



# ET-HV30S-4.8K

## User Manual

Light up every corner of the world with renewable energy.

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## 1 Product Information

This manual introduces EITAI ET-HV30S-4.8K battery products. Please read this manual carefully before using the battery. If you have any questions, please contact EITAI for advice and assistance.

### 1.1 Content Description

This user manual is applicable to EITAI ET-HV30S-4.8K.

This user manual contains EITAI ET-HV30S-4.8K product information, user guide, safety information, installation guide, and detailed information on frequently asked operating questions and follow-up maintenance measures.

### 1.2 Usage Scenarios

EITAI ET-HV30S-4.8K is an energy storage unit designed for residential or commercial grid applications with short-term backup capability.

#### **Usage Precautions:**

The EITAI ET-HV30S-4.8K is not intended to support life-sustaining medical devices. This product is used only in accordance with the information provided in the attached documents and local applicable standards and regulations. Any other improper use may cause personal injury or property damage. The illustrations in this manual are intended only to help explain the concept of system configuration, including usage guidelines, safety precautions, common operating problems, and subsequent maintenance measures.

Changes and modifications to the product are only permitted under the following conditions, such as the written permission of EITAI. No warranty or claim will be made for unauthorized changes. EITAI shall not be liable for any damage caused by such alteration. Any non-standard use of the product and any use beyond that described in the terms and conditions will be considered a violation. Attachment documentation is an integral part of this product. Please keep the document in a secure place for future use. The product model label (see section 1.3) must be retained on the product.

### 1.3 Product Label

The label is attached to the product and contains product identification information. For safe use, the user must fully understand the contents of the label.

The label:

LiFePO4 Battery Pack

Model: \_\_\_\_\_ 96V50Ah  
 Ratings: \_\_\_\_\_ 4800Wh/96V/50Ah  
 Charge Voltage: \_\_\_\_\_ 108V  
 Max. Output Power: \_\_\_\_\_ 4800W  
 Maximum Current: \_\_\_\_\_ 50A  
 Charge Temperature: \_\_\_\_\_ 0~50 °C  
 Recommended Current: \_\_\_\_\_ 25A

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**CAUTION!**

- Do not disassemble
- Do not short-circuit
- Do not place in fire or near hot source
- Please read user manual carefully

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CE,MSDS,UN38.3

Model: \_\_\_\_\_ BCU  
 Nominal Voltage: \_\_\_\_\_ 168V~540V  
 Nominal Current: \_\_\_\_\_ 25A  
 Maximum Current: \_\_\_\_\_ 50A

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**CAUTION!**

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CE,MSDS,UN38.3



**DANGER !**



**CHEMICAL HAZARD & SHOCK HAZARD**

- Do not disassemble or repair by yourself.
- Do not drop, deform, impact, cut or spearing with a sharp object.
- Do not place near open flame or incinerate.
- Do not put any objects onto the battery.
- Do not allow to contact with liquid.
- Keep out of reach of children, animals or insects.
- Contact the supplier within 24 hours if anything wrong.

**WARNING !**

Stop the battery operation immediately to secure the battery safety when environmental temperature is over working temperature (suitable operation temperature is 0~45°C). If battery is at high temperature usually, it will impact battery performance.

## 2 Security Measures

This section contains safety information that must be followed at all times when using or installing batteries. To prevent personal injury or property damage, and to ensure the long-term operation of batteries, read this section carefully and always watch for "warnings"   issued by all safety information.

### Environmental requirements

1. Do not expose the battery to more than 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 corrosive gases or liquids;
5. Do not expose the battery to flammable gases or liquids;
6. Do not expose the battery to direct sunlight for a long time;
7. Do not allow battery power terminals to touch conductive objects, such as wires;
8. Keep the battery in a safe place away from children and animals.

### Operation Precautions:

1. Please do not remove the battery;
2. Do not touch the battery string with wet hands;
3. Do not crush, drop, or Pierce the battery;
4. Do not reverse the polarity or connect in series;
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 dispose the products in accordance with the local safety regulations;
7. Store and use the battery in accordance with the user's manual;
8. Ensure reliable grounding;
9. Disconnecting all batteries to the wires before installation and maintenance;
10. Do not stack batteries outside the protective packaging during storage or handling;
11. Packaged batteries shall not be stacked more than the quantity specified on the packaging;
12. Continued operation of the damaged battery may lead to dangerous situations, causing serious injuries such as electric shock or combustion.

### 3 Technical Parameters

Basic Parameters	ET-HV30S-9.6	ET-HV30S-14.4	ET-HV30S-19.2	ET-HV30S-24
Number of Battery Modules	2	3	4	5
System Rated Voltage	192V	288V	384V	480V
System Rated Capacity	9.6kWh	14.4kWh	19.2kWh	24kWh
System Usable Capacity (90%DOD)	8.64KW.h	12.96KW.h	17.28KW.h	21.6KW.h
Dimensions (W*D*H,mm)	660*205*1146	660*205*1538	660*205*1930	660*205*2322
Weight	120kg	170kg	220kg	270kg
Protection Level	IP65			
Cooling Mode	Natural Cooling			
Max. Continuous Work Current	50A			
Temperature	0°C ~ 50°C			
Storage Temperature	≤25°C, 12 Months			
	≤35°C, 6 Months			
	≤45°C, 3 Months			
Work Environment Air Humidity	<95%RH (No Condensation)			
Operating Altitude	<2000m			
Certificate	CE, MSDS, UN38.3			
Cycle Life	≥6000 times			

Battery Module Parameters	
Rated Voltage	96V
Rated Storage Capacity	50AH
Weight	50kg
Dimensions (W*D*H)	660*205*392mm
Protection Level	IP65

**Remark:**

1. Operating current adjust according to the cell voltage and the battery temperature.
2. Different string battery modules of ET-HV30S-4.8K (2 ~ 5 battery modules) will change parameters.

#### 4 Technical Items

No.	Noun	Description
1	Discharge	Battery output power.
2	Recharge	To put electricity into battery by charger.
3	Full Charge	SOC is 100% when the battery is fully charged.
4	Standby	Ready for charging or discharge.
5	Shutdown	Disconnect the battery output.
6	SOC	State of charge (Available capacity).
7	Battery Voltage	Voltage between the battery module PCS+/PCS-.
8	Single String Voltage	Voltage of single battery.
9	Battery Module Voltage	Voltage between battery modules BAT+ / BAT -.
10	Protection	The battery stops charging and discharging.
11	Fault	The battery or BMS is damaged and needs to be replaced.
12	Over Release	Insufficient battery charge and requires timely charging.

## 5 Product Overview



### 5.1 Product Profile

The EITAI ET-HV30S-4.8K high voltage lithium battery energy storage system, consisting of 2-5 battery modules (96V/50AH) and a BCU (Battery Control Unit) in series, with an operating voltage range of 168V-540V, is used for household / commercial energy storage applications, working with a high voltage inverter for energy storage purposes.

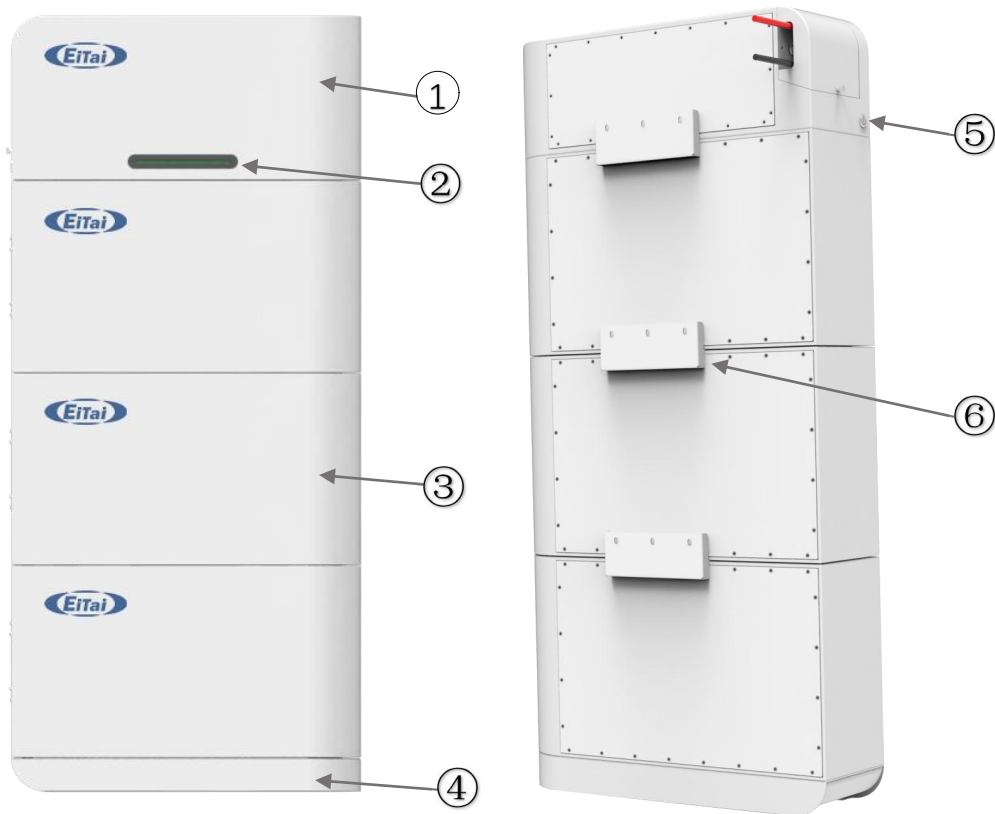
The EITAI ET-HV30S-4.8K has a built-in BMS (battery management system, including the main BMS in BCU and the slave BMS in battery module), which can manage and monitor battery information, including voltage, current and temperature. In addition, BMS can balance battery charging to prolong service life. BMS has over discharge, over charge, over-current, high / low temperature and other protection functions. The system can automatically manage the charge state, discharge state and balance state.

The EITAI ET-HV30S-4.8K have soft-start circuit inside so it can support inverters without soft-start function.



## 5.2 Battery System Overview

The EITAI ET-HV30S-4.8K series consists of the battery module and the BCU module, The BCU (battery control unit) is connected in series.



No.	Description
1	BCU (Battery Control Unit)
2	Battery Level Indicator
3	Battery Module
4	Base
5	Power Button
6	Anti-roll Plate

## 5.3 ET-HV30S-BCU

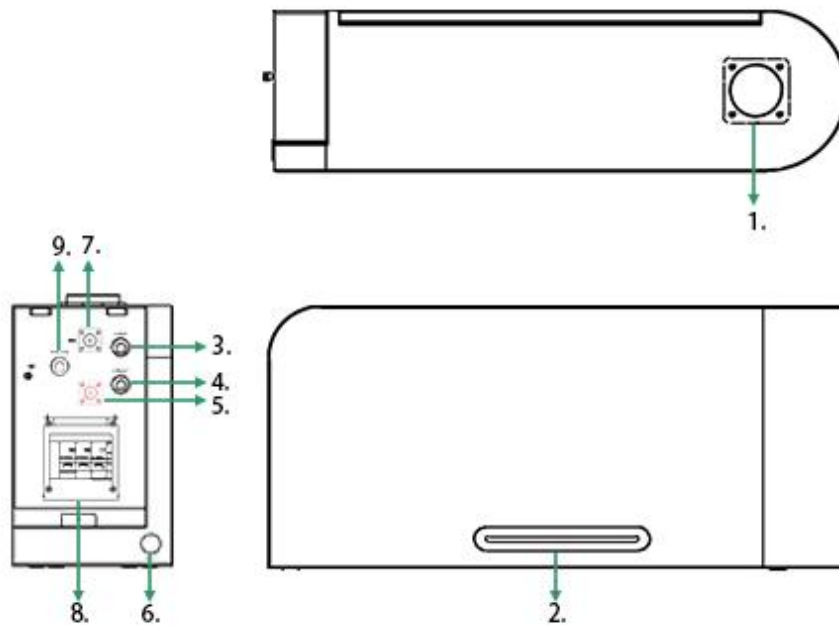
The BCU includes the master BMS, DC fuse, soft starting circuit, charging circuit, discharge circuit, 12VDC/DC power supply module.

The BMS in the battery module collects the battery voltage and temperature data uploaded to the master BMS via the internal CAN. BMS's BCU controls the charging voltage / current and discharge voltage / current.

### 5.3.1 Technical Data

Name	Technical Parameters
Rated Voltage	168V—540V
Rated Current	25A
Max. Current	50A
Operating Temperature	0°C~50°C
Humidity	<95%RH
Protection Level	IP65
Cooling	Natural Cooling
Weight (kg)	20KG
Dimensions( W*H*D)	660*205*300mm
Communication	CAN/RS485

### 5.3.2 The Ports of the BCU



NO.	Mark	Description	NO.	Mark	Description
1.	WIFI	WIFI module	2.		SOC
3.	COM-IN	Parallel port	4.	COM-OUT	Connect the battery module
5.	P+	Positive output	6.	ON/OFF	Power button
7.	P-	Negative output	8.		Switch
9.	PCS-CAN	Connect the inverter			

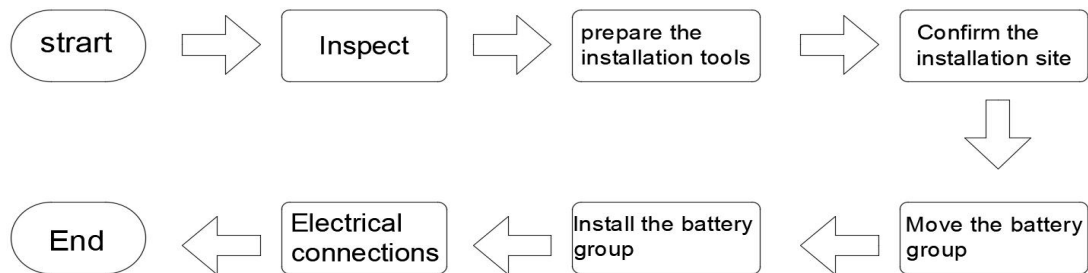
#### 5.4 ET-HV30S-5120 Battery Module

The battery module includes the 96V/50AH battery cell and the subordinate BMS. The slave BMS collects and transfers the battery voltage and temperature of the battery cell in real time and the BCU to the main BMS via internal communication.



Name	Technical Parameters
Rated Voltage	96V
Rated Capacity	50Ah
Rated Power (100%DOD)	4800W.h
Usable Power (90%DOD)	4320W.h
DOD	< 90%
Rated Current	25A
Max. Current	50A
Operating Temperature	0°C~50°C
Humidity	<95%rh
Protection Level	IP65
Cooling	Natural Cooling
Weight (kg)	50KG
Dimensions (W*D*H)	660*205*392mm
Certificate	CE, MSDS , UN38.3

## 6 Installation Guide



### 6.1 Inspection Before the Installation

#### 6.1.1 Check the Outer Packaging

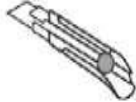






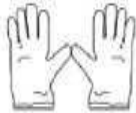



Packaging materials and components may be damaged during transportation. Check the outer packaging material before installing the battery. Check the packaging material surface for damage, such as holes and cracks. If any damage is found, do not unpacking the battery and contact the dealer as soon as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

#### 6.1.2 Check Deliverables

After unpacking the package, check that the deliverables are intact and complete. If any damage or missing parts is found, please contact EITAI. Accessories list in the package.

Model: ET-HV30S-4.8K					
No	Name	Model	Unit	Qty	Mark
1	Battery module	ET-HV30S-4.8K	PCS	1	
2	Anti-roll Plate	Steel	PCS	1	
3	Phillips setscrew	M4	PCS	3	Lock Anti-roll Plate
4	Expansion screw	M8	PCS	3	Lock Anti-roll Plate
<b>NO. 1~4 are accessories for slave control; NO. 5~11 are accessories for master control.</b>					
5	Battery control unit	BCU	PCS	1	
6	Base	Steel	PCS	1	
7	Phillips setscrew	M12	PCS	4	Lock base
8	Power connection cable	Black and red	PCS	2	Connect the inverter
9	Communication cable		PCS	1	Connect the inverter
10	User manual	ET-HV30S-4.8K User manual	PCS	1	
11	PC cable		PCS	1	Connect the PC

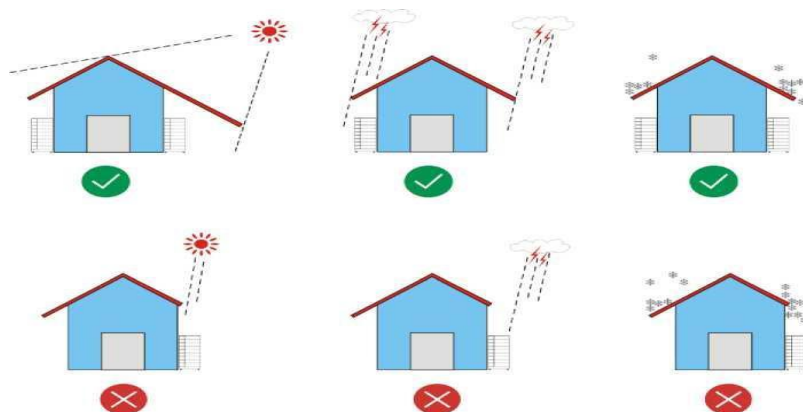
## 6.2 Tools

Type	Tools			
Installation	Knife 	Hammer drill 	Socket wrench 	Measuring tape 
	Rubber mallet 	Cross Screwdriver 	Inclinometer 	
Protection	ESD gloves 	Safety goggles 	Dust mask 	Safety shoes 

## 6.3 Installation Requirements

### 6.3.1 Installation Environment Requirements

1. Install the battery indoors or under eaves wet from rain.
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 corrosive gas or liquids.
7. Do not expose the battery to a combustible gas or liquid.



### 6.3.2 Installation Bracket Requirements

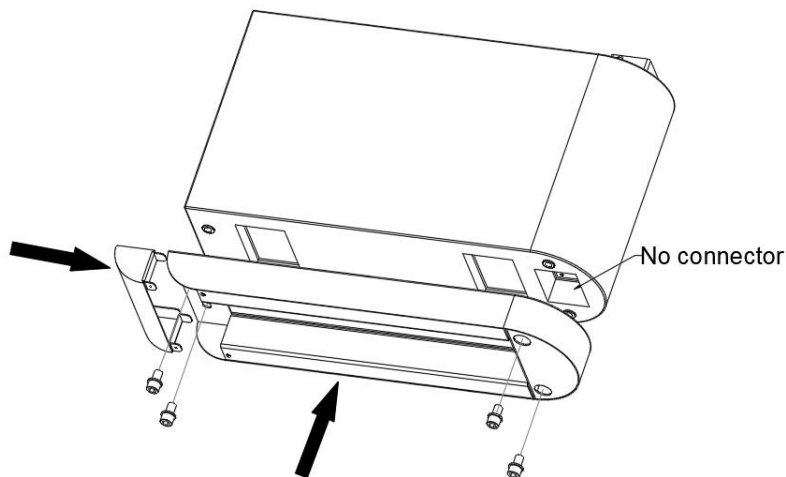
1. The mounting bracket shall be fire resistant. Do not install batteries on flammable buildings.
2. The mounting bracket surface shall meet the requirements of bearing gravity.



#### 6.4 Installation and Use Instructions

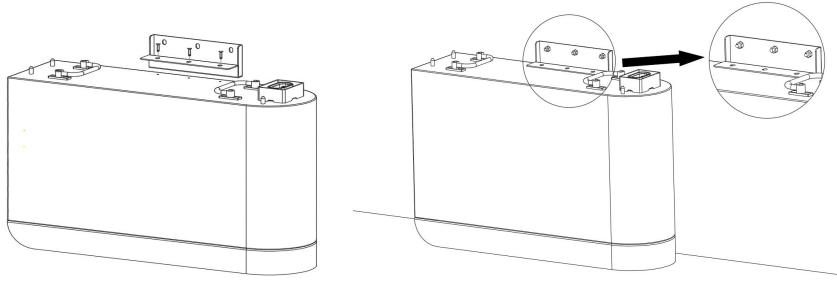
**Step 1:** When receiving the product, first check whether all parts are complete, if not, please report to EITAI .

**Step 2:** Remove the base and battery pack from the box. Lay the battery pack flat, and fix the base to the bottom of the battery that has the Identified with M12 screws. After the base is installed, insert the accessories and fix them with screws. (Note: The battery pack with the fixed base is different from other modules, there is no connector at the bottom) As shown in the figure:

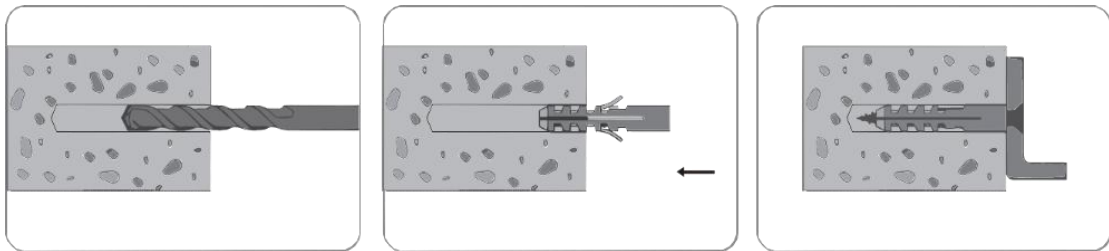


**Step 3:** Place the battery pack with the base against the wall, and the wall must be perpendicular to the ground at 90°. (Note: the wall must be a load-bearing wall, otherwise the battery pack cannot be installed on this wall) Fix the hanger on the battery holder. Once installed, secure the position to the wall through the holes in the hanger. Remove the battery pack, drill a  $\varnothing 8\text{mm}$  depth 60mm hole in the wall with a hammer drill, then screw the M8 blasting screw into the wall. Move the battery pack to a suitable position and

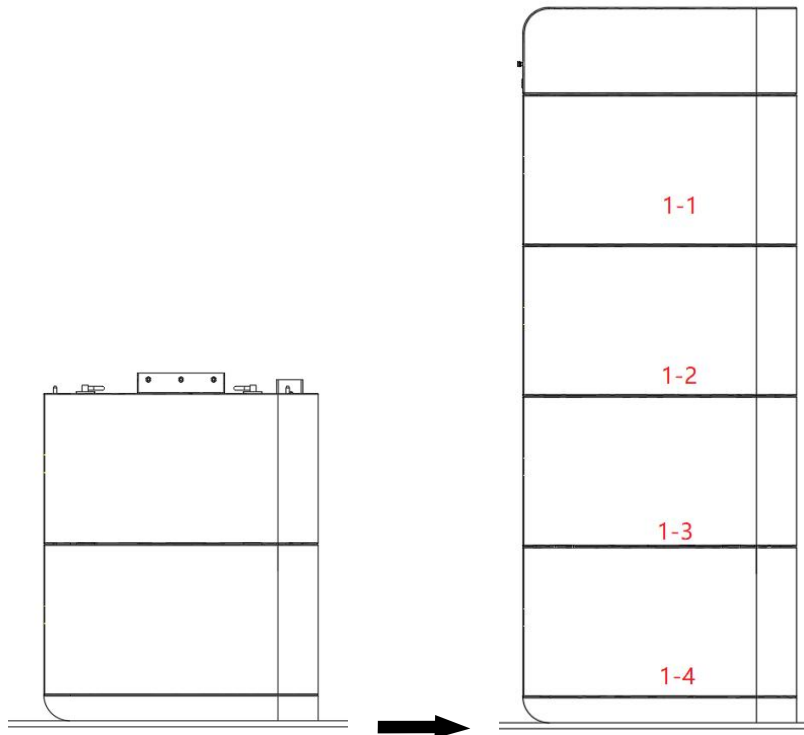
lock it with the nut.



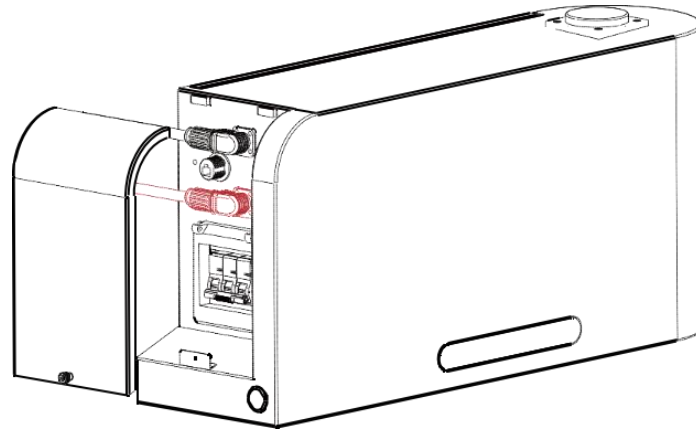
**Step 4:** Drill holes with a  $\varnothing 8\text{mm}$  drill bit, the depth is about 60mm, and the hole spacing is as follows: (install the explosion screws after drilling)



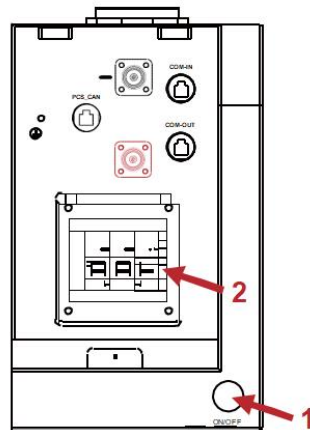
**Step5:** Align the pins, place the second battery module on top of the first battery module, and secure the hanger with the screws. After installing the second battery pack, install the third and fourth battery packs in sequence. Finally, install the main control box to complete the installation. as the picture shows:



**Step 6:** Open the side cover of the main control box, install the power connect cable and communication cable (RS485/CAN port), and connect to the inverter. Lock the side cover to complete the installation.



**Step 7:** Start the high pressure system. Press the power button for 3S, when the red light of the switch lights up, release your finger to start the system.

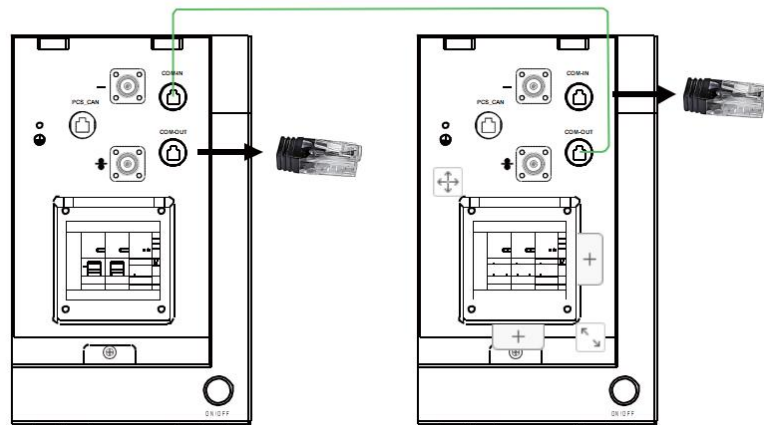
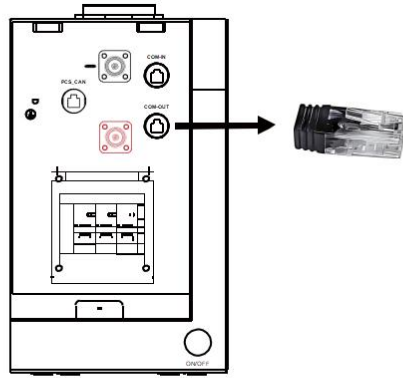


**Step 8:** Running the device, set the external charger or inverter parameters, please set according to the corresponding operation manual. Can not exceed the rated parameter requirements .

**Step 9:** Stop operating the battery pack. When it is necessary to stop battery charging and discharging or troubleshoot, please first stop the external equipment and cut off the input and output circuits. Turn off the system output DC air switch(1). Press the OFF button to turn off the system.

**Step 10:** Each high-voltage box is equipped with a matching resistor, and a single running matching resistor is connected to COM-OUT. When multiple machines are connected in parallel, only the COM-OUT of the last one needs to be connected with a matching resistor.





## 7 Cleaning and Maintenance

**Caution:** Power off the system before cleaning.

It is recommended to clean the ET-HV30S-4.8K regularly. If the shell is dirty, remove dust using a soft, dry brush or remover. Do not clean the enclosure with a solvent or a corrosive liquid.

### 7.1 Recharging Requirements During Normal Storage

The battery shall be stored in an environment with a temperature range of between  $-10\text{ }^{\circ}\text{C}$  +  $45\text{ }^{\circ}\text{C}$ , and maintained regularly according to the table below, to 0.5C (25A) current until 40% SOC. after long storage.

Storage Environment Temperature	Relative Humidity of the Storage Environment	Storage Time	SOC
Below $-10\text{ }^{\circ}\text{C}$	/	No use	/
$-10\sim 25\text{ }^{\circ}\text{C}$	5% ~ 70%	$\cong 12$ Months	$30\% \leq \text{SOC} \leq 60\%$
$25\sim 35\text{ }^{\circ}\text{C}$	5% ~ 70%	$\cong 6$ Months	$30\% \leq \text{SOC} \leq 60\%$
$35\sim 45\text{ }^{\circ}\text{C}$	5% ~ 70%	$\cong 3$ Months	$30\% \leq \text{SOC} \leq 60\%$
Above $45\text{ }^{\circ}\text{C}$	/	No use	/

### 7.2 Requirements When Recharging an Over-discharge Battery

Please charge the over-discharged battery (90%DOD) within the specified time according to the following table; otherwise, the battery module may be damaged due to excessive discharge.

Storage Environment	Storage Time	Mark
$-10\sim 25\text{ }^{\circ}\text{C}$	$\leq 15$ days	The battery string is disconnected. Connect to a personal computer
$25\sim 45\text{ }^{\circ}\text{C}$	$\leq 7$ days	
$-10\sim 45\text{ }^{\circ}\text{C}$	$< 12$ hours	The battery pack is connected to the inverter

## 8 Common Issues and Solutions

The customer should not replace or change accessories. If the ALM long red is in red this means an error occurs. When you find a battery fault, please contact our after-sales service department within 48 hours.

### 8.1 Common Issues and Solutions

**Users can monitor the operating status, warning and alarm information through the inverter LCD display.**

1. The battery cannot be turned on. If the LED indicator of the ET-HV30S-BCU switch power button is not displayed, the battery is deeply discharged and needs to be charged first. If the external charger power voltage is 84V or above and the battery still cannot be turned on, please contact EITAI.

2. If the battery can be started but cannot be charged or discharged, the ET-HV30S-BCU control board is faulty. Contact EITAI.

3.

1) High temperature up to 50°C will alarm (55°C high temperature battery protection), low temperature reaches 0°C will alarm (- 10°C temperature battery protection), protection after the battery cannot charge.

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

2) High temperature up to 50°C will alarm (55°C high temperature battery protection), low temperature reaches 0°C will alarm (- 10°C temperature battery protection), to protect the battery can discharge.

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

3) Current: if ET-HV30S-4.8K current is greater than 50A, will open the battery protection device.

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

4) High pressure: when the battery monomer voltage is higher than 3.6 V or higher, battery charging protection will open.

The battery is fully charged.

5) Low pressure: when the battery monomer voltage below 2.8 V or lower, the battery discharge protection will open.

Solution: The battery is empty. Charge the battery in time.

## 8.2 Emergency

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

1. **Wet:** If the battery pack is damp or immersed in water, do not try to disassemble the battery pack, please contact EITAI company or authorized dealer for technical support.
2. **Fire:** Do not try to extinguish the fire with water! Only use dry powder fire extinguishers; If possible, place the battery pack in a safe area.
3. **Leaked battery:** If the battery pack leaks the electrolyte, avoid contact with the leaking liquid or gas. If someone is exposed to the leaking material, do the following immediately:
  - 1) **Inhaled gas:** People shall evacuate the contaminated area and seek medical treatment.
  - 2) **Contact eye:** Wash eyes with water for 15 minutes and seek medical treatment.
  - 3) **Contact skin:** Wash the infected site with soap and water and seek medical treatment.
  - 4) **Battery damage:** Damaged battery is dangerous and must be treated with very carefully. They are not continued to use and may pose a danger to a person or property. If the battery pack is damaged, contact EITAI for handling.

## 8.3 Handling of the Battery System

1. The system treatment must comply with the locally applicable disposal regulations of electronic waste and second-hand 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. Do not expose the battery to a combustible gas or liquid.



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