东莞市达锂电子有限公司
Dongguan DALY Electronics Co., Ltd.

达锂智能家储保护板说明书
DALY Integrated ESS BMS Manual

一、产品简介 Product introduction

随着铁锂电池在家储和基站的广泛应用 ，对电池管理系统也提出了高性能、高可靠性及高性价比等要求。DL-R16L是专门针对储能电池设计的BMS，采用集成化的设计，将采集、管理、通信等功能集成于一体。

该BMS产品以一体化作为设计理念，可广泛应用在室内室外储能电池系统，如家庭储能、光伏储能、通信储能等。

BMS采用一体化设计，对于Pack厂家有更高的组装效率和测试效率，降低生产投入成本，对于整体安装质量保障有较大提升。

With the widespread application of lithium iron phosphate batteries in home storage and Telecom station scenarios, requirements for battery management systems such as high performance, high reliability, and high cost performance are also put forward. DL-R16L is a BMS specially designed for energy storage batteries. It adopts an integrated design to integrate collection, management, communication and other functions.

This BMS product takes integration as its design concept and can be widely used in indoor and outdoor energy storage battery systems, such as home energy storage, photovoltaic energy storage, Telecom energy storage, etc.

BMS adopts integrated design, which has higher assembly efficiency and testing efficiency for Pack manufacturers, reduces production investment costs, and greatly improves the overall installation quality assurance.

二、功能说明 Function Description

正面 Top Layer

序号 No.	功能 Function	说明 Description
1	故障存储 Fault storage	存储单元位于芯片内部，可存储10000条故障信息。 The memory unit is located inside the chip，10000 fault information can be stored.
2	充电限流 Charge current limiting	最大5A，当充电过流时开启。 Max 5A, open when BMS triggers charging over-current.
3	LED	可通过发出的灯光提示电池系统正处于告警、充电、放电等状态或者SOC等信息。 The LED can remind people that the battery system is in an alarm, charging, discharging and other states or information such as SOC through the light emitted.
4	RJ45单口 RJ45 single interface	集成485-1、CAN、UART3通讯，连接上位机，8pin。 Integrated 485, CAN, UART into communication, used to connect PCMaster, 8pin.
5	RJ45双口 RJ45 double interface	485通讯，内部通讯并联接口，各8pin。 485 communication,for internal communication parallel interface, each 8pin.
6	干接点（选配） Dry contact (Optional)	干接点 1——PIN1 to PIN2：常开，低电量闭合。 Dry contact 1 -- PIN1 to PIN2: Open normally and close at low power 干接点 2——PIN3 to PIN4：常开，故障 保护时闭合。 Dry contact 2 -- PIN3 to PIN4: Open normally and closed during fault protection.
7	复位按钮 Reset button	按下按键，可使BMS处于休眠、唤醒、复位状态。 By pressing the button, the BMS can be in sleep，wake up, or reset state.
8	散热片 Cooling fin	用于加快散热，降低MOS温度。 Used to speed up heat dissipation and reduce MOS temperature.

底面 Bottom Layer

序号 No.	功能 Function	说明 Description
1	采样线接口 Sampling cables interface	连接电池的正负极，收集电池的相关信息。 Connect the positive and negative terminals of the battery to collect battery information.

2	纽扣电池 Button cell	CR1220-12-4×6_40mAH，给MCU供电。 CR1220-12-4X640mAH, powering the MCU.
3	蜂鸣器 Buzzer	可发出声音提示电池系统正处于故障、告警或保护状态；默认关闭，可通过上位机使其打开。 The buzzer sounds to inform you that the battery system is in the fault, alarm, or protection state；Factory default closed, can be turned on by PCMaster
4	NTC接口A NTC interface A	外接NTC1+NTC2，监测电池温度，4pin。 External NTC1+NTC2, monitoring battery temperature, 4pin.
5	NTC接口B NTC interface B	外接NTC3+NTC4，监测电池温度，4pin。 External NTC3+NTC4, monitoring battery temperature, 4pin.
6	UART接口 UART interface	连接WIFI/蓝牙/GPS，6pin。 Connect WIFI/Bluetooth/GPS, 6pin.
7	LCD接口 LCD interface	连接显示屏，5pin。 Connect to display, 5pin.
8	Key接口 Key interface	连接钥匙开关，4pin。 Connect key switch, 4pin.
9	钥匙开关 Key switch	可激活BMS，可通过上位机更改钥匙开关的状态来控制mos的开和关。 Can activate the BMS, and the mos on and off can be controlled by changing the state of the key switch through PCMaster.
10	DO接口 DO interface	连接加热模块/安全模块，5pin。 Connect heating module/safety module, 5pin.
11	加热模块（选配） Heating module (Optional)	天冷时给电池系统预热用。 To preheat the battery system in cold weather.
12	安全模块（选配） Safety module (Optional)	二次保护，当MOS失效时，切断系统充放电回路。 Secondary protection，when MOS failure, cut off the system charge and discharge loop.
13	B+接口 B+ interface	连接电池正极，给主板供电用。 Connect the positive terminal of the battery to supply power to the mainboard.
14	C-接口 C-Interface	它是保护板充放电负极，连接充放电负端。 It is the charging and discharging negative terminal of the protection board, and it is connected to the charging and discharging negative terminal.
15	B-接口 B- interface	连接电池总负极。 Connect the total negative electrode of the battery.

三、使用说明 Direction for use

3.1 接线说明 Wiring instructions

步骤1：焊接排线：排线中第1根排线(黑线)接电池总负极，第2根排线(红线)接到第一串电池正极，第3根排线(红线)接到第二串电池正极。如此类推，接完所有排线。

步骤2：检测排线:接好排线后，从排头开始测量相邻两根排线之间的电压，确认排线焊接顺序没有接错、漏接等问题。

步骤3：固定保护板，测量和确认保护板B-与P-之间电压无误后，将排线插入保护板；

步骤4：插上NTC 线，最后用B+线将电池组正极与 BMS B+接口相连接；

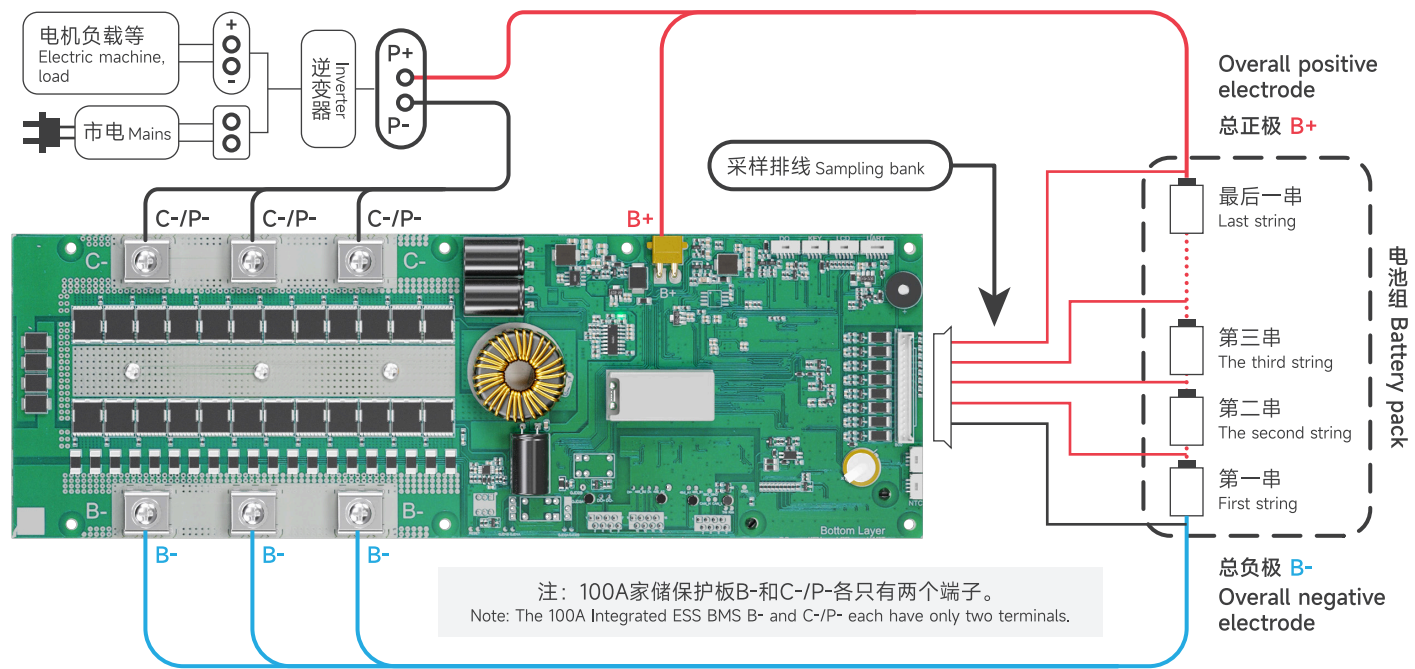步骤5：以上线完成后即可唤醒 BMS&正常工作，否则请按照上面重新操作。

Step 1: Solder the cable: The first cable (black wire) in the cable is connected to the negative terminal of the battery, the second cable (red wire) is connected to the positive terminal of the first string of batteries, and the third cable (red wire) is connected to the positive terminal of the first string of batteries. The positive terminal of the second string of batteries. And so on, until all cables are connected.

Step 2: Check the cables: After connecting the cables, measure the voltage between two adjacent cables starting from the head of the cable to confirm that there are no wrong connections or missing connections in the welding sequence of the cables.
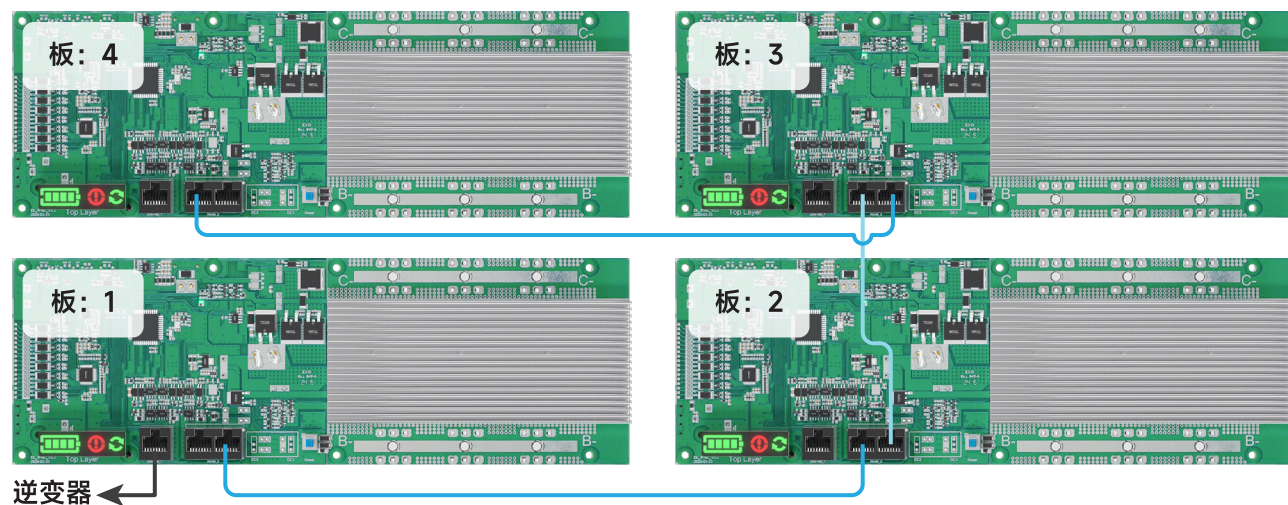
Step 3: Fix the protection board. After measuring and confirming that the voltage between B- and P- of the protection board is correct, insert the cable into the protection board;

Step 4: Plug in the NTC cable, and finally use the B+ cable to connect the positive terminal of the battery pack to the BMS B+ interface;
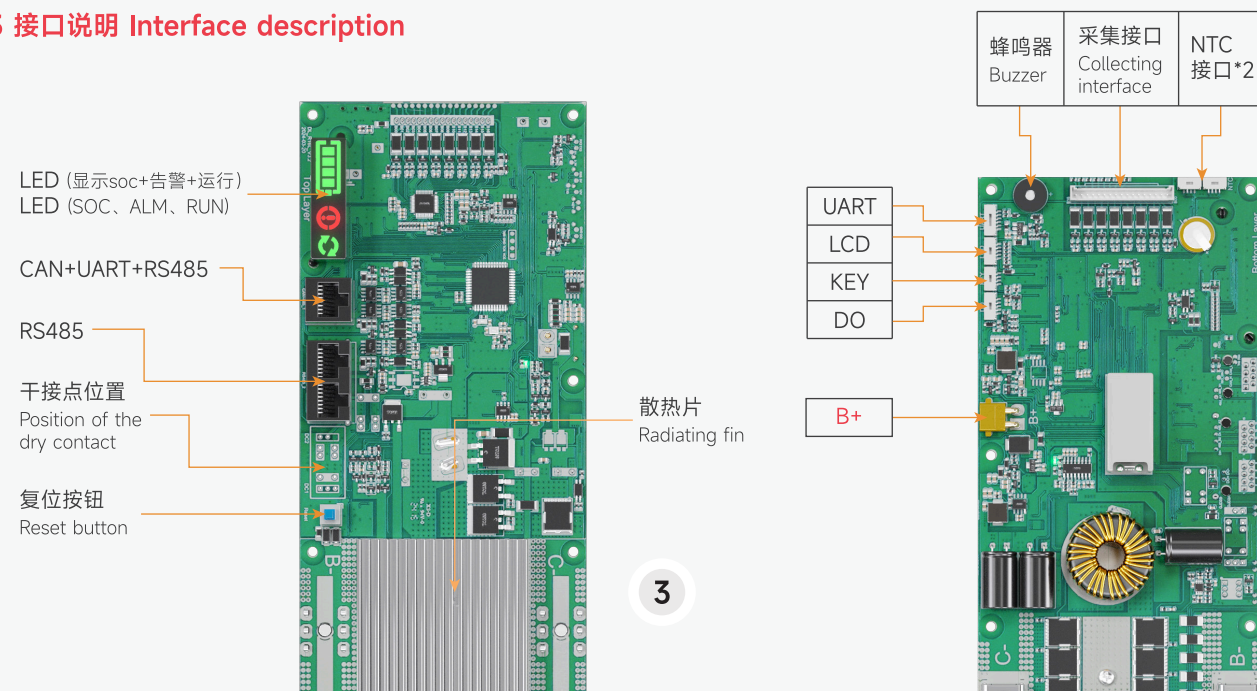
Step 5: After the above online process is completed, the BMS can be woken up and work normally. Otherwise, please follow the above steps again.

Overall positive electrode
总正极 B+

采样排线 Sampling bank

最后一串
Last string

第三串
The third string

第二串
The second string

第一串
First string

电池组 Battery pack

Overall negative electrode
总负极 B-

电机负载等
Electric machine, load

市电 Mains

Inverter 逆变器

注：100A家储保护板B-和C-/P-各只有两个端子。
Note: The 100A Integrated ESS BMS B- and C-/P- each have only two terminals.

3.2 通讯接线图 Communication wiring diagram

板：4　板：3　板：1　板：2

逆变器

3.3 接口说明 Interface description

LED（显示soc+告警+运行）
LED（SOC、ALM、RUN）

CAN+UART+RS485

RS485

干接点位置
Position of the dry contact

复位按钮
Reset button

散热片
Radiating fin

蜂鸣器
Buzzer

采集接口
Collecting interface

NTC接口*2

UART
LCD
KEY
DO

B+

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四、逆变器通讯 Inverter communication

保护板支持RS485和CAN通信接口的逆变器协议，上位机工程模式&APP可以选择设置。
BMS supports the inverter protocol of RS485 and CAN communication interfaces, and the upper computer engineering mode & APP can be selected to set.

协议类型Protocol type	协议名称Protocol name	协议类型Protocol type	协议名称Protocol name
RS485 协议RS485 Protocol	日月元协议Voltronic	CAN 协议CAN Protocol	古瑞瓦特协议Growatt
RS485 协议RS485 Protocol	古瑞瓦特协议Growatt	CAN 协议CAN Protocol	艾罗协议SOLAX
RS485 协议RS485 Protocol	艾罗协议SOLAX	CAN 协议CAN Protocol	首航协议SOFAR
RS485 协议RS485 Protocol	力通威协议LTW	CAN 协议CAN Protocol	鹏程协议LUXPower
RS485 协议RS485 Protocol	深圳沛城协议SZPC	CAN 协议CAN Protocol	MUST 协议PV1800F
RS485 协议RS485 Protocol	MUST协议PV3500	CAN 协议CAN Protocol	力通威协议LTW
RS485 协议RS485 Protocol	硕日协议SRNE	CAN 协议CAN Protocol	威通协议Victron
RS485 协议RS485 Protocol	航天柏克BAYKEE	CAN 协议CAN Protocol	中兴派能协议/德业协议PYLONTECH
RS485 协议RS485 Protocol	问鼎协议Local	CAN 协议CAN Protocol	索瑞德协议SOROTEC
CAN 协议CAN Protocol	固德威协议GOODWE	CAN 协议CAN Protocol	SOALARFAM
		CAN 协议CAN Protocol	问鼎协议Local

五、注意事项 Matters needing attention

我司产品进行严格的出厂检验测试，但是因为客户使用的环境不同（特别是在高温、超低温、太阳下等），难免会出现BMS故障，所以客户在选择和使用BMS时，需要在友好的环境下使用，及选择一定冗余量的BMS。
不同电压平台的BMS不能混用，如三元锂电池类型BMS不能使用磷酸铁锂电池上；
不同厂家的排线不通用，请确保使用我们公司配套排线；
在测试、安装、接触和使用BMS时，要做好放静电措施；
不要使BMS的散热面直接接触电芯，否则热量会传送到电芯，影响电池的安全；
不可自行拆卸、更改保护板元器件；
如果BMS出现异常，请停止使用，等问题解决了再使用。

Our products undergo strict factory inspection and testing. However, due to the different environments used by customers (especially at high temperatures, ultra-low temperatures, under the sun, etc.), BMS failures will inevitably occur. Therefore, customers need to operate in a friendly environment when choosing and using BMS. Use it under the following conditions, and select a BMS with a certain amount of redundancy.

BMS with different voltage platforms cannot be mixed. For example, ternary lithium battery type BMS cannot be used with lithium iron phosphate batteries;
Cables from different manufacturers are not universal, please make sure to use our company's matching cables;
When testing, installing, contacting and using BMS, take measures to discharge static electricity;
Do not let the heat dissipation surface of the BMS directly contact the battery core, otherwise the heat will be transferred to the battery core and affect the safety of the battery;
Do not disassemble or change the components of the protective board by yourself;
If there is an abnormality in the BMS, please stop using it and wait until the problem is solved before using it again.

六、手机蓝牙APP下载地址

浏览器扫描（安卓）　　浏览器扫描（苹果）

安卓系统手机APP下载地址：
http://yunbms.cn/resources/download/smartBMS.apk

IOS系统手机APP下载地址：
https://apps.apple.com/cn/app/smart-bms/id1519968339?l=en

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