

JK-PB BMS Manual

JKBMS

2024年1月10日

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|||Catalog

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V15 New Features

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1

V15 New Features



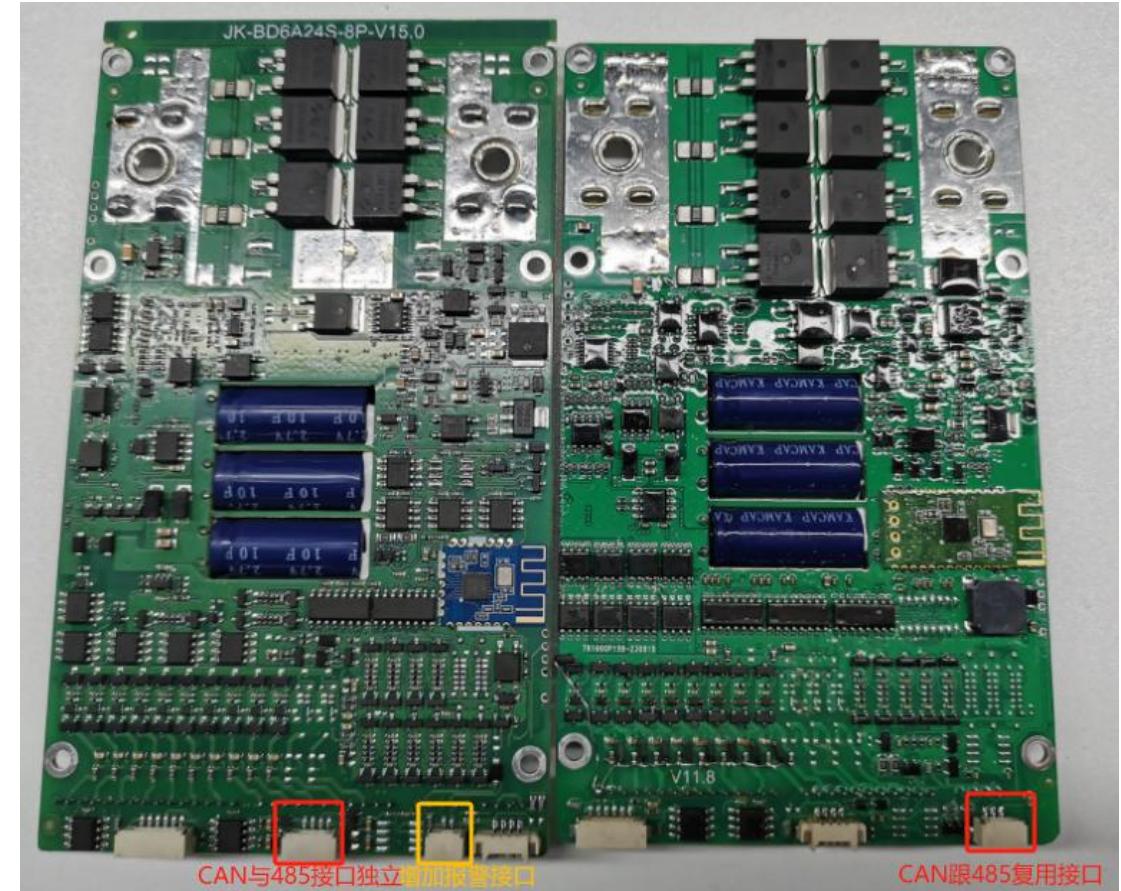
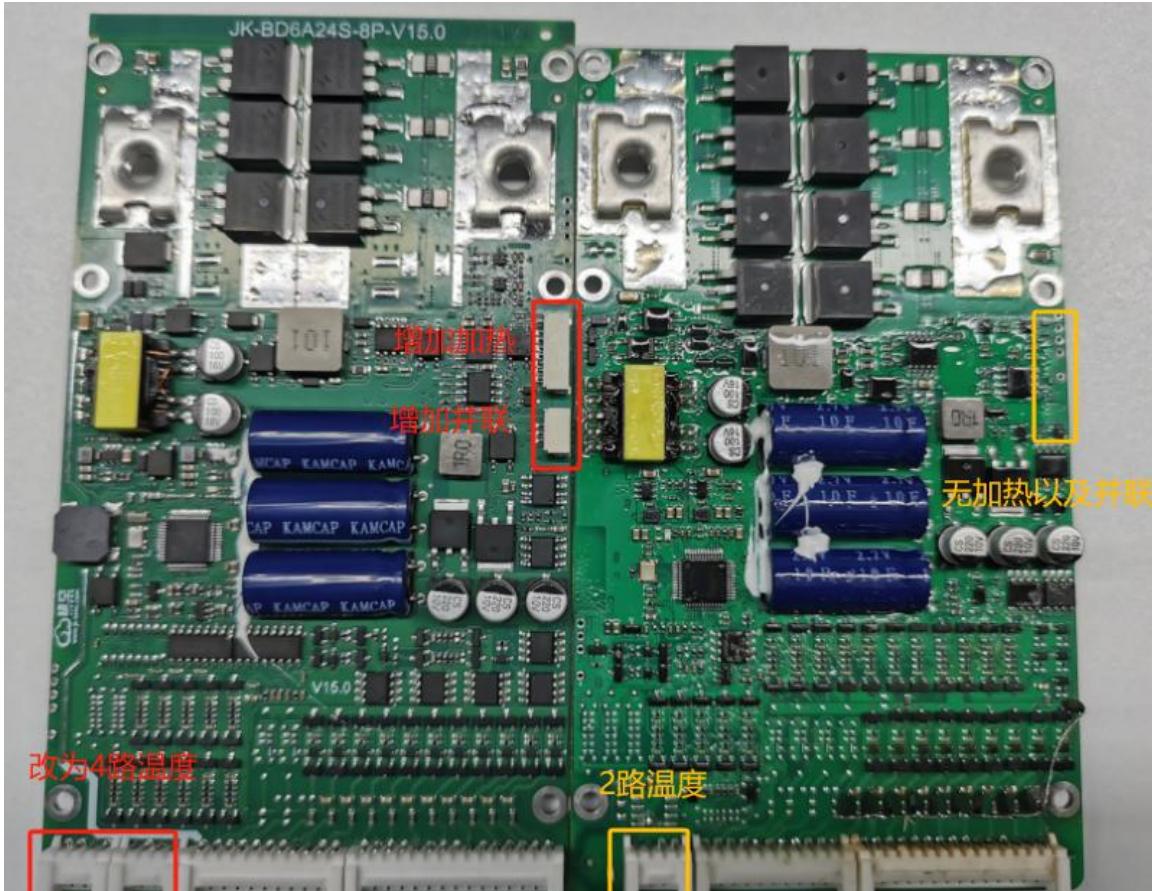


❖ Upgrade items of V15 BMS compared to V11 BMS

Version	GPS interface	Temperature collection	LCD interface	Heating function	CAN&RS485	Alarm function	Parallel function
V11	support	2cable	support	some have	pick one of two	not support	not support
V15	support	4cable	support	all support	all can be use in same time	all support	all support



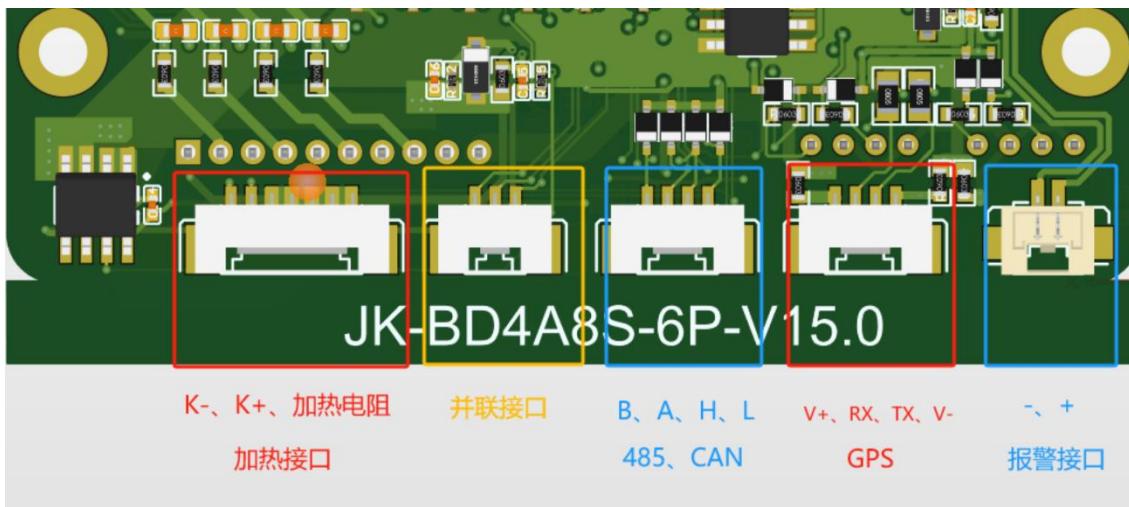
❖ Upgrade items of V15 BMS compared to V11 BMS (sample by 6P)





❖ Interface definition comparison

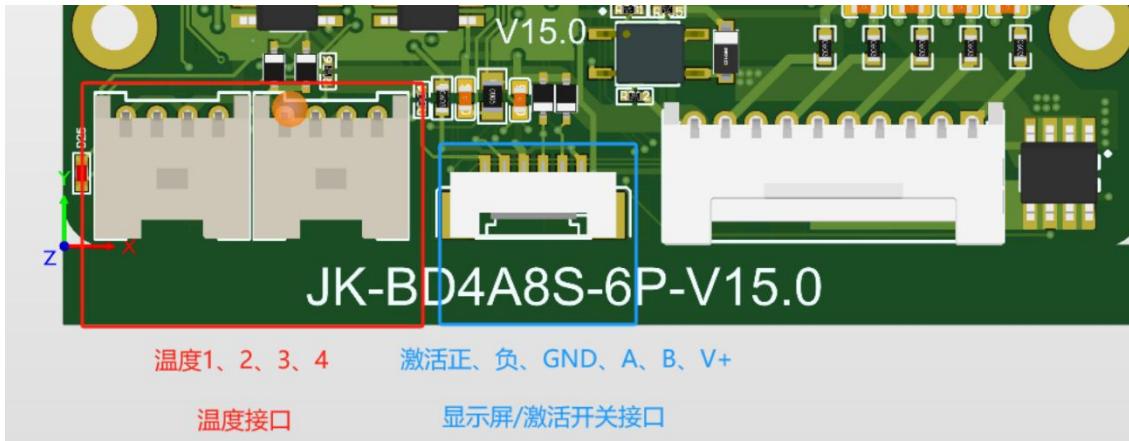
V15背面



V11



V15正面



2

ESS BMS

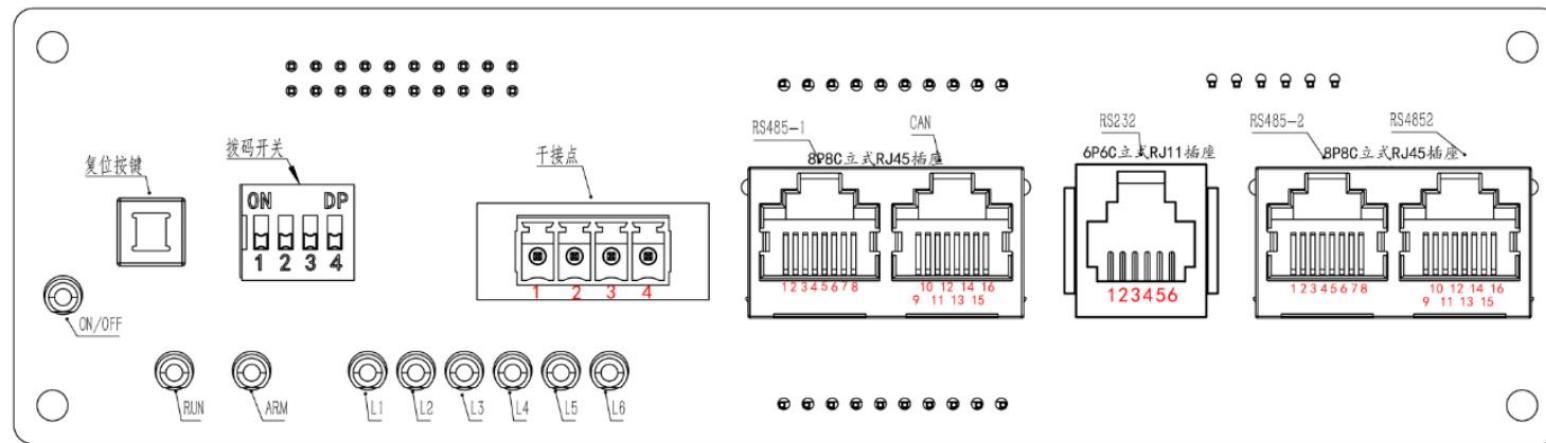
1.ESS BMS Wiring

2.Communication RS485 CAN





❖ Adapter board definition



干接点接口定义

引脚序号	引脚定义	备注
1	COM1	
2	S1	有告警状况下 S1 和 COM1 导通
3	COM2	
4	S2	低电量状况下 S2 和 COM2 导通

CAN 和 RS485-1 接口定义

RS485-采用 8P8C 立式 RJ45 插座	CAN-采用 8P8C 立式 RJ45 插座		
引脚序号	引脚定义	引脚序号	引脚定义
1、8	RS485-B1	9、10、11、14、16	NC
2、7	RS485-A1	12	CANL
3、6	GND	13	CANH
4、5	NC	15	GND

RS232 接口定义

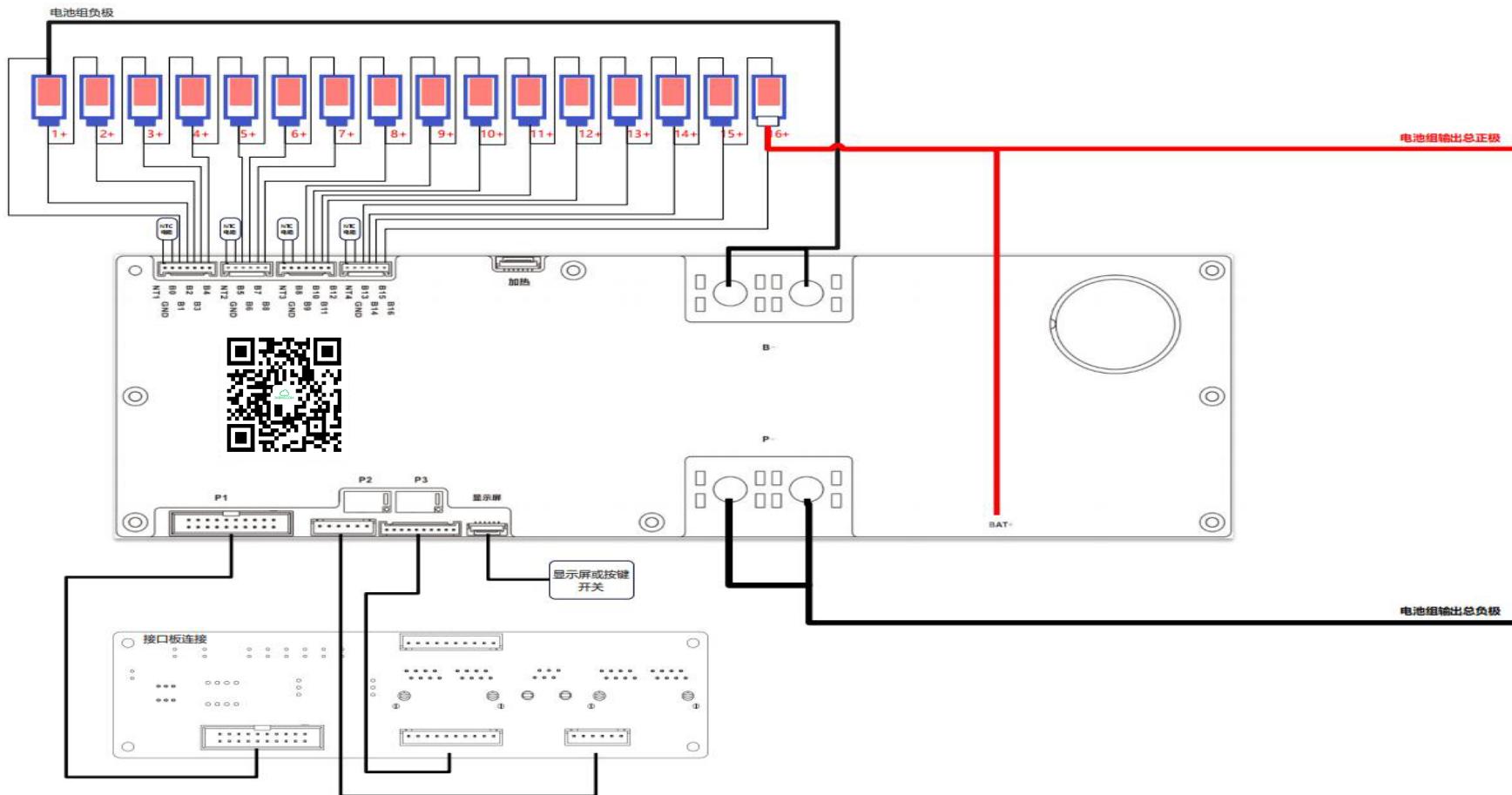
RS232-采用 6P6C 立式 RJ11 插座		
引脚序号	引脚定义	备注
1、2、6	NC	
3	RS232_TX	
4	RS232_RX	
5	GND	

RS485-2 并联接口定义

RS485-采用 8P8C 立式 RJ45 插座	RS485-采用 8P8C 立式 RJ45 插座		
引脚序号	引脚定义	引脚序号	引脚定义
1、8	RS485-B2	9、16	RS485-B2
2、7	RS485-A2	10、15	RS485-A2
3、6	GND	11、14	GND
4、5	NC	12、13	NC

❖ ESS BMS WIRING

JK-PBxA16S-10P/15P/20P Active balance BMS Wiring Diagram





❖ Batteries in parallel



图1

- 1.Batteries in parallel, + to +, - to -;
- 2.Each battery pack previously communicated through the RS485-2 interface, In a parallel battery pack system, one and only one master is required (the device address is set to 0), the rest are slaves and the addresses of the slaves cannot be the same.



❖ ESS BMS Address settings

ESS BMS Address settings:

1. ESS BMS adapter board (picture 1) have 4 DIP switches for setting device address;

2. ON means open, OFF means close;

3. The actual corresponding address values of 1, 2, 3, and 4 on the DIP switch are 1, 2, 4, and 8; then add the values dialed to the ON position to calculate the device address., picture2;

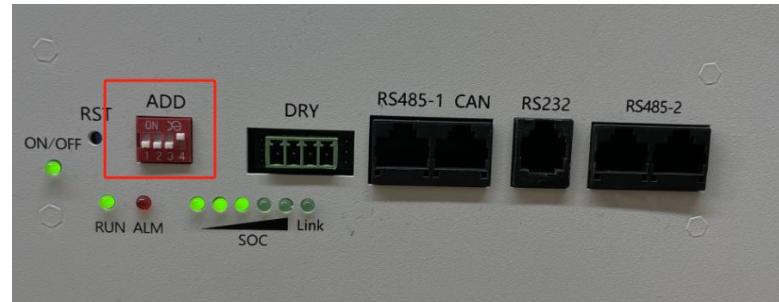


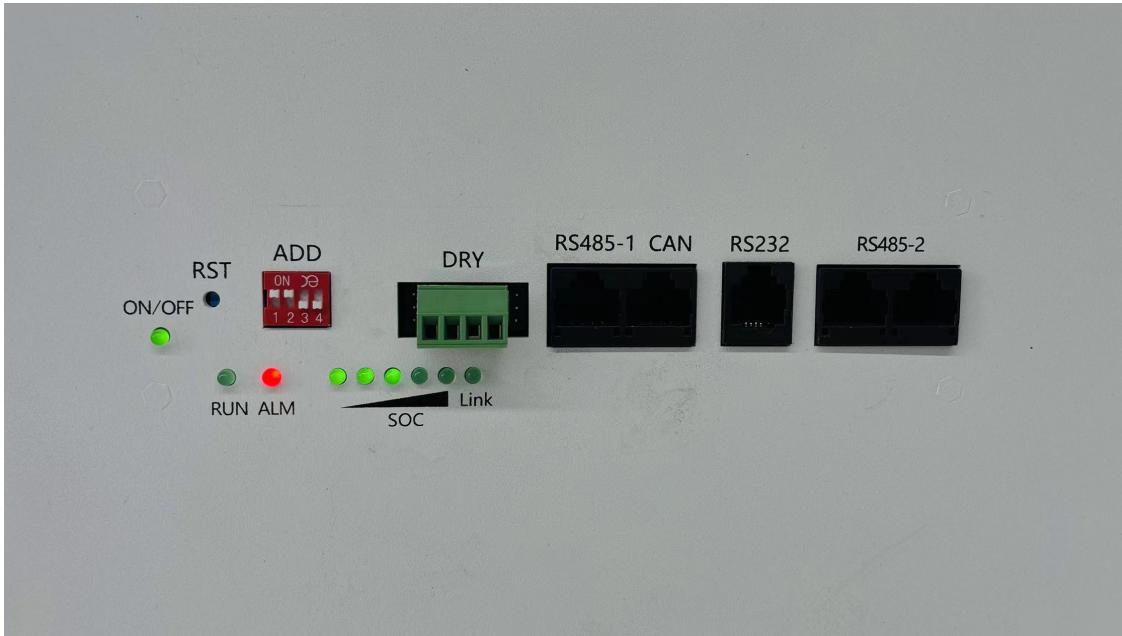
图1

地址	拨码开关位置			
	1	2	3	4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

图2



❖ Adapter broad



ON/OFF: Power Indicator;

RST: Reset button, after clicking, BMS will restart;

ADD: BMS address setting;

RUN: Indicates that the BMS is running normally;

ALM: Fault indicator light, only system faults do not include user-defi

SOC: Light up the indicator light;

Link: When connected in parallel, the host and slave will flash after successful communication;

DRY: Dry node, used by customers to connect some external alarm equipment;

CAN: CAN communication interface;

RS232: RS232 communication interface;

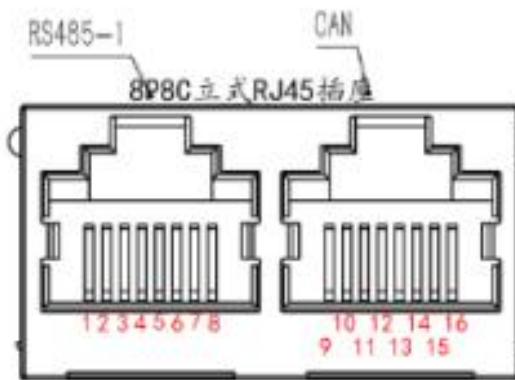
RS485-1: RS485 interface to communicate with the inverter, optional

RS485-2: RS485 interface, communication interface during parallel op



❖ ESS BMS COMMUNICATION

BMSCommunication interface definition:



CAN 和 RS485-1 接口定义

RS485-采用 8P8C 立式 RJ45 插座		CAN-采用 8P8C 立式 RJ45 插座	
引脚序号	引脚定义	引脚序号	引脚定义
1、8	RS485- B1	9、10、11、14、16	NC
2、7	RS485-A1	12	CANL
3、6	GND	13	CANH
4、5	NC	15	GND



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❖ Current limiting module

ESS BMS Current limiting function:

- 1.The current limiting function is mainly used to balance the voltage between battery packs when connected in parallel;
- 2.The current limit is 10A;
- 3.The triggering conditions of the current limiting module (the charging prohibition current limiting needs to be turned off, as shown in Figure 1) are charging overcurrent and charging short circuit protection.;
- 4.The end condition is that the current limit size is less than 5A;



图1



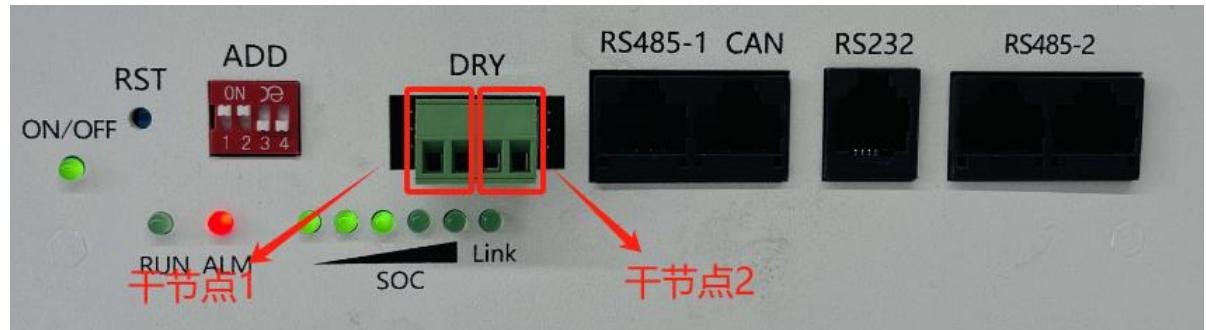
❖ Dry contact trigger source and display alarm



图1



图2



Dry contact function:

1. Users can connect external alarm equipment (picture 3), such as LEDs, buzzers, etc;

2. Some alarm function settings can be customized (such as low battery, battery overvoltage, cell overvoltage, etc, picture2) ;

Monitor alarm:

The display alarm is similar to the dry node, and the user can define the alarm function by himself, Then alarm through the buzzer on the display;

3

PC SOFTWARE

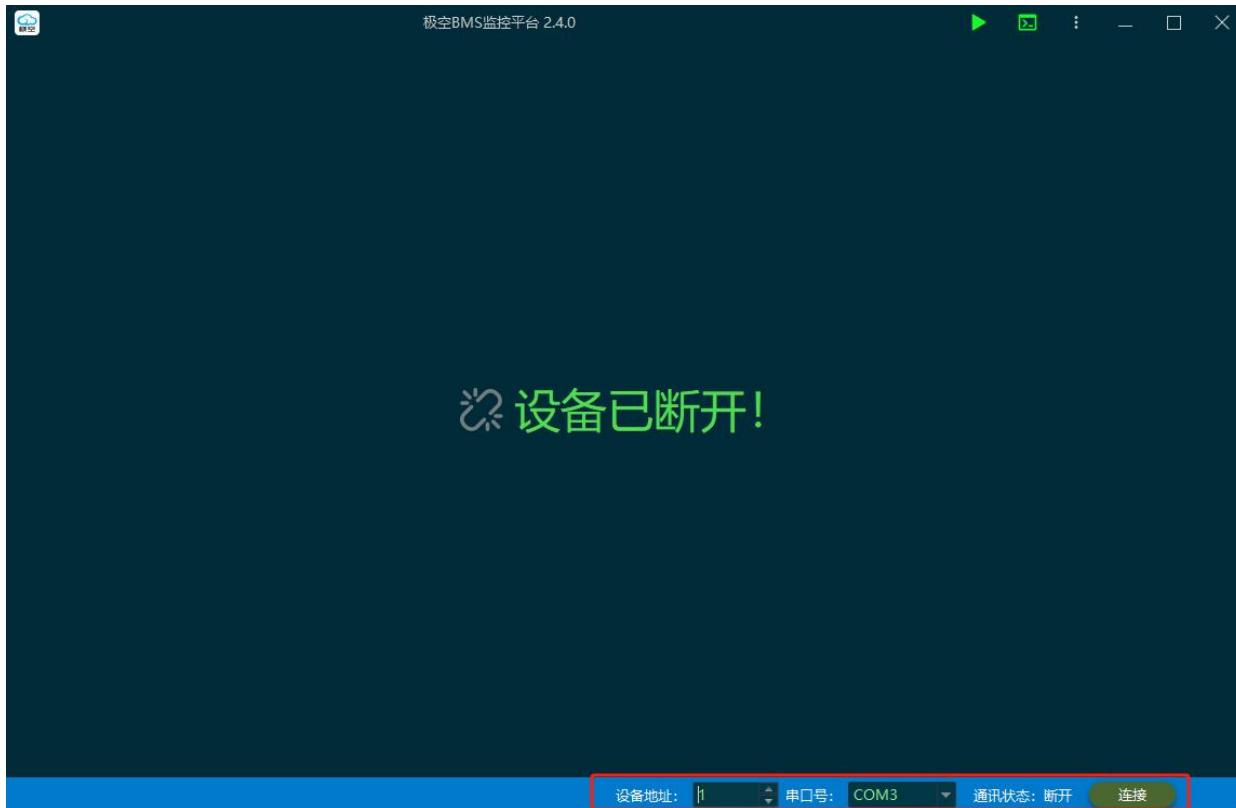
— Use of PC software —

— BMS firmware upgrade —





❖ pc software connect



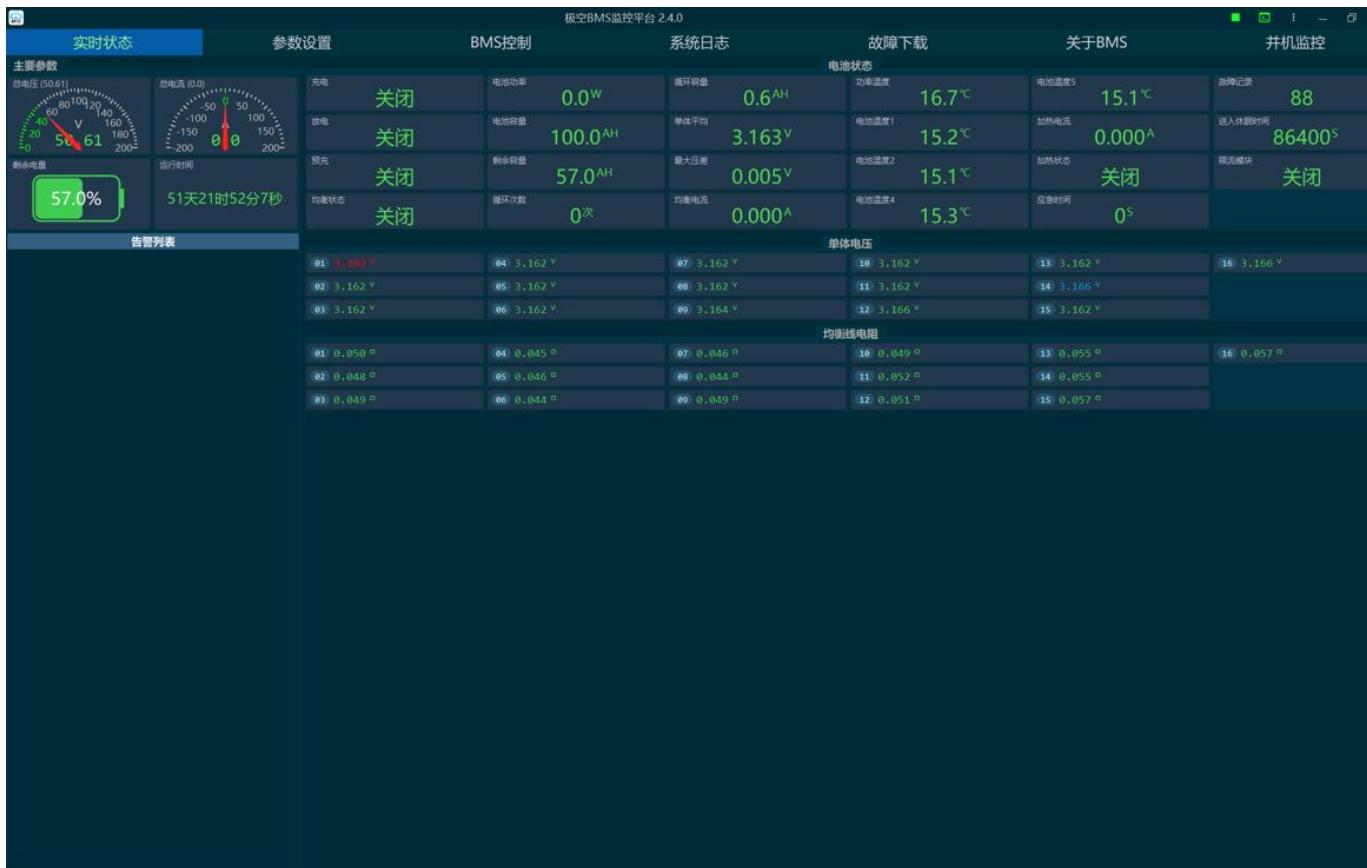
Steps to Connect Devices:

1. Use USB to RJ45 cable to connect ESS BMS and computer;
2. Set the upper computer device address to the energy storage BMS dialing address;
3. Select the corresponding port number;
4. Just click to connect;



❖ Real time status

In the real-time status interface, you can see real-time information related to the battery, such as battery voltage, current, SOC, cell voltage, etc. (as the picture show) ;





❖ Parameter settings

In the parameter setting interface, parameters such as the number of battery strings, cell overvoltage, cell undervoltage, charging overcurrent, and discharging overcurrent can be set, but an authorization password is required. The default is 123456;





❖ BMS control

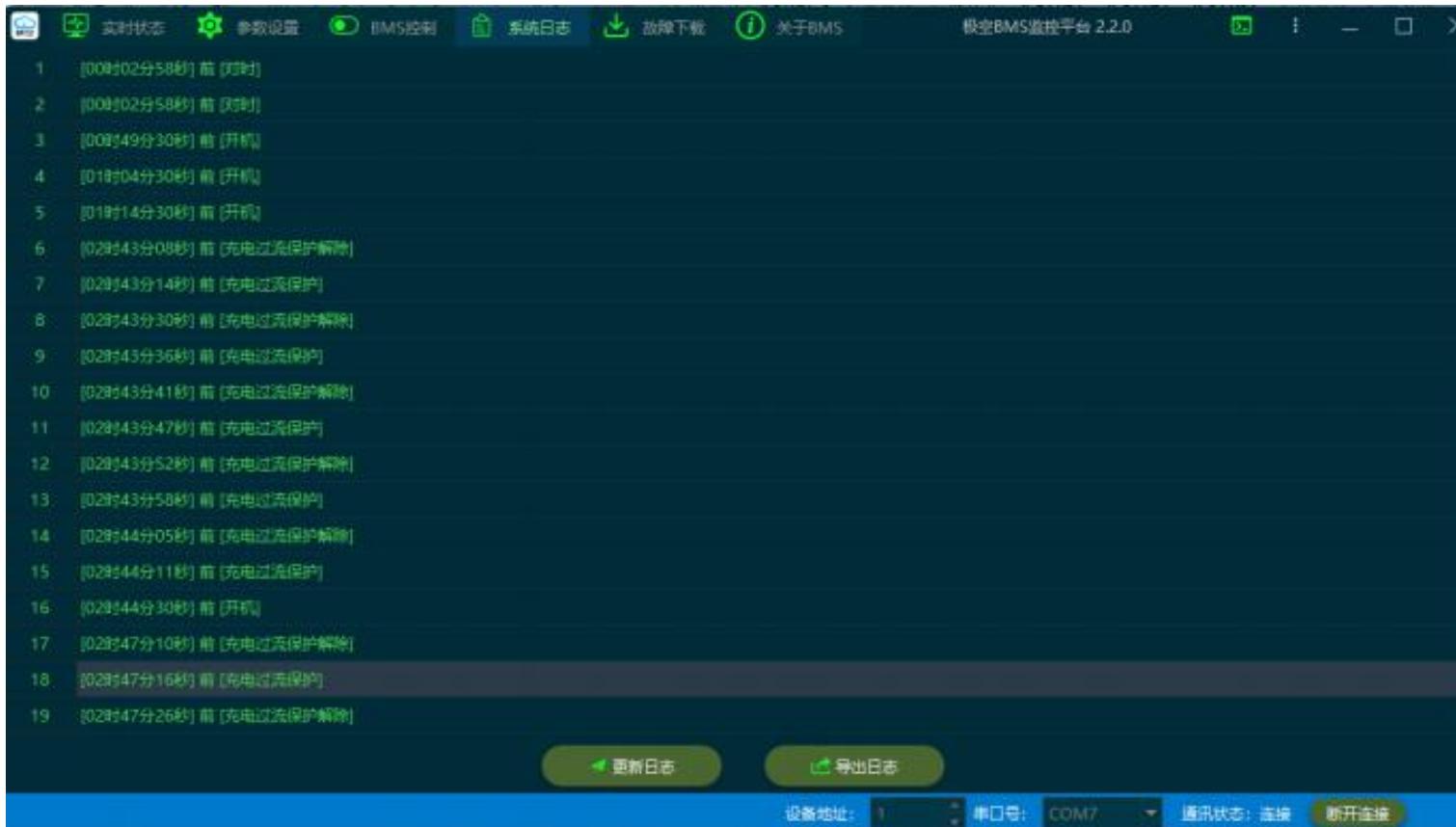
In the control interface, you can control the battery charging switch, discharge switch and other control operations. The default authorization password is 123456;





❖ System log

On the system log page, the "Update Log" button can update the BMS internal logs to the host computer for display. The Export Log button can export all current logs to a designated folder on the computer in the format of xlsx, which can be viewed using excel and other software..





❖ Faulty download

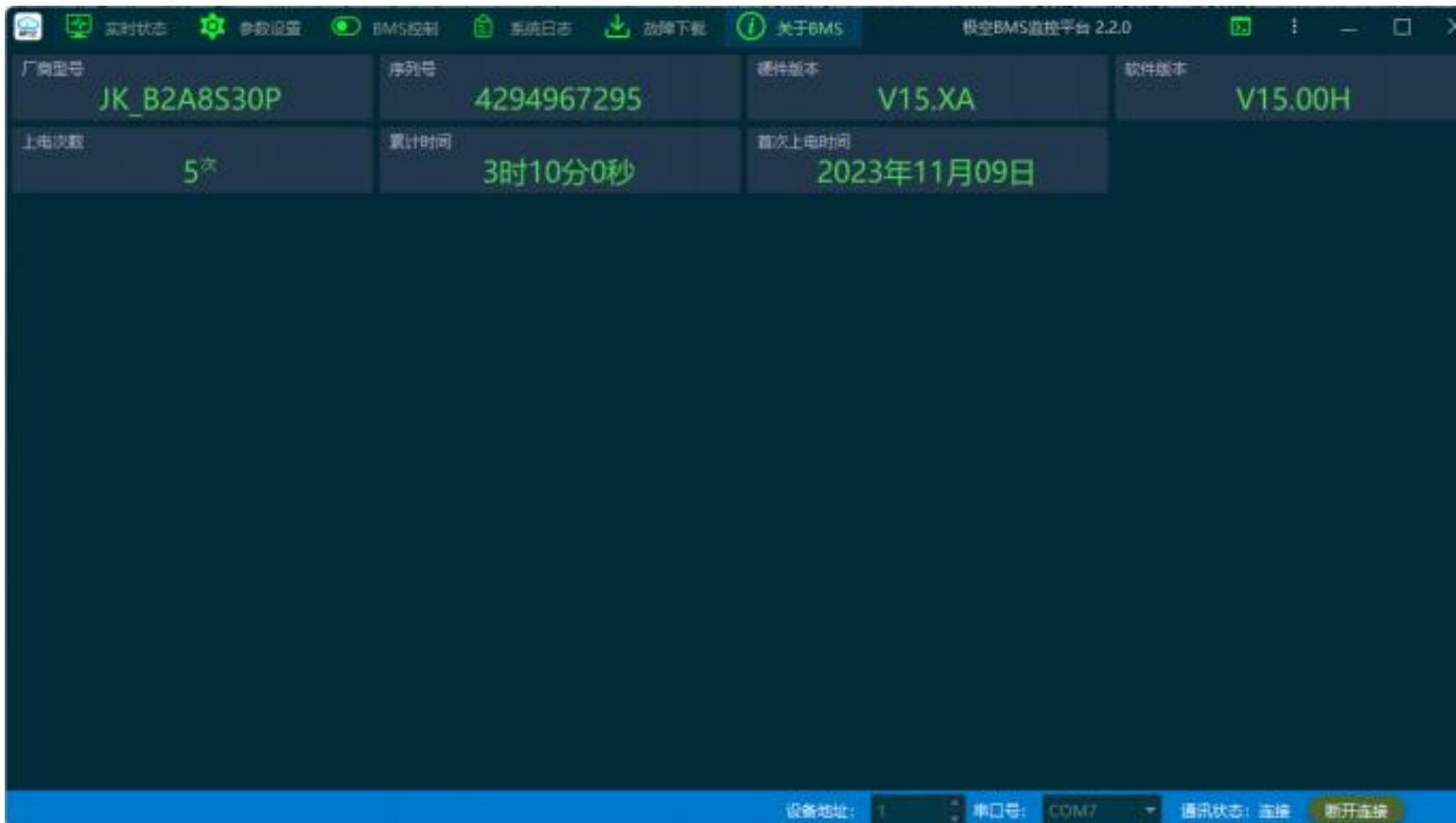
On the fault download page, the "Fault Download" button can update the BMS internal fault log to the host computer for display. The "Export Fault" button can export all currently displayed fault logs to a designated folder on the computer in the format of xlsx, using software such as excel. Available to view.

The screenshot shows a software interface titled '极空BMS监控平台 2.2.0'. The main window displays a table of fault logs with columns: 编号 (Index), 时间 (Time), 系统状态 (System Status), 充电 (Charging), 放电 (Discharging), 均衡 (Balancing), 加热 (Heating), 最高单体编号 (Highest Cell Index), 最低单体编号 (Lowest Cell Index), 最高单体电压 (V) (Highest Cell Voltage (V)), 最低单体电压 (V) (Lowest Cell Voltage (V)), 电池电压 (V) (Battery Voltage (V)), 电池电流 (A) (Battery Current (A)), and 剩余容量 (AH) (Remaining Capacity (AH)). The table lists 18 entries from January 1, 2020, at 00:00:00 to 00:09:43. A modal dialog box in the center says '查询故障信息成功!' (Query fault information successfully!) with a yellow warning icon and a green '确定' (Confirm) button. At the bottom, there are two buttons: '下载故障' (Download Fault) and '导出故障' (Export Fault). The status bar at the bottom shows '设备地址: 1' (Device Address: 1), '串口号: COM7' (Serial Port: COM7), '通讯状态: 连接' (Communication Status: Connected), and '断开连接' (Disconnect).



❖ About BMS

About BMS page, showing basic information of the product: model, hardware version, software version, power-on time and other information.





❖ Parallel monitoring

On the parallel monitoring page, you can view relevant information such as real-time parameters and configuration parameters of the host and each slave.;

The screenshot shows the 'JKBMS Monitoring Platform 2.4.0' interface. The top navigation bar includes tabs for '实时状态' (Real-time Status), '参数设置' (Parameter Settings), 'BMS控制' (BMS Control), '系统日志' (System Log), '故障下载' (Fault Download), '关于BMS' (About BMS), and '并机监控' (Parallel Monitoring). The '并机监控' tab is currently active and highlighted in red.

实时状态 (Real-time Status): Displays two analog gauges for '总电压' (Total Voltage) and '总电流' (Total Current). Below these are two digital displays: '57.0%' and '51天21时38分57秒' (51 days 21 hours 38 minutes 57 seconds).

参数设置 (Parameter Settings): Shows various configuration parameters for the host and slaves, including '单体电压' (Cell Voltage) and '均衡线电阻' (Balancing Line Resistance) tables.

并机监控 (Parallel Monitoring): This is the main content area. It lists 16 slave devices (设备0 to 设备15) with their current status, power consumption, battery level, and temperature. A table below provides detailed battery status for each cell.

单体电压	均衡线电阻
R1: 3.162 V	R1: 0.050 Ω
R2: 3.162 V	R2: 0.049 Ω
R3: 3.162 V	R3: 0.049 Ω
R4: 3.164 V	R4: 0.045 Ω
R5: 3.162 V	R5: 0.046 Ω
R6: 3.162 V	R6: 0.044 Ω
R7: 3.162 V	R7: 0.055 Ω
R8: 3.162 V	R8: 0.054 Ω
R9: 3.162 V	R9: 0.049 Ω
R10: 3.166 V	R10: 0.050 Ω
R11: 3.162 V	R11: 0.050 Ω
R12: 3.166 V	R12: 0.050 Ω
R13: 3.162 V	R13: 0.055 Ω
R14: 3.162 V	R14: 0.055 Ω
R15: 3.162 V	R15: 0.057 Ω
R16: 3.166 V	R16: 0.050 Ω

配置参数状态 (Configuration Parameter Status): Displays various configuration parameters for the host and slaves, including '单体数量' (Number of Cells), '电池容量' (Battery Capacity), and '均衡线电阻' (Balancing Line Resistance).

At the bottom of the page, there is a footer bar with the text: '设备地址: 0 | 端口号: COM17 | 通讯状态: 连接 | 断开连接'.



❖ Real-time data logging

1. Click the triangle icon in the upper right corner. If it changes to a square, it will start to save real-time information and generate an Excel file.:

The screenshot shows the 'BMS Control Platform' software interface. At the top, there are several tabs: '实时状态' (Real-time Status), '参数设置' (Parameter Settings), 'BMS控制' (BMS Control), '系统日志' (System Log), '故障下载' (Fault Download), '关于BMS' (About BMS), and '并机监控' (Parallel Machine Monitoring). The '实时状态' tab is active, displaying various status indicators and data tables.

主要参数 (Main Parameters):

总电压 (V)	51.61
总电流 (A)	0.0
剩余容量 (%)	57.0
运行时间 (运行时)	51天21时50分56秒

BMS Control:

充电	关闭
放电	关闭
提升	关闭
均衡状态	关闭

电池状态 (Battery Status):

总电压	0.0W
总电量	0.6AH
单体平均	3.163V
最大电压	57.0AH
最小电压	0.005V
循环次数	0次
均衡电压	0.000V
输出功率	16.7°C
输出温度	15.2°C
输出电流	15.1°C
输出时间	15.3°C
故障记录	15.1°C
进入休眠时间	88
休眠模式	86400S
风扇状态	关闭
风扇速度	关闭

警告列表 (Warning List):

P1: 3.162V	Q1: 3.162V	R1: 3.161V	S1: 3.164V	T1: 3.162V	U1: 3.166V
P2: 3.161V	Q2: 3.162V	R2: 3.164V	S2: 3.162V	T2: 3.166V	U2: 3.166V
P3: 3.162V	Q3: 3.164V	R3: 3.162V	S3: 3.166V	T3: 3.161V	U3: 3.162V

单体电压 (Cell Voltage):

P1: 0.050m	Q1: 0.045m	R1: 0.046m	S1: 0.049m	T1: 0.055m	U1: 0.057m
P2: 0.048m	Q2: 0.046m	R2: 0.044m	S2: 0.052m	T2: 0.055m	U2: 0.059m
P3: 0.049m	Q3: 0.044m	R3: 0.049m	S3: 0.051m	T3: 0.057m	U3: 0.053m

设备地址: 6 **串口号:** COM17 **通讯状态:** 连接 **断开连接**



❖ Real-time data logging

2.The save path can be set in the picture below. Click the three dots in the upper right corner and then set the button to see;





❖ Upgrade firmware

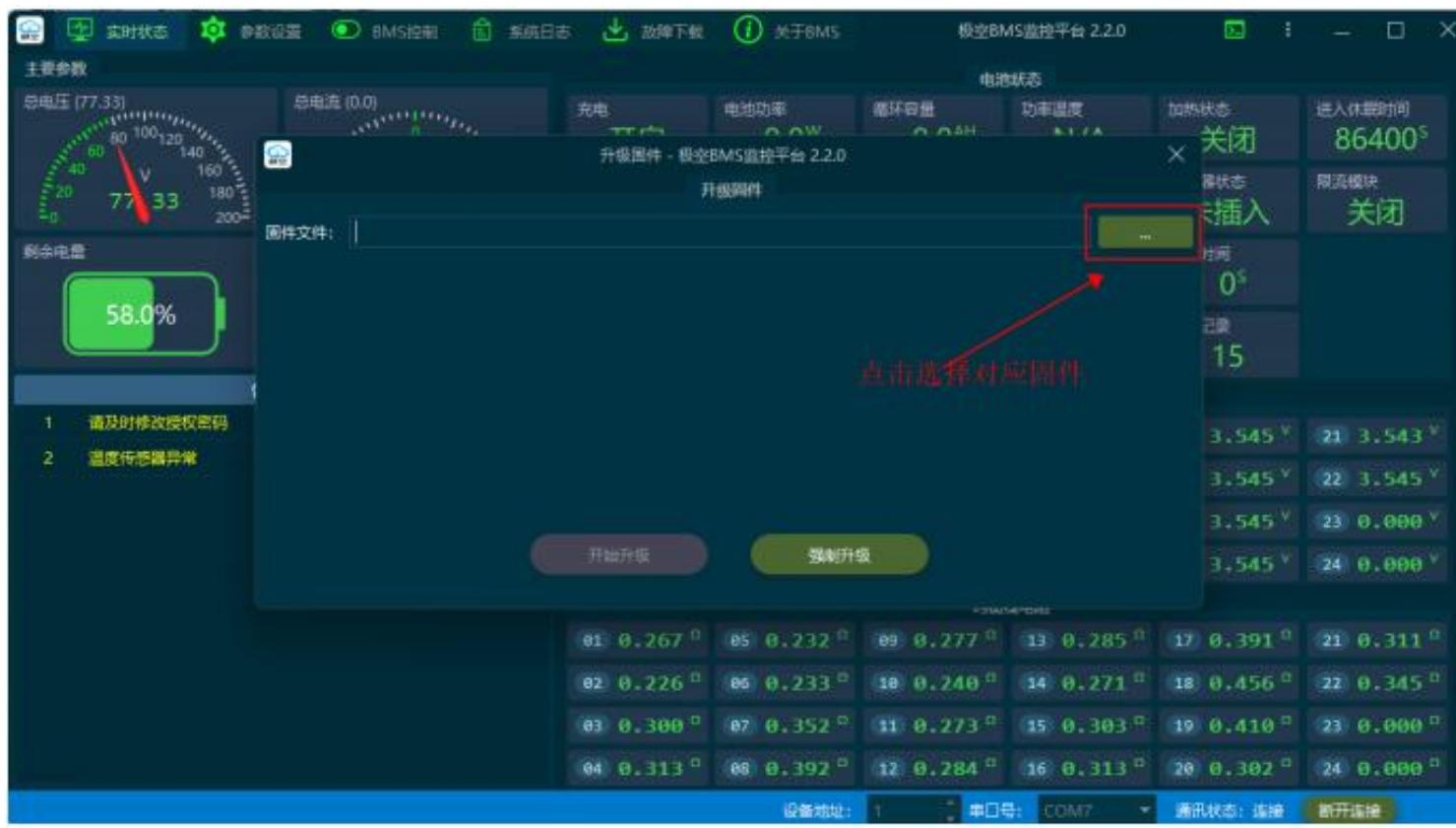
1. Firmware upgrade function. When upgrading firmware, BMS needs to be set as a slave (the address cannot be 0) and cannot communicate with other BMS hosts.:





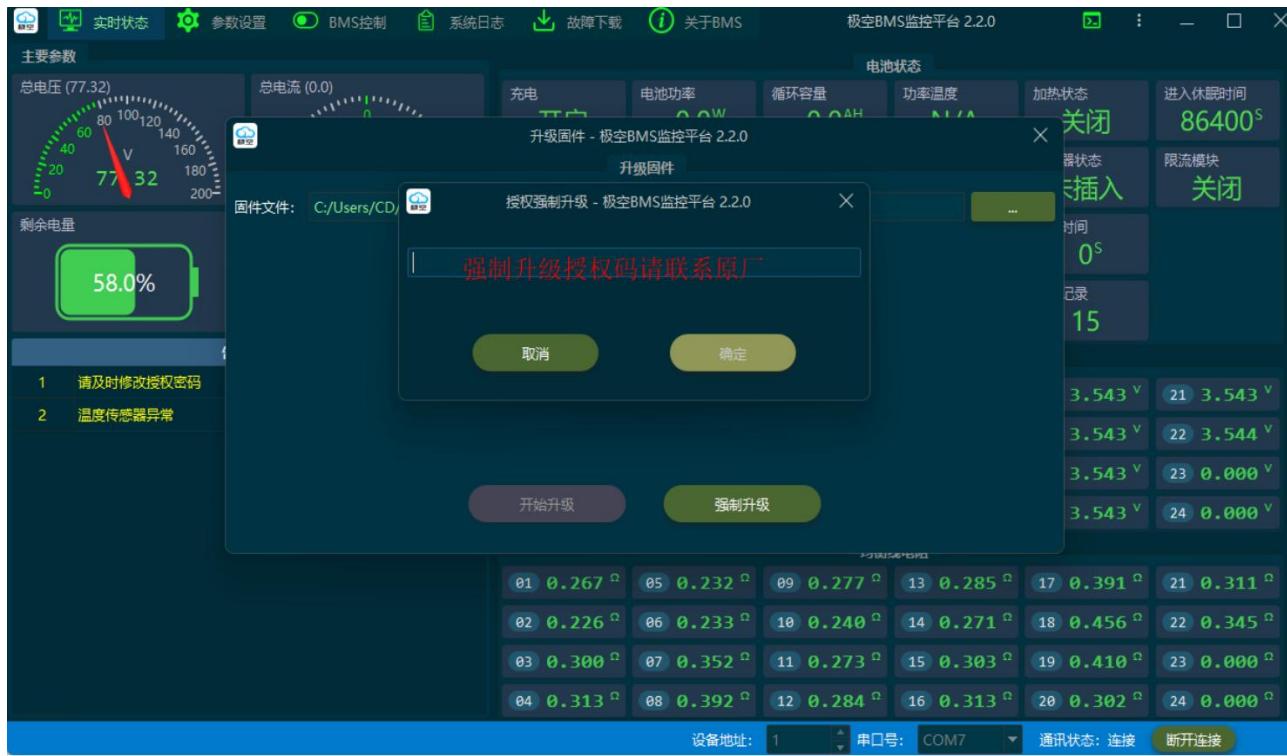
❖ Upgrade firmware

2. Then click on the three-point mutation in the upper right corner of the host computer, click "Upgrade Firmware", select the corresponding firmware, click Start Upgrade to start the upgrade normally, and the end of the progress bar indicates that the upgrade is completed.。





❖ Forced upgrade



- 1.Click on the three point mutations in the upper right corner of the host computer ;
- 2.Click "Upgrade Firmware", select the corresponding firmware, and click Force Upgrade;
3. Fill in the authorization code (please contact the original manufacturer if you need an authorization code);
- 4.The end of the progress bar indicates that the upgrade is completed.



❖ Upgrade failed

What to do after an upgrade fails:

- 1.Repeat the forced upgrade operation;
- 2.Keep pressing the activation switch (as shown in Figure 1) or the display switch (as shown in Figure 2);
- 3.Press the reset switch RST (as shown in Figure 3) and release it;
- 4.Wait for the progress bar to end, indicating that the upgrade is complete.;



图1



图2

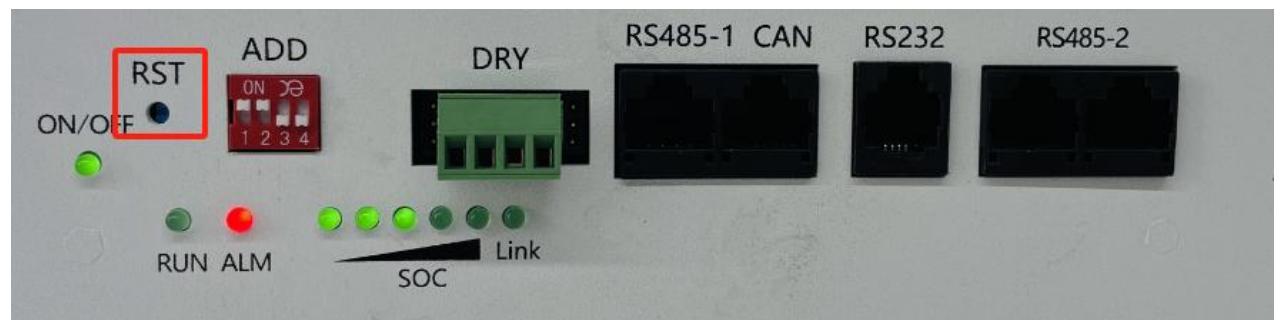


图3

3

Inverter

Inverter wiring

Inverter settings





❖ Inverter introduction

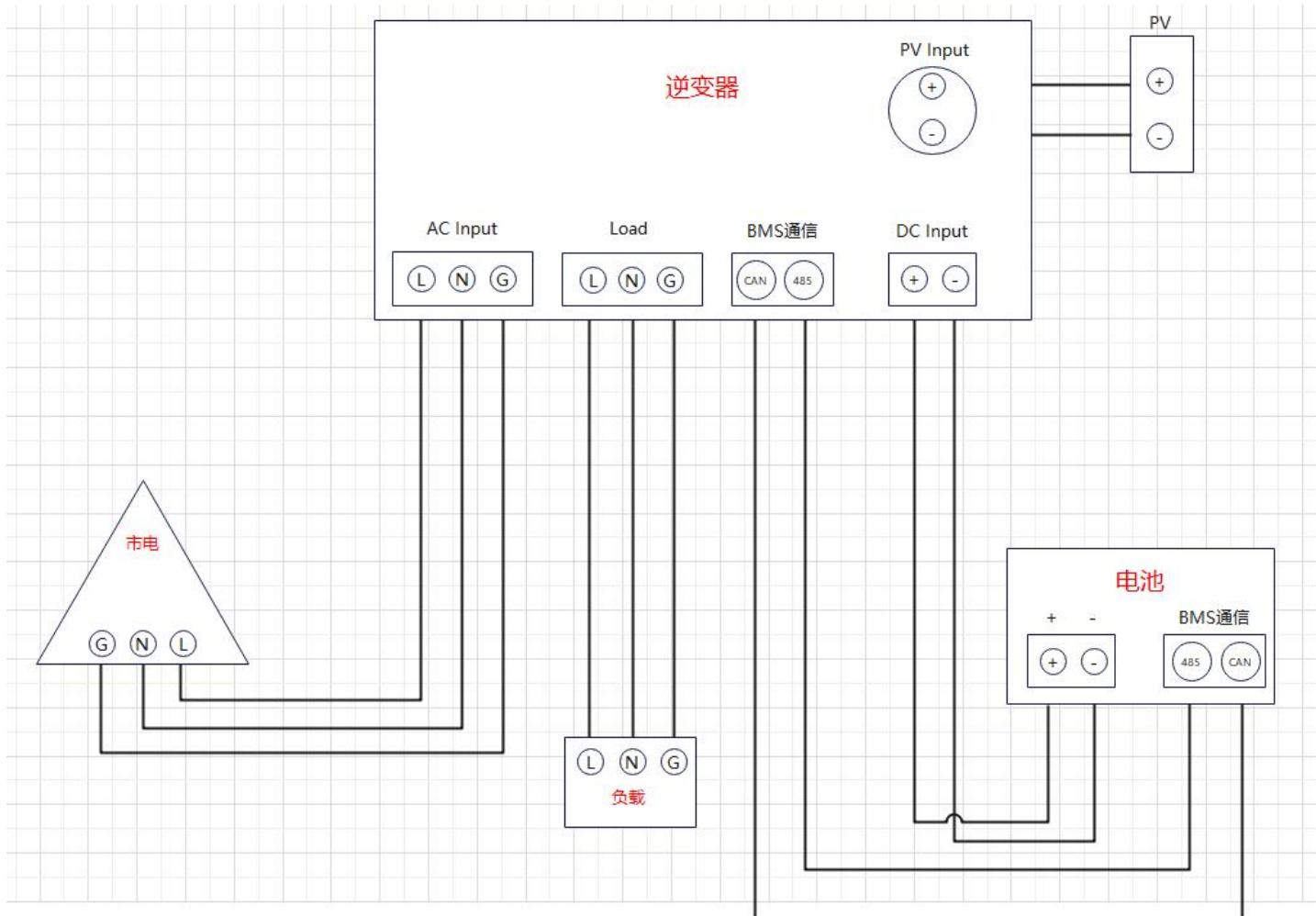
The main function of inverter wiring:

1. Alternating current (AC) to direct current (DC), convert the mains power into direct current through the inverter and store it in the battery;
2. Direct current (DC) to alternating current (AC), convert the direct current stored in the battery into alternating current for household electricity consumption;
3. Direct current (DC) to direct current (DC), storing the electrical energy generated by photovoltaics into batteries;





❖ Inverter wiring



Main components of
inverter wiring:

- 1.Battery
- 2.load
- 3.photovoltaic
- 4.Mains power



❖ Inverter settings

目前适配的逆变器需要设置的品牌:

- 1.德业 (Deye)
- 2.古瑞瓦特(Growatt)
- 3.日月元(Voltronic)
- 4.硕日(SRNE)
- 5.美世乐(MUST)
- 6.固德威(GoodWe)

目前适配的逆变器不需要设置的品牌:

- 1.英威腾(INVT)
- 2.维克托(Victron)

不确定:

- 1.SMA
- 2.派能(Pylon)



❖ 德业 (Deye)parameter settings

Inverter setup steps:

- 1.Go to the settings page (Figure 1)
- 2.Click on Battery Setting and set it to Lithium (Figure 2);
- 3.Click Advanced Function and set BMS _Err_Stop (Figure 3);

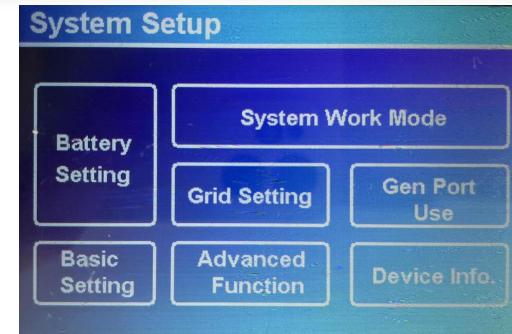


图1

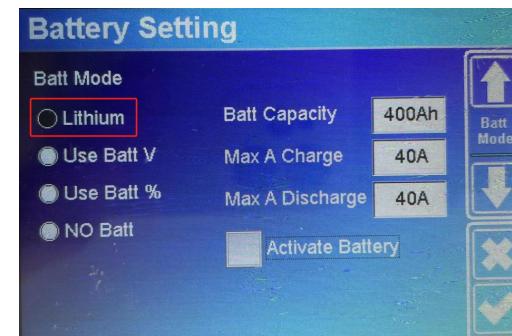


图2

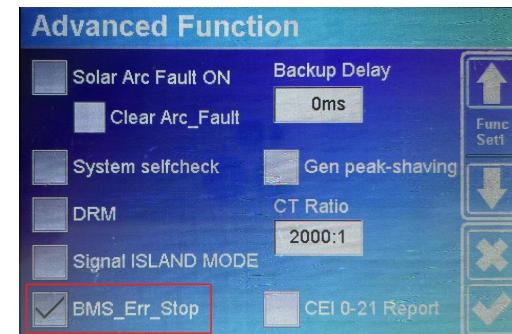


图3



❖ 古瑞瓦特(Growatt)parameter settings

Inverter setup steps:

1. Press and hold the Enter key to enter setting mode
2. Set item 05 to LI (as shown in Figure 1);
2. After successful setting, it will jump to item 36;
3. If RS485 communication is used, set item 36 to L01 (as shown in Figure 2); if CAN communication is used, set item 36 to L51 (as shown in Figure 3);



图1

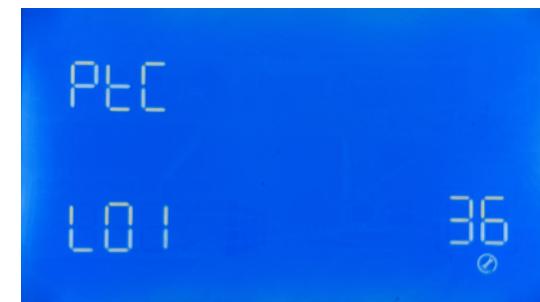


图2

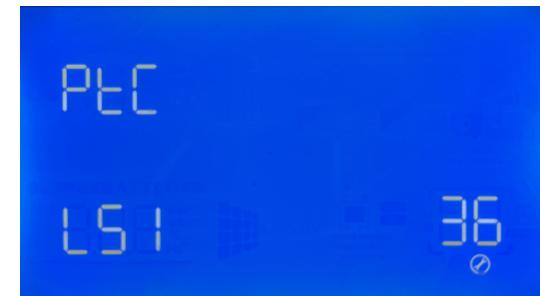


图3



❖ 日月元(Voltronic)parameter settings

Inverter parameter settings:

1. Press and hold the SET button to enter the setting page;
2. Set item 05 to LIB, as shown in Figure 1

05 *

LIB

图1



❖ 固德威(Goodwe)参数设置



❖ 硕日(SRNE)parameter settings

Inverter parameter settings:

1. Press and hold the SET button to enter the setting page;
2. Set 32 items into BMS, as shown in Figure 1;
3. Set item 33 to WOW, as shown in Figure 2;
4. Set 39 items to BMS, as shown in Figure 3;



图1

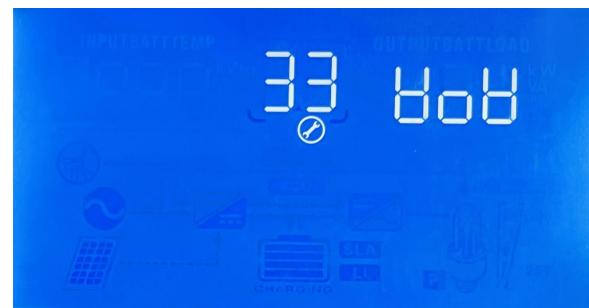


图2

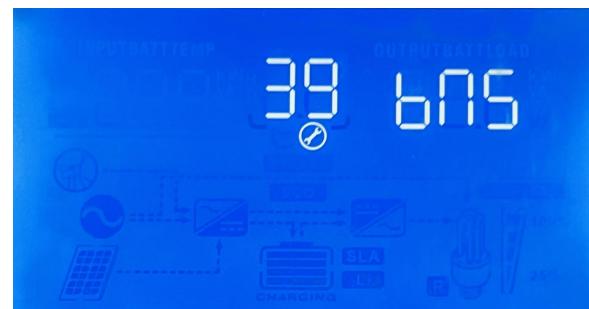


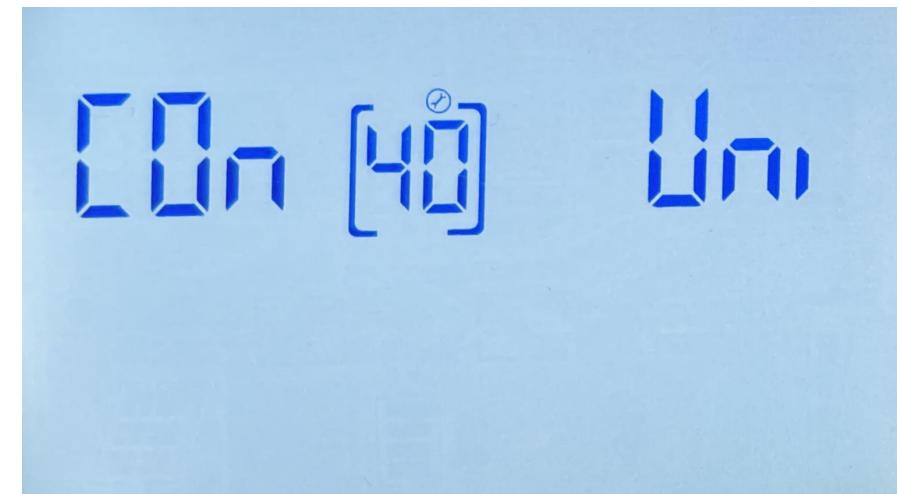
图3



❖ 美世乐(MUST)parameter settings

Inverter setup steps:

1. Press and hold the Enter key to enter the settings page
2. Use the Enter key to switch between 40 items;
3. Set the setting items as shown in the picture, otherwise blind charging will be performed according to the inverter settings;



Thank you