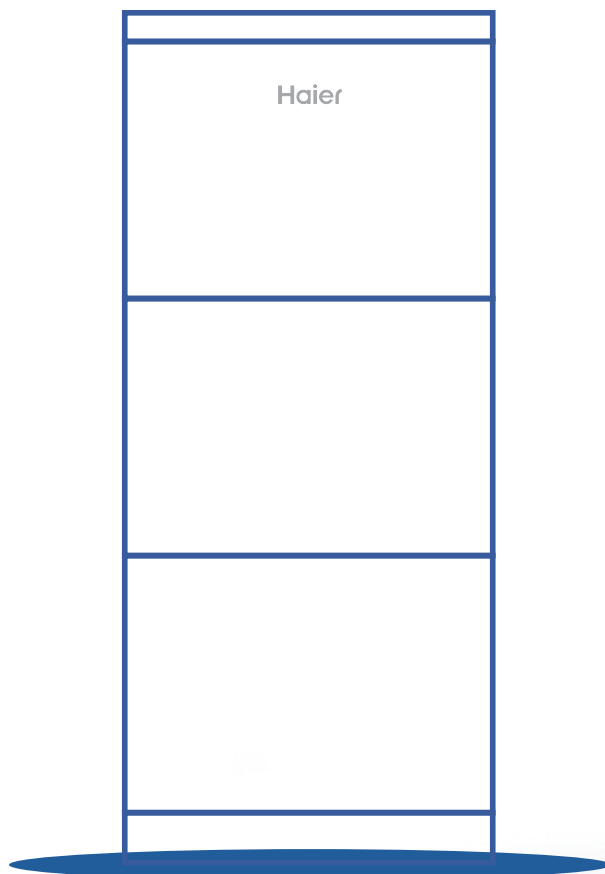


# -Tower HV

## USER MANUAL

HA3PH-4/5/6/8/10/12/15KB1/HU9 and HBHS-4.8KB1/LPP



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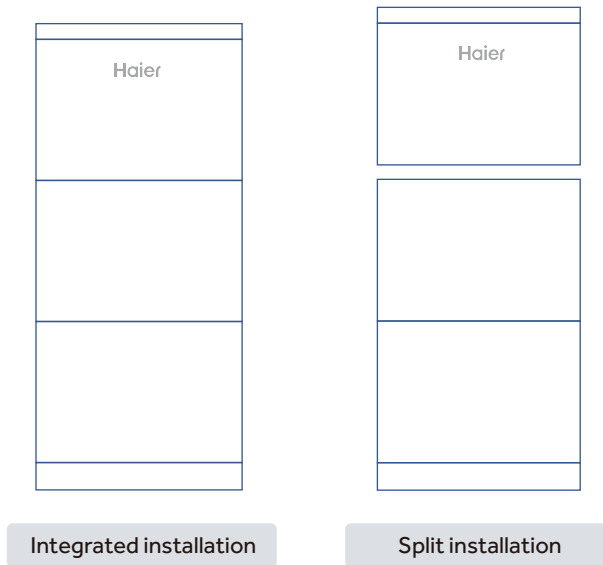
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# 1 SYSTEM INTRODUCTION

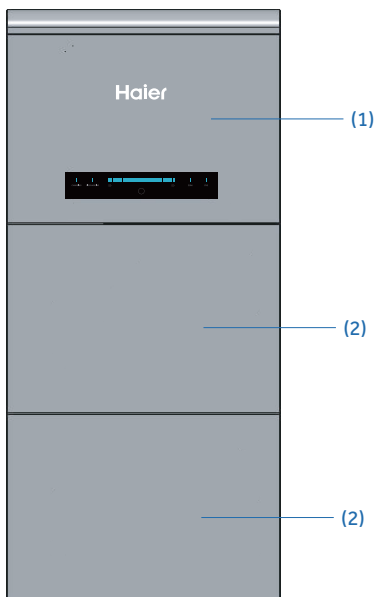
HA3PH-4/5/6 4.8/9.6/14.4B1 & HA3PH-8/10K9.6/14.4B1 & HA3PH-12/15K14.4B1 consist of PCS module, battery module, and battery base.



## NOTE :

- The diagram only represents the installation of 1 inverter and 2 batteries. If more inverters/batteries need to be installed, please refer to the corresponding quick installation manual.
- This document describes the installation, commissioning, configuration, operation of the product as well as the operation of the product user app.
- You can scan the QR code "Haier Energy" download the APP. For more commissioning information, please refer to the Haier Energy App Quick Start Guide (For Installer and User).
- You will find the latest version of this document and further information on the product in PDF format at [www.haier-energy.com](http://www.haier-energy.com).

## 1.1. Product Introduction



### HBHS-4.8KB1/LPP

Dimension(W×H×D): 620×(484.9+430\*N)×206mm

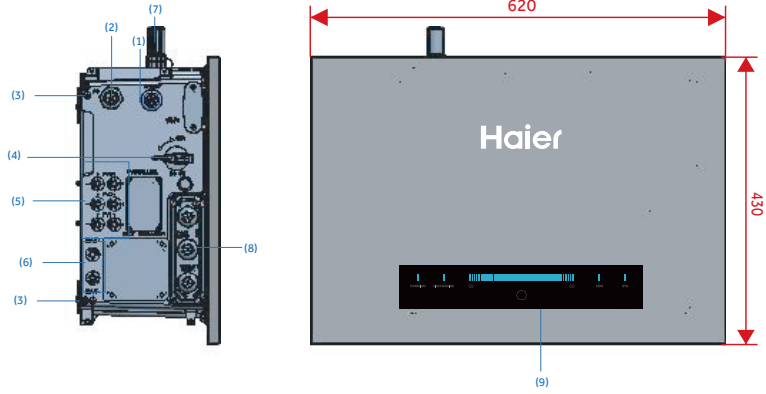
N: Number of batteries

Object	Name	Explain
1	HAH3P-4KB1/HU9 HAH3P-5KB1/HU9 HAH3P-6KB1/HU9 HAH3P-8KB1/HU9 HAH3P-10KB1/HU9 HAH3P-15KB1/HU9	Inverter
2	HBHS-4.8KB1/LPP	Battery

## 1.2. Inverter Introduction

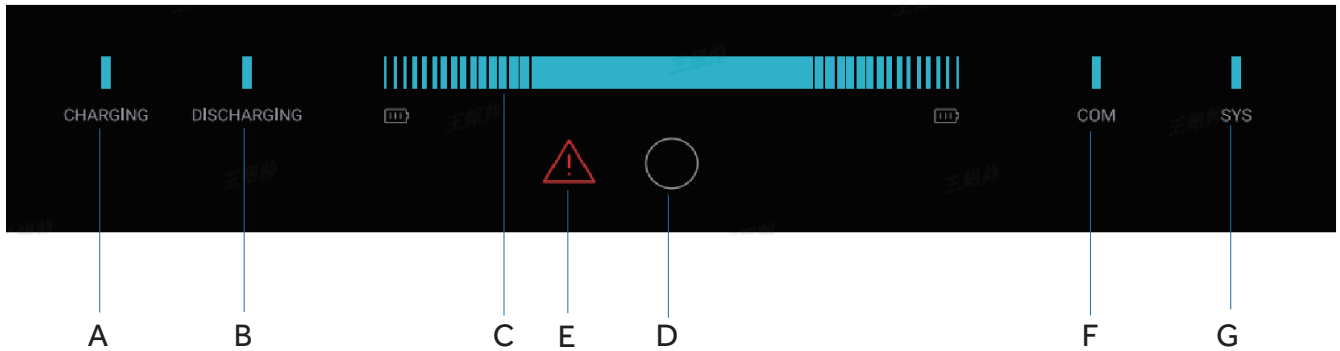
- Inverter electrical interface

- (1) Backup Connector
- (2) Grid Connector
- (3) Grounding Point
- (4) PV Switch
- (5) PV Input
- (6) BAT + Connector / BAT - Connector
- (7) Wi-Fi stick Port
- (8) Communication Ports\*
- (9) LED Display



\*All breakers of the product are switched off when shipped.  
 \*Communication Ports(CAN/RS485,BMS, LAN, METER, DRM\*\*, AUX).  
 \*\*The DRM is only for regions with AS/NZS 4777.2 safety regulations.

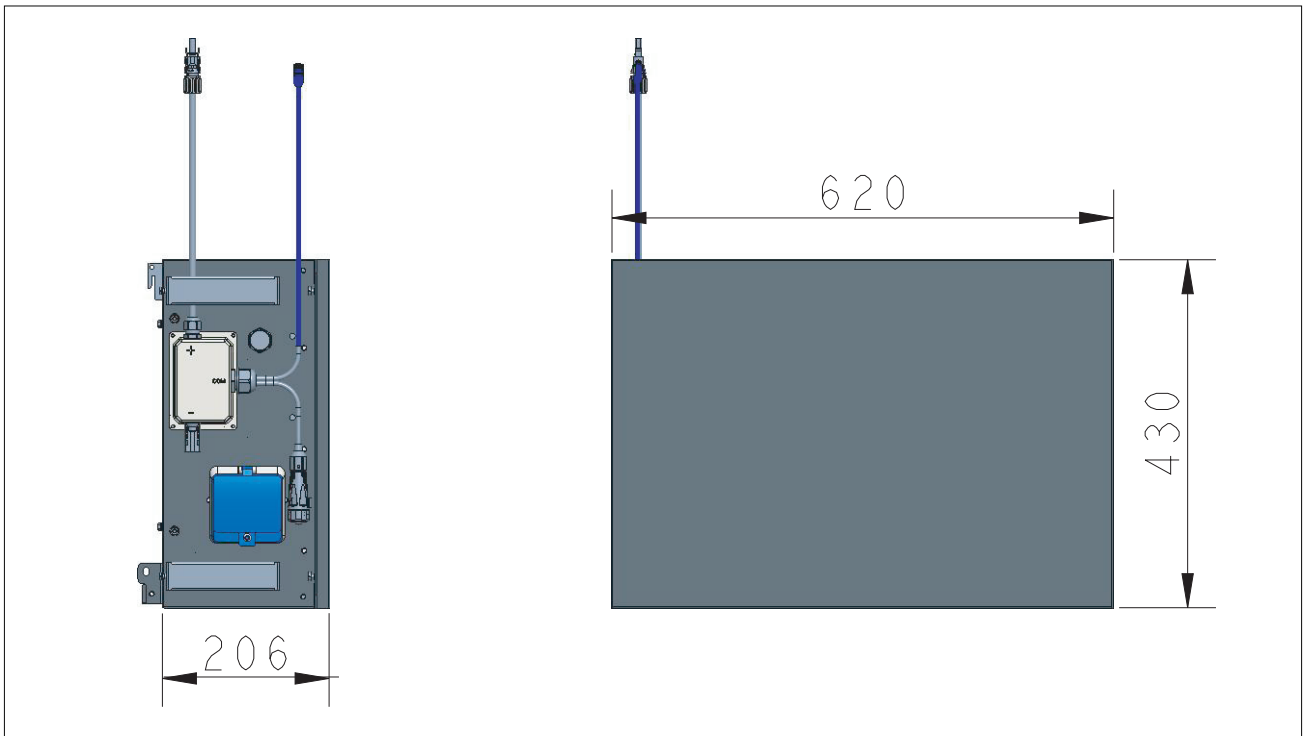
- Inverter display interface introduction



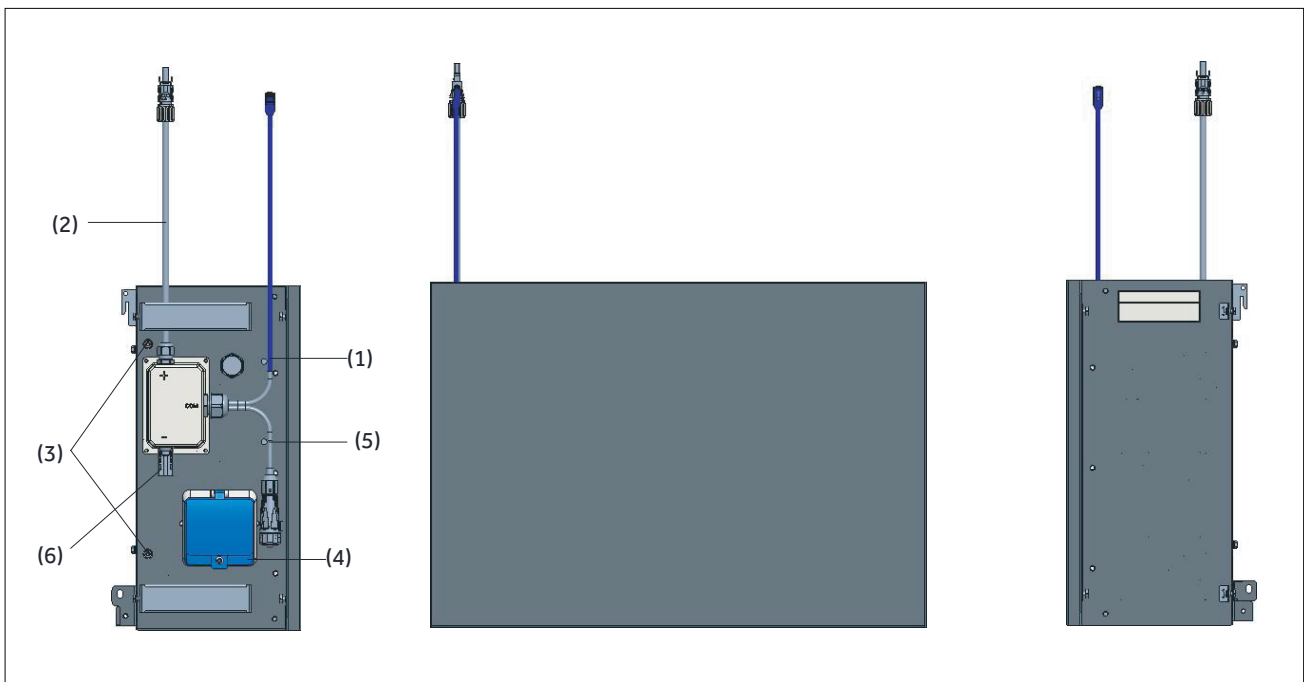
Object	Name	Description
A	Charging	Charging Status Indicator Light
B	Discharging	Discharging Status Indicator Light
C	Battery Light	Battery Level Indicator Light
D	Tap to wake	Tap to wake or turn off the screen
E	Battery Warning Light	Battery Fault Alarm Indicator Light
F	COM	Communication Indicator Light
G	SYS	System Operation Indicator Light

### 1.3. Battery Introduction

- Battery pack appearance and dimensions of HBHS-4.8KB1/LPP.



- Connection area overview of HBHS-4.8KB1/LPP.



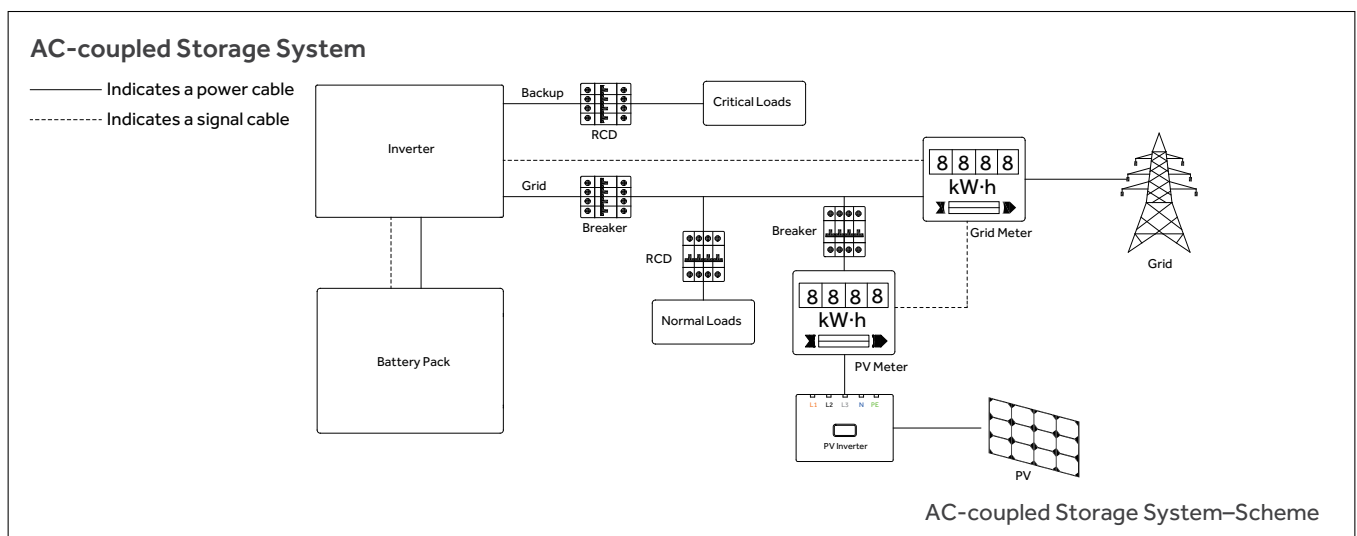
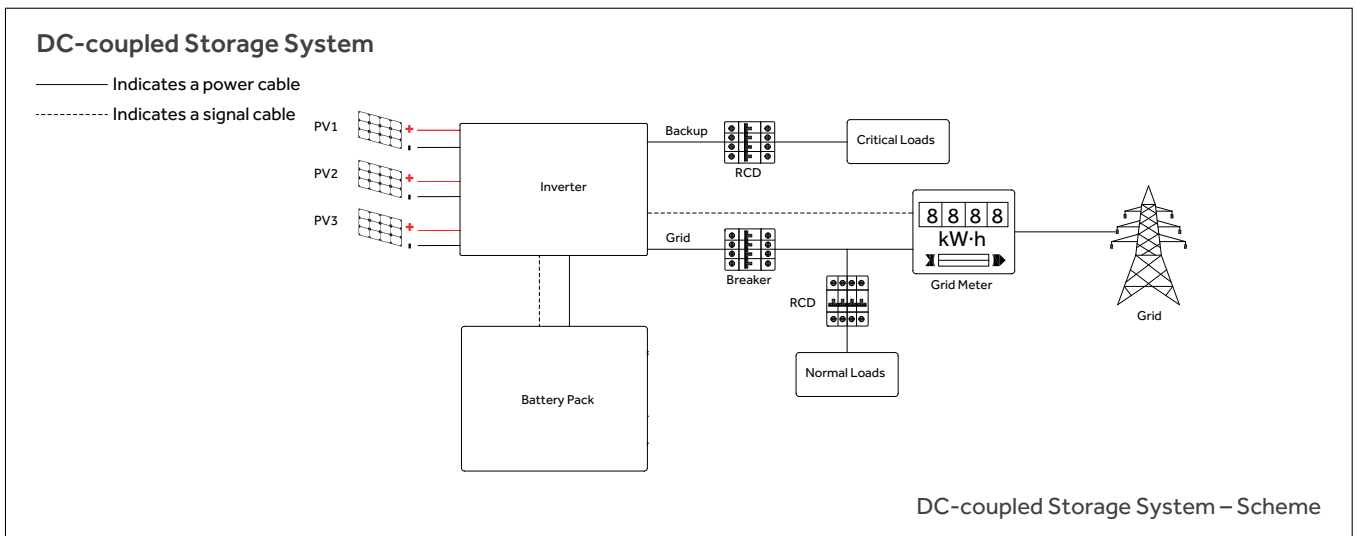
Position	Designation
1	BMS COM 1
2	Battery Positive Power Connector
3	Grounding
4	Battery Circuit Breaker
5	BMS COM 2 (with terminal resistance)
6	Battery Negative Power Connector

- The LED indicators on the front of the inverter cover provide information about the SOC operational status of the system batteries with lights displaying solid white or red.

LED Indicator	No.	SOC	Description
LEDs show the SOC status	1		SOC ≤ 10%
	2		10% < SOC ≤ 30%
	3		30% < SOC ≤ 50%
	4		50% < SOC ≤ 60%
	5		60% < SOC ≤ 90%
	6		90% < SOC ≤ 100%

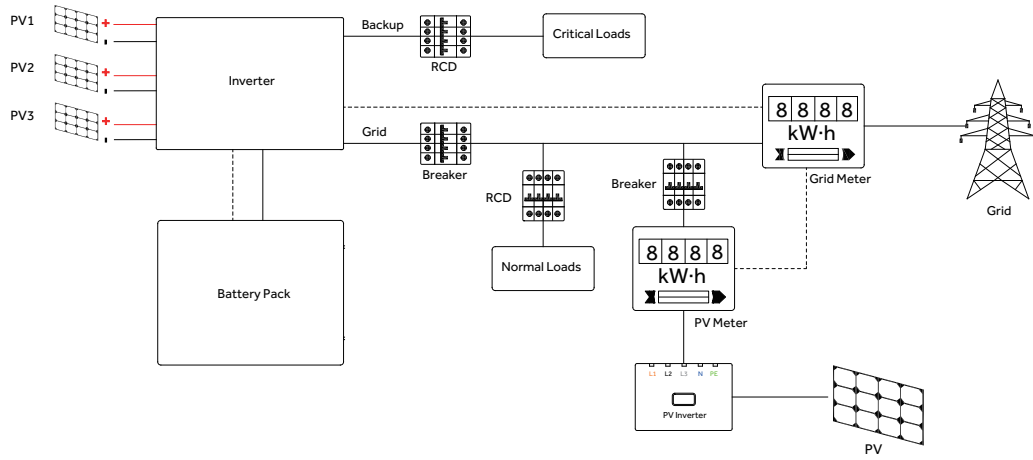
### 1.4. Application scenarios

- Storage System ( includes inverter HAH3P-series and battery HBHS-4.8KB1/LPP applied in DC-coupled systems ( mostly new installation ), AC-coupled systems ( mostly retrofit ), Hybrid-coupled systems ( mostly retrofit, and increase the PV capacity ), and Off-grid ( with Generator ) systems as the following schemes show:



### Hybrid-coupled Storage System

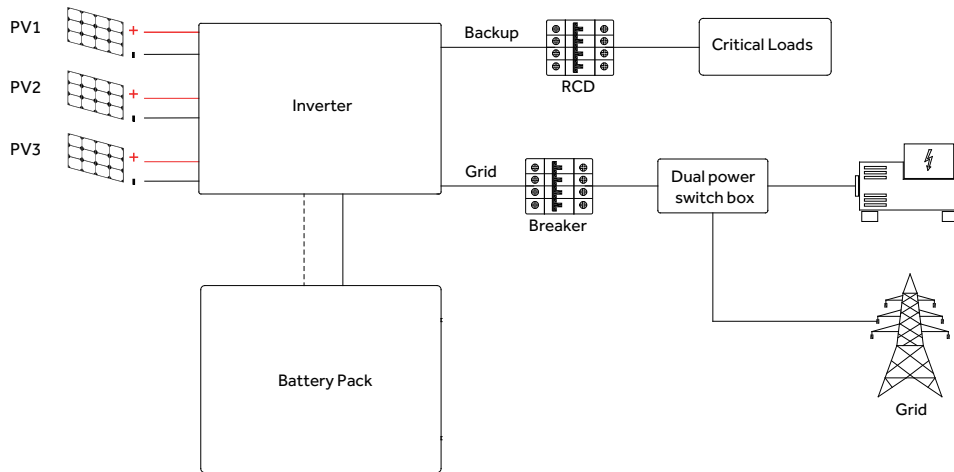
————— Indicates a power cable  
 - - - - - Indicates a signal cable



Hybrid-coupled Storage System – Scheme

### Off grid Storage System with Dual power switch box

————— Indicates a power cable  
 - - - - - Indicates a signal cable



Off grid (with Dual power switch box) Storage System – Scheme

## 2 SAFETY

### 2.1. Safety precautions

Please read the manual carefully and operate in accordance with the safety precautions. Refer to local safety regulations on items not covered in this manual. Electrical installation, maintenance must be performed by professional / qualified personnel.

Inverter must only be operated with PV arrays of protection class II in accordance with IEC 61730, application class A. The PV modules must be compatible with this product.

PV modules with a high capacity to ground must only be used if their coupling capacity does not exceed 1.0  $\mu$ F.

All components must operate in a scenario suitable for their operation.

Be sure to use this product in accordance with the information provided in the accompanying documents and local applicable standards and directives. Any other operation may cause personal injury or property damage.

Alterations to the product, e.g. changes or modifications, are only permitted with the express written permission of Haier. Unauthorized alterations will void guarantee and warranty claims.

Haier shall not be held liable for any damage caused by such changes.






Any use of the product other than that described in the Safety precautions section does not qualify as appropriate.

The enclosed documentation is an integral part of this product. Keep the documentation in a convenient place for future reference and comply with all instructions contained therein.

The type label must remain permanently attached to the product.

### 2.2. Levels of warning messages

The following levels of warning messages may occur when handling the product.

Symbol	Description
 <b>DANGER</b>	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
 <b>NOTE</b>	NOTE indicates a situation which, if not avoided, can result in property damage.
	INFORMATION provides tips which are valuable for the optimal installation and operation of the product.

### 2.3. Safety instructions for battery

#### 2.3.1. General safety Instructions

Over voltage or wrong wiring can damage the battery pack and cause deflagration, which can be extremely dangerous.

All types of breakdown of the battery may lead to a leakage of electrolyte or flammable gas.

Battery pack is not user-serviceable. There is high voltage in the device.

Read the label with Warning Symbols and Precautions, which is on the right side of the battery pack.

Do not connect any AC conductors or PV conductors directly to the battery pack which should be only connected to the inverter.

Do not charge or discharge damaged battery. Do not damage the battery pack in such ways as dropping, deforming, impacting, cutting or penetrating with a sharp object. It may cause a leakage of electrolyte or fire.

Do not expose battery to open flame.

### 2.3.2. Response to emergency situations

The battery pack is composed of multiple batteries and designed to prevent the danger caused by malfunction.

If the batteries leak electrolyte, direct contact with the leaking liquid or gas should be avoided. The electrolyte is corrosive, and contact with it may cause skin irritation and chemical burns. If one is exposed to the leaked substance, and contact with electrolyte, please follow these instructions:

1. Inhalation: Leave the contaminated area immediately and seek medical attention.
2. Eye injuries: Rinse eyes with running water for 15 minutes and seek medical attention.
3. Skin injuries: Wash the contacted area with soap thoroughly and seek medical attention.
4. Ingestion: Induce vomiting and seek medical attention.

If a fire breaks out in the place where the battery pack is installed, perform the following countermeasures:

- **Fire extinguishing media**

1. Respirator is not required during normal operations.
2. Use FM-200 or CO<sub>2</sub> extinguisher for battery fire.
3. Use an ABC fire extinguisher, if the fire is not from battery and not spread to it yet.

- **Firefighting instructions**

1. If fire occurs when charging batteries, if it is safe to do so, disconnect the battery pack circuit breaker to shut off the power to charge.
2. If the battery pack is not on fire yet, extinguish the fire before the battery pack catches fire.
3. If the battery pack is on fire, do not try to extinguish but evacuate people immediately.



**DANGER**

There may be a possible explosion when batteries are heated above 150°C. When the battery pack is burning, it leaks poisonous gases. Do not approach.

- **Effective ways to deal with accidents.**

1. On land: Place damaged battery into a segregated place and call local fire department or service engineer.
2. In water: Stay out of the water and don't touch anything if any part of the battery, inverter, or wiring is submerged.
3. Do not use submerged battery again and contact the service engineer.



**DANGER**

Danger to life due to electric shock when live components or cables are touched.

There is high voltage in the conductive components or cables of the product. Touching live parts and cables can result in death or lethal injuries due to electric shock.

- Do not touch non-insulated parts or cables.
- Disconnect the product from voltage sources and make sure it cannot be reconnected before working on the inverter or the battery pack.
- After disconnection, wait for 5 minutes until the capacitors have discharged.
- Do not open the product.
- Wear suitable personal protective equipment for all operations on the product.



**DANGER** Danger to life due to danger voltages on the battery pack.

There is danger voltage at the pin connector for the power cable. Reaching into the pin connector for the power cable can result in lethal electric shock.

- Do not open the battery pack.
- Do not wipe over the battery pack with a damp cloth.
- Leave the protective caps on the pin connectors for the batteries power connection until the inverter cables are connected to the battery pack.
- Disconnect the system from voltage sources and make sure it cannot be reconnected before working on the inverter or the battery pack.



**WARNING** Risk of chemical burns from electrolyte or toxic gases.

During normal operation, no electrolyte would leak from the battery pack and no toxic gases would form. Despite careful construction, if the battery pack is damaged or a fault occurs, it is possible that electrolyte may be leaked or toxic gases may form.

- Store the battery pack in a cool and dry place.
- Do not drop the battery pack or damage it with sharp objects.
- Only set the battery pack down on its back or its bottom.
- Do not open the battery pack.
- Do not install or operate the battery pack in potentially explosive atmosphere or areas of high humidity.
- If moisture has penetrated the battery pack (e.g. due to a damaged housing), do not install or operate the battery pack.
- In case of contact with electrolyte, rinse the affected areas immediately with water and consult a doctor without delay.



**CAUTION** Risk of burns due to hot heatsink and housing.

The heatsink and housing can get hot during operation.  
During operation, do not touch any parts other than the cover of the inverter.



**NOTE** Damage to the inverter due to electrostatic discharge.

- Touching electronic components can cause damage to or destroy the inverter through electrostatic discharge.
- Ground yourself before touching any component.



**NOTE** Damage due to cleaning agents.

- The use of cleaning agents may cause damage to the product and its components.
- Clean the product and all its components only with a cloth moistened with clear water.



**DANGER** Danger to life due to electric shock when live components or PV cables are touched.

When PV panels exposed to sunlight, the PV array generates high DC voltage which presents in the DC conductors. Touching the live DC cables can result in death or lethal injuries due to electric shock.





















- Disconnect the inverter from voltage sources and make sure it cannot be reconnected before working on the device.
- Do not touch non-insulated parts or cables.
- Do not disconnect the DC connectors under load.
- Wear suitable personal protective equipment for all work on the inverter.



**DANGER** Danger to life due to electric shock from touching an ungrounded PV module or array frame.

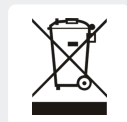
- Touching ungrounded PV modules or array frames can result in death or lethal injuries due to electric shock.
- Connect and ground the frame of the PV modules, the array frame and the electrically conductive surfaces so that there is continuous conduction.
- Observe the applicable local regulations.

## 2.4. Symbols explanation

Symbol	Explanation
	Beware of a danger zone This symbol indicates that the product must be additionally grounded if additional grounding or equipotential bonding is required at the installation site.
	Beware of electrical voltage The product operates at high voltages.
	The surface temperature of the inverter can reach up to 75 °C (167 F). To avoid risk of burns, do not touch the surface of the inverter while it's operating. Inverter must be installed out of the reach of children.
	Do not touch any inner live parts until 5 minutes after disconnection from the utility grid and the PV input.
	WEEE designation Do not dispose of the product together with the household waste but in accordance with the disposal regulations for electronic waste applicable at the installation site.
	Observe the documentation.
	CE marking The product complies with the requirements of the applicable EU directives.
	Certified safety The product is TUV-tested and complies with the requirements of the EU Equipment and Product Safety Act.
	RCM (Regulatory Compliance Mark) The product complies with the requirements of the applicable Australian standards.
	UKCA marking The product complies with the regulations of the applicable laws of England, Wales and Scotland.
	RoHS labeling The product complies with the requirements of the applicable EU directives.
	Risk of chemical burns.
	Risk of explosion.
	Risk of electrolyte leakage.
	Refer to the instruction for operation.
	Use eye protection.
	Fire, naked light and smoking prohibited.
	No hearing.
	Do not dispose of the battery pack together with the household waste but in accordance with the locally applicable disposal regulations for batteries.
	Recycling code.
UN38.3	Marking for transport of dangerous goods The product passes the certifications of the UN38.3.

## 2.5. Disposing of the product

- This product shall not be disposed of with household waste.
- They should be segregated and brought to an appropriate collection point to enable recycling and avoid potential impacts on the environment and human health.
- Local rules in waste management shall be respected.

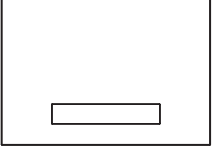
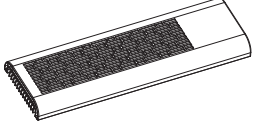
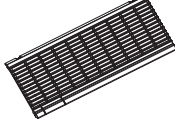
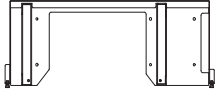
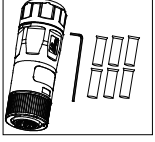
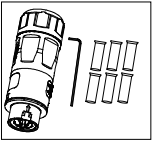
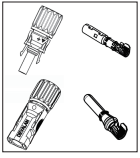
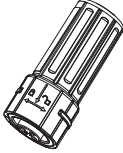
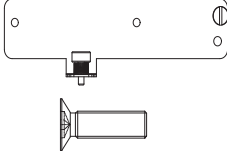
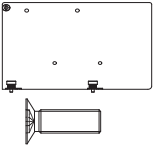
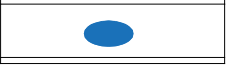
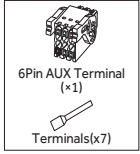
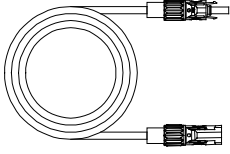
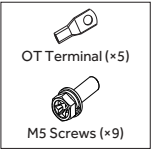
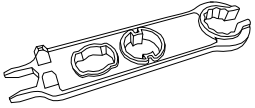




### 3 INSTALLATION GUIDE


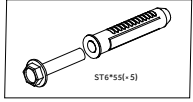
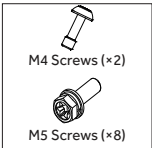
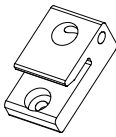
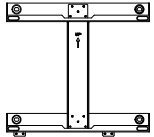
#### 3.1. Included Materials of delivery

Check the Included Material of delivery for completeness and any externally visible damage. Contact your distributor if the materials of delivery are incomplete or damaged.

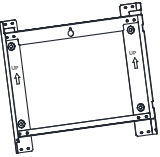
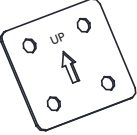
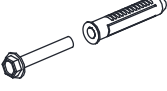
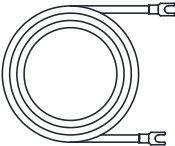

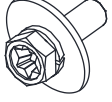

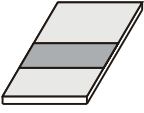
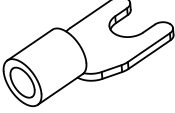
##### 3.1.1. Included Materials of delivery for Inverter Installation


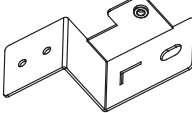
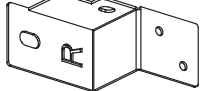

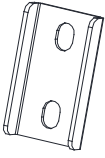
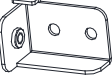



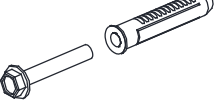
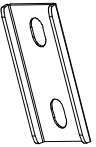

Inverter				
				
Inverter (X1)	TOP Cover (X1)	Side Cover (X2)	Support Foot (×1)	Grid Connector (×1)
				
Backup Connector (×1)	PV+ & PV- Connectors (X3)	Wi-Fi Module (×1)	Sheet Metal Bracket(×1) M3×8 T20 (×3)	Sheet Metal Bracket(×1) M3×8 T20 (×4)
				
Small Spirit Level (X1)	6 Pin AUX Terminal Block (X2)	Series battery power cable(X1)	Screws and Terminals Set (X1)	Wrench Tool (X1)
				
Meter plug wiring	Documentation(×1)			

##### 3.1.2. Included Materials for inverter wall bracket installation(optional)

Inverter				
				
Documentation(×1)	Wall Anchor (×1)	Screws Bag (×2)	Wall Hanger (×4)	Horizontal Beams of Wall Bracket (X1)

### 3.1.3. Included Materials for battery HBHS-4.8KB1/LPP wall bracket installation(Optional)

Battery				
				
Wall Bracket (X1)	Connecting Plate for Wall Brackets(X2)	Wall Anchor St6*55(X6)	Grounding Cable (X1)	Small Gasket Screw M5×12* (X5)
				
Large Gasket Screw M5×12 (X3)	Flange Nut M5 (X6)	Quick Installation Guide (X1)	Y Type Terminal (X1)	

Accessories for Base unit				
				
Base Unit (X1)	Left bracket for base (X1)	Right bracket for base (X1)	Bracket for the top of the battery (x1)	Connection bracket for wall holders (X4)
				
Additional sparte part: Right holder for wall bracket (x1)	Additional sparte part: Left holder for wall bracket (x1)	Small gasket screw M5×12(X17)	M5×12(X3)	Wall anchor ST6*55 (X6)
				
Connection braket for wall holders(x4)	T20 screwdriver(×1)			

### 3.2. Requirements for Installation



**WARNING** Danger to life due to fire or explosion.

Despite careful construction, electrical devices can cause fires.

- Do not mount the energy storage system in areas containing highly flammable materials or gases.
- Do not mount the energy storage system in potentially explosive atmospheres.

### 3.2.1. Basic Requirements

- The Inverter and Battery system is suitable for indoor and outdoor use.
- Do not install the inverter in a place where a person can easily touch it because its housing and heatsink are hot during operation.
- Do not mount the system in areas with flammable or explosive materials.
- Do not mount the inverter at a place within children's reach.
- Do not mount the system outdoors in salt areas because it will be corroded there and may cause fire. A salt area refers to the region within 500m from the coast or prone to sea breeze. The regions prone to sea breeze vary depending on weather conditions (such as typhoons and monsoons) or terrains (such as dams and hills).

### 3.2.2. Installation Environment Requirements

- The system must be mounted in a well-ventilated environment to ensure good heat dissipation.
- When mounted under direct sunlight, the power of the system may be derated due to additional temperature rise.
- Mount the system in a sheltered place or mount an awning over the product.
- The optimal temperature range for the battery pack to operate is from 15°C to 30°C.
- Do not expose or place near water sources like downspouts or sprinklers.
- If the battery pack is mounted in the garage, then ensure that it is above the height of the vehicle bumper and/ or door.

### 3.2.3. Installation Structure Requirements

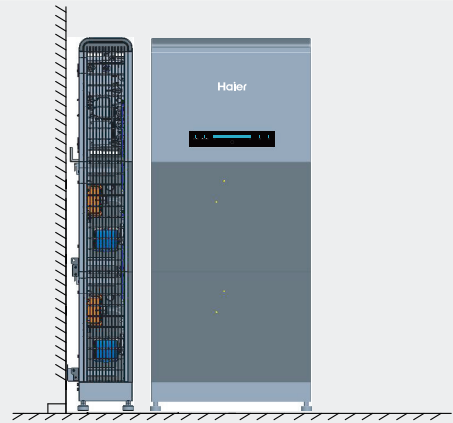
- The installation structure where the system is mounted must be fireproof.
- Do not install the system on flammable building materials.
- Ensure that the installation surface is solid enough to bear the weight load.
- In residential areas, do not install the inverter on dry walls or walls made of similar materials which have a weak sound insulation performance because the noise generated by the inverter is noticeable.

### 3.2.4. Installation Angle and Stack Requirements

The system may be fixed on the wall.

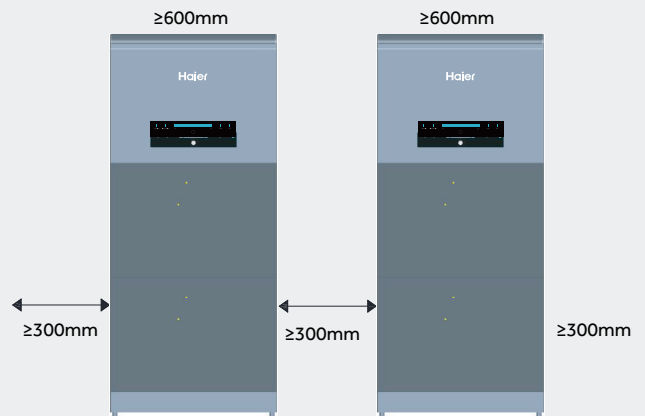
The installation angle requirement are as follow:

- Do not install the inverter at forward tilted, side tilted, horizontal, or upside down positions.





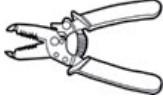


















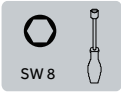


### 3.2.5. Installation Space Requirements

- Reserve sufficient clearance around the product to ensure sufficient space for installation, maintenance and heat dissipation.
- The side clearance is a recommendation. Keep the clearance as short as you can if there is no influence to the operation and maintenance.



### 3.3. Preparing Tools and Instruments

Category	Tools and Instruments		
<b>Installation</b>			
	Hammer drill (with a $\Phi$ 10 mm drill bit)	Torque socket wrench SW10	Multimeter (DC voltage range $\geq$ 1000 V DC)
			
	Diagonal pliers	Wire stripper	T20 screwdriver (torque range: 0-5 N m) L < 200mm
			
	Rubber mallet	Utility knife	Cable cutter
			
	Crimping tool (model: PV-CZM-22100)	Cord end terminal crimper	Disassembly and Assembly Tool of PV connector
			
	Vacuum cleaner	Heat shrink tubing	Heat gun
			
	Marker	Measuring tape	Bubble or digital level
<b>Personal Protective Equipment</b>			
	Safety gloves	Safety goggles	Anti-dust respirator
			
	Safety shoes	Flat-Head Screwdriver 1.2×75mm	Socket Wrench SW 8

## 3.4. Installation

### 3.4.1. Installing the Battery HBHS-4.8KB1/LPP

Battery installation can be divided into two scenarios:

- Scenario 1 – Ground-mounted installation:

The battery is directly stacked on top of the battery base. This is the default installation scenario.

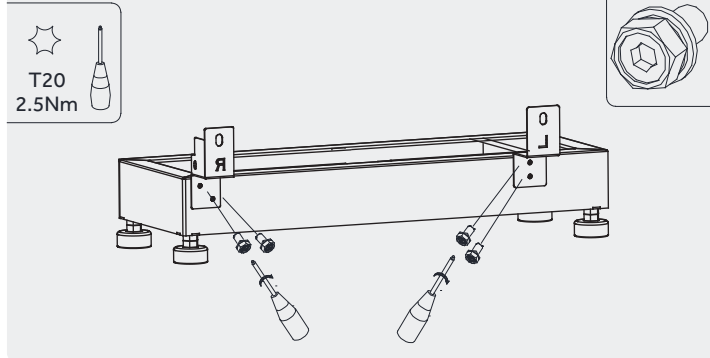
- Scenario 2 – Wall-mounted installation:

The battery is mounted onto the wall. Additional accessories must be ordered both for battery and for inverter.

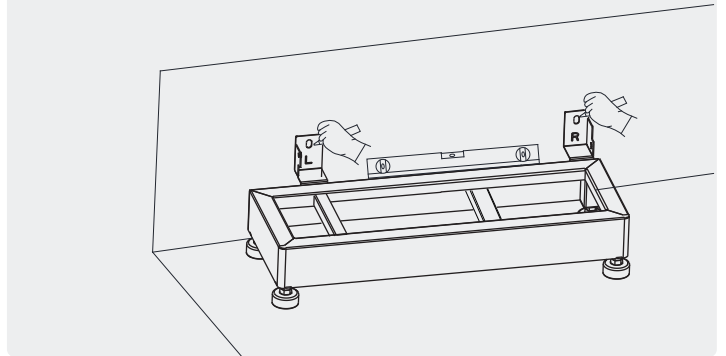
Please follow the steps at 3.4.1.2 Wall Bracket Installation.

#### 3.4.1.1 Ground-mounted installation

- 1 Install the Left & Right Bracket at their respective point.

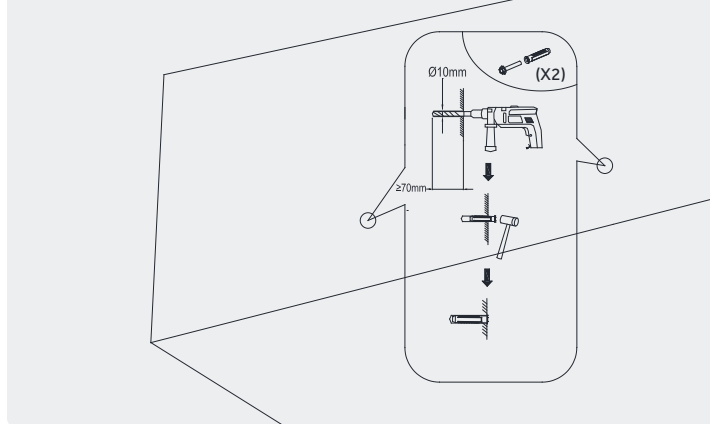


- 2 Use a level to ensure that the base is installed on a horizontal plane. Define the location.

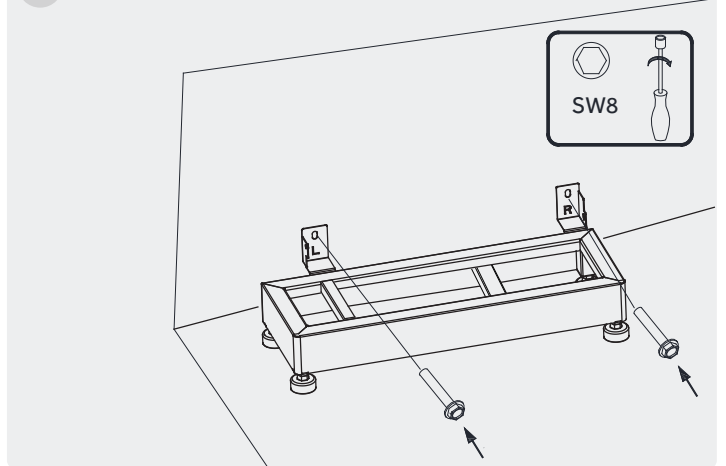


Ensure that the base is mounted horizontally using a bubble level before securing the base fixing bracket.

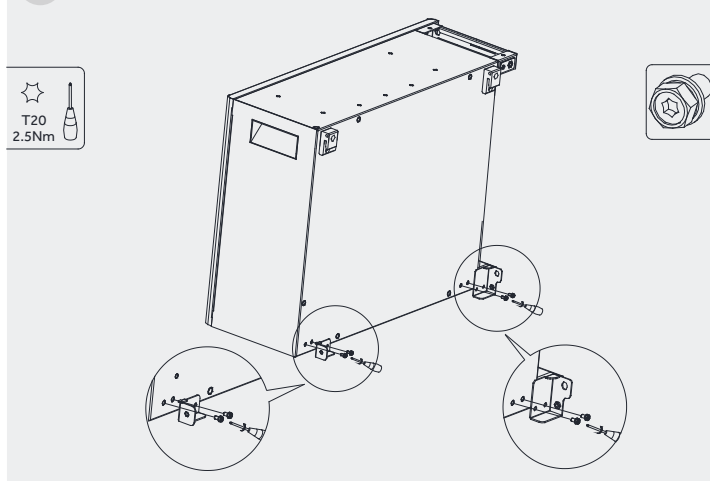
- 3 Remove the base and drill a hole with an electric drill, and knock in the expansion pipe.



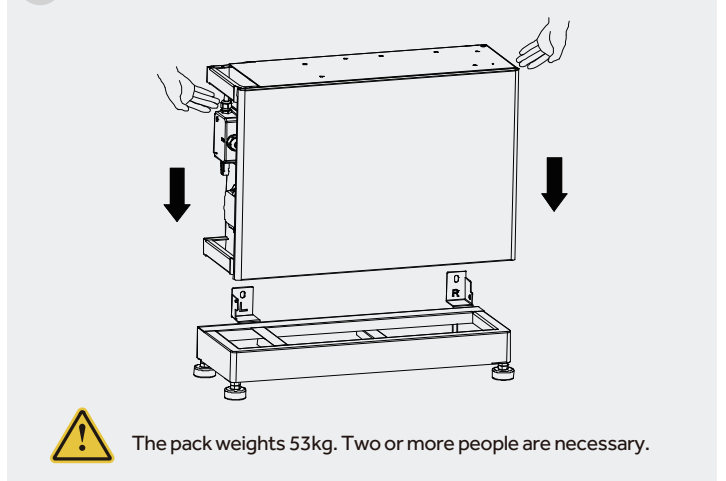
- 4 Fix the base to the wall with expansion screws.



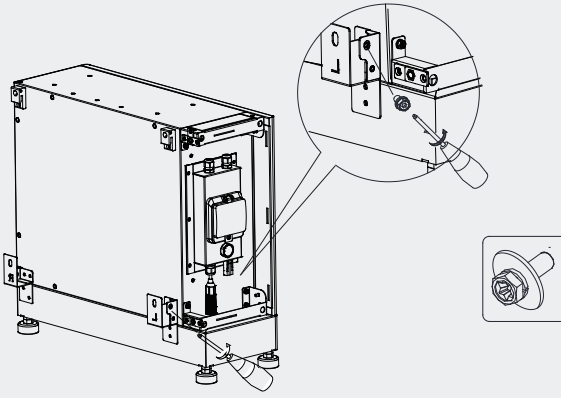
- 5 Check the left & right limit bracket of the battery pack.



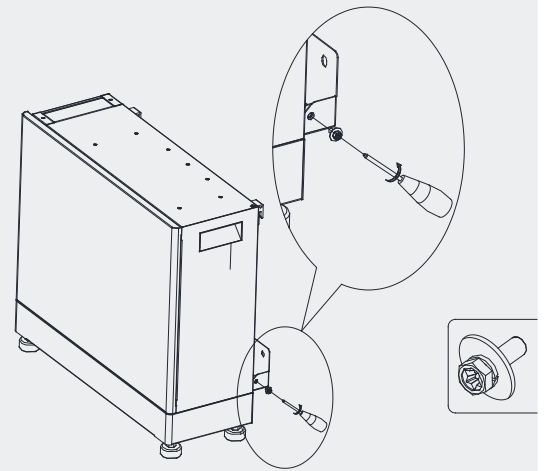
- 6 Stack the battery onto the base.



**7** Left: Fix the battery and base brackets with M5 \* 12 screws.

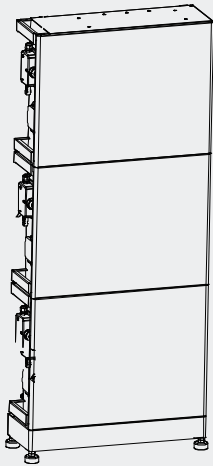


**8** Right: Fix the battery base brackets with M5 \* 12 screws.

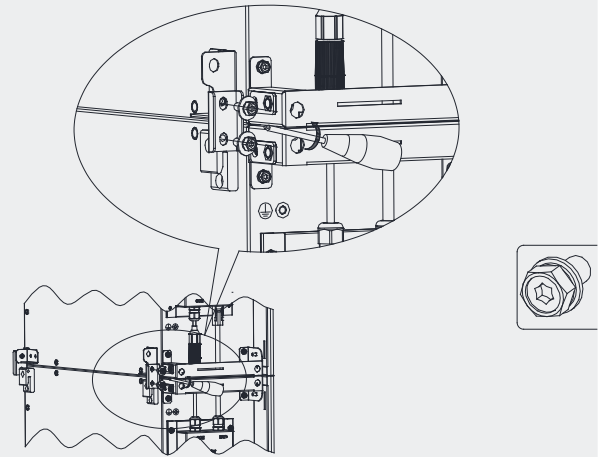


**9** Stack another battery.

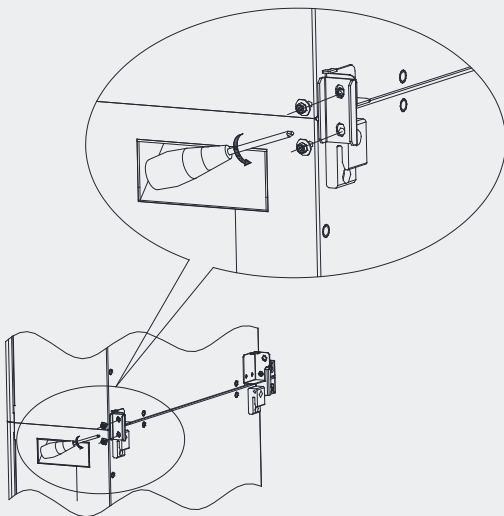
Repeat



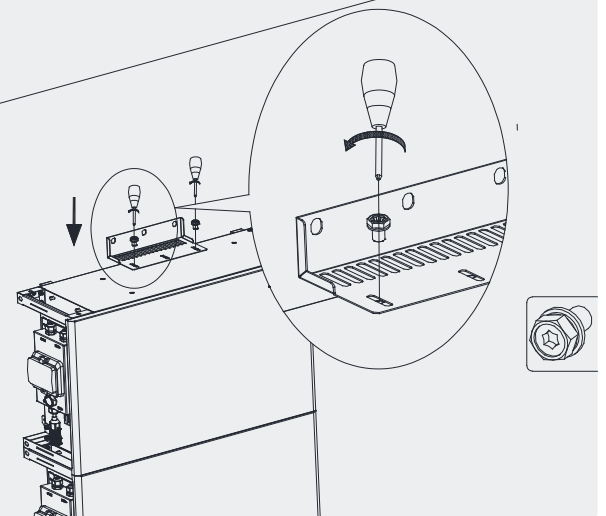
**10** Fix the connectors between batteries with M5 \* 12 screws.



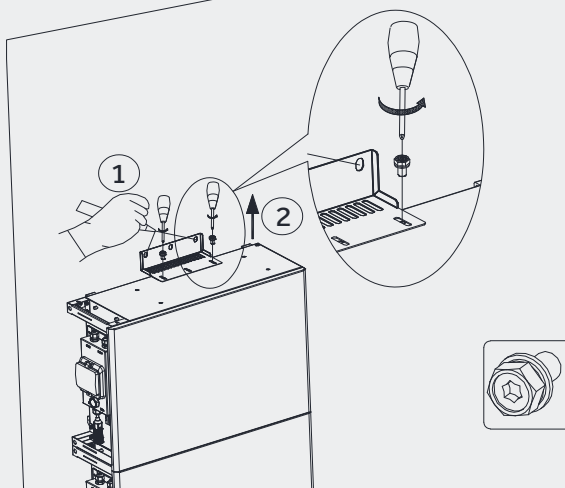
**11** Fix the brackets between batteries with M5 \* 12 screws.



**12** Place the Bracket for battery top according to the reserved hole and fix it with M5\*12 screws.

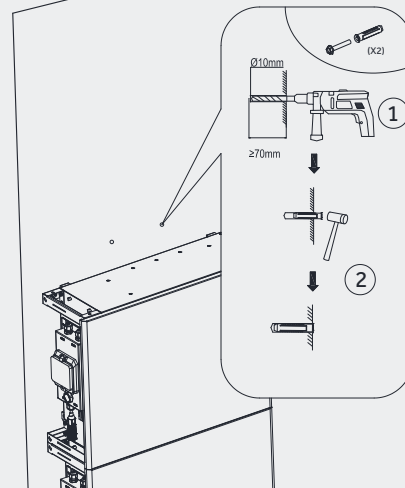


**13** Mark the screw hole on the wall, Loosen the screws on the bracket and remove the bracket.

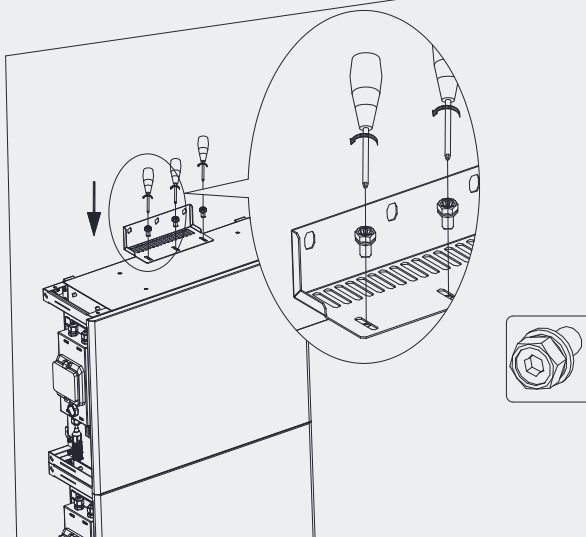


**14** Drill 2 \*  $\phi$  10mm hole with an electric-drill at the marked location.

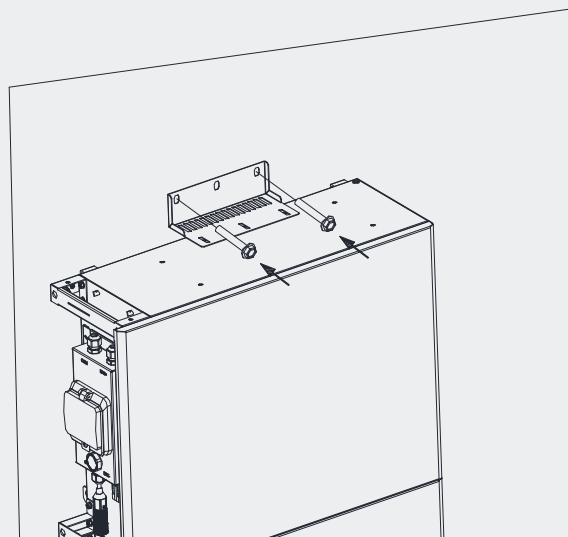
**Note:**  
Be careful to prevent dust before drilling the wall.



in the expansion tube and fix the bracket.



**16** Install the silicone plugs when the inverter is not installed on the battery .

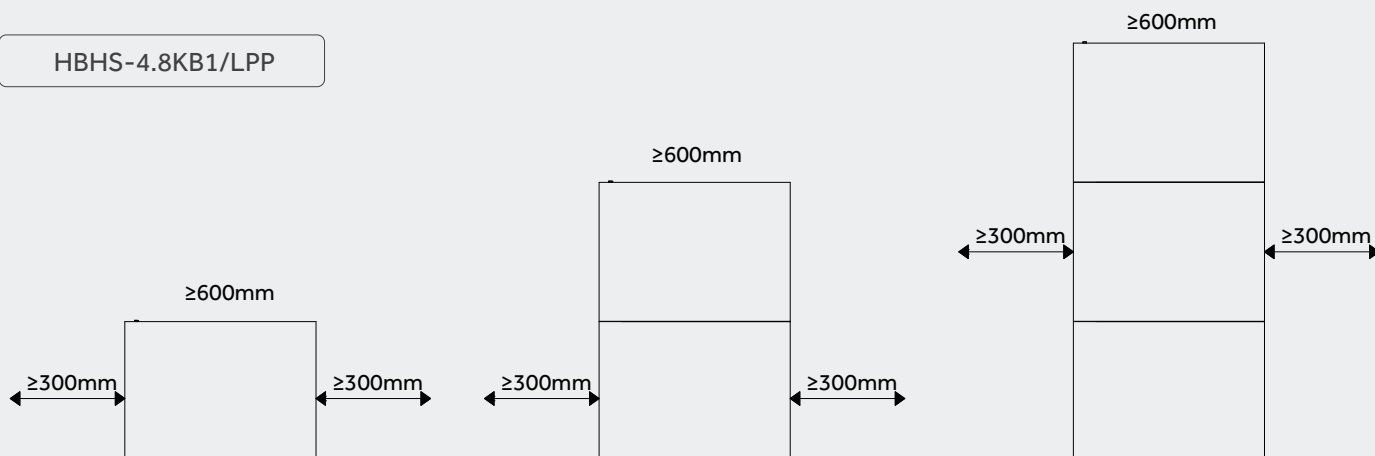


**(a) This recommended value is for the location which is the middle hole of the wall bracket for the bottom battery.**

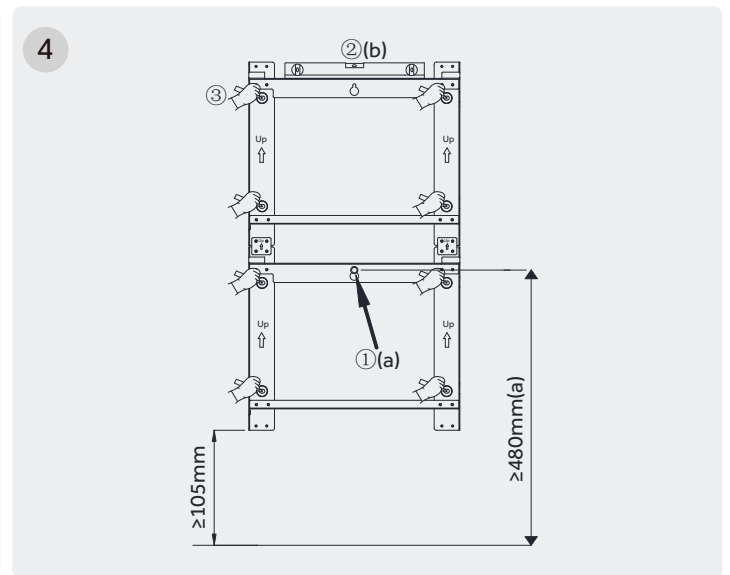
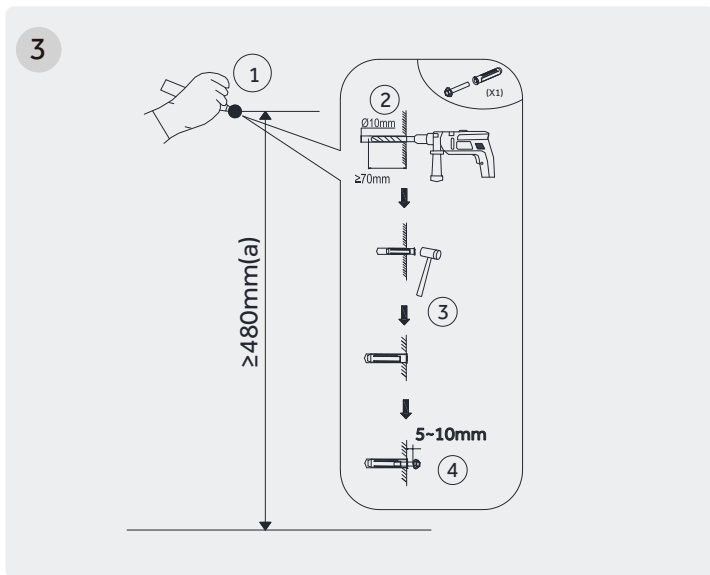
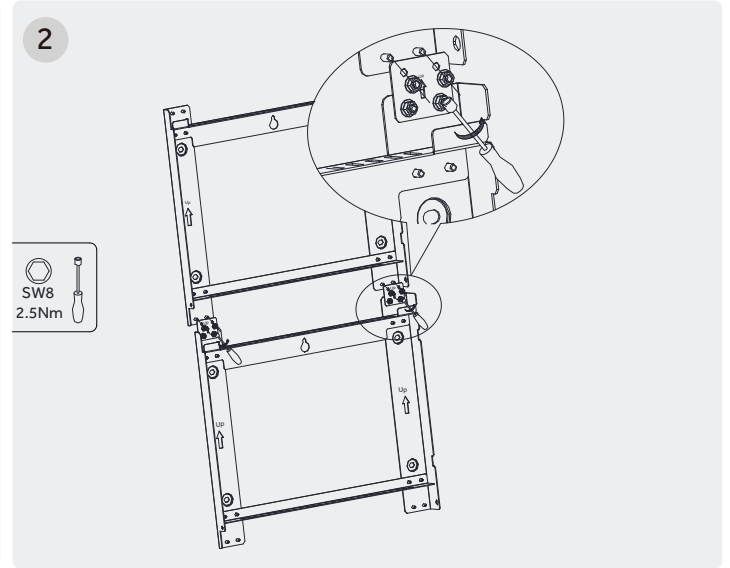
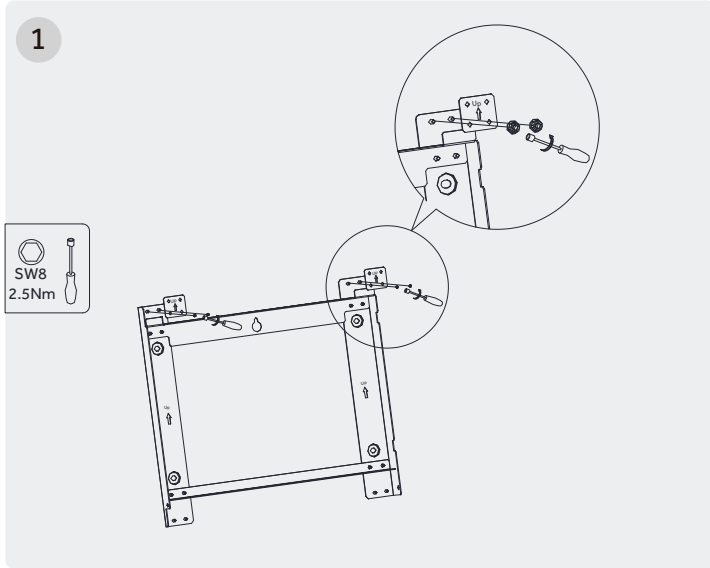
For installing multiple batteries, please follow as above steps.

If you will install extra batteries by side, please keep the distance between two batteries greater than 300mm. You can install extra batteries up to 6 batteries in a system.

HBHS-4.8KB1/LPP



### 3.4.1.2 Wall bracket installation(Optional)

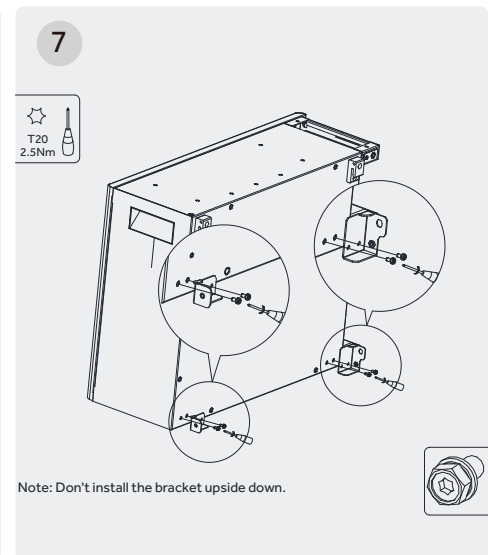
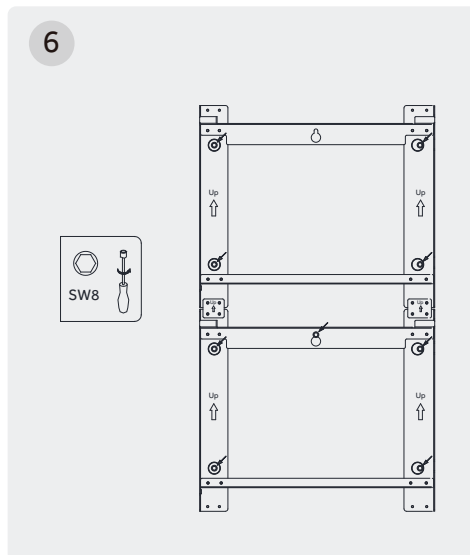
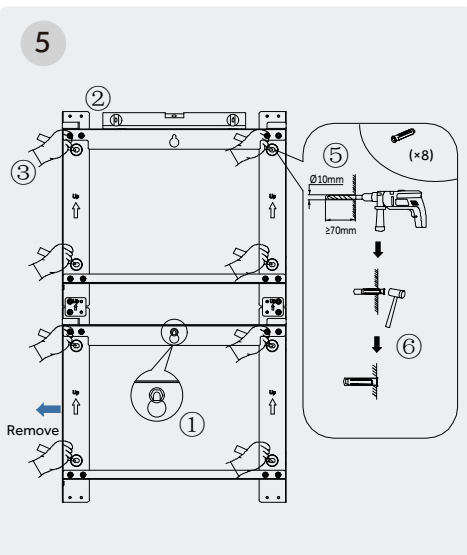


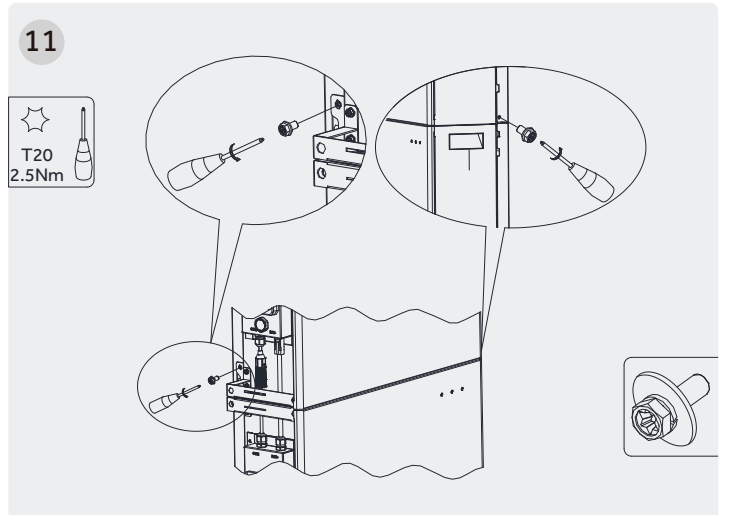
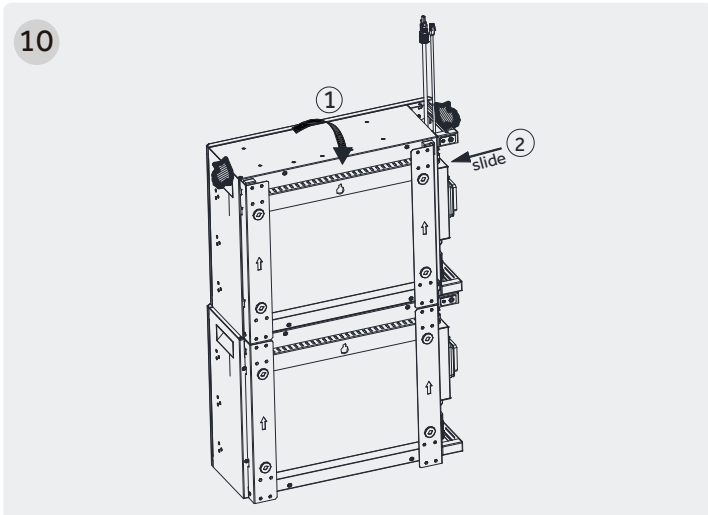
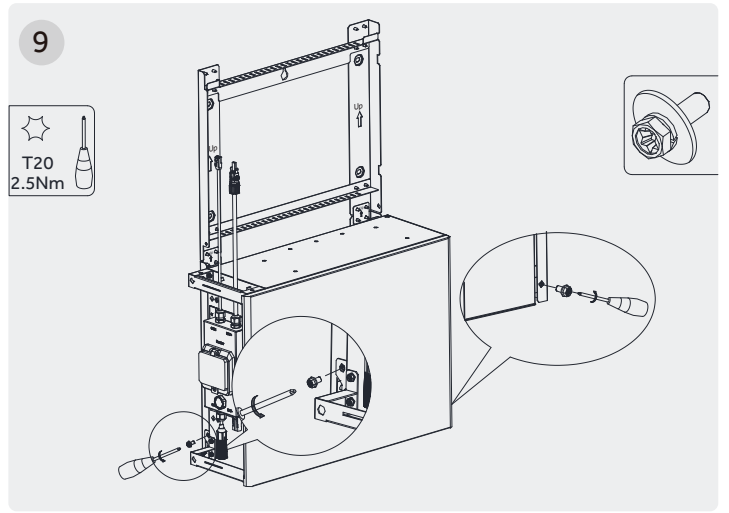
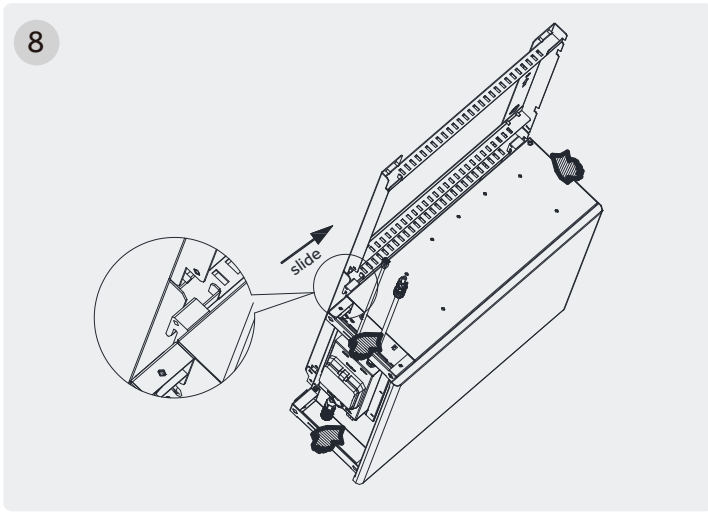
(a) This recommended value is for the location which is the middle hole of the wall bracket for the bottom battery.



**NOTE**

(b) Ensure that the wall bracket is mounted horizontally using a spirit level before securing the wall bracket.





### Wall-mounted battery disassembly

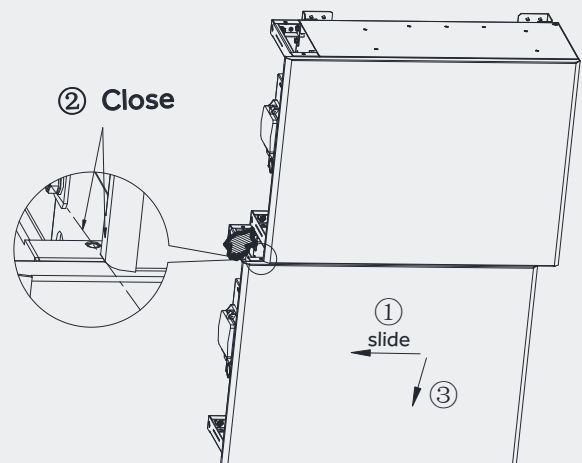


**CAUTION** Risk of injury due to the weight of the battery.

Incorrectly lifting or dropping the battery during transportation, mounting, or disassembling may lead to injuries.

- Transport and lift the battery carefully. Take the weight of the product into account.
- Always have two or more people to mount and disassemble the product.
- Wear suitable personal protective equipment for all work on the product.

- When disassembling the battery which has been mounted with wall bracket and not directly connected to the inverter, always hold the handles on both sides of the battery firmly and slide it to the left.
- Once the contour of the round hole of the upper left handle is close with the left edge of the front cover, carefully lift the battery forward and off the wall bracket.



### 3.4.2. Inverter Installation

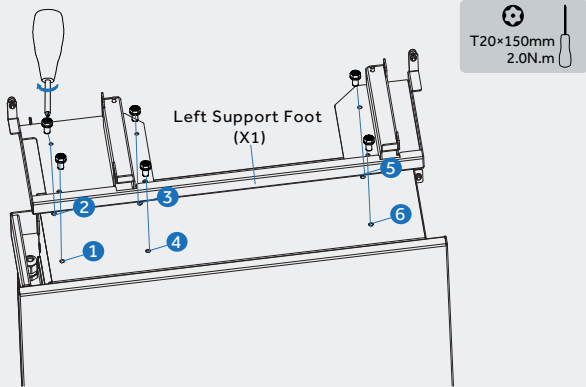
Inverter installation can be divided into two scenarios:

- Scenario 1 – Ground-mounted installation:  
The inverter is directly stacked on top of the battery base. This is the default installation scenario.
- Scenario 2 – Wall-mounted installation:  
The inverter is mounted onto the wall. Additional accessories must be ordered both for battery and for inverter.  
Please follow the steps at 3.4.2.2 Wall Bracket Installation.

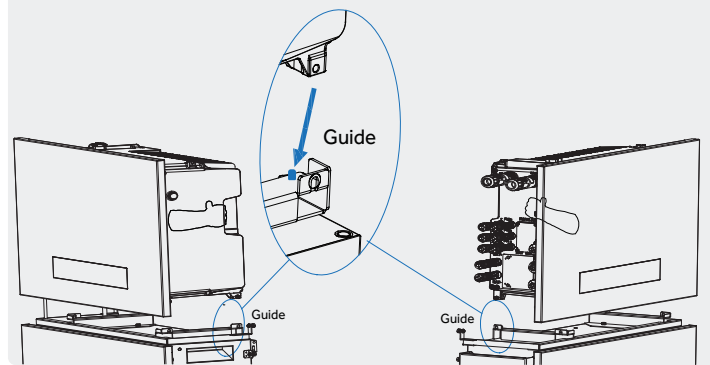
#### 3.4.2.1 Ground-mounted installation

- a. This Scenario is the default installation.
- b. Fit the Support Foot brackets onto the top of the battery.
- c. Following the steps to install the inverter.

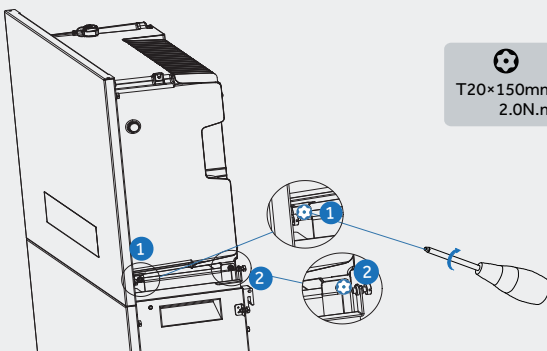
- 1** Fix the Support Bracket onto the top battery with M5\*12 screws.



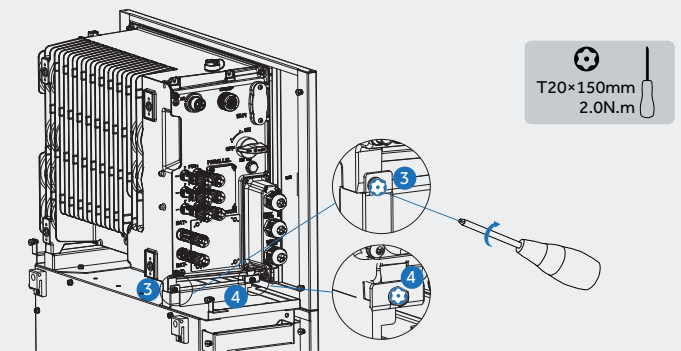
- 2** Fix the inverter according to the positioning column.



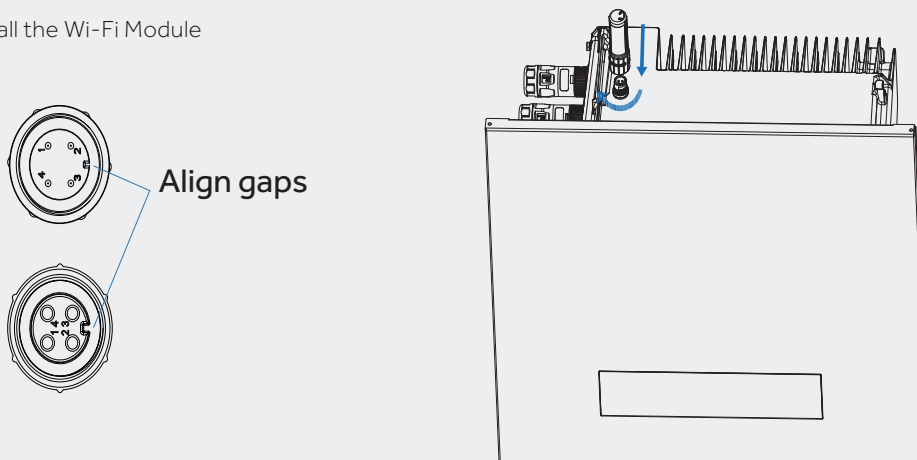
- 3** Fix the inverter and the Supporting Bracket with M5 \* 12 screws (right side).



- Fix the inverter and the Supporting Bracket with M5 \* 12 screws (left side).

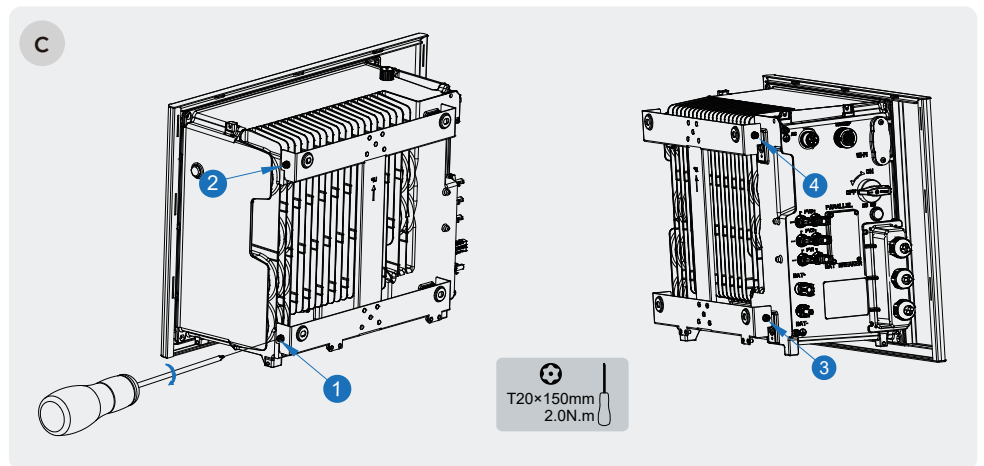
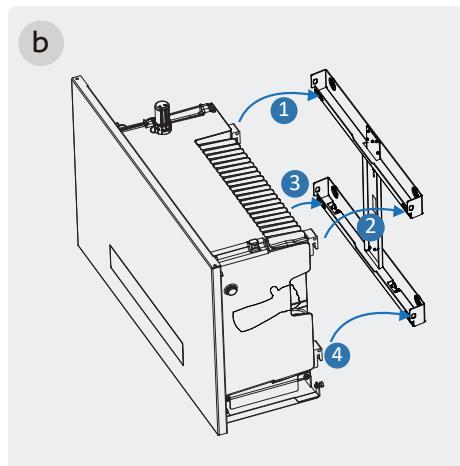
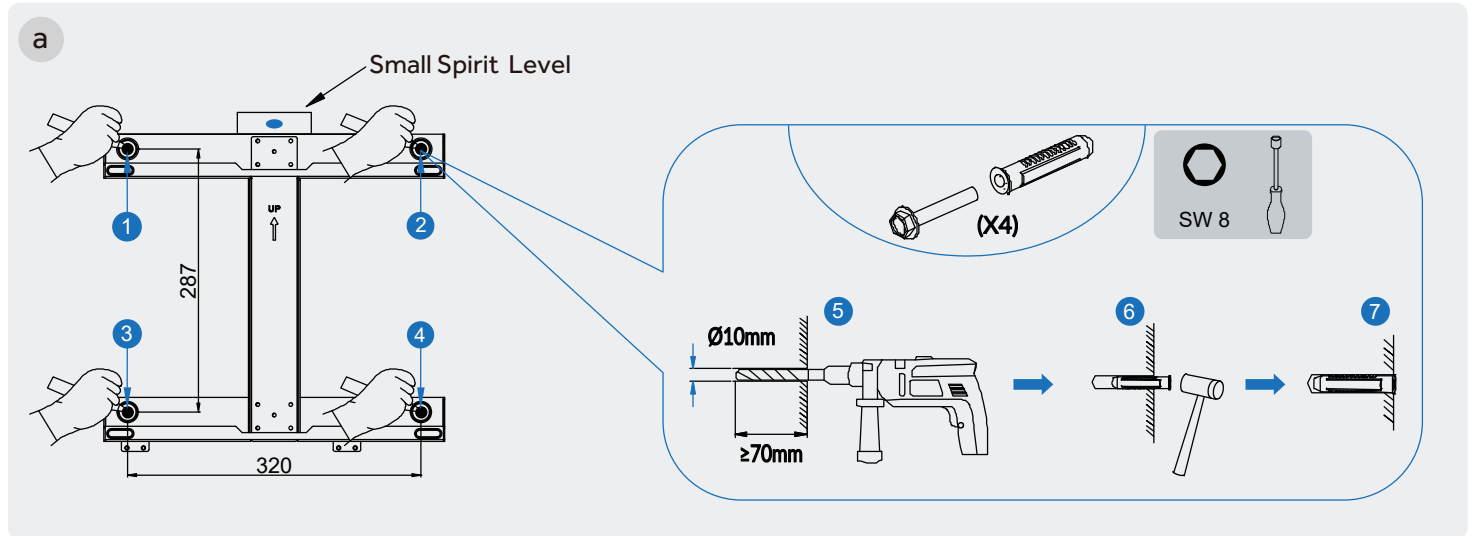


- 4** Install the Wi-Fi Module



### 3.4.2.2 Wall-mounted installation(optional)

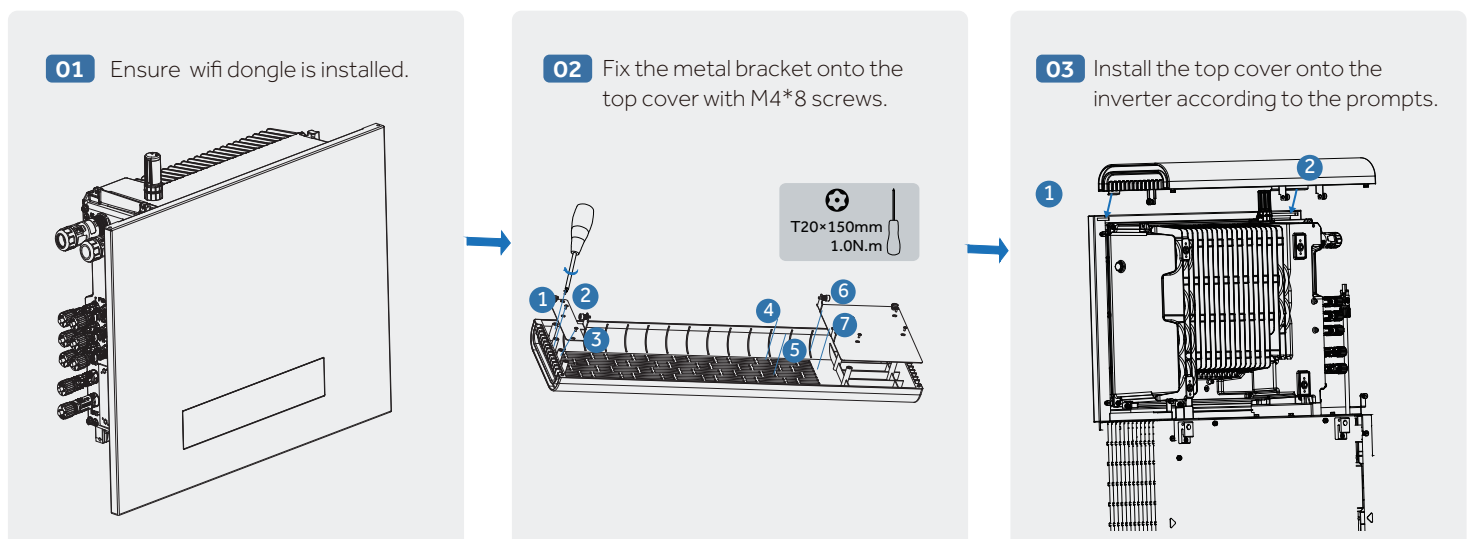
- a.You can choose this scenario if the installation space is not high enough.
- b.The wall-mouted bracket needs to be purchased additional.
- c.Following the steps to install the inverter.



### 3.5 Install the Covers of the Inverter

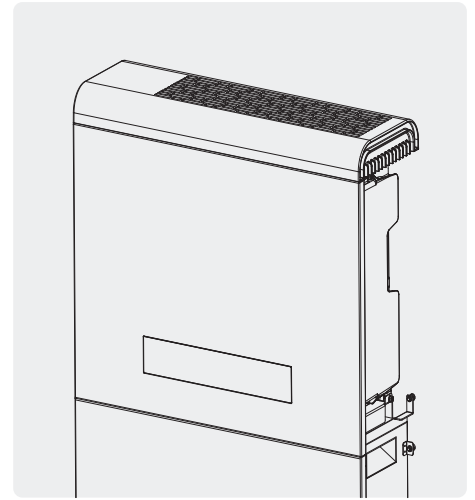
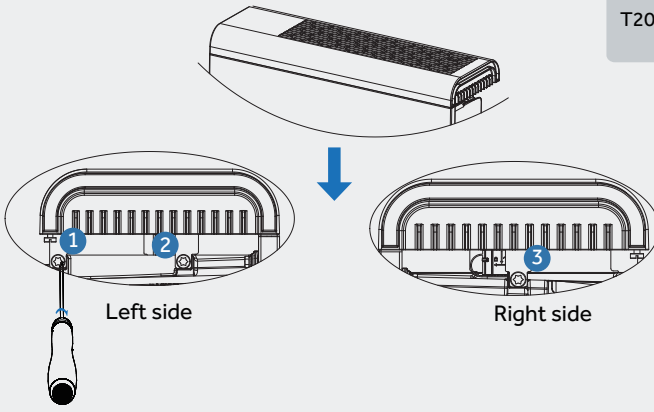
Once installation and commissioning are completed, install the top and side covers.

#### 3.5.1. Install the Top Cover



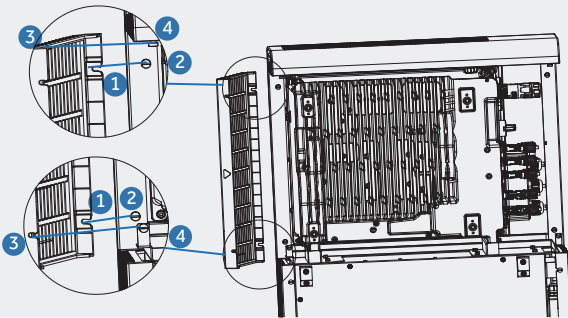
04 Tighten the screws on the top cover.

T20×150mm  
2.0N.m

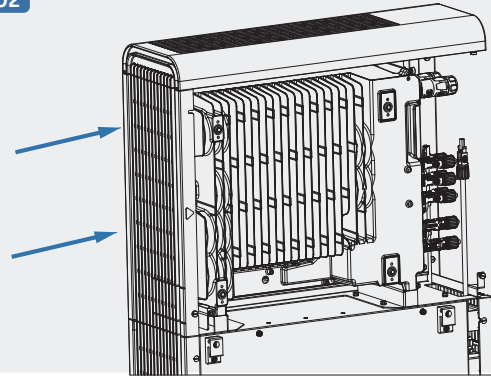


### 3.5.2. Install the Right Cover of Inverter

01



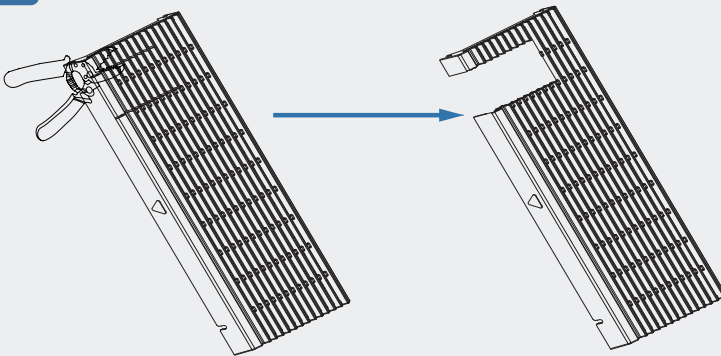
02



**NOTE** Ensure that the side panel with triangular markings is installed facing the wall.

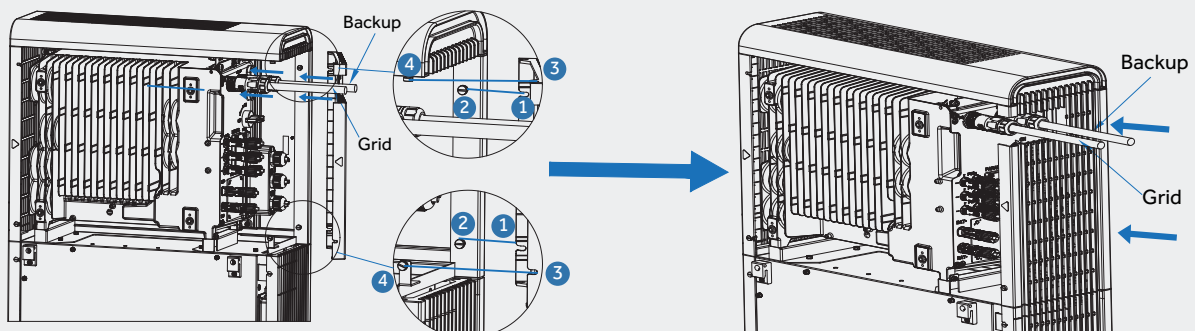
### 3.5.3. install the left Cable Cover of Inverter

01

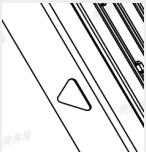
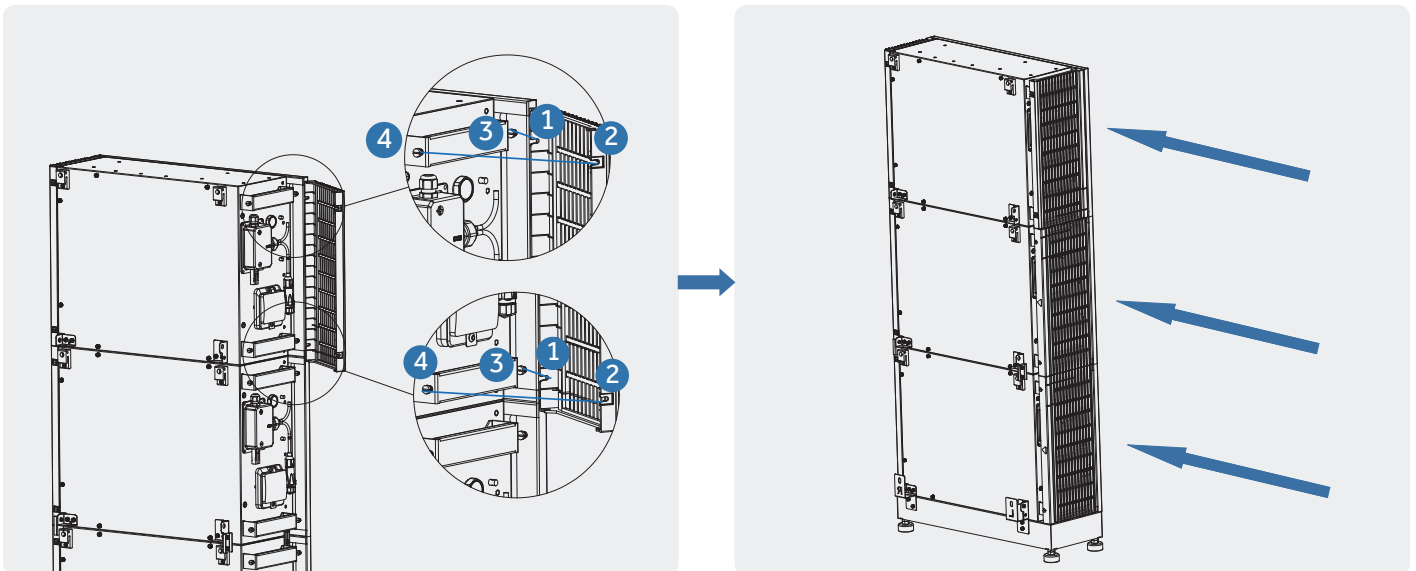
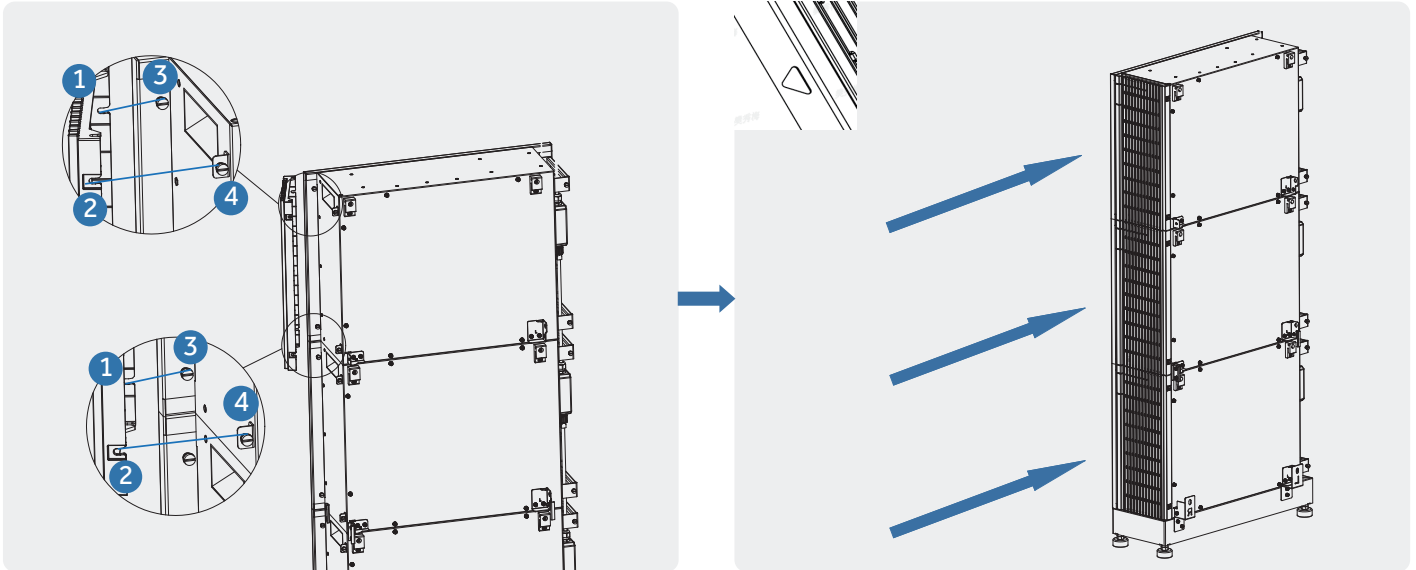


Note:  
Make sure that the side with the triangle symbol is installed facing the wall.

02



### 3.5.4. Install the Cable Cover of Batteries



**Note:**  
Make sure that the side with the triangle symbol is installed facing the wall.

### 3.5.5. Included Accessories


When the system is installed in a split configuration or the number of battery clusters exceeds 2, the top cover is recommended to install on the top battery.



Top Cover (×1)



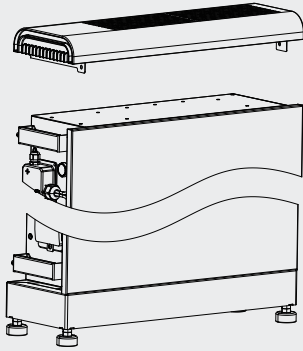
Small gasket screw M5×12(×3)



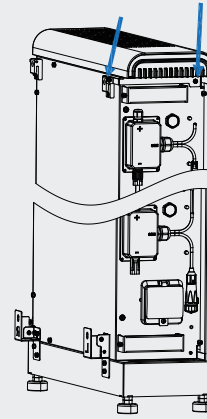
Documentation(×1)

### 3.5.6. Install the Top Cover and Battery

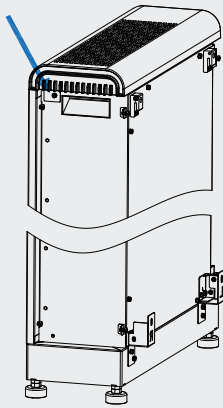
**01** Install the top cover onto the batteries according to the prompts.



**02** Left: Fix the battery and cover bracket with M5 \* 12 screws.



**03** Right: Fix the battery and cover bracket with M5 \* 12 screws.



## 4 ELECTRICAL CONNECTION

### Precautions



#### **DANGER**

Before connecting cables, ensure that all breakers of the inverter and the battery packs and all the switches connected to inverters and the battery packs are set to OFF. Otherwise, the danger voltage of the energy storage system may result in electric shocks.



#### **WARNING**

- The energy storage system damage caused by incorrect cable connections is not covered under any warranty.
  - Only certified electricians are allowed to connect cables.
- Operation personnel must wear proper PPE when connecting cables.



#### **CAUTION**

The cable colors shown in the electrical connection diagrams provided in this chapter are for reference only. Select cables in accordance with local cable specifications (green-and-yellow cables are only used for PE).

## 4.1. Cable requirements for connection

No.	Cable	Type	Conductor Cross Section Area Range	Outer Diameter	Source
1	Battery power cable	Standard PV cable in the industry (recommended type:PV1-F)	HBHS-4.8KB1/LPP:10m2	N/A	Delivered with the battery
2	Battery communication cable	Standard network cable in the industry (recommended type: Cat5e, UTP, UV-resistant for outdoor use)	0.12 ~ 0.2 mm <sup>2</sup> (AWG26 ~ AWG24)	N/A	Delivered with the battery
3	PV power cable	Standard PV cable in the industry (recommended type: PV1-F)	4 ~ 6 mm <sup>2</sup>	5.5 ~ 9mm	Not Included, need to be bought
4	Signal cable	Standard network cable in the industry (recommended type: Cat5e, FTP, UV-resistant for outdoor use)	0.12 ~ 0.2 mm <sup>2</sup> (AWG26 ~ AWG24)	N/A	Delivered with the inverter
5	Signal cable	Standard network cable in the industry (recommended type: Cat5e, FTP, UV-resistant for outdoor use)	0.12 ~ 0.2 mm <sup>2</sup> (AWG26 ~ AWG24)	4 ~ 6mm	Not Included, need to be bought
6	Signal cable	Multiple-core outdoor shielded twisted pair cable	0.1 ~ 1.3 mm <sup>2</sup>	4 ~ 6mm	Not Included, need to be bought
7	AC power cable for backup	Three-core (L, N and PE) outdoor copper cable	4 ~ 6 mm <sup>2</sup>	13 ~ 17.5mm	Not Included, need to be bought
8	AC power cable for grid	Three-core (L, N and PE) outdoor copper cable	4 ~ 6mm <sup>2</sup>	13 ~ 17.5mm	Not Included, need to be bought
9	PE cable	Single-core outdoor copper cable	6 ~ 10mm <sup>2</sup>	N/A	Not Included, need to be bought



### NOTE

1. For CT communication connection with inverter.
2. For CAN/RS485, LAN, Meter, DRM communication connection with inverter.
3. For AUX communication connection with inverter.

## 4.2. Connecting additional grounding



**CAUTION** Electric Shock Hazard

Before doing electrical connection, please ensure the PV switch & all AC and BAT circuit breakers in the energy storage system are switched OFF and cannot be reactivated.

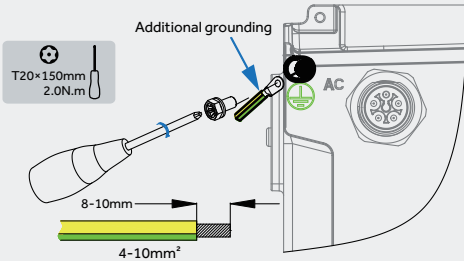
External grounding points are provided at the left side of the inverter.

Prepare M5 OT terminals, strip the grounding cable insulation, insert the stripped part of the grounding cable into the ring terminal lug and crimp using a crimping tool.

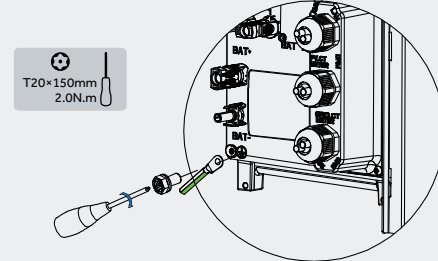
Connect the OT terminal to grounding point using the torque 2.0 N.m with TX20 screwdriver.

### Additional grounding connection for inverter.

#### 01 Additional grounding connection.



#### 02 Inverter grounding point with battery.

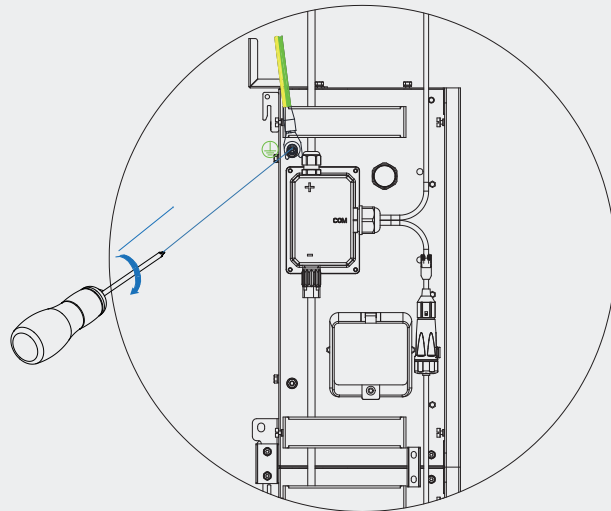


### Grounding connection between inverter and battery.

#### 03 Grounding connection for series battery.

Battery HBHS-4.8KB1/LPP

T20×150mm  
2.0N.m



## 4.3. AC connection

### 4.3.1. Requirements for the AC connection



**CAUTION**

Residual-current monitoring unit:

The inverter does not require an external residual-current device when operating.

If local regulations require the use of a residual-current device, or Hybrid-coupled storage system with big coupling capacity from the PV array and PV inverter, the following must be observed:

The inverter is compatible with type A residual-current devices with a rated residual current of 100 mA or higher. Each inverter in the system must be connected to the utility grid via a separate residual-current device.



**DANGER**

You must protect each inverter with an individual grid/backup circuit breaker in order to ensure that the inverter can be disconnected safely.



**CAUTION**

For Australia and New Zealand installation site, the neutral cable of grid side and backup side must be connected together, otherwise backup output function will not work.

AC connection recommendation for 4kW			
Description	Max. Current	Breaker Type	Recommend cable cross section
Grid Side	11.6A	16A ( Type C curve )	2.5~6mm <sup>2</sup>
Backup Side	8.7A	16A ( Type C curve )	2.5~6mm <sup>2</sup>

AC connection recommendation for 5kW			
Description	Max. Current	Breaker Type	Recommend cable cross section
Grid Side	14.5A	25A ( Type C curve )	4~6mm <sup>2</sup>
Backup Side	10.9A	16A ( Type C curve )	2.5~6mm <sup>2</sup>

AC connection recommendation for 6kW			
Description	Max. Current	Breaker Type	Recommend cable cross section
Grid Side	17.4A	25A ( Type C curve )	4~6mm <sup>2</sup>
Backup Side	13.0A	25A ( Type C curve )	2.5~6mm <sup>2</sup>

AC connection recommendation for 8kW			
Description	Max. Current	Breaker Type	Recommend cable cross section
Grid Side	23.2A	32A ( Type C curve )	4~6mm <sup>2</sup>
Backup Side	17.4A	25A ( Type C curve )	4~6mm <sup>2</sup>

AC connection recommendation for 10kW/ 12kW/ 15kW			
Description	Max. Current	Breaker Type	Recommend cable cross section
Grid Side	29A	40A ( Type C curve )	6mm <sup>2</sup>
Backup Side	21.7A	32A ( Type C curve )	4~6mm <sup>2</sup>



**NOTE**

The breaker is MCB, Rated Voltage 400V, 4P, Type C Curve, Isc max 6kA.



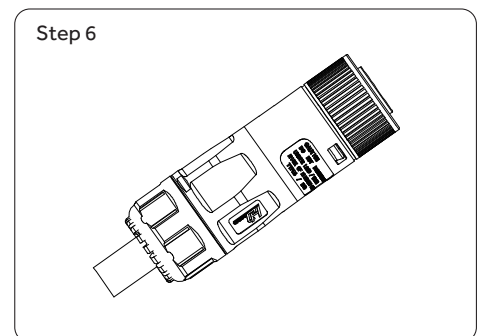
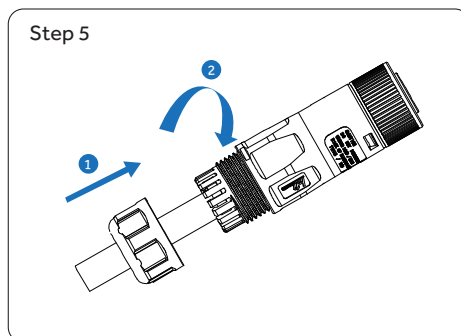
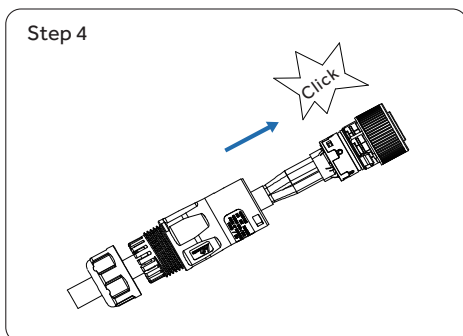
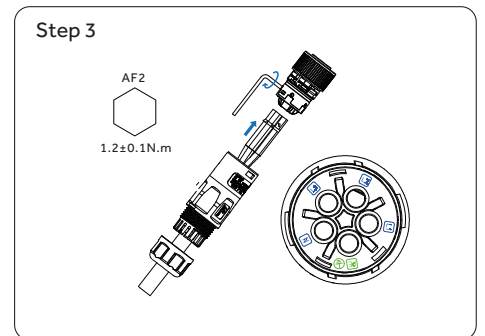
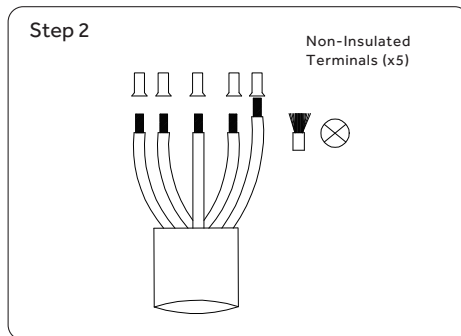
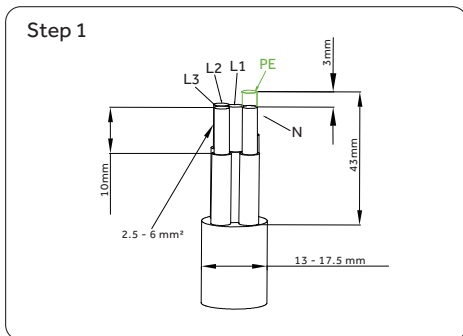
**WARNING**

Selecting a circuit breaker and copper conductor cross section.

You should use APP or Cloud to do the right setting for example when selecting grid circuit breaker specification 32A or 40A and suitable copper conductor cross section, otherwise it increases the danger of the circuit breaker tripping under normal operating conditions.

### 4.3.2. Grid and backup connection

The steps for connecting the grid connector as follows:



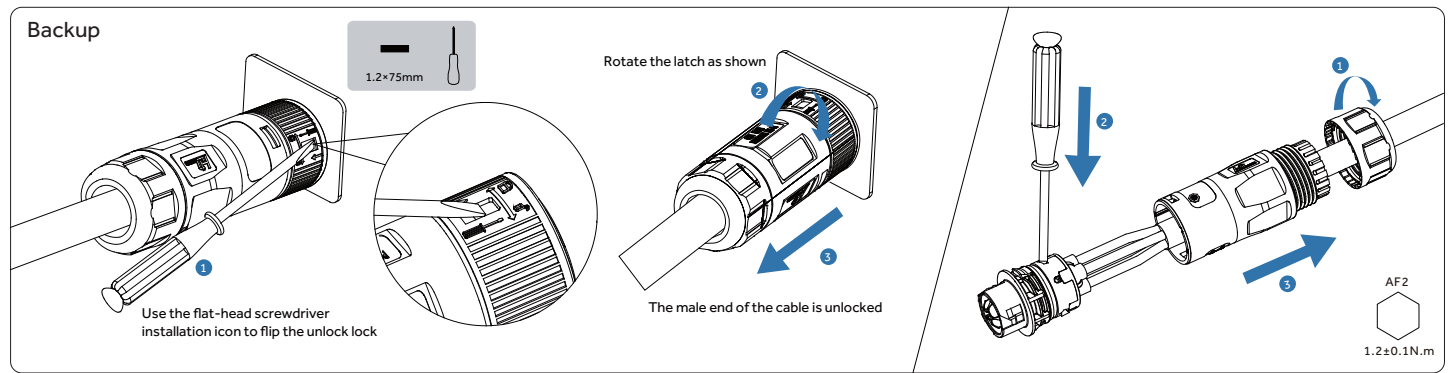
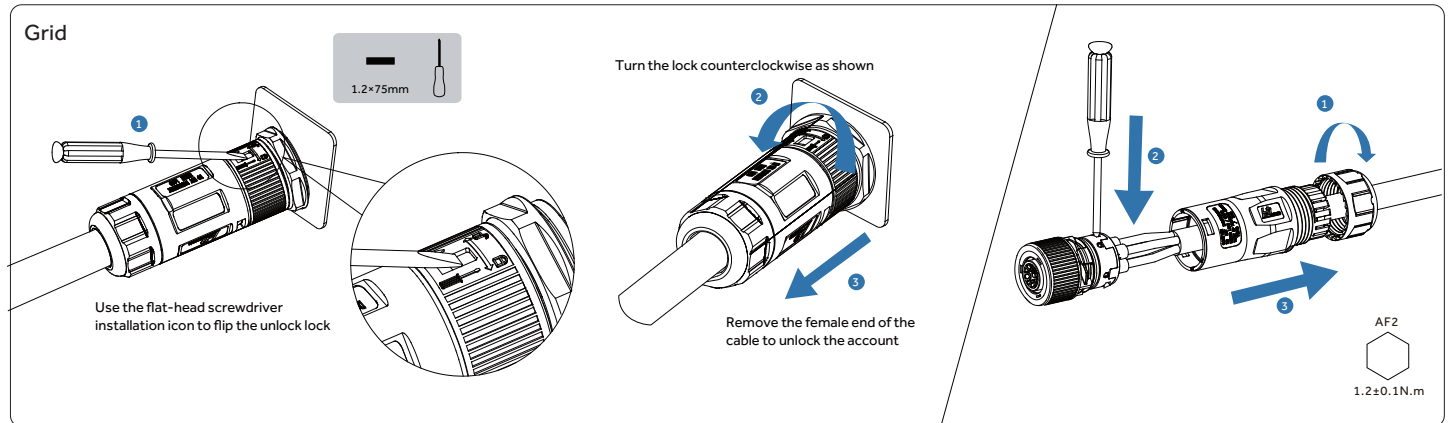
The steps for backup connection are similar as grid connection.



**NOTE**

Do not install the grid and backup connector on the inverter.

### Disassembly the Grid/Backup Connector

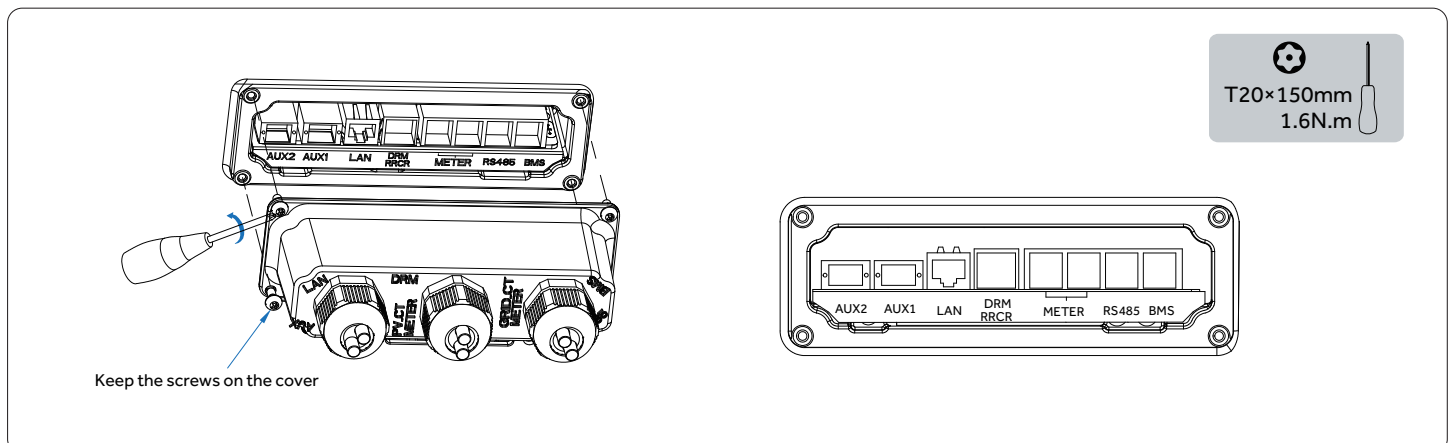


### 4.3.3. Electricity meter connection

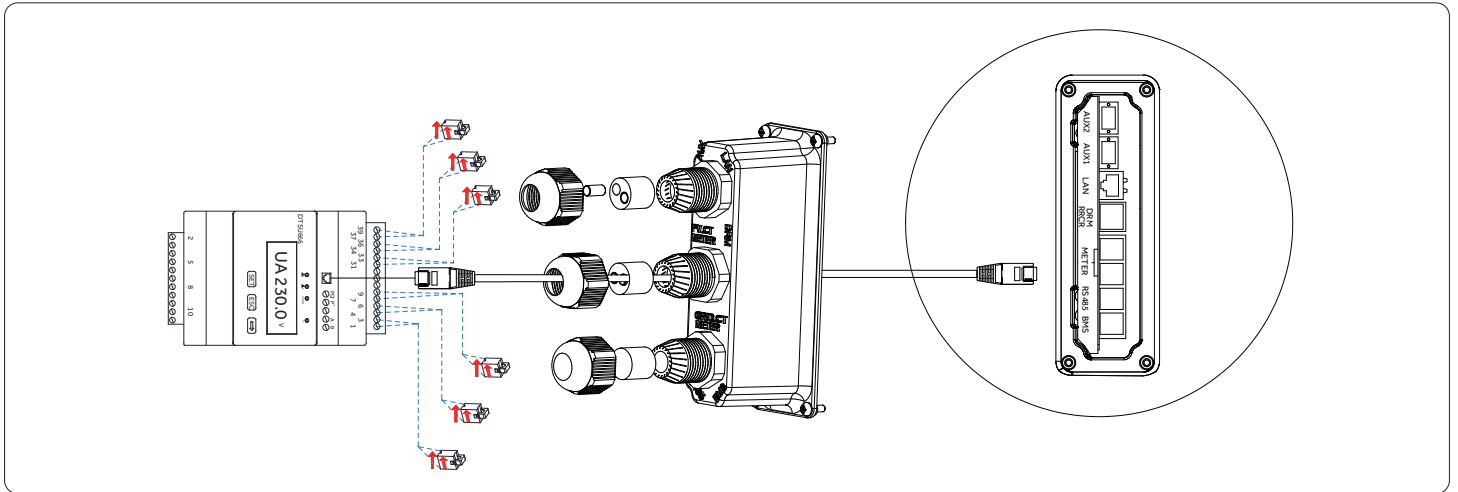
Item	Current	Scenarios
DTSU666-3*230V 5(80)A	65A(a)	Three phase meter (without CT)
DTSU666-3*230V 100A/40mA	100A	Three phase meter (with CT)
DTSU666-3*230V 250A/50mA	250A	Three phase meter (with CT)

(a): Current ≤65A Per phase

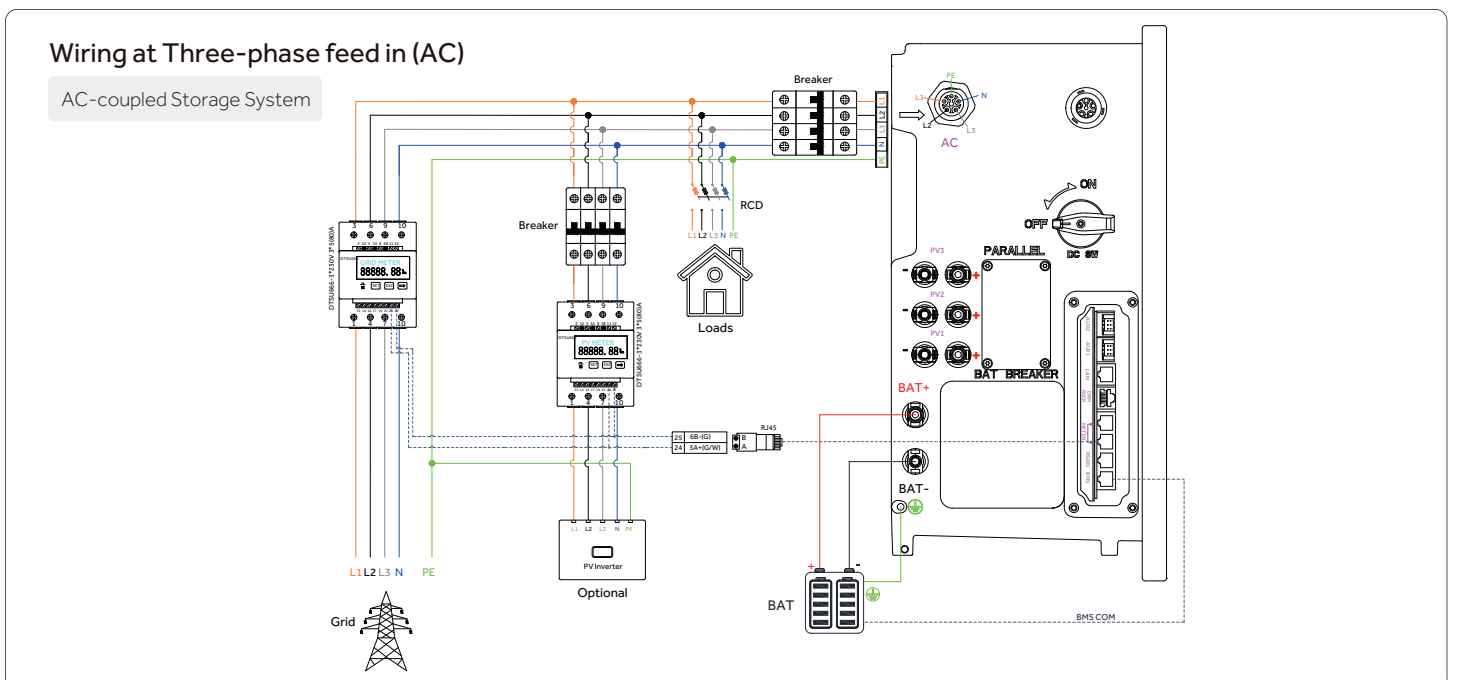
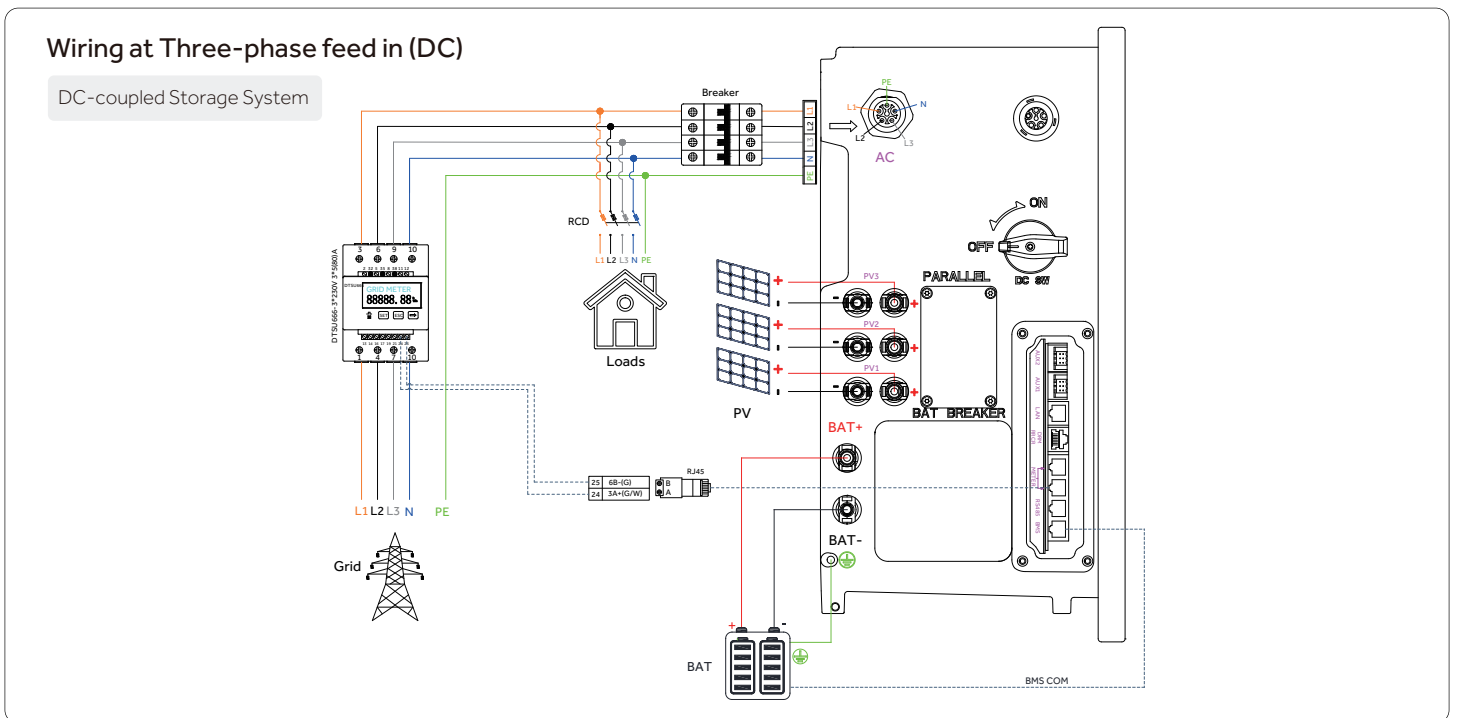
Loosen the swivel nuts of the cable glands on the COM connection cover of Inverter, and unscrew the 4 screws on the corners, then you will see the meter communication ports.



Lead the meter cable through the cable gland of the COM connection cover, don't tighten the swivel nuts of the cable glands. Insert the RJ45 plugs to the meter communication port.

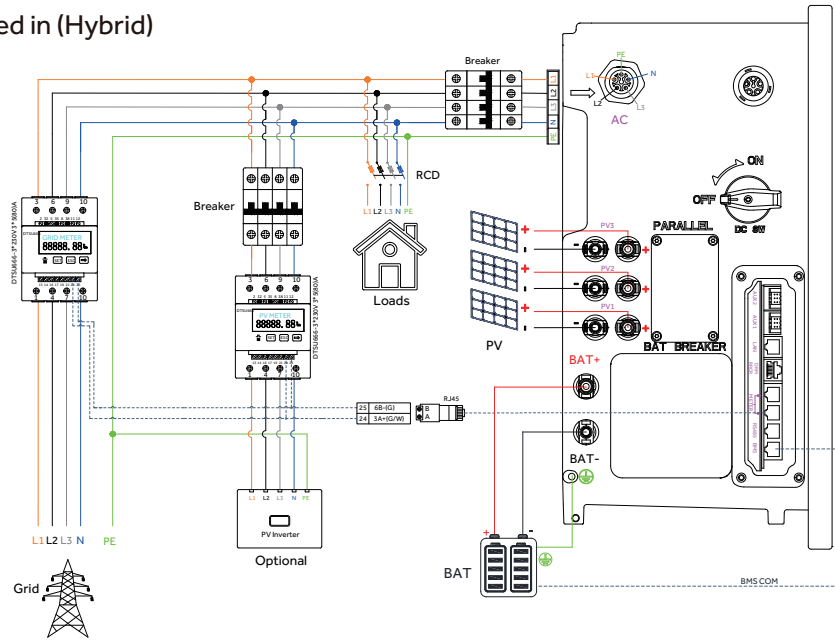


The other steps for meter(without CT) DTSU666-3\*230V 5(80)A connection as follows:



### Wiring at Three-phase feed in (Hybrid)

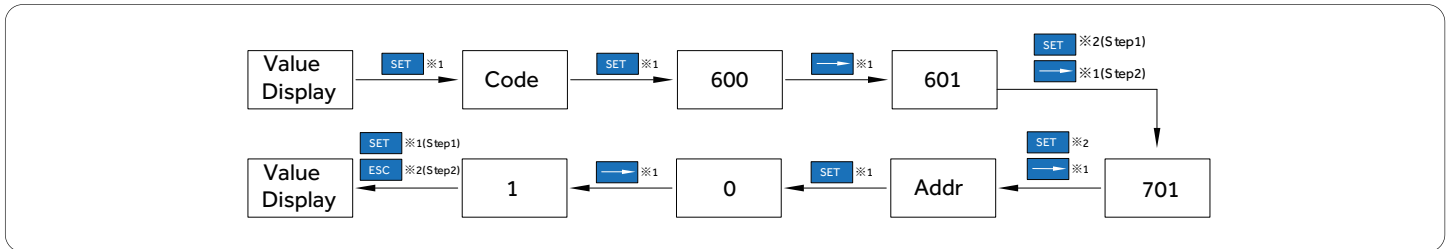
Hybrid-coupled Storage System



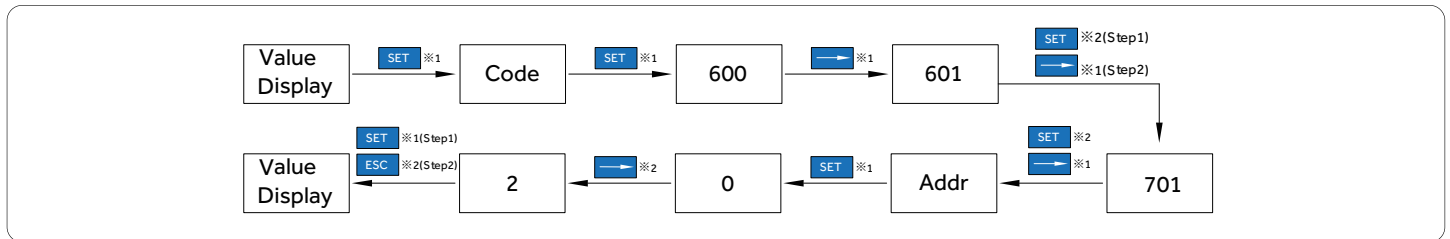
#### 4.3.4. Configuring the chint meter

Model	Grid Meter Address	PV Meter Address
DTSU666-3*230V 5(80)A (without CT)	1(default)	2

When the meter is used as Grid meter, please follow the steps below to complete the address setting.



When the meter is used as PV meter, please follow the steps below to complete the address setting.



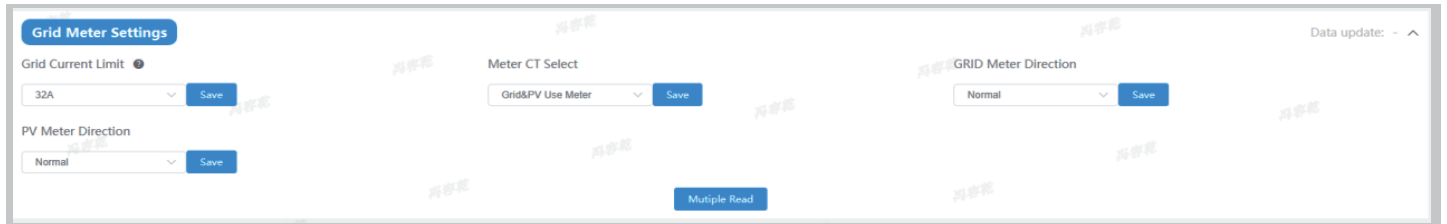
Please complete meter settings on Haier app or website according to the actual application scenario.

Application Scenario	Options
The grid-side meter does not have CT, and the user did not connect other inverters.	C
The grid-side meter has CT, and the user did not connect other inverters.	C
The grid-side meter does not have CT, and the user needs to connect other inverters through smart meter without CT.	C M
The grid-side meter has CT, and the user needs to connect other inverters through smart meter without CT.	C M
The grid-side meter has CT, and the user needs to connect other inverters through smart meter with CT.	C N
The grid-side meter does not have CT, and the user needs to connect other inverters through smart meter with CT.	C N

## Meter setting on Haier cloud

Select the corresponding option based on the Scenario.

Then click read, the option is which you select , the setting is successful.



## Meter Setting on "Haier Energy " APP (Pleaser refer to the chapter 6 for more information)

Select the corresponding option based on the Scenario.

Then click read ,the option is which you select , the setting successful.



**NOTE** It is forbidden to tick CT to modify the CT ratio.

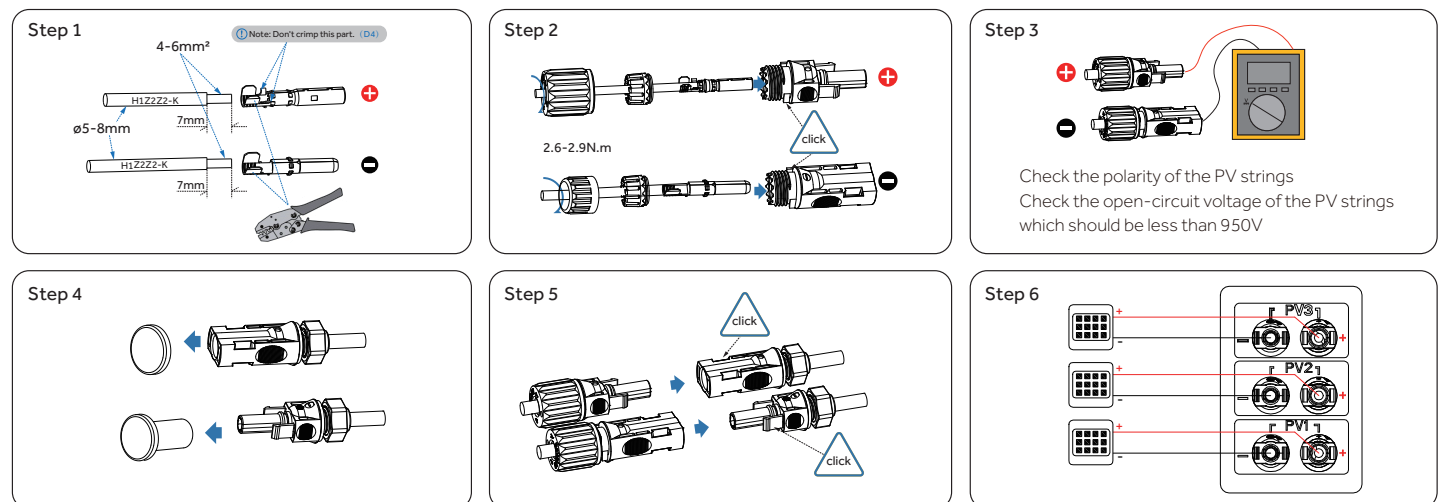
## 4.4. PV connection

Please ensure the follows before connecting PV strings to the Hybrid inverter:

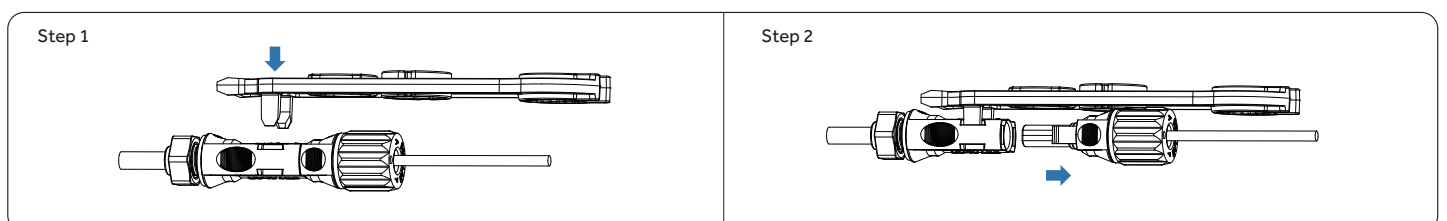
- Make sure the open voltage of the PV strings will not exceed the max. DC input voltage (950Vdc). Violating this condition will void the warranty.
- Make sure the polarity of the PV connectors is correct.
- Make sure the PV-switch, breakers of battery, AC-BACKUP and AC-Grid are all in their off-states.
- Make sure the PV resistance to ground is higher than 200kOhms.

The inverter uses the Vaconn D4/MC4(optional) PV connectors. Please follow the picture below to assemble the PV connectors.

PV conductor cross section requirements: 4~6 mm<sup>2</sup>.



## Disassemble the PV Connectors



## 4.5. Electrical connection between the inverter and battery packs

### 4.5.1. Electrical connection between the inverter and battery



**DANGER** Danger to life due to short-circuiting of the battery.

Touching the short-circuit connection of the battery results in death or lethal injuries due to electric shock and massive energy release.

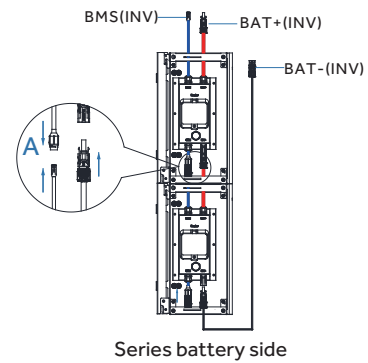
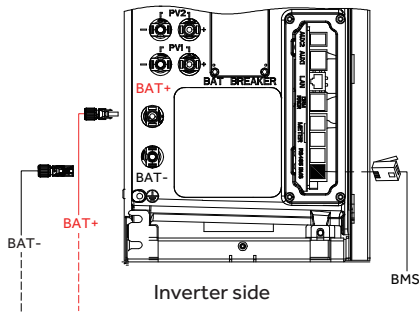
- Switch off the battery breaker which is located on the left side of the battery.
- Please connect both ends of one battery power cable completely before connecting the next power cable to avoid short-circuiting of the positive and negative battery power cables.



**NOTE**

Before connecting the battery power cables, Replace the connector terminal at one end of the power cable in the attachment with the Amphenol H4P connector.

BAT connection for inverter and series battery



### 4.5.2. Electrical connection between batteries

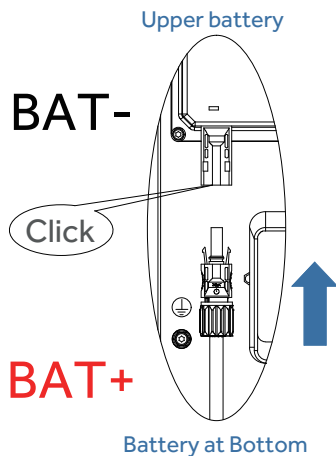
- For electrical connection between multiple battery packs, please follow steps as chapter 4.5.1. Electrical Connection between the Inverter and First Battery.
- For grounding connection between batteries, please refer to Chapter 4.2. Grounding Connecting.
- You can install extra batteries up to 6 batteries in a system. Please install extra batteries by side.



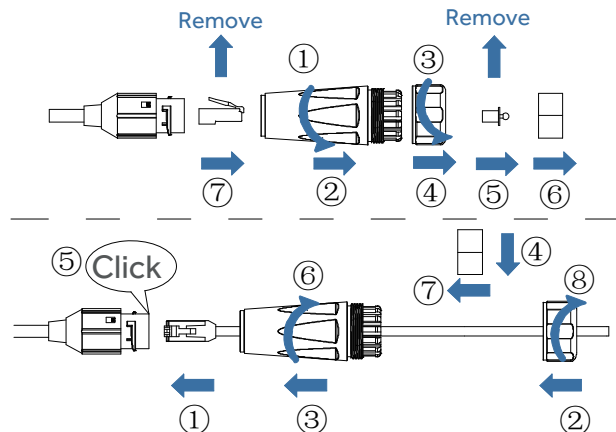
**NOTE**

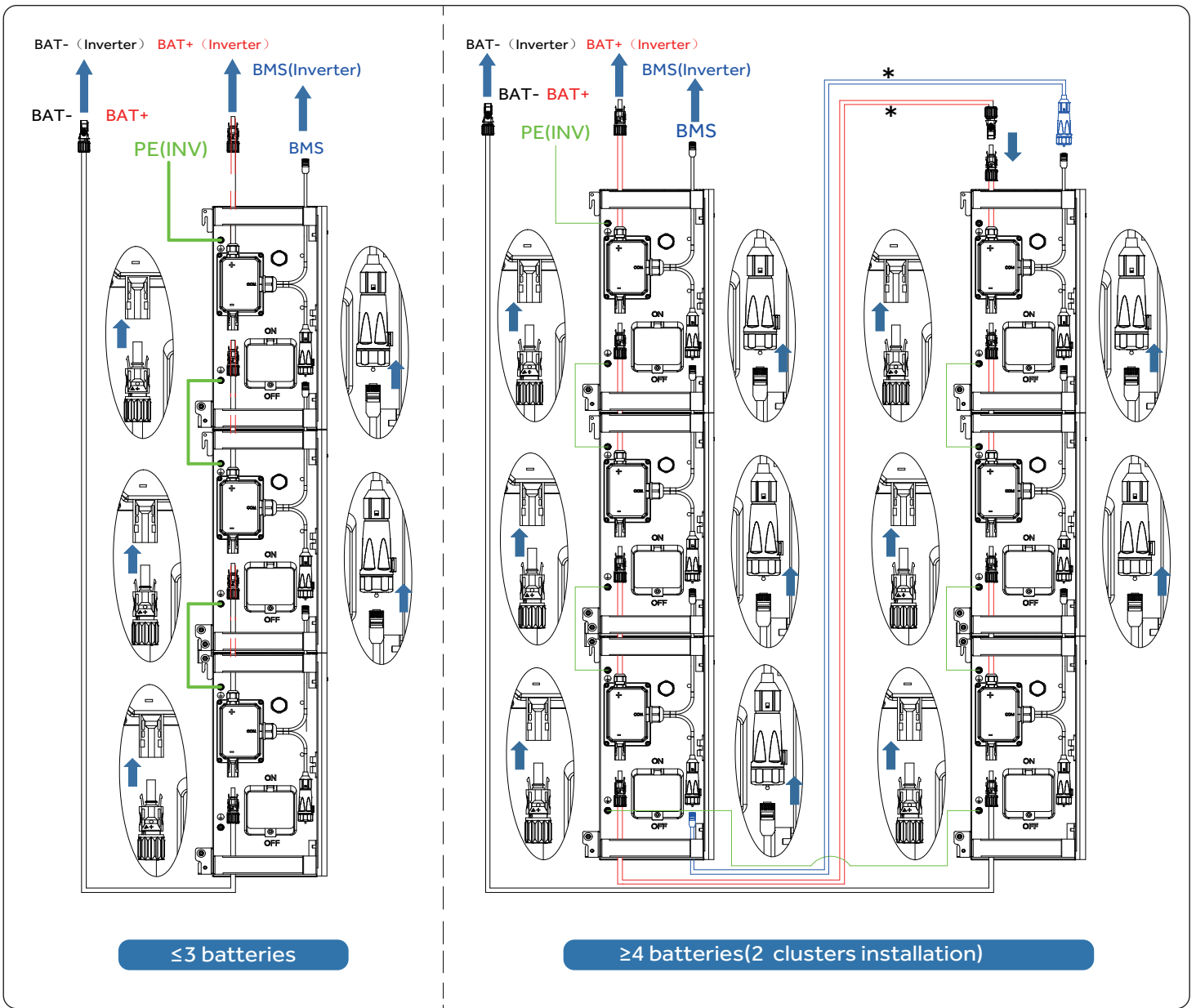
Connect the cables between the batteries, route them from the rear side of the battery when two batteries mounting side by side.

#### 1 BAT connection



#### 2 Communication connection



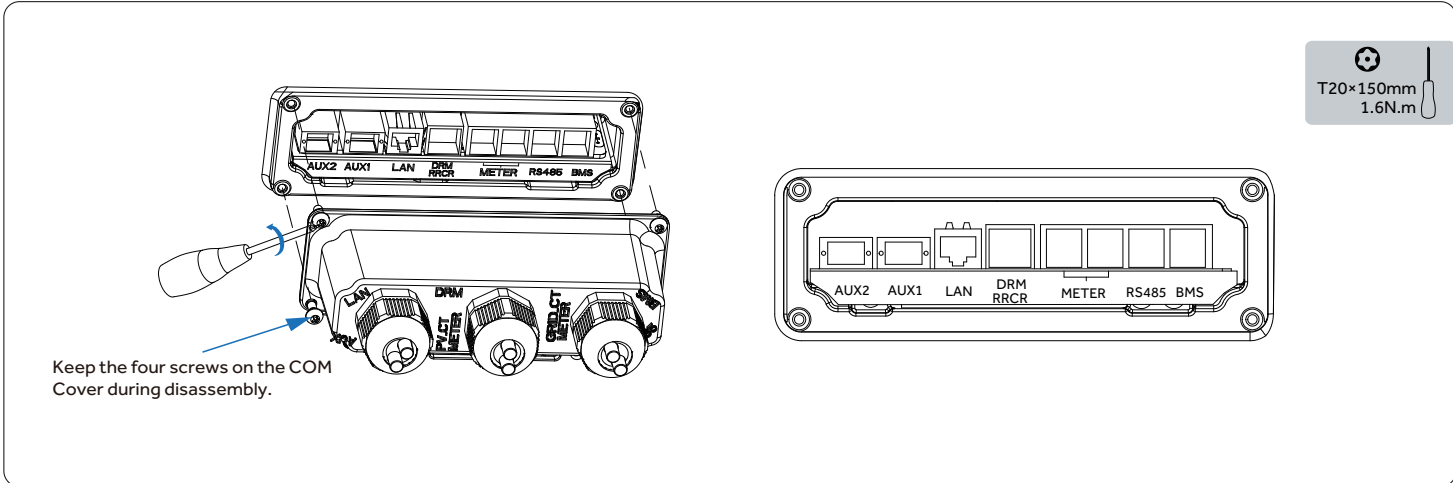


**NOTE**

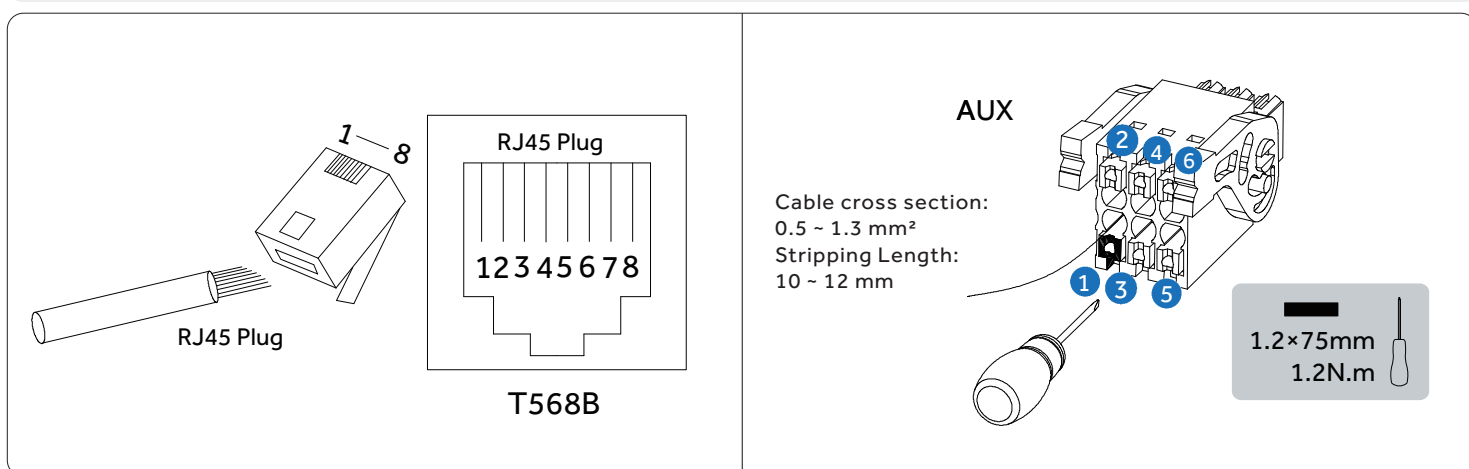
1. Remove the termination resistor from all RJ45 battery communication connectors, leaving it only on the last module (the one connected to the base).
2. Accessory of cables with the (\*) are for battery expansion installation which need to be purchased additionally.

### 4.5.3. AUX/LAN/DRM&RRCR/Meter/RS485/BMS connection

For other communication (AUX, LAN, RRCR, DRM, Meter, RS485) connection, please follow the below steps.



1. Loosen the cable glands on the COM connection cover, and then unscrew the 4 screws on the COM connection cover.
  2. Lead the communication cables through the cable glands of the COM connection cover, don't tighten the swivel nuts of the cable glands.
- Insert the RJ45 plugs to the relative RJ45 sockets.
  - For meter wiring, refer to Chapter 4.3.5 for Meter Connection.
  - If DRM support is specified, the system may only be used in conjunction with a Demand Response Enabling Device (DRED). This ensures that the system implements the commands from the grid operator for active power limitation at all times. The system and the Demand Response Enabling Device (DRED) must be connected in the same network.
  - Only DRM0 is available for Inverter.
  - Take out 6 pin terminal block for AUX connection. To do wiring connection, insert a screwdriver (blade width: 1.2 mm) into the relative connection position side.
  - For AUX position definition, please see the AUX wiring documentation.



**NOTE**

For easier installation, connect all white/colored wires to PIN A and all colored wires to PIN B of the meter. Please refer to Three-Phase Inverter System Wiring Diagram with Electricity Meter DTSU666 (Without CT) (EU) for the meter wiring.

3. Place the COM connection cover against the inverter housing and tighten the 4 screws, at last secure the swivel nut of the cable glands.

The pin definition of the communication ports:

ITEM \ No	1	2	3	4	5	6	7	8
BMS	NC	RS 485-A4	NC	CAN1-H	CAN1-L	NC	RS 485-B4	NC
RS485	12V	DEBUG-RXD-COM	GND	RS 485-B5	RS 485-A5	NC	DEBUG-TXD-COM	NC
METER	NC	NC	RS485-A7	NC	NC	RS 485-B7	NC	NC
DRM	DRED 1/5	DRED 2/6	DRED 3/7	DRED 4/8	REF GEN/0	COM LOAD/0	NC	NC
RRCR	K1	K2	K3	K4	3.3V	NC		
AUX 1	DO1_NO	DO1_COM	DO1_NC	DI-negative	DI-positive	GND		
AUX 2	DO2_NO	DO2_COM	DO2_NC	DI-negative	DI-positive	GND		

## 5 SYSTEM POWER ON AND OFF

### 5.1. Powering on the system

- 1) Switch on the PV switch on the left side of the inverter.
- 2) After removing the side cover, switch on the battery breaker for each installed battery.
- 3) Switch on the AC breaker between the inverter and the loads.
- 4) Switch on the AC breaker between the backup port of the inverter and the loads (if there is any).
- 5) Observe the indicators on the front side of the inverter to learn about the equipment status.

### 5.2. Powering off the system



#### WARNING

After the energy storage system is powered off, the remaining electricity and heat may still cause electric shocks and body burns. Therefore, put on protective gloves and operate the product 5 minutes after the power-off.

- 1) Switch off the AC breaker between the inverter and the loads.
- 2) Switch off the PV switch on the left side of the inverter.
- 3) Switch off the battery breakers of all batteries.
- 4) Switch off the AC breaker between the inverter and the grid (if there is any).

## 6 COMMISSIONING

### 6.1. Preparation

No.	Check Item	Acceptance Criteria
1	Battery pack and inverter mounting	The battery pack and inverter are mounted correctly, securely, and reliably.
2	Wi-Fi mounting	The Wi-Fi module is mounted correctly, securely, and reliably.
3	Cable layout	Cables are routed properly as required by the customer.
4	Cable tie	Cable ties are secured evenly and no burr exists.
5	Grounding	The ground cable is connected correctly, securely, and reliably.
6	Switch and breakers status	The PV switch and battery breakers and all the breakers connecting to the product are OFF.
7	Cable connections	The AC cables, PV cables, battery power cables, and communication cables are connected correctly, securely, and reliably.
8	Unused power terminals	Unused power ports and communication ports are blocked by watertight caps.

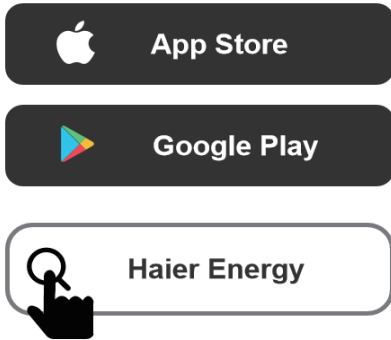
After finishing electrical connection of energy storage system, do the following operations.

- Check the voltage range and frequency range of the grid and the installation of meter(without CT).
- Install the top and right decorative cover of the inverter.
- Follow the chapter-5 to power on the system.

## 6.2. Download and Install App

The App can be downloaded in the following two ways:

1. Search the "Haier Energy" APP in Google Play or App Store.



2. Scan the QR code below to download.



### ⚠ Note

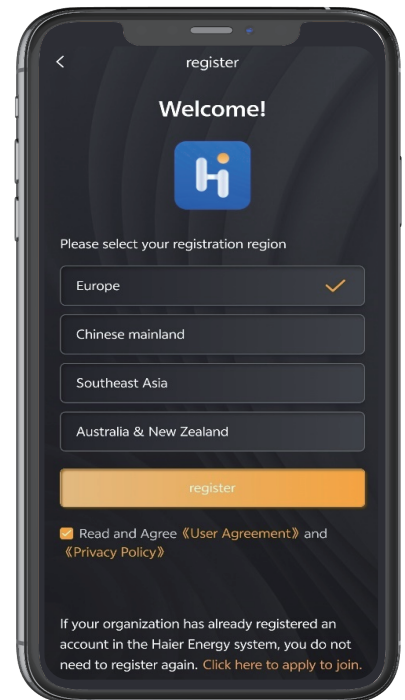
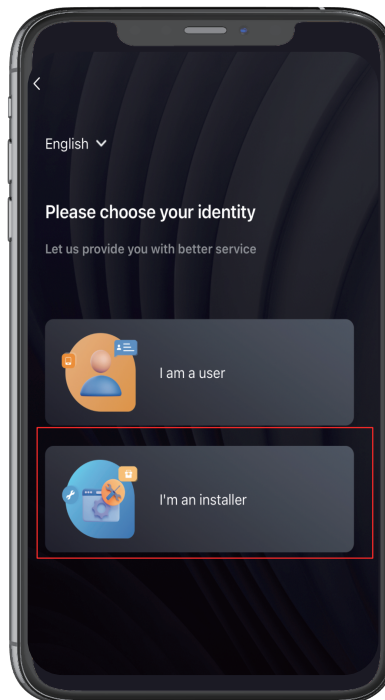
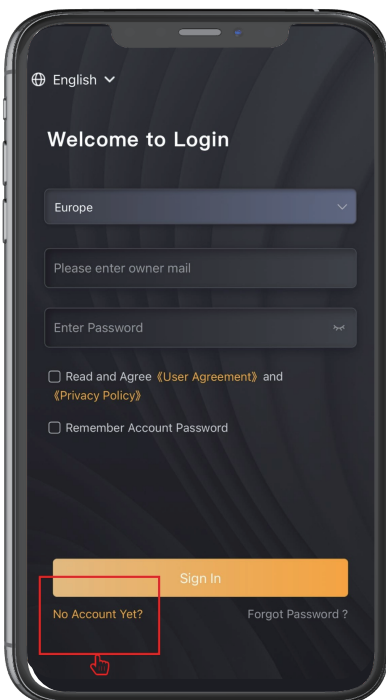
1. Both the installer and the home owner use Haier Energy app.
2. The screenshots given in this document are for illustration purposes only. Interfaces in different periods may differ. The actual interface display shall prevail.
3. For details about App instruction and function, see Haier Energy App User Manual.

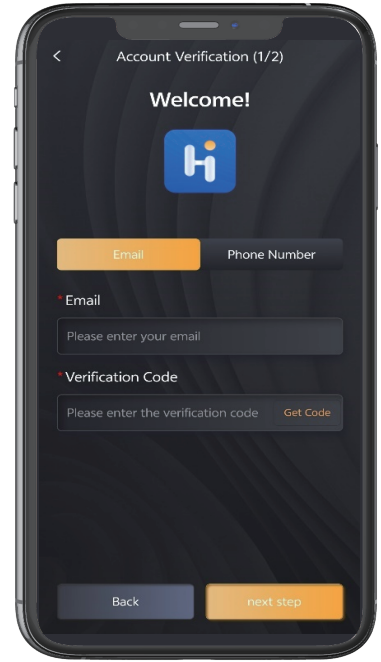
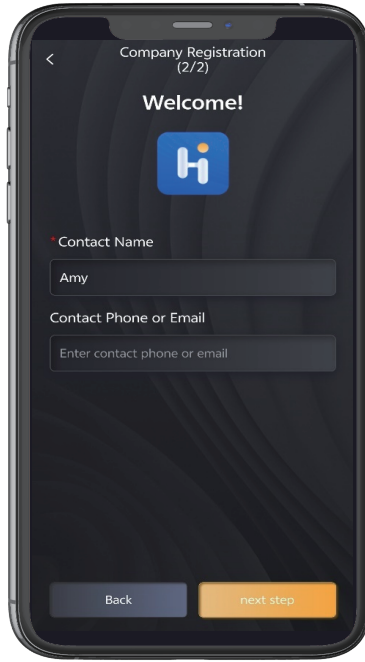
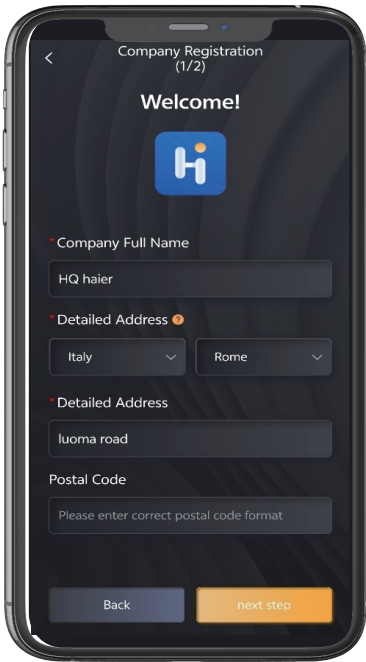
## 6.3. Login the APP

### 6.3.1. Register an account

For new installers, there are two ways to register an account:

1. From the app: Click 'No account yet' on the app and follow the prompts to register and sign up for your account.

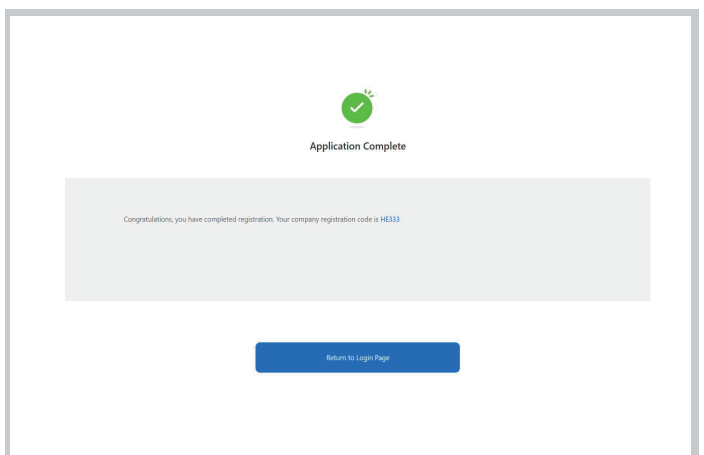
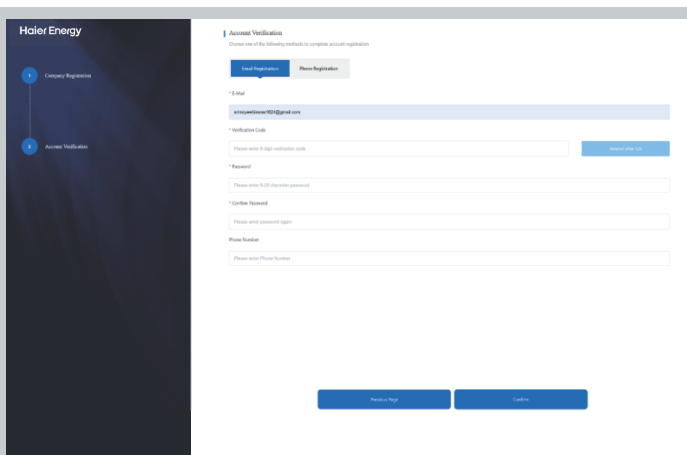
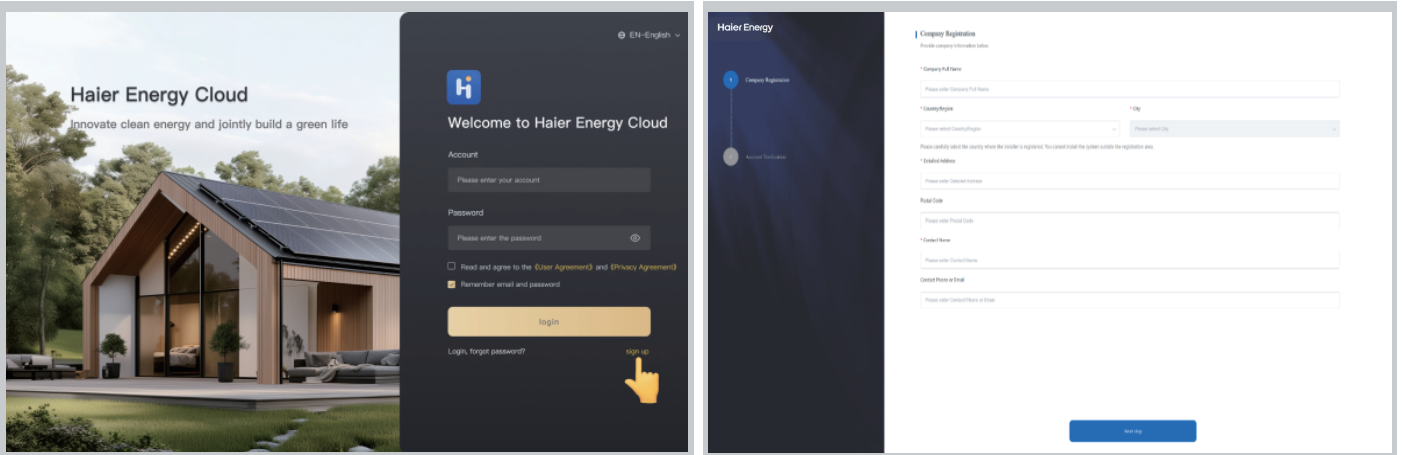




**⚠ Note**

Only accounts within Mainland China support registration with a mobile phone number.

2. Please visit <https://hemseu.haier-energy.com> and sign up for your account (For Installers only).



• For end users, accounts can only be registered through the Haier Energy A

1. Tap 'No account yet' on the app.
2. Select I'm an user to progress to your home page.
3. Enter your email to be used for the installer account.

Select "Get Code".      Check the email to retrieve the verification code.      Enter the code.

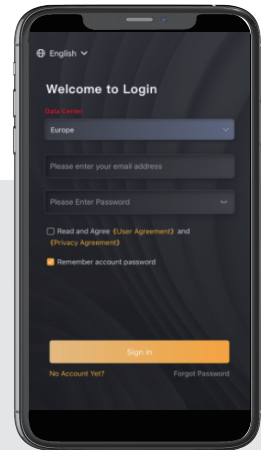
Then create a password.      Read and agree User Agreement and the Privacy Policy.      Register.

### 6.3.2. Login to the APP

For users who already have an account or have completed registration (including installers and end users) can log in directly on the homepage.

**⚠ Note**

1. Give all permissions to the App and turn ON the Bluetooth of your smartphone.
  2. Dongle only supports 2.4G network.
- Choose data center and entering the account and password, then check the "Privacy Policy" and "User Agreement", then click "Sign In".

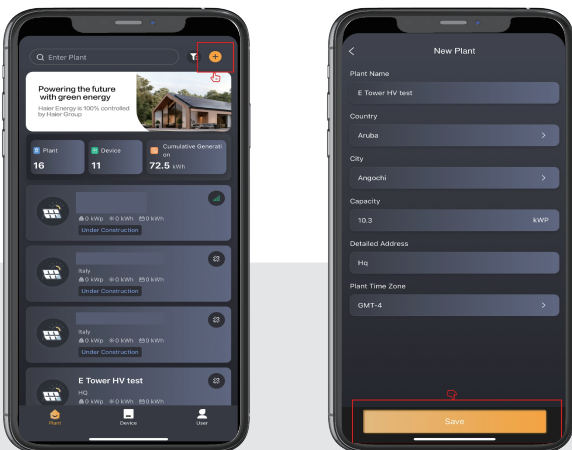


### 6.4. For installer

This section is intended only for installers. It describes the operational procedures for installers using the Haier Energy APP for site setup, network configuration, equipment handover, and other functions.

#### 6.4.1. Create Plant

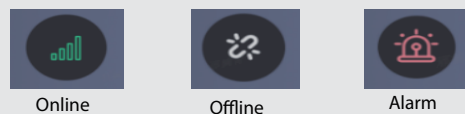
Go to the 'Plant' page and click the top right corner, enter the 'New Plant' creation page.



• **Plant status**

- Under Construction** Not delivered to the user
- Delivered** Already handed over to the user

• **Device Status**



**⚠ Note**

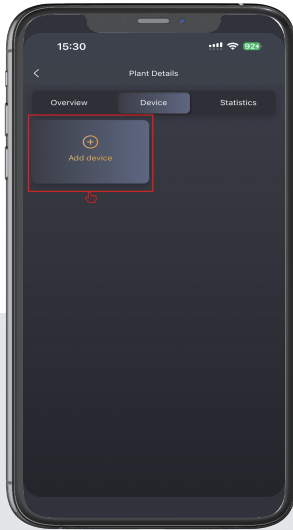
When setting the plant time zone, please keep it consistent with the installed site of the inverter.

## 6.4.2. Add Devices and WiFi Configuration by Bluetooth

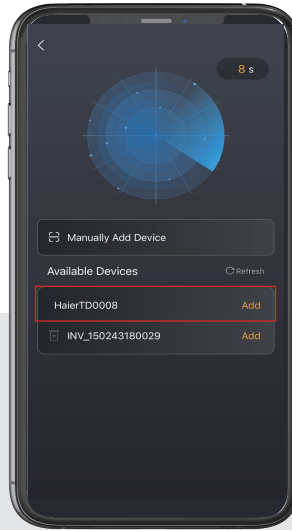
Step1: On the 'Plant' page, click the plant what you want to add device to enter the 'plant details' page . Switch to 'Device' and click 'Add Device'.

Step2: In the 'Available Devices' list, select the device you want to add.

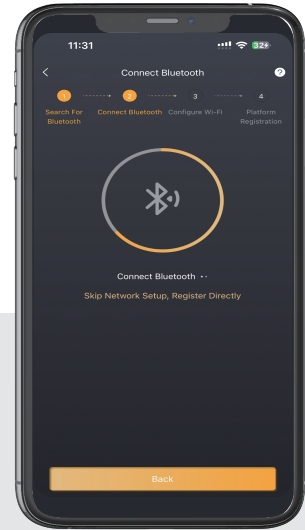
Step3: Establish Bluetooth connection.



①



②



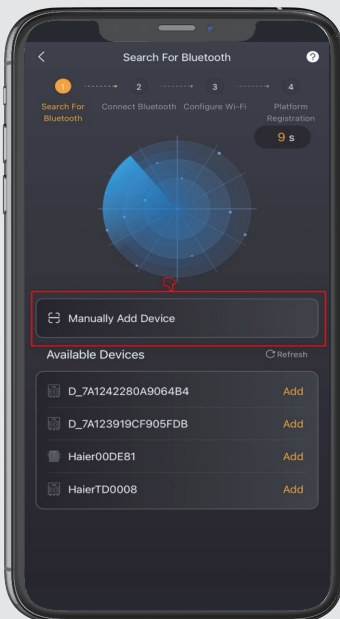
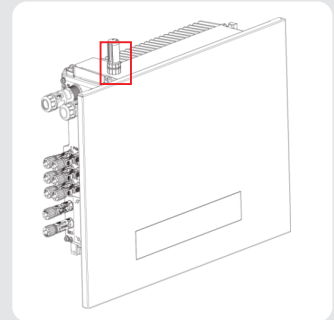
③

### ⚠ Note

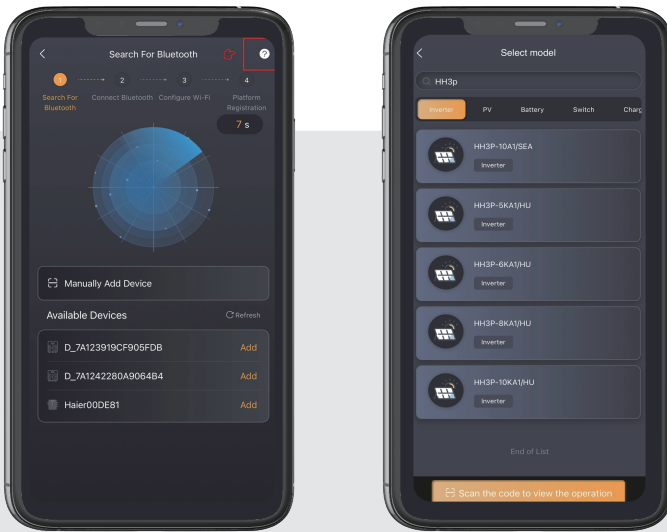
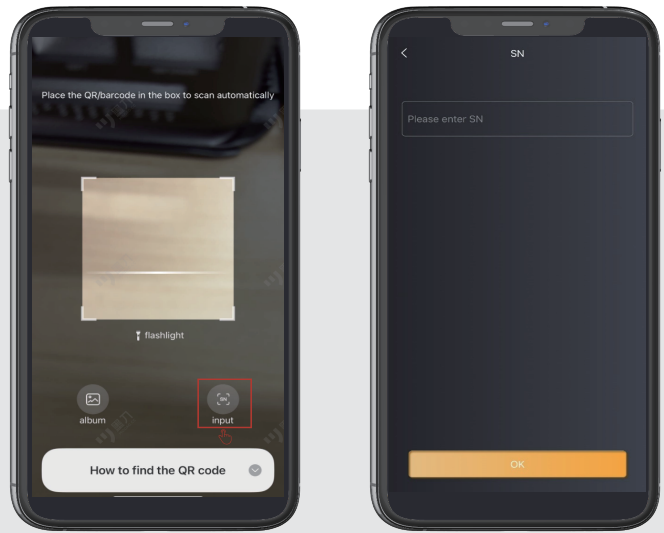
1. Don't disconnect the dongle when the system is powered on to avoid to damage it

2. If you cannot find the device serial number in 'Available Devices' list , please ensure the communication dongle is properly installed on the inverter.

3. If the communication dongle is installed properly, but the device serial number still cannot be found after searching several times, you can manually connect the device by clicking 'Manually Add Device' and scanning the S/N on the inverter nameplate.




If it's inconvenient to scan with your phone, you can also click 'input' to manually connect the device.

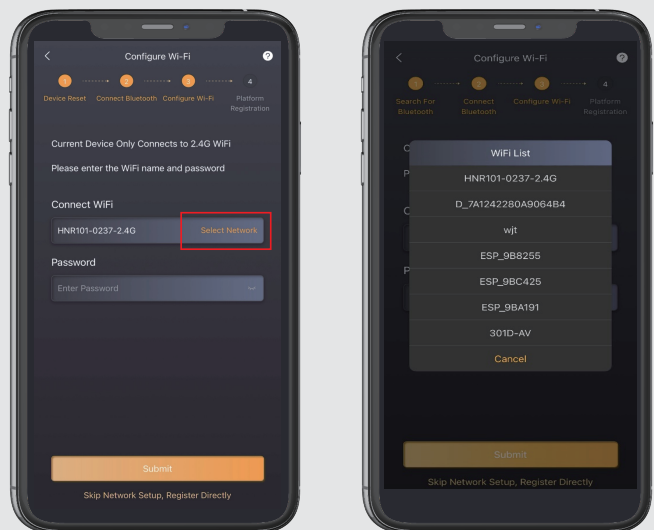


4. Click on the "?" in the upper right corner of the page and enter the product model to view detailed operating instructions.

#### Step4:

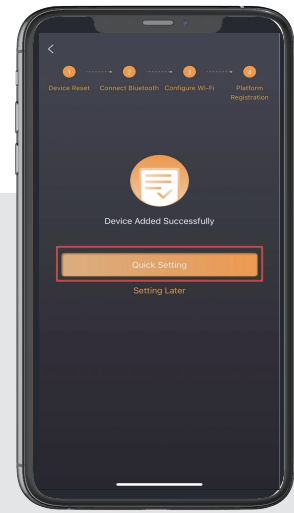
- Go to the 'Configure Wi-Fi' page, click 'Select Network' to choose the network you want to configure, and enter the Wi-Fi password in the 'Password' field.
- Click 'Submit' to start network setup.

 Note: Dongle only supports 2.4G network.



### 6.4.3. Quick Setting

- When the app shows 'Device Added Successfully', it means the device has been successfully connected to the Haier Energy platform.
- Click 'Quick Setting' to configure the parameters directly, or click 'Setting Later' to jump to the device list page. It is recommended to click 'Quick Setting' first.

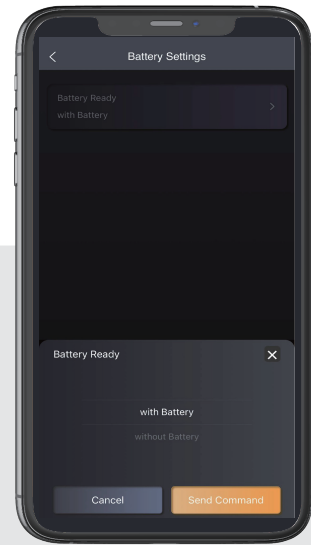
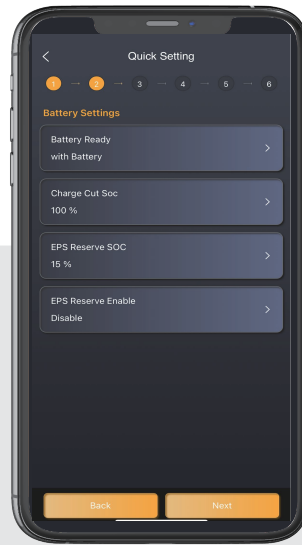
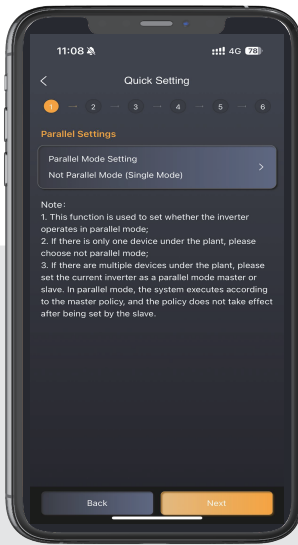


#### 1. Parallel Settings

If there is no parallel operation, please select 'Not Parallel Mode(Single Mode)'.

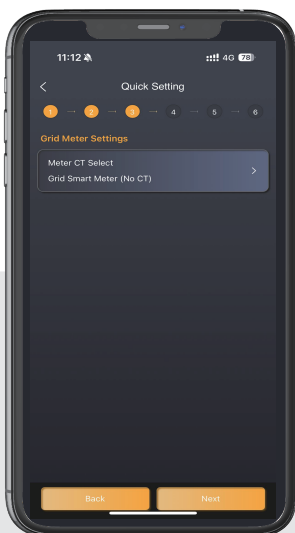
#### 2. Battery Settings

After both the inverter and the battery are installed, please select 'with Battery'.



#### 3. Meter Settings

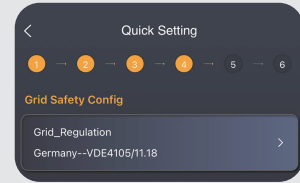
The meter settings have six application scenario. Please refer to the table and choose according to the actual installation situation.



Application Scenario	Option
The grid-side meter does not have CT, and the user did not connect other inverters.	Grid Smart Meter (No CT)
The grid-side meter has CT, and the user did not connect other inverters.	Grid Smart Meter (with CT)
The grid-side meter does not have CT, and the user needs to connect other inverters through smart meter without CT.	Grid Smart Meter (No CT) + Smart Meter (No CT) for 3 <sup>rd</sup> -Party Inverter
The grid-side meter has CT, and the user needs to connect other inverters through smart meter without CT.	Grid Smart Meter (CT) + Smart Meter (No CT) for 3 <sup>rd</sup> -Party Inverter
The grid-side meter has CT, and the user needs to connect other inverters through smart meter with CT.	Grid Smart Meter (CT) + Smart Meter (CT) for 3 <sup>rd</sup> -Party Inverter
The grid-side meter does not have CT, and the user needs to connect other inverters through smart meter with CT.	Grid Smart Meter (No CT) + Smart Meter (CT) for 3 <sup>rd</sup> -Party Inverter

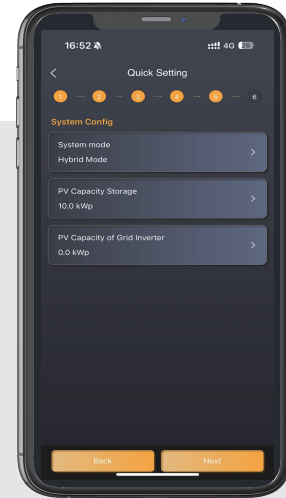
#### 4. Grid Safety Config

Please select the grid code based on the local grid network requirements.



#### 5. System configuration

The mode are DC mode, AC mode and Hybrid mode, Please choose the mode according to the actual installation scenario.



#### 6. Work Mode Setting & Charging and Discharge Settings

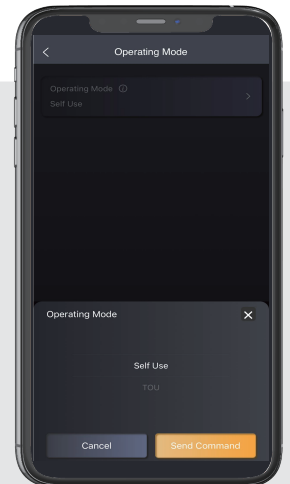
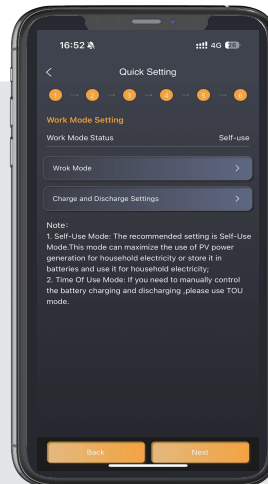
There are two modes that can be set. It's default setting is Self-Use Mode.

- **Work mode 1: Self-Use Mode (default )**

This mode can maximize the use of PV power generation for household electricity or store it in batteries and use it for household electricity.

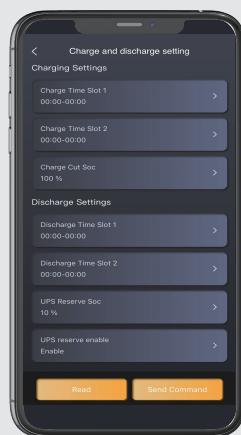
- **Work mode 2: TOU(time of use)**

If you need to manually control the battery charging and discharging with respected time, please use the TOU mode.

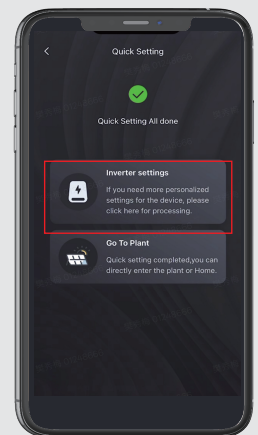


- **Charging and Discharge Settings**

After the work mode settings, you can set the battery charging and discharging times.



- **Quickly settings is finished. Then you can go to inverter settings to do more settings, and you can go to the plant page.**



#### ⚠ Note

1. The quick settings for different models are different, please focus on the app display.
2. If you want to make more product settings, please go to the "Parameter Settings" page of the device to make modifications.

## 6.4.4. Other Parameter Settings

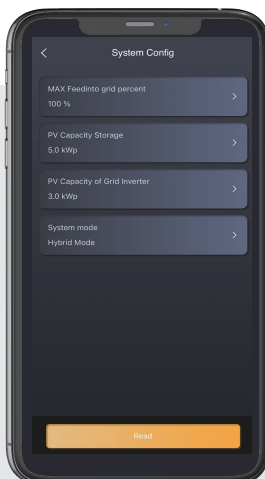
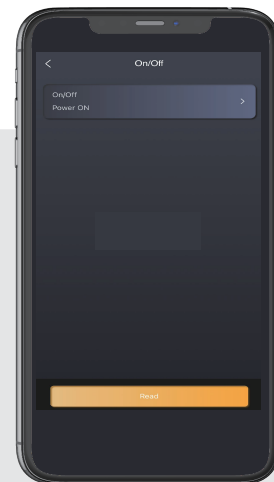
- After the commissioning is completed, choose the corresponding power plant, enter the Overview page, it can display the working state.
- Today Yield of PV, Today Imported/ Exported of Grid, Today Charged/ Discharged of battery and Today Consumption of household electricity.



- Click "Device", then choose the corresponding inverter, and click upper right corner "...", enter the control page, you can set the parameters, read the system information, and delete device.

### On/Off setting

- This is a remote standby function, the default state is Power on.
- After switching to "Power Off", the inverter is in standby mode and it can't transfer energy to the battery or grid. The devices connected to the backup side can supply power normally (when the grid is not powered off).



### • Grid Meter Settings

Please refer to the step 3 of chapter 6.4.3 for more information.

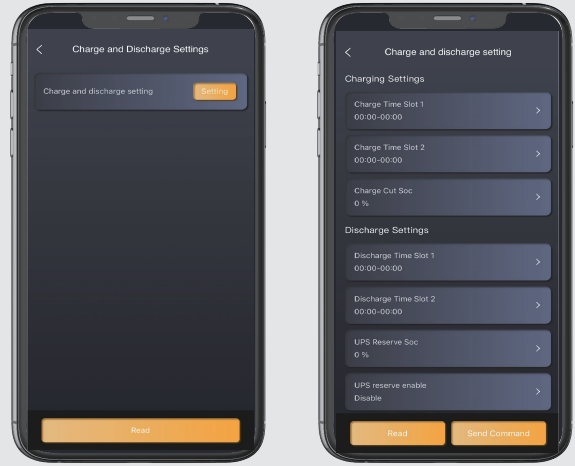
### • System Config

The mode is DC mode, AC mode and Hybrid mode, DC mode is default mode, Please choose the mode according to the actual installation scenario.

### Charging and Discharging setting

- The charging and discharging time slot is only effective in TOU mode;
- Charging Cut SOC: The battery will stop charging when it reaches the set value;
- UPS Reserve Soc: The battery will stop discharging when it reaches the set value;
- UPS reserve enable: After set it as enable, when the battery discharge SOC is lower than UPS Reserve Soc, the grid will charge the battery to reach the UPS Reserve Soc;

**Note**  
The above parameters are only effective under grid connection.



### Grid Dispatch

#### Note

- **This mode is turned off by default. When it is turned on, the priority of Grid Dispatch is higher than TOU and Self-use mode.**

The function to discharge the battery to the grid without connecting load. This function can also be used to charge the battery from the power grid.

Step1: Dispatch start needs to be turned on firstly, otherwise the settings doesn't work.

Step2: Set the "Dispatch Active power "as you need; "Dispatch reactive power "doesn't need to set.

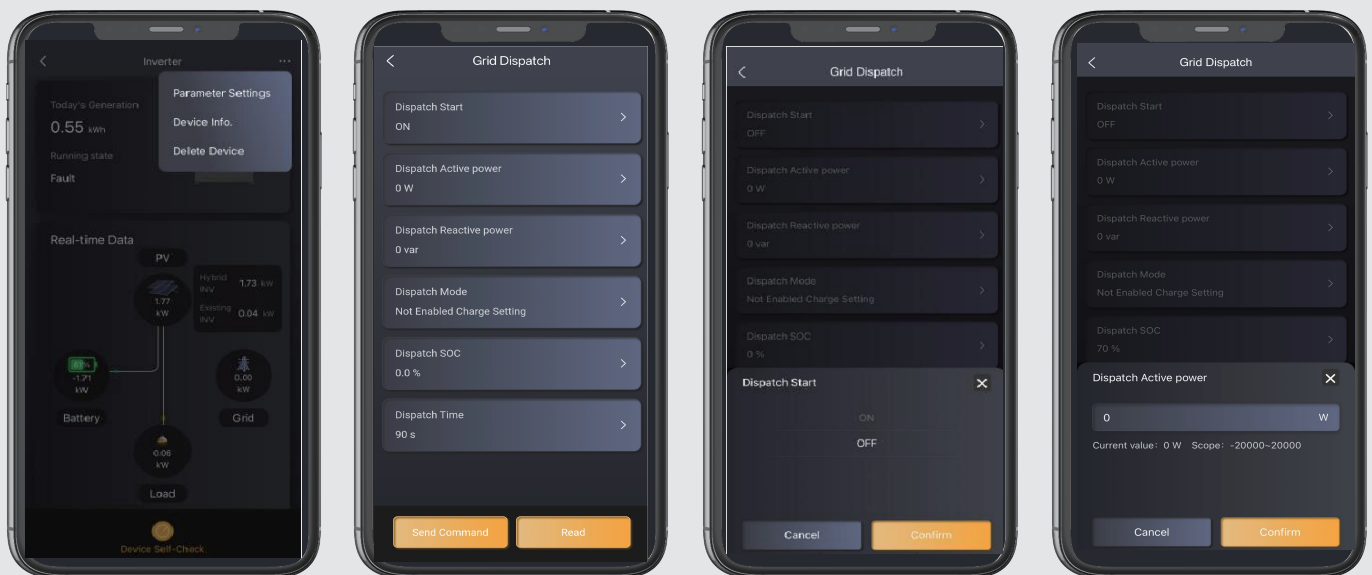
- **If you want to charge, set a negative value; if you want discharge , please set it a positive value.**

Step3: Dispatch mode set with "force charging and discharging".

Step4: Dispatch SOC setting, the value is the SOC expected to charge or discharging.

Step5: Dispatch time setting, the value is the time expected to charge or discharging time.

**Note**  
The dispatch function will stop when either SOC or scheduling time reaches the set value.



## Remote Reset

Use the corresponding function in the following situations:

- **EMS Refresh:** When abnormal data collection occurs, please reset the EMS to recover the system;
- **DSP Reboot:** When the fault information is inconsistent with the actual situation, it can be recovered by restarting the DSP. For example, if the APP experiences a fault of losing the ground wire, but the ground wire connected to the inverter is not disconnected, it can be recovered by restarting the DSP.
- **Factory Reset:** If you want to set all the sparameters of the inverter as default values, this function can be used.



## Backup box setting(Optional)

- If a Backup box is installed, the switch of "Backup-Box Enable" should be turned on firstly. And you can set the SOC according to the importance of the electrical equipment.
- In order to ensure the important loads can run normally, the SOC value of important loads recommended to be set a minimum value .



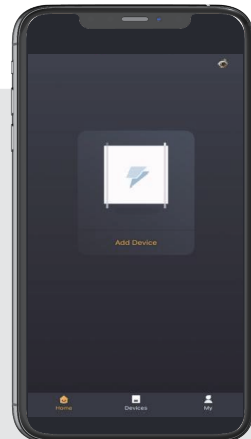
**Note**  
Only compatible backup-box can be used.



## 6.4.5. Deliver to End User

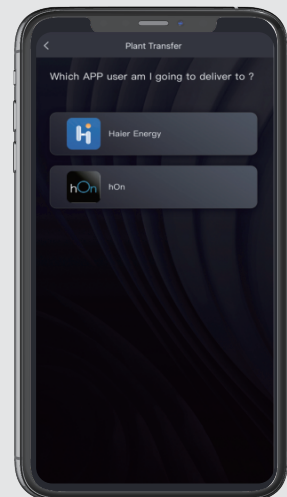
### For End User:

- ① The end user should download the ' Haier Energy App' firstly following the chapter 3.1.
- ② Open the Haier Energy App, following the chapter 3.1 to register an ender user account.
- ③ After registration is completed, the end user will see the following page. Please wait for the installer to hand over the device. the end user does not need to take any action during this process.

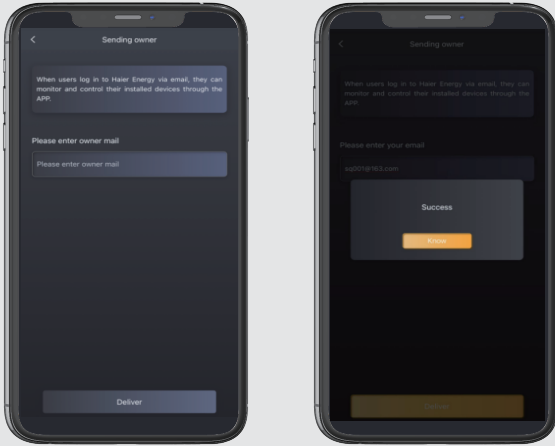


### For Installer:

- ① After confirming the end user has completed the registration, the installer enters the App homepage and selects the 'Haier Energy' app, then enters the power station details page and clicks the ' Deliver ' button, Enter the end user's email.



② On the deliver page, enter the end user's email and click the 'Deliver' button. After the app prompts 'Success', it will automatically jump to the plant overview page.



③ Upon completion of the delivery, the plant status will change to 'delivered'.

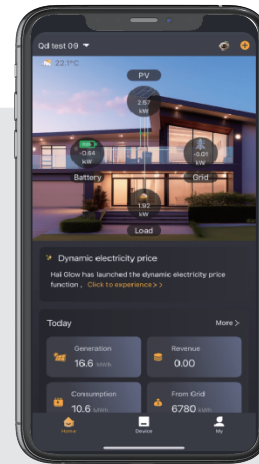


**⚠ Note**

- ① End User need to register a Haier Energy account in advance.
- ② End User's email is the one associated to his Haier Energy's account.

## 6.5. For End User

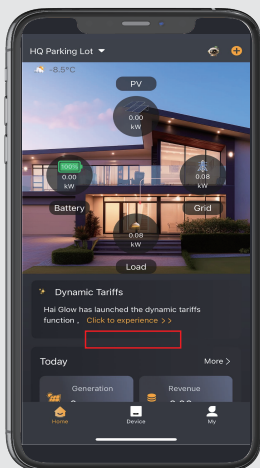
- After the delivery is completed, the end user can directly view the device data by logging into the Haier Energy app.
- The user parameter settings don't include "ON/OFF Settings", Grid Safety Config, and "Remote Reset", other settings are as the same as the installer's, please refer to 6.4.5 for more information.



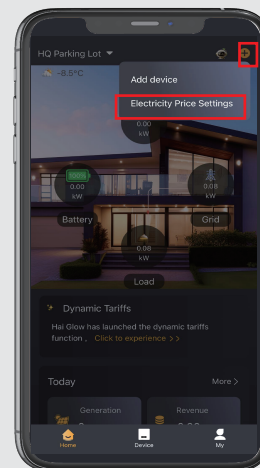
### 6.5.1. Dynamic Tariffs Function

Before using the dynamic electricity price feature, you need to set the electricity prices in the app. You also have two entry points for the settings.

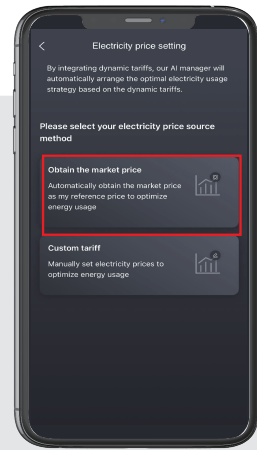
① Enter the 'Home' page, tap 'Click to experience' to set the electricity price.



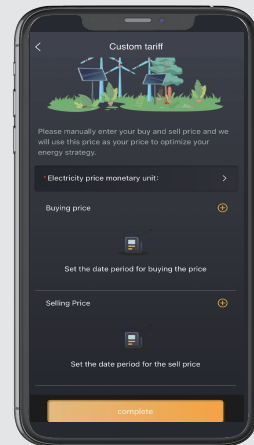
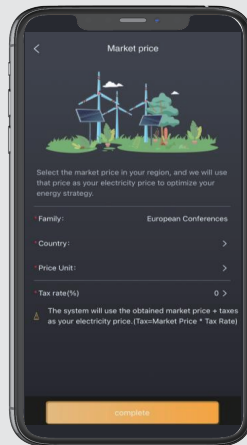
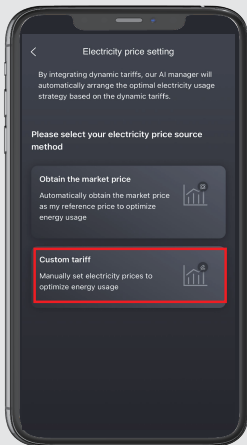
② tap "⊕" in the top right corner, select "Electricity Price Settings" to set the price set page.



Enter electricity price settings page. You can choose automatically obtain the market price by clicking 'obtain the market prices'.



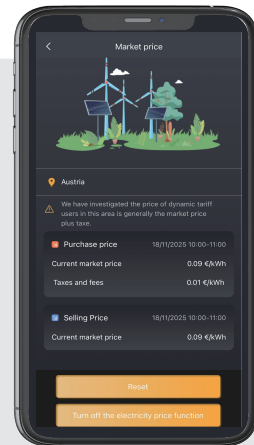
You also can manually set the electricity price by choosing 'custom tariff'.



After setting the electricity price, you will enter the following page. You can view the electricity price information, and you can also reset the electricity price settings or disable the electricity price function.

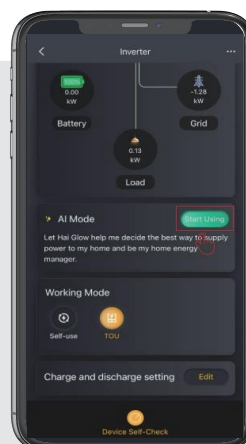
**Note**

Once you have set the electricity price, the setting entry in chapter 6.5.2 will no longer be displayed.

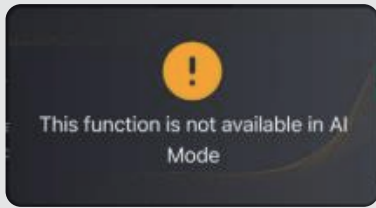
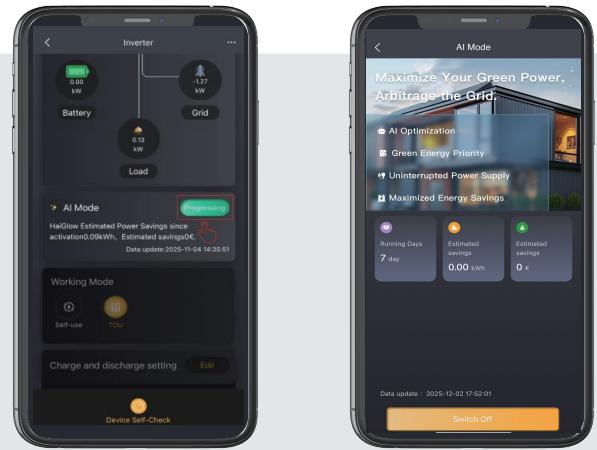


### 6.5.2. Enable dynamic Tariffs feature

On the 'Device' page, select the device you want to enable the feature. In the middle of the page, you can see the 'AI Mode'. Click 'start using' to enter the AI mode activation page. Click 'Switch On' to activate the dynamic pricing feature.



After the AI mode is enabled, the current status is updated to 'Progressing'. You can click this button to go to the AI mode deactivation page. Click 'Switch Off' to deactivate the dynamic tariffs feature.

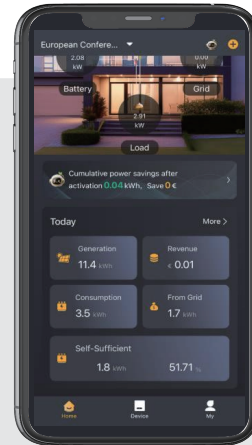


**⚠️ Note**

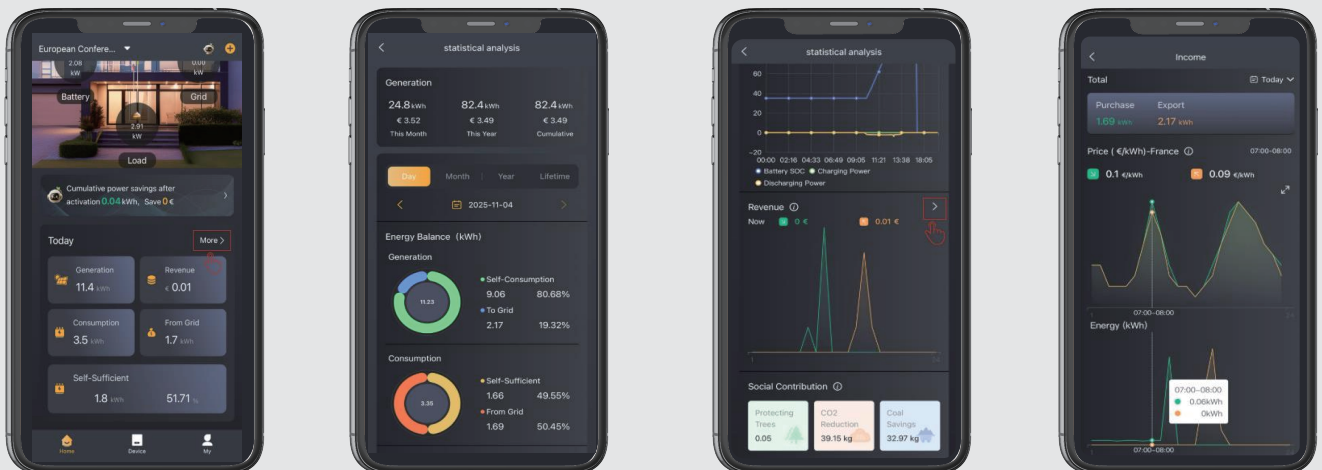
Once the AI mode is enabled, you cannot directly switch the inverter's operating mode. You need to turn off the AI mode before you can manually switch it.

**Step3: Operating Status Monitoring**

- You can view operational data such as the device's power generation, electricity consumption, and revenue through the following portal.
- On the home page, you can see the total electricity generation, electricity consumption, and the energy savings and earnings after enabling AI mode.



On the home page, click 'More' to view the device's operating parameters. At the bottom of the page, you can view the historical buy and sell electricity volumes; Click the "More" you can see the electricity price, the buy and sell volumes, and the corresponding income.



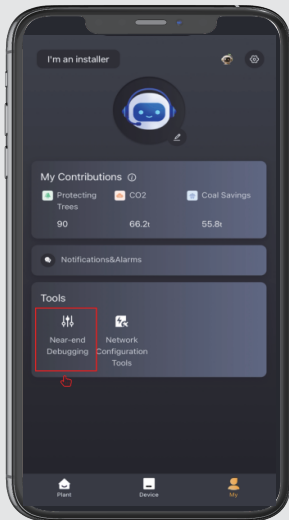
## 6.6. Bluetooth connection: Near-end debugging

### ⚠ Note

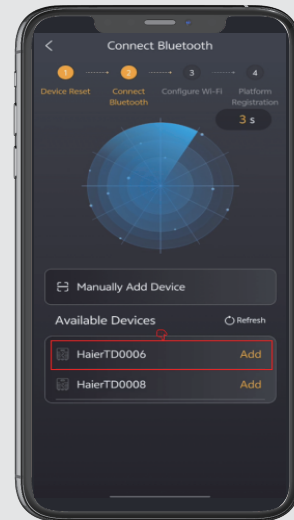
- ① Please ensure your phone has Bluetooth/GPS turned on and the app has been authorized to use Bluetooth.
- ② Both the Installer and the end user can use the Near-end debugging to set parameters.  
Please refer to the user manual for more setting information.

If the device cannot connect to the network through the app, you can use the following methods to debug the device. This method allows full local configuration of the inverter without Wi-Fi setup.

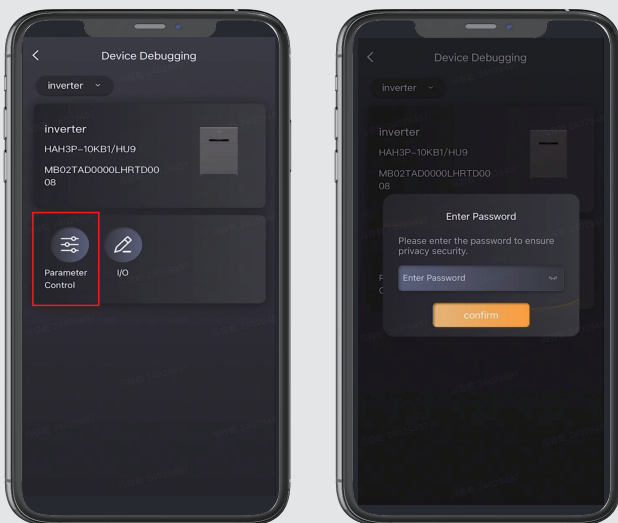
- ① Log in to the app and enter "My" page, click the "Near end Debugging" button.



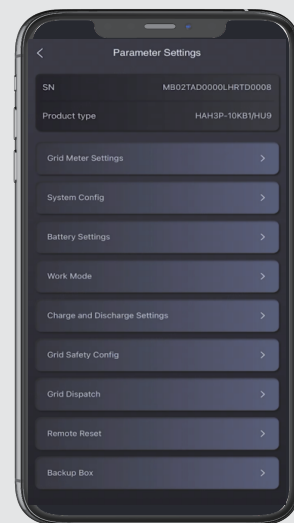
- ② In the Bluetooth list, Choose the consistent SN code with inverter (displays the inverter icon) to enter the inverter control page.



- ③ Click on "Parameter Control" and enter password, password is "AA55".



- ④ Set the parameters you need.

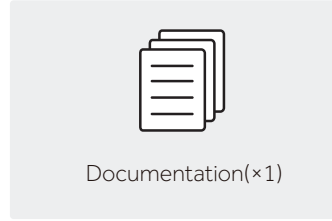
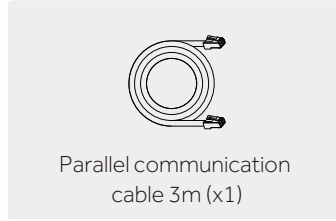
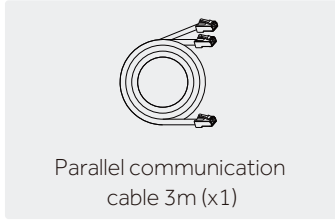


## 7 PARALLEL SETUP

### 7.1. Inverters operation in parallel mounting

Please refer to the "QUICK INSTALLATION GUIDE FOR PARALLEL" for inverters operation in Parallel Mounting.

### 7.2. Scope of delivery



### 7.3. Electrical connection



#### ATTENTION

When inverters are operating in parallel, the measurement unit at the feed-in point must utilize the meter type of DTSU666-3\*230V 100A/40mA(with CT) or DTSU666-3\*230V 250A/50mA(with CT).

#### Note

- The batteries connecting to the same inverter must be connected together. Battery clusters connected to different inverters must not be connected together.
- The number and type of batteries connected to each inverter should be the same.
- The Max. number of series batteries connected to each inverter is 6.
- The backup connection ports of three phase inverter forbid connecting in parallel.
- The grid connection ports (symbolled with "AC") of three phase inverter must be connected in parallel.
- The Max. number of inverters operating in parallel is 3.
- Each inverter operating in parallel must be connected with battery.
- Each inverter operating in parallel must be connected with PV modules.
- Each inverter installing PV modules should have the same PV installed capacity. Otherwise it will cause the battery SOC difference between the battery clusters.

#### 7.3.1. AC Wiring to grid combiner cabinet

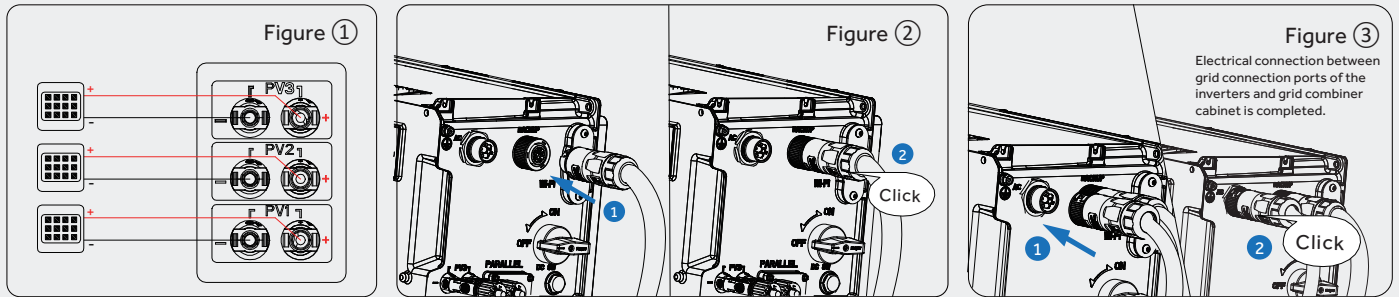
Wiring sequence	From	Recommended Cable type	To
1	Mains grid	Five-core (L1, L2, L3, N and PE) outdoor copper cable, 25~35 mm <sup>2</sup>	Grid combiner cabinet
2	Grid combiner cabinet	Five-core (L1, L2, L3, N and PE) outdoor copper cable, 4~6 mm <sup>2</sup>	Grid connection port of the host inverter
3	Grid combiner cabinet	Five-core (L1, L2, L3, N and PE) outdoor copper cable, 4~6 mm <sup>2</sup>	Grid connection port of the follow inverter

#### 7.3.2. Verify the electrical connection

##### Please confirm the following connection

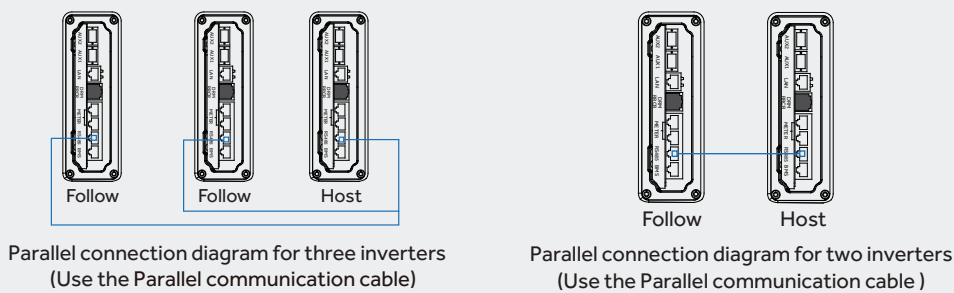
- (1) BAT power connection and grounding connection between the batteries connected to each inverter have finished.
- (2) BMS communication connection between the batteries connected to each inverter is completed.
- (3) Please finish PV arrays connection to the inverters, please refer to the "Inverter Quick Installation Guide"(As shown in Figure ①).
- (4) Insert the backup connector plugs into the sockets for the backup connection. When doing so,make sure to align the key on the backup connection socket with the keyway on the backup connector plug (As shown in Figure ②).

(5) Wiring grid connector plugs, then insert the grid connector plugs into the sockets for the grid connection. When doing so, make sure to align the key on the grid connection socket with the keyway on the grid connector plug (As shown in Figure ③).

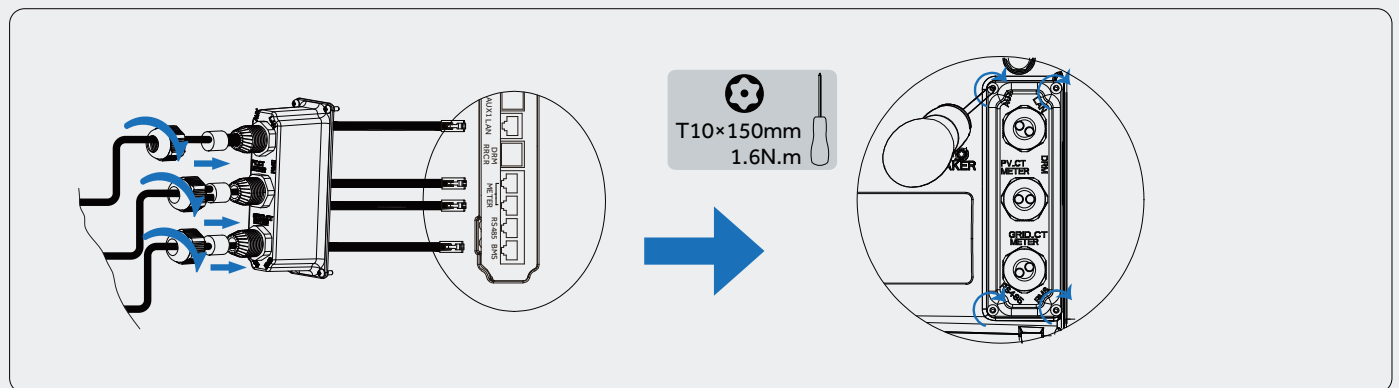


(6) Communicate connection between these inverters, refer to the relative "System Wiring Diagram" of parallel installation.

Wire the communication connection of inverters operating in parallel.



(7) Please refer to the "Inverter Quick Installation Guide" to mount the cable cover.



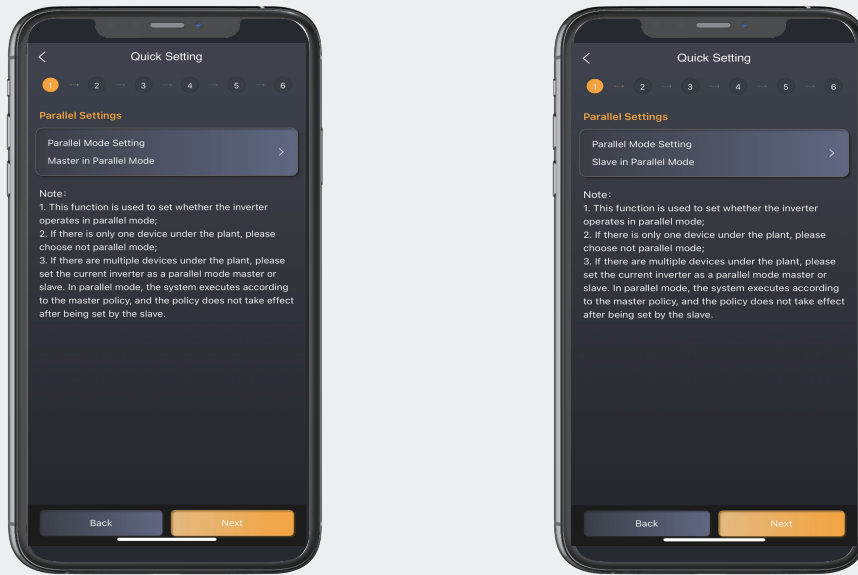
## 7.4. Master/Slave Configuration

### Note:

① After the system is installed according to the installation guide, the installer and the end user need download the Haier Energy app, register an account according to "QUICK START GUIDE OF HAIER ENERGY APP". Then login in the app;

② Firstly disconnect the PV and all battery pack breakers to ensure that the inverter is only connected to the grid. Afterwards, build a plant, do wifi configuration for the master device. In the "parallel Settings" setup page, select "Master in Parallel Mode" and do other quick settings according to the prompt;

③ Under the same power station, do wifi Configuration for the slave device. In the "parallel Settings" setup, select the "Slave in Parallel Mode" and do other quick settings according to the prompt. After setting up the master and slave devices, the slave device will operate according to the mode set by the master;



④ After setting up the master and slave devices, close the circuit breakers of PV and batteries, and the system starts to operate normally;

⑤ Deliver the plant to the end user.

## 8 MAINTENANCE AND TROUBLESHOOTING

If you require after-sales support, please contact our dedicated service team at [service.haier-energy@haier-europe.com](mailto:service.haier-energy@haier-europe.com). You can also visit the **Haier Energy** website to submit a support ticket through the dedicated service portal.

### 8.1. Routine maintenance

- Normally, the energy storage system need no maintenance or calibration.
- However, in order to maintain the accuracy of the SOC, it is recommended to perform a full charge calibration for SOC (charging battery until the charging power is 0) on the battery at regular intervals (such as two weeks).
- Disconnect the system from all power sources before cleaning. Clean the housing, cover and display with a soft cloth.
- To ensure that the energy storage system can operate properly in the long term, you are advised to perform routine maintenance on it as described in this chapter.

### Maintenance checklist

Check Item	Acceptance Criteria	Maintenance Interval
Product cleanliness	The heatsink at the back of the product are free from obstacles or dust.	Once every 6 to 12 months
Product visible damage	The product are not damaged or deformed.	Once every 6 months
Product running status	1. The product operate with no abnormal sound. 2. All parameters of the product are correctly set. Perform this check when the product is running.	Once every 6 months
Electrical connections	1. Cables are securely connected. 2. Cables are intact, and in particular, the cable jackets touching the metallic surface are not scratched. 3. Unused cable glands are blocked by rubber sealing which are secured by pressure caps.	Perform the first maintenance 6 months after the initial commissioning. From then on, perform the maintenance once every 6 to 12 months.

**CAUTION**

Risk of burns due to hot heatsink and housing

The heatsink and housing of the inverter can get hot during operation.

- During operation, do not touch any parts other than the cover.
- Wait approx. 30 minutes before cleaning until the heatsink has cooled down.

## 8.2. Troubleshooting

### 8.2.1. Inverter error troubleshooting

Error description	Troubleshooting
Insulation_fault	<ol style="list-style-type: none"> <li>1. Check whether PV cable connection is reliable.</li> <li>2. Check whether PV cable is damaged.</li> </ol>
GFCI_fault	Restart system and check whether the fault is existing.
Leakage current test failure	
BAT_OVP	Check whether the actual battery voltage exceeds the battery charging cut-off voltage by more than 20V.
BAT_UVP	Check whether the actual battery voltage is lower than the battery discharge cut-off voltage.
Output_short_circuit	<ol style="list-style-type: none"> <li>1. Use a multimeter to test the impedance of the off grid output. If it is small, check whether the wiring is correct.</li> <li>2. Restart system, if error still exists, please call the service center.</li> </ol>
Output_overload	<ol style="list-style-type: none"> <li>1. Check whether the load exceeds the rated power.</li> <li>2. Restart system, if error still exists, please call the service center.</li> </ol>
Grid Load Reverse	<ol style="list-style-type: none"> <li>1. Check whether cables are reversed (whether Grid cable is connected to the Backup side).</li> <li>2. Restart system, if error still exists, please call the service center.</li> </ol>
LPE Reverse	<ol style="list-style-type: none"> <li>1. Check whether the L cable is connected to the Grounding.</li> <li>2. Restart system, if error still exists, please call the service center.</li> </ol>
DCI	Restart system to see if the fault still exists. If still exists, please call the service center.
SW Consistency	Perform the remote upgrading again and ensure that the version of CPU1 and CPU2 upgrade files is the same.
N-N Reverse Lost	<ol style="list-style-type: none"> <li>1. The system installed in Australia needs to check whether N-N is short-circuited.</li> <li>2. If not in Australia, set the safety standard correctly.</li> <li>3. Restart system, if error still exists, please call the service center.</li> </ol>
inv_line_short	<ol style="list-style-type: none"> <li>1. Check whether the load is short-circuited connected.</li> <li>2. Restart system, if error still exists, please call the service center.</li> </ol>
Bat over-voltage alarm	Check that the actual battery voltage is 10V higher than the battery charging cut off voltage.

Error description	Troubleshooting
Bat under-voltage alarm	Check that the actual battery voltage is 10V higher than the battery discharging cut-off voltage.
output_overload_alarm	Check whether the load exceeds 0.95 of the rated power.
Bat Reverse	Check whether battery positive and negative connections are reversed.
Grid Loss	<ol style="list-style-type: none"> <li>1. Wait for the Grid power return to normal.</li> <li>2. If Grid is normal, check the connections to the grid terminal.</li> <li>3. Restart system, if error still exists, please call the service center.</li> </ol>
Grid Volt	
Grid Freq	
10min Grid Volt	
PE Loss	<ol style="list-style-type: none"> <li>1. Check whether the grounding cable is disconnected.</li> <li>2. Restart system(This warning does not affect system running).</li> </ol>
LN Reverse	<ol style="list-style-type: none"> <li>1. Check whether the Grid L/N cable are reversed connected.</li> <li>2. Restart system, if error still exists, please call the service center.</li> </ol>
Low Temperature	<ol style="list-style-type: none"> <li>1. Wait for the temperature to return to normal (above -20°C).</li> <li>2. If temperature is normal, restart system, if error still exists, please call the service center.</li> </ol>
GFCI	<ol style="list-style-type: none"> <li>1. Check whether there is leakage current in system cables.</li> <li>2. If no abnormal connection, but still error frequently, please call the service center.</li> </ol>
Island	Normal protection mode, no action is required.
Fan Abnormal	Restart system, if error still exists, please call the service center.
N Loss	<ol style="list-style-type: none"> <li>1. Check whether the Grid N cable is disconnected.</li> <li>2. Restart system, if error still exists, please call the service center.</li> </ol>
Machine Type	Restart system, if error still exists, please call the service center.
Inv Volt Low	<ol style="list-style-type: none"> <li>1. Check whether the Backup load power exceeds the inverter rated power.</li> <li>2. Restart system, if error still exists, please call the service center.</li> </ol>
Bus Under	<ol style="list-style-type: none"> <li>1. Wait for the Grid power restore to normal.</li> <li>2. Charge the battery and wait until the battery restore.</li> </ol>
Reduce PBy Over Freq	Wait for the Grid power restore to normal.
Reduce PBy Over Volt	Wait for the Grid power restore to normal.
Reduce PBy Over Temp	Wait for the inverter temperature returns to normal.
HVRT	Wait for the Grid power restore to normal.
LVRT	Wait for the Grid power restore to normal.

Error description	Troubleshooting
Bat Open	Check the battery circuit breaker and the battery circuit breaker on the inverter are on.
EMS CAN ALARM	Restart system, if error still exists, please call the service center.
EMS SCI ALARM	Restart system, if error still exists, please call the service center.
PV Over Volt	<ol style="list-style-type: none"> <li>1. Check whether the configured voltage of the PV panel is greater than 950V(Use a multimeter to measure the PV terminal voltage).</li> <li>2. Restart system, if error still exists, please call the service center.</li> </ol>
N-N Reverse Lost	<ol style="list-style-type: none"> <li>1. The system installed in Australia needs to check whether N-N is short-circuited.</li> <li>2. If not in Australia, set the safety standard correctly.</li> <li>3. Restart system, if error still exists, please call the service center.</li> </ol>
bat_num_abnormal	Restart system, if error still exists, please call the service center.
parallel_host_lost	Host inverter communication lost in parallel system.
parallel_form_lost	Slave inverter communication lost in parallel system.
parallel_ems_ver_different	Inverter EMS software version mismatch in parallel system.
parallel_dsp_ver_different	Inverter DSP software version mismatch in parallel system.
parallel_inv_sub_different	Inverter model mismatch in parallel system.

### 8.2.2. Battery protection troubleshooting

LED Indicator	Description	Troubleshooting
Red LED turn on	Temperature difference	Wait for automatic recovery. If the problem is not be solved yet, please call the service center.
	High Temperature	Stop discharging and charging until this code is eliminated and wait for the temperature to drop.
	Low-temperature discharge	Stop discharging until this code is eliminated and wait for the temperature to rise.
	Over-current charge	Wait for automatic recovery. If the problem is not be solved yet, please call the service center.
	Over-current discharge	
	Cell overvoltage	
	Cell undervoltage	Stop discharging and call the service immediately.
	Low-temperature charge	Stop discharging until this code is eliminated and wait for the temperature to rise.

### 8.2.3. Battery error troubleshooting

Description	Troubleshooting
Hardware error	Wait for automatic recovery. If the problem is not be solved yet, please call the service center.
Circuit breaker open	Switch on circuit breaker after po-wering off the battery.
LMU disconnect(slave)	Reconnect the BMS communication cable.
SN missing	Call for service.
LMU Disconnect(master)	Reconnect the BMS communication cable.
Software version inconsistent	Call for service.
Multi master	Restart all batteries.
MOS over temperature	Power off the battery and power on the battery after 30minutes.
Insulation fault	Restart battery and in case the problem is not resolved, call for service.
Total voltage fault	Restart battery and in case the problem is not resolved, call for service.

### 9.1. Inverter storage

**The following requirements should be met if the inverter is not put into use directly:**

1. Do not unpack the inverter.
2. Keep the storage temperature at -40~60°C and the humidity at 5%~95% RH.
3. The inverter should be stored in a clean and dry place and be protected from dust and water vapor corrosion.
4. A maximum of six inverters can be stacked. To avoid personal injury or device damage, stack inverters with caution to prevent them from falling over.
5. During the storage period, check the inverter periodically. Replace the packing materials which are damaged by insects or rodents in a timely manner.
6. If the inverters have been stored for more than two years, it must be checked and tested by professionals before being put into use.

### 9.2. Battery storage

**The following requirements should be met if the battery is not put into use directly:**

1. Place batteries according to the signs on the packing case during storage. Do not put batteries upside down or sidelong.
2. Stack battery packing cases by complying with the stacking requirements on the external package.
3. Store the battery pack out of reach of children and animals.
4. Store the battery pack where it should be minimal dust and dirt in the area.
5. Handle batteries with caution to avoid damage.
6. The storage environment requirements are as follows:
  - a. Ambient temperature: -10~55°C, recommended storage temperature: 15~30°C.
  - b. Relative humidity: 15%~ 85%.
  - c. Place batteries in a dry and clean place with proper ventilation.
  - d. Place batteries in a place that is away from corrosive organic solvents and gases.
  - e. Keep batteries away from direct sunlight.
  - f. Keep batteries at least 2m away from heat sources.
7. The batteries in storage must be disconnected from external devices. The indicators (if any) on the batteries should be off.
8. Batteries should be delivered based on the "first in, first out" rule.
9. The warehouse keeper should collect battery storage information every month and periodically report the battery inventory information to the planning department. The batteries that have been stored for nearly 6 months should be recharged timely.
10. If a lithium battery is stored for a long time, capacity loss may occur. After a lithium battery is stored for 12 months in the recommended storage temperature, the irreversible capacity loss rate is 3%~10%. It is recommended that batteries not be stored for a long period. If the batteries need to be stored for more than 6 months, it is recommended to recharge the batteries to 65~75% of the SOC.

### 9.3. Transport

**During transportation, please follow these guidelines:**

1. Priority to use the original packaging for transportation. If the original packaging is not available, put the product inside a suitable cardboard box and seal it properly.
2. Handle with care. choose the corresponding handling method according to the weight, and pay attention to safety.
3. During transportation, please keep the packaging away from dangerous sources and take waterproof measures.
4. Please fix the packaging during transportation to prevent falling or mechanical impact.

## 10 SPECIFICATION

### 10.1. Inverter Datasheet

Item	HAH3P-4KB1/HU9	HAH3P-5KB1/HU9	HAH3P-6KB1/HU9	HAH3P-8KB1/HU9	HAH3P-10KB1/HU9	HAH3P-12KB1/HU9	HAH3P-15KB1/HU9
<b>Input DC (PV side)</b>							
Recommended Max. PV power	8000W	10000W	12000W	16000W	20000W	22500W	22500W
Max.Power per MPPT	7000W	7000W	7000W	7000W	7000W	8000W	8000W
Max. PV Input Voltage	1100 V					1000V	
Rated Voltage	720 V						
Start-up Voltage	85 V						
Mppt Voltage Range	140 ~ 950 V						
Max. Input Current Per MPPT	16 A / 16 A / 16 A						
Max. Short Circuit Current Per MPPT	24 A / 24 A / 24 A						
MPPT Number	3						
Max Input Strings Number Per MPPT	1						

<b>Battery</b>							
Battery Type	LFP (LiFePO <sub>4</sub> )						
Battery Voltage Range	90 ~ 700 V						
Maximum Charging Power	4 kW	5 kW	6 kW	8 kW	10 kW	12 kW	15 kW
Maximum Charge/ discharge current	50 A / 50 A						
Communication	CAN						
<b>Output AC (Back-up)</b>							
Rated Output Power	4 kW	5 kW	6 kW	8 kW	10 kW	12 kW	15 kW
Max Apparent Output Power	4 kVA	5 kVA	6 kVA	8 kVA	10 kVA	12 kVA	15 kVA
Back-up Switch Time	<20 ms						
Rated Output Voltage	3L/N/PE, 380/400V						
Rated Frequency	50/60 Hz						
Rated Output Current	5.8 A	7.2 A	8.7 A	11.6 A	14.5 A	17.4 A	21.7 A
THDV(@linear load)	< 3%						
<b>Input AC (Grid side)</b>							
Rated Input Power	8 kW	10 kW	12 kW	16 kW	20 kW	20 kW	20 kW
Max. Input Current	11.6 A	14.5 A	17.4 A	23.2 A	29 A	29 A	29 A

<b>Output AC(Grid side)</b>							
Rated output power	4 kW	5 kW	6 kW	8 kW	10 kW	12 kW	15 kW
Max. Apparent Output Power	4.4 kVA	5.5 kVA	6.6 kVA	8.8 kVA	11 kVA	13.2 kVA	15.75 kVA
Operation Phase	Three phase						
Rated Grid Voltage	3L/N/PE, 380/400V						
Grid Voltage Range	150 ~ 288 V						
Rated Grid Frequency	50 / 60 Hz						
Rating Grid Output Current	5.8 A	7.2 A	8.7 A	11.6 A	14.5 A	17.4 A	21.7 A
Power Factor	>0.99 (0.8 leading to 0.8 lagging)						
THDI	< 3%						
Protection Class	I						
Pollution Degree	II						
Overvoltage Category	III						
<b>Efficiency</b>							
Max Efficiency	>98%	>98 %	>98.2 %	>98.4%	>98 %	>98.4 %	>98.4 %
EU Efficiency	>97.5%	>97.5%	>97.7%	>97.9%	>97.9%	>97.9%	>98%
<b>Protection</b>							
Anti-Islanding Protection	Integrated						
Insulation Resistor Detection	Integrated						
Residual Current Monitoring Unit	Integrated						

<b>Protection</b>	
Output Over Current Protection	Integrated
Output Short Protection	Integrated
Output Overvoltage Protection	Integrated
DC Reverse Polarity Protection	Integrated
PV Overvoltage Protection	Integrated
PV Switch	Integrated
Battery Breaker	Integrated
<b>General Data</b>	
Dimensions (W*H*D)	620*485*206mm
Weight	29 kg
Topology	Transformerless
Operation Temperature Range	-25 ~ +60 °C
Ingress Protection	IP65
Noise Emission	<30 dB/<45 dB(12kw&15kw)
Cooling Concept	Natural convection/Smart FAN(12kw&15kw)
Max. Operation Altitude	3000 m
Grid Connection Standard	G98, VDE-AR-N 4105, EN 50549-1, VDE 0126, RD 1699, CEI 0-21, C10/11, NRS 097-2-1, TOR Erzeuger, MEA, PEA, AS/NZS 4777.2
Safety/ EMC Standard	IEC62109-1/-2 IEC/EN61000-6-1/2/3/4

Features	
PV Connection	Vaconn D4 connectors
Grid Connection	Plug in connector
Back-up Connection	Plug in connector
BAT Connection	Amphenol H4 connectors
Communication	LAN, Wi-Fi
Warranty	10 years standard

## 10.2. Battery Datasheet

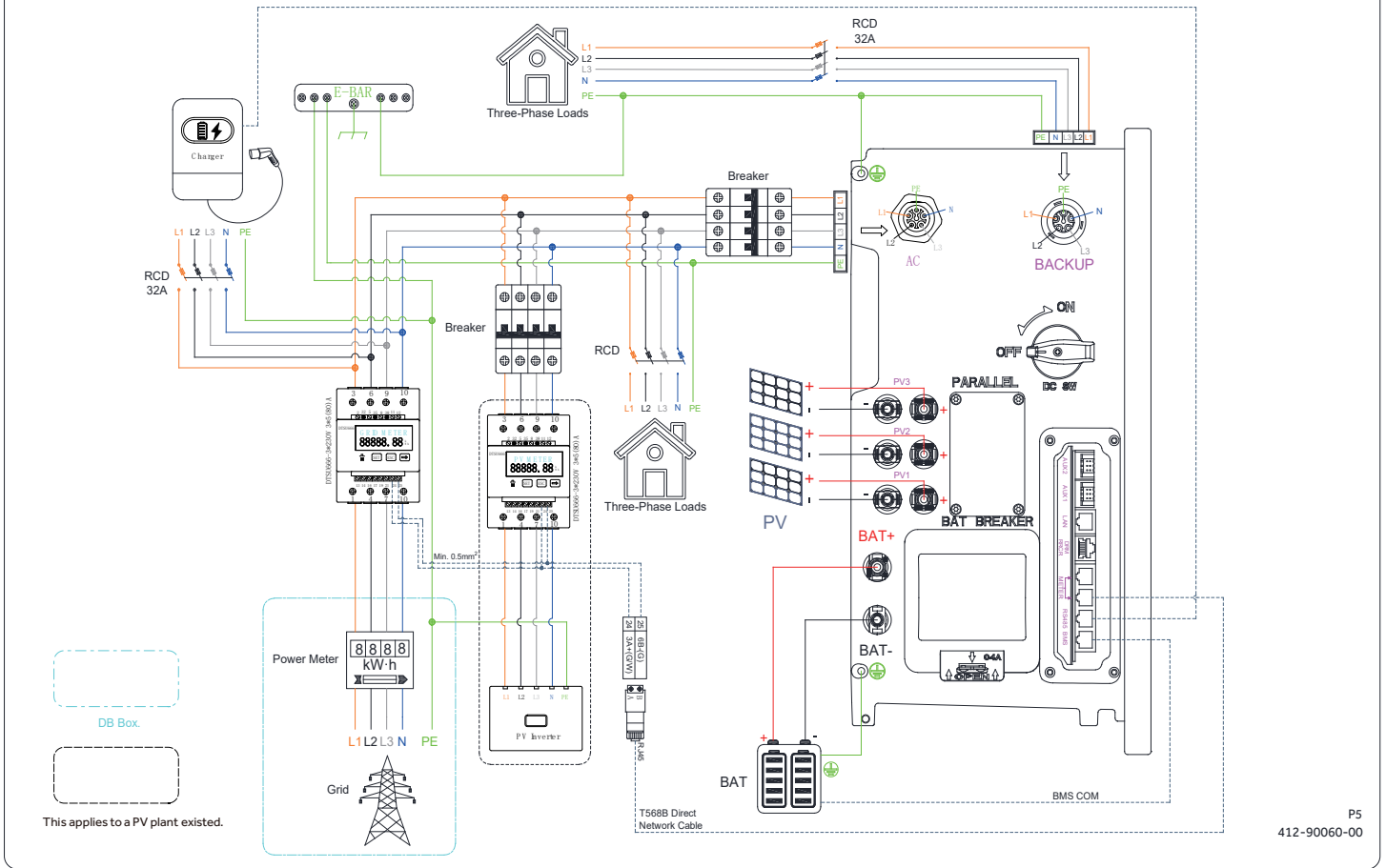
Model	HBHS-4.8KB1/LPP
Battery Type	LFP (LiFePO4)
Weight	53 kg
Dimension (W*D*H)	620* 430 * 206mm
Ingress Protection	IP65
Energy Capacity	4.8 kWh
Usable Capacity	4.56 kWh
DoD	95%
Nominal Voltage	96 V
Operating Voltage Range	90 ~ 108 V
Max. Charging / Discharging Current *	50 A/50 A
Operating Temperature Range	Charge: 0<T<50 °C / Discharge: -10<T<50 °C
Monitoring Parameters	System voltage, current, cell voltage, cell temperature, PCBA temperature
BMS Communication	CAN
System	
Safety	IEC62619/IEC62040
Warranty	10 Years
Transportation	UN38.3

\* Max. charge/discharge current derating will occur related to temperature and SOC.

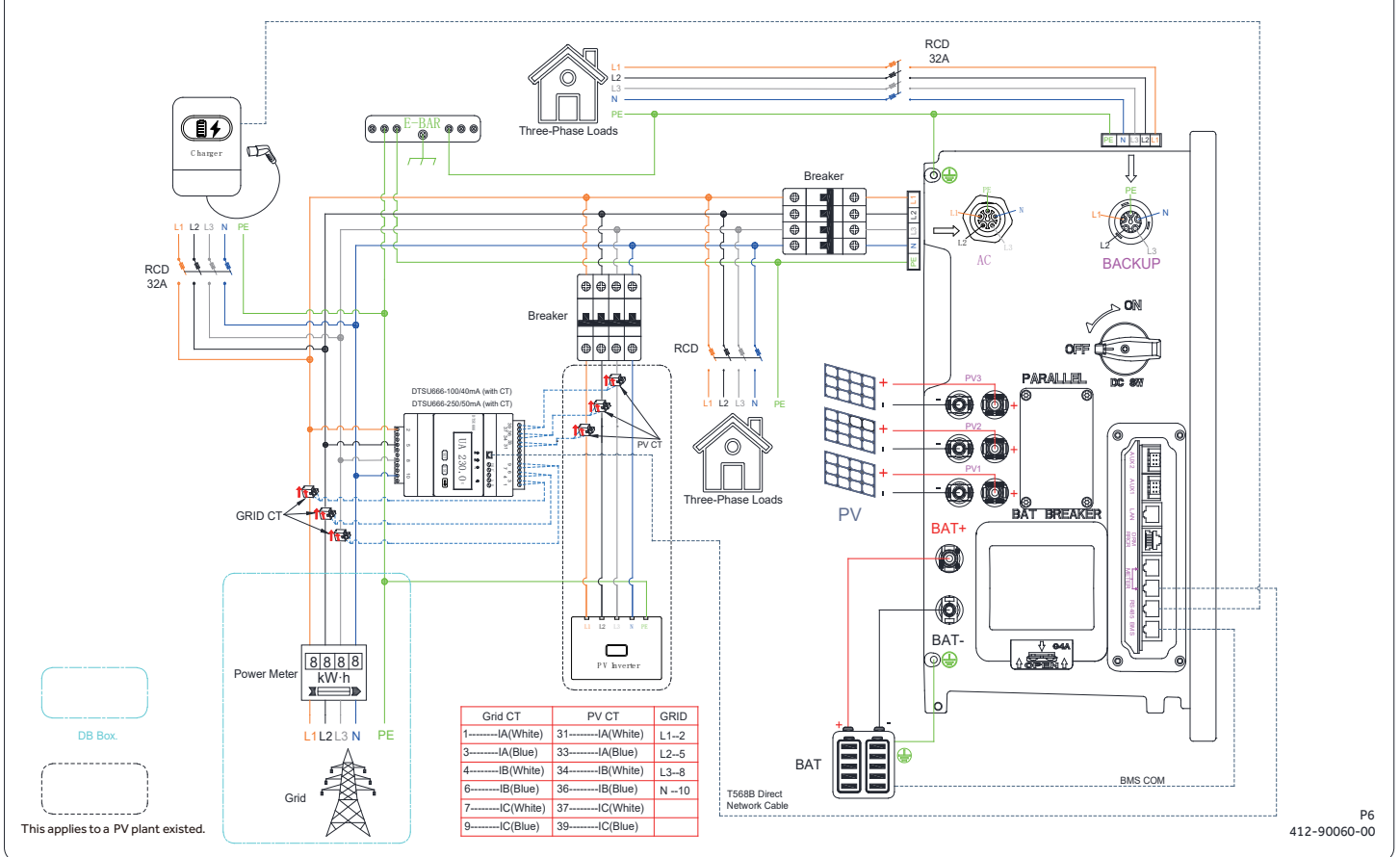
# Appendix 1: System overview

Please see the following wiring diagram of the system principle, divided into European, Australian and other regions.

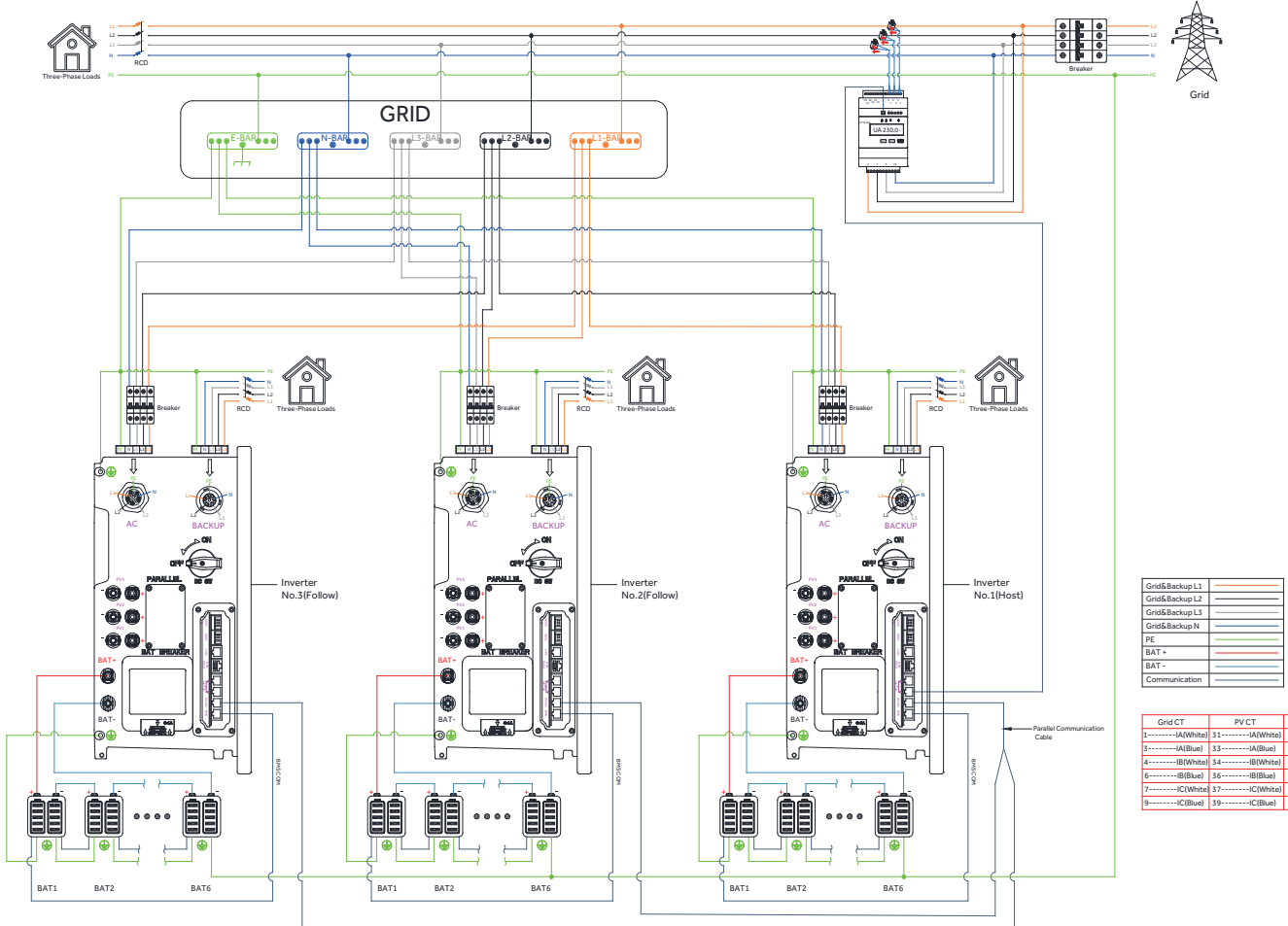
## 1. Three-Phase Inverter System Wiring Diagram with Electricity Meter DTSU666 (Without CT)(EU)



## 2. Three-Phase Inverter System Wiring Diagram with Electricity Meter DTSU666 (With CT)(EU)



## Three-Phase Inverter Parallel System Wiring Diagram(EU)



P 1

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- This manual may be updated according to user's or customer's feedback. The information in this manual is subject to change without notice. Please check our website at <https://www.haier-energy.com> for latest version.
- Please adhere to the actual products in case of any discrepancies in this user manual. If you encounter any problem on the inverter, please find out the inverter S/N and contact us, we will try to respond to your question ASAP.



小程序二维码

# 青岛海尔新能源科技有限公司

Qingdao Haier Energy Technology Co., Ltd.

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