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	DL-R32S 模块用户手册	Rev 1.0

DL-R32S 模块用户手册 V1.0

DL-R32S Module User Manual V1.0



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第一章 BMS 系统概述

Chapter 1 BMS System Overview

BMS 能够实时采集、处理和存储电池组在使用过程中的信息数据，保证电池组的安全性、可用性和稳定性。

The BMS can collect, process and store the information data of the battery pack during use in real time to ensure the safety, availability and stability of the battery pack.

1.1 达锂智能版 BMS 功能简介

1.1 Introduction to Lithium Smart BMS Function

达锂智能版 BMS 除了具备单体电压采集，温度采集，电流采集等基本功能外，还开发了被动均衡、GPS 定位及远程控制电池（断电/恢复）、容量管理和蓝牙通讯监控电池信息等高级功能，如图 1-1 所示。

In addition to the basic functions of single voltage collection, temperature collection, current collection, etc., the Lida Smart BMS also developed passive equalization, GPS positioning and remote control battery (power off/recovery), capacity management and Bluetooth communication monitoring battery information. And other advanced features, as shown in Figure 1-1.

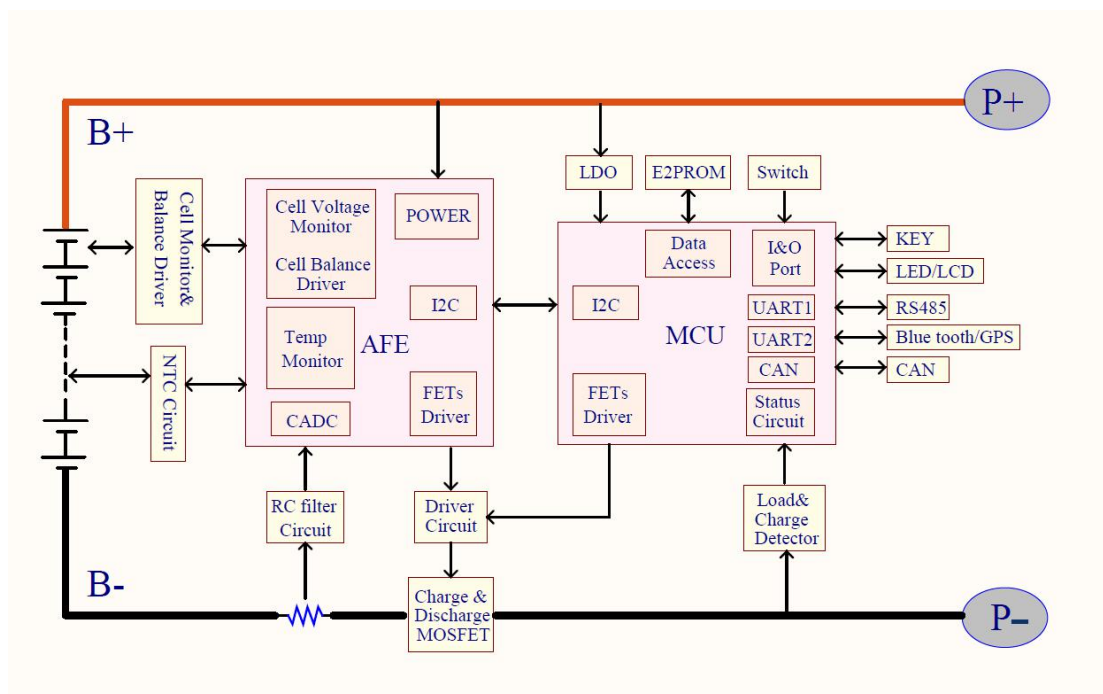



图 1-1 BMS 系统原理

BMS system diagram

BMS 通过对电池组数据的实时采集分析，通过被动均衡管理、充电管理、放电管理等控制电池工作在合适的工况。系统具有丰富的外部接口，能够满足多种场合的应用需求，接口包括：电压采集输入接口、温度采集输入接口、CAN2.0/485

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接口、电量显示灯板接口、蓝牙通讯接口和开关量输入检测接口。

Through the real-time collection and analysis of the battery data, the BMS controls the battery to work in the proper working condition through passive equalization management, charge management, and discharge management. The system has a rich external interface, which can meet the application requirements of various occasions. The interface includes: voltage acquisition input interface, temperature acquisition input interface, CAN2.0/485 interface, power display light board interface, Bluetooth communication interface and digital input detection. Interface.

1.2 达锂智能版 BMS 主要功能 (Daly Smart board main function)

表 1-1 DL-R32S 采集模块主要功能

序号 item	项目 mode	内容 content	备注 remark
1	电池均衡方式 Battery balancing mode	被动均衡 Passive balancing	均衡电流 35mA Balancing current 35mA
2	硬线通讯方式 Hardwired communication	CAN2.0 和 RS-485 AN2.0&RS-485	/
3	远程通讯方式 Remote communication method	蓝牙/GPS Bluetooth /GPS	端口中蓝牙和 GPS 只能选择一个功能接入 Bluetooth and GPS in the port can only select one function to access
4	电量显示灯板 Power indicator board	LED 显示 LED displaying	一共有 5 盏 LED 灯，每盏灯代表 20%的电量 There are 5 LED lights in total, each of which represents 20% of the power.
5	开关量输入输出检测 Switching input and output detection	DI/DO 检测 DI/DO detection	/
6	激活方式 Activation mode	钥匙开关激活 Key switch activation	短接 TRIG+与 TRIG-引脚 Short TRIG+TRIG pin
		485 激活 485 activation	/
		CAN 激活 can activation	/
		灯板开关激活 Light board switch activation	触发灯板 S1 进行激活 Trigger the light board S1 to activate
		充电机激活	/




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Charger activation

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第二章 DL-R32S 采集模块

Chapter 2 DL-R32S Collection module

2.1 DL-R32S 采集模块 connection DL-R32S module.

DL-R32S 采集模块，适用于电动交通和电网储能场合，保证电池能安全使用
 2.1 The DL-R32S acquisition module is suitable for electric traffic and grid energy storage occasions to ensure the safe use of the battery.

2.1.1 DL-R32S 采集模块功能指标

2.1.1 DL-R32S Acquisition Module Function Indicators

表 1 DL-R32S 采集模块主要参数

Table 1 DL-R32S connection module main parameter

T 序号 item	技术参数 Technical parameters	规格 System specification	误差 Tolerance	备注 Remark
1	电池检测串数 Battery detection string	32	/	
2	温度检测点数 Temperature detection points	6	/	
3	电流	-100~100A	$\leq \pm 2\% @ FS$	
4	单体电池电压 Single cell voltage	0~4.5V	$\pm 15mV$	
5	电池组总电压 Battery pack total voltage	0~150V	$\pm 1V$	
6	温度检测 temperature check	-40~100℃	$\pm 2^{\circ}C$	
7	SOC 估算 SOC estimation	0~100%	$\leq 10\%$	
8	正常工作模式功耗 Normal operating mode power consumption	$\leq 15mA$	/	
9	休眠功耗 Sleep power	$\leq 300\mu A$	/	
10	工作温度 Operating temperature	-40~85℃	/	
11	工作湿度 Working humidity	0~90%	/	



2.1.2 DL-R32S 采集模块外形尺寸及重量

DL-R32S collection module dimensions and weight

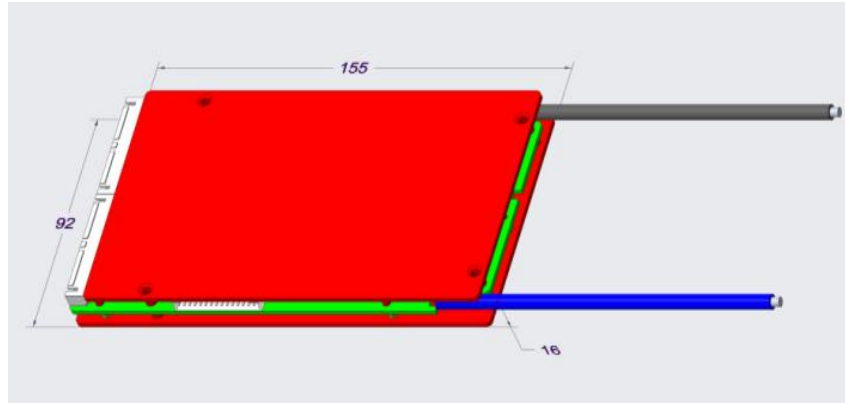


图 2-1 DL-R32S 采集模块结构尺寸图

Picture 2-1 DL-R32S collection module structure size chart

重量: $274\text{g} \pm 5\text{g}$ (16 个 Mos 管)

Weight $274\text{g} \pm 5\text{g}$ (16pcs mos)

2.1.3 DL-R32S 采集模块接口定义

3.1.3 DL-R32S collection module interface

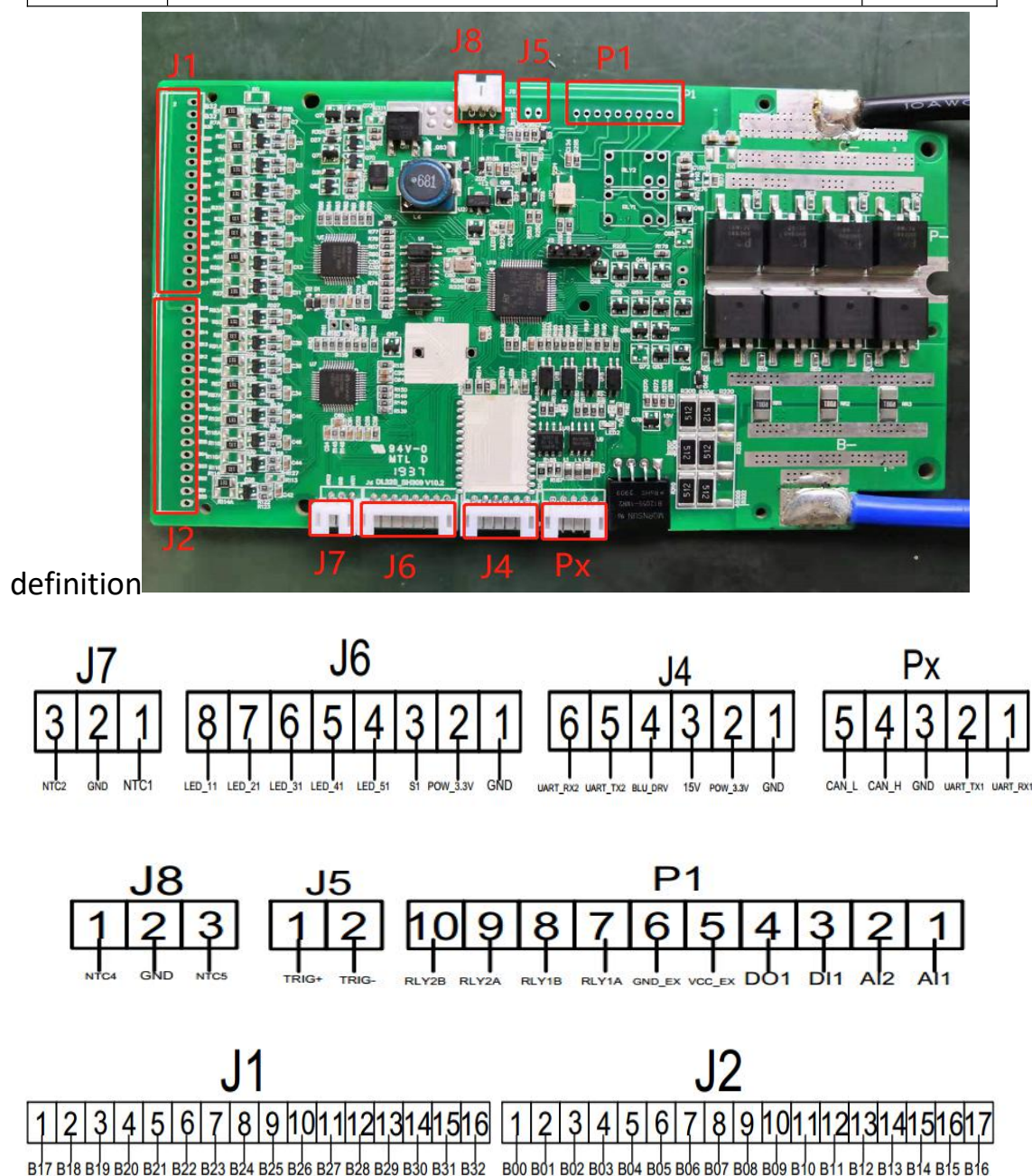



图 2-2 DL-R32S 采集模块信号接口定义图

Picture 2-2 DL-R32S collection module signal interface definition map

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2.1.3.2 DL-R32S 采集模块接口定义表:

表 2-3 DL-R32S 采集模块接口定义

接口	功能	PIN	描述	备注 remark
J1 (电池采集 均衡接口) J1 Battery collection balancing interface	B17	1	第 17 个电池正极 17th battery positive	
	B18	2	第 18 个电池正极 18th battery positive	
	B19	3	第 19 个电池正极 19th battery positive	
	
	B30	14	第 30 个电池正极 30th battery positive	
	B31	15	第 31 个电池正极 31th battery positive	
	B32	16	第 32 个电池正极 32th battery positive	
J2 (电池采集 均衡接口) J2 Battery collection balancing interface	B00	1	电池总负极 battery total negative	
	B01	2	第 1 个电池正极 1th battery positive	
	B02	3	第 2 个电池正极 2th battery positive	
	
	B14	15	第 14 个电池正极 14th battery positive	
	B15	16	第 15 个电池正极 15th battery positive	
	B16	17	第 16 个电池正极 16th battery positive	
J4 (蓝牙/GPS 模块接口) J4 Bluetooth / GPS module interface	GND	1	蓝牙模块/GPS 供电电源地 Bluetooth module / GPS power supply ground	
	POW_3.3V	2	蓝牙模块供电电源 3.3V Bluetooth module power supply 3.3V	
	15V	3	GPS 模块供电电源 15V 3 GPS module power supply 15V	
	BLU_DRV	4	GPS 控制断电/恢复 GPS control power off / recovery	
	URAT_TX2	5	蓝牙通讯发送端	



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			Bluetooth communication sender	
	URAT_RX2	6	蓝牙通讯接收端 Bluetooth communication receiver	
J5 (钥匙开关) J5 Key switch	TRIG+	1	激活输入脚 1 activate input pin	短接 1 脚和 2 脚, 即可激活 BMS
	TRIG-	2	激活输出脚 Activate output pin	
J6 (外置电量 显示灯板端 口) J6 External power display light board port	GND	1	灯板供电电源地 Light board power supply ground	
	POW_3.3V	2	灯板供电电源 3.3V Light board power supply 3.3V	
	S1	3	灯板按键 Light board button	
	LED_51	4	第 5 盏灯 5th lamp	
	LED_41	5	第 4 盏灯 4th lamp	
	LED_31	6	第 3 盏灯 3th lamp	
	LED_21	7	第 2 盏灯 2th lamp	
	LED_11	8	第 1 盏灯 1th lamp	
J7 (温度传感 器输入端口) Temperature sensor input port	NTC1	1	1#温度线 1# temperature line	
	GND	2	温度线公共级 Temperature line common level	
	NTC2	3	2#温度线 2# temperature line	
J8 (温度传感 器输入端口) (temperature sensor input port	NTC5	1	5#温度线 5# temperature line	
	GND	2	温度线公共级 Temperature line common level	
	NTC4	3	4#温度线 4# temperature line	




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PX (485/CAN 通讯接口) PX (485/CAN Communication Interface	UART_RX1	1	485 通讯接收端 485 communication receiving end	
	UART_TX1	2	485 通讯发送端 485 communication sender	
	GND	3	通讯电源地 Communication power ground	
	CAN_H	4	CAN 通讯低 CAN high communication	
	CAN_L	5	CAN 通讯低 CAN Low communication	
P1 (485/CAN 通讯接口) P1 P1 (485/CAN Communication Interface	AI1	1	开关量信号 Switching signal	
	AI2	2	开关量信号 Switching signal	
	DI1	3	开关量信号 Switching signal	
	DO1	4	开关量信号 Switching signal	
	VCC_EX	5	外置电源 External power ground	
	GND_EX	6	外置电源地 External power ground	
	RLY1A	7	继电器控制端 Relay control terminal	
	RLY1B	8	继电器控制端 Relay control terminal	
	RLY2A	9	继电器控制端 Relay control terminal	
	RLY2B	10	继电器控制端 Relay control terminal	

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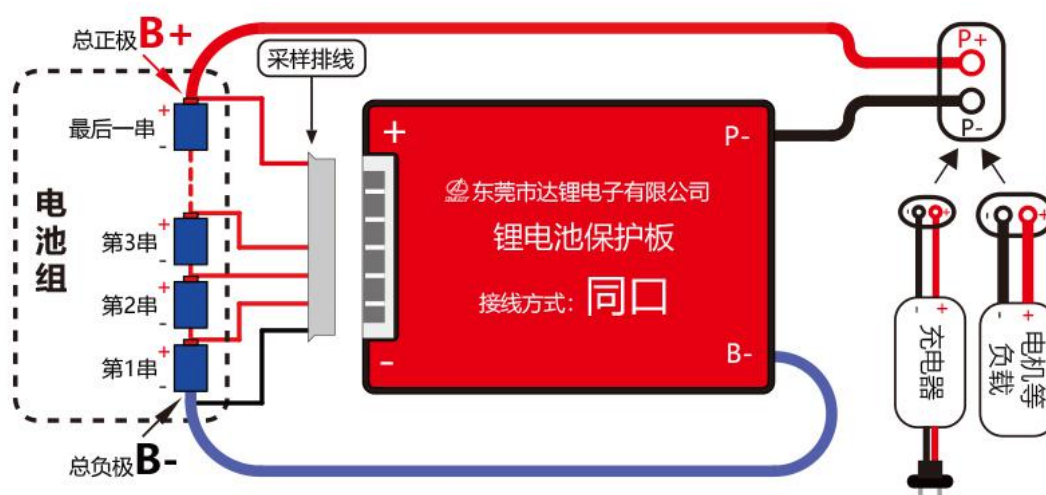
第三章 系统接线

3.1 系统部分构成

3.1 System composition

系统主要由 DL-R32S 保护板、电池和充电器/负载来构成，如图 3-1 系统布置图所示，同口保护板按照以下接法进行。

The system is mainly composed of DL-R32S protection board, battery and charger/load. As shown in the system layout diagram of Figure 3-1, the same protection board is used according to the following connection method.



接线说明:

B-: 连接到电池模组负极

P-: 连接到负载负极和充电器负极

CN1 (排线): 保护板电压检测端子 (注意顺序)

图 3-1 系统接线示意图

3.2 系统接线步骤

3.2 System wiring steps

- 1) 先将保护板 B-线 (蓝色粗线) 到电池组总负极;
- 2) 排线从细黑线连接 B-开始, 第 2 根线连接第 1 串电池正极, 后面依次连接每一串电池的正极; 确认接线无误后, 再把排线插入保护板;
- 3) 接线完成后, 测量电池 B+, B-电压与 B+, P-电压值是否相同, 相同即保护板工作正常; 否则请按照上面重新操作;
- 4) 拆卸保护板时, 先拔排线, 再拆动力线 B-.

1) First protect the B-line (blue thick line) of the protection board to the total negative pole of the battery pack;


2) The cable is connected from the thin black line to B-, the second



line is connected to the positive pole of the first string of batteries, and the positive pole of each string of batteries is connected in turn; after confirming that the wiring is correct, insert the cable into the protection board;

3) After the wiring is completed, measure whether the battery B+, B-voltage and B+, P-voltage values are the same, the same as the protection board works normally; otherwise, please re-operate according to the above;

4) When removing the protection board, first pull out the cable and then remove the power line B-.

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第四章 DALY BMS-V1.0.0 使用教程

4.1 上位机软件的功能

4.1 PC software function

上位机 DALY BMS-V1.0.0 功能主要分为六大部分：数据监控、参数设置、参数读取、工程模式、历史告警和 BMS 升级。

- 1、解析各模块发送的数据信息，然后将电压、温度、配置值等显示出来；
- 2、通过上位机向各模块配置信息；
- 3、生产参数校准；
- 4、BMS 升级。

The function of the host computer DALY BMS-V1.0.0 is mainly divided into six parts: data monitoring, parameter setting, parameter reading, engineering mode, historical alarm and BMS upgrade.

1. Analyze the data information sent by each module, and then display the voltage, temperature, configuration value, etc.;
2. Configure information to each module through the host computer;
3. Calibration of production parameters;
4. BMS upgrade.

4.2 上位机的使用

4.2 Use of the host computer

通过使用上位机软件，可对电池组进行数据监控，连接上位机有两种方式，一种是 RS 485 串口连接，另外一种是通过 CAN2.0 进行连接。

4.2.1 RS-485 转 USB 连接上位机

步骤一：将 RS-485 转 USB 模块上的 TX 引脚和 RX 引脚与 DL-32S 上的 Px 端口中 UART_RX 和 UART_TX 连接，然后 RS-485 转 USB 模块再与 PC 进行通讯连接，确保硬件部分连接无误；


步骤二：安装 RS-485 转 USB 模块软件驱动，在 PC 端上“管理”进行驱动下载更新，确保驱动已正确下载安装；

步骤三：打开上位机软件（如图 4-1 串口设置），一共有两种方式打开上位机，若进行串口设置，串口号为 RS-485 转 USB 的设备的 COM 号，“波特率”选择“9600”，然后单击界面中“打开串口”；

By using the host computer software, data monitoring can be performed on the battery pack. There are two ways to connect the host computer. One is the RS 485 serial port connection, and the other is CAN2.0 for connection.

4.2.1 RS-485 to USB connection host computer

Step 1: Connect the TX pin and the RX pin on the RS-485 to USB module to the UART_RX and UART_TX in the Px port on the DL-32S, and then connect the RS-485 to USB module to communicate with the PC to ensure the hardware part. The connection is correct;

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Step 2: Install the RS-485 to USB module software driver, and “Manage” on the PC to download and update the driver to ensure that the driver has been downloaded and installed correctly.

Step 3: Open the upper computer software (as shown in Figure 4-1 serial port), there are two ways to open the upper computer,

If serial port setting is made, the serial port number is the COM number of the RS-485 to USB device, the "baud rate" selects "9600", and then click "Open Serial Port" in the interface;



图 4-1 串口设置

4.2.2 CAN 连接上位机 CAN Connect to the host computer

步骤一：将 CAN 盒上的 CAN_H 引脚和 CAN_L 引脚分别与 DL-32S 上的 Px 端口中 CAN_H 和 CAN_L 连接，然后 CAN 盒再与 PC 进行通讯连接，确保硬件部分连接无误；

步骤二：安装 CAN 盒软件驱动，在 PC 端上“管理”进行驱动下载更新，确保驱动已正确下载安装；

步骤三：打开上位机软件（如图 4-2 CAN 设置），CAN 设备选择硬件 CAN 所支持的型号，“设备索引”选择“0”，“CAN 通道”选择“0”，波特率选择“250kbp”；

Step 1: Connect the CAN_H pin and CAN_L pin on the CAN box to CAN_H and CAN_L in the Px port on the DL-32S respectively, and then connect the CAN box to the PC to ensure that the hardware part is connected correctly.

Step 2: Install the CAN box software driver, and “manage” on the PC to download and update the driver to ensure that the driver has been downloaded and installed correctly.

Step 3: Open the PC software (as shown in Figure 4-2 CAN setting), the CAN device selects the model supported by the hardware CAN, select “0” for “Device Index”, “0” for “CAN Channel”, and select “Baud Rate”. 250kbp”;



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图 4-2 CAN 设置

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4.3 数据监控

图中 1 为电池累计的总电压值显示；

图中 2 为电池与负载/充电器连接的电流值显示，规定正值为放电状态，负值为充电状态；

图中 3 为 SOC，电池剩余的可用电流值显示；

图中 4 为告警列表，当前发生的告警显示；

图中 5 为电池状态信息，最高/最低单体电池电压值以及对应位置、最高/最低单体电压温度值以及对应位置、采集电池串数、采集温度个数、剩余容量、BMS life 值、充放电 MOS 管开关状态和 DI/DO 输入开关量检测；

图中 6 为单体电压，显示单位为 mV，最大能显示 48 串单体电压值；

图中 7 为电池温度，最大能显示 16 串单体温度值；

注：点击右上角“中”字，可进行中英文切换。

In the drawing, 1 is the total voltage value displayed by the battery;

2 is the current value display of the battery and the load/charger connection, the positive value is specified as the discharge state, and the negative value is the charge state;

In the figure, 3 is the SOC, and the remaining available current value of the battery is displayed;

In the figure, 4 is an alarm list, and the current alarm display is displayed;

Figure 5 shows battery status information, highest/lowest single cell voltage value and corresponding position, highest/lowest cell voltage temperature value and corresponding position, number of collected battery strings, number of collected temperatures, remaining capacity, BMS life value, charge Discharge MOS tube switch state and DI/DO input switch quantity detection;


In the figure, 6 is the cell voltage, the display unit is mV, and the maximum can display 48 string cell voltage values;

In the figure, 7 is the battery temperature, which can display a maximum of 16 strings of monomer temperature values;

Note: You can switch between Chinese and English by clicking the “中” in the upper right corner.



图 4-3 数据监控页面

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4.4 参数设置

4.4 Parameter Setting

图中 1 为电池额定容量：可设置电池额定容量，需要根据实际情况进行设置，否则会影响 SOC 的计算；

额定电压：根据电池类型来进行设置，一般默认三元电池设置成 3.6V，磷酸铁锂设置成 3.2V，钛酸锂设置为 2.0V；

图中 2 为均衡开启电压、均衡开启压差根据不同电池类型来设置，而触发均衡的前提是在充电状态下进行；

图中 3 为充电总安时，放电总安时；

图中 4 为短路保护电流：一般设置为放电电流的 10 倍；

电流采样电阻：根据实际 DL-32S 模块上电流采样电阻来设置；

图中 5 设置自动休眠时间，当 DL-32S 模块与 485/CAN 无通讯后，或者没有充放电电流，没有接入充电器，满足上述条件后，且到达设置的时间后，DL-32S 模块会进入休眠模式；

电池生产日期根据客户的要求来进行设置；

电池类型可设置成三种类型，分别磷酸铁锂、三元锂或者钛酸锂；

电池操作模式有长按开关机和短按开关机；

图中 6 为采集板个数设置为实际的采集芯片个数，采集电池串数和采集温度个数；

图中 7 为固件索引号和电池编码，可根据客户的要求来进行设置；

图中 8 为可更改 SOC（可用电量）的数值，可设置 RTC 时间，为 DL-32S 的采集时间，此时间位置可设置与当前 PC 端时间一致；

图中 9 一级告警为仅仅告警，二级告警为最严重的故障。若只有一级故障，可将一级和二级故障值设置成一样的数值。

In the figure, 1 is the rated capacity of the battery: the rated capacity of the battery can be set, and it needs to be set according to the actual situation, otherwise it will affect the calculation of SOC;

Rated voltage: set according to the type of battery, generally the default ternary battery is set to 3.6V, lithium iron phosphate is set to 3.2V, lithium titanate is set to 2.0V;

In the figure, 2 is the equalization turn-on voltage, and the equalization turn-on voltage difference is set according to different battery types, and the premise of trigger equalization is performed under the state of charge;

In the figure, 3 is the total charge when charging, the total discharge time:

In the figure, 4 is the short-circuit protection current: generally set to 10 times the discharge current;

Current sampling resistor: set according to the current sampling resistor on the actual DL-32S module;

In the figure, 5 sets the automatic sleep time. When the DL-32S module has no communication with 485/CAN, or there is no charge/discharge current, no charger is connected, after the above conditions are met, and after the set time is reached, the

DL-32S module will Enter sleep mode;

The battery production date is set according to the customer's requirements;

The battery type can be set to three types, respectively, lithium iron phosphate, ternary lithium or lithium titanate;


The battery operation mode has a long press switch and a short press switch;

In the figure, 6 is the number of acquisition boards set to the actual number of acquisition chips, and the number of collected battery strings and the number of collection temperatures;

In the figure, 7 is the firmware index number and battery code, which can be set according to the requirements of the customer;

In the figure, 8 is the value that can change the SOC (available power), and the RTC time can be set, which is the acquisition time of the DL-32S, and the time position can be set to be consistent with the current PC end time;

In the figure, the first level alarm is only the alarm, and the second level alarm is the most serious fault. If there is only one level of failure, the primary and secondary fault values can be set to the same value.



The screenshot shows the '参数设置' (Parameter Setting) page of the DL-32S module. The interface is divided into several sections with various input fields and buttons. Red arrows and numbers 1 through 9 point to specific features:

- 1**: Points to the '额定容量(Ah)' (Rated Capacity) and '额定电压(V)' (Rated Voltage) fields.
- 2**: Points to the '均衡开启电压(V)' (Balancing Start Voltage) and '均衡开启压差(V)' (Balancing Start Voltage Difference) fields.
- 3**: Points to the '充电总安时(Ah)' (Total Charging Capacity) and '放电总安时(Ah)' (Total Discharging Capacity) fields.
- 4**: Points to the '采集板个数' (Number of Acquisition Boards) field.
- 5**: Points to the '自动休眠时间' (Automatic Sleep Time) field.
- 6**: Points to the '采集板1~3单体个数' (Number of Cells in Acquisition Boards 1-3) and '采集板1~3温度个数' (Number of Temperature Points in Acquisition Boards 1-3) fields.
- 7**: Points to the '固件索引号' (Firmware Index Number) and '电池编码' (Battery Code) fields.
- 8**: Points to the 'SOC' (State of Charge) and 'RTC' (Real Time Clock) fields.
- 9**: Points to the '等级' (Level) field in the alarm settings table.

The interface also includes a table for alarm settings with columns for '等级' (Level), '单体过压' (Cell Overvoltage), '单体欠压' (Cell Undervoltage), '总压过压' (Total Overvoltage), '总压欠压' (Total Undervoltage), '放电过流' (Discharge Overcurrent), '充电过流' (Charging Overcurrent), '压差过大' (Voltage Difference Too Large), '温差过大' (Temperature Difference Too Large), 'SOC过高' (SOC Too High), 'SOC过低' (SOC Too Low), '充电过温' (Charging Overtemperature), '充电欠温' (Charging Undertemperature), '放电过温' (Discharge Overtemperature), and '放电欠温' (Discharge Undertemperature). Each cell in the table has a '设置' (Set) button.

图 4-4 参数设置页面

4.5 参数读取

4.5 Parameter Reading

对相关参数进行设置以后，在“参数读取”页面中进一步确认参数被写入和存储。

After setting the relevant parameters, further confirm that the parameters are written and stored in the "Parameter Read" page.

数据监控

参数设置

参数读取

工程模式

历史告警

BMS升级

额定容量(Ah): <input type="text"/>		均衡开启电压(V): <input type="text"/>		电池操作模式: <input type="text"/>										
额定电压(V): <input type="text"/>		均衡开启压差(V): <input type="text"/>		自动休眠时间: <input type="text"/> 秒										
充电总安时(Ah): <input type="text"/>		短路保护电流(A): <input type="text"/>		电池生产日期: <input type="text"/>										
放电总安时(Ah): <input type="text"/>		电流采样电阻(mΩ): <input type="text"/>		电池类型: <input type="text"/>										
采集板个数: <input type="text"/>		采集板1~3单体个数: <input type="text"/> <input type="text"/> <input type="text"/>		采集板1~3温度个数: <input type="text"/> <input type="text"/> <input type="text"/>										
固件索引号: <input type="text"/>		RTC: <input type="text"/>												
电池编码: <input type="text"/>														
软件版本号: <input type="text"/>		硬件版本号: <input type="text"/>												
等级	单体过压	单体欠压	总压过压	总压欠压	放电过流	充电过流	压差过大	温差过大	SOC过高	SOC过低	充电过温	充电欠温	放电过温	放电欠温
①	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
②	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
→	读取		读取		读取		读取		读取		读取		读取	

一键读取

图 4-5 参数读取页面

4.6 工程模式

Engineering mode

确保出货前 DL-32S 模块采集的总电压、电流、休眠功能、LED 显示和 DI/DO 功能，都是正常无误的。若检测出异常时，需要对相应采集功能进行校准。

Ensure that the total voltage, current, sleep function, LED display and DI/DO functions collected by the DL-32S module before shipment are correct. If an abnormality is detected, the corresponding acquisition function needs to be calibrated.



图 4-6 工程模式页面 Engineering mode

4.7 历史告警


4.7 Historical alarm

在历史告警页面中，DL-32S 模块能存储 1000 条发生过的警告，包含告警序号、告警名称、告警等级、告警发生的时间，已经消失的告警将在历史告警页面显示。

On the historical alarm page, the DL-32S module can store 1000 alarms that have occurred, including the alarm number, alarm name, alarm level, and alarm time. The alarms that have disappeared will be displayed on the historical alarm page.



图 4-7 历史告警页面

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	DL-R32S 模块用户手册	Rev 1.0

4.8 BMS 升级

4.8 BMS upgrade

厂内测试完后，根据客户所提供的要求，使用升级功能将相关参数进行批量写入，提高了生产出货测试的效率。

After the in-plant test, according to the requirements provided by the customer, the upgrade function is used to batch write the relevant parameters, which improves the efficiency of the production and shipment test.



图 4-8 BMS 升级页面

Picture 4-8 upgraded page



第五章 故障诊断

Chapter 5 Troubleshooting

5.1 故障及告警信息列表

5.1 List of failures and alarms

DL-32S 模块有完善的管理功能，能够延长电池的使用寿命，使用过程中可能会遇到一些故障提示，请按照下表进行分析，判断发生原因，排除故障。

The DL-32S module has perfect management functions to extend the battery life. Some faults may be encountered during use. Please analyze according to the following table to determine the cause and eliminate the fault.

序号 item	故障描述 Failure description	可能原因 Possible root cause
1	最低温度显示 “-40℃” The lowest temperature shows "-40° C"	温度传感器未正确连接 Temperature sensor is not connected properly
2	部分电池电压异常 Some battery voltage is abnormal	对应电池的电压采集排线未正确连接 The voltage collection cable corresponding to the battery is not connected correctly.
3	过充或过放不能保护 Overcharge or overdischarge cannot protect	参数设置有误 Incorrect parameter settings
4	系统不工作 System does not work	排线没有接触到位 The cable is not in place
5	静态时，有电流显示 When static, there is current display	未设置“电流校准” Current calibration not set