压温度采集插插座 16-30 series of voltage and temperature collection sockets	

J3	31-45 串电压温度采集插座 31-45 series of voltage and temperature collection sockets	
J4	46-60 串电压温度采集插座 45-60 series of voltage and temperature collection sockets	
J5	61-75 串电压温度采集插座 61-75 series of voltage and temperature collection sockets	
P4-0	BMS 主板供电插座 BMS motherboard power socket	24VDC
P5	霍尔和高压板通讯插座 Hall andhigh voltage board socket	与霍尔传感器和高压板相连 Connected to Hall sensor and high pressure plate
P11	接口板插座 Interface board socket	与接口板相连 Connect with interface board
COM...VO4	内部控制检测插座 Internal control detection socket	控制和检测接触器断路器 Control and detection of contactor circuit breakers

5.3 接口板接口图表 Interface board interface chart：



标号 Label	描述 Description	备注 Remarks
AC220V	AC 供电插座 AC power socket	AC 启动用（注意必须接在 UPS 交流输出端）（子） AC boot up(Note that it must be connected to the UPS AC output terminal)
DC Start	直流启动开关 DC start switch	
ID	拨码开关 Dial switch	3 位，地址选择用 3 bits for address selection
24V+	干接点插座 Dry contact socket	24V 输出，与电源模块已隔离(给显示屏供电) 24V output,isolated from power(Power to the display)
24V-		
R1		干接点 1Dry contact1
R1		
R2		干接点 2Dry contact2
R2		
R3		干接点 3Dry contact3
R3		
COM1	CAN、RS485 COM1 与 COM2 并联 COM1 is connected in parallelwith COM2	4：CAN_H　5：CAN_L 7：RS485_A　8：RS485_B
COM2		
ERR	故障指示灯 Fault indicator	红色 Red
RUN	运行指示灯 Running lights	绿色 Green
SOC%	电量指示灯 battery indicator	25：　SOC 处于 0%-25%区间
		50：　SOC 处于 25%-50%区间

		75： SOC 处于 50%-75%区间
		100： SOC 处于 75%-100%区间

六． BMS 工作状态描述 BMS WORKING STATUS DESCRIPTION

6.1 启动、开机过程：Startup process

使 BMS 处于关机状态，完成与 BMS 的连线，在 BMS 装配完成后，将机箱上的微断开关拨到“ON”，然后按下启动按钮（DC Start），BMS 进入自检，如果自检正常，能听见接触器吸合的响声，机箱上绿色灯长亮（有外部通讯的情况下会闪烁），启动完成。

Make the BMS in the shutdown state and complete the connection with the BMS. After the BMS is assembled, turn the micro disconnect switch on the chassis to "on", then press the start button (DC start), and the BMS will enter the self-test.If the self-test is normal, you can hear the sound of the contactor closing, the green light on the chassis is on for a long time (it will flash if there is external communication), and the start is completed.

6.2 关机 / 运输状态：Shutdown/transport status

在系统启动、开机正常完成后，将微断开关拨到”OFF”,使 BMS 进入关机/运输状态。如果 BMS 长期不使用，必须使 BMS 处于此状态。

After the system starts and starts normally, turn the micro disconnect switch to "off" to turn the BMS into shutdown / transport status. If the BMS is not usedfor a long time, the BMS must be in this state.

6.3 工作状态：Working State

BMS 启动完成后，检测到 BMS 的供电则开始正常工作。否则自动进入休眠。

After the BMS is started, the power supply of the BMS is detected and it starts to work normally. Otherwise, it will automatically go to sleep.

6.4 休眠状态：Dormancy state

系统默认不休眠。

The system does not sleep by default.

6.5 故障状态：Fault condition

BMS 自检时若检测到以下 3 种情况时将进入故障模式，需人工干预排除故障。

If the following threeconditions are detected during BMS self-test, it will enter into the failure mode, and manual intervention is required to eliminate the failure.

	故障 Fault	指示 indicate	备注 Remarks
1	内部电源故障 Internal power failure	红灯长亮 Long red light	
2	内部通讯故障（MCU 与 AFE 通讯错误） Internalcommunication failure (communication error between MCU and AFE)	红灯长亮 Long red light	
3	单节电压有高于 4.1V 的或有低于 0.5V 的，或压差大于 2.5V Single section voltage is higher than 4.1V or lower than 0.5V, or the differential pressure is greater than 2.5V	红灯长亮 Long red light	
4	温度有低于-30 度或有高于 100 度的，或温差大于 30 度 The temperature is lower than - 30 ℃ or higher than 100 ℃, or the temperature difference is greater than 30 ℃.	红灯长亮 Long red light	
5	其他 others	红灯长亮 Long red light	

6.6 均衡功能 Equalization function

BMS 采用电阻傍路的方式进行电芯均衡，电池组的单体电压达到 3.5V 且该节电压高于最低单节电压 50mV，或者单体电压超过 3.65V 即开启该节均衡功能；进入保护状态时（过充、满电状态除外）均衡停止。

BMS uses the resistor circuit to balance the cell. The cell voltage of the battery pack reaches 3.5V and the voltage of the cell is higher than the lowest single-segment voltage of 50mV, or the cell voltage exceeds 3.65V to turn on the equalization function. Time (except for overcharge and full charge) equalization stops.

注：均衡电压可设置。

Note: The equalization voltage can be set.

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七、发货清单(单台套)DELIVERY LIST (SINGLE SET)

序号 Serial number	名称 name	规格 Specification	数量 quantity
1	主机 host	按照订单型号要求 According to the order model requirements	1pcs
2	电压采集线束 Voltage acquisition wiring harness	标准 1.2 米电压采集线 Standard 1.2m voltage collection line	4pcs（60 串）；5pcs（75 串） 4pcs (60 strings); 5pcs (75 strings)
3	温度采集线束 Temperature collection harness	标准 1.2 米温度采集线 Standard 1.2m temperature collection line	4pcs（60 串）；5pcs（75 串） 4pcs (60 strings); 5pcs (75 strings)
4	AC 插头 AC plug		1pcs
5	接线端子 Terminals	8Pin 绿色 8Pin green	1pcs

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