All-in-one Energy Storage System

BR-AIO-LV 10KWh+5K
BR-AIO-LV 20KWh+5K
BR-AIO-LV 30KWh+5K
BR-AIO-LV 40KWh+5K

BASEN GREEN

Content

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

1. Safety Instructions

This manual will provide detailed product information and installation instructions for users of the All in one series products. Please read this manual carefully, and put this manual in a place where you can install, operate, and obtain it conveniently.

The safety precautions mentioned in the manual do not represent all the safety matters that should be observed, but are only supplementary to the safety precautions. When installing, operating, and maintaining equipment, local safety regulations and norms should be followed. Only trained professionals can install, operate and maintain equipment. The responsibility for losses will be not covered as the issue caused by violation of general safety operation requirements or violation of safety standards for the design, production, and use of equipment. Installation and maintenance personnel must have high-voltage and AC power operation skills. When installing, operating, and maintaining equipment, they must not wear any conductive objects, such as watches, bracelets, bracelets, 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 a 51.2V 200AH battery pack and a Deye 5KW inverter, which is suitable for home use.For home applications, customized products can be designed according to customer needs to meet different application scenarios, and can provide various solutions for users.The equipment provides stable power support, long service life, high energy density, strong temperature adaptability, and modular design, environmental protection, space saving, etc.

b. Configured 100A BMS system, the battery pack has overcharge, over-discharge, over-current, temperature short-circuit and other protection functions. It has a voltage balancing function during the charging process, with high safety performance, long service life, stability and reliability, and has RS485 communication interface, supports battery pack parallel connection, wide operating temperature range (-20~60°C), and good high-temperature discharge performance.

2.1 Label Explanation

The label contains the following information

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Guangdong Basen Green New Energy Co.,Ltd

ALL IN ONE ENERGY STORAGE SYSTEM		
Inverter Part: Deye 5kW (SUN-5K-SG01LP1-EU)		
PV String Input Data	Max. DC input Power (W)	6500
	Rated PV Input Voltage (V)	370 (125-500)
	Start-up Voltage (V)	125
	MPPT Voltage Range (V)	150-425
	Full Load DC Voltage Range (V)	300-425
	PV Input Current (A)	13+13
	Max. PV I (A)	17+17
	No.of MPP Trackers	2
	No.of Strings per MPP Tracker	1
AC Output Data	Rated AC Output and UPS Power (W)	5000
	Max. AC Output Power (W)	5500
	AC Output Rated Current (A)	22.7/21.7
	Max. AC Current (A)	25/23.9
	Max. Continuous AC Passthrough (A)	35
	Peak Power (off grid)	2 time of rated power, 10 S
	Power Factor	0.8 leading to 0.8 lagging
	Output Frequency and Voltage	50/60Hz; L/N/PE 220/230Vac (single phase)
	Grid Type	Single Phase
	Total Harmonic Distortion (THD)	<3%(of nominal power)
	DC current injection	<0.5% In

SN: WITH IEC/EN 62109-1,IEC/EN 62109-2

CAUTION

- High voltage, warning electric shock!
- The capacitors store hazardous energy.
  Do not touch th terminal or remove the shell within 5 minutes after all power is disconnected.
- Keep the equipment well ventilated.
- To avoid electric shock and warranty void, do not remove covers.
- No operator serviceable component inside.

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Product Name	Rechargeable LiFePO4 Battery
Product Model	BR-AIO-LV 10KWH
Battery Voltage Operation Range	43.2Vdc-58.4Vdc
Maximum Charge Current	100A
Maximum Discharge Current	100A
Rated Capacity	200Ah/51.2V/10240Wh
Ingress Protection	IP55
Protective Class	1

SN: CE UN38.3

DANGER

DANGER LOW DC VOLTAGE INSIDE

DANGER ARC FLASH & SHOCK HAZARD

- Do not disconnect or disassemble by non-professional personnel.
- Do not drop, deform, hit or pierce with sharp objects.
- Do not place at a children or pet touchable area.
- Do not place near open flame or flammable material.
- Do not cover or wrap the product case.
- Do not sit or put any object on battery.
- Avoid direct sunlight.
- Avoid moisture or liquid.
- The product ingress Protection (IP) class is IP55.
- Make sure the grounding connection is correct before operation.
- Follow the product manual to make wiring connection.
- If leaking, fire, wet or damaged, switch off the breaker on DC side and stay away from battery. Do not touch the leaking liquid.
- Contact your supplier within 24 hours if any failure happens.

2.2 Battery box interface introduction:

①: P+ battery positive pole

②: ADD Address dialer

③: RST reset switch

④: P- battery negative pole

⑤: Ground wire interface

⑥: SOC capacity indicator

⑦: ALM indicator light

⑧: Running lights

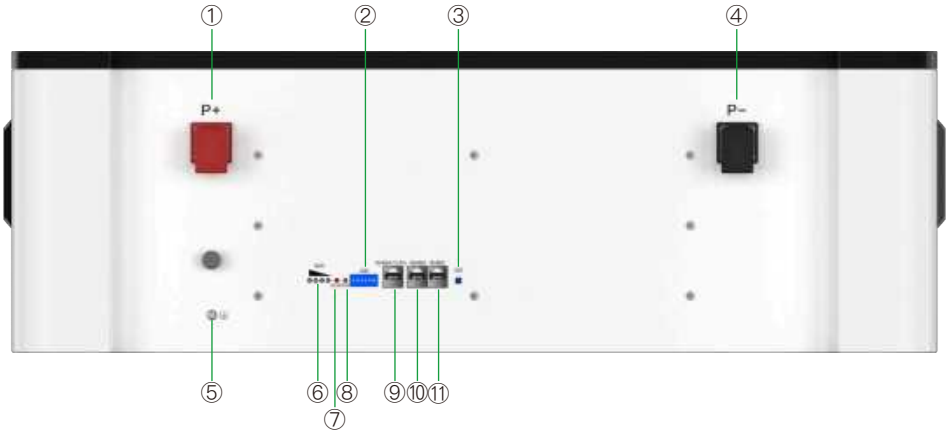
⑨: RS485A/CAN port

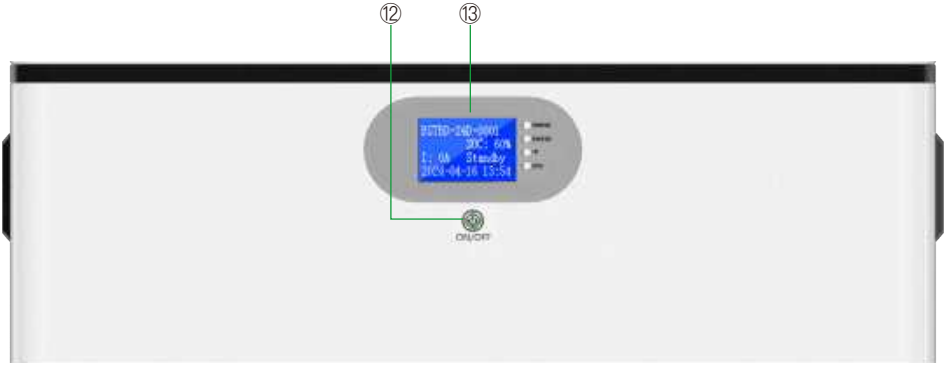
⑩: RS485B port

⑪: RS485C port

⑫: Power switch button

⑬: LCD Display





2.3 Introduction to the inverter box interface:

①: Connect to P+ battery positive pole ②: Connect to P-battery negative pole

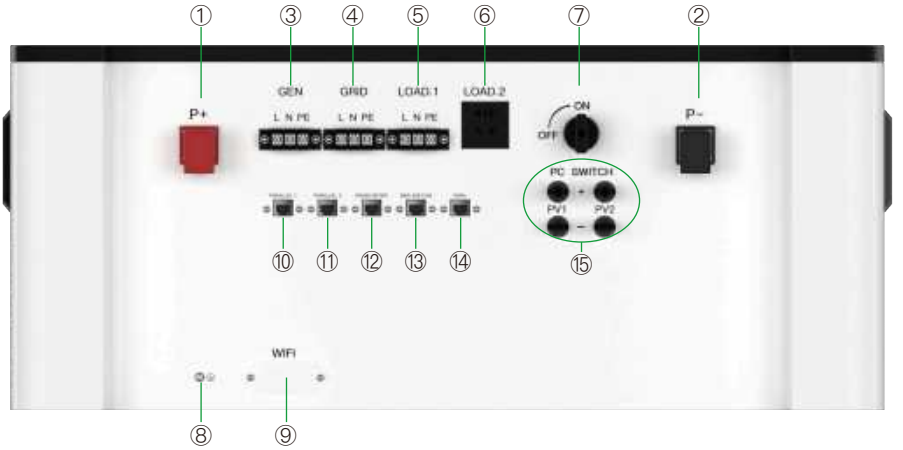
③: GEN interface ④: GRID interface ⑤: LOAD_1 interface

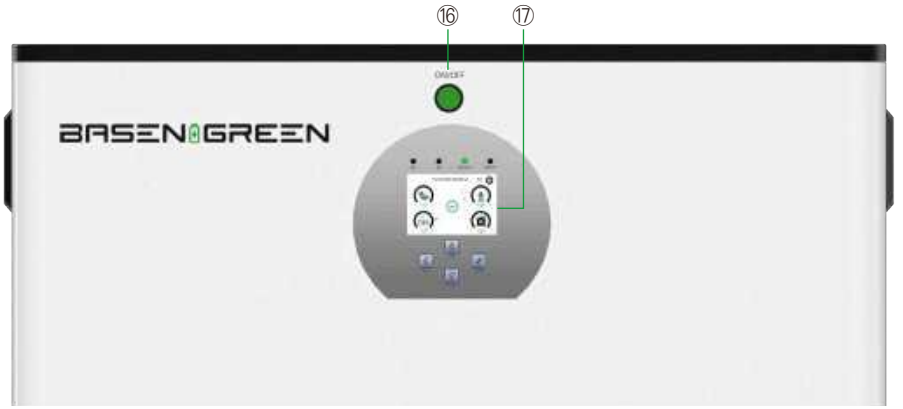
⑥: LOAD_2 interface ⑦: Rotary switch ⑧: Ground wire interface

⑨: WIFI port ⑩: Parallel_1 port ⑪: Parallel_2 port

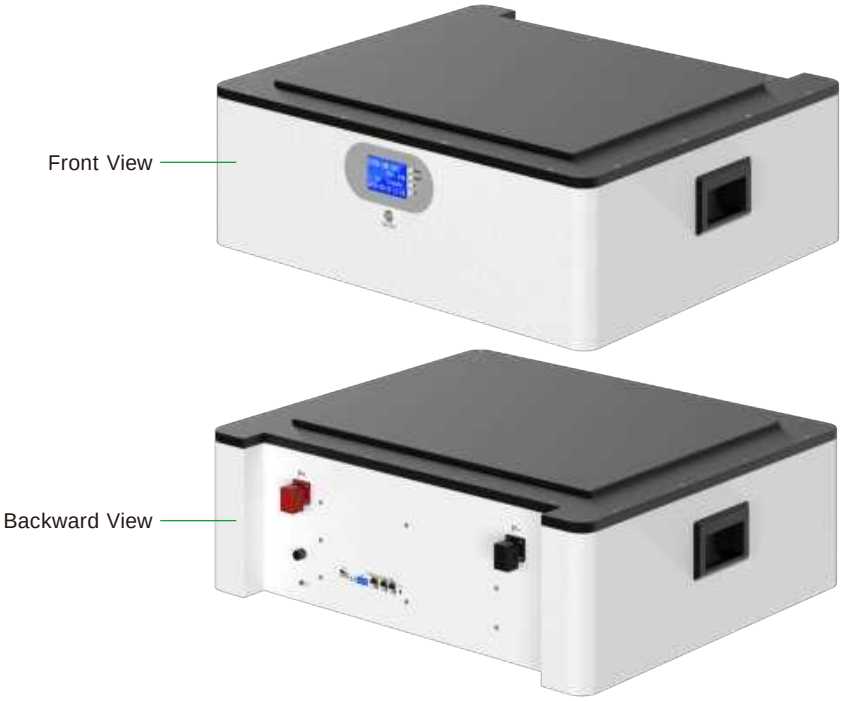
⑫: RS485 Meter port ⑬: BMS 485/CAN port ⑭: DRMs port

⑮: PV interface ⑯: Power switch button ⑰: LCD Display





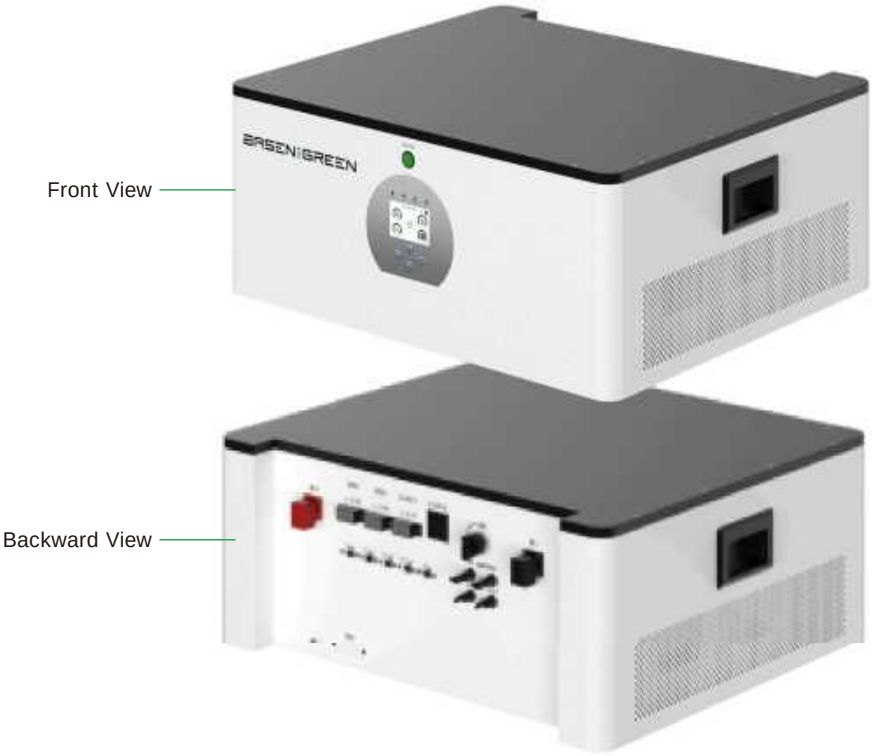
2.4 Battery module unit



Battery module unit performance parameters

Name	Specification	Remark
Battery pack specifications and models	51.2V 200AH	
Battery box series and parallel number	16 serial 1 parallel	
Battery box dimensions	W750*D650*H253mm	
Battery box weight	Approx. 103KG	
Battery box voltage range	43.2V-58.4V	
Operating temperature	Charging: 0℃＜T≤55℃ Discharge: -20℃＜T≤60℃	
Maximum charging current	100 A	
Maximum discharge current	100 A	

2.5 Inverter module unit



Inverter Module Unit Performance Parameters

Model	SUN-5K-SG01LP1-EU
Battery Input Data	
Battery Type	Lead-acid or Lithium-ion
Battery Voltage Range (V)	40~60V
Max. Charging Current (A)	120A
Max. Discharging Current (A)	120A
Charging Curve	3 Stages / Equalization
Charging Strategy for Li-Ion Battery	Self-adaption to BMS

PV String Input Data	
Max. DC Input Power (W)	6500W
PV Input Voltage (V)	370V (100V~50 0V)
MPPT Range (V)	125V-425V
Start-up Voltage (V)	150V
PV Input Current (A)	13A+13A
No.of MPPT Trackers	2
No.of Strings Per MPPT Tracker	1
AC Output Data	
Rated AC Output and UPS Power (W)	5000W
Max. AC Output Power (W)	5500W
Peak Power (off grid)	2 times of rated power, 10 S
AC Output Rated Current (A)	22.7A/21.7A
Max. AC Current (A)	25A/23.9A
Max. Continuous AC Passthrough (A)	35A
Output Frequency and Voltage	50 / 60Hz; 230Vac (single phase)
Grid Type	Single Phase
Current Harmonic Distortion	THD<3% (Linear load<1.5%)
Efficiency	
Max. Efficiency	97.60%
Euro Efficiency	97.00%
MPPT Efficiency	99.90%
Certifications and Standards	
Grid Regulation	VDE 0126, AS4777, NRS2017, G98, G99 IEC61683, IEC62116, IEC61727
Safety Regulation	
EMC	EN61000-6-1, EN61000-6-3, FCC 15 class B
General Data	
Operating Temperature Range (℃)	-25~60℃, >45℃ Derating
Cooling	Smart cooling
Noise (dB)	<30 dB
Communication with BMS	RS485; CAN

2.6 Appearance of the stacked battery system

10kWH

20kWH

30kWH

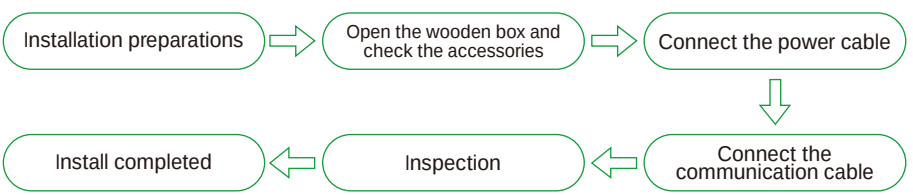
40kWH

2.7 Performance parameters of stacked battery system

Name	Specification				Remark
Battery Type	Lithium iron phosphate battery				
Product number	51.2V200AH	51.2V400AH	51.2V600AH	51.2V800AH	
Rated voltage	51.2V	51.2V	51.2V	51.2V	
Rated Capacity	200AH	400AH	600AH	800AH	
Rated power	10kWh	20kWh	30kWh	40kWh	
Push stack size	W750*D650 *H735mm	W750*D650 *H980mm	W750*D650 *H1225mm	W750*D650 *H1470mm	
Total battery weight	Approx. 174Kg	Approx. 276Kg	Approx. 378Kg	Approx. 480Kg	
Support communication	CAN and RS485 communication				
Inverter brand	DEYE 5KW Inverter				
Voltage range	43.2V-58.4V				
Operating temperature	Charging: 0℃＜T≤55℃ Discharge:-20℃＜T≤60℃				
Maximum charging current	100A				
Maximum discharge current	100A				

3. Installation Notes

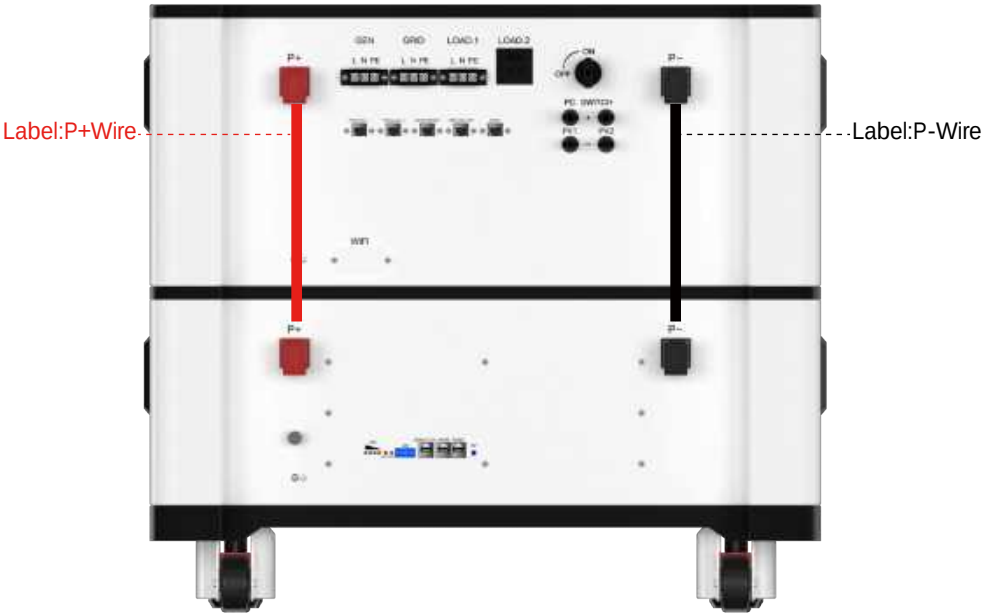
3.1 Installation process



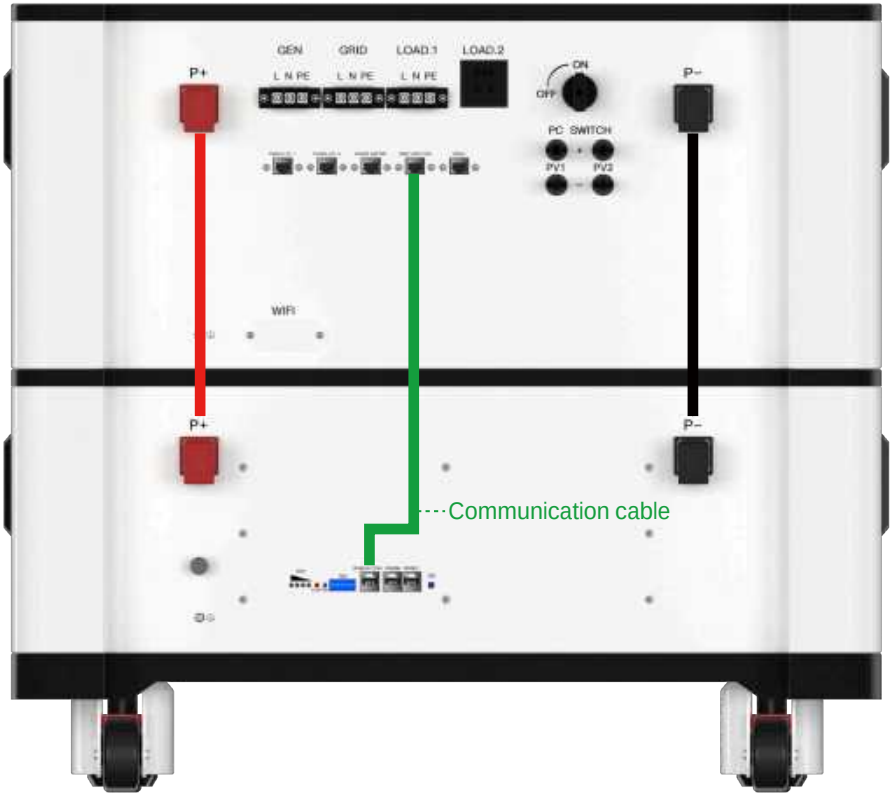
3.2 Installation tools

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

3.3 Connect the power cable



3.4 Connect the communication cable



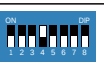
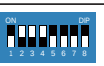
CAN port is used for communication between the inverter box and the battery box. RS485A port of the battery box is used for communication with the upper monitor system. RS485B and RS485C Ports are used for communication for batteries in parallel connection

4. DIP switch definition and setting

For multi-machine communication when battery packs are connected in parallel, DIP switches can be used to distinguish between different Pack address, the address can be passed on the board

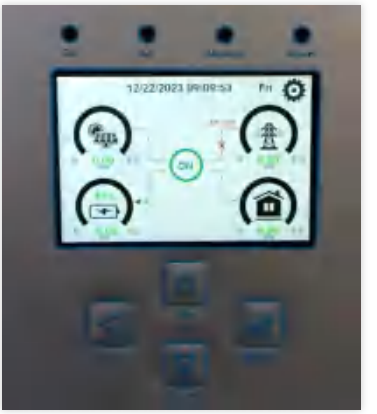
This is a 8 Bit DIP switch.

Please refer to the table below to set the DIP switch for parallel connection.

Address	Dip Switch Position								Illustration
	#1	#2	#3	#4	#5	#6	#7	#8	
0	OFF	OFF	OFF	OFF					
1	ON	OFF	OFF	OFF					
2	OFF	ON	OFF	OFF					
3	ON	ON	OFF	OFF					
4	OFF	OFF	ON	OFF					
5	ON	OFF	ON	OFF					
6	OFF	ON	ON	OFF					
7	ON	ON	ON	OFF					
8	OFF	OFF	OFF	ON					
9	ON	OFF	OFF	ON					
10	OFF	ON	OFF	ON					
11	ON	ON	OFF	ON					
12	OFF	OFF	ON	ON					
13	ON	OFF	ON	ON					
14	OFF	ON	ON	ON					
15	ON	ON	ON	ON					

5. Inverter parameter settings

5.1 Turn on the battery first by clicking the power switch of the battery module, then turn on the inverter by clicking the power switch of the Inverter module.
The inverter will enter the settings menu, as shown in the figure below.



Set interface

5.2 The inverter cannot communicate with the battery before setting it up, Press the battery icon in the red circle as shown in the attached picture, 1 interface institute Display, enter the following picture 2 interface, which cannot communicate with the battery at this time.

Figure 1

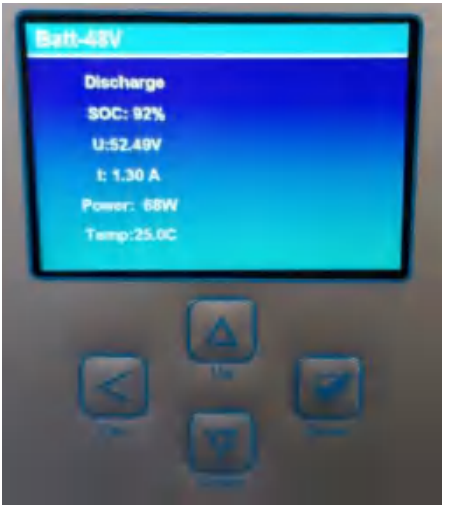


Figure 2

5.3 Press the icon in the red circle in the upper right corner of the inverter, as shown in Figure 3, click "battery setting", as shown in Figure 4, then choose "Lithium", as shown in Figure 5. The inverter settings have been completed.

Figure 3

Figure 4

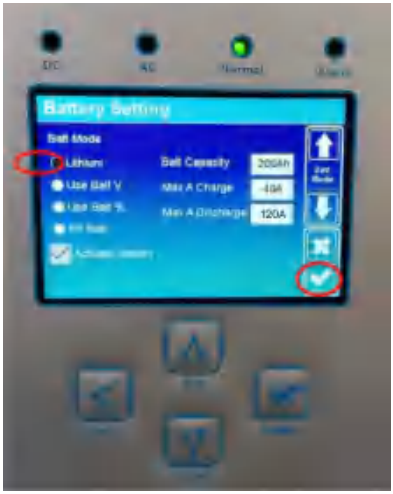


Figure 5

5.4 Return to the menu, press the battery icon in the red circle, as shown in Figure 1, then click "Li-BMS" as shown in Figure 6.

The SOC status shown by the inverter matches with the batteries. (as shown in Figure 7, 8, 9)

The inverter communicates with the battery successfully.

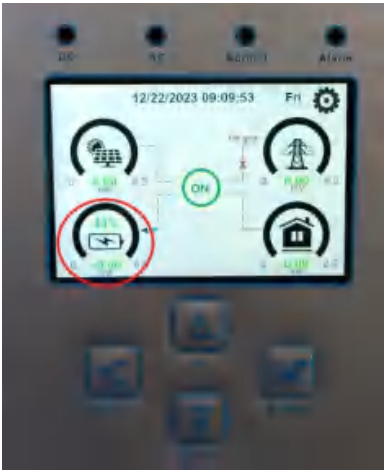


Figure 1

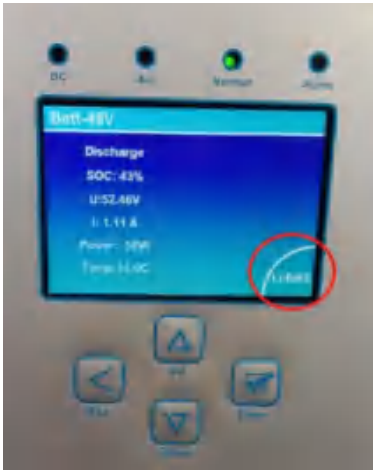


Figure 6

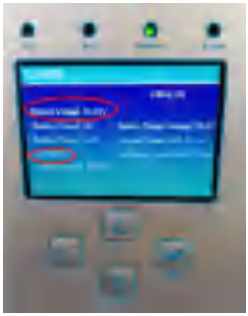


Figure 7

Figure 8

Figure 9

5.5 Capacity setting, the inverter cannot automatically identify the capacity, it has to be set manually.

For single or multiple sets of batteries in parallel, it should follow the dip switch rules(check Chapter 4).

Capacity Settings are shown in Figure 10.

Enter the setting(check Chapter 5.3), and then Press the "up" or "down" in the red circle in Figure 11 to modify the capacity and confirm.

The charging current and discharging current are default settings, no need to modify.

Figure 10

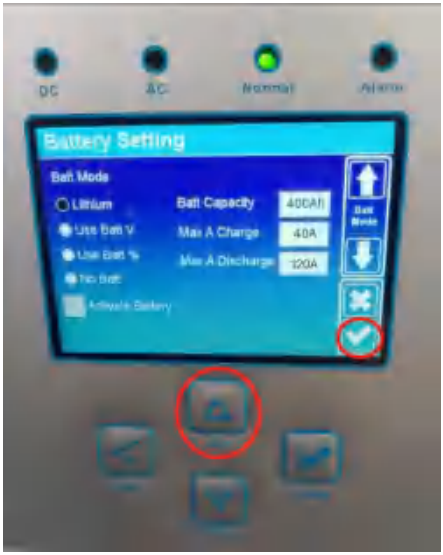


Figure 11

P.S: For more setting of inverter module, please refer to the manual of inverter.

6. 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 performance of protecting the battery.
- During storage and transportation, lithium batteries should be properly protected to maintain an SOC level of about 50% to 70% to ensure that there is no short circuit or liquid entering the lithium battery pack or being 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°C~35°C
- During the loading and unloading process, batteries should be handled with care, and strict precautions should be taken to prevent throwing, rolling, and heavy pressure.

7. Warning

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

Warning!

- Do not use or place the battery in high temperatures (in hot sunlight or in a hot car), otherwise it may cause Cause the battery to overheat, fire or function failure, life is shortened; The recommended temperature for long-term battery storage is 10°C~35°C.
- Do not throw the battery in the fire or heater to prevent fire, explosion and environmental pollution; End-of-life batteries should be returned to the supplier or battery recycling point for disposal.
- Do not use it in places with strong static electricity and magnetic field. Otherwise, the battery safety protection device may be damaged, resulting in unsafe risks.
- If the battery leaks, electrolyte into the eyes, do not rub, should immediately wash the eyes with water, and immediately sent to the hospital for treatment, otherwise it will hurt the eyes.
- If the battery gives off an odor, heats up, changes color, becomes deformed, or shows any abnormality during use, storage, or charging, the battery should be removed from the device or charger immediately and deactivated.
- 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.

8. Maintenance

- The 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, and lithium battery brand, machine noise, volume, weight and other parameters. The battery should not be fully loaded,
- should retain more than 20% of the power margin, good load control between 40% and 60% of the rated output power.
- Master the basic knowledge of lithium batteries, carefully read the equipment manual, understand the meaning of various warning information, warning code, indicator light, as well as the causes and countermeasures. Familiar with the function of various switches and buttons on the equipment. Familiar with various operations, clear connections.
- Strengthen daily inspection and maintenance, check whether the equipment has alarms, no odor, no abnormal sound, check whether the joint is loose and hot, whether the cooling fan is operating normally, whether the equipment is normal, and solve the problem in time.
- Maintain a suitable ambient temperature. An important factor affecting the life of lithium batteries is the
- ambient temperature, and the best ambient temperature required is between 20-25 °C. Once the ambient temperature exceeds 25 °C, the battery life will be cut in half for every 10 °C increase.
- Replace wasted/broken batteries in time. In the continuous operation and use of lithium batteries, due to the difference in performance and quality, it is inevitable that the performance of individual batteries will decline and the storage capacity will not meet therequirements. When one or more batteries in the battery pack are damaged, the maintenance personnel should conduct an inspection test on each battery to remove the damaged battery.
- The use of lithium battery environment should pay attention to good ventilation, conducive to heat dissipation, and keep the environment clean. Otherwise, the battery pack will be in poor contact, resulting in energy loss or failure to charge.

9. Revision of product specifications

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

10. Configuration list

Serial No.	Item Name	Quantity	Dimensions (width/depth/height)mm	Weight (KG)
1	Battery pack	adaptation	W750*D650*H253mm	Approx. 88KG
2	Inverter box	adaptation	W750*D 650*H365mm	Approx. 58KG
3	Battery tray	adaptation	W750*D650*H135mm	Approx. 13KG
4	Parallel communicatio cable	adaptation		
5	Inverter communication cable	adaptation		
6	M8*12mm screw	adaptation		
7	P+ parallel cable	adaptation		
8	P+ parallel cable	adaptation		

Need additional information?

Just Contact BASEN!

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