High Voltage Lithium Battery Product

Installation and User Manual

BR-HV 15.36KWh
BR-HV 20.48KWh
BR-HV 25.60KWh
BR-HV 30.72KWh
BR-HV 35.84KWh
BR-HV 40.96KWh

BASEN GREEN

Content

Thank you for purchasing the lithium battery products of Shenzhen BASENGREEN Technology Co., Ltd.!

1. Safety Instructions

Please read this operation and maintenance manual carefully before performing any operation on the equipment; the safety precautions mentioned in the manual do not represent all the safety matters that should be observed, but are only a supplement to the safety precautions. When installing, operating, and maintaining equipment, you should abide by local safety laws and regulations. Only trained professionals can install, operate, and maintain equipment. Our company does not assume any responsibility for any violation of general safe operation requirements or violation of design, production and Liability for losses resulting from the use of equipment safety standards. Installation and maintenance personnel must have the technical ability to operate high-voltage and AC power supplies. When installing, operating, and maintaining equipment, they are not allowed to wear any conductive objects, such as watches, bracelets, bangles, and rings, and prevent moisture from entering the equipment.

1.1 Safety precautions

Notice

The input voltage and output voltage of this equipment are dangerously high voltage and large current. Improper operation may endanger life and safety. Please read this manual carefully before installation and operation, and pay attention to various warning signs and warning sentences on the equipment. Do not remove the chassis of the power supply device unless authorized professional maintenance personnel.

High voltage hazard

The high-voltage power supply provides power for the operation of the equipment. Direct contact or indirect contact with the high-voltage power supply through wet objects will bring fatal danger.

Use special tools

When working on high voltage and AC power, be sure to use special tools instead of personal tools.

Electrostatic Prevention

Static electricity generated by the human body will damage the static-sensitive components on the board. Before touching the plug-in, circuit board or chip, ensure correct anti-static measures.

⚠ Disconnect power during operation

It is strictly prohibited to install or remove the power cord while the power is on. Before installing or removing the power cord, the power switch must be turned off. Before connecting the cables, please confirm that the connecting cables and cable labels match the actual installation conditions.

- It is strictly prohibited to wear watches, bracelets, bracelets, rings and other conductive objects during operation.
- Before maintenance, the AC power supply and battery power supply must be disconnected to isolate the power input. It is best to check the main unit's input wiring strip with a voltmeter before performing maintenance to ensure that the input power is turned off and in a safe state.

⚠ DC short circuit hazard

The power system provides DC regulated power supply. DC short circuit will damage the equipment and cause fatal danger.

⚠ Danger

Do not place the device in an environment containing flammable or explosive gases or smoke, and do not perform any operations in such an environment.

⚠ Warn

Battery operations must be carried out in accordance with the battery instructions, especially battery wiring operations. Improper operation can damage the battery and even endanger personal safety.

- It is prohibited to short-circuit the positive and negative terminals of the battery. The battery cable must be locked tightly. It is prohibited to touch any two terminals of the battery or the exposed ends of the connecting wires at the same time, otherwise the battery may be damaged or personal injury may occur.
- Be careful to prevent battery electrolyte from overflowing. Spilled electrolyte will corrode metal objects and circuit boards, causing equipment damage and circuit board short circuits.
- The battery should be kept away from fire sources and all electrical equipment that can easily cause sparks to avoid danger or unnecessary losses.

1.2 Equipment operating environment requirements

The operation of any electronic equipment in a flammable atmosphere poses an extreme hazard and the equipment must be used and stored in accordance with the environmental requirements set out in the user manual.

The battery operating environment should meet the following requirements:

a. Comply with the technical specifications for equipment operation (temperature: 0℃~40℃, relative humidity: 0%~95%).

b. Provide good ventilation and keep away from water, heat and flammable and explosive materials.

c. The operating altitude should not exceed 2000m. If used at an altitude exceeding 2000m, it must be derated in accordance with GB/T3859.2.

d. Avoid long-term use in the following places

- Places exposed to direct sunlight or near heat sources.
- Working environment with metal conductive dust.
- Direct sunlight, dust, volatile gases, corrosive substances and environments with excessive salt content.

2. Product overview

a. This battery system consists of one to eight 51.2V 100AH battery boxes(depends on the energy)-connected in series and a BMS high voltage box to form a 153.6-409.6V 100AH battery system.

b. The High-voltage BMS module is composed of circuit breakers, electrical appliances, integrated high-voltage boards, battery management modules, and other electronic devices. The LiFePO4 battery module is composed of LiFePO4 battery cells and the battery management system(BMS). High-performance BMS has overcharge, over-discharge, over-current, short-circuit, over-temperature, and other protection functions. It is also equipped with communication functions that can communicate with computers and monitor various parameters and status of battery cells in real time.

c. With a large 4.3-inch touch screen display, it is easy to operate and convenient for daily management and maintenance. It can display the operating parameters and operating status of the battery system and each power module in real time, and record historical events and alarm information.

d. This product is widely used in access network equipment, remote switching offices, mobile communication equipment, transmission equipment, satellite ground stations and Microwave communication equipment and other communication fields as backup power supply.

2.1 Introduction to the battery main control box interface:

①: P+ battery output positive pole

②: P- battery output negative pole

③: Circuit breaker switch

④: Battery box communication port

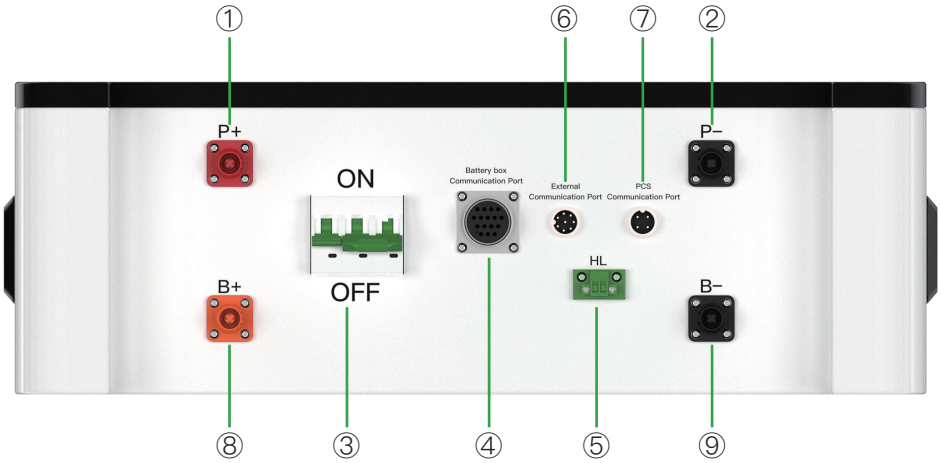
⑤: CAN communication port (communication with Inverter)

⑥: External communication port (parallel cluster/debugging communication)

⑦: PCS communication port (communication with Inverter)

⑧: B+ battery input positive pole

⑨: B- battery input negative pole



2.2 Battery module

2.3 Battery pack performance parameters

Name	Specification	Remark
Battery pack specifications and models	51.2V 100AH	
Battery box series and parallel number	16S1P	
Battery box dimensions	W480*D530*H160mm	
Battery box weight	Approx. 48KG	
Battery box voltage range	45.6V-59.2V	
Operating temperature	Charging: 0℃＜T≤55℃ Discharge: -10℃＜T≤60℃	
Maximum charging current	50A	
Maximum discharge current	50A	

2.4 Battery system appearance diagram

15.36KWh

20.48KWh

25.6KWh

30.72KWh

35.84KWh

40.96KWh

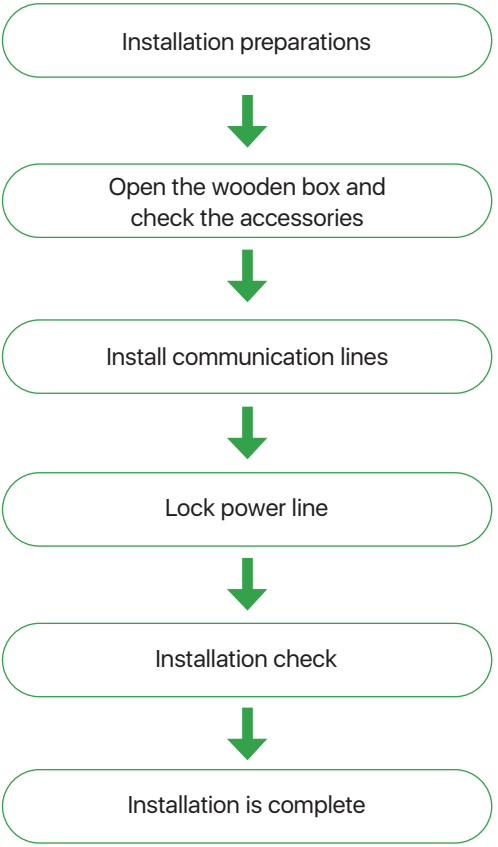
2.5 Battery system performance parameters

Name	Specification			Remark
Battery Type	Lithium iron phosphate battery			
Product number	153.6V100AH	204.8V100AH	256V100AH	
Rated voltage	153.6V	204.8V	256V	
Rated Capacity	100AH	100AH	100AH	
Rated power	15.36KWh	20.48KWh	25.6KWh	
Stacked high voltage dimensions	W480*D530 *H760mm	W480*D530 *H920mm	W480*D530 *H1080mm	
Weight	Approx. 200Kg	Approx. 250Kg	Approx. 300Kg	
Supporting communication	CAN communication			
Protocol	The default is Deye, supporting protocols such as Pylon, Growatt, Megarevo, Solis, INVT, Hypon,SOFAR, SMA, etc.			
Display	4.3-inch display			
Battery system voltage range	136.8V-177.4V	182.4V-236.8V	228V-296V	
Operating temperature	Charging: 0℃＜T≤55℃ Discharge: -10℃＜T≤60℃			
Maximum charging current	50A			
Maximum discharge current	50A			

Name	Specification			Remark
Battery Type	Lithium iron phosphate battery			
Product number	307.2V100AH	358.4V100AH	409.6V100AH	
Rated voltage	307.2V	358.4V	409.6V	
Rated Capacity	100AH	100AH	100AH	
Rated power	30.72KWh	35.84KWh	40.96KWh	
Stacked high voltage dimensions	W480*D530 *H1240mm	W480*D530 *H1400mm	W480*D530 *H1560mm	
Weight	Approx. 360Kg	Approx. 410Kg	Approx. 460Kg	
Supporting communication	CAN communication			
Protocol	The default is Deye, supporting protocols such as Pylon, Growatt, Megarevo, Solis, INVT, Hypon,SOFAR, SMA, etc.			
Display	4.3-inch display			
Battery system voltage range	273.6V-355.2V	319.2V-414.4V	364.8V-473.6V	
Operating temperature	Charging: 0℃＜T≤55℃ Discharge: -10℃＜T≤60℃			
Maximum charging current	50A			
Maximum discharge current	50A			

3. Installation Notes

3.1 Installation process

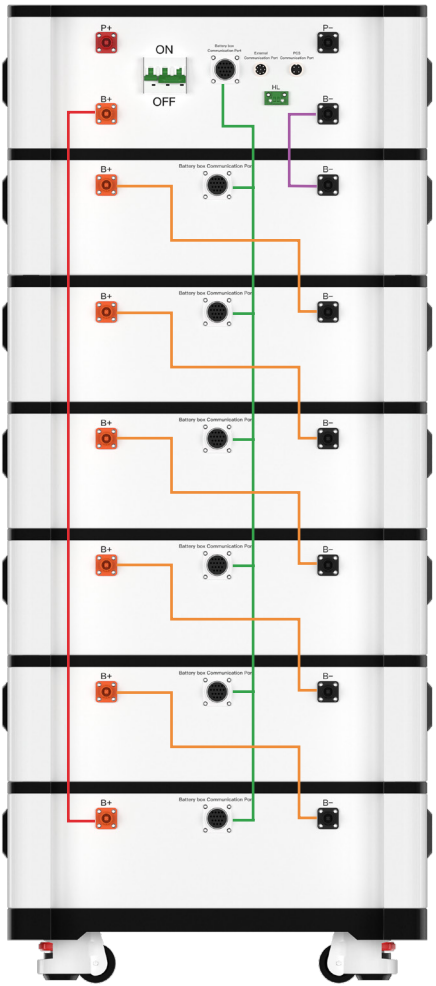


3.2 Installation tools

Tool		
Clamp ammeter	Phillips screwdriver	Electric batch
Multimeter	Socket wrench	Protective gloves

3.3 Lock power line

Taking 30.72kWh Battery as an example



B-series line

positive and negative series lines

P+ series line

box communication

The order of locking and paying the series power lines

1. Lock the B-series line first

2. Lock the positive and negative power lines from top to bottom

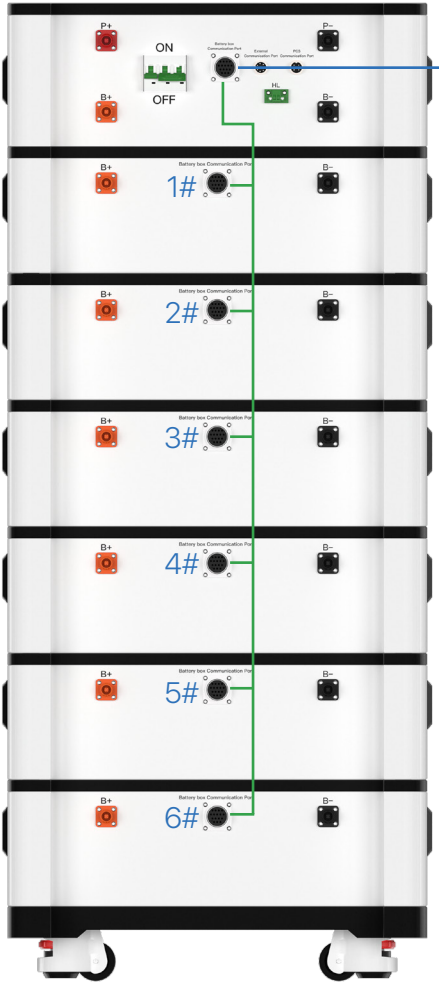
3. Lock the P+ series lines (from BMS module P+ port to the bottom battery module B+ port)

Important: It is necessary to install the terminal's cap after finishing the previous connection, and then go to lock the next power line.

The wiring diagram is completed as shown in the picture above.

3.4 Install communication lines

Taking 30.72kWh Battery as an example



main control box communication

Communication line installation sequence

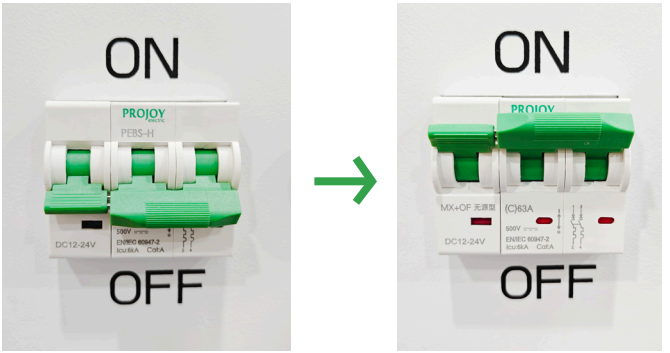
There are labels on the communication lines.

1. Connect the main control box communication line first (from BMS module communication port to the bottom battery module communication port)

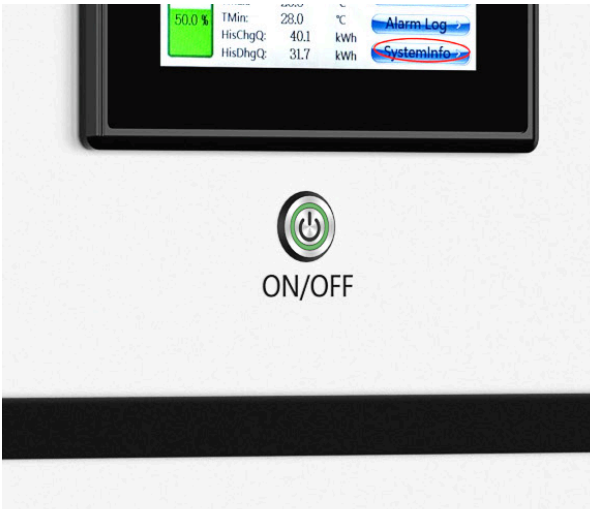
2. Install the 1#, 2#, 3#, 4#, 5#, and 6# communication line connectors in order according to the labels, the installation is completed as shown in the picture above.

3.5 Turn on the battery

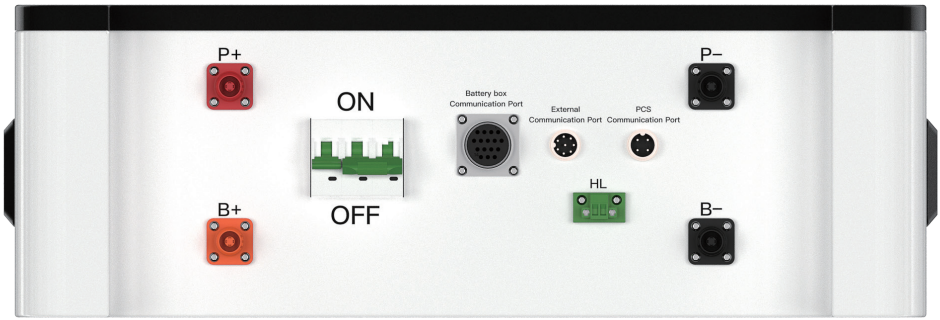
1. Turn on the DC breaker after every part is connected well.



2. Press the button on the front of the battery, and wait for 8-10 seconds, then press the button again, it is to activate the high voltage of the battery to the inverter.



4. Communication interface description



External communication port

Parallel output interface

(1) CAN2_L

(2) CAN2_H (parallel cluster/host computer communication)

(3) -12V (12V power supply output negative pole)

(4) ADDR_DO (CSU module automatically assigns address DO output)

Parallel input interface:

(1) CAN2_L;

(2) CAN2_H (parallel cluster/host computer communication)

(3) -12V (12V Negative pole of power supply input)

(4) ADDR_DI (automatically assigned address DI input)

PCS communication port:

(1) RS485_2A (reserved)

(2) RS485_2A (reserved)

(3) CAN3_L (communicates with PCS)

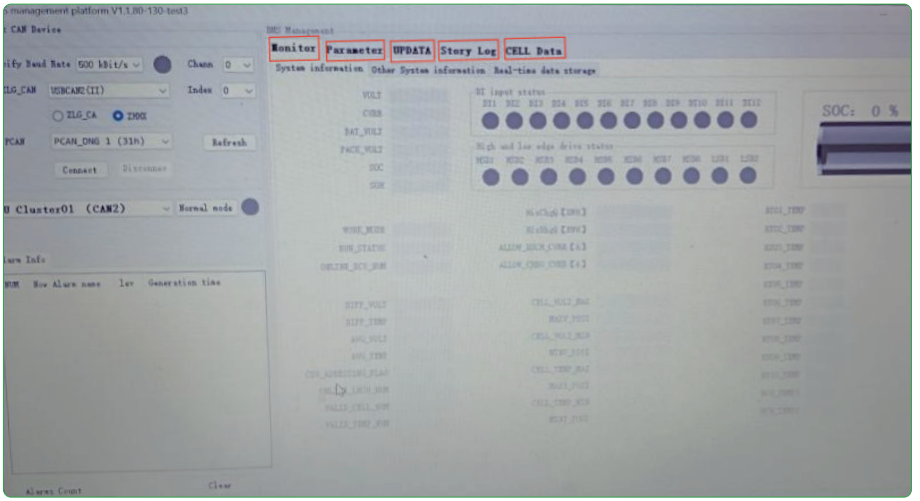
(4) CAN3_H (communicates with PCS)

H L interface:

communication port with PCS

5. Upper System software operating instructions

The Upper System Software is mainly divided into 5 functional modules: Monitor,Parameter,Updata, Story Log,Cell Data.



PC software interface

5.1 Driver Installation

Before checking upper system and using the CAN box for the first time, you need to install the driver corresponding to the CAN box. The driver installation method is as shown in the following steps.

a. Plug the USB cable of the CAN box into the computer port,

b. Log in to the CAN box driver website https://www.basenpower.com/Support/DOWNLOAD/ (Figure1)

c. Download the attachment (Figure 1),

d. Unzip the zip file, and you can choose to install it with the driver installation tool or install it manually (Figure 2)

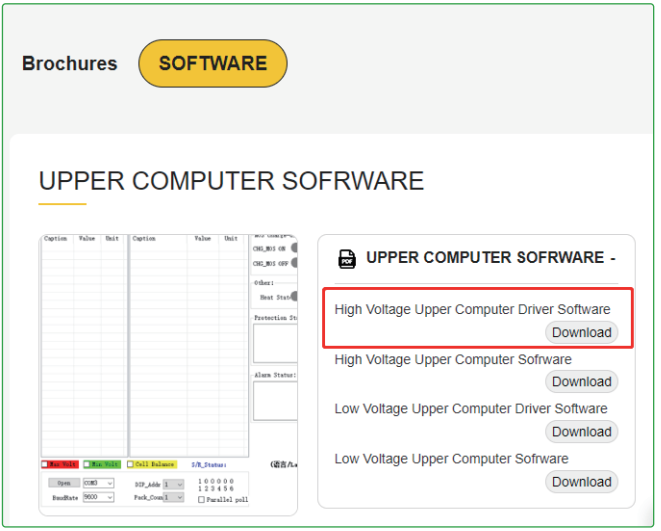
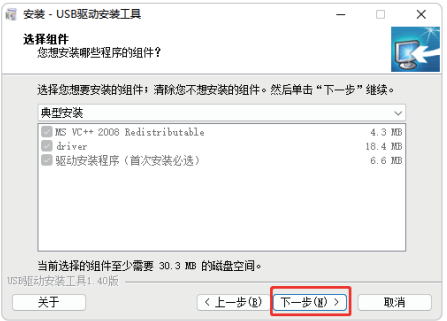
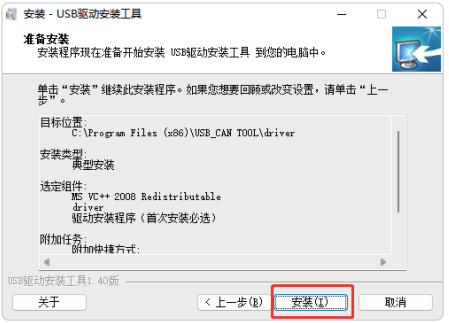


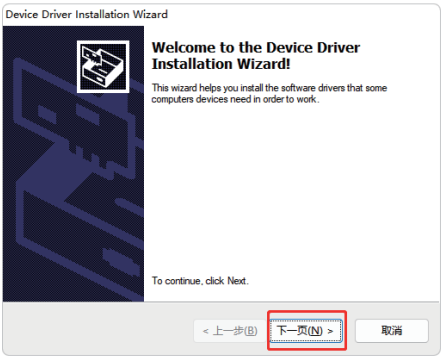
Figure 1

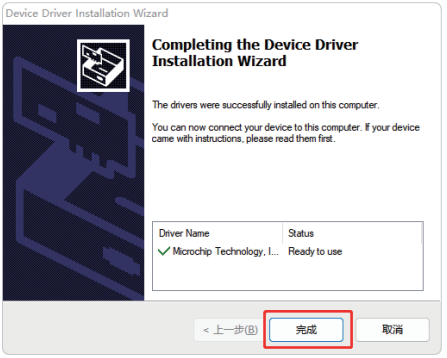
Figure 2

Follow the installation procedure



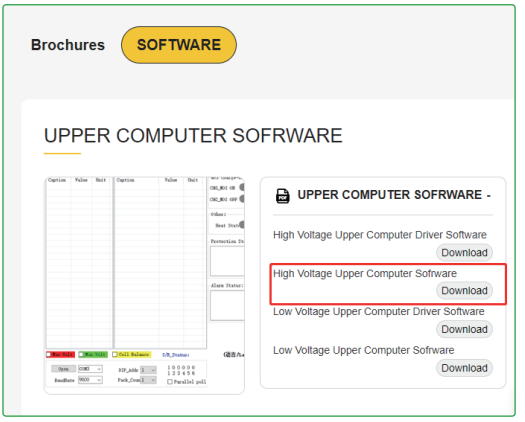


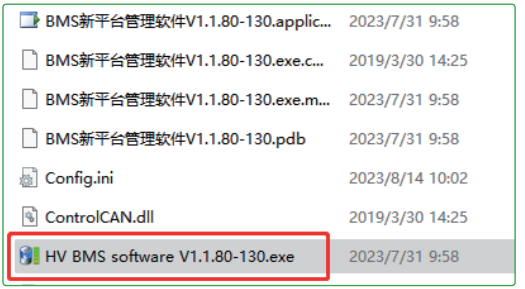




5.2 BMS software operation

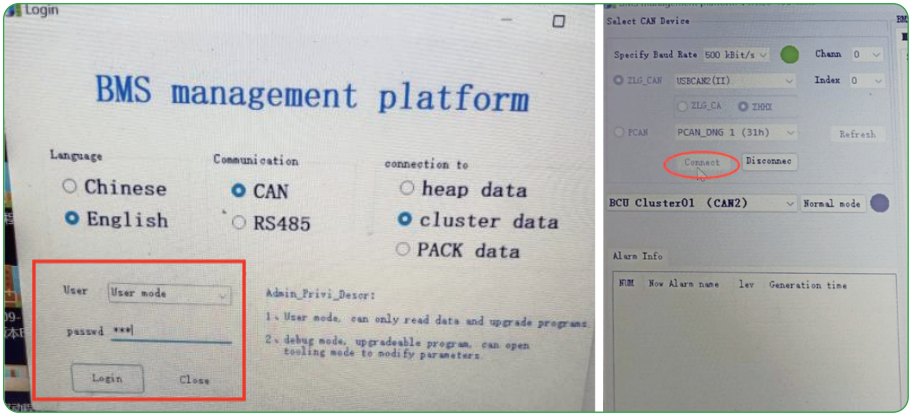
Download the file from BASENGREEN website： https://www.basenpower.com/Support/DOWN-LOAD/, then unzip the file and open it as shown in the figure below





5.3 Log in

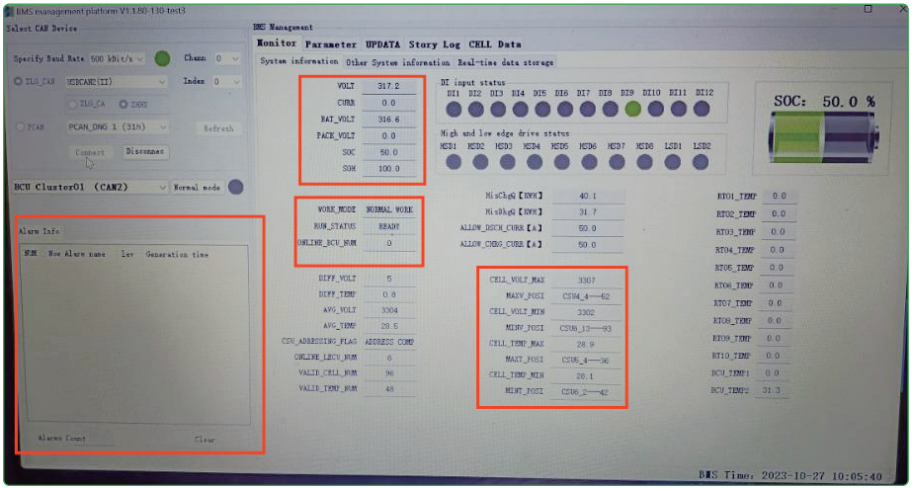
Select User mode for the username and password 123,after logging in, click Connect, and the upper system will be connected successfully, as shown in the figure below.



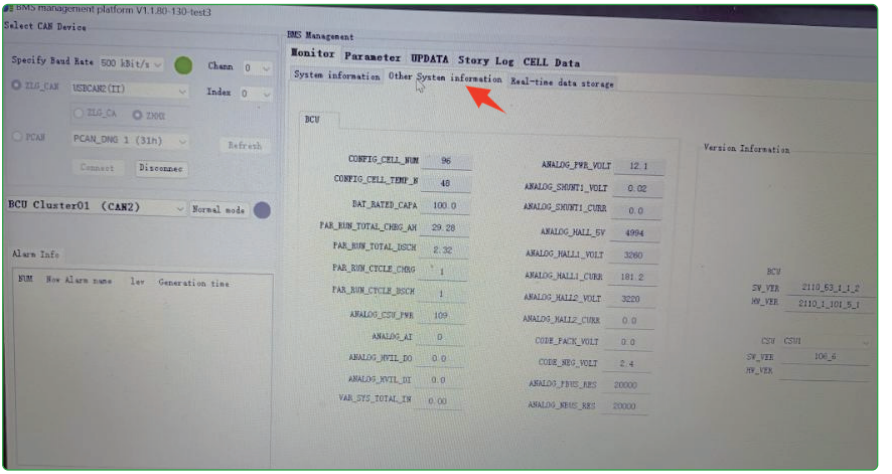
5.4 Monitor

(1) System information

Read total voltage, total current, SOC, system status, real-time fault information, maximum and minimum cell information, etc.

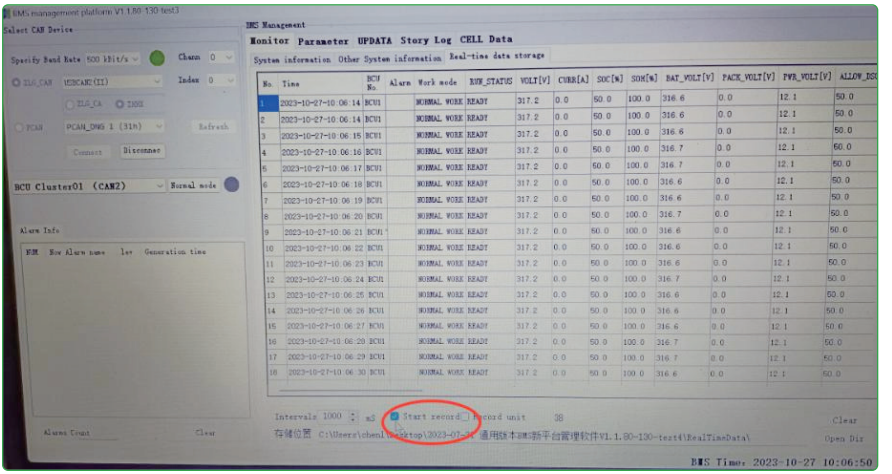


(2) Other system information



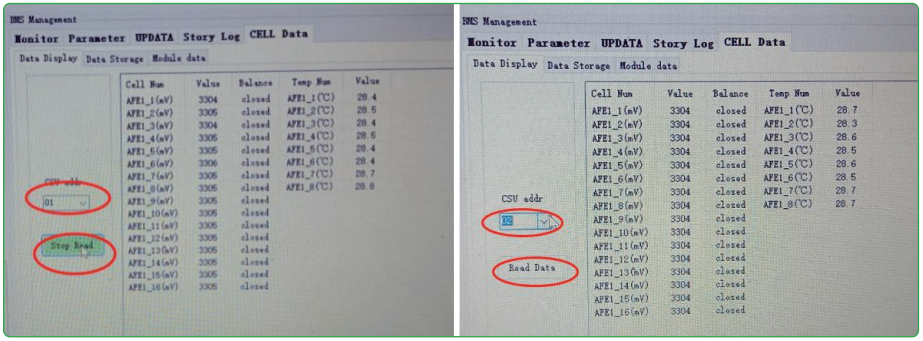
(3) Real-time data storage

Check [Start record] to record BMS real-time operating data in real time. The default storage time is BMS internal time.



5.5 Cells data

Check the corresponding box number and click Read to view the cell voltage and tempera–ture of the battery core, as shown in the figure below.



6. Communication Protocol Operation

List:

1-PYLON, 2-Revo, 3-Solis, 4-INVT, 5 -HYPONTECH, 6-SMA, 7-Deye,

8-GROWATT, 9-SOFAR.

There are kinds of communication protocol can be switched, the protocol can be switched through the touch screen.

The operation procedure are as shown in the figure below:

Turn on display interface - enter the system information - click on the account: enter "1234" and press "OK" - click Password: Enter "1234" and press "OK" to log in, click to enter the setting interface, click PCS protocol, the default protocol is 7-Deye, customers can choose the communication protocol accordingly(by change the number).

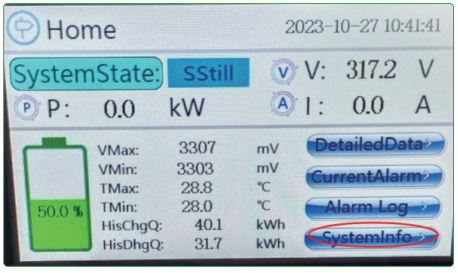


Figure 1

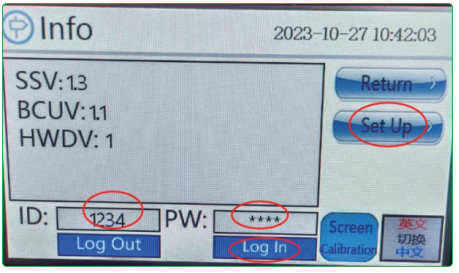


Figure 2

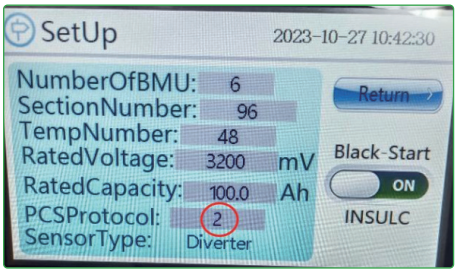


Figure 3

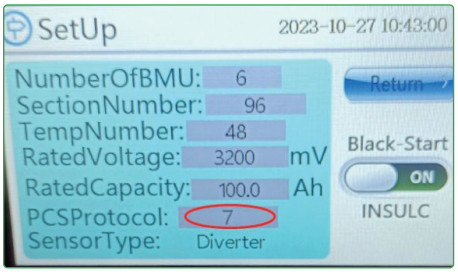


Figure 4

7. Battery storage and transportation instructions

- According to the characteristics of the battery, the lithium battery pack should meet its storage environmental conditions during storage and transportation to maximize the protection of battery performance.
- During storage and transportation, lithium batteries should be properly protected to maintain an SOC level of about 50% to 70% to ensure that no short circuit occurs and no liquid enters the lithium battery pack or is immersed in liquid (such as water, oil, etc.).
- If not used temporarily, the battery should be stored in a dry, clean and well-ventilated warehouse at 10℃~35℃.
- During the loading and unloading process, the battery should be handled with care, and strict precautions should be taken to prevent throwing, rolling, and heavy pressure.

8. Warnings and precautions when using batteries

To prevent the battery from leaking, heating, or exploding, please pay attention to the following precautions:

Notice !

- It is prohibited to use or place the battery at high temperatures (under scorching sunlight or in a very hot car), otherwise it may cause the battery to overheat, catch fire, or malfunction, and shorten its life; the recommended optimal temperature for long-term battery storage is 10°C to 35°C .
- It is prohibited to throw batteries into fire or heater to prevent fire, explosion and environmental pollution; used batteries should be returned to the supplier or battery recycling point for disposal.
- It is prohibited to use it in places with strong static electricity and strong magnetic fields. Otherwise, the battery safety protection device may be easily damaged and cause unsafe risks.
- If the battery leaks and the electrolyte enters the eyes, do not rub the eyes. Rinse the eyes with clean water immediately and send them to the hospital for treatment immediately. Otherwise, the eyes will be harmed.
- If the battery emits an odor, becomes hot, discolors, deforms, or otherwise appears abnormal during use, storage, or charging, the battery should be removed from the device or charger immediately and out of use.
- It is forbidden to insert the positive and negative terminals of the battery directly into the power socket. A special charger for lithium-ion batteries must be used.
- It is necessary to check the battery voltage and connections before installation. It can be used only after everything is normal.
- The battery is stored half-charged. If the battery has not been used for three months, it needs to be recharged once.
- If the electrode is dirty, wipe it with a dry cloth before use, otherwise it may cause poor contact and functional failure.

9. Maintenance of lithium battery power system

- Various parameters that should be paid attention to when using lithium batteries, such as input voltage range, output waveform, output power, long power supply time, conversion time, as well as lithium battery brand, machine noise, volume, weight and other parameters. The battery should not be operated at full load and should retain more than 20% power margin. The best load should be controlled between 40% and 60% of the rated output power.
- Master the basic knowledge of lithium batteries, carefully read the equipment instructions, and understand the meanings of various warning messages, warning codes, indicator lights, as well as the causes and countermeasures. Be familiar with the functions of various switches and buttons on the equipment. Familiar with various operations and clear connections.
- Strengthen daily inspections and maintenance, check whether the equipment has alarms, odors, and abnormal noises, check whether the joints are loose and heating, whether the cooling fan is operating normally, whether the various instructions of the equipment are normal, and solve problems in a timely manner.
- Maintain a suitable ambient temperature. An important factor affecting the life of lithium batteries is the ambient temperature. The optimal ambient temperature required is between 20-25℃. Once the ambient temperature exceeds 25℃, the battery life will be shortened by half for every 10℃ increase.
- Replace used/bad batteries promptly. In the continuous operation and use of lithium batteries, due to differences in performance and quality, it is inevitable that the performance of individual batteries will decline, the storage capacity will not meet the requirements, and damage will be inevitable. When certain batteries/batteries in the battery pack are damaged, maintenance personnel should inspect and test each battery to eliminate damaged batteries.
- The environment where lithium batteries are used should be well ventilated to facilitate heat dissipation and keep the environment clean. Otherwise, the battery pack will have poor contact, causing energy loss or failure to charge.

10. Revision of product specifications

Our company reserves the right to interpret and revise this product specification without prior notice if the version is upgraded.

11. Configuration list

Serial No.	Item name	Quantity	Dimensions (width/depth/height)mm	weight (KG)	Remarks
1	Battery box	adaptation	W480*D530*H160mm	Approx. 48KG	5kWh
2	Main control box	adaptation	W480*D530*H182mm	Approx. 14KG	
3	Battery tray	adaptation	W480*D530*H95mm	Approx. 8KG	
4	Battery box communication line	adaptation			
5	External communication line	adaptation			
6	PCS communication line	adaptation			
7	B-series line	adaptation			
8	B+series line	adaptation			
9	Positive and negative series lines	adaptation			
10	CAN box	adaptation			

Need additional information?

Just Contact BASEN!

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