



*TriView*

**Lithium iron phosphate battery (LiFePo4)**

12.8V/100Ah-280Ah

25.6V/100Ah-200Ah-280Ah

51.2V/100Ah-200Ah-280Ah

**User Manual**



# TABLE OF CONTENTS

● Important Safety Instructions .....	1
● Battery Installation .....	3
● Battery Settings and Configuration Via Bluetooth .....	3
● Technical Specifications .....	10
● Dial Switch Settings .....	13
● Interface Definition .....	13
● Over-Charge Protection .....	14
● Over-Discharge Protection .....	15
● Over-Current Protection .....	16
● Short Circuit Protection .....	17
● High Temperature Protection .....	17
● Low Temperature Protection .....	18
● Environment Temperature Protection .....	18
● MOS Temperature Protection .....	19
● Voltage Difference alarm .....	19
● Temperature Difference alarm .....	19
● Realibility Parameter .....	20
● LED Indication .....	21
● LED Flash Instructions .....	21
● SOC Instructions .....	22
● Reset Button Description .....	22
● Buzzer Logic .....	22
● Parameter Configuration Description .....	23
● Sleep and Wake up .....	23
● Wake up .....	23
● Communication Instructions .....	24
● Battery Maintenance .....	25
● Battery Storage .....	25

# IMPORTANT SAFETY INSTRUCTIONS

This manual contains important installation, operation, and maintenance instructions for the smart LiFePO<sub>4</sub> Battery. Please observe these instructions and keep them located near the battery for further reference.

## Handling Precautions:

- DO NOT puncture, drop, crush, burn, penetrate, shake, or strike the battery.
- Avoid opening, dismantling, or modifying the battery.
- Refrain from touching any terminals or connectors.
- Avoid contact with exposed electrolyte or powder if the battery casing is damaged.
- Keep the battery away from water, heat sources, sparks, and hazardous chemicals.

## Charging Safety:

- Ensure any battery charger or charge controller is disconnected before working on the battery.
- DO NOT connect or disconnect terminals from the battery without first disconnecting loads.
- Please use the matched charger that contains a Lithium charge profile for this battery.

## Workplace Safety:


- Avoid placing tools on top of the battery.
- Keep the battery out of the reach of young children.
- Wear proper protective equipment and use insulated tools when working on the battery.
- Do not wear jewelry or other metal objects when working on or around the battery.

## Transportation:

- Use suitable handling equipment for safe transportation of the battery.
- Avoid shipping or storing the battery together with metal.

## Installation Environment:

- Ensure adequate and secure mounting of the battery.
- Install the battery away from heat sources, high voltage, and avoid exposed sunlight for long periods.

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- The battery should be installed in a clean, cool, and dry place, away from water, oil, and dirt. Accumulation of these materials on the battery can lead to current leakage, self-discharge, and potential short-circuits.
  - Ensure sufficient air flow around the battery to prevent excessive heat build-up and minimize temperature variation between batteries. This helps maintain optimal performance and prolongs battery life.

### **Usage Instructions:**

- Do not use the battery for cranking/starting applications.
- Do not connect the positive and negative terminals of the battery together.
- Do not connect batteries with different chemistries, brands, models, rated capacities or nominal voltages in series or parallel configurations.
- In parallel connection, ensure that the cables between each battery are of equal length to promote uniformity in the system's operation.

### **Disposal and Recycling:**

- Do not dispose of the battery as household waste. Please use recycling channels in accordance with local, state, and federal regulations.

### **Emergency Procedures:**

- If the battery emits a peculiar smell, heats up, distorts, or exhibits any abnormality during operation or storage, stop using the battery immediately. Contact us for further details.
- In case of battery leakage getting into eyes or on skin, do not wipe. Rinse with clean water and seek medical attention immediately.

# BATTERY INSTALLATION

Before installing and operating the battery, it is advisable to have the following equipment or tools readily available:

- Proper Protective Equipment
- Insulated Tool(s)
- Multimeter
- Battery Cable
- Battery Charger/Charge Controller

# BATTERY SETTINGS AND CONFIGURATION VIA BLUETOOTH

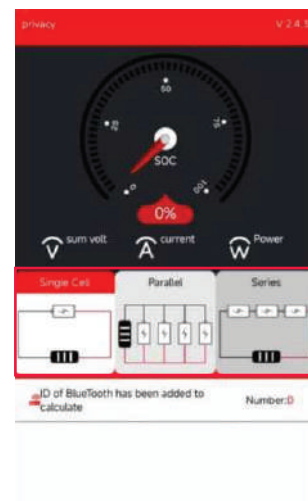
## Download

Scan the QR code with your smartphone to download the app version for your phone. You'll be directed to the App Store(Apple) or Google Play(Android) automatically. Alternatively, you could search for "Smart BMS" instead.



## Connection

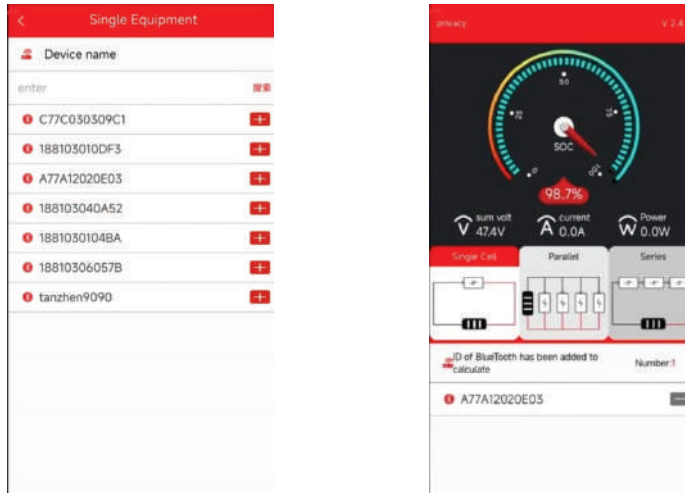
After you have successfully downloaded and installed the app, you can open the app on your smartphone. In the first interface, you can see three options: single group, parallel connection and series connection.



## Single Group mode:

If only one group of batteries needs to be managed, then click "Single Group", enter the device selection interface.

After selecting the device, you can view and modify the battery data.



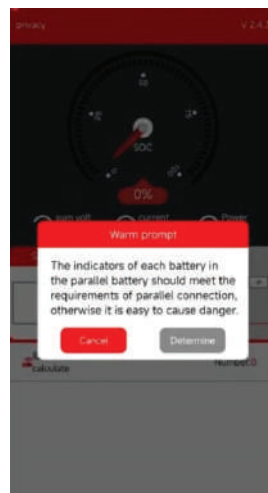
In "Single Pack" mode, the data on the first interface is consistent with the data on the battery pack.



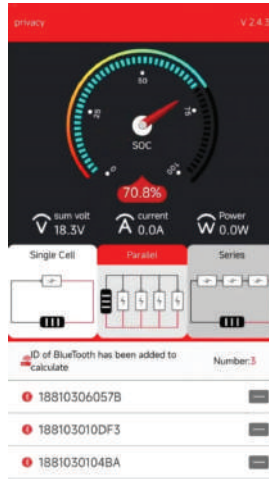
**Note:** In "Single Group" mode, only one device can be added. If you want to add other devices, you need to delete the current device.

## Parallel mode:

If there are multiple sets of parallel batteries to be managed, click "Parallel". The app will remind the user to confirm the status of the battery pack.



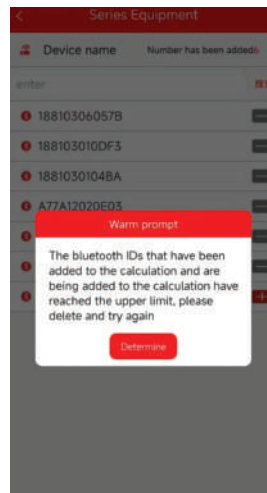
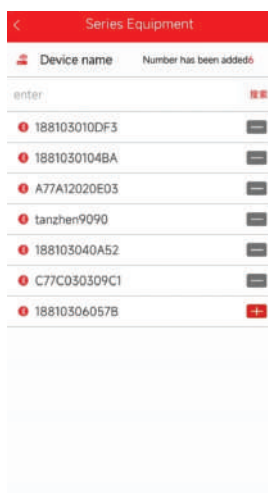
After confirmation, enter the device selection interface. After selection the device, what you see on the first interface is the total data of the entire parallel battery pack.



If you need to view the data of a single battery pack, click the battery pack at the bottom of the first interface.



App can access up to 6 bluetooth devices, after connecting 6 bluetooth devices, you need to delete the connected devices before you can connect to other new bluetooth devices.

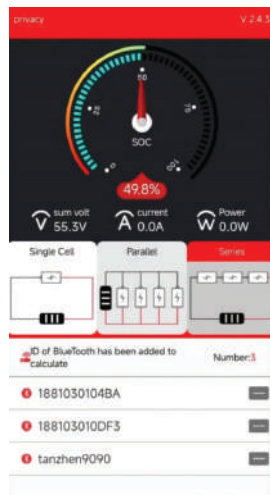


## Series mode:

If there are multiple sets of the batteries in series that need to be managed, click "Series". The app will remind the user to confirm the status of the battery pack.



After confirmation, enter the device selection interface. After selection the device, what you see on the first interface is the total data of the entire battery pack.

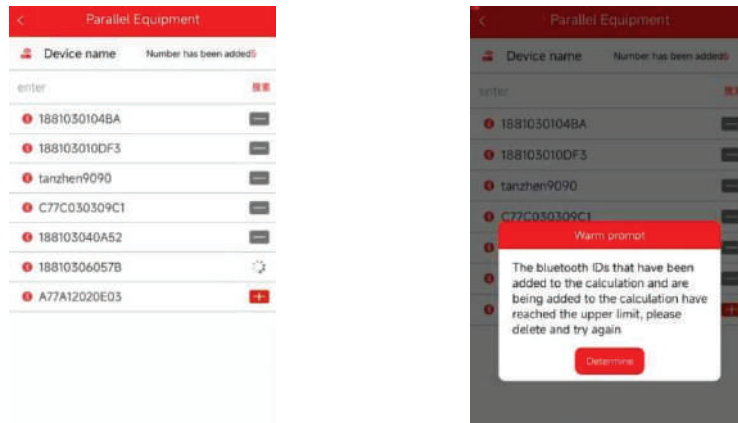


If you need to view the data of a single battery pack, click the battery pack at the bottom of the first interface.



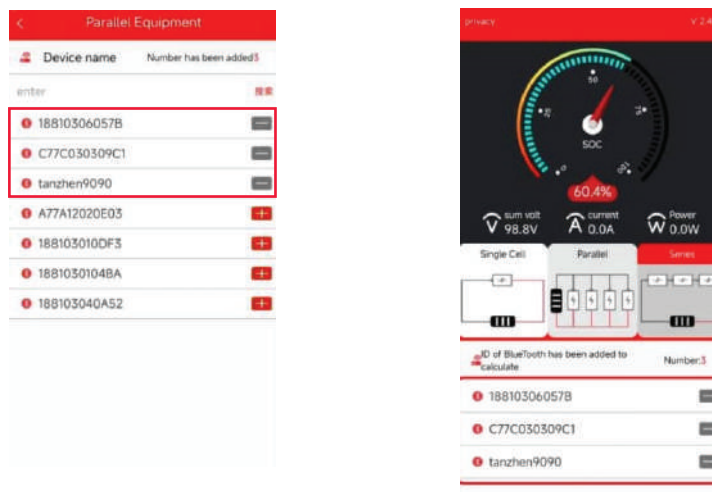


App can access up to 6 bluetooth devices,after connecting 6 bluetooth devices,you need to delete the connected devices before you can connect to other new bluetooth devices.

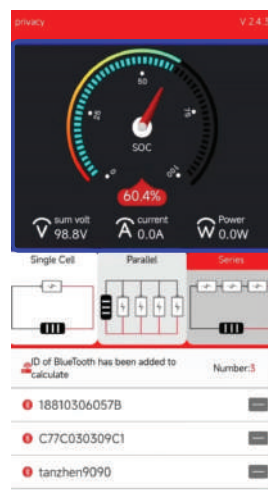


## Multiple Group of non-series-parallel batteries:

If you need to manage multiple groups of batteries that are not connected in series or parallel,you can choose parallel or series mode. After selecting “Parallel” or “Series”, the added bluetooth device will be displayed at the bottom of the first interface. Which set of batteries need to be managed just click on the corresponding bluetooth device.

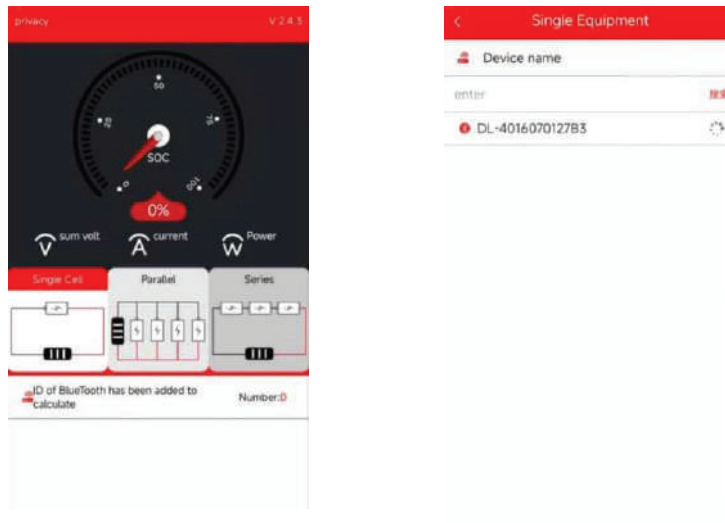


**Note:**in this case,the first interface data is invalid data,do not treat it as a certain set of battery data.



## Setting up reverse variable protocol on mobile phone

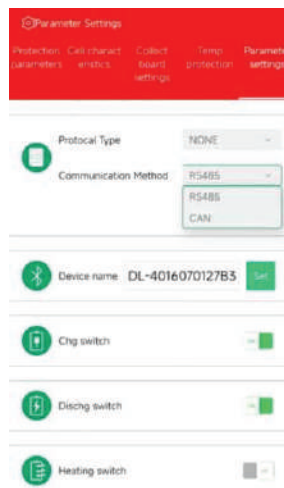
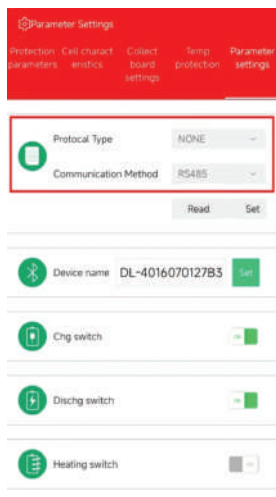
After installing “Smart BMS” on the mobile phone, open the app to connect to bluetooth device, enter the secondary interface



Click “Parameters Settings” in the bottom right corner and then click “System Setting” at the top.

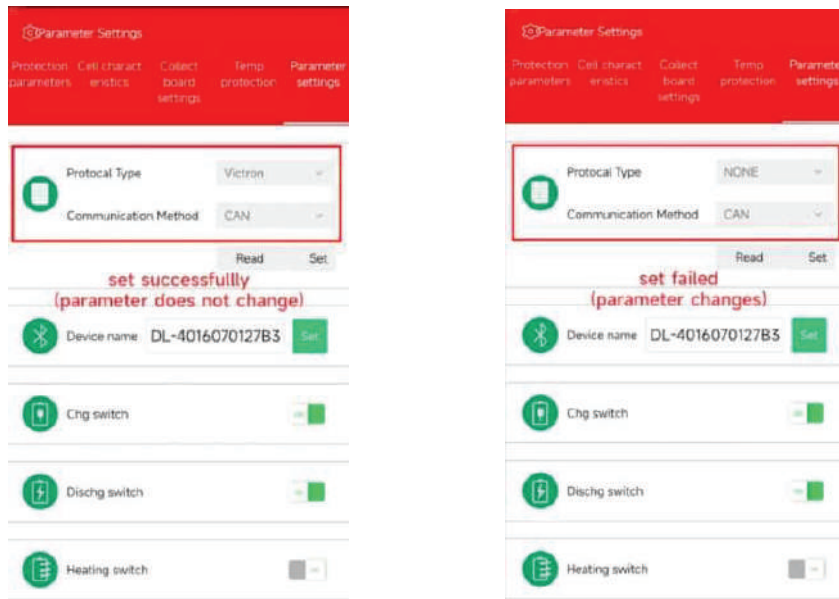
Project	Machine	Setting
cell volt high protect	5.60V	enable Set
cell volt low protect	2.20V	enable Set
sum volt high protect	56.70V	enable Set
sum volt low protect	35.20V	enable Set
diff volt protect	0.80V	enable Set
chg overcurrent protect	150.0A	enable Set
dischg overcurrent protect	150.0A	enable Set

In the interface you can see two columns protocol and communication method. first select CAN or RS485 in communication method, then select the protocol type you use in the “Contract Class”.



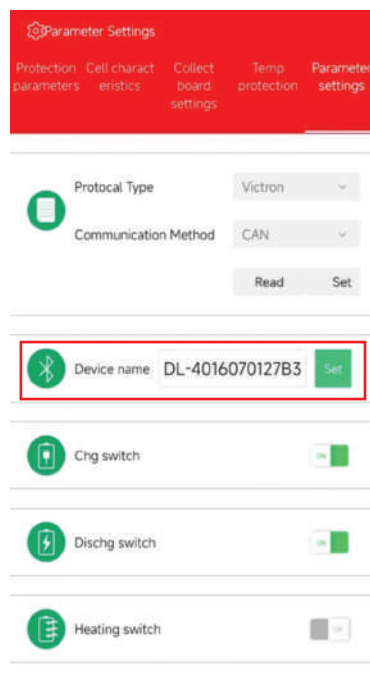
After all are selected, click setting then click read.

If the communication protocol is set successfully, after clicking Read, the “protocol type” and “communication method” will not change, but if the communication protocol setting failed, after clicking read, the “protocol type” and “communication method” will return to the parameters before setting.



## Modify the name of the bluetooth device

The default name for the bluetooth device is a long string of numbers and letters. This can default to identify and manage. we can change the device name via parameters setting.



# TECHNICAL SPECIFICATIONS

## 12.8V/100Ah-280Ah (Hardware BMS)

Rated Voltage	12.8 V	
Rated Capacity	100 Ah	280 Ah
Rated Energy	1.28 Kw	3.584 Kw
Output Voltage Range	10.0V to 14.6V	
Charging Voltage	14.2V to 14.6V	
Max.Charging Current	60A	
Max.Discharging Current	60A	
BMS Type	H-Type Hardware LFP 4S 60A	
Warranty	3 years	
Dimension H*W*D(cm)	30X25X15 cm	40X30X20 cm
Weight(kg)	13 kg	30 kg
Cells Used	3.2V 102A LF100LA	3.2V 280A LF280LA
Number of Cells	4	
Cell Brand	EVE	
Cell Production Date	1-Jul-2024	
Cycle Life	5000 Charge and discharge cycle	8000 Charge and discharge cycle
Number of Cell Strings	4S	

## 25.6V/100Ah-280Ah (Hardware BMS)

Rated Voltage	25.6 V	
Rated Capacity	100 Ah	280 Ah
Rated Energy	2.56 Kw	7.168 Kw
Output Voltage Range	20.0V to 29.2V	
Charging Voltage	28.4V to 29.2V	
Max.Charging Current	100A	
Max.Discharging Current	100A	
BMS Type	K-Type Hardware LFP 8S 100A	
Warranty	3 years	
Dimension H*W*D(cm)	40x30x20 cm	60x50x25 cm
Weight(kg)	25 kg	63 kg
Cells Used	3.2V 102A LF100LA	3.2V 280A LF280K
Number of Cells	8	
Cell Brand	EVE	
Cell Production Date	1-Jul-2024	
Cycle Life	5000 Charge and discharge cycle	8000 Charge and discharge cycle
Number of Cell Strings	8S	

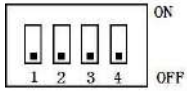
## 25.6V/100Ah-200Ah-280Ah (Smart BMS)

<b>Battery General Spec</b>	<b>Rated Voltage</b>	25.6 V		
	<b>Rated Capacity</b>	100 Ah	200 Ah	280 Ah
	<b>Rated Energy</b>	2.56 Kw	5.120 Kw	7.168 Kw
	<b>Output Voltage Range</b>	20.0V to 29.2V		
	<b>Charging Voltage</b>	28.4V to 29.2V		
	<b>Max.Charging Current</b>	100A		
	<b>Max.Discharging Current</b>	100A		
	<b>Dimension H*W*D(cm)</b>	40X30X20 cm	60X50X25 cm	60X50X25 cm
	<b>Weight(kg)</b>	27 kg	60 kg	65 kg
	<b>Warranty</b>	3 years		
<b>Cells Spec</b>	<b>Cells Used</b>	3.2V 102A LF100LA		3.2V 280A LF280K
	<b>Number of Cells</b>	8		
	<b>Cell Brand</b>	EVE		
	<b>Cell Production Date</b>	1-Jul-2024		
	<b>Cycle Life</b>	5000 Charge and discharge cycle		8000 Charge and discharge cycle
<b>BMS Spec</b>	<b>BMS Type</b>	Integrated smart ESS BMS LFP 16S200A BMS+RS485+CAN with LCD & wifi module function		
	<b>Number of Cell Strings</b>	8S		
	<b>LED</b>	Battery efficacy indicator, Alarm indicator, On/Off indicator		
	<b>RJ45 single network port</b>	Supports 485-CAN-UART communication used to communicate with the computer		
	<b>Dual RJ45 input 1</b>	Supports CAN1+4851 communication used for external communication		
	<b>Dual RJ45 input 2</b>	Supports CAN2+4852 communication used for parallel communication		
	<b>Reset</b>	Restart button		
	<b>Temperature sensor</b>	4 temperature sensors to monitor cell temperature		
	<b>WiFi+Bluetooth</b>	2.4G WiFi and Bluetooth connection		
		IEEE 802.11 b/g/n		
		Battery monitoring via SMART BMS mobile application for Android and IOS devices to adjust battery settings and monitor battery parameters		
	<b>LCD</b>	3.2 inch screen to display battery parameters		
	<b>Screen control buttons</b>	Menu, Enter, Down, Esc		
<b>Play Button</b>	To enable BMS Board			
<b>Balancer Spec</b>	<b>Type</b>	Integrated with BMS Board		
	<b>Bluetooth</b>			
	<b>Number of Cell Strings</b>			
<b>Accessories (optional)</b>	<b>RJ45 cable extension</b>	RJ45 cable "BMS Accessories"		
	<b>USB To RJ45 Connector</b>	WIFI Module "BMS Accessories"		

## 51.2V/100Ah-200Ah-280Ah (Smart BMS)

<b>Battery General Spec</b>	<b>Rated Voltage</b>	51.2 V		
	<b>Rated Capacity</b>	100 Ah	200 Ah	280 Ah
	<b>Rated Energy</b>	5.120 Kw	10.240 Kw	14.336 Kw
	<b>Output Voltage Range</b>	40.0V to 58.4V		
	<b>Charging Voltage</b>	56.8V to 58.4V		
	<b>Max.Charging Current</b>	100A	200A	200A
	<b>Max.Discharging Current</b>	100A	200A	200A
	<b>Dimension H*W*D(cm)</b>	70X50X20 cm	80X60X25 cm	80X60X25 cm
	<b>Weight(kg)</b>	52 kg	110 kg	122 kg
	<b>Warranty</b>	3 years		
<b>Cells Spec</b>	<b>Cells Used</b>	3.2V 102A LF100K		3.2V 280A LF280K
	<b>Number of Cells</b>	16		
	<b>Cell Brand</b>	EVE		
	<b>Cell Production Date</b>	1-Jul-2024		
	<b>Cycle Life</b>	5000 Charge and discharge cycle		8000 Charge and discharge cycle
<b>BMS Spec</b>	<b>BMS Type</b>	Split smart ESS BMS LFP 8S100A BMS+RS485+CAN with 1A active balancing function.LCD&wifi module function		
	<b>Number of Cell Strings</b>	16S		
	<b>LED</b>	Battery efficacy indicator, Alarm indicator, On/Off indicator		
	<b>RJ45 single network port</b>	Supports 485-CAN-UART communication used to communicate with the computer		
	<b>Dual RJ45 input 1</b>	Supports CAN+485 communication used for parallel communication		
	<b>Dual RJ45 input 2</b>			
	<b>Reset</b>	Restart button		
	<b>Temperature sensor</b>	4 temperature sensors to monitor cell temperature		
	<b>WiFi+Bluetooth</b>	2.4G WiFi and Bluetooth connection		
		IEEE 802.11 b/g/n		
		Battery monitoring via SMART BMS mobile application for Android and IOS devices to adjust battery settings and monitor battery parameters		
	<b>LCD</b>	3.2 inch screen to display battery parameters		
	<b>Screen control buttons</b>	Menu, Enter, Down, Esc		
<b>Play Button</b>	To enable BMS Board			
<b>Balancer Spec</b>	<b>Type</b>	16S Smart Active Balancer with BT Module		
	<b>Bluetooth</b>	Yes		
	<b>Number of Cell Strings</b>	16S		
<b>Accessories (optional)</b>	<b>RJ45 cable extension</b>	RJ45 cable "BMS Accessories"		
	<b>USB To RJ45 Connector</b>	WIFI Module "BMS Accessories"		

# Dial switch Settings

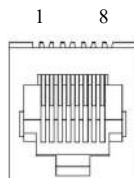


address	Dip switch position				Introductions
	#1	#2	#3	#4	
0	OFF	OFF	OFF	OFF	PACK1 Let PACK1 set to be master
1	ON	OFF	OFF	OFF	PACK2 Let PACK2 set to be slave
2	OFF	ON	OFF	OFF	PACK3 Let PACK3 set to be slave
3	ON	ON	OFF	OFF	PACK4 Let PACK4 set to be slave
4	OFF	OFF	ON	OFF	PACK5 Let PACK5 set to be slave
5	ON	OFF	ON	OFF	PACK6 Let PACK6 set to be slave
6	OFF	ON	ON	OFF	PACK7 Let PACK7 set to be slave
7	ON	ON	ON	OFF	PACK8 Let PACK8 set to be slave
8	OFF	OFF	OFF	ON	PACK9 Let PACK9 set to be slave
9	ON	OFF	OFF	ON	PACK10 Let PACK10 set to be slave
10	OFF	ON	OFF	ON	PACK11 Let PACK11 set to be slave
11	ON	ON	OFF	ON	PACK12 Let PACK12 set to be slave
12	OFF	OFF	ON	ON	PACK13 Let PACK13 set to be slave
13	ON	OFF	ON	ON	PACK14 Let PACK14 set to be slave
14	OFF	ON	ON	ON	PACK15 Let PACK15 set to be slave
15	ON	ON	ON	ON	PACK16 Let PACK16 set to be slave

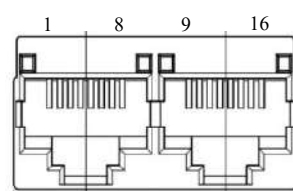
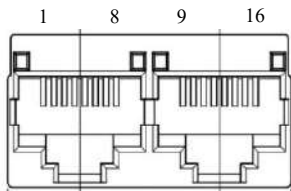
Note: Uncascade, single machine using PACK 1

## Interface definition

### RJ45 network port



External communication (RJ45 single network port)	
pin	Definition
1	485B1
2	485A1
3	ISO_GND
4	CAN1_H
5	CAN1_L
6	ISO_GND
7	/
8	/



CAN1+4851 External communication port				CAN2+4852 Parallel port for internal communication			
pin	Definition	pin	Definition	pin	Definition	pin	Definition
1	485B1	9	485B1	1	485B2	9	485B2
2	485A1	10	485A1	2	485A2	10	485A2
3	ISO-GND	11	ISO-GND	3	ISO-GND	11	ISO-GND
4	CAN1 H	12	CAN1 H	4	CAN2 H	12	CAN2 H
5	CAN1 L	13	CAN1 L	5	CAN2 L	13	CAN2 L
6	ISO-GND	14	ISO-GND	6	ISO-GND	14	ISO-GND
7	485A1	15	NC	7	485A2	15	485A2
8	485B1	16	NC	8	485B2	16	485B2

## Over-Charge protection

Test content		Factory default parameters	Unit
		LiFePO4	
Single Cell over-charge alarm	Single Cell over-charge alarm voltage	3.6±0.05	V
	Single Cell over-charge alarm delay	1±0.8	S
	Single Cell discharge alarm release voltage	3.5±0.05	V
Single Cell over-charge protection	Single Cell over-charge protection voltage	3.65±0.05	V
	Single Cell over-charge protection delay	1±0.8	S
Single Cell over-charge protection release	Single Cell over-charge protection release voltage	3.5±0.05	V
	The SOC of remaining capacity release	< 96%	
	Discharge current release	> 1	A
	<p>Note: Release voltage +SOC 96% must be met at the same time;            Or discharge voltage + discharge current &gt; 1A is met at the same time, temporary strong charge MOS; Discharge voltage + discharge current &gt; 1A meets at the same time, plus no charging current &amp; charging voltage, you can directly remove the protection;</p>		
Overall overcharge alarm	Overall overcharge alarm voltage	=3.55*n±0.8	V
	Overall overcharge alarm delay	1±0.8	S
	Overall overcharge alarm release voltage	= (3.55*n-1) ±0.8	V
Overall overcharge protection	Overall overcharge protection voltage	=3.6*n±0.8	V
	Overall overcharge protection delay	1±0.8	S
Overall overcharge protection release	Overall overcharge protection release voltage	= (3.6*n-1) ±0.8	V
	The SOC of remaining capacity release	< 96%	
	Discharge current release	> 1	A
	<p>Note: Release voltage +SOC 96% must be met at the same time;            Or discharge voltage + discharge current &gt; 1A is met at the same time, temporary strong charge MOS; Discharge voltage + discharge current &gt; 1A meets at the same time, plus no charging current &amp; charging voltage, you can directly remove the protection;</p>		



## Over-Discharge protection

Test content		Factory default parameters	Unit
		LiFePO4	
Single Cell discharge alarm	Single Cell discharge alarm voltage	$2.8 \pm 0.05$	V
	Single Cell discharge alarm delay	$1 \pm 0.8$	S
	Single Cell discharge alarm release voltage	$2.9 \pm 0.05$	V
Single Cell over-discharge protection	Single Cell over-discharge protection voltage	$2.7 \pm 0.05$	V
	Single Cell over-discharge protection delay	$1 \pm 0.8$	S
	discharge protection for 30 seconds If the device still cannot be recovered, it enters sleep mode		
Single Cell over-discharge protection release	Single Cell over-discharge protection release voltage	$2.9 \pm 0.05$	V
Overall discharge alarm	Overall discharge alarm voltage	$= 2.85 * n \pm 0.8$	V
	Overall discharge alarm voltage delay	$1 \pm 0.8$	S
	Overall discharge alarm release voltage	$= (2.85 * n + 1) \pm 0.8$	V
Overall discharge protection	Overall discharge protection voltage	$= 2.75 * n \pm 0.8$	V
	Overall discharge protection delay	$1 \pm 0.8$	S
	Over discharge protection for 30 seconds if the device still cannot be recovered, it enters sleep mode		
Overall discharge protection release	Overall discharge protection release voltage	$= (2.75 * n + 1) \pm 0.8$	V

## over-current protection

Test content		Factory default parameters	Unit
Discharge over-current Level protection	Discharge over-current Level 1 alarm current	$105 \pm 3 / 210 \pm 6$	A
	Discharge over-current Level 1 alarm delay	$1 \pm 0.8$	S
	Discharge over-current Level 2 protection current	$110 \pm 3 / 220 \pm 7$	A
	Discharge over-current Level 2 protection delay	$1 \pm 0.8$	S
	Discharge over-current Level 3 protection current	$150 \pm 5 / 300 \pm 9$	A
	Discharge over-current Level 3 protection delay	$1 \pm 0.8$	S
	<p>1. The lock will be automatically unlocked after 1 minute. If the lock occurs for 10 consecutive times, the lock will not be automatically unlocked</p> <p>2, charge release: charging current &gt; 1A Meet any condition can be released</p>		
Charge over-current protection	Charge over-current Level 1 alarm current	$105 \pm 3 / 210 \pm 6$	A
	Charge over-current Level 1 alarm delay	$1 \pm 0.8$	S
	Charge over-current Level 2 protection current	$110 \pm 3 / 220 \pm 7$	A
	Charge over-current Level 2 protection delay	$1 \pm 0.8$	S
	Charge over-current Level 3 protection current	$150 \pm 5 / 300 \pm 9$	A
	Charge over-current Level 3 protection delay	$1 \pm 0.8$	S
	<p>1. The current limiting module is automatically unlocked after 5 minute. If the current limiting module is unlocked for 10 consecutive times, the current limiting module is always on.</p> <p>2, discharge discharge: discharge current &gt; 1A</p>		

## Short circuit protection

Test content		Factory default parameters	Unit
Short circuit protection	Short-circuit protection current	1000/2000	A
	Short-circuit protection delay (The actual customer sent back to our test shall prevail)	300±200	uS
	Short-circuit protection release : Remove Load release/charge release		

## High temperature protection

Test content		Factory default parameters	Unit
Charging high temperature protection	Charging high temperature alarm	55±2	°C
	Charging high temperature alarm delay	1±0.8	S
	Charging high temperature alarm release	50±2	°C
	Charging high temperature protection	60±2	°C
	Charging high temperature protection delay	1±0.8	S
	Charging high temperature protection release	55±2	°C
Discharge high temperature protection	Discharge high temperature alarm	60±2	°C
	Discharge high temperature alarm delay	1±0.8	S
	Discharge high temperature alarm release	55±2	°C
	Discharge high temperature protection	65±2	°C
	Discharge high temperature protection delay	1±0.8	S
	Discharge high temperature protection release	60±2	°C

## Low temperature protection

Test content		Factory default parameters	Unit
Charge low temperature protection	Charge low temperature alarm	5±2	°C
	Charge low temperature alarm delay	1±0.8	S
	Charge low temperature alarm release	10±2	
	Charge low temperature protection	0±2	°C
	Charge low temperature protection delay	1±0.8	S
	Charge low temperature protection release	5±2	°C
Discharge low temperature protection	Discharge low temperature alarm	-15±2	°C
	Discharge low temperature alarm delay	1±0.8	S
	Discharge low temperature alarm release	-10±2	°C
	Discharge low temperature protection	-25±2	°C
	Discharge low temperature protection delay	1±0.8	S
	Discharge low temperature protection release	-20±2	°C

## Environment temperature protection

Test content		Factory default parameters	Unit
Environment temperature protection	Environment high temperature alarm	65±2	°C
	Environment high temperature protection	70±2	°C
	Environment high temperature protection release	65±2	°C

## MOS temperature protection

Test content		Factory default parameters	Unit
MOS temperature protection	MOS high temperature alarm	95±2	°C
	MOS high temperature alarm release	90±2	°C
	MOS high temperature protection	100±2	°C
	MOS high temperature protection release	65±2	°C

## voltage difference alarm

Test content		Factory default parameters	Unit
voltage difference alarm	voltage difference level 1 alarm	0.3	V
	voltage difference level 1 alarm release	0.25	V
	voltage difference level 2 alarm	0.5	V
	voltage difference level 2 alarm release	0.45	V

## temperature difference alarm

Test content		Factory default parameters	Unit
temperature difference alarm	temperature difference level 1 alarm	10±2	°C
	temperature difference level 1 alarm release	7±2	°C
	temperature difference level 2 alarm	15±2	°C
	temperature difference level 2 alarm release	12±2	°C

## others

Test content		Factory default parameters		Unit
SOC alarm	Battery capacity low alarm	< 10%		
internal resistance	The main circuit conducts the internal resistance	<20		mΩ
current consumption	Self-consuming electrical current during operation	≤60	With display	mA
		≤45	Without display	mA
	The sleep mode consumes electrical current	<800		uA
	Sleep time	3600		S
communication mode	<input checked="" type="checkbox"/> UART <input checked="" type="checkbox"/> CAN <input checked="" type="checkbox"/> 485 <input type="checkbox"/> 232			

## Reliability parameter

NO.	Item	condition
1	Detection accuracy	Current detection accuracy: ≤3%FSR Voltage detection accuracy: ≤15mV Temperature detection accuracy: ≤2°C (normal temperature) SOC accuracy (≤5%@50% capacity range or above)
2	Information storage	Store a maximum of 10,000 biographical information, including protection times, current total voltage, current, temperature, SOC, etc
3	SOC measurement	Current integration method, accuracy ≤10% (affected by ambient temperature)
4	Working environment condition	Operating temperature :-40°C ~ 85°C
		Relative humidity :5% ~ 90%RH
5	Storage environment condition	Storage temperature :-40°C ~ 85°C
		Relative humidity :5% ~ 90%RH

# LED indication

status	RUN LED	Alarm LED	Battery Indicator LED				Instructions
	●	●	●	●	●	●	
Power Off Or Sleep	Off	Off	Off	Off	Off	Off	/
standby state	Flash 1	Off	Refer to 6.2				standby state
	Flash 1	Flash 3					Secondary protection has been triggered. Connect the host computer to check the fault information and take appropriate measures
charge	on	off	Refer to 6.2				Normal charge
	on	Flash 3					
	on	off	on	on	on	on	Overcharge protection; If the charger is unplugged, the indicator turns to standby state
discharge	Flash 3	off	Refer to 6.2				Normal discharge
	Flash 3	Flash 3					Over-discharge protection, please charge the battery
	off	off	off	off	off	off	Enter undervoltage sleep state, please charge the battery
Failure state	off	on	off	off	off	off	The system is in temperature, over-current, short circuit protection, etc., can not charge and discharge, need to check the cause

## LED Flash Instructions

Flash mode	on	off
Flash1	0.25S	3.75S
Flash2	0.5S	0.5S
Flash3	0.5S	1.5S

## SOC Instructions

SOC	charging				discharge				standby state			
	L4	L3	L2	L1	L4	L3	L2	L1	L4	L3	L2	L1
	●	●	●	●	●	●	●	●	●	●	●	●
0~25%	off	off	off	Flash2	off	off	off	On	off	off	off	On
25~50%	off	off	Flash2	On	off	off	On	On	off	off	On	On
50~75%	off	Flash2	On	On	off	On	On	On	off	On	On	On
75~100%	Flash2	On	On	On	On	On	On	On	On	On	On	On

## Reset button description

- 1、 When the BMS is in sleep state, press the button and release it. The protection board is activated, and the LED indicator turns on for 0.5 seconds from "RUN".
- 2、 When the BMS is in the active state, press the button (3~6S) and release it, the protection board will be hibernated, and the LED indicator will turn on for 0.5 seconds from the lowest power indicator.
- 3、 When the BMS is in the active state, press the key (6-10s) and release it, the protection board is reset, and all the LED lights are extinguished at the same time.
- 4、 When the BMS is in the active state, press the button three times within 5s, and the BMS can be automatically coded again.

## Buzzer logic

- 1- When a fault occurs, 0.25S is emitted every 1S.
- 2- When protection, sound 0.25S every 2S (except overvoltage protection, 3S sound 0.25S when undervoltage);
- 3- When an alarm is generated, the alarm is generated every 3S for 0.25S (except for an overvoltage alarm).
- 4- When the heat is out of control, sound 1S every 2S

The buzzer function can be enabled or disabled by the host computer, but is disabled by factory default



## Parameter configuration description

Save/load configuration: Users can save the configuration and load through the host computer for the factory-configured or set parameters;

## Sleep and wake up

If any of the following conditions are met, the system enters sleep mode:

- 1) Monomer or overall overrelease protection is not removed within 30 seconds.
- 2) Press the button (3~6S) and release the button.
- 3) At the same time, no communication, no protection, no balance, no current, and the duration reaches the sleep delay time.

Before entering sleep mode, ensure that no external voltage is connected to the input terminal. Otherwise, the sleep mode cannot be entered.

### wake up

If any of the following conditions are met, the system exits the sleep mode and enters the normal running mode:

- 1) Plug in charger/load.
- 2) Press the button and release the button.
- 3) With 485, CAN communication activation.

Note: After the single or overall over-discharge protection, it enters sleep mode, wakes up periodically every 4 hours, and starts charging and discharging MOS. If it can be charged, it will exit the resting state and enter normal charging;

# Communication instructions

## External communication

RJ45 single network port integrates RS485, UART, CAN functions, BMS can communicate with the host computer through RJ45 single port, so that the host computer can monitor various information of the battery, including battery voltage, current, temperature, status and battery production information, the default baud rate is 9600bps.

## Inner Communication

RJ45 dual network port has the function of RS485, through which internal communication between BMS can be carried out to achieve automatic coding of BMS, the baud rate is 115200bps.

## Inverter communication

The protection board supports the inverter protocols of RS485, and CAN communication interfaces. The engineering mode of the upper computer can be selected.

Protocol type	Protocol abbreviation
RS485 Protocol	Voltronic
RS485 Protocol	Growatt
RS485 Protocol	SOLAX
RS485 Protocol	LTW
RS485 Protocol	SZPC
RS485 Protocol	PV3500
RS485 Protocol	SRNE
RS485 Protocol	BAYKEE
RS485 Protocol	Local
CAN Protocol	GOODWE
CAN Protocol	Growatt
CAN Protocol	SOLAX
CAN Protocol	SOFAR
CAN Protocol	LUXPower
CAN Protocol	PV1800F
CAN Protocol	LTW
CAN Protocol	Victron
CAN Protocol	PYLONTECH
CAN Protocol	SOROTEC
CAN Protocol	SOALARFAM
CAN Protocol	Local

# BATTERY MAINTENANCE

## Regular Inspections:

- Examine the external appearance of the battery.
- Ensure the top of the battery and terminals are clean, dry, and free of corrosion.
- Check battery cables and connections; replace damaged cables and tighten loose connections.

## Cleaning Procedure:

- Disconnect the battery from the charging source or electric load.
- Clean the top of the battery and terminals with a damp cloth or non-metallic brush.
- Dry the battery with a clean and maintain cleanliness and dryness around the battery.

## Periodic Voltage Checks:

- Periodically check the battery voltage to assess battery health.
- If the battery resting voltage is under 10V in active mode at room temperature it may indicate over-discharge due to self-discharge or parasitic loads.
- Stop using the battery until the fault is corrected and the battery can be charged.

# BATTERY STORAGE

- To prevent potential parasitic loads from discharging the battery, disconnect it from the discharge equipment.
- Store the battery in an open, well-ventilated, dry, and clean area to maintain its condition and prevent damage.
- Charge the battery at least once every 3 months to prevent over-discharge and ensure its longevity.
- When taking the battery out of storage, ensure it is given a full charge before use to optimize its performance and reliability.