Rack-Mounted
Lithium-ion Battery Pack
机架式
锂离子电池组系统

User Manual
用户手册

51.2V100Ah- 5.12KWh

Version: 1.

Warning 

Please comply with all warnings and operating instructions in this manual strictly. Save this manual properly and read carefully the following instructions before installing the unit. Do not operate this unit before reading through all safety information and operating instructions carefully.

请严格遵守本手册中的所有警告和操作说明。正确保存本手册，并在安装设备前仔细阅读以下说明。在仔细阅读所有安全信息和操作说明之前，请勿操作本装置。

1.Parameters of Battery电池参数

1-1 Parameters of Battery Pack单电池组参数

Model of battery pack 电池组型号	51.2V100AH
Nominal voltage 标称电压	51.2V
Rated capacity 额定容量	100AH
Rated reserved energy 额定瓦时	5.12KWH
Standard charging current 标准充电电流	0.2C
Total charging cut-off voltage 充电截止电压	57.6
Cut-off voltage of charging monomer 单体充电截止电压	3.6V
Standard discharging current 标准放电电流	0.2C
Maximum continuous discharging current 最大持续放电电流	100A
Cut-off voltage of discharging 放电截止电压	43.2V
Charging temperature range 充电温度范围	0℃～60℃
Discharging temperature range 放电温度范围	-20℃～65℃
Single module Size(W×L×H) **单模组尺寸**	500*446*177mm (excluding hanger and amphenol connector) （不含插头）
Weight 1PCS重量	Single Module ≤46kg 单模组约≤46kg

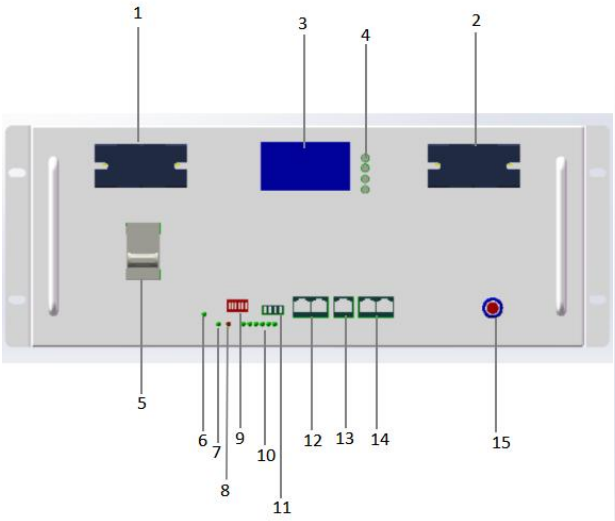
1-2 Technical Parameters of Battery Management System (BMS)

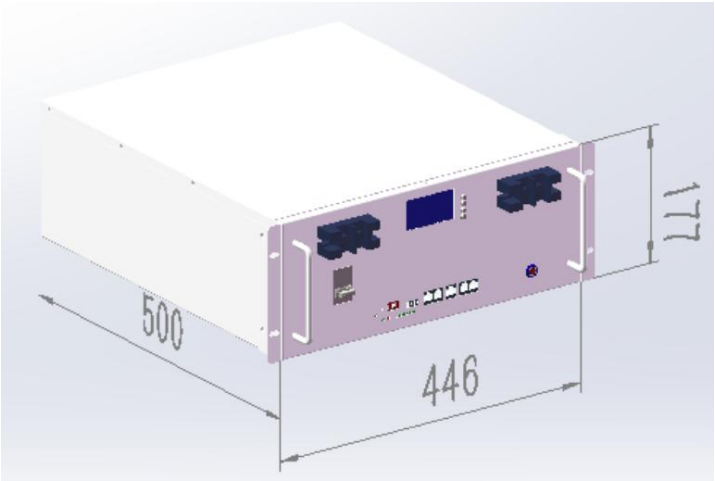
电池管理系统（BMS）技术参数

Items 项目	Details 详情细节	Standard 标准可设
Cell overcharge protection 电芯过充电保护	Overcharge detection voltage 过充保护电压	3.65V
	Overcharge detection delay time 过充保护延迟时间	Typical:1.0s
	Overcharge release voltage 过充释放电压	3.40V
Cell over-discharge protection 电芯过放电保护	Over-discharge detection voltag 过放保护电压	2.70V
	Over-discharge detection delay time 过放保护延迟时间	Typical:1.0s
	Over-discharge release voltage 过放恢复电压	3.0±V or charge release
Over-current protection 过流保护	discharge Over-current protection current1 放电过电流保护电流1	100-110A
	discharge Over-current detection delay time 1 放电过电流保护延迟时间1	3S
	discharge Over-current protection current2 放电过电流保护电流2	150A
	discharge Over-current detection delay time2 放电过电流保护延迟时间1	≤30ms
	Charge OC protection current 充电过流保护	100-110A
Short protection 短路保护	Short protection current 短路保护电流	-212A
	Protection condition 保护条件	External load short circuit 外部负载短路
	Detection delay time 检测延迟时间	≤500us
	Protection release condition 保护释放条件	Charge release or reset 充电释放或重置

Temperature(T) protection 温度保护	Charge high T protection 充电高温保护	60±5℃
	Charge high T recover 充电高温恢复	50±5℃
	Discharge high T protection 放电高温保护	60±5℃
	Discharge high T recover 放电高温恢复	50±5℃
	Charge low T protection 充电低温保护	-5±5℃
	Charge low T recover 充电低温恢复	0±5℃
	Discharge low T protection 放电低温保护	-30±5℃
	Discharge low T recover 放电低温恢复	-10±5℃
Balance 均衡	Balance threshold voltage 均衡开启电压	3.40V
Communication 通讯	It has RS485 and CAN standard communication interface, it can real-time monitoring the capacity of battery bank, the voltage, current, environment temperature, and charging/discharging current. 具有RS485和CAN标准通讯接口，可实时监测电池组容量、电压、电流、环境温度、充放电电流	
Alarm 报警	It has over-temperature, over charge, under-voltage, over-current, short circuit alarm function. 具有超温、过充、欠压、过流、短路报警功能	

2. Panel operation instructions 面板操作说明





电池尺寸单位均为毫米 Battery sizes are all in mm

No.	Description 说明	Silk-screen 丝印	Remark 备注
1	Battery + 电池正极	P+	Battery positive pole电池正极
2	Battery - 电池负极	P-	Battery negative electrode电池负极
3	LCD		Display screen显示屏
4	LCD KEY		LCD display keyboards液晶显示键
5	killer switch 断路器开关	Air switch	killer switch 断路器开关
6	（LED）	lights	Switch machine running light开关机运行灯
7	Normal running light正常运行灯	RUN	Normal running light正常运行灯
8	Failure alarm lamp故障告警灯	ALM	Failure alarm lamp故障告警灯
9	ADS Dialer	ADS	Display connection address显示连接地址
10	Electricity volume indicator	SOC	Display the battery's capacity容量显示灯
11	Dry contact signal (reserved)干接点信号（预留）	DO	Dry contact signal (reserved)干接点信号（预留）
12	RS485A/CAN port	RS485A	RS-485/CANconnection port-A RS485
13	CAN	CAN	
14	RS485B port	RS485B	RS-485connection port-B RS485
15	Weak current switch弱电开关	On/off	Battery switch machine电池开关机

3. Installation and Operation 安装操作

3-1. Single battery Installation单电池安装

Installation and wiring must be performed in accordance with the local electric laws/regulations and execute the following instructions by professional personnel.安装和布线必须按照当地电气法律/法规进行，并由专业人员执行以下指示

1) Make sure the mains wire and breakers in the building are in compliance with the standard of rated capacity of battery to avoid the hazards of electric shock or fire.确保建筑物内的电源线和断路器符合蓄电池额定容量标准，避免触电或火灾危险

NOTE: Do not use the wall receptacle as the input power source for the battery, as its rated current is less than the battery's maximum input current. Otherwise the receptacle may be burned and destroyed.
注意：不要使用壁挂式插座作为电池的输入电源，因为它的额定电流小于电池的最大输入电流。否则容器可能被烧毁

2) Switch off the mains switch in the building before installation安装前关闭建筑物内的电源开关

3) Turn off all the connected devices before connecting to the battery连接到电池前关闭所有连接的设备.

4) Prepare wires based on the following table根据下表准备电线:

Model	Cables(AWG)	Cables(mm2)
<50Ah	8	6
50Ah	6	16
100Ah	4	25
200Ah	1-0	50

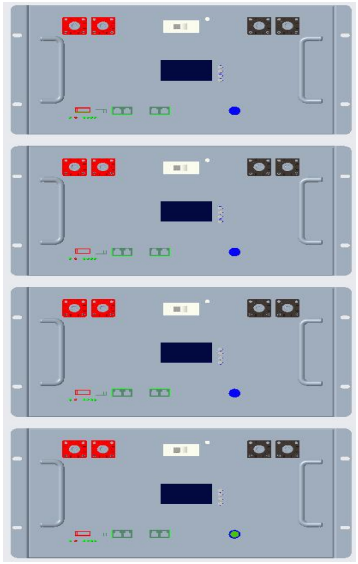
Table 1 Output Cables

NOTE : It is recommended to use suitable wire in above table or thicker for safety and efficiency.
注意：为了安全和高效，建议使用上表中的合适电线或更粗的电线

5) Put the terminal block cover back to the front panel of the battery.
将接线板盖放回蓄电池前面板

NOTE: Set the battery pack breaker in "OFF" position and then install the battery pack.
注意：将电池组断路器置于"关闭"位置，然后安装电池组

3-2 Cabinet battery installation 机柜电池安装



安装方式：本款产品适合采用机架式或者机柜安装，安装方式参考图片，具体情况按实际订单要求操作

Installation: this product is suitable for rack-type or cabinet installation, installation reference picture, specific conditions according to the actual order requirements

3-3.Installation Precautions安装注意事项

(1) Prior to installation, unpacking to check the quantity of the parts and battery appearance.
安装前开箱检查零件数量和电池外观

(2) Measure the battery voltage with a multimeter. The general factory voltage of the

battery is50V-53V ． 用万用表测量电池电压。电池的出厂电压一般为50-53V.

(3)Prior to wiring, check the anode and cathode of the battery and the anode and cathode terminals shall not be connected reversely.接线前应检查蓄电池的正负极，正负极端子不得接反

(4)During battery connection, please wear the protective gloves. When using such metal tools as torque wrench, please perform insulating packaging for them and two end of the metal tools such as torque wrench shall not contact the positive and negative terminals of the battery at the same time to avoid battery short-circuit.连接电池时，请戴上防护手套。使用扭矩扳手等金属工具时，请对其进行绝缘包装，扭矩扳手等金属工具的两端不得同时接触电池的正负极，以免电池短路.

(5)Before the battery is connected with the externally connected equipment, make the equipment in a disconnected state, check whether the connecting polarity of the battery and total voltage are correct, connect the battery anode with the equipment anode and battery cathode with the equipment cathode and fix the connecting line.电池与外接设备连接前，应先使设备处于断开状态，检查电池的连接极性和总电压是否正确，电池阳极与设备阳极、电池阴极与设备阴极连接，并固定连接线.

(6)During handling and placement, the battery must be handled gently. No dropping or impacting. The battery shall not be thrown or beaten to avoid damaging the battery or resulting in potential safety hazard.在搬运和放置过程中，必须轻拿电池。无跌落或撞击。不得投掷或敲打电池，以免损坏电池或造成安全隐患.

(7)Do not touch the surface of the battery box with the sharp part of the tool to scratch or damage the battery box.不要用工具的锋利部分接触电池盒表面，以免划伤或损坏电池盒.

(8)Do not disassemble the battery box without authorization.未经授权，请勿拆卸电池盒.

(9)Do not put any article made of the metal conductive material together with the battery or assemble it into the battery box.
不要将任何由金属导电材料制成的物品与电池放在一起，也不要将其组装到电池盒中.

（10）Install it according to the selected installation mode根据所选安装模式进行安装:

Installation of standard cabinet (rack): Install the matching hanger for the battery pack and fix them in the standard cabinet and the tray protection is added for the battery box.标准柜（架）安装：安装匹配的电池箱和支架或托盘固定在内部，标准是为保护电池箱

Stacking battery box installation: first place the base in the plane area, then stack the battery box according to the outer label number sequence, then the screw holes reserved for the upper and lower chassis are locked and fixed with screws,

堆叠式电池箱安装：先将底座放在平面区域，然后将电池箱按外标识编号顺序安放堆叠，再将上下机箱预留的螺丝孔，用螺丝锁紧固定，

Installation of wall-mounted box: Prior to installation, please ensure that the wall complies with the wall-mounted requirements; according to the location in the design plan, install the special wall-mounted box of the lithium battery; the battery pack is fixed in the wall-mounted box in a hanger manner.
壁挂箱安装：安装前，请确保壁挂符合壁挂要求；根据设计方案中的位置，安装锂电池专用壁挂箱；电池组以悬挂方式固定在壁挂箱中

Installation of integrated indoor and outdoor cabinets (boxes): Install them according to the installation specification for the customized integrated cabinet (box)室内外综合柜（箱）安装：按定制综合柜（箱）安装规范进行安装.

3-4 Operation Instruction for Installation安装作业指导书

1) Prior to installation, please check whether the battery is normal.
安装前请检查电池是否正常？

Press the switch on the front panel RST button for 1 second to start for startup. During startup, 4 capacity indicator lights on the front panel, ALM alarm indicator light (red) and RUN running indicator light light up. Check whether all indicator lights light up normally; then the ALM alarm indicator light goes out, the RUN running indicator light lights up and the capacity indicator light lights up according to the capacity.

If the ALM alarm indicator light flashes after startup, it means that the battery has an alarm. The newly installed battery seldom has alarm. The common alarm is the battery undervoltage alarm (which is resulted from non-use of the battery for a long time). Such case may be removed after the battery is charged for 30min; if the alarm may not be removed, please press the reset key RST for 10S, until all LEDs light up for reset, execute the battery reset operation and confirm whether the alarm is removed. If the alarm is removed, the battery may be used normally. Otherwise the battery shall be reworked.

按前面板上的RST 1秒启动。启动时，前面板4个容量指示灯亮，ALM报警指示灯（红色），运行指示灯亮。检查各指示灯是否正常亮起，然后ALM报警指示灯熄灭，运行指示灯亮起，容量指示灯按容量亮起。如果启动后ALM报警指示灯闪烁，说明电池有报警。新安装的电池很少有报警。常见报警为电池欠压报警（长时间不使用电池导致）。这种情况可在电池充电30分钟，如果不能解除报警，请按内部复位键RST 10秒，直到所有LED亮起进行复位，执行电池复位操作，确认是否解除报警。如果警报解除，电池可以正常使用。否则，应返修加工电池.

2) For the battery which is normal after detection, please press the reset key RST for 3S to execute the battery ON/OFF operation.

对于检测正常的电池，请按内部复位键 RST 3秒，执行电池开/关操作.

Instructions of manual operation of the reset key RST复位键RST的手动操作说明	Startup 启动	In the OFF state of BMS, press the key for 3S for startup;在BMS关闭状态下，按键3s启动
	Shutdown 关闭	In the non-standby state of BMS, press the key for 3S for shutdown;在BMS的非待机状态下，按键3-6s关机
	Reset 重置	In the non-standby state of BMS, press the key for 10S, until all LEDs light up for reset.在BMS的非待机状态下，按键10秒，直到所有LED亮起进行重置

Instructions: "Shutdown" and "standby" and "startup" and "activation" in Chinese have the same meaning.

说明："关机"、"待机"，"启动"、"激活"中文含义相同

3) Installation of the lithium battery, wiring and startup　　锂电池安装，布线和启动.

Make the battery pack in a standby state, install it in the battery cabinet one by one, the anode and cathode of the battery pack are connected respectively, which are connected to the switching mode power supply or UPS (Please note that the switching mode power supply and UPS shall be disconnected from the AC). Press the reset key On/OFF button of one of battery packs for 1S for startup. Such startup battery may activate other batteries which are connected in parallel (or press the reset key On/OFF button of each battery pack for 1S successively) and the whole battery pack with high capacity enters the working state. Later, apply AC to the power supply equipment such as switching mode power supply and UPS to make the whole standby system run.

使电池组处于关机状态，逐个安装电池，电池组的正负极分别连接，与开关电源或UPS相连（请注意开关电源和UPS应与交流断开）。按其中一个电池组的复位键开关 1秒启动。该启动电池可激活其他并联电池（或依次按下各电池组的按钮开关 1秒），整个大容量电池组进入工作状态。随后对开关电源、UPS等供电设备进行交流，使整个备用系统运行.

The specification of the connecting line is selected according to the load current, with the common specifications of the connecting line as follows

连接线的规格根据负载电流选择，连接线的通用规格如下：

1）When the battery pack with the capacity of 200Ah or below is connected in parallel, it is suggested to select 25mm2 copper wire.

1）200Ah及以下电池组接入时并联，建议选用25mm2铜线.

2）When the battery pack with the capacity of 200Ah~300Ah is connected in parallel, it is suggested to select 35mm2 or 50mm2 copper wire.

2）200Ah~300Ah蓄电池组并联时，建议选用35mm2或50mm2铜线.

3）When the battery pack with the capacity of 300Ah or above is connected in parallel, it is suggested to select 35mm2 copper wire.

3）容量为300Ah及以上的电池组并联时，建议选用50mm2铜线.

4）Note: We do not equip with the battery connecting line by default, which shall be selected according to the total capacity of the battery pack.

注：我们默认不配置电池连接线，根据电池组总容量选择

Lithium battery 锂电池	Copper core cable 铜芯电缆	Copper pigtail 铜鼻子	Remarks
48V50Ah	16mm^2/25mm^2	16-8/25-8	M8 copper pigtail is used for 48V50Ah
48V100Ah	16mm^2/25mm^2	16-10/25-10	M10 copper pigtail is used for48V100Ah

Introduction to operation steps in detail according to the capacity required
根据所需容量详细介绍操作步骤:

5）Battery pack in parallel with the capacity of 200Ah or below (the wiring diagram is shown in Figure 1):电池组并联，容量200Ah及以下（接线图所示）：

Step 1: The battery pack is in the shutdown state, and the battery is installed successively;

步骤1：使电池组处于关机状态，依次安装电池；

Step2: Disassemble the anode insulating cap of the neighboring batteries one by one, connect the anodes of up and own neighboring battery packs with the installation connecting line and screw on the anode insulating cap；

步骤2：逐个拆卸相邻电池的正极绝缘帽，将上下相邻电池组的正极与安装连接线连接，并拧上正极绝缘帽；

Step 3: According to step 2, connect the cathode of the battery pack.

步骤3：根据步骤2，连接电池组的负极

Step 4: Set the dial-up addresses of all battery modules from top to bottom one by one, which are 1000, 0100, 1100 and 0010 (the dial-up addresses are set according to the number of battery modules actually used) respectively; (this step may be skipped if there is no need to access to the remote monitoring platform).

步骤4：从上到下依次设置所有电池模块的拨号地址，分别为1000、0100、1100和0010（拨号地址根据实际使用的电池模块数量设置）；（如果不需要访问远程MO，可以跳过此步骤。监测平台）。

Step 5: Perform the cascade connection to RS485 communication interface of the battery module with the RS485 connecting line; lead to the collector of the monitoring platform from the CAN interface of the battery module with the address of 1000 with the CAN connecting line; (this

step may be skipped if there is no need to access to the remote monitoring platform).

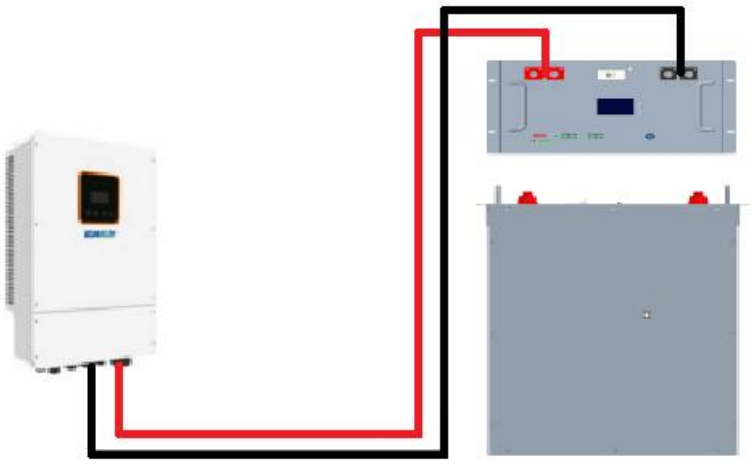
步骤5：用RS485连接线串接电池模块的RS485通信接口；用CAN连接线从地址为1000的电池模块的CAN接口引至监控平台的集电极；（如果不需要接入遥控器，可跳过此步骤）监控平台）

Step 6: Draw out two wires from the anode and cathode of a battery pack at the top or in the middle respectively as the main connecting line of the battery pack in parallel, which are connected with the switching mode power supply or UPS.

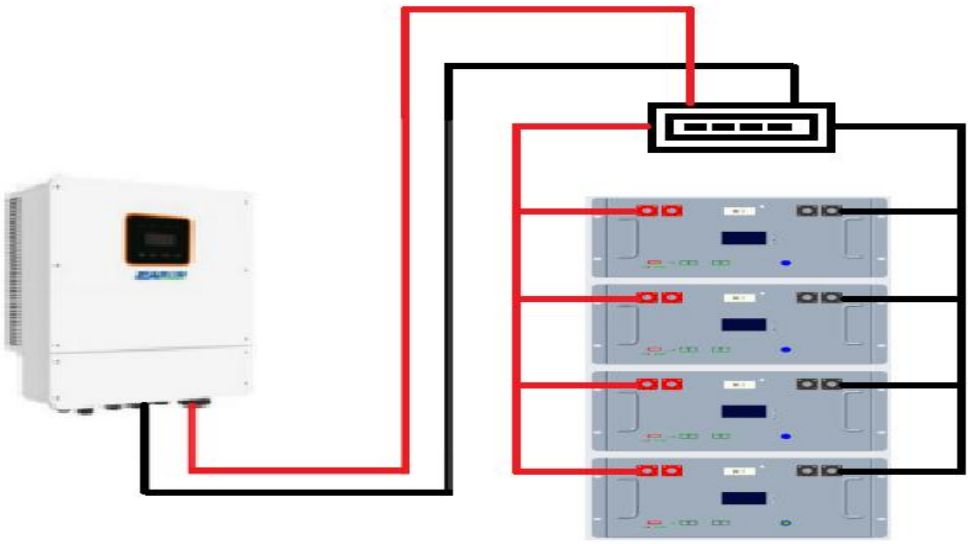
步骤6：从电池组顶部或中部的正极和负极分别抽出两根电线，作为电池组的并联主连接线，与开关电源或UPS连接；

Step 7: Press the ON/OFF key of each battery pack for Reset and the whole battery pack with high capacity enters the working state.

步骤7：按每个电池组的ON/OFF键复位，整个大容量电池组进入工作状态



Stand-alone installation单机安装



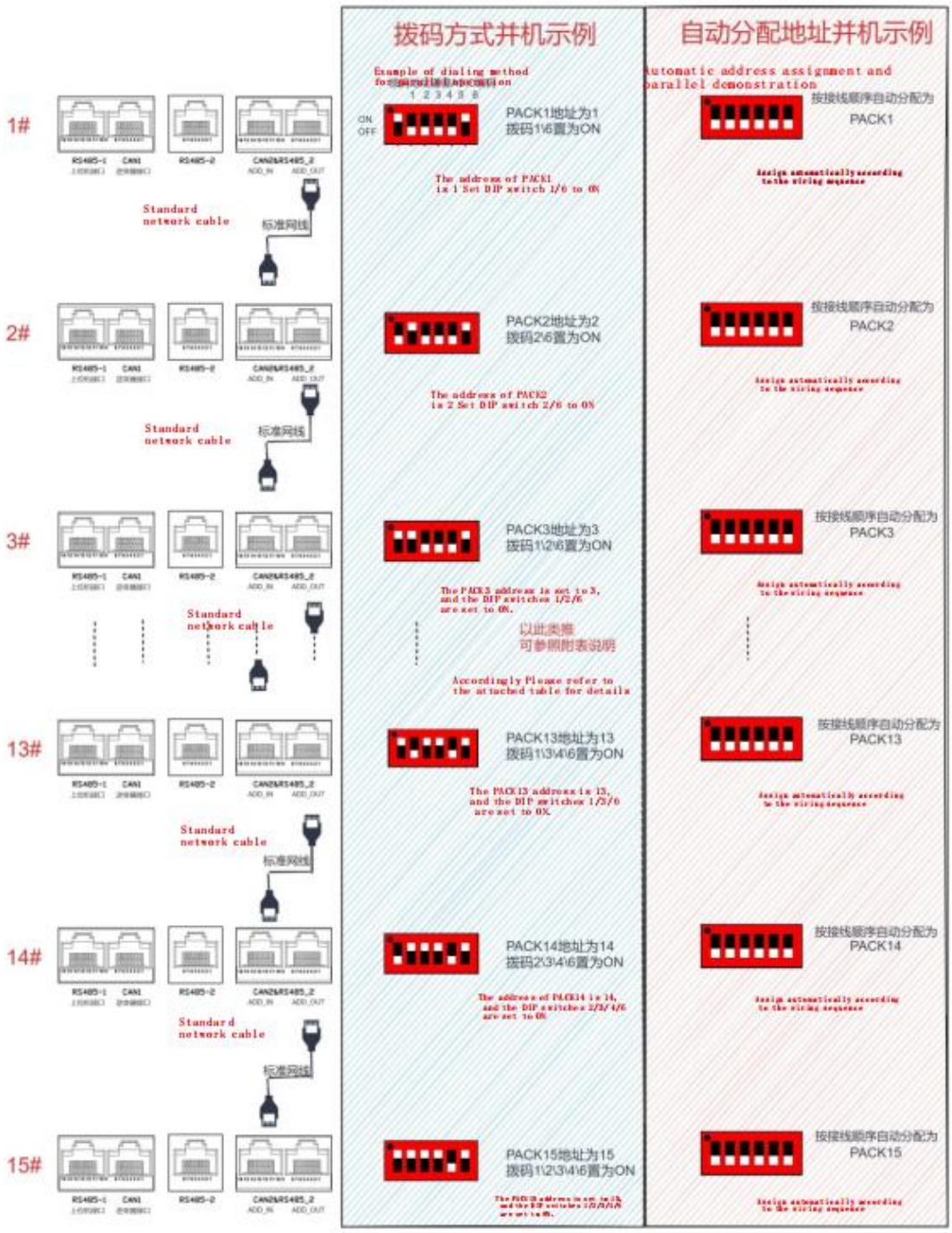
Parallel machine installation并机安装

3-5. Connection mode for parallel communication并行通信连接方式：

While in parallel communication, dial-up addresses of battery module are 1,2,3,4……14,15,of which1 stands for host computer, to which other batteries' data is uploaded; host computer conducts unified uploading, and host computer with dial-up code of 1 is required to connect with upper computer; polling mode used as consulting mode.

并行通信时，电池模块的拨号地址为1、2、3、4……14、15，其中1为主机，其它电池数据上传到主机；主机统一上传，要求拨号码为1的机与上位机连接；轮询方式作为咨询方式

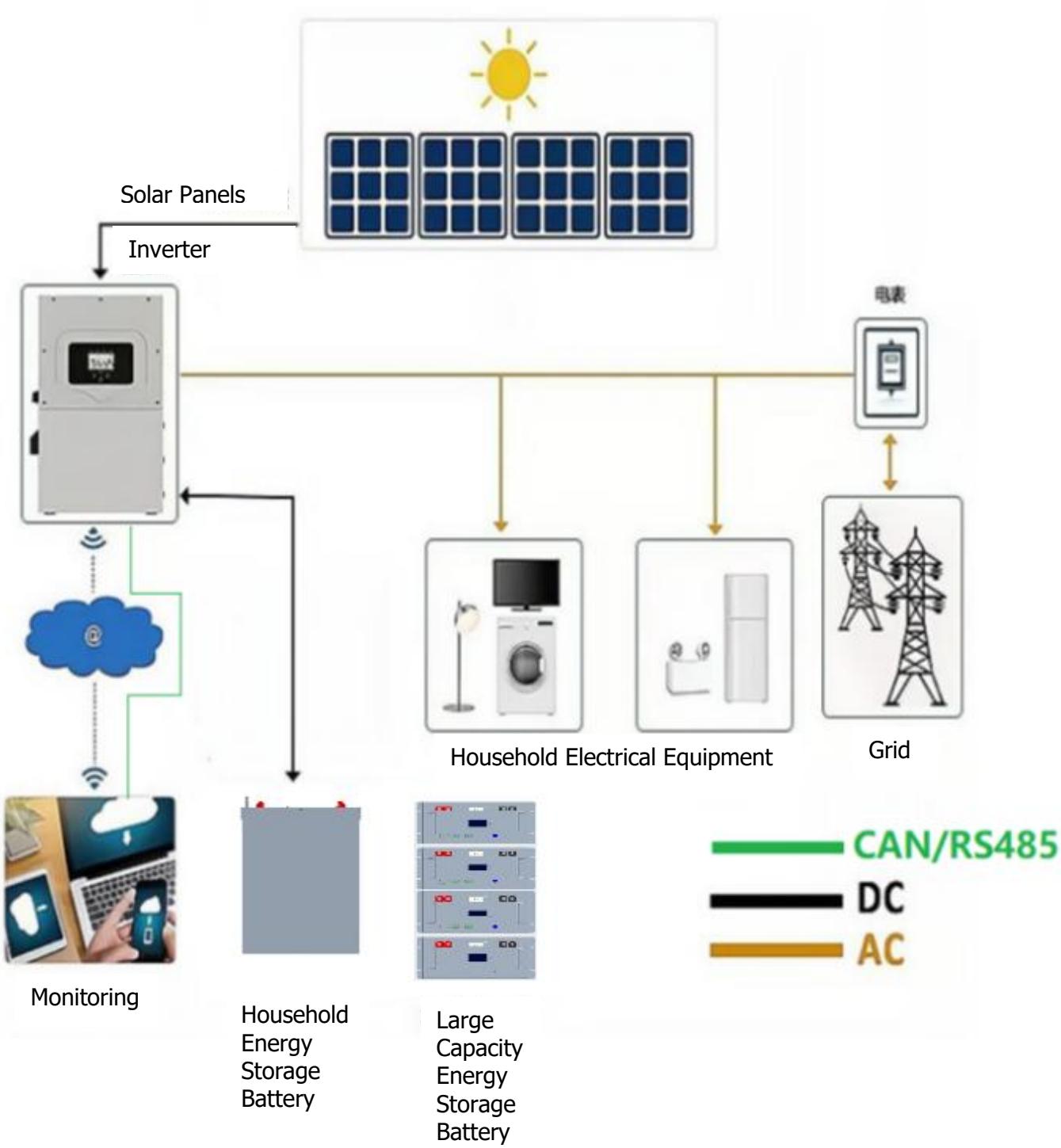
3-6. Reference table for parallel dial-up communication:并机拨码通讯参照表：



RS485 Parallel Communication

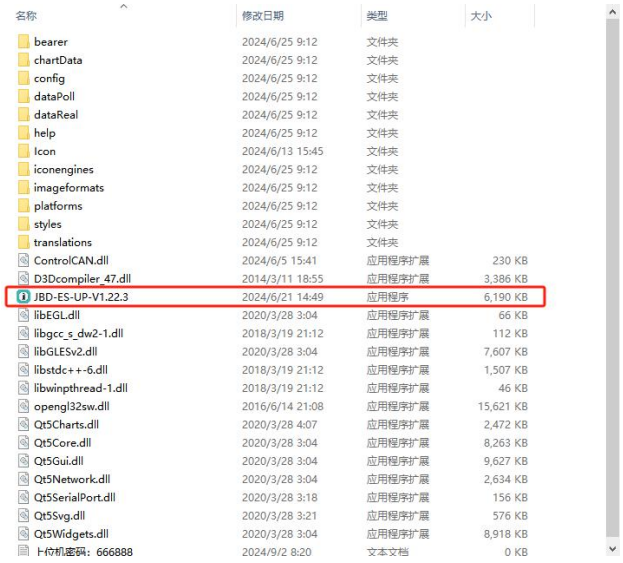
3-6. System integration link installation topology diagram

系统集成连接安装拓扑图



3-7.Upper computer instructions 上位机说明选项

A、Software source file



B、Software running envirement 软件运行环境：

The software running on the PC and its compatible computer, using WINDOWS operation system.
使用Windows操作系统在PC及其兼容计算机上运行的软件

C、Software using steps 软件使用步骤：

（1） Double click JBD-ES-UP-V1.22.3 icon can show the main interface of the software（As shown in figure A）双击JBD-ES-UP-V1.22.3图标可以显示软件的主界面（如图）.

3-8-1.Software Overview 软件概述

JBD-ES-UP-V1.22.3 is an application software used for the monitoring and setting of the lithium battery management system (BMS). This version combines multiple functions in one to provide one-stop monitoring and maintenance services for BMS users. Its main features are as follows:
JBD-ES-UP-V1.22.3是一 款用于锂电池管理系统（BMS）监控和设置的应用软件。此版本集 合多种功能于一身，为 BMS 用户提供一站式监控和维护服务。其 主要特性如下:

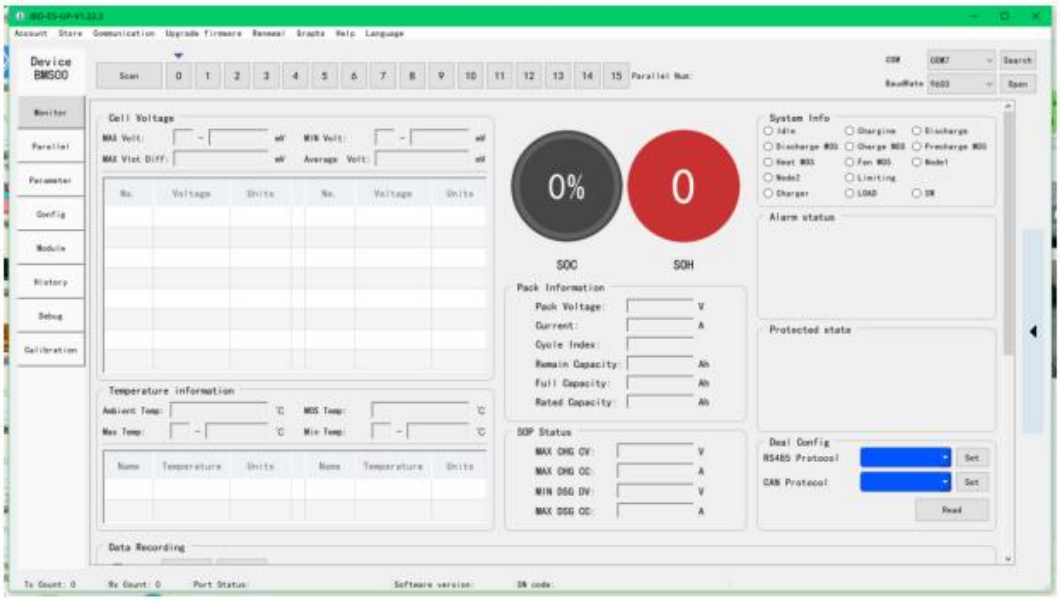
- Supports all BMS modules from Richpower
- Supports live monitoring of all BMS data
- Supports Single & parallel mode
- Supports real-time/history data storage/read
- Support data analysis
- Support upload and download BMS parameters
- Support online BMS program upgrade
- Support calibration for voltage & current
- Support uultilingual interface

3-8-2.Software Installation软件安装

This software is a green version free from installation, and users can unpress the compression package of the software to the desired position of the computer, and then run the JBD-ES-UP-V1.22.3 file for use.
Unpack this package to a folder.
本软件为免安装的绿色版本，用户可以将软件的压缩包解压至 计算机的所需位置，然后运行 JBD-ES-UP-V1.22.3 文件即可使用。
将此文件包解压到文件夹。

3-8-3.Use It quickly快速使用

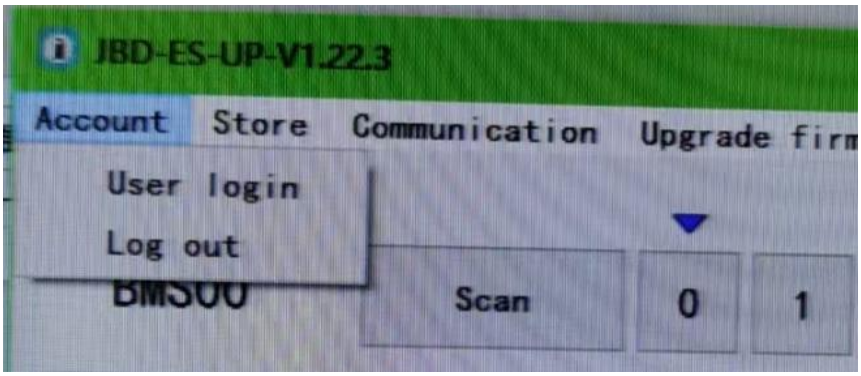
Double click the exe file in the software path to run the software
双击运行软件目录中的执行文件即可打开软件。



Connect BMS to computer via RS232 or RS485 serial port communication adapter, select correct port number, load corresponding BMS protocol provided by supplier, then click ‘Connect’ button on the HMI. The connection between BMS and HMI is then established.
使用 RS232 或 RS485 串口通讯线连接 BMS 与上位机，设置 正确的串口，加载对应的通讯协议，然后单击主界面的“连接”按 钮，即可建立上位机与 BMS 的连接。

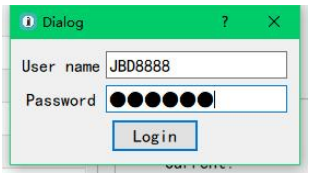
3-8-4.**User Login** 用户登陆

Click ‘Administrate’ menu, select ‘Login’option. 单击管理菜单，选择“登陆”选项。



Input password 666888 in the popup input box and press Enter key to login. You are allowed to modify parameters and upgrade the BMS after login.

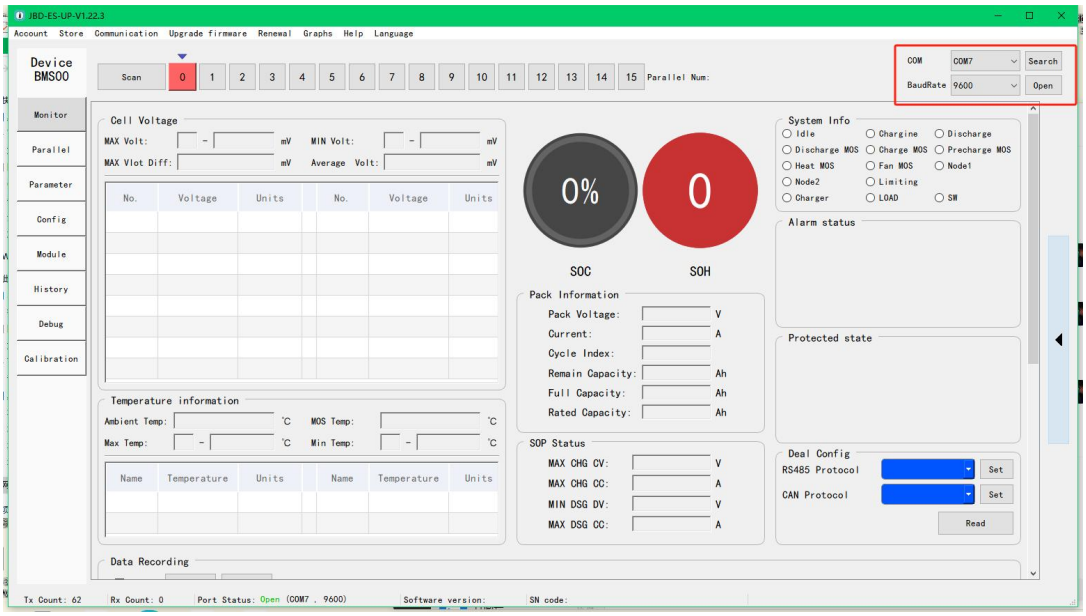
在弹出的输入框中输入登陆密码“666888”，按回车键确认 即可登陆。登陆后可以进行参数修改和程序升级等操作。



3-8-5.**Stand-alone Mode**单机连接

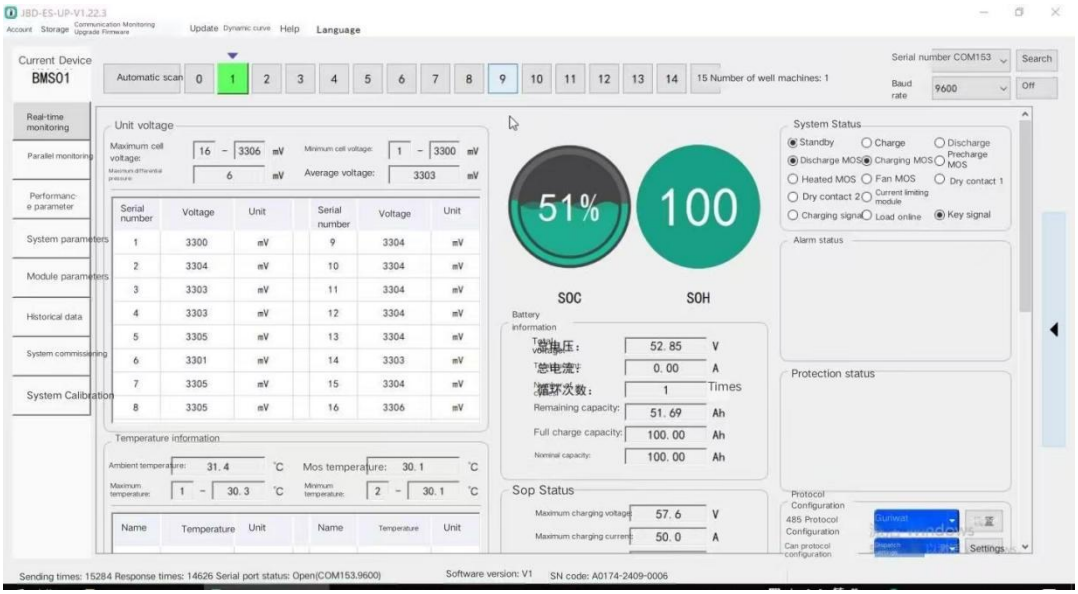
Start connecting to the BMS. Click OK to select the correct communication serial port in the software main interface and open the communication with Porter rate 9600. BMS is on, dial code switch dial 0. You can connect an individual BMS to the upper host computer.

开始连接 BMS。点 击确定在软件主界面选择正确的通讯串口，并使用波特率 9600 打开通讯。BMS 处于开启状态，拨码开关拨 0。 即可将单个 BMS 连接至上位机。



After the HMI is connected, the main interface of the software can display all kinds of data and status.

上位机连接之后，软件主界面能显示各种遥测遥信数据和状态。



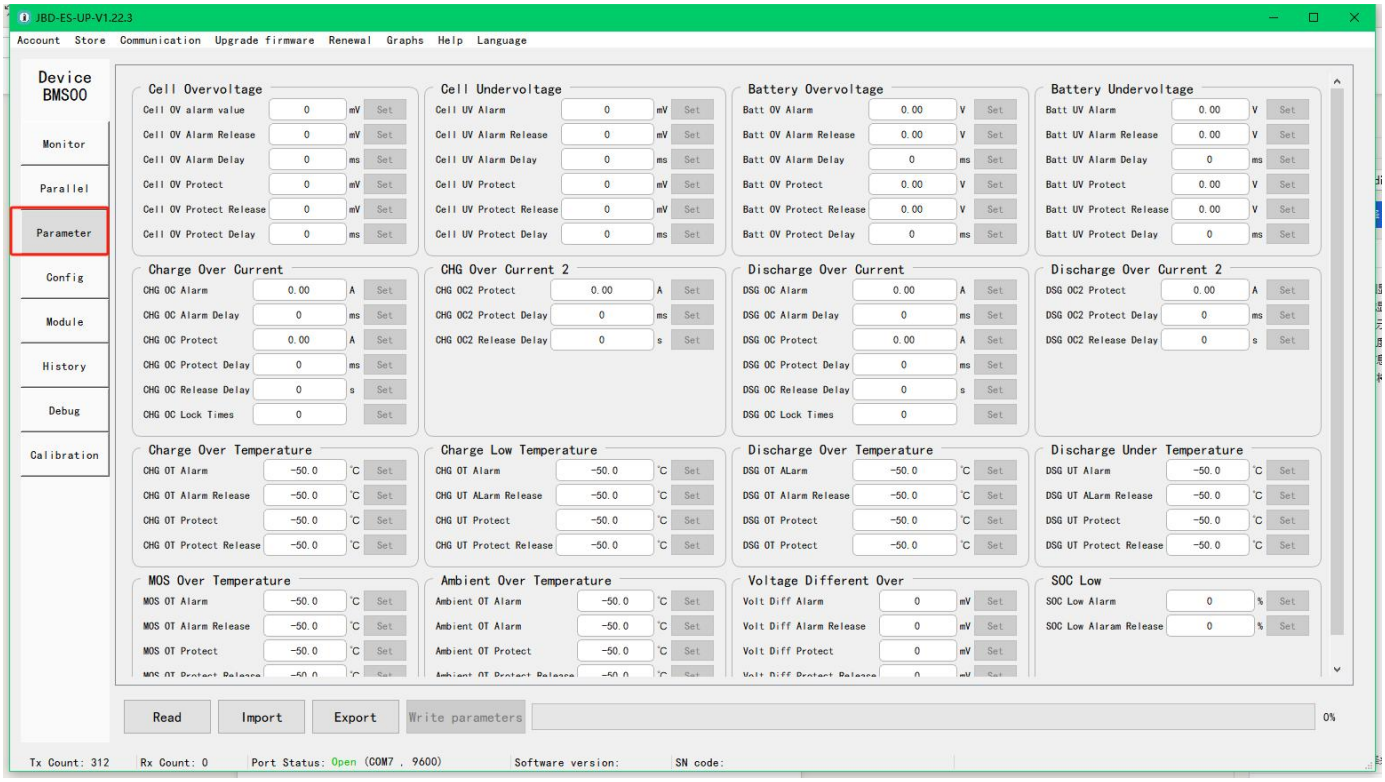
As shown in the figure above, the sampling voltage of each unit is displayed on the left side of the main interface of the upper machine, and the middle area shows the total voltage, current, temperature, voltage, current, capacity, cycle times and other information of the whole Pack. The Pack number is provided above it. On the right is the alarm information box, all the alarm protection and other information will be displayed in this box.

如上图，上位机主界面左侧显示各串单体采样电压，正中区域 显示整个 Pack 的总电压，电流，温度、电压、电流、容量、循环次数等信息。上方有 Pack 编号。右侧为告警信息框，所有的告警保护等信息将在此框中显示。

3-8-6.**Modify Parameter**修改参数

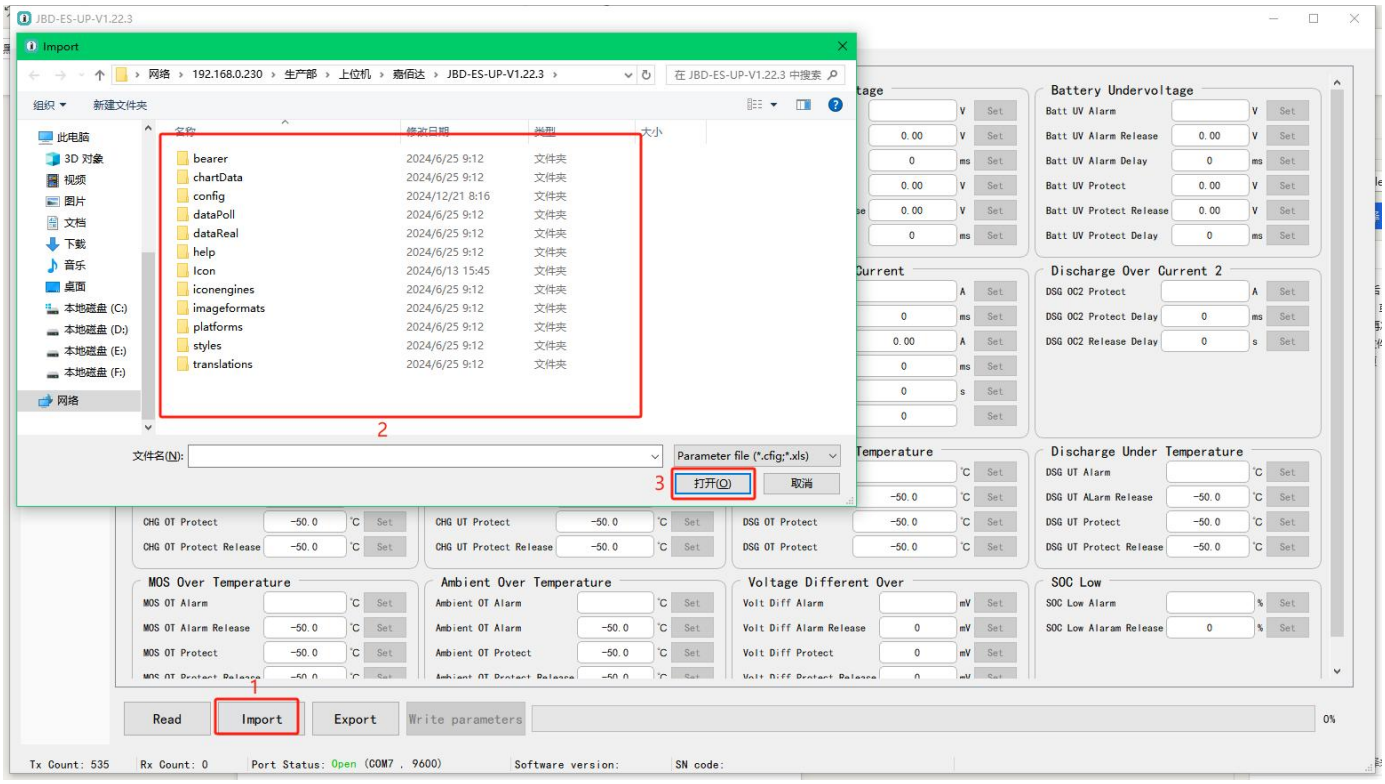
After connecting to BMS and logging in the system, the configured parameter file can be downloaded to BMS, or the BMS parameters can be uploaded and then downloaded to BMS after individual modification. The method is as follows. Click the menu, the performance parameters in the bottom left of the read parameters, import parameters, export parameters

在连接 BMS 且登陆了系统之后，可以将配置好的参数文 件下载到 BMS 中，也可以上传 BMS 参数进行个别修改后重新下载 到 BMS 中。方法如下。 点击菜单 性能参数 左下方有读取参数，导入参数，导出参数



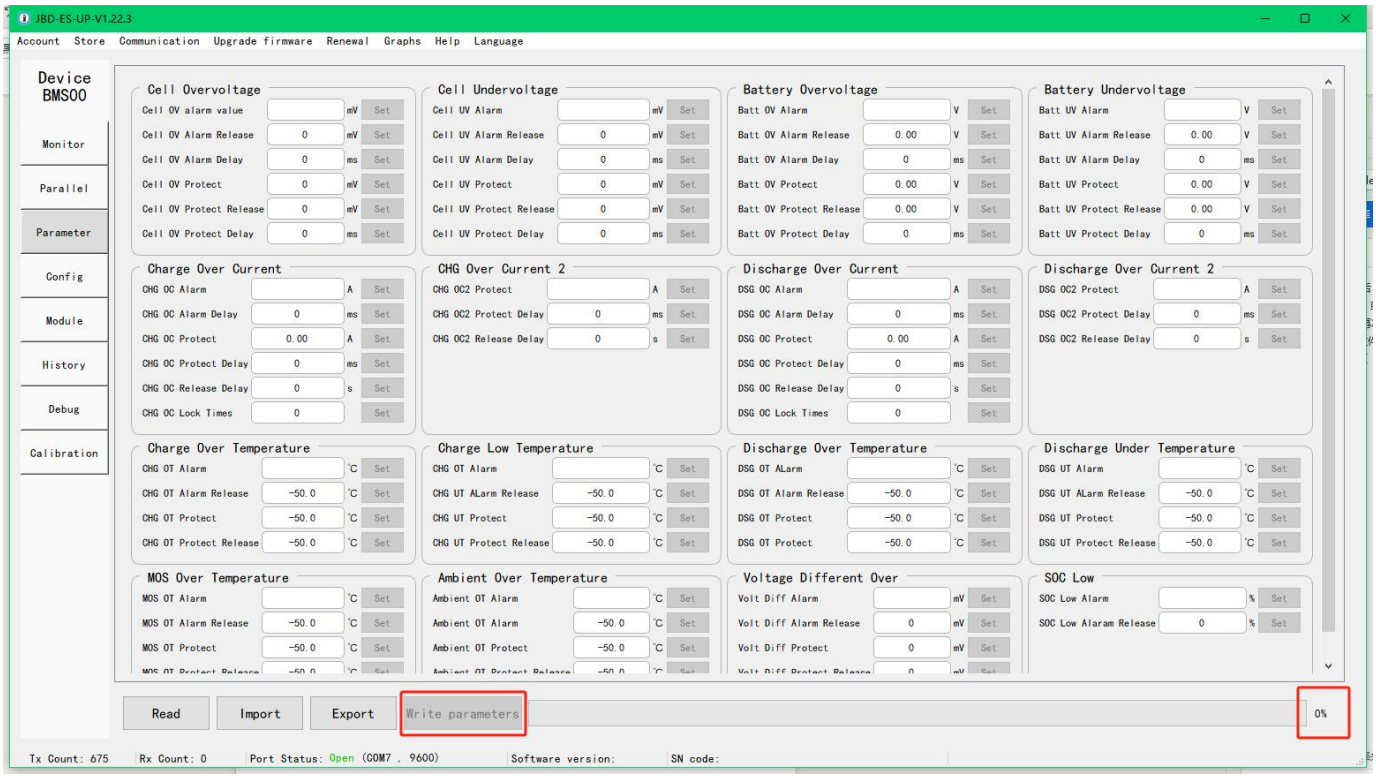
Select the correct configuration parameter file in the pop-up file selection box. Click the open button.

在弹出的文件选择框中选择正确的配置参数文件。点击打开按钮



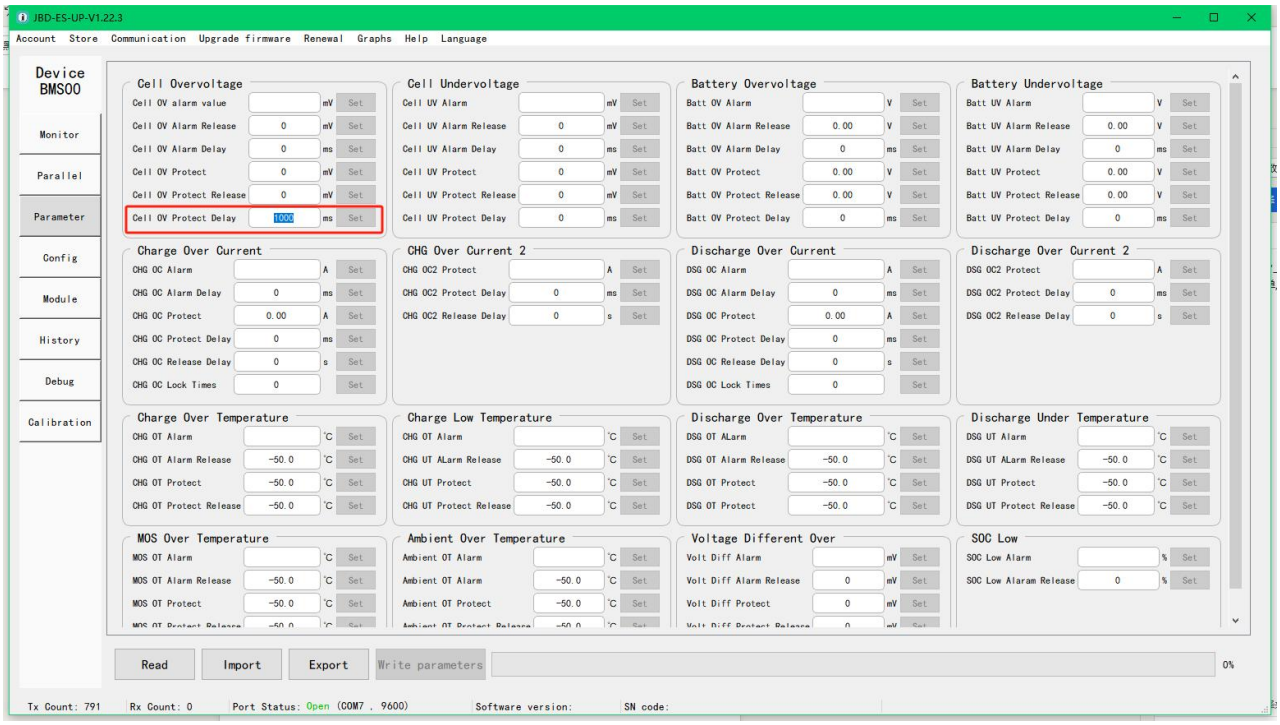
Check the configuration parameters in the pop-up parameter management window, and click the button to write the parameters ". All the configuration parameters will be downloaded into BMS and take effect.

在弹出的参数管理窗口中核对一下各项配置参数，无误后单 击”一键写入参数“按钮，配置参数将会全部下载进 BMS 中并生效。



The software will read the configuration parameters in BMS and display them in the pop-up parameter management window.

上位机读取 BMS 中的配置参数，并显示在弹出的参数管 理窗口中。

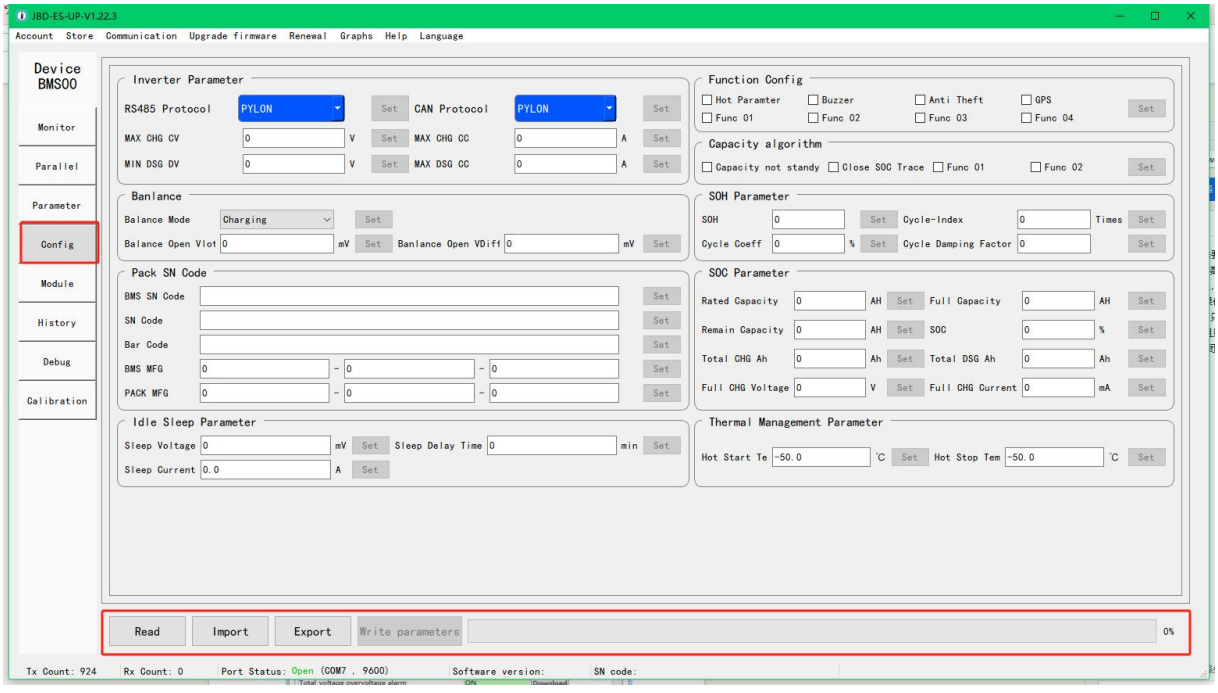


In the performance parameter window, click the value you want to modify, enter the appropriate parameters in the text box, click the "Settings" button on the right to download them into BMS; click "one key write parameters" to save all parameters to BMS

在性能参数窗口中，单击想要修改的数值，在文本框中输入合适的参数后，单击右侧的“设置”按钮可以将下载进 BMS 中；所有参数修改后点击“一键写入参数”可以将参数全部保存到BMS

In addition to the performance parameters, you can also click on the System Parameters tab in the window to manipulate the function parameters as above

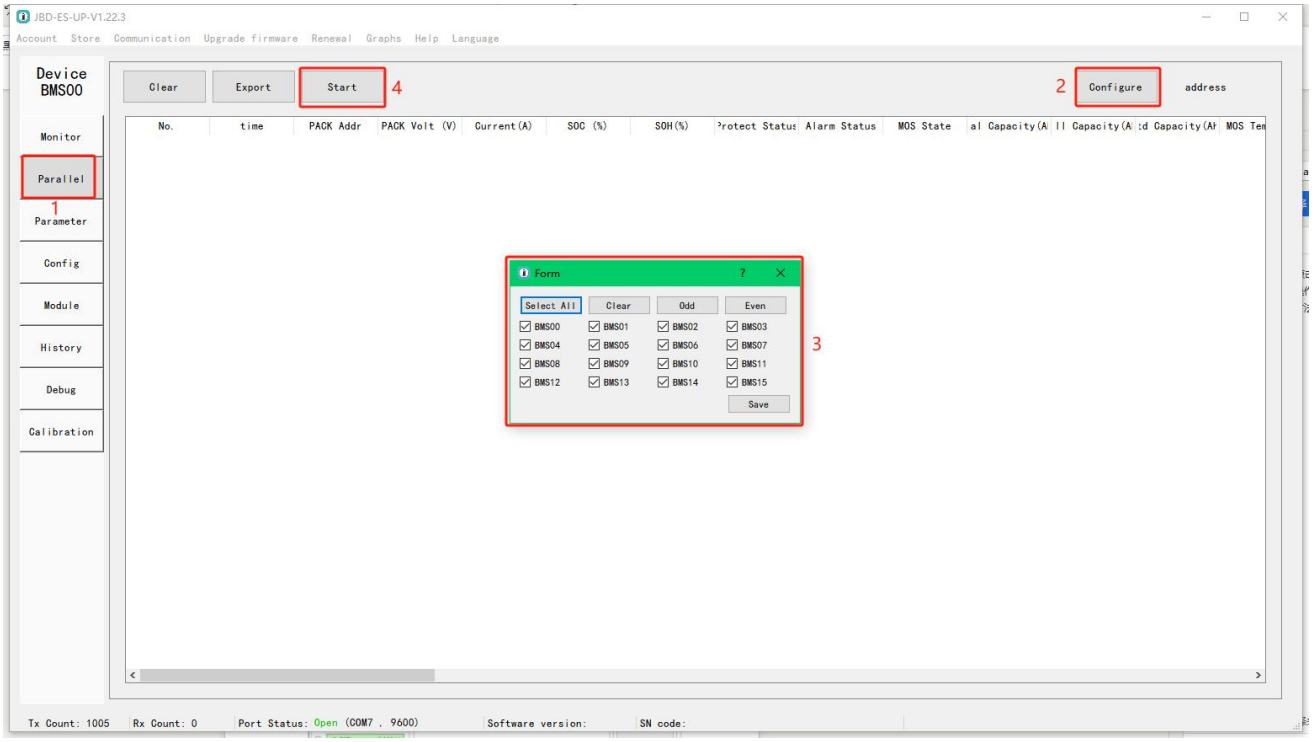
除了性能参数，还可以单击窗口中的“系统参数”选项卡，对功能参数进行操作和下载方法同上



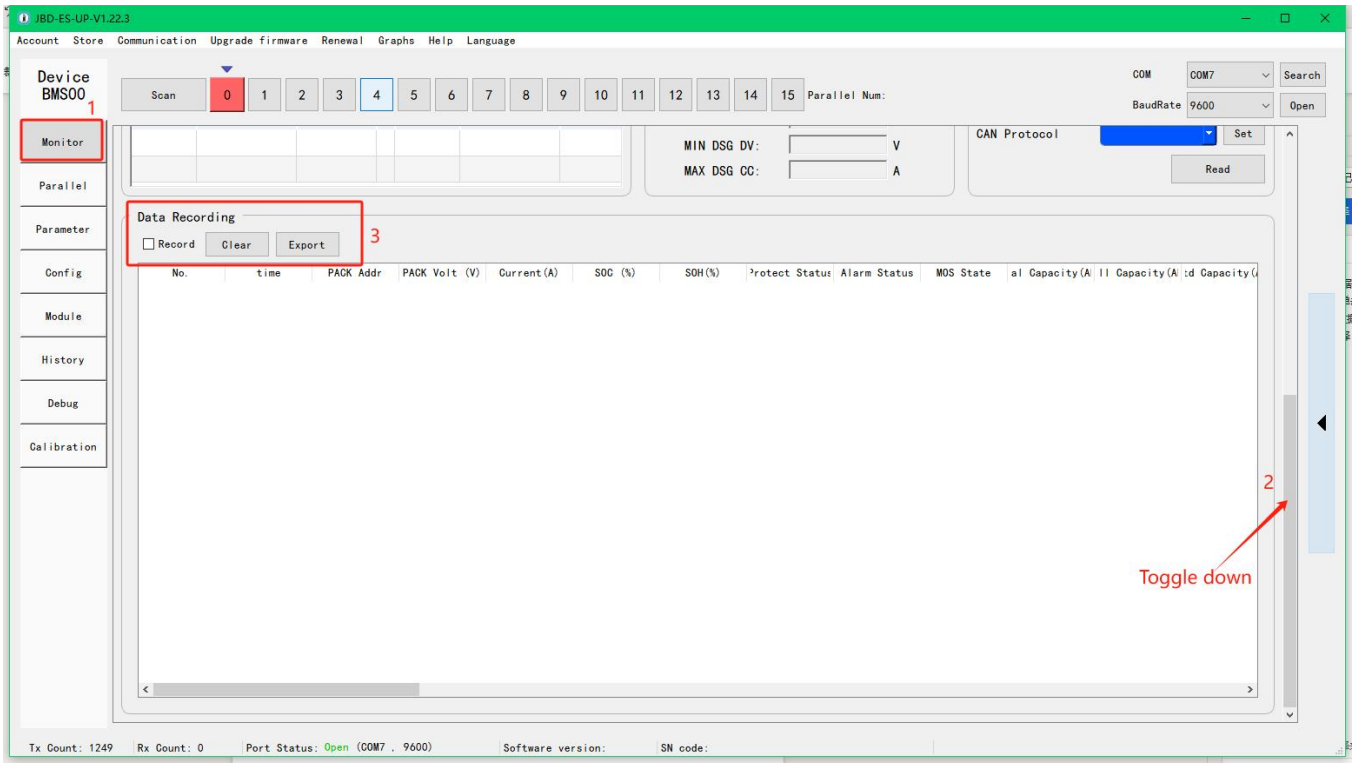
3-8-7.**Parallel Connection**并机连接

After "management- -login (password 666888)", the upper computer runs normally. After selecting parallel monitoring, click poll configuration and select the dial switch of BMS to dial up from address 1. Check the Pack number required in the polling configuration interface

“管理--登录(密码 666888）” 后，上位机运行正常， 选择并机监控之后点击轮询配置，选择BMS 的拨码开关从地址 1拨起。轮询配置界面勾选需要显示的 Pack 编号

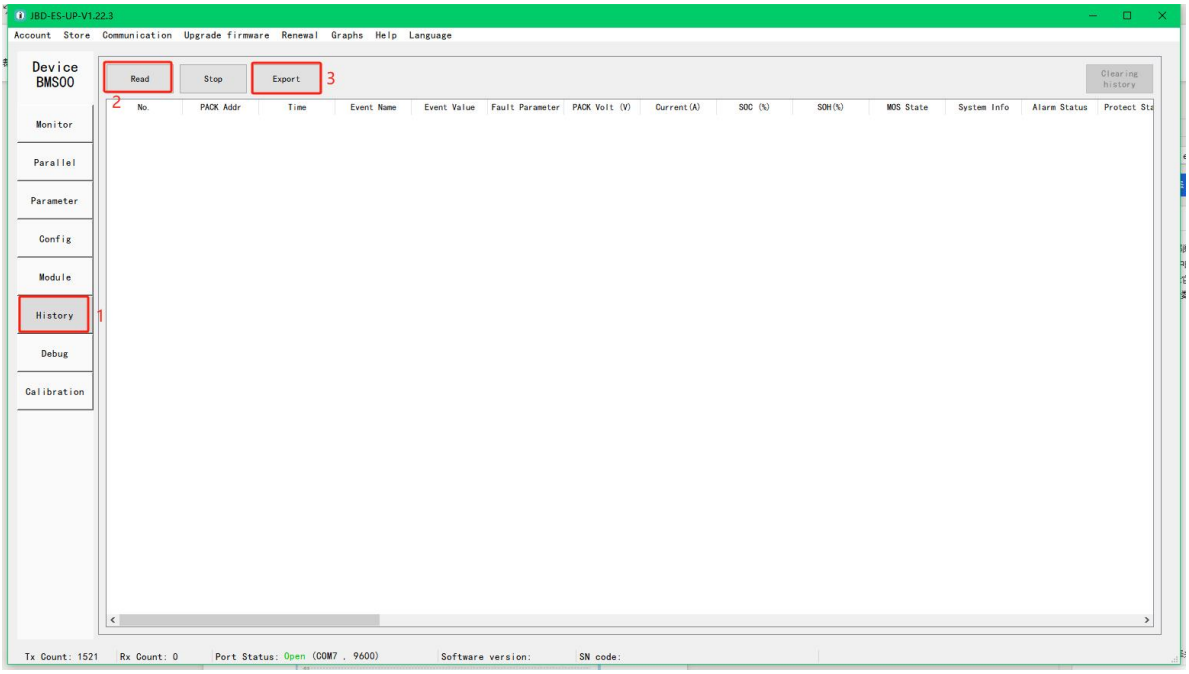


3-8-8.**View the historical data and run the real-time data**查看历史数据和运行实时数据



Check "Record real-time data" in the real-time data window, and the upper computer will store the BMS real-time running data and display it in the following window. Click Export Data to save the record data export as an EXCEL file

在的实时数据窗口中勾选“记录实时数据”，上位机将会储存 BMS 实时运行数据并显示在如下窗口中。单击导出数据将记录数据导出保存为EXCEL文件



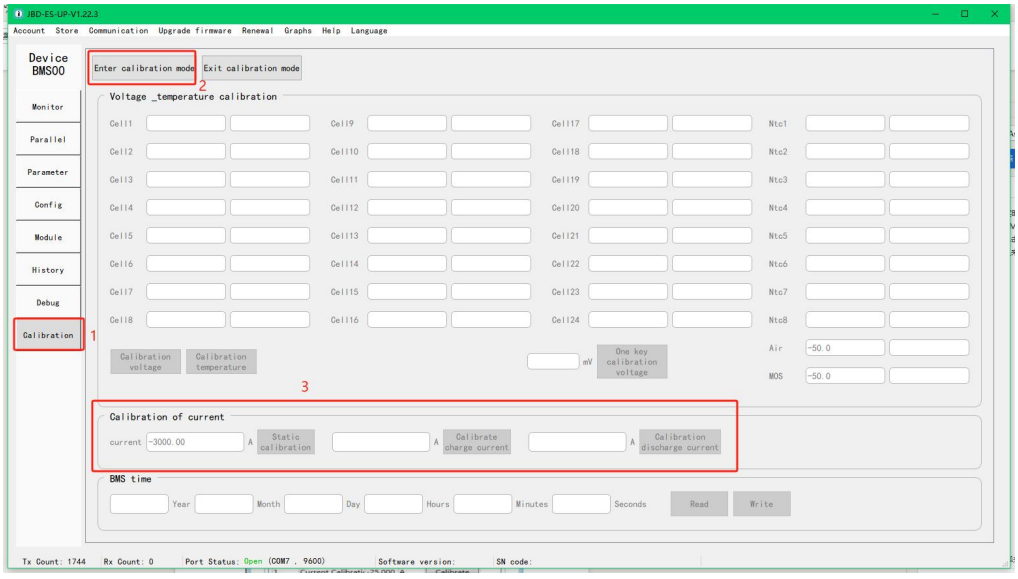
Click the read record in the historical data interface, and the upper computer will read the historical stored data of BMS and scroll in the display window. Click the Stop read button to press the Export data button to save the record data export as a EXCEL file.

在历史数据界面点击读取记录，上位机将会读取 BMS 的历史储存数据并滚动显示窗口中。单击停止读取按钮，可以按导出数据按钮将记录数据导出保存为 EXCEL 文件。

3-8-9.**Calibrate**校准

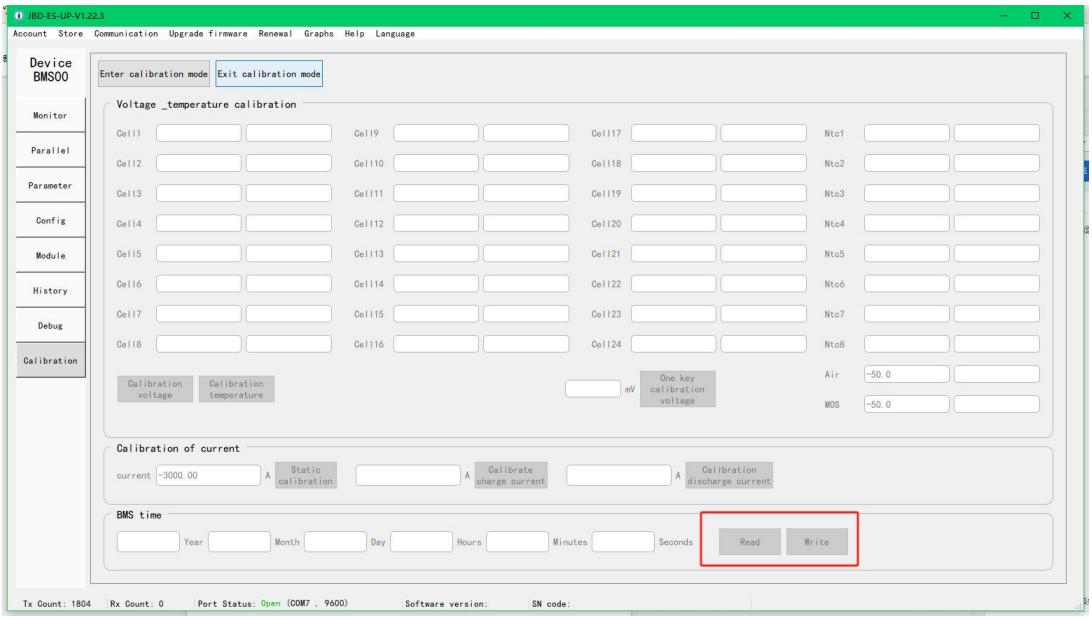
Click the System Calibration " option to enter the calibration mode.

单击“系统校准”选项进入校准模式。



In the pop-up window, you can read the BMS time,synchronize the local time to BMS, calibrate the zero current of BMS, current calibration, voltage calibration, etc.

在弹出的窗口中可以进行读取 BMS 时间、同步本机时间到 BMS、BMS 零点电流校准、电流校准、电压校准等操作。



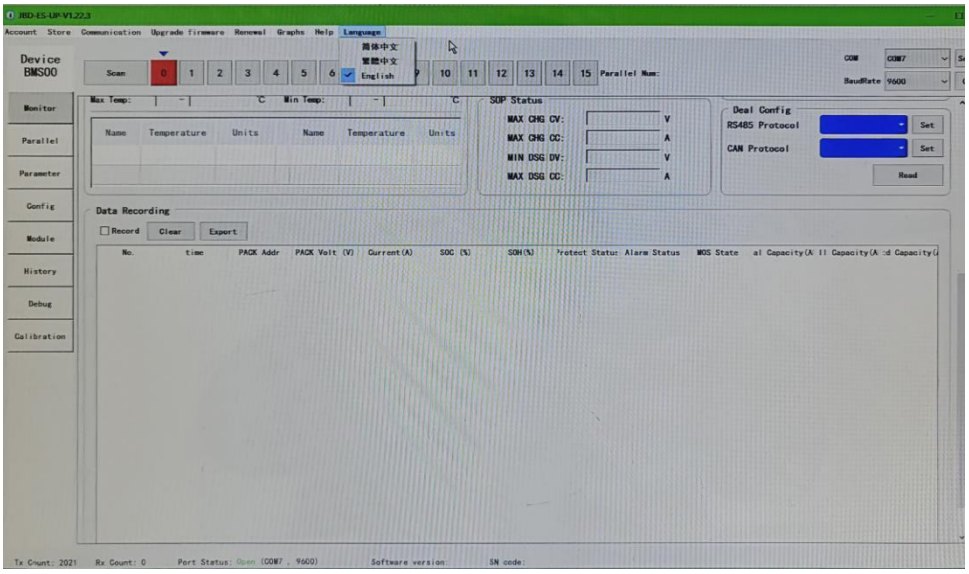
Note: Zero calibration shall be conducted without charge and discharge flow, the calibration value shall be written to "0A"; current calibration shall be conducted at 20A to 50A precision current charge and discharge state; voltage calibration shall be conducted at each BMS string sampling voltage of 3.300V.

注意：零点校准应在无充放电流情况下进行，校准值应写入“0A”；电流校准应在 20A至50A 精准电流充放电状态下进行；电压校准应在 BMS 各串采样电压 为 3.300V 下进行。

3-8-10.**Switch language**切换语言

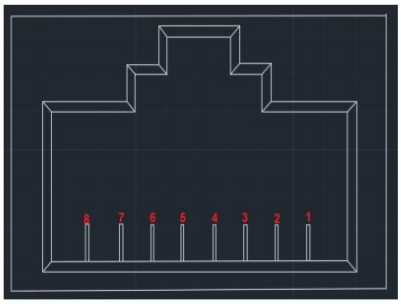
Click the Language to select the Chinese, English, and Traditional Chinese options.

单击语言，可选择中文、英文、繁体中文选项。

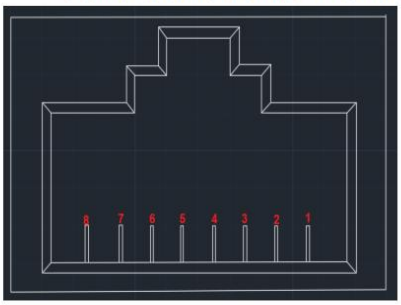


3-9. Communication Function 通讯功能

● **CAN 接口**
CAN interface



● **独立 RS485 接口（不可与 232 同时存在）**
Stand-alone RS485 interface (not compatible with 232)



RS485 Terminal Port	Definition
Pin1,8	RS485_B
Pin2,7	RS485_A
Pin3,6	GND
Pin4,5	NC

RS485 Communication Port Definition

CAN Terminal Port	Definition
Pin4	CAN_H
Pin5	CAN_L
Pin3,6	GND
Pin1,2,7,8	NC

CAN Communication Port Definition

4-0.Operations LED操作

4-1. LED Indicators LED指示灯

LED Indicators:

There are 6 LEDs on front panel to show the battery working status

前面板上有6个LED指示灯，用于显示电池的工作状态:

LED工作状态指示

The LED working status indication

状态status	正常/告警/保护 Normal / alarm / protection	ON/OFF（LED9）	RUN (LED8)	ALM (LED7)	电量指示（LED6~1）						说明 instructions
		🟢	🟢	🔴	🟢	🟢	🟢	🟢	🟢	🟢	
关机 shut down	休眠 dormancy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	全灭 All out
待机 standby	正常Normal	常亮 Often bright	闪1 Flash 1	灭 destroy	依据电量指示 According to the electricity instruction						待机状态 standby state
	告警 alarm	常亮 Often bright	闪1 Flash 1	闪3 Flash 3							模块低压 Module low pressure
充电 charging	正常Normal	常亮 Often bright	常亮 Often bright	灭 destroy	依据电量指示（电量指示最高LED闪2） According to the electricity instruction (Power indicates maximum LED flash 2)						最高电量LED闪2，过充告警时ALM不闪烁 Maximum power LED flash 2, ALM does not flash when overcharge alarm
	告警 alarm	常亮 Often bright	常亮 Often bright	闪3 Flash 3							
	过充保护 Overcharge protection	常亮 Often bright	常亮 Often bright	灭 destroy	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	若无市电，指示灯转为待机状态 If there is no city supply, the indicator light turns to the standby state
	温度，过流，失效保护	常亮 Often bright	灭 destroy	常亮 Often bright	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	停止充电 Stop charging
放电 discharge	正常Normal	常亮 Often bright	闪3 Flash 3	灭 destroy	依据电量指示 According to the electricity instruction						
	告警 alarm	常亮 Often bright	闪3 Flash 3	闪3 Flash 3							
	欠压保护 undervoltage protection	灭 destroy	闪2 Flash 2	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	停止放电 Stop discharge
	温度，过流，短路，反接，失效保护 Temperature, overcurrent, short circuit, backconnection, failure protection	常亮 Often bright	灭 destroy	常亮 Often bright	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	停止放电 Stop discharge
失效 Failure		灭 destroy	灭 destroy	常亮 Often bright	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	停止充，放电 Stop charging and discharge

LED容量指示说明

LED capacity indication instructions

状态status		充电 charging						放电 discharge					
容量指示灯 Capacity indicator light		L6 🟢	L5 🟢	L4 🟢	L3 🟢	L2 🟢	L1 🟢	L6 🟢	L5 🟢	L4 🟢	L3 🟢	L2 🟢	L1 🟢
电量（%） quantity of electricity（%）	0~16.6%	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	闪2 Flash 2	灭 destroy	灭 destroy	灭 destroy	灭 destroy	灭 destroy	常亮 Often bright
	16.6~33.2%	灭 destroy	灭 destroy	灭 destroy	灭 destroy	闪2 Flash 2	常亮 Often bright	灭 destroy	灭 destroy	灭 destroy	灭 destroy	常亮 Often bright	常亮 Often bright
	33.2~49.8%	灭	灭	灭	闪2	常亮	常亮	灭	灭	灭	常亮	常亮	常亮

		destroy	destroy	destroy	Flash 2	Often bright	Often bright	destroy	destroy	destroy	Often bright	Often bright	Often bright
	49.8~66.4%	灭 destroy	灭 destroy	闪2 Flash 2	常亮 Often bright	常亮 Often bright	常亮 Often bright	灭 destroy	灭 destroy	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright
	66.4~83.0%	灭 destroy	闪2 Flash 2	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	灭 destroy	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright
	83.0~100%	闪2 Flash 2	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright	常亮 Often bright
运行指示灯 Run the indicator light		常亮 Often bright						闪3 Flash 3					

LED闪烁说明

LED blinking description

闪动方式 Flash mode	亮 bright	灭 destroy
闪1 Flash 1	0.25S	3.75S
闪2 Flash 2	0.5S	0.5S
闪3 Flash 3	0.5S	1.5S

4-2. Reset key function复位键功能

BMS处于休眠状态时，按下按键（3~6S）后松开，保护板被激活，LED指示灯从"RUN"开始依次点亮0.5秒。
When the BMS is dormant, press the button (3~6S) to release, the protection plate is activated, and the LED indicator starts from "RUN" for 0.5 seconds.
BMS处于激活状态时，按下按键（3~6S）后松开，保护板被休眠，LED指示灯从最低电量灯开始依次点亮0.5秒。
When the BMS is active, press the button (3~6S) to release, the protection plate is dormant, and the LED indicator starts from the lowest power light for 0.5 seconds.
BMS处于激活状态时，按下按键（6~10S）后松开，保护板被复位，LED灯全部同时点亮1.5秒。
When BMS is active, press the button (6~10S) and release, the protection plate is reset, and all LED lights are lit for 1.5 seconds.

5-0. Display function instruction显示功能指令

5-1.LCD Size chart LCD尺寸表

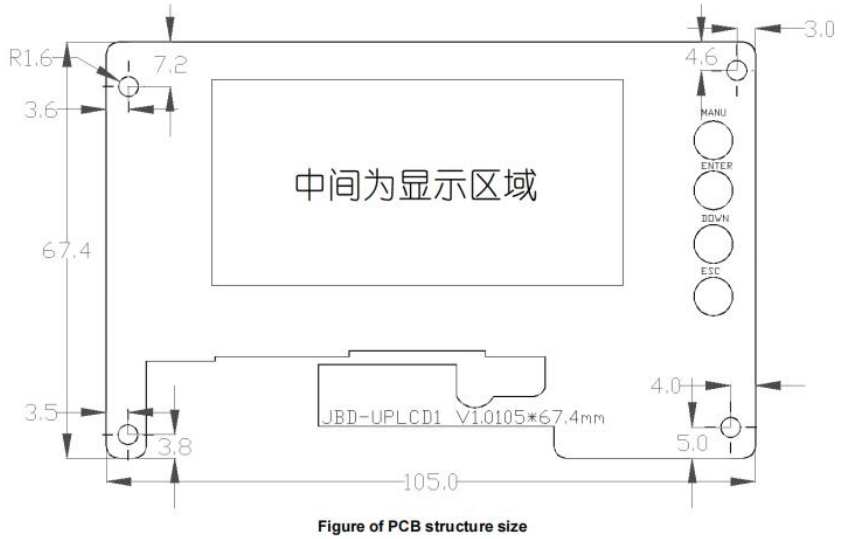


Figure of PCB structure size

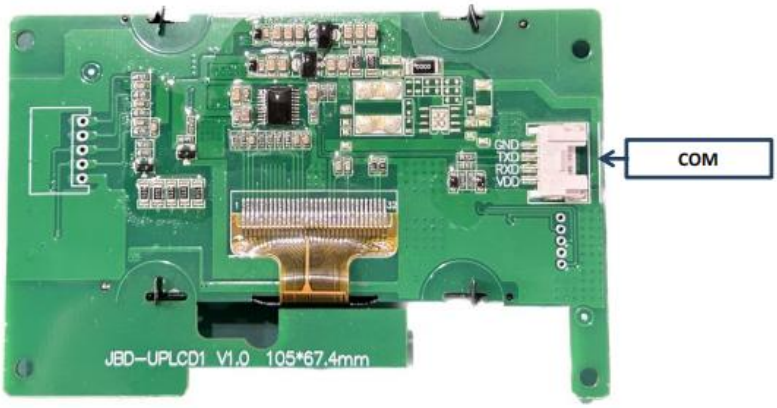
Notes:

1.All linear dimensions are in millimeters.
2.Any dimensions in parenthesis are only for refer ence only.
3.The above drawing is subject to change without Notice

5-2.功能描述 functional description

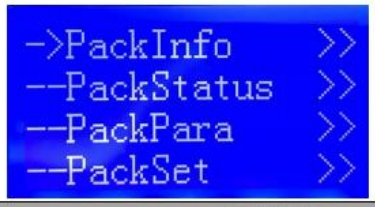
JBD-UPLCD1 V1.0

Number	Label	Function	Notes
1	Button 1	Main menu 主菜单	Start the screen or get back into the main page
2	Button 2	Enter 确认\进入当前选项	Select and get into the page
3	Button 3	Down 光标下移、循环滚动	Move the selection down
4	Button 4	Esc 退出	Escape from current page



Number	Label	Diagram	Function	Notes
1	COM	 HY2.0	UART - GND	B-
2			UART - TXD	
3			UART - RXD	
4			UART - VDD	12-20V

5-3.页面描述 **Page description**



Name	Definition
Pack Info (Pack information)	此页面可以查看电压、电流、温度及其他数据。 This page allows you to view voltage, current, temperature, and other data.
Pack Status	此页面可以查看保护状态，保护次数，以及保护标志。 This page allows you to view the protection status, protection times, and protection flags.
Pack Para (Pack parameters)	此页面可以设置部分保护参数，暂未开放。 This page can set some protection parameters and is currently not open.
Pack Set (Pack settings)	此页面可以设置 BMS 的主机 RS485 协议或 CAN 协议。 This page allows you to set the host RS485 protocol or CAN protocol for BMS.

Notes:

注：若未进行任何操作，系统会延时一分钟关闭。

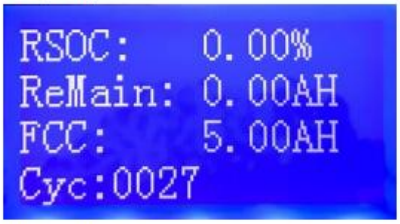
If there is no cooperation, the system will shut down for one minute.

5-4.页面信息 **Page information**

•Vol(Voltage):电池组电压。Battery pack voltage

•Cur(Current): 充电/放电电流。
Charging/discharging current

•Capacity:



•RSOC(Rest of state of capacity):剩余容量百分比。

•Remain: 剩余容量。

•FCC(Full charge capacity): 满充电容量。

•Cyc(Cycle times):循环次数。

•Temp(Temperature):显示 BMS 所有探头的温度。.

•CellInfo(Cell Information):查看单节电压，单位为 mV。.
(The units of cell voltage are all in millivolt).

5-5.显示状态 **display status**

•Pro Count (Protection Count):不同保护标志的次数。.

•Pro Status(Protection Status):显示当前 BMS 产生何种保护标志。

Item	Definition
OVP	Over Voltage Protection(single cell) 单节过压保护
UVP	Under Voltage Protection(single cell) 单节欠压保护
POVP	Pack Over Voltage Protection 整组过压保护
PUVP	Pack Under Voltage Protection 整组欠压保护
COTP	Charge Over Temperature Protection 充电高温保护
CUTP	Charge Under Temperature Protection 充电低温保护
DOTP	Discharge Over Temperature Protection 放电高温保护
DUDP	Discharge Under Temperature Protection 放电低温保护
COCP	Charge Over Current Protection 充电过流保护
DOCP	Discharge Over Current Protection 放电过流保护
SCP	Short Circuit Protection 短路保护
LOCK	Soft Lock 软件锁定

5-6.逆变器协议设置 **Inverter protocol settings**

RS485(设置 BMS 主机 RS485 接口协议）
RS485 (set up the RS485 interface protocol for the BMS host)
CAN Bus(设置 BMS 的 CAN 接口协议）
CAN Bus (Set up the CAN interface protocol for BMS)

可选择协议内容： Agreement contents can be selected:

RS485	CAN BUS
RS485 - PYLON	CAN - Pylon
RS485 - GROWATT	CAN - VicTron
RS485 - Voltronic	CAN - GOODWE
RS485 - LXP	CAN - GROWATT
RS485 - DEYE	CAN - LXP
RS485 - INVT	CAN - DEYE
RS485 - SRNE	CAN - SOFAR
RS485 - OTHER	CAN - GINLONG
...	CAN - SMA
	CAN - MUST
	CAN - OTHER
	...

6-0.Safety Precaution 安全预防措施

6-1. When Using battery使用电池时

Danger of High Voltage高压危险

The high voltage power supply offer the equipment power, wet object contact high voltage power supply directly or indirectly , can cause fatal danger.

高压电源直接或间接为设备供电，湿物接触高压电源，会造成致命危险.

Using a special tool使用专用工具

Working in high voltage and ac power, be sure to use a special tool instead of individual tools.

在高压和交流电源下工作，一定要使用专用工具而不是单独的工具.

Static - free无静电

Static electricity would damage veneer on the electrostatic sensitive components, before touching the plug - in, circuit board or chips, be sure to use correct electrostatic prevention measures.

静电会损坏静电敏感部件上的贴面，在接触插头、电路板或芯片之前，请务必使用正确的静电防护措施.

Disconnect the power supply in operation断开运行电源

When operate the power supply, you must first cut off power supply, power operation is prohibited.

操作电源时，必须先切断电源，严禁带电操作.

Dc short circuit dangerous直流短路危险

Power system provides dc regulated power supply. Dc short circuit could cause fatal damage to the e quipment.

电力系统提供直流稳压电源。直流短路会对设备造成致命的损坏

6-2. While Charging电池充电时

CAUTION注意

The temperature range over which the battery can be charged is 0°C to 45°C. Charging the battery at temperatures outside of this range may cause the battery to become hot or to break. Charging the battery outside of this temperature range may also harm the performance of the battery or reduce the battery's life expectancy.

可对蓄电池充电的温度范围为0°C至45°C。在此温度范围之外对蓄电池充电可能会导致蓄电池发热或断裂。在该温度范围之外对蓄电池充电也可能会损害蓄电池的性能或降低蓄电池的预期寿命.

6-3. When Discharging the Battery电池放电时

DANGER危险

Do not discharge the battery using any device except for the specified device. When the battery is used in devices aside from the specified device it may damage the performance of the battery or reduce its life expectancy, and if the device causes an abnormal current to flow, it may cause the battery to become hot and cause serious injury.

不要使用指定设备以外的任何设备放电。当电池用于指定设备以外的设备时，可能会损坏电池的性能或降低电池的预期寿命，如果设备导致异常电流流动，可能会导致电池发热并造成严重伤害

CAUTION注意

The temperature range over which the battery can be discharged is -20°C to 60°C. Use of the battery outside of this temperature range may damage the performance of the battery or may reduce its life expectancy.

电池可放电的温度范围为-20°C至60°C。在此温度范围之外使用电池可能会损坏电池的性能或降低电池的预期寿命.

6-4. Safety Gear安全防护装备

			
Insulated gloves绝缘手套	Safety goggles安全护目镜	Safety shoes安全鞋	SafetyHelmet安全头盔

7-0.Troubleshooting故障排除

If the battery does not operate correctly, please solve the problem by using the table below.

如果电池不能正常工作，请使用下表解决问题

Symptom症状	**Possible cause可能原因**	**Remedy处理方法**
No indication and alarm in the front display panel前显示面板无指示和报警	Sleeping mode 休眠模式	Press Reset to normal mode 按RST键到正常模式
No indication and alarm in the front display panel even Reset still no reaction 前显示面板无指示和报警，即使复位仍无反应	Battery voltage too low 电池电压过低	Charge battery immediately 立即给电池充电
Red LED Flashing when Standby 待机时红色运行灯闪烁	Battery cell low voltage 电池单节电压低	Charge battery immediately 立即给电池充电
Red LED Flashing when charging 充电时红色运行灯闪烁	Alarm for protection when charging 充电报警	BMS show alarm, protect and adjustment BMS显示警报、保护和调整
Red LED Flashing when Discharging 放电时红色运行灯闪烁	Battery voltage too low and will shutdown 电池低电压告警即将保护	Charge battery immediately 立即给电池充电
RED LED Lighting continuous 红色运行灯一直常亮	Battery wrong 电池错误	Need to repair 需要维修

8-0. Storage and Maintenance储存和维护

8-1. Storage存储

Before storing, charge the battery at least 7 hours. Store the Battery covered and upright in a cool, dry location. Recommend long-term storage temperature is 15°C -25°C . During storage, recharge the battery in accordance with the following table 储存前，请至少给电池充电7小时。将电池盖好直立存放在阴凉干燥的地方。建议长期储存温度为15°C-25°C。在存放期间，请按照下表对电池重新充电：

8-2. Maintenance维护

The battery system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.电池系统在危险电压下工作。维修只能由合格的维修人员进行.

Even after the unit is disconnected from the mains, components inside are still connected to the battery cells which are potentially dangerous即使在装置与电源断开连接后，内部部件仍与可能存在危险的电池连接.

Before carrying out any kind of service and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exists in the terminals.在进行任何类型的维修和/或维护之前，断开电池并确认端子中没有电流和危险电压.

Only major persons are adequately familiar with batteries and with the required precautionary measuresmay replace batteries and supervise operations. Unauthorized persons must be kept well away

from the batteries.只有专业人员才能充分熟悉电池和所需的预防措施，可更换电池并监督操作，未经授权的人员必须远离电池.

Verify that no voltage between the battery terminals and the ground is present before maintenance or repair. In this product, the battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground.确认电池端子和接地之间没有电压，然后维护或修理。在本产品中，电池电路不与输入电压隔离。电池端子和接地之间可能会产生危险电压.

 Batteries may cause electric shock and have a high short-circuit current. Please remove all wristwatches, rings and other metal personal objects before maintenance or repair, and only use tools with insulated grips and handles for maintaining or repairing.电池可能会导致触电并产生高短路电流。在维护或修理前请全部取掉手表、戒指和其他金属个人物品，只能使用带绝缘握把和手柄的工具进行维护或修理.

 When replace the batteries, install the same number and same type of batteries.
更换电池时，请安装相同数量和类型的电池

 When replace the parallel batteries, make sure the new battery is full charged.
更换并联电池时，确保新电池充满电

 Do not open or destroy batteries. Escaping electrolyte can cause injury to the skin and eyes.
不要打开或损坏电池。电解液溢出会对皮肤和眼睛造成伤害

9-0.Product Responsibilities and Consulting 产品责任和咨询

1) We will not be liable for the accidents resulting from operation breaking this specification and user manual.我们对因操作违反本规范和用户手册而导致的事故不承担责任.

2) We will not send separate notice, provided that the contents of this specification are changed due to improvement of product quality or technological upgrading; provided that you want to understand the latest information of this product, please contact us.

3) 本说明书内容如因产品质量的提高或技术的升级而发生变化，恕不另行通知；如您想了解本产品的最新信息，请与我们联系.

4) The shelf life of this product is within 60 months after it is delivered; we will maintain the product, which is in the warranty period for free of charge, provided that it has any product quality problems within the specified operation range; we may replace the relevant parts, if we fail to maintain it, so as to achieve the purpose of sustainable use without performance reduction; our after-sales service personnel will propose the specific maintenance and troubleshooting methods.本产品的保质期为交货后60个月内，产品在保修期内，如有任何产

品，我们将免费维修。在规定的操作范围内出现质量问题；如果我们不能维护，我们可以更换相关部件，以达到持续使用的目的而不降低性能；我们的售后服务人员将提出具体的维护和故障排除方法.

In case of any questions, please contact us: +86 13020256650

如有任何疑问，请联系我们：+86 13020256650

Appendix:附件

Tools工具

The following tools are required to install the battery pack　　安装时请准备如下工具

electric screw driver 电动螺丝刀

Phillips screwdriver bit
十字螺丝刀批头

M10 / M12 套筒

Forklift 叉车

M8开口扳手

液压钳

钳流表 Clamp meter

剥线钳 Stripper

斜口钳Slanting pliers

卷尺 Tape measure

美工刀Box Cutter

钉锤Nail Hammer