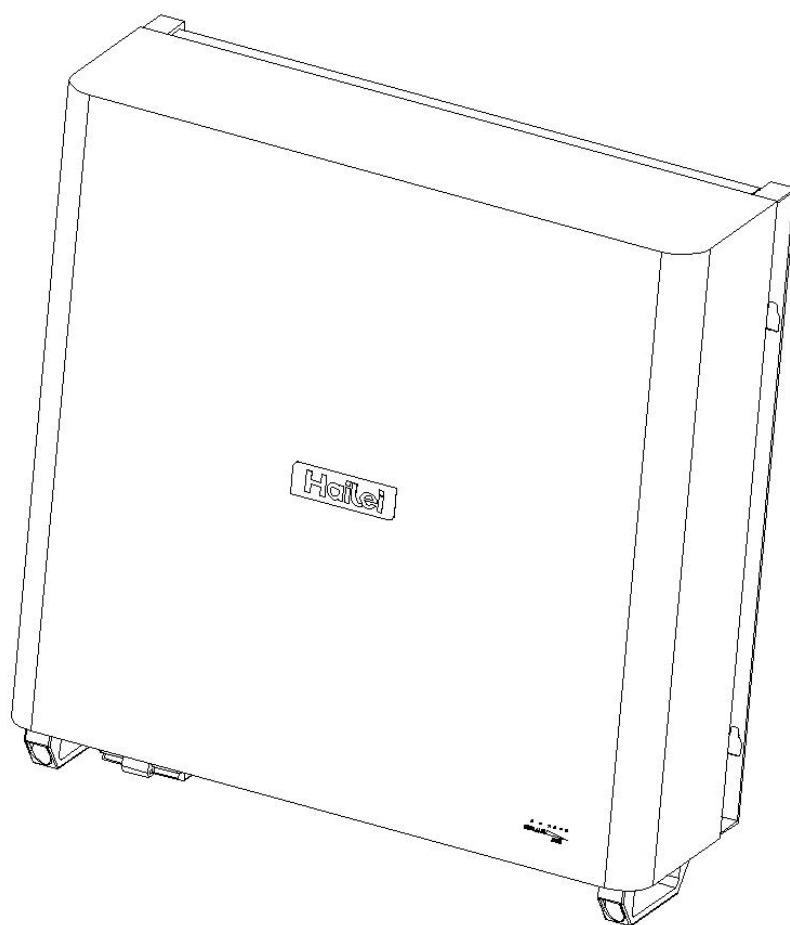


## USER MANUAL

Wall mounted LiFePO4 battery

WB-51100



**Notify:**

The products, services or functions purchased described In the contract between Hailei New Energy And The customer may not fall within the scope of the supplying or of the use, in All or in part, as described in in this document.

Self not otherwise agreed In the this agreement, Hailei New Energy will not release any declaration or guarantee.

The this document will not be updated regularly due to Of update minds from the version of the product or For others reasons. Self not otherwise agreed, the present document And understood Alone as guide, but all the statements, the information And the recommendations contained In the present document they do not constitute one warranty .

**Limitation of Liability:**

THE equipment manufacturers are not directly responsible for the damage to the plant from the battery or For property losses caused by following circumstances

- > Without the authorization of equipment manufacturer, the system of battery is state modified or replaced with components.

- > Change or Cancel The number Of series of the system Of batteries .

- > the design and installation of systems consisting of other equipment Not I am compliant to standard, at safety regulations and more others requirements relevant.

- > Damage to the equipment caused by failure to observe the prescriptions of manual of the system Of diet.

- > Damage to the equipment caused by use improper or from use of the system Of batteries.

- > Equipment damage caused by insufficient ventilation of the system Of diet.

- > The procedures system maintenance battery they don't follow the standards acceptable.

- > Damage to equipment caused by force greater, which earthquakes, storms, lightning, surges, fires, etc.

- > Damage at equipment caused from factors external .

## Overview

This document describes the introduction of the product, the introduction of the components, the system maintenance and the concerning technical battery indicators.

## This document And intended to:

Alone for the professionals who are familiar with the normative, the standard And the systems electrical local, which have received professional training And That they know the knowledge of this product.electrical systems, which they have received a training professional And that are familiar with the relevant knowledge to This product.

## Symbol Description

The symbols can appear in this document and represent the following meanings.

| Symbol                                                                              | Description                                                                                                                                  |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|    | Attention!<br>the failure to observe the signs Of warning present in This manual can provoke injuries personal.                              |
|   | It will be generated during the operation of the equipment high voltage electricity; avoid touching during The operation.                    |
|  | Equipment must be placed In the correct place And recycled in compliance with environmental regulations locals .                             |
|  | The equipment Not can be treated as disposal Of waste .<br>dispose of the equipment in accordance with the laws And the regulations locals . |
|  | Certification mark the IS                                                                                                                    |
|  | Sign of grounding of protection , used to point out the connection position connection position of the cable Of grounding of protection .    |
|  | Yes please do reference to instructions for use.                                                                                             |

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## Instructions Of safety



### DANGER

- ◆ The battery will generate high voltage during operation. Before putting in function the equipment of the system, turn off the power to avoid danger and scrupulously follow all precautions and signs safety features present on the equipment and reported in this manual.
- ◆ Only professional personnel can operate the battery system. Professional staff needs to know the regulations, standards and electrical systems locals, have received one professional training And have familiarity with the knowledge relevant Of This product .
- ◆ If the battery or control box has defects obvious, damage or I am missing, stop using
- ◆ modify any part of the battery or housing check without the authorization
- ◆ If electrolyte leaks, do not contact it the electrolyte leaked or with volatile gases And to contact immediately The center Of assistance after - sales For assistance official of the producer of the equipment .



### ATTENTION

- > Make sure the system of batteries Not come damaged during The transport or And the storage.
- > When you remove it the battery, lend Attention And consider its weight.
- > You must use i gloves when handled the batteries.
- > Do not pull, drag or touch the device and not insert non-objects related in Nowhere of the module battery .

## Abuse Of operation

The following operating modes must to be avoid.

| Abuse Of operation   | Protection Description                                                                                                                                                                                                                                                                                          |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| connection reverse   | Self the cables Of diet from the battery are connected in way reverse, the battery no yes start And remains in mode of hibernation. If yes presses The button MANUAL ON/OFF the terminal of activation to activate the battery , will be reported an alarm of protection e Yes will light up the ALM indicator. |
| Short circuit        | Self the battery circuit is short-circuited, the protection of battery intervenes And the battery Not can be loaded i n short circuit for a long time can cause card failure, resulting in risks of fire.                                                                                                       |
| Connection in series | The batteries Not they can be linked in series, the protection will be triggered . Operations outside the range Of protection will behave The damage to the card e the damage from the protection from the battery, with consequent risks Of fire.                                                              |

## 1 Introduction

### 1.1 Parameters of battery

The batteries can be connected in parallel to extend capacity (kWh).

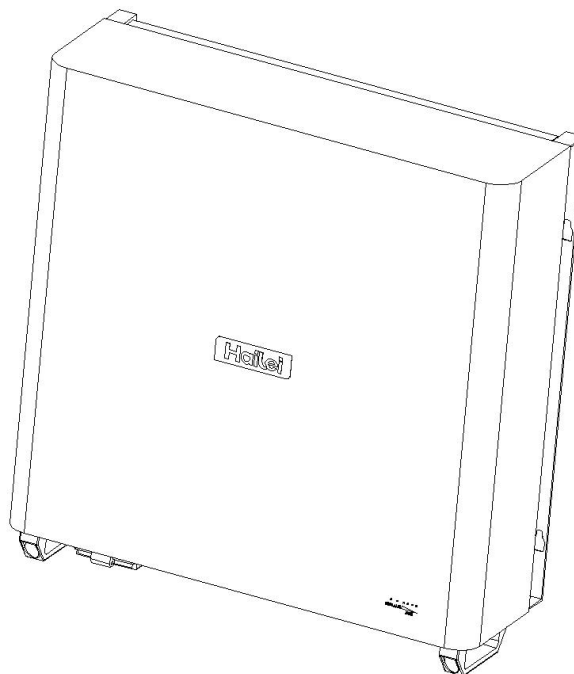
For example, one battery: 5kWh, 2 batteries : 10kWh, 8 batteries:40kWh.

**Parameters of battery**

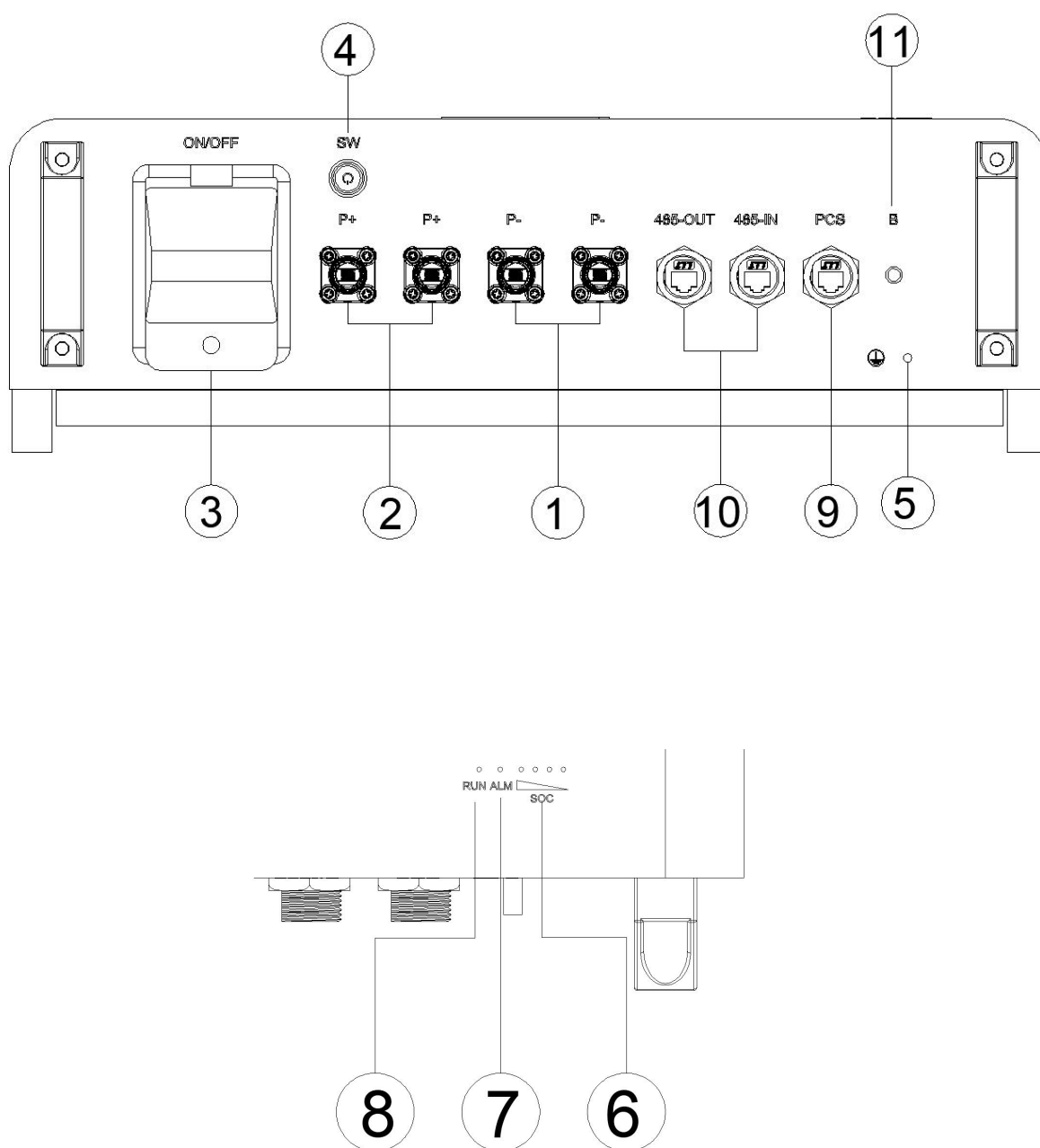
| Item                        | Specifications               |
|-----------------------------|------------------------------|
| Cell type                   | LFP                          |
| Nominal voltage             | 51.2V                        |
| Energy                      | 5kWh                         |
| Dimension(W*H*T)(mm*mm*mm)  | 495 *480 *146.2              |
| Voltage range               | 44.8~57.6V                   |
| Max Power in/output         | 5000W 25°C                   |
| Charging current maximum    | 100A                         |
| Discharge current maximum   | 100A                         |
| Weight (kg)                 | 55                           |
| Cycle                       | 6000 cycles (80% DOD @25 °C) |
| Number maximum of parallels | 8pcs suggested               |
| Cooling method              | Natural cooling              |
| Temperature of Work         | Charge : 0~45 °C             |
|                             | Discharge : -20~60 °C        |

### 1.2 Appearance

#### 1.2.1 The appearance



## 1.2.2 Ports



## Definition of ports

| No. | Symbol                                                                            | Item                 | Description                                                                                                  |
|-----|-----------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|
| 1   | P-                                                                                | Terminal negative    | Connect to the inverter or for battery parallel connection                                                   |
| 2   | P+                                                                                | Terminal positive    |                                                                                                              |
| 3   | ON/OFF                                                                            | Breaker              | Prevention of short circuits and overloads                                                                   |
| 4   | SW                                                                                | Switch               | Switch on /off the battery                                                                                   |
| 5   |  | GND                  | Sign of grounding of protection, used For indicate the wire connection position Of grounding cable to Earth. |
| 6   | SOC                                                                               | SOC indicator        | State of the capacity of the battery                                                                         |
| 7   | ALM                                                                               | Indicator of alarm   | Alarm status of the battery                                                                                  |
| 8   | RUN                                                                               | Indicator of working | State of charge, discharged                                                                                  |
| 9   | PCS                                                                               | Communication port   | Communication port with inverter(CAN and RS485)                                                              |
| 10  | 485in/OUT                                                                         | Communication port   | Communication port between the battery pack                                                                  |
| 11  | B                                                                                 | Bluetooth Antenna    | Can monitoring the battery and select inverter protocol through bluetooth APP                                |

## LED instructions

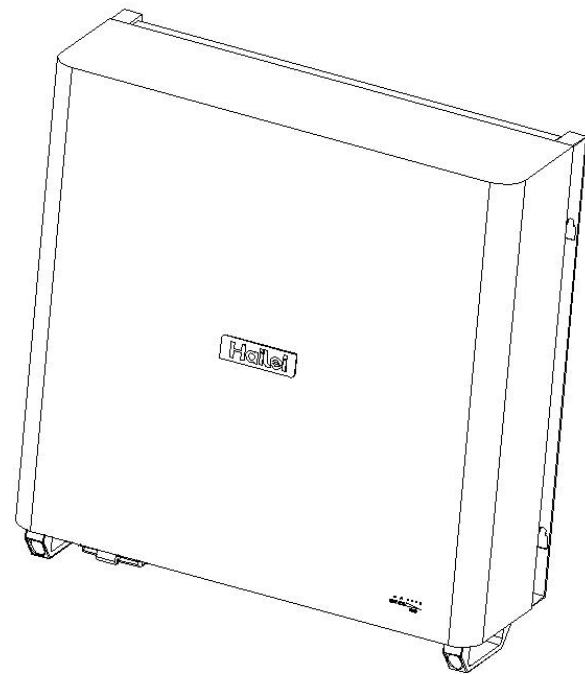
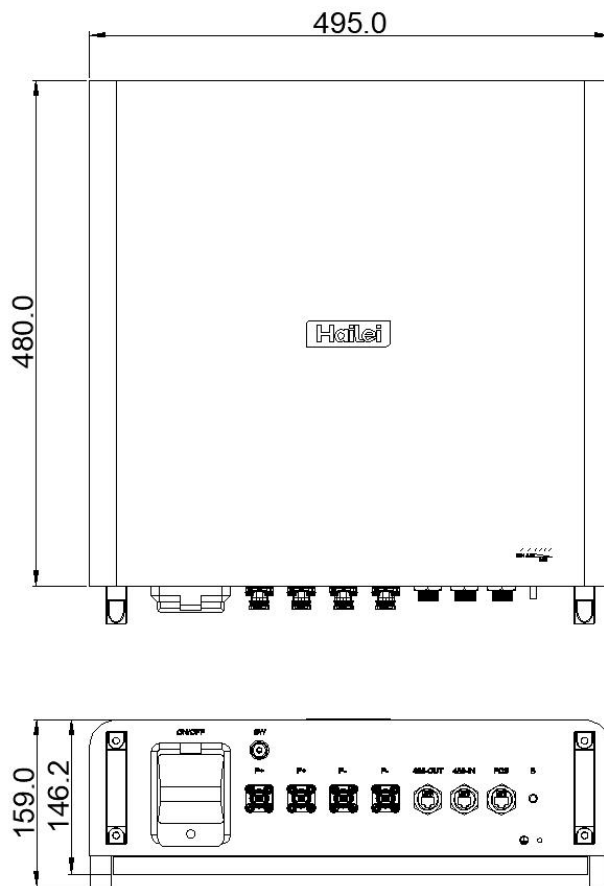


Table 1-3 LED(SOC) indicators

| Status     | Charge                                                                                 |                                                                                        |                                                                                        |                                                                                        | Discharge                                                                              |                                                                                          |                                                                                          |                                                                                          |
|------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| SOC LED    | L4  | L3  | L2  | L1  | L4  | L3  | L2  | L1  |
| 0-25% SOC  | Flash2                                                                                 |     |     |     |     |     |     |     |
| 25-50% SOC |     | Flash2                                                                                 |     |     |     |     |     |     |
| 50-75% SOC |     |     | Flash2                                                                                 |     |     |     |     |     |
| ≥ 75% SOC  |     |     |     | Flash2                                                                                 |     |     |     |     |

## 1.3 Dimensions

Units:mm



## 2 Installation

### 2.1 Storage environment

The device he does not come immediately installed and used, please Of to verify that the storage or storage environment satisfies the following conditions:

- > The equipment must be packed in a box Of packaging And sealed with a drying liquid placed inside of
- > If the installation it is not carried out within 3 days of opening Yes recommends Of put away L 'equipment in the box packaging.
- > Storage SOC: 25%~50% SOC, cycles load And download I am required Everything is fine 3 months Of storage.
- > Storage temperature range: Store between temperatures -20 ~45 For Not more Of 1 month; Store at 0-35 For Not more Of 1 year.
- > Humidity : 0-95% non-condensing. The interface of the battery Not can be installed in Presence of condensates
- > Equipment must be located in a cool place, avoiding the light direct of the Sun.
- > I Equipment warehouses must be kept far away from materials flammable, explosives e corrosive.
- > The equipment they must not be exposed to the Sun.

### 2.2 Packaging

The battery packaging consists of following main materials.

| No . | category                    | Description                                           | specifications                                                                       |
|------|-----------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1    | User manual                 | Instructions and precautions for use                  |  |
| 2    | Positive cable              | Connection cable between the battery and the inverter |  |
| 3    | Negative cable              | Connection cable between the battery and the inverter |  |
| 4    | Communication cable         | Communication cable between battery and inverter      |  |
| 5    | Expanding bolt              | M6*60                                                 |  |
| 6    | Battery external components | Wall mount bracket                                    |                                                                                      |

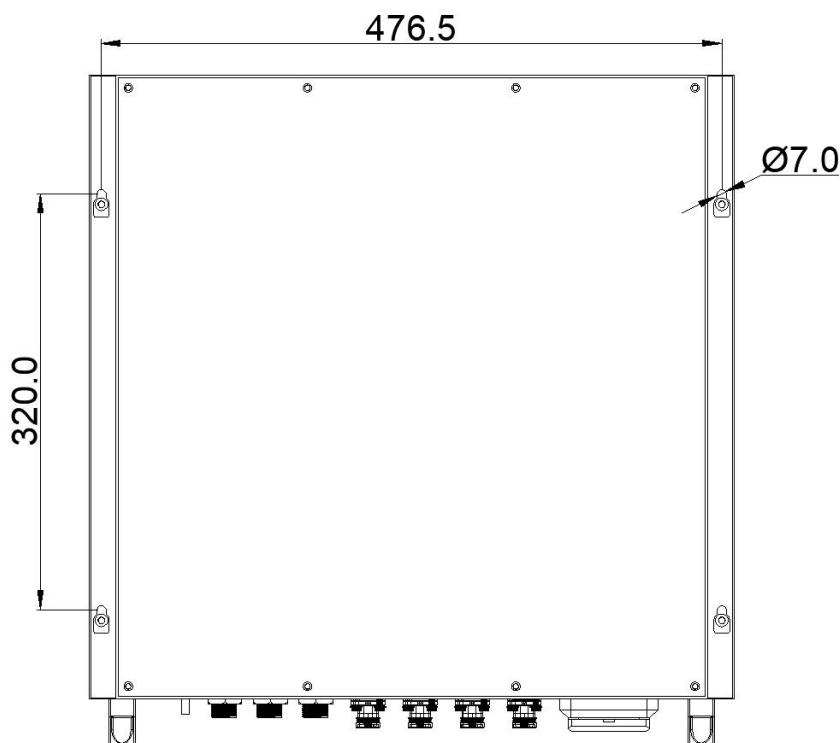
## 2.3 Installation

- . The battery system must be installed on a safe surface can support the dimensions and The weight of battery.
- . The system of batteries works al Better in an environment with temperatures included Between 20 and 40.
- . The system of battery must be installed inside of.
- . Avoid the installation in environments directly exposed to air currents.
- . To avoid install high temperature heat sources or sources to low temperature or sources high temperature or to low temperature .
- . Avoid the installation in areas with strong temperature changes.
- . Avoid the installation in strong environments interference.
- . Avoid the installation in areas where the children they can touch.
- . Avoid the installation in areas subject to water accumulation.

Use the stop Of corresponding assembly For secure the set off Of assembly battery to the installation surface .

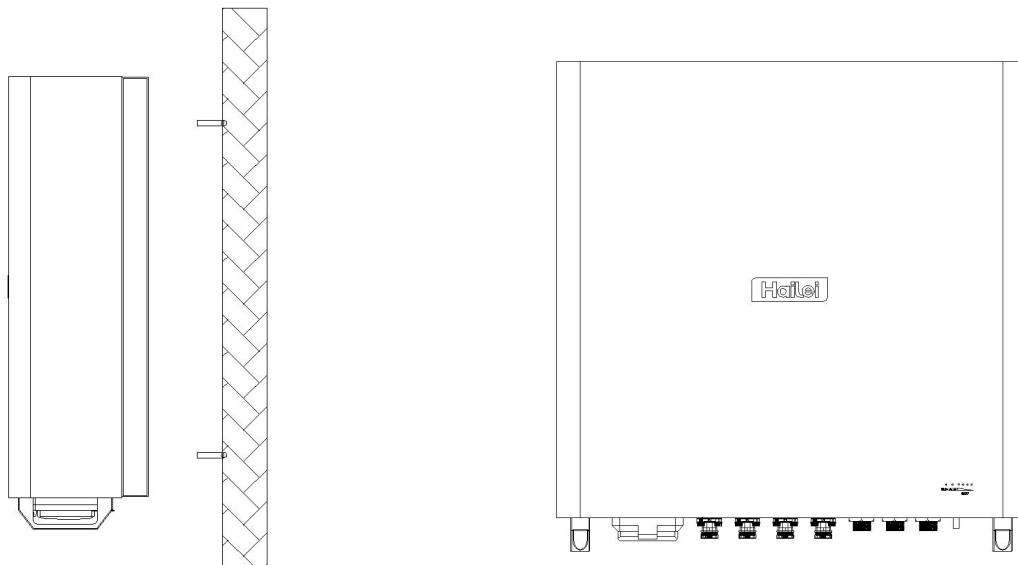
To make sure that the surface of installation is in degree hold up a weight Of 60 kg For the entire system .

### Wall mount Bracket installtion diemensions



## 2.3.1 Installation of battery

### Battery installation



Phase 1: To remove the battery from the box.

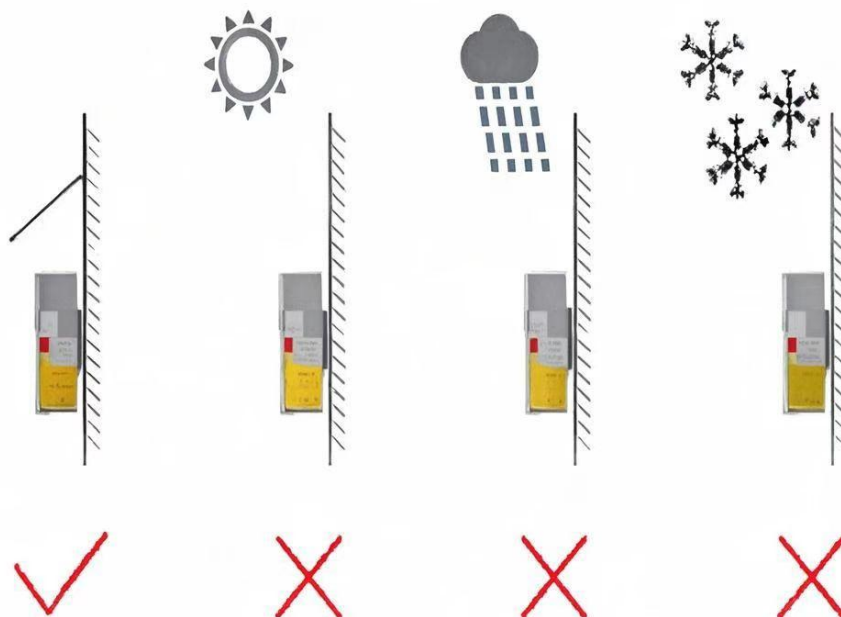
Phase 2: To remove the wall mount bracket and parts in the box.

Step 3: Mark the hole position for wall mount bracket installation.

Step 4: Drill the wall for wall mount bracket installation with a electric drill . (Diameter : 6 mm).

Step 5: Tighten the expansion screw with a value Of 10N-m to ensure That the leave assembly are installed in safe way.

Step 6: To install the battery on the holder.



## 2.3.2 Tools



Torque Screwdriver



Phillips Screwdriver



Hexagon Wrench



Phillips Screwdriver



Slotted Screwdriver



Torque Wrench



Tape Measure



Driller



Pencil or Marker

### 2.3.3 Electrical connections

Notice: electrical connections must comply with norms of installation of the installation

Country/ region. Before making the electrical connections, make sure that the "a. switch" of the battery in status "off", otherwise the high voltage of the battery of energy could be to cause an electric shock.

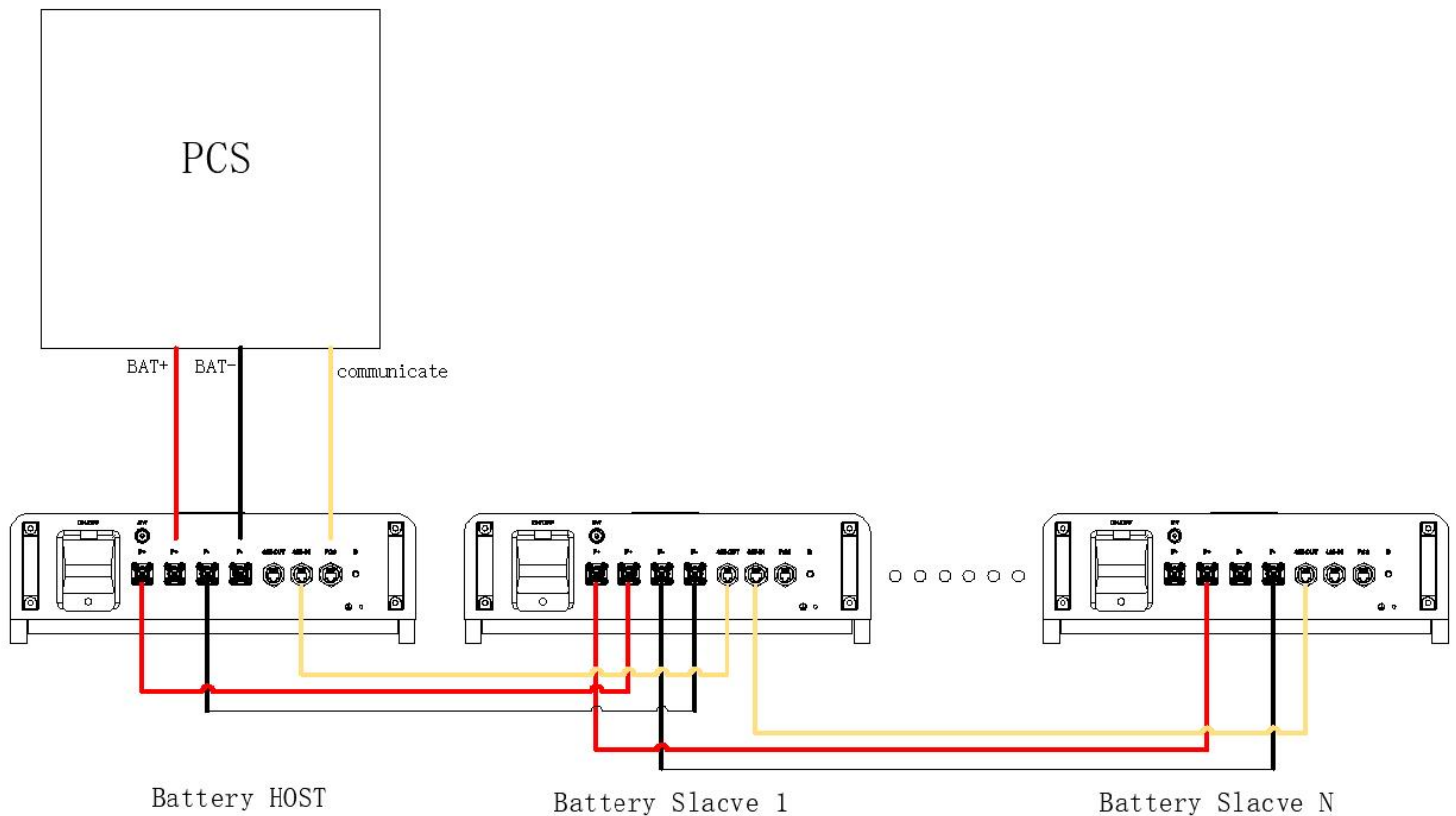
#### 2.3.3.1 connection to the inverter

Notify:

To ensure safe operation and compliance at regulations, and necessary to install necessary protection devices independent Breaker and devices of disconnection between the

Battery and inverter. Even if devices of disconnection not required in determined applications, justified protection is necessary.

Diagram electric Of connection of the system

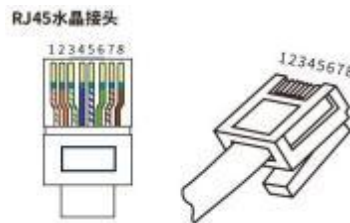


Notice: Please check the polarity of the cable it is correct And That Not come connected During The wiring , make sure that the polarity of cable of battery whether correct.

If the positive and negative poles of the battery are reversed, there is risk to harm equipment.

For other wiring of the whole system , how The wiring of the photovoltaic Do reference to the manual use of the inverter.

## Definition of door of standard network RJ45



## Definition of the wire sequence of the door of net CAN For The package battery

| PIN          | Definition |
|--------------|------------|
| 1 , 2 、 7、 8 | NC         |
| 4            | CAN-H      |
| 5            | CAN-L      |
| 3 、 6        | GND        |

## Definition of the wire sequence of the door of network485 For The package battery

| PIN   | Definition |
|-------|------------|
| 1 、 8 | RS485-B    |
| 2 、 7 | RS485-A    |
| 3 、 6 | GND        |
| 4 、 5 | NC         |

## 2.4 System operation

### 2.4.1 Inspection first

When the system a battery is turned on, make sure to check the following contents to avoid damage to system.

| # | Inspection                                                                                                                                                                                         |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | The equipment is installed securely, the position of installation it's easy from use and maintenance, installation space And adequate to ventilation And to heat dissipation and the environment . |
| 2 | The earth cable of protection , The cable Of communication And The resistor of the terminal is connected correctly And firmly .                                                                    |
| 3 | The cable connection satisfies the requirements of routing , And reasonably distributed and not And damaged .                                                                                      |

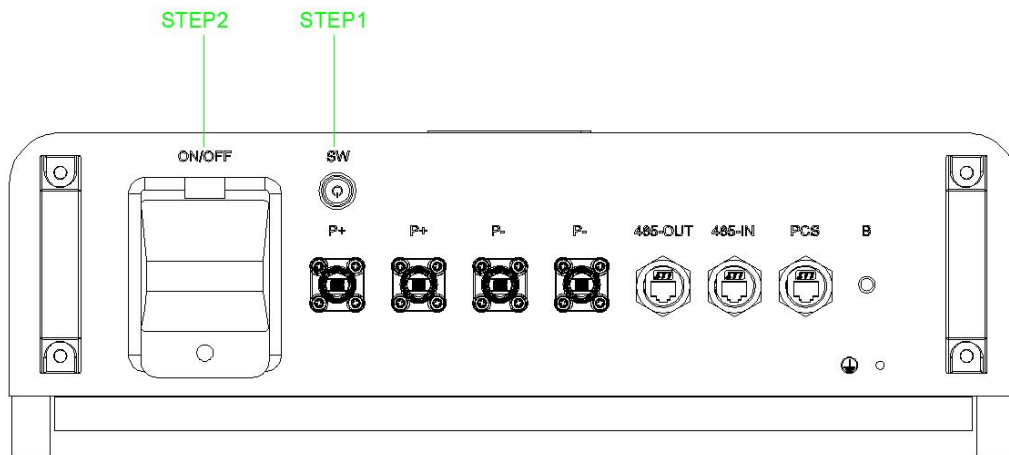
### 2.4.2 Battery powered

After checking the correctness of each circuit of the system, proceed as follows:

Step 1: Turn on the switch "SW" on the battery And the LEDs turns on.

Step2 Turn on the breaker ON/OFF of the battery.

Step 3: Open the DC circuit breaker which collected between the battery and inverter , transfer the power from the battery to the inverter and power the inverter .



### 2.4.3 Switching off the battery

When it turns off the battery system, follow the sequence of steps under reported to avoid damage the system :

Phase 1: Disconnect the circuit breaker DC between the battery and the inverter .

Step 2: Turn off the breaker on battery(ON/OFF).

Phase 3: Turn off the switch "SW" button

## 3 Transport And storage

**Hailei**

### 3.1 Transportation requirements

The box packing must be compliant at norms national in force And printed with anti-collision , anti-humidity marking and more , and it must to be printed with anti-collision, proof marks Of humidity .

The disposal some waste from the batteries all lithium Hailei new energy must respect strictly the laws and the regulations locals.

Protect the packaging box containing the product from the impact of rain, snow, waterfall, from falls or mechanical impact, overturning or inclination.

### 3.2 Storage requirements

#### 3.2.1 Storage Safety

1) During storage, the lithium batteries must be placed following the indications shown on the packaging box , without turn them over.

2) The packing boxes for batteries electrical they must to be stacked second the outer packaging stacking requirements .

3) THE storage environment requirements are o the following:

Ambient temperature: 0-35°C; recommended storage temperature : 20-30° relative humidity: ≤85%, dry, clean, well ventilated,

away from corrosive and organic substances (including the gas), distant from sources Of heat . corrosive and organic substances (including i gas) For at least 2 meters.

4) Keep away from sources of strong radiation infrared, organic solvents And gas corrosive and keep away from sources of fire.

## 4 Recycle

### 4.1Recycling



This brand name indicates that the battery Not it can be separated from the others waste. To avoid that waste disposal dangerous can damage the environment And the Health of man, Please Of follow the classification local Of recycling of the waste .



To recycle the exhausted batteries, yes please follow the regulations premises e The system Of recycling or contact The manufacturer or the seller of l product e the authority qualified For the management of waste.