

Model

JBL-HV-5K-M

Light up every corner of the world with renewable energy

catalog

1. General Information 1
1.1 Validity 1
1.2 Intended Use 1
1.3 Product labels 2
2. Safety Measures 2
3. Technical parameters 5
4. Technical Items 5
5. Product Overview 6
5.1 Product Introduction 6
5.2 Overview of the battery system 6
5.3 JEBEL-BCU (Battery control unit) 7
5.4 JEBEL battery module 9
6. Installation guide 10
6.1 Inspection Before Installation 10
6.1.1 Check the Outer Packaging 10
6.1.2 Check whether the Accessories are Complete 10
6.2 Tools 12
6.3 Installation Requirements 13
6.3.1 Installation Environment Requirements 13
6.3.2 Installation Carrier Requirements 13
6.4 Installation Instructions 14
7. Cleaning and maintenance 16
7.1 Cleaning Work 16
7.2 Maintenance 16
7.2.1 Charging requirements during normal storage 16
7.2.2 Recharging Requirements for Excessive Discharge 17
8. Common Issues and Solutions 17
8.1 Common Issues and Solutions 17
8.2 Emergency 18
8.3 Disposal of damaged batteries 19

1. General Information

This manual introduces the **JEBEL-5K-HV** battery products. Please read this manual carefully before using the battery. For any questions, please contact JEBEL TECHNOLOGY immediately for advice and clarification.

1.1 Validity

This user manual is applicable to JEBEL-5K-HV.

This manual contains JEBEL-5K-HV product information, usage, safety information, installation guidance and details on common operation issues and subsequent maintenance measures.

1.2 Intended Use

JEBEL-5K-HV is an energy storage unit that designed for residential and commercial grid application scenarios with the capability of short-term backup.

Notes:

JEBEL-5K-HV is not suitable for supporting life-sustaining medical devices. This product is intended for used only in accordance with the information provided in the enclosed documents and applicable local standards and regulations. Any other use may result in personal injury or property damage. The illustrations in this manual are only intended to help explain the concept of the system configuration, including use guidelines, safety precautions, common operating problems, and subsequent battery maintenance.

Alterations to the product, e.g. changes or modifications, are only permitted with the express written permission of JEBEL TECHNOLOGY. Unauthorized changes will not be allowed by warranty claims. JEBEL TECHNOLOGY shall not be liable for any damage resulting from such changes. Any use of the product other than described in the intended use section does not qualify as appropriate. The enclosed documentation is an integral part of this product. Please keep the documentation in a safe and convenient place for future reference.

Product model labels (see Section 1.3) must be attached to the product.

Transportation requirements:

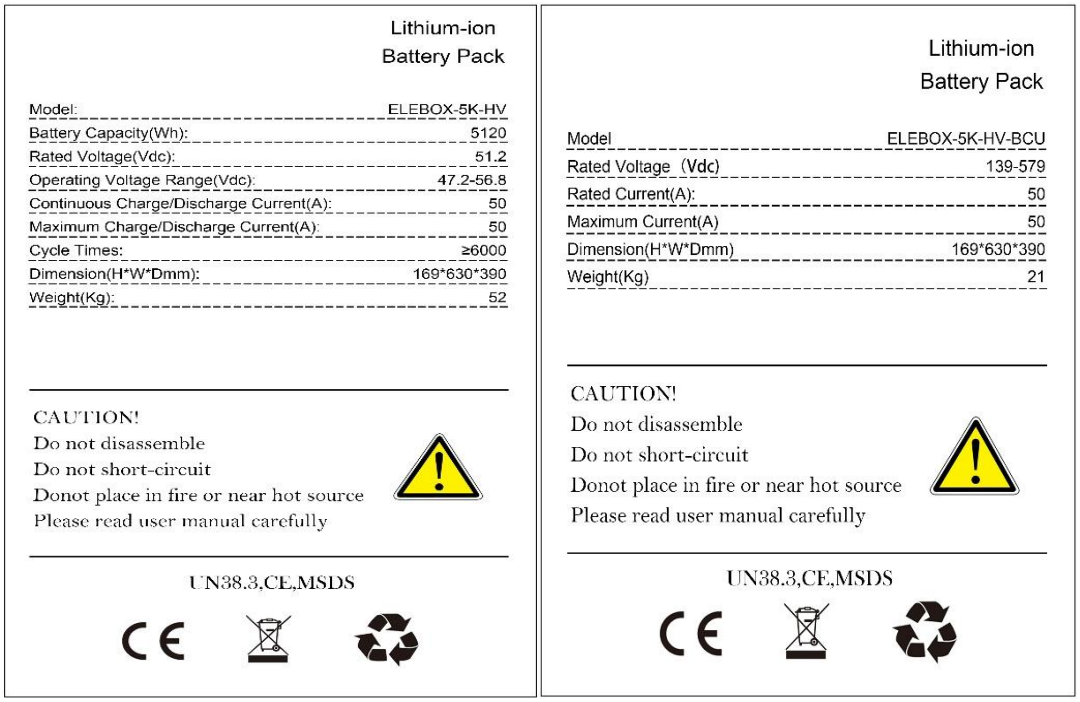
The battery is in good electrical and physical condition. During transportation, the battery module must be placed in the original packaging or other appropriate packaging. The

Transport Company shall be responsible for any damage during transportation. Please thoroughly inspect the battery when receiving the goods. If any packaging problems or any visible damage that may cause damage to the product, please notify the responsible shipping company immediately. If necessary, you can ask the installer or JEBEL TECHNOLOGY for help. The battery module contained in this product passes UN38.3, which belongs to category 9 dangerous goods. Therefore, during transportation, handling must comply with local laws and regulations and industry standards. Rough handling may lead to a short circuit or damage to the battery, which may lead to battery leakage, rupture, explosion or fire.

1.3 Product labels

The type labels were attached on the product, which contain the product identification information. For safe usage, the user must be well-informed of the contents in the type labels.

The Labels include:



2. Safety Measures

This section contains safety information that must always be observed when using or installing batteries. To prevent personal injury or property damage and ensure long-term operation of the batteries, please read this section carefully, always watch for warnings from all safety messages.

Environmental requirements:

1. Do not expose the battery to temperature above 50 °C;

2. Do not place the battery near any heat source;

3. Do not expose the battery to moisture or liquid;

4. Do not expose the battery to a corrosive gas or liquid;

5. Do not expose the battery to a combustible gas or liquid;

6. Do not expose the battery to direct sunlight for extended periods of time;

7. Battery power terminals are not allowed to contact conductive objects, such as electric wires;

8.Place the battery in safe place that away from children and animals.

Operation Precautions:

1. Do not disassemble the battery;

2. Do not touch the battery pack with wet hands;

3. Do not smash, fall or puncture the battery;

4. Do not reverse the polar series connection battery;

5. Do not short-circuit the terminal and remove all metal jewelry items that may produce a short-circuit before installation and repair;

6. Always handle the products in accordance with the local safety regulations;

7. Ensure reliable grounding;

8.Disconnecting all batteries to the wires before installation and repair;

9.Do not stack batteries outside the protective packaging during storage or Handling;

10.The stacking of packaging batteries shall not exceed the quantity specified on the packaging;

11.Continued operation of a damaged battery may lead to dangerous situations, causing serious injuries such as electric shock or combustion.

Model	JBL-B-HV-5K-M							
Number of battery modules	3	4	5	6	7	8	9	10
Battery Capacity (Wh)	15360	20480	25600	30720	35840	40960	46080	51200
Rated Voltage (V)	153.6	204.8	256	307.2	358.4	409.6	460.8	512
Operating voltage range (V)	141.6-170.4	188.8-227.2	236-284	283.2-340.8	330.4-397.6	337.6-454.4	424.8-511.2	472-568
Dimensions (H * W * D)	754/630/390	923/630/390	1092/630/390	1261/630/390	1430/630/390	1599/630/390	1768/630/390	1937/630/390
Weight (Kg)	177	229	281	333	351	397.5	489	541
Battery type	LFP							
Max. charge/ discharge current (A)	50							
Continuous charge / discharge current (A)	50							
Operating temperature range (℃)	0-45							
temperature control	natural cooling							
communication port	CAN							
Cycles (80% DOD, 25℃)	≥6000							
Storage temperature	25℃, at 12 months							
	35℃, at 6 months							
	45℃, at 3 months							
Installation	Stacked installation							
Operating Humidity	≤95%rh							
Storage humidity	≤95%rh							
Operating Altitude	≤3000m							
Protection Level	IP54							
Product Certificate	CE, IEC62619(Cell&Pack), MSDS, ROHS, UN38.3							

3. Technical parameters

Battery module parameters	
rated voltage	51.2V
Rated storage capacity	50AH
weight (kg)	52
Dimensions (H * W * D)	169*630*390mm
Erosion protection grade	IP 54

Note:

1. Operating current derates according to battery voltage and temperature.
2. Stacking a different number of JEBEL-5K-HV modules (3 modules to 10 modules) will change the parameters.

4. Technical Items

No.	noun	explanation
1	Discharge	Battery output power for load
2	Charge	Put the electricity into the battery through the charger
3	Full Charge	The battery is fully charged with 100% SOC
4	Standby	Ready for charging or discharging
5	Turn-off	Turn-off battery output
6	SOC	State of Charging (Useable Capacity)
7	Battery voltage	Voltage between PCS+/PCS- of battery module
8	Single-string Voltage	Single-cell voltage
9	Battery module voltage	Voltage between BAT+/BAT- of battery module
10	Protection	Battery stops charging or discharging
11	Fault	Battery or BMS is damaged and need to be replaced
12	Over discharged	Battery is lack of electricity, and need to be charged in time

5. Product Overview

5.1 Product Introduction



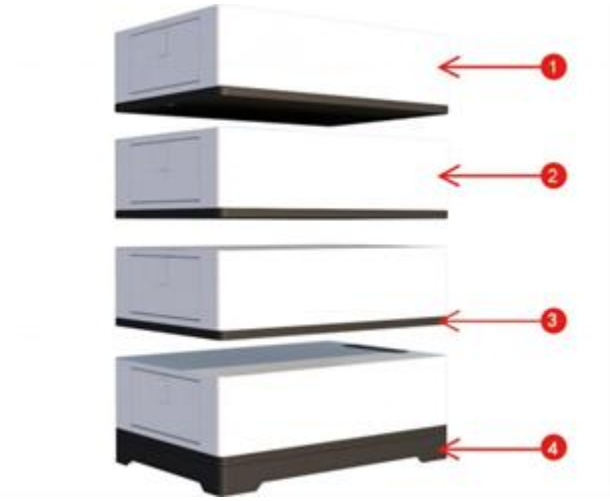
JEBEL-5K-HV high voltage lithium battery energy storage system consists of 3-10 battery modules and one BCU (battery control unit) in series, with an operating voltage range of 139V-579V. It is used for home/commercial energy storage applications and used with high voltage inverters to achieve energy storage purpose.

JEBEL-5K-HV built-in BMS (Battery Management System,Master BMS in BCU and slave BMS in battery module) can manage and monitor battery information, including voltage, current and temperature. In addition, BMS can balance battery charging to extend service life. BMS has protection functions such as over-discharge, over-charge, over-current, high/low temperature, etc. The system can automatically manage the charging state, discharge state, and balance state.

JEBEL-5K-HV has an internal soft start circuit, so it can support inverters without soft start function.

5.2 Overview of the battery system

The **JEBEL-5K-HV** system consists of JEBEL batteries module and an JEBEL-BCU (battery control unit) .



Serial Number	Explanation
1	JEBEL-BCU (battery control unit)
2	JEBEL slave battery (battery module)
3	JEBEL Slave battery base plate
4	JEBEL base

5.3 JEBEL-BCU (Battery control unit)

The JEBEL-BCU includes BMS (Battery Management System), DC fuse,soft start circuit,charging circuit, discharge circuit and 24VDC / DC power module.

The BMS in the battery module collect the battery voltage and temperature data and upload them to the primary BMS via an internal CAN. The BMS in the BCU controls the charge voltage/current and the discharge voltage/current.

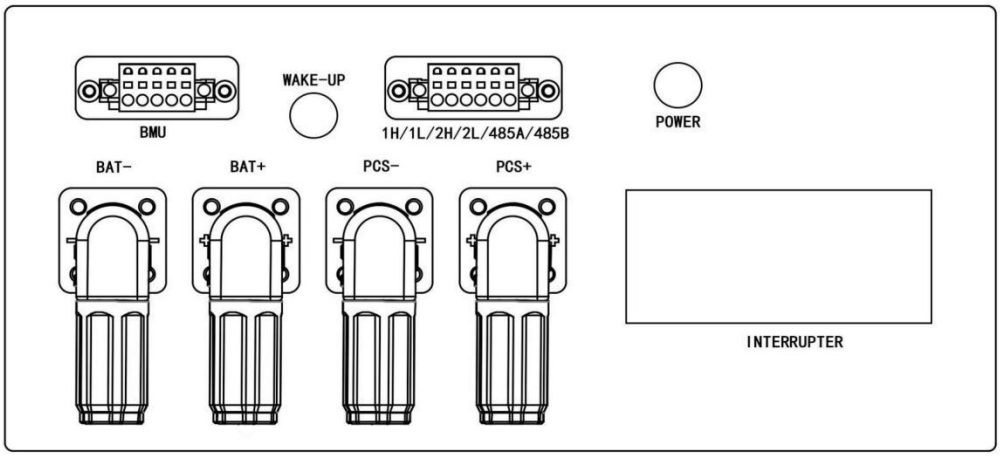
5.3.1 Battery startup / close process

1. Turn on the battery system: turn on the circuit breaker (INTERRUPTER), press the power button (POWER), and release the button after 10 seconds. The batteries enter the self-test state, and enters the pre-charge state after the self-test is completed.

2. Turn off the battery system: press the power button (POWER), release the button after 10 seconds, and the batteries stops outputting.

3. Battery wake up function: When the battery voltage is too low, the system cannot start. Press the power button (POWER) and the wake up button (WAKE-UP) at the same time. Release the button after 10 seconds. The system self-tests without faults and the inverter starts charging the batteries.

5.3.2 Port Definition



Port	Explanation	Port	Explanation
1H/1L	Connect the inverter CAN communication port	2H/2L	Keep the communication port (CAN)
INTERRUPTER	miniature circuit breaker	BMU	Connect the battery module for communication
BAT-	Battery anode series	BAT+	Battery positive electrode series
PCS-	Total negative output of battery	PCS+	Total battery cathode output
WAKE-UP	Wake up button	POWER	mains switch

5.3.2.1 1H / 1L port

The 1H/1L communication terminal follows the CAN communication protocol, please connect to the inverter.

The BMS controls the inverter charge current/charge voltage or discharge current/ discharge cut-off voltage Via CAN communication, depending on the battery voltage and battery temperature.

5.3.2.2 2H / 2L port

The 2H/2L communication terminal follows the CAN communication protocol and is in standby mode.

5.3.2.3 BMU communication port

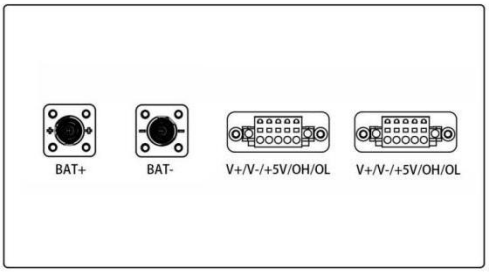
The BMU communication terminal connects the BCU to the internal CAN of each battery module using the CAN communication protocol. In addition, each battery module BMS provides a DC24V power supply.

Port	Explanation	
The BMU communication definition	PIN 1	output DC24V+
	PIN 2	output DC24V-
	PIN 3	+5V
	PIN 4	CAN H
	PIN 5	CAN L

5.4 JEBEL battery module

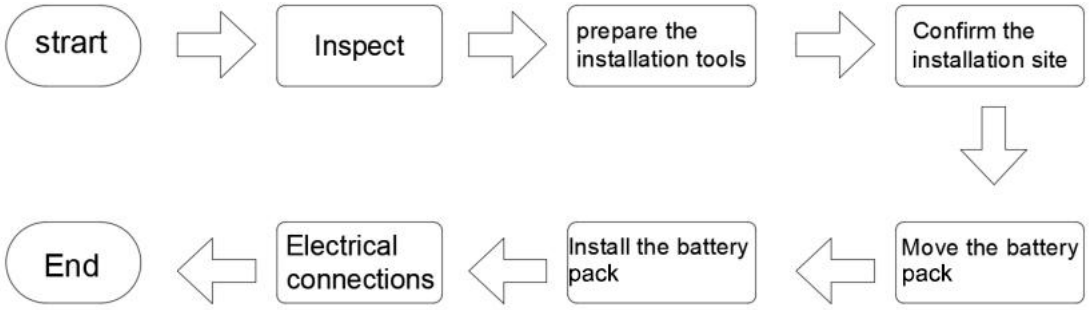
The battery module includes 51.2V/50AH battery cells and a slave BMS. The slave BMS collects and transmits the battery voltage and temperature of the battery cells in real time, and communicates internally with the master BMS through the BCU.

5.4.1 Port Definition



No.	Port	Explanation
1	V+/V-	Power interface
2	OH/OL	communication port
3	BAT -	Battery Module B- -
4	BAT +	Battery module B +
5	+5V	Addressing port

6. Installation guide



Installation Flowchart

6.1 Inspection Before Installation

6.1.1 Check the Outer Packaging

Packaging materials and components may be damaged during transportation. Therefore, please check the packaging material before installing the battery. Check the surface of packaging materials for damage, such as holes and cracks. If any damage is found, do not unpack the battery and contact the JEBEL TECHNOLOGY as soon as possible. It is recommended that you remove the packaging material within 24 hours before installing the battery.

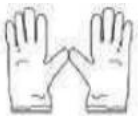
6.1.2 Check whether the Accessories are Complete

After opening the packing box, check whether the attached accessories are complete. If any damage or missing parts are found, contact your JEBEL TECHNOLOGY.

Bill of Materials:

No.	Name	Model
1	Energy storage battery (slave control)	EB-5K-01(02)
2	Cross outer hexagon three combination bolt	M6*12
3	Network cable	EB-5K-HV-06-07(00) Slave CAN Communication Cable
		EB-5K-HV-06-08(00)PCS Communication cable
		EB-5K-HV-06-09(00) Host computer communication cable
4	Energy storage battery (main control)	EB-5K-02(02)
5	Special soft silicone wire	EB-5K-HV-06-02 (00) is facing the negative plug
		EB-5K-HV-06-03 (00) is directly on the front plug
		EB-5K-HV-06-01 (00) negative
		6 AWG (black): 1,500 mm
		6 AWG (red): 1,500 mm
6	Energystorage connector	125A orange positive power cable, black negative power cable
7	copper nose	SC25-8
8	Base welding	EB-5K-04(01)
9	Rubber foot cup	D55-M16-L50
10	CAN box	USBCAN-I
11	terminal resistance	2 W120Ω + 5P through the wall terminal
12	User manual	JEBEL-5K-HV Product Manual
13	Product test report	The JEBEL-5K-HV test report

6.2 Tools

Type	Tool		
Installation Tools	Knife 	Hammer drill 	Socket wrench 
	Rubber mallet 	Cross Screwdriver 	
	Incinometer 	Measuring tape 	
Protective Equipments	ESD gloves 	Safety goggles 	Anti-dust respirator
	Safety shoes 		

6.3 Installation Requirements

6.3.1 Installation Environment Requirements

1.Install the battery in an indoor environment.

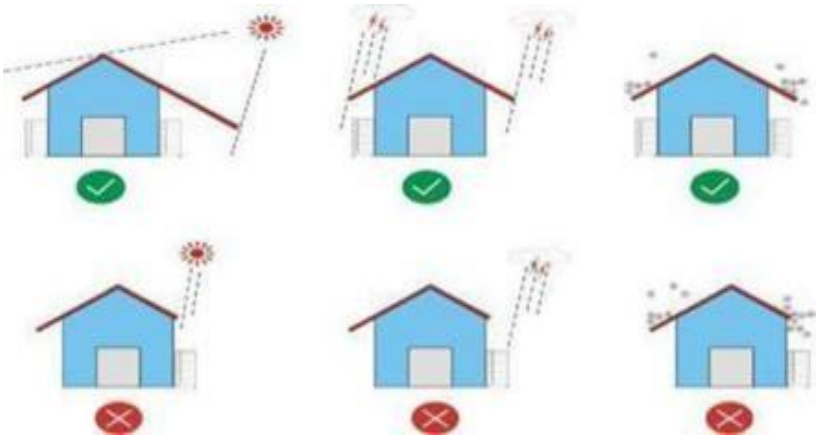
2.Place the battery in a safe position away from children and animals.

3.Do not place the battery near any heat source, and avoid generating sparks.

4.Do not expose the battery to moist air or liquid.

5.Do not expose the battery to direct sunlight.

6.Do not expose the battery to a combustible gas or liquid.



6.3.2 Installation Carrier Requirements

1.The mounting carrier shall be fire resistant. Do not install batteries on flammable buildings.

2.The mounting bracket surface shall meet the requirements of bearing requirements.



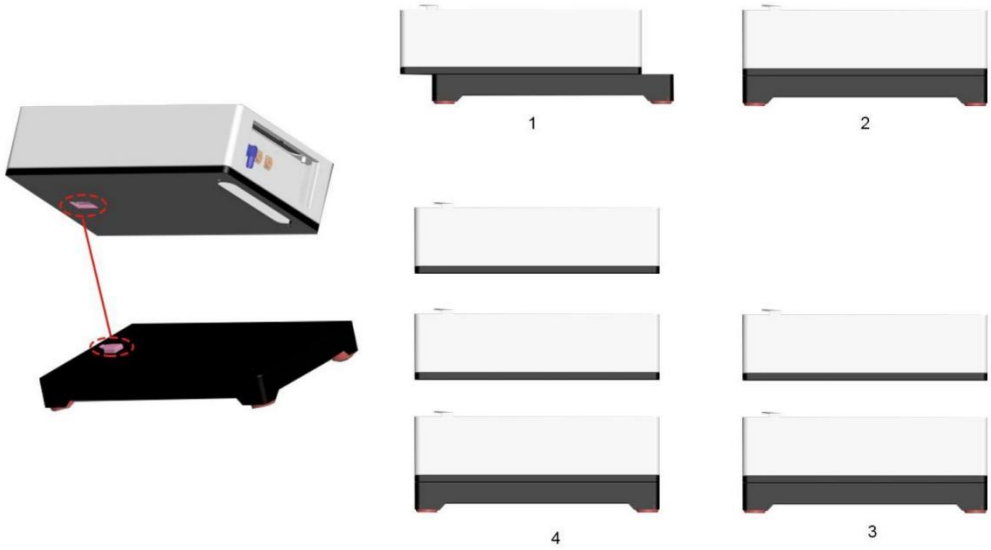
6.4 Installation Instructions

Step 1:

Use the level ruler to adjust the levelness of the base.

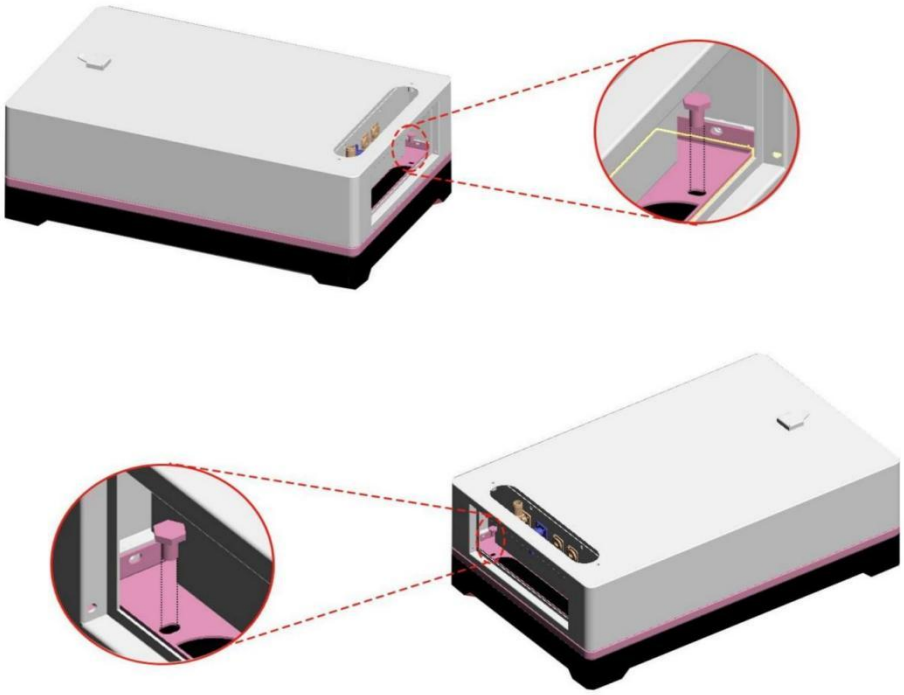
Step 2:

After leveling the base, embed the slave PACK box in the bottom plate.



Step 3:

Open the front cover of the PACK box and screw in two M6*12 screws to secure it as shown in the figure.

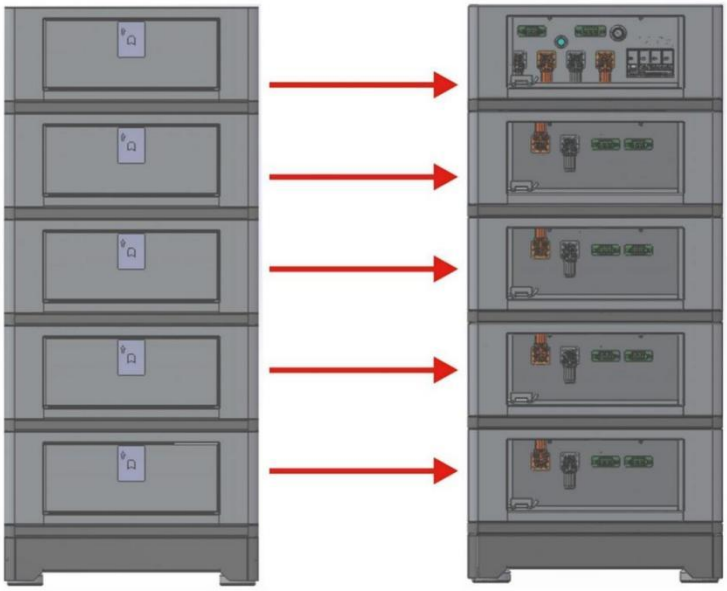


Step 4:

Stack and fix them in sequence, and finally place the BCU control box, following the same method as steps 2 and 3.

Step 5:

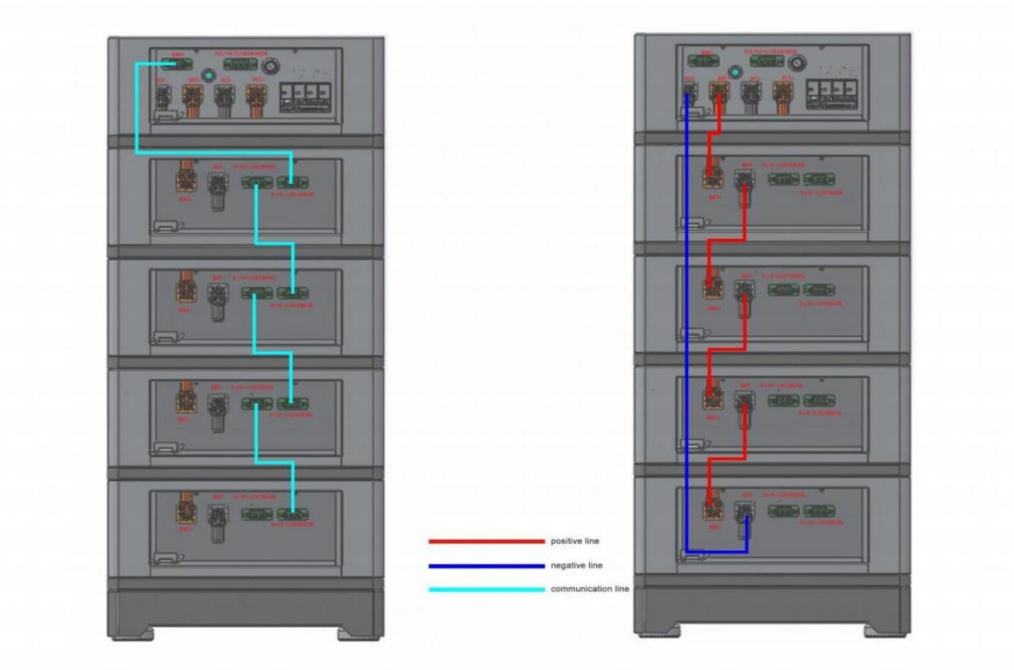
As shown in the figure below, open the side covers of all battery pack boxes and BCU control box.



Step 6:

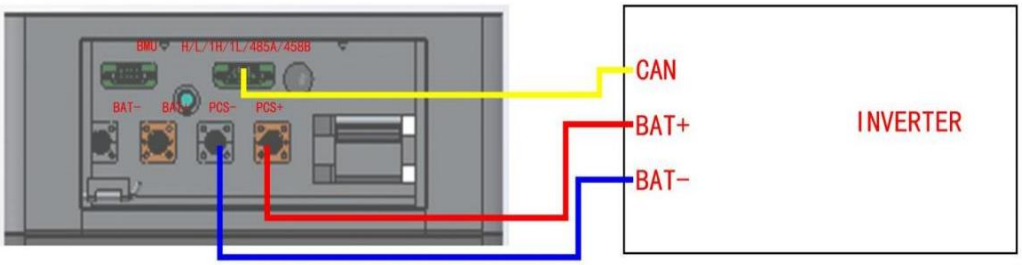
As shown, connect the cable harness and the communication harness in the accessory package.

Note: When cable harness connection, black plug BAT-, orange plug BAT +, wrong connection will cause serious damage or personnel injury, endangering life and property safety.



Step 7:

Connect to the inverter.



7. Cleaning and maintenance

7.1 Cleaning Work

Note: please turn off the power supply of the system before cleaning. It is recommended to clean battery regularly. If the shell is dirty, please use a soft and dry brush or dust collector to remove the dust. Do not use solvents, or corrosive liquids to clean the enclosure.

7.2 Maintenance

7.2.1 Charging requirements during normal storage

The battery should be stored in the temperature range of -10℃~+45℃ and kept regularly according to the following table; Charge at 0.5C current until the SOC of the battery reaches 40%.

Charging conditions during storage:

Store the ambient temperature	Relative humidity of the storage environment	Storage time	SOC
Below -10°C		Prohibit	/
-10~25℃	5%~70%	≤ deadline: 12 months	30%≤soc≤60%
25~35℃	5%~70%	≤ deadline: 6 months	30%≤soc≤60%
35~45℃	5%~70%	≤ deadline: 3 months	30%≤soc≤60%
45°C above		Prohibit	

7.2.2 Recharging Requirements for Excessive Discharge

Please charge the overdischarged (DOD>90%) battery within the time specified in the following table, otherwise the overdischarged battery module will be damaged.

Storage Environment Temperature	Storage Time	Note
-10~25℃	≤15 days	The battery pack disconnected to PCS
25~45℃	≤7 days	
-10~45℃	<12 hours	Battery pack connect to the inverter

8. Common Issues and Solutions

The customer should not replace or change the accessories without authorization. If a battery fault is found, please contact after-sales service department in time.

8.1 Common Issues and Solutions

Users can monitor the operation status, warning and alarm information through the inverter LCD display screen.

1.Battery system cannot start: After pressing the power button (POWER), the button indicator does not display, which means that the battery has been deeply discharged and needs to be charged first. At this time, press the wake-up button (WAKE-UP), and the system will start charging after detecting no other faults. If the voltage of a single battery pack is 51V or above, but the battery still cannot be turned on, please contact the JEBEL TECHNOLOGY.

2.If the battery can be turned on but cannot be charged or discharged, the JEBEL-BCU control board is faulty. Please contact a JEBEL TECHNOLOGY.

3.

1) When the temperature reaches 50℃, the battery will alarm (the battery enters the protection state at 55℃ and above), and when the temperature reaches 0℃, the battery will alarm (the battery enters the protection state at -10℃ and below). The battery cannot be charged after entering the protection state.

Solution: Move the battery to the normal operating temperature range of 0°C to 50°C.

2) Current: If the JEBEL-HV current is greater than 50A, the battery protection state will be turned on.

Solution: Stop using appliances that exceed the maximum power load of the battery.

3) High voltage: When the battery cell voltage is higher than 3.6V or higher, the battery protection state will be turned on immediately and charging will stop.

4) Low voltage: When the battery cell voltage is lower than 2.85V or lower, the battery protection state will be turned on immediately and discharging will stop.

Solution: The battery is exhausted and charge the battery in time.

8.2 Emergency

Please cut off the power supply and turn off the battery in an emergency.

1. **Damp:**If the battery pack is damp or immersed in water, do not get close to the battery, and then contact JEBEL TECHNOLOGY or an authorized JEBEL for technical support.

2. **Fire:**Water cannot be used to extinguish the battery fire! Our company recommends the use of dry powder fire extinguishers to avoid environmental pollution; If possible, place the battery pack in a safe area.

3. **Battery leakage**:If the battery pack electrolyte leaks, avoid contact with the leaking liquid or gas.

If someone comes into contact with the leaked material, do the following immediately.

Inhalation: Evacuate the contaminated area and seek medical attention as soon as possible.

Contact: Rinse eyes with water for 15 minutes and seek medical attention as soon as possible.

Contact skin: Wash the affected area thoroughly with soapy water and seek medical attention as soon as possible.

Swallow in: Induce vomiting and seek medical attention as soon as possible.

Battery damage: Damaged battery is dangerous and must be treated with very carefully. Battery cannot be used or may be dangerous to person or property. If the battery pack is damaged, contact JEBEL TECHNOLOGY for handling.

8.3 Disposal of damaged batteries

1) The disposal of batteries must comply with local regulations on the disposal of electronic waste and used batteries.

2) Do not treat the battery system along with household waste.

3) Avoid exposing the battery to high heat or direct sunlight.

4) Avoid exposing the battery to high humidity or corrosive environments.

5) Avoid exposing the battery to flammable gases or liquids