48V

LiFePO4

BATTERY PACK

USER MANUAL

CONTENT

1. Layout of Front Panel

NO.	Name	Function
1	Positive Terminal	Charge & Discharge
2	SOC	Indicators For Capacity
3	ALM	Indicator For Alarms
4	RUN	Indicator For Running Status
5	ADD	Dial Code Of Communication
6	Negative Terminal	Charge & Discharge
7	Power Switch	ON/OFF Switch
8	Reset	Activate/Hibernate BMS
9	RS485*2/CAN*2	Communication Interface
10	LCD Screen	Display Battery Information

2. Battery Specifications

Nominal Parameters			
Model No	LFP48100P	LFP48150P	LFP48200P
Voltage	51.2 V	51.2 V	51.2 V
Capacity	100Ah	150Ah	200Ah
Energy	5KWh	7KWh	10KWh
Dimensions (L * W * H mm)	480*440*160	480*440*200	480*440*255
Weight (KG)	Approx 48	Approx 60	Approx 85
Built-in BMS	16S 100A	16S 200A	16S 200A
Electrical Parameters			
Operation Voltage	51.2 VDC	51.2 VDC	51.2 VDC
Max. Charging Voltage	58.4 VDC	58.4 VDC	58.4 VDC
Cut-off Discharge Voltage	43.2 VDC	43.2 VDC	43.2 VDC
Max. Continous Charging and Discharging Current	100A	150A	200A
Peak Discharge Current	150A (5s)	250A (5s)	250A (5s)
Basic Parameters			
Life Time(25°C)	10 years		
Communication Method	RS485/CAN		
Display Method and Language	LCD, English		
Life Cycles (70% DOD, 25°C)	≥6000 times Cycles		
Operating Temperature Range	-20℃~70℃		
Operating Humidity Range	10%~85%		

3. Working Mode

3.1. Basic Mode

3.1.1. Charging Mode

The BMS turns on the charging MOSFET for charging when it detects an external charging voltage of ≥48V, and the cell voltage and temperature are within the chargeable range. When the charging current reaches the effective charging current, it enters the charging mode. Both charging and discharging MOSFETs are on in charge mode.

3.1.2. Discharging Mode

The BMS enters the discharge mode when it detects that the load is connected and the cell voltage and temperature are within the dischargeable range and the discharge current reaches the effective discharge current.

3.1.3. Standby Mode

When neither of the above two modes is met, it enters standby mode.

3.1.4. Hibernation Mode

The BMS will enter sleep (shutdown) mode after a specific time of standby, or when the battery triggers undervoltage protection, or when the key is executed to shutdown or when the upper computer executes the shutdown command mode.

The wake-up conditions of hibernation mode:

1. Make charging to activation;

2. Press the button to power on.

3.2. Description of Buzzer

Buzzer function can be enabled or disabled via the upper computer, factory default is disabled.

3.3. Description of Reset Button

When the BMS is dormant, press the button for 1S and then release it, the protection board will be activated and the LED will light up from "L4" for 0.5 seconds.

When the BMS is active, press the button for 3S and then release it, the board will be dormant and the LED will light up from "RUN" for 0.5 seconds.

3.4. Dormancy and Activation

3.4.1. Dormancy

The system will enter low-power mode when any of the following conditions are met.

1. Single cell undervoltage protection or overall undervoltage protection is not released within 30 minutes.

2. Press the button for 3 seconds and then release the button.

3. The minimum individual voltage is lower than the sleep setting voltage (default value 3150mV) and the duration reaches the sleep delay time (default value 1440 minutes), and there is no communication and no charging/discharging in meanwhile.

4. Forced shutdown via the upper computer software.

Note: Before entering hibernation, make sure that no external voltage is connected to the P-terminus, otherwise it will not be able to enter the low-power mode.

3.4.2. Activation

When the system is in low-power mode and any of the following conditions are met, the system will exit low-power mode and enter normal operation mode.

1. Connect to the charger, the charger output voltage should be greater than or equal to 48V.

2. Press the button for 1S, after releasing the button.

4. LED Indicator Description

4.1. LED Indicator Description

Four green capacity indicators, one red alarm indicator, one green operation indicator

🟢	🟢	🟢	🟢	🔴	🟢
SOC				ALM	RUN

4.2. SOC Capacity Indicator

Status	Charge				Discharge			
Capacity Indicator	L1●	L2●	L3●	L4●	L1●	L2●	L3●	L4●
0 ~ 25%	OFF	OFF	OFF	Flash 2	OFF	OFF	OFF	ON
25 ~ 50%	OFF	OFF	Flash 2	ON	OFF	OFF	ON	ON
50 ~ 75%	OFF	Flash 2	ON	ON	OFF	ON	ON	ON
75 ~ 100%	Flash 2	ON	ON	ON	ON	ON	ON	ON
Running Indicator●	ON				Flash 3			

4.3. Status Indicator

Status	Warning/Normal	RUN ●	ALM ●	SOC LED ●	●	●	●	Mark
OFF		OFF	OFF	ALL OFF				
Standby	Normal	Flash 1	OFF					
	Warning	Flash 1	Flash 2					
Charge	Normal	ON	OFF					
	Over Voltage Warning	ON	OFF					
	Over Current, Over Voltage and Temperature Warning	ON	Flash 2	ON as battery capacity indicates				
	Over Voltage Protection	Flash 1	OFF					
	Over Current Protection	ON	OFF					
Discharge	Normal	Flash 3	OFF					
	Warning	Flash 3	Flash 2					
	Low Voltage Protection	Flash 1	Flash 2					
	Protection of Overcurrent, Short Circuit, Temperature, Reverse Polarity etc	OFF	ON	ALL OFF				

4.4. Flash Instruction of LED Indicators

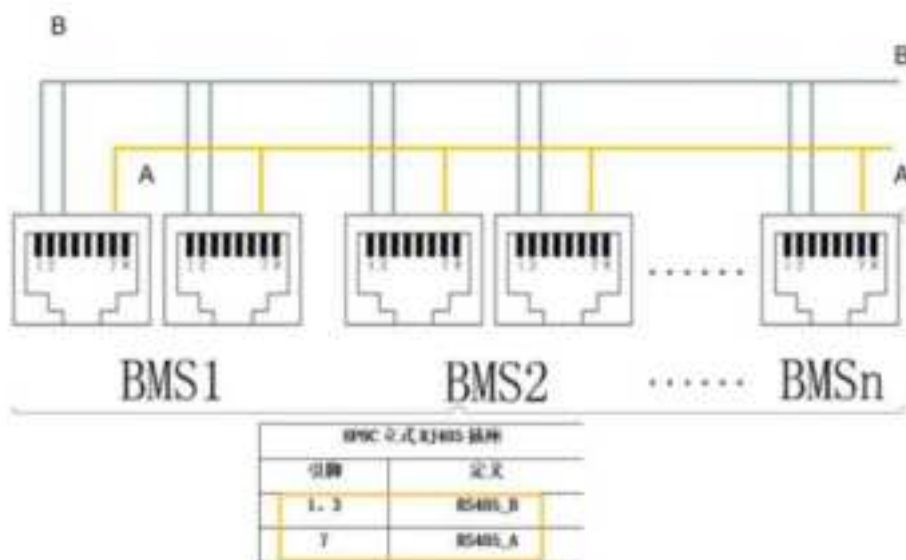|	ON	OFF
Flash 1	0.25 S	3.75 S
Flash 2	0.5 S	0.5 S
Flash 3	0.5 S	1.5 S

5. Communication

With RS485 and CAN interface, which supports communicating with multiple machines in parallel and with the upper computer. RS485 baud rate is 19200, CAN baud rate is 500K.

RS485 INTERFACE
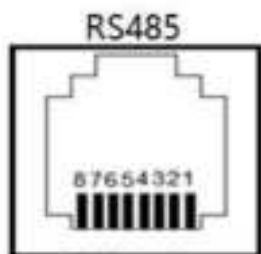
8P8C RJ45 Pins Assignment (RS485)	
Pins	Definition
1、3	RS485_B
7	RS485_A
2、6	GND
4	CANH
5	CANL
8	NC

The multi-unit parallel bus connections are shown in the following figure.

| Instructions For Compatibility With Inverters	
1. Compatible inverter brands list	Victron, Pylontech, Goodwe, Growatt, Voltronic, Deye, LXP, Sofar, GinLong, SMA, 拓宝, Salocor
2. If your inverter not on our list above	① If you can provide the communication protocol (a kind of code) of your inverter, we can customize the BMS to be compatible with your inverter, minimum order quantity for customzed is 50 pcs.
	② Without communication protocol, inverter cannot communicate with our battery. You need to make some setting on your inverter, for example, select the user-defined mode and set the corresponding voltage level(according to the inverter user manual), so that they can work together without communication.
More questions about inverter communication, pls contact our customer service.	

6. Assignment of ID Addresses

When performing parallel communication operation of multiple machines, you need to configure the dialing address of each PACK first. When the BMS is configured for stand-alone operation, and the dialing address can be any address; when the BMS is configured for cascade operation mode, the slave dialing address is selected from 1 to 31, and the host dialing address is selected from 32 or 48 according to the inverter brand.

You can enter the address code of the master or slave battery in the system parameters of the upper computer to detect and communicate.

Code						ADD	PACK NO.	Remarks
1	2	3	4	5	6			
ON	OFF	OFF	OFF	OFF	OFF	1	PACK 1	Slave Pack
OFF	ON	OFF	OFF	OFF	OFF	2	PACK 2	
ON	ON	OFF	OFF	OFF	OFF	3	PACK 3	
OFF	OFF	ON	OFF	OFF	OFF	4	PACK 4	
ON	OFF	ON	OFF	OFF	OFF	5	PACK 5	
OFF	ON	ON	OFF	OFF	OFF	6	PACK 6	
ON	ON	ON	OFF	OFF	OFF	7	PACK 7	
OFF	OFF	OFF	ON	OFF	OFF	8	PACK 8	
ON	OFF	OFF	ON	OFF	OFF	9	PACK 9	
OFF	ON	OFF	ON	OFF	OFF	10	PACK 10	
ON	ON	OFF	ON	OFF	OFF	11	PACK 11	
OFF	OFF	ON	ON	OFF	OFF	12	PACK 12	
ON	OFF	ON	ON	OFF	OFF	13	PACK 13	
OFF	ON	ON	ON	OFF	OFF	14	PACK 14	
ON	ON	ON	ON	OFF	OFF	15	PACK 15	
OFF	OFF	OFF	OFF	ON	OFF	16	PACK 16	
ON	OFF	OFF	OFF	ON	OFF	17	PACK 17	
OFF	ON	OFF	OFF	ON	OFF	18	PACK 18	
ON	ON	OFF	OFF	ON	OFF	19	PACK 19	
OFF	OFF	ON	OFF	ON	OFF	20	PACK 20	
ON	OFF	ON	OFF	ON	OFF	21	PACK 21	
OFF	ON	ON	OFF	ON	OFF	22	PACK 22	
ON	ON	ON	OFF	ON	OFF	23	PACK 23	
OFF	OFF	OFF	ON	ON	OFF	24	PACK 24	
ON	OFF	OFF	ON	ON	OFF	25	PACK 25	
OFF	ON	OFF	ON	ON	OFF	26	PACK 26	
ON	ON	OFF	ON	ON	OFF	27	PACK 27	
OFF	OFF	ON	ON	ON	OFF	28	PACK 28	
ON	OFF	ON	ON	ON	OFF	29	PACK 29	
OFF	ON	ON	ON	ON	OFF	30	PACK 30	
ON	ON	ON	ON	ON	OFF	31	PACK 31	
OFF	OFF	OFF	OFF	OFF	ON	32	PACK 32	**Master Pack:** if your inverter is from other brands except Victron, SMA and Growatt, the ADD of master pack is 32
OFF	OFF	OFF	OFF	ON	ON	48		**Master Pack:** if your inverter is from Victron, SMA or Growatt, the ADD of master pack is 48

7. LCD Display Introduction
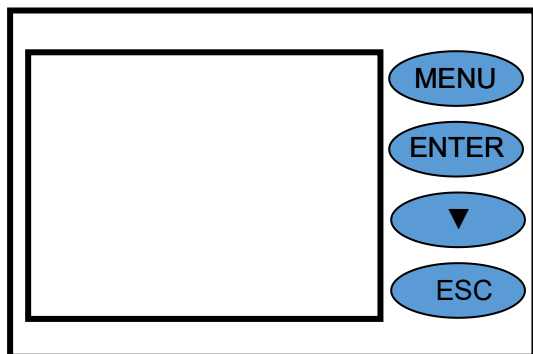
Button description:

MENU：Enter the management system.

ENTER：Enter to the sub-menu.

▼：Move the cursor down or to next page.

ESC：Return to the previous menu.

7.1. Power-on screen

System Date	SOH
Charging/Discharging Current	Environmental Temperature
Total Voltage	Max. Temperature of Battery Cell
Remaining Capacity	SOC
Max. Voltage of Single Unit	Min. Voltage of Single Unit

Battery protection status：
Over Voltage: OV
Low Voltage: LV
Over Temp: OT
Low Temp: LT
Over Current: OC
Short Circuit: SC

Note: When there is protection situation of the battery, there will show the corresponding protection status, otherwise, the protection status will not be showed.

7.2. Press "MENU" to enter the main menu

(Note: "》" means there is a sub-menu, press "ENTER" to enter the sub-menu)

BMS Parameter	》
Battery Status	》
GYRO Status	》
Version Number	》

7.2.1. Move the cursor to "BMS Parameter" and press "Enter" to enter.

Voltage	0.00V
Current	0.0A
Cell Temp	》
Cell Volt	》

Move the cursor to "Cell Temp" and press "Enter" to check the battery temperature information, then press "▼" to turn the page.

Temp 01	xx℃
Temp 02	xx℃
Temp 03	xx℃
Temp 04	xx℃
MOS Temp	xx℃
Env Temp	xx℃

Move the cursor to "Cell Volt" and press "Enter" to check the battery voltage information, then press "▼" to turn the page.

Cell 01	xxxxmV
Cell 02	xxxxmV
Cell 03	xxxxmV
Cell 04	xxxxmV
Cell 05	xxxxmV
Cell 06	xxxxmV
Cell 07	xxxxmV
Cell 08	xxxxmV
Cell 09	xxxxmV
Cell 10	xxxxmV
Cell 11	xxxxmV
Cell 12	xxxxmV
Cell 13	xxxxmV
Cell 14	xxxxmV
Cell 15	xxxxmV
Cell 16	xxxxmV
SOC	xx%
Nominal Capacity	0.0AH
Remain Capacity	0.0AH
BMS Cycles	0

7.2.2. Move the cursor to "Battery Status" and press "Enter" to check the battery status information, then press "▼" to turn the page.

Status	IDLE/DISCHG/CHARGE/FULL
Alarm Status	》
Protect Status	》
Failure Alarm	》

Move the cursor to "Alarm Status" and press "Enter" to check the battery alarm information, then press "▼" to turn the page.

Over Volt	YES/NO
Low Volt	YES/NO
Over Temp	YES/NO
Low Temp	YES/NO
Low SOC	YES/NO
Diff Volt	YES/NO
Over Curr	YES/NO
Reverse	YES/NO

Move the cursor to "Protect Status" and press "Enter" to check the battery protection information, then press "▼" to turn the page.

Over Volt	YES/NO
Low Volt	YES/NO
Over Temp	YES/NO
Low Temp	YES/NO
Over Curr	YES/NO
Short Curr	YES/NO

Move the cursor to "Failure Alarm" and press "Enter" to check the battery fault information, then press "▼" to turn the page.

Sample Line	N/Y
Charge MOS	N/Y
Dis CHG MOS	N/Y
Sample Chip	N/Y
SC Times	0
Over Temp CNT	0
Over Cur CNT	0
OVER Chg CNT	0
Over Dchg CNT	0

7.2.3. Move the cursor to "GYRO Status" and press Enter to check the gyroscope information, then press "▼" to turn the page. (Note: This gyroscope is optional)
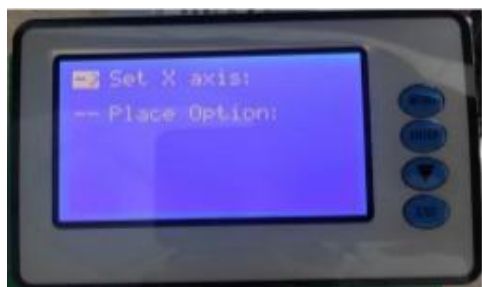
Set X axis:	
Place Option:	

7.2.4. Move the cursor to "Version number" and press Enter to check the version information, then press "▼" to turn the page.

BMS Version	》
LCD Version	》

Move the cursor to "BMS Version" and press "Enter" to check the BMS version information.

BMS SW Version	
BMS HW Version	

Move the cursor to "LCD Version" and press "Enter" to check the LCD version information.

LCD SW Version	
LCD HW Version	

7.3. Dormancy and Activation Function

After 1 minute of no button operation in normal running, the display screen will be off (only the backlight is off). Pressing any button while the screen is off will allow the screen light and operate normally.

8. Upper Computer Software Introduction

	Enable the monitoring software, select the communication interface of the corresponding device, select the corresponding baud rate, and finally click "Open Serial Interface" to communicate with BMS and get the basic parameters.
	You can switch the version in Chinese or English in help center
	After the BMS communicates with the upper computer, you can monitor the basic parameters and status of the battery in real time. These information include battery voltage, current, SOC, SOH, cycle count, battery temperature, alarm status, protection status, etc.

You can view the real-time data storage of the BMS and export as excel tables.

When monitoring multiple packs, you need to set the start and end address of packs manually, you can check and comparethe data of each pack. And you can also export as excel table.
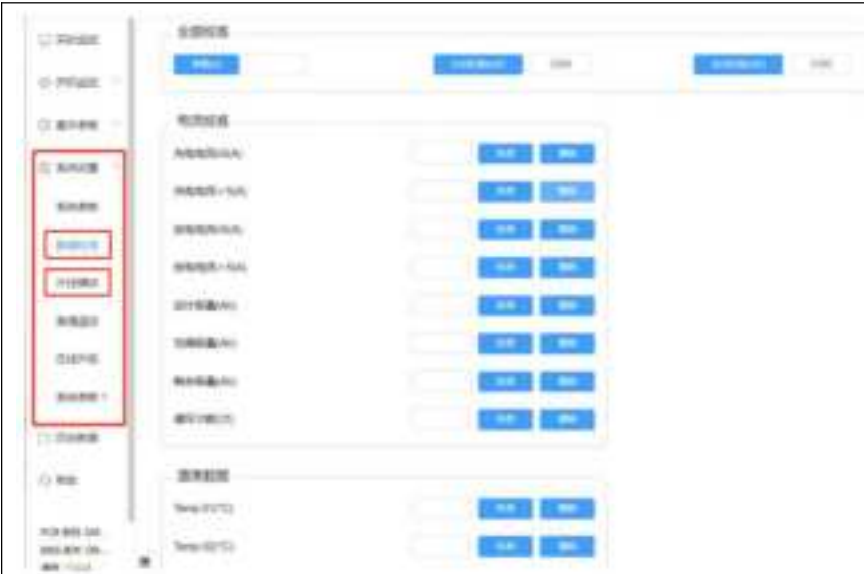

Basic parameters 1. Click "Read All" when enter for the first time. This section includes reading basic parameter information, restoring default parameters, writing individual parameters, writing all parameters, importing parameters and exporting parameters (it is not recommended to manually modified default parameters).

	Basic parameters 2. Click "Read All" when enter for the first time. This section includes heating settings, other BMS parameter information, etc. (it is not recommended to manually modified default parameters).
	System parameter setting. Click "Read All" when enter for the first time. You can monitor the BMS parameters configuration, sleep settings and BMS information in real-time(it is not recommended to manually modified default parameters).
	Data calibration: Here is calibration content of BMS data　(all has calibrated by factory, not recommended for private calibration). Plug-in modules: Here will contains information about some additional functional modules.

Normal remote control: Here includes the control of charging and discharging MOS, heating and other states (please consult the manufacturer for operation).

Online upgrade: software online upgrade function of BMS (please consult the manufacturer for operation).

System Parameters 1. Here includes some basic parameter information and dormancy settings.

Click "Read Data" to get real-time history data and export data, and view basic data information of battery packs.

9. List of Accessories

NO.	ITEM	PICTURE	QTY	Remarks
1	Battery Pack		1	
2	Parallel Power Cable		2	For 48V 100AH: 6 gauge cable 0.3M + SC25-8 connector For 48V 150AH/200AH: 4 gauge cable 0.4M + SC35-8 connector
3	Parallel Communication Cable		1	RJ45 cable 0.5M
4	Upper computer Connecting Cable		1	RJ45 to USB cable 2M
5	Screws		4	M8