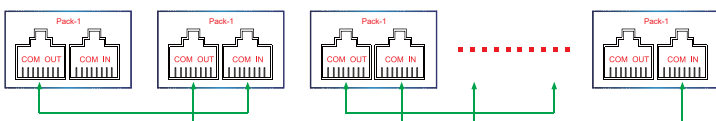


Li48-100WM/ Li48-100FTRT

Example of Parallel packs DIP setting									
Number of parallel packs	DIP switch position								Description
	1#	2#	3#	4#	5#	6#	7#	8#	
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
16 in parallel	OFF	OFF	OFF	OFF	ON	ON	ON	ON	1st host
	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	2nd guest
	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	3rd guest
	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	4th guest
	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	5th guest
	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	6th guest
	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	7th guest
	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	8th guest
	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	9th guest
	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	10th guest
	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	11th guest
	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	12th guest
	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	13th guest
	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	14th guest
	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	15th guest
	ON	ON	ON	ON	OFF	OFF	OFF	OFF	16th guest

2.3.2 Automatic DIP address

Automatic DIP address communication connection



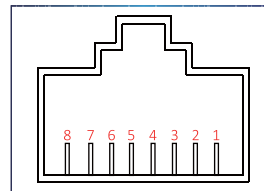
2.4 Reset switch

Serial number	Function	Definition
1	Power on/boot	When the Battery is in the dormant state, press the reset button once, the battery will be activated, and the LED indicators will flash in sequence, and then it will enter the normal working state.
2	Shutdown/hibernate	When the battery is in the standby or discharge state, press this key for 3s, the battery will be dormant, and the LED indicators will flash in sequence, then it will enter the dormant state. The BMS has no power consumption after hibernation.

2.5 CAN Communication

BMS has the function of battery pack upload CAN communication, the baud rate is 500K. CAN communication interface adopts 8P8C network cable interface. It can communicate with inverter or CAN TEST through CAN interface.

CAN communication interface definition:

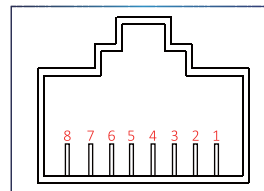


Pin	Definition Description
1、2、7、8	NC (Dangling)
4	CAN-H
5	CAN-L
3、6	Ground wire

2.6 RS485 communication

BMS has RS485 communication of battery pack, baud rate is 19200bps. RS485 communication interface adopts 8P8C network cable interface RS485.

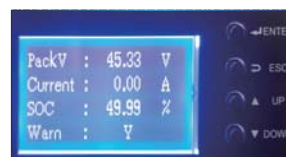
Communication interface definition:



Pin	Definition Description
1、8	T/R -
2、7	T/R +
3、6	Ground wire
4、5	NC (Dangling)

2.7 LCD screen

2.7.1 Button introduction



- ◆ENTER-- Enter/confirm
- ◆ESC-- Exit
- ◆UP-- Up button
- ◆DOWN-- Down button

◆Each item starts with a number, among which "number flashing" indicates the current cursor position, press UP or DOWN key to move the cursor position up and down; press ENTER key to enter the corresponding page.

◆Press RETURN key to return to the previous directory.

◆The backlight of the display screen is turned off in the sleep state. Press any key to turn on the backlight of the display screen.

This manual describes the use of lithium iron phosphate batteries, please read this manual before installing the battery, and follow the instructions carefully during the installation process.

Failure to do so or to follow any instructions or warnings in this document may result in electric shock, serious injury or death, or may damage the battery, potentially rendering it inoperable.

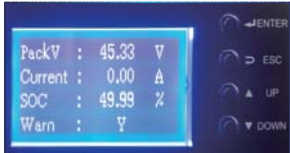
If you have any doubts, please contact supplier for assistance immediately.



Manual

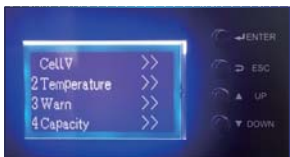
1. Scope of application
 - 1.1 Product Features
 - 1.2 Product Specification
 - 1.2.1 Product appearance and Size
 - 1.2.2 Product Technical Specifications
2. Functional features
 - 2.1 Equipment interface instruction
 - 2.2 LED indication function
 - 2.3 DIP address selection
 - 2.4 Reset switch
 - 2.5 CAN Communication
 - 2.6 RS485 communication
 - 2.7 LCD screen
 - 2.8 Battery switch
 - 2.9 Output terminals
3. BMS
 - 3.1 Software Introduction

2.7.2 Display effect
After power-on activation, main page will show the battery management interface, press ENTER to enter the main page. As shown below:



- ◆PackV-- Total battery voltage
- ◆Current-- Current
- ◆SOC-- Remaining capacity
- ◆Warn-- Warning

2.7.3 Interface introduction
Press UP key to enter battery parameter details:



- ◆CellV-- Cell voltage query
CellV01-CellV16: Cell voltage value
- ◆Temoeraure-- Temperature query
Temp1-Temp4: Cell temperature value
Envir-temp: Ambient temperature
PCB-temp: Power temperature
- ◆Capacity--Capacity query
FCC: Battery capacity
Rm: Remaining capacity
Cycle Time: Cycle times

- ◆Warn-- Warning query
OV-Warn: High voltage warning
OV-Prot: Overvoltage Protection
UV-Warn: Low voltage warning
UV-Prot: Undervoltage protection
OT-Warn: High temperature warning
OT-Prot: Over temperature protection
UT-Warn: Low temperature warning
UT-Prot: Under temperature protection
OC-Warn: Overcurrent warning
OC-Prot: Overcurrent Protection
CAPA-Warn: Remaining capacity warning
OFF-USE: Failure alarm
SCP: Short circuit protection
- ◆CAN protocol

2.7.4 CAN protocol switching
Press the DOWN key to enter the protocol switching interface, select the corresponding protocol, long press the ENTER key for 3 seconds, jump to SUCCESS, and the switching is completed.



- ◆CAN PAGE 1:
PN GDLT: Paineng Agreement
GRWT: Growatt Agreement
VCTR: Victron Agreement
SMA SF: SMA Agreement
- ◆CAN PAGE 2:
GINL: Ginlang Protocol
STUD: Studer Protocol

The interface displays SUCCESS indicating that the protocol switch was successful.

- 3.2 Installation method
 - 3.2.1 Unzip
 - 3.2.2 Installation
- 3.3 Function and operation
 - 3.3.1 Port, Baud Rate, Pack Selection
 - 3.3.2 Protocol loading
 - 3.3.3 Authority management
 - 3.3.4 Telecommunication Record
 - 3.3.5 Real-time recording
 - 3.3.6 History
 - 3.3.7 CAN and 485 inverter protocol switching

4. Bluetooth
 - 4.1 Software introduction
 - 4.2 Android and Apple system software download and installation
 - 4.3 User login
 - 4.4 Device connection
5. Packing List
6. Battery installation
 - 6.1 Check packing list
 - 6.2 Tool preparation
 - 6.3 Installation
 - 6.3.1 Installation precautions
 - 6.3.2 Install the battery pack
 - 6.3.3 Connect to device
 - 6.3.3.1 Cable
 - 6.3.3.2 Breaker
7. Storage
8. Recycle
9. Precautions

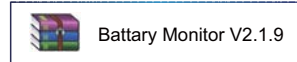
2.8 Switch
External switch can control Battery on/off, external switch takes precedence.
2.9 Output terminals
Positive and negative output terminals for connecting devices.

BMS

3.1 Software Introduction
Display of voltage data and over-limit condition of each cell; display of battery temperature, ambient temperature and power temperature; display of charge and discharge current, total voltage, remaining capacity, total capacity and battery cycle times; Display of alarm protection information; display of system operating status and display of communication status and product information.

3.2 Installation method

3.2.1 Unzip
Double-click the 'Battery Monitor V2.1.6' archive and select unzip:



The icon to open the monitoring software of the upper computer is as follows:

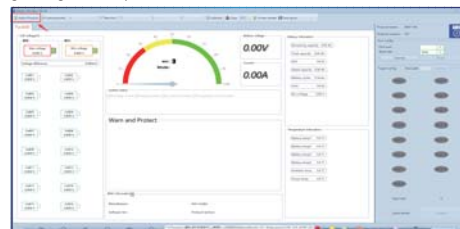


If you use this software for the first time, please check if your computer has the ".net framework version 4.0 or later" runtime library (which can be downloaded from the website).

3.3 Function and operation

3.3.1 Protocol loading
3.3.1.1 Double-click the folder to run the software. The first run will automatically load 16 protocols in the protocol folder. If no protocol is found, please load the protocol in your hand, and open the host computer interface as follows, please load the protocol.

3.3.1.2 Loading the protocol file: Click to import the protocol--the protocol is in the host computer folder--'Agreement' in the folder is the protocol--click OK in the above figure, and the protocol file selection dialog box will pop up as follows: Select the corresponding protocol (EN tail) suffix is the English agreement)



Scope of application

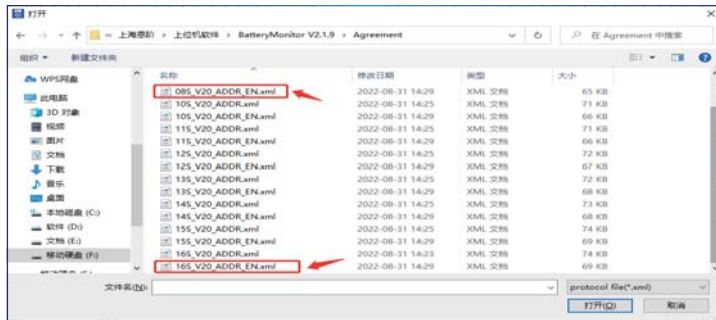
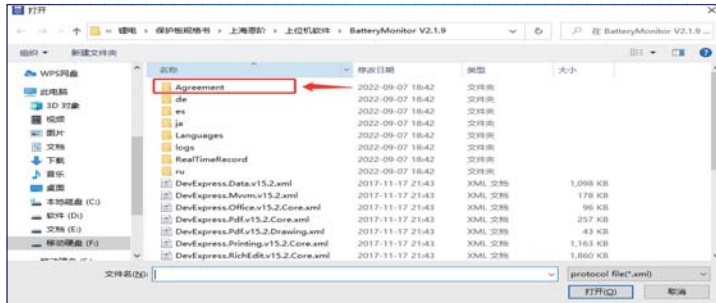
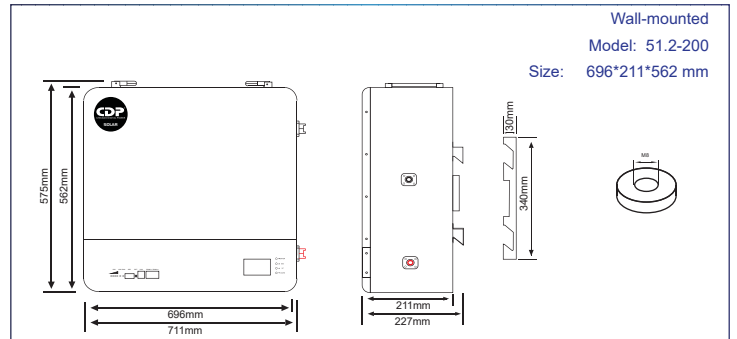
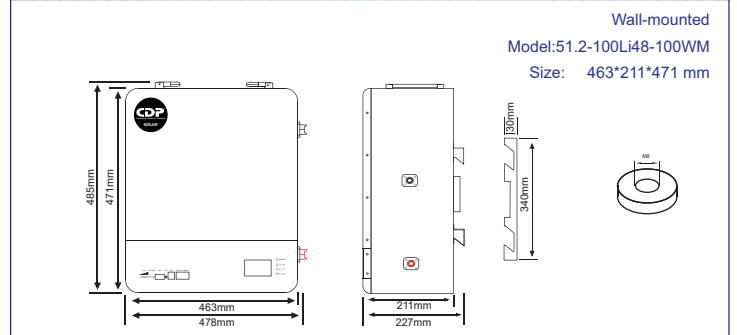
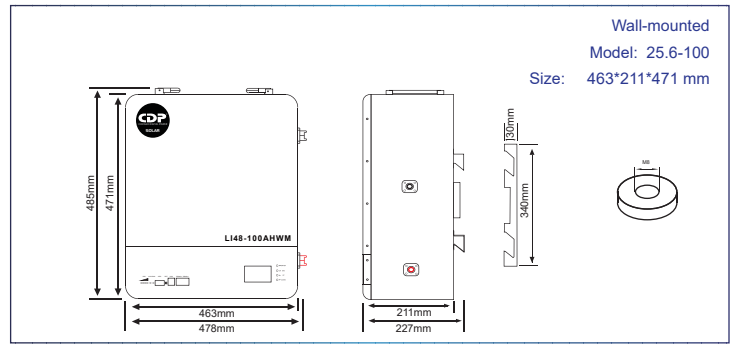
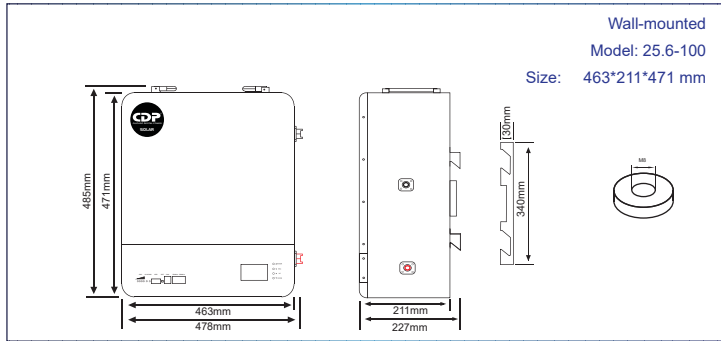
This product is a new type of energy storage product developed and produced by our company, which can provide reliable power support for various equipment and systems. The battery has a built-in BMS battery management system, which can manage and monitor the battery's voltage, current, temperature and other information.

1.1 Product Features

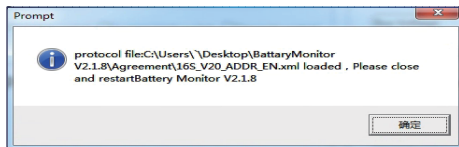
- ◆Using lithium iron phosphate battery cell, it has better thermal stability, good safety performance and cycle life.
- ◆Low self-discharge, can be stored for up to 6 months.
- ◆No charge-discharge memory effect, discharge depth can reach 80% DOD.
- ◆Small size, light weight, wall-mounted and 19-inch module standard, easy to install and maintain.
- ◆Flexible configuration and free expansion for use.
- ◆Car-grade BMS, providing double protection.
- ◆Realize accurate measurement of SOC and SOH health status statistics during charging and discharging.
- ◆It has protection and recovery functions such as overvoltage, undervoltage, charge and discharge overcurrent, high and low temperature, and short circuit.
- ◆Automatic voltage equalization during charging to extend service life.
- ◆Automatically set DIP address when connecting multiple battery packs.
- ◆Support battery pack data monitoring through RS485 communication host computer software.
- ◆The battery pack comes with CAN communication protocol, which is suitable for 90% of equipment manufacturers on the market.

1.2 Product Specification

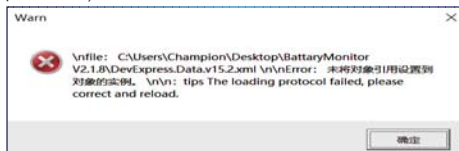
1.2.1 Product appearance and Size



After clicking this button to open, if the protocol is correct, you will see the successful dialog box as shown below, the software will restart automatically!

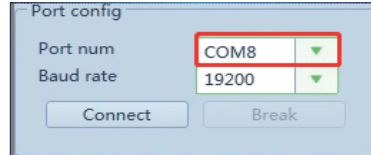


If the protocol is incorrect, you will see a failed dialog as follows: (probably the client loaded not the protocol file)



3.3.2 Port, Baud Rate, Pack Selection

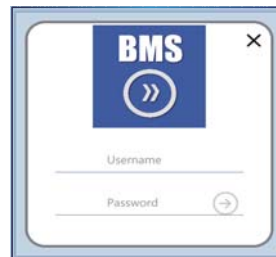
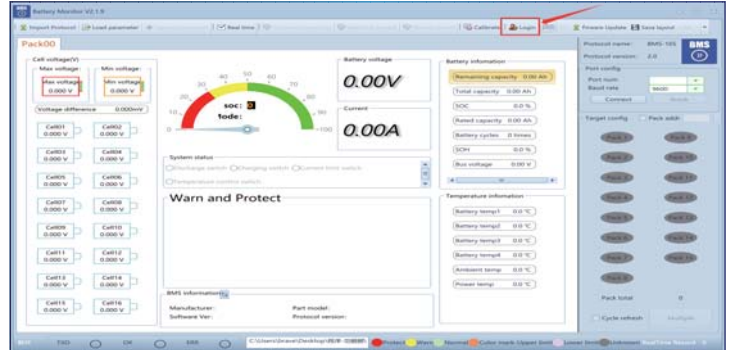
Port settings in the interface, you can set the port (automatically identify the port), baud rate, as shown below:



Note: The port number can only be selected according to the reading of the serial port

3.3.3 Authority management(Log in)

The action of 'login' in the menu bar realizes the management of software permissions as shown in the figure:

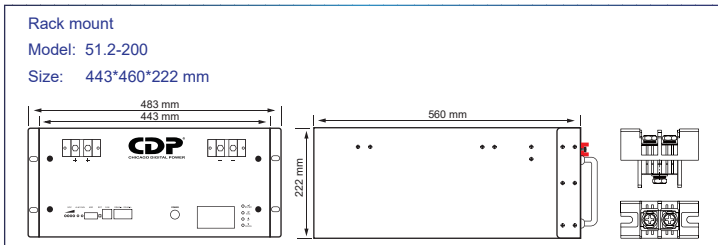
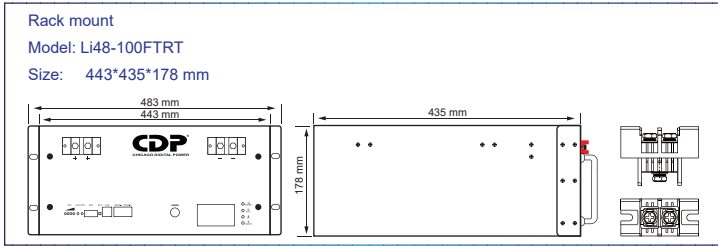
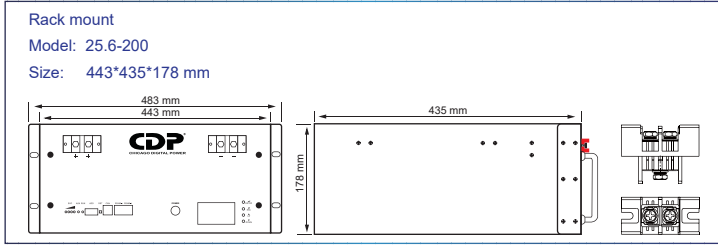
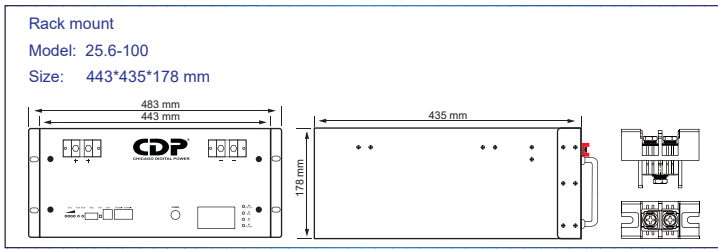


Username: admin
Password: admin

3.3.4 Telecommunication Record

The action of 'login' in the menu bar realizes the management of software permissions as shown in the figure

1.2.2 Product Technical Specifications

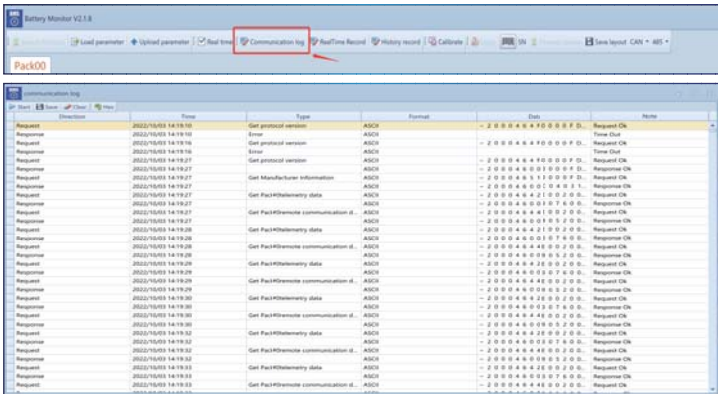


		Walk-mounted			
Rating	Model Item	25.6-100	25.6-200	Li48-100WM	51.2-200
		Pack Method	8S	2P 8S	16S
Nominal Capacity		100Ah	200Ah	100Ah	200Ah
Minimum Capacity		96Ah	192Ah	96Ah	192Ah
Nominal Voltage		25.6V		51.2V	
Energy		2560Wh	5120Wh	5120Wh	10240Wh
Charge Voltage		29.2V		58.4V	
Discharge cut-off Voltage		20V		40V	
Charge Method		CC/CV			
Standard Charge Current		50A	100A	50A	100A
Max.Charge Current		100A			
Standard Discharge Current		50A	100A	50A	100A
Max.Continues Discharge current		100A			
Cycle Life		80% DOD (≥ 6000 times)			
Dimension		463*211*471 mm	463*211*471 mm	463*211*471 mm	469*211*562 mm
Terminal		M6			
Communication interface		RS485- CAN- Bluetooth			
Monitoring software		PC operation/APP			
Weight		Approx. ≈30.00kg	Approx. ≈45.00kg	Approx. ≈45.00kg	Approx. ≈90.00kg
Working Temperature Range		Charge: 0°C-40°C Discharge: -10°C-55°C			
Storage Temperature		0°C-40°C(Recommendation 23±2°C)			

		Rack mount			
Rating	Model Item	25.6-100	25.6-200	Li48-100FTRT	51.2-200
		Pack Method	8S	2P 8S	16S
Nominal Capacity		100Ah	200Ah	100Ah	200Ah
Minimum Capacity		96Ah	192Ah	96Ah	192Ah
Nominal Voltage		25.6V		51.2V	
Energy		2560Wh	5120Wh	5120Wh	10240Wh
Charge Voltage		29.2V		58.4V	
Discharge cut-off Voltage		20V		40V	
Charge Method		CC/CV			
Standard Charge Current		50A	100A	50A	100A
Max.Charge Current		100A			
Standard Discharge Current		50A	100A	50A	100A
Max.Continues Discharge current		100A			
Cycle Life		80% DOD (≥ 6000 times)			
Dimension		443*435*178 mm	443*435*178 mm	443*435*178 mm	443*460*222 mm
Terminal		M6			
Communication interface		RS485- CAN- Bluetooth			
Monitoring software		PC operation/APP			
Weight		Approx. ≈22.00kg	Approx. ≈43.00kg	Approx. ≈43.00kg	Approx. ≈76.00kg
Working Temperature Range		Charge: 0°C-40°C Discharge: -10°C-55°C			
Storage Temperature		0°C-40°C(Recommendation 23±2°C)			

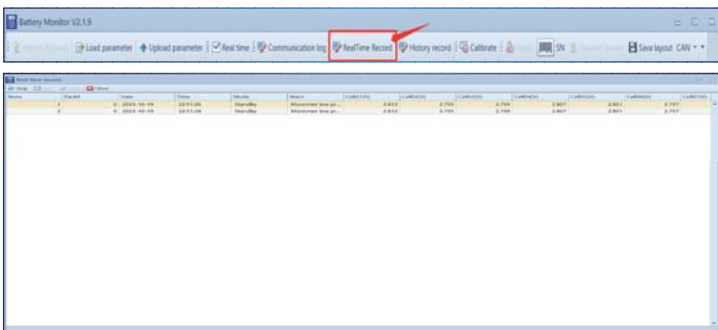
Functional features

2.1 Equipment interface instruction



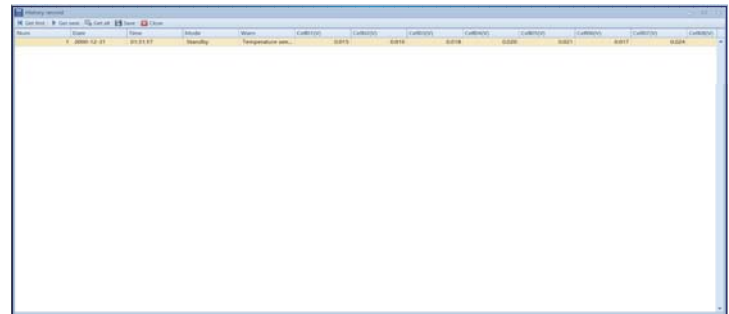
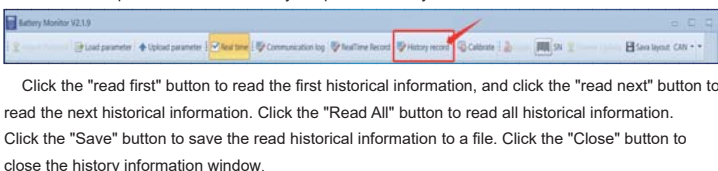
3.3.5 Real-time recording

Click the real-time record on the operation interface, let the host computer start recording data and pop up the window to view the real-time record as shown in the figure below:



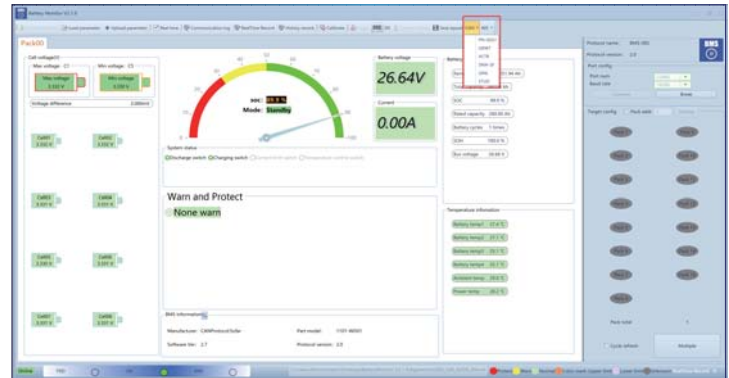
3.3.6 History

Click on the operation interface history to open the history information form as shown below:



3.3.7 CAN and 485 inverter protocol switching

Select the appropriate protocol connection according to the device used.



Bluetooth

4.1 Software Description

Bluetooth APP software can be applied to Andriod system and IOS mobile phone system. This system connects the battery wirelessly through the Bluetooth of the mobile phone to realize various management and alarm information collection, query, display, configuration modification and other unctons of the battery pack.

4.2 Android and Apple system software download and installation

◆Android system

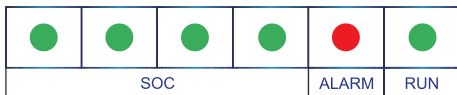
Use a browser to open the webpage and scan the QR code on the webpage to download and install.



2.2 LED indication function

2.2.1 LED light sequence

1 running light, 1 warning light, 4 capacity indicator lights



2.2.2 Capacity indication

State	Charge				Discharge				
	LED4	LED3	LED2	LED1	LED4	LED3	LED2	LED1	
Capacity indicator lights	●	●	●	●	●	●	●	●	
Capacity status	0-25%	Out	Out	Out	Flash	Out	Out	Out	Light on continuously
	25-50%	Out	Out	Flash	Light on continuously	Out	Out	Light on continuously	Light on continuously
	50-75%	Out	Flash	Light on continuously	Light on continuously	Out	Light on continuously	Light on continuously	Light on continuously
	75-100%	Flash	Light on continuously	Light on continuously	Light on continuously	Light on continuously	Light on continuously	Light on continuously	Light on continuously
Running lights	Light on continuously				Flash				

2.2.3 Instruction of flash

Flashing state	Light on continuously	Out
Flash 1 time	0.25S	3.75S
Flash 2 times	0.5S	0.5S
Flash 3 times	0.5S	1.5S

2.2.4 State Indication

Status	Health status	RUN	ALN	Capacity indicator LED				Description
		●	●	●	●	●	●	
Shut down	Dormant	Out	Out	Out	Out	Out	Out	All off
Standby	Normal	Flash 1 time	Out	Out	Out	Out	Out	Standby mode
Recharge	Normal	Light on continuously	Out	According to the battery capacity display				LED Flash up to 2 times
	Over-current warning	Light on continuously	Flash 2 times	According to the battery capacity display				LED Flash up to 2 times
	Over-voltage warning	Flash 1 time	Out	Out	Out	Out	Out	/
Discharge	Temperature & over-current protection	Flash 1 time	Flash 1 time	Out	Out	Out	Out	/
	Normal	Flash 3 times	Out	According to the battery capacity display				According to the battery capacity display
	Alarm	Flash 3 times	Flash 3 times	According to the battery capacity display				/
	Temperature over-current short-circuit protection	Out	Light on continuously	Out	Out	Out	Out	Stop discharging forced dormancy without action after 48h when the mains is offline
	Low-voltage protection	Out	Out	Out	Out	Out	Out	Stop charging

7



Apple system

"Search for "EN BMS" in the Apple Store to install (note the space in the middle)

4.3 Login

Default username: **admin** & default password: **111111**

4.4 Device connection

After the user logs in, the "Device" interface will display the searched device name.

-Single pack: Since the single machine dialing address is all 0, BP00 is displayed.

-Click "Device BP00" to connect the mobile phone to the battery Bluetooth module.



The parallel switching operation can be performed on the main page - status bar 6 after entering the app system.

Single pack mode can be selected: BP00 (master), BP01~BP15 (slave); status bar 6 displays "Parallel Packs-BPxx"

In parallel packs mode, status bar 6 displays "Parallel - Paralle"

In parallel packs mode, status bar 1~4 displays the parallel summary data; status bar 5 displays the protocol type connecting the host BP00 to the inverter; status bar 6 displays "Device Details"/"Configuration" in addition to the parallel status. Parameters/Switch Settings are grayed out and cannot be displayed or configured.

In single pack mode, status bar 2~5 are the selected stand-alone data; status bar 6 displays the selected unit data. Machine number, "Device Details", "Configuration Parameters", "Switch Settings"; among them, "Configuration Parameters" and "Switch Settings" can be viewed and modified.

Packing List

After receiving the goods, please check the items against the packing list. If there is anything missing, please contact the dealer in time.

Packing List(Wall-mounted)			
Serial number	Material packing list	Qty	Unit
1	LiFePO4 Battery Pack	1	Pcs
2	485 to USB communication cable	1	Pcs
3	RJ45 communication line	1	Pcs
4	Screw/with gasket	2	Pcs
5	Expansion screws	8	Pcs
6	Terminal protection sleeve	2	Pcs
7	Wall mounting bracket	1	Pcs
8	User manual	1	Part

Packing List(Cabinet type)			
Serial number	Material packing list	Qty	Unit
1	LiFePO4 Battery Pack	1	Pcs
2	485 to USB communication cable	1	Pcs
3	RJ45 communication line	1	Pcs
4	Screw/with gasket	2	Pcs
5	User manual	1	Part

Battery installation

6.1 Check packing list

After receiving the goods, please check the items against the packing list. If there is anything missing, please contact the dealer in time.

6.2 Tools preparation

When installing the battery pack, it is recommended to wear the following safety gear:

Insulating gloves, goggles, safety shoes



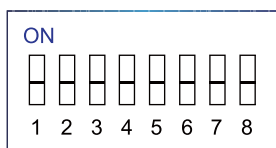
8

2.3 DIP address selection

2.3.1 Manual DIP address

For multi-computer communication when the battery packs are connected in parallel, use the DIP switch to distinguish different Pack addresses, and the hardware address can be set through the DIP switch on the board. (Support 16 groups in parallel)

Definition of DIP switch bit1 to bit8: bit1 to bit4 are used to set the address, and bit5 to bit8 are used for the number of slaves.



Host setting: bit1 to bit4 are 0, the master address is fixed to 0, bit5 to bit8 are set according to the number of parallel slaves.

Host Settings					
Number of parallel packs	DIP switch position				Description
	5#	6#	7#	8#	
2	ON	OFF	OFF	OFF	2 units in parallel
3	OFF	ON	OFF	OFF	3 units in parallel
4	ON	ON	OFF	OFF	4 units in parallel
5	OFF	OFF	ON	OFF	5 units in parallel
6	ON	OFF	ON	OFF	6 units in parallel
7	OFF	ON	ON	OFF	7 units in parallel
8	ON	ON	ON	OFF	8 units in parallel
9	OFF	OFF	OFF	ON	9 units in parallel
10	ON	OFF	OFF	ON	10 units in parallel
11	OFF	ON	OFF	ON	11 units in parallel
12	ON	ON	OFF	ON	12 units in parallel
13	OFF	OFF	ON	ON	13 units in parallel
14	ON	OFF	ON	ON	14 units in parallel
15	OFF	ON	ON	ON	15 units in parallel

Slave setting: bit1 to bit4 are set according to the device order, the slave address range is 1 to 15.

Bit5 to bit8 are fixed to 0.

Slave Settings					
Number of parallel packs	DIP switch position				Description
	5#	6#	7#	8#	
1	ON	OFF	OFF	OFF	Pack 1
2	OFF	ON	OFF	OFF	Pack 2
3	ON	ON	OFF	OFF	Pack 3
4	OFF	OFF	ON	OFF	Pack 4
5	ON	OFF	ON	OFF	Pack 5
6	OFF	ON	ON	OFF	Pack 6
7	ON	ON	ON	OFF	Pack 7
8	OFF	OFF	OFF	ON	Pack 8
9	ON	OFF	OFF	ON	Pack 9
10	OFF	ON	OFF	ON	Pack 10
11	ON	ON	OFF	ON	Pack 11
12	OFF	OFF	ON	ON	Pack 12
13	ON	OFF	ON	ON	Pack 13
14	OFF	ON	ON	ON	Pack 14
15	ON	ON	ON	ON	Pack 15

Parallel use address setting: refer to the following table for the definition of the DIP switch:

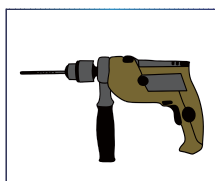
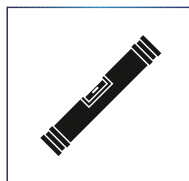
Example of Parallel packs DIP setting									
Number of parallel packs	DIP switch position								Description
	1#	2#	3#	4#	5#	6#	7#	8#	
Single pack	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Single pack
2 in parallel	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	1st host
	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	2nd guest
3 in parallel	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	1st host
	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	2nd guest
	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	3rd guest

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Use properly insulated tools to prevent accidental electric shock or short circuit:

Horizontal ruler, electric drill, insulated wrench, screwdriver



6.3 Installation

6.3.1 Installation precautions

- ◆The installation area is completely waterproof.
- ◆There are no flammable or explosive materials in the accessories.
- ◆The operating environment temperature is 0°C-50°C.
- ◆More than 2 meters away from heat source.
- ◆More than 0.5 meters away from the inverter air outlet.

Caution

- Max support 16 module in parallel
- The parallel modules must have the same voltage, the same capacity, and the same batch
- After parallel connection, only diffuser capacity is allowed, and discharge current is not increased
- Module series and parallel differential pressure ≤100mV

Before installation, make sure the battery is in off mode

6.3.2 Install the battery pack

Wall-mounted:

Use a horizontal ruler to mark the positioning holes of the bracket on the wall, fix the bracket on the wall, lift the battery and hang it on the bracket.



Rack mount:

Lift the battery, place the battery in the rack, and secure the battery.

6.3.3 Connect to device

6.3.3.1 Cable

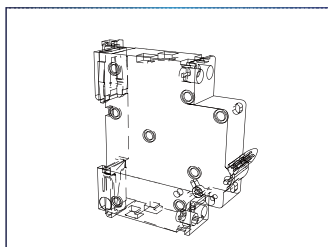
Prepare 2 cables and cold-pressed terminals for connecting to the inverter or other equipment
Cable: no less than 13.3 square meters (6AWG)

Cold-pressed terminal: SC16-6



6.3.3.2 Breaker

A suitable circuit breaker needs to be installed between the battery system and the inverter or other equipment



Storage maintenance

The battery needs to be charged at least once every 6 months to ensure that the SOC is charged to above 80%.

After installation, it is recommended to check the battery cables and specified connections every year to ensure that the connection points are not loose, broken, or corroded.

Recycle

If batteries (in normal condition or damaged) require disposal or recycling, they should be handled in accordance with local recycling regulations and use the best technology to achieve the relevant recycling efficiency.

Precautions

To prevent the possibility of the battery from leaking, heating, fire, Please READ this specification carefully before usage and observe the following precautions:

