B-Box H 6.4~11.5

Installation Guidance

Rev.1_Aug.2017

Contents

Website of installation video:**http://www.byd.com/energy/b-box-25.htm**

Safety

Warning

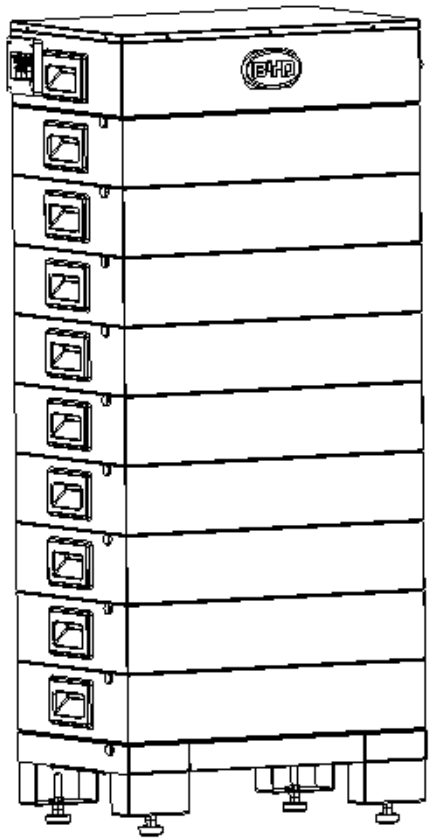
When disassembling the system, avoid touching the battery terminal with any metal objects or human body.
All work relating to electrical connections of the system shall be carried out by qualified personnel only.
All operations of B-Box H relating to electrical connection must be done by professionals.
B-Box H provides a safe source of electric energy when operated as designed.
Potentially hazardous circumstances such as excessive heat or electrolyte mist may occur under improper operating conditions, damage, misuse and abuse. The following safety precautions and the warning messages described in this section must be observed and complied. If any of the following precautions are not fully understood, or if you have any questions, contact customer service for guidance.
Installation and maintenance personnel must review and operate according to applicable federal, state and local regulations as well as the industry standards regarding this product.
Installation workers may not wear metal accessories, etc. in order to avoid short circuit and personal injury.

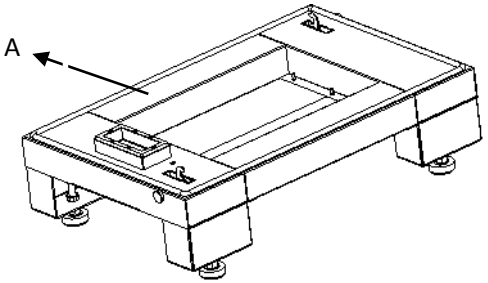
Warning

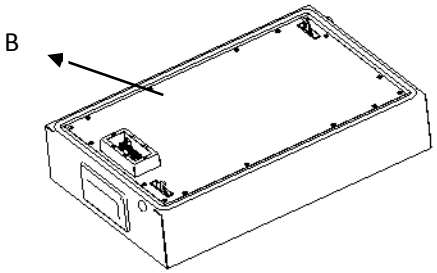
During loading, unloading and handling of the product, be cautious, and avoid accidents of product damage and personal injury due to the falling of product.
When adding battery, first disconnect the power supply of the battery and other power input.
To avoid danger, DO NOT remove the BCU module when the system is in operation.

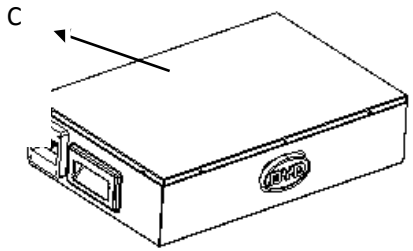
1 Product Overview

B-Box H is the abbreviation of high-voltage battery box, with the operating voltage range within 200~500V. It is applied to the household energy storage field and works together with high-voltage inverter to realize energy storage and release. Each set of battery of the system supports the serial connection of 5~9 battery modules, and parallel connection of 2~5 sets of systems





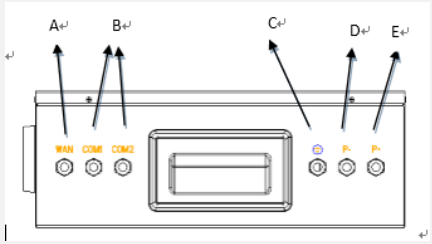


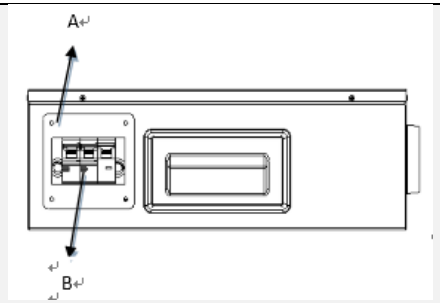


Position	Designation
A	Base
B	B-Plus-H
C	BCU

2 BCU Introduction

The battery management and control part, which contains BCU and charge-discharge relay, and connected to the battery modules underneath and to inverter or BMU above.

Position	Designation	Left side terminals
A	Ethernet	
B	CAN (Inverter)	
C	Grounded	
D	P-	
E	P+	

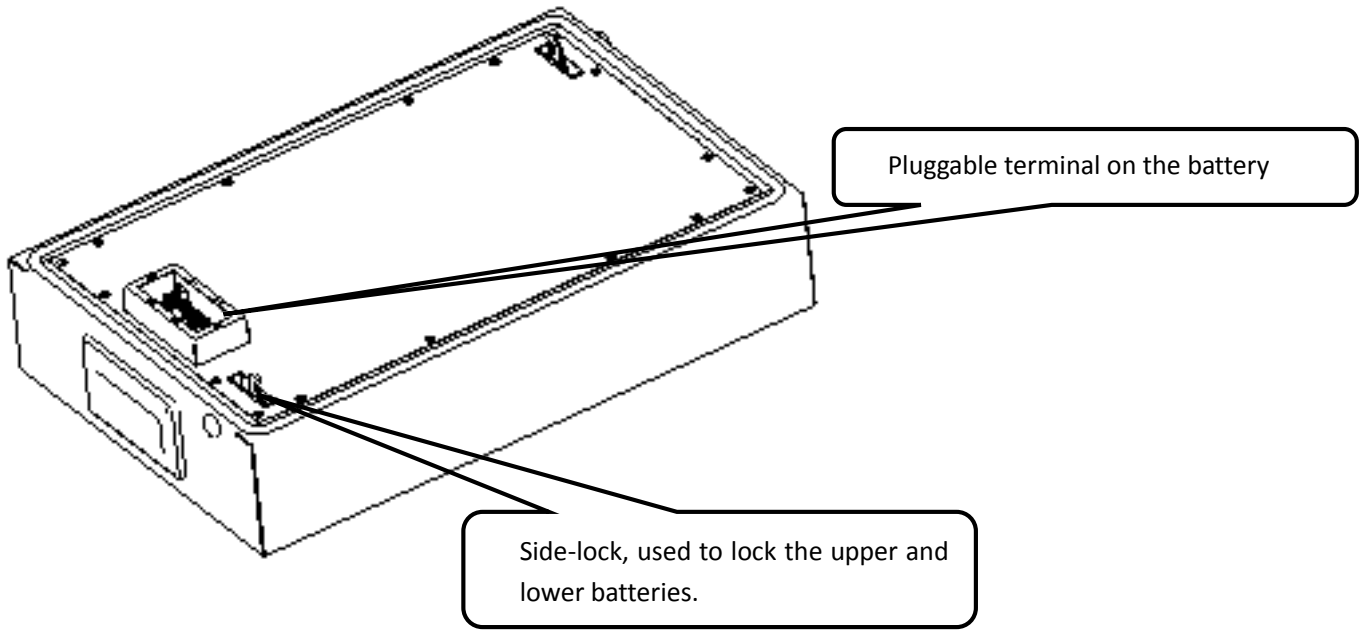
Position	Designation	Right side terminals
A	Air switch waterproof cover	
B	System Air switch	

Definition of BCU Functional Interfaces

No.	Interface Name	Description
1	P+	The system positive terminal, connected to the positive terminal of battery interface of inverter.
2	P-	The system negative terminal, connected to the negative terminal of battery interface of inverter.
3	GND	Grounding terminal, connected to the ground.
4	Ethernet	Connected to the Ethernet, to complete the functions of communication and remote program update.
5	Inverter communication	Contain RS485, CAN, and enable signals, outputting 13V power.
6	System switch	The main switch of system, which can be operated manually and has short circuit protection function.

3 Description of B-Plus-H Interface and Terminal

The battery module provides energy and sends the information about the cell voltage and cell temperature in the battery module to the upper-layer BCU.



4 B-Box HV Inverter Configuration List

4.1 B-Box HV Configuration List with SMA Sunny Boy Storage

1 Phase on Grid		
Inverter Type	B-Plus-H quantity	BCU quantity
SBS 2.5	5 ~ 9	1

4.2 B-Box HV Configuration List with Kostal Piko

3 Phase on Grid		
Inverter Type	B-Plus-H quantity	BCU quantity
PIKO 6.0 BA	5 ~ 9	1

5 Preparation

5.1 Installation Instructions

a) Before installation, ensure that BCU manual switch is switch off.

b) The battery shall be installed in a place away from heating source and avoid sparks. The safety distance is greater than 0.5m.

c) The connecting cables for installing batteries shall be as short as possible, to prevent excessive voltage drop.

d) Batteries of different capacity, different P/N or from different manufacturers cannot be connected.

e) After installation, ensure the positive and negative terminals of BCU and inverter are connected correctly.

f) The installation place shall be on a flat ground, without accumulated water.

5.2 Packing Information and System Structure Configuration List

The battery, BCU+ base are packed in separate carton. Before installation, the installation personnel shall read the system configuration list.

No.	Item Description	Qty	Purpose	Picture
1	Installation Manual	1	Provide guidance for field installation.	\
2	User Manual	1	System information and using method and warranty items.	\

5.3 Structure Configuration List

Type	H6.4	H7.7	H9.0	H10.2	H11.5
BCU + base	1	1	1	1	1
B-Plus-H	5	6	7	8	9
User manual	1	1	1	1	1
Installation Manual	1	1	1	1	1

5.4 Installation Tools

Cross screwdriver

M3~M10

Flat tip screwdriver

M3~M6

Crimping pliers

Diagonal cutters

Adjustable wrench

Inner hexagon spanner

Impact drill

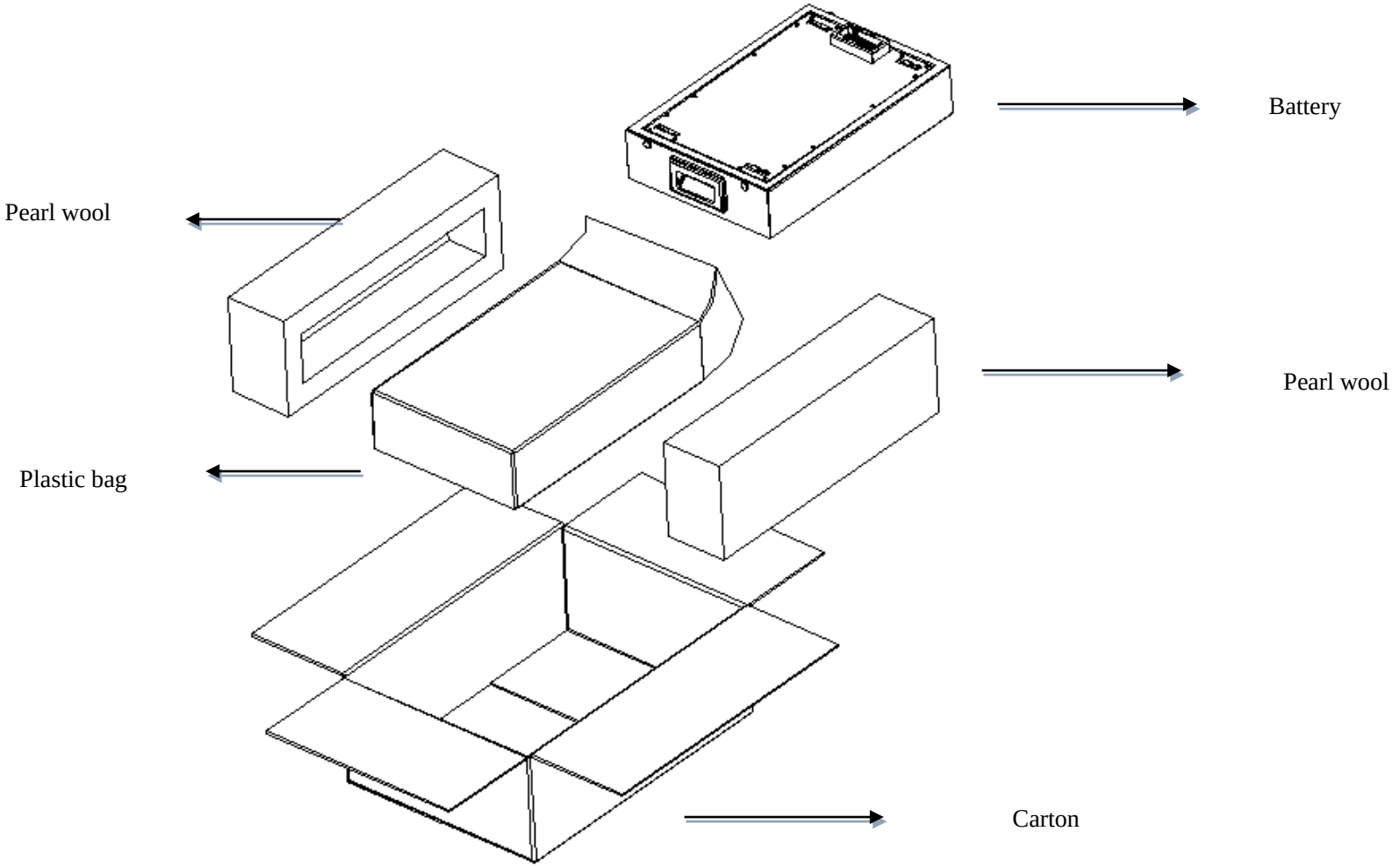
5.5 Personal Protection Equipment

Insulated gloves

Safety shoes

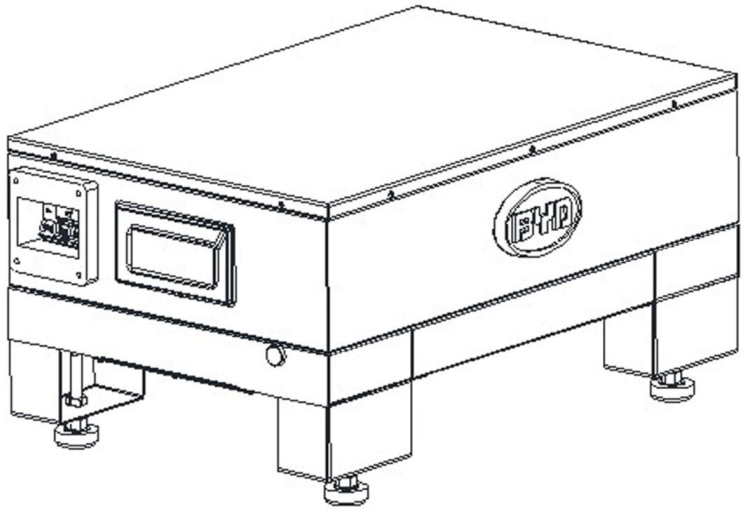
6 Installation of Single System

Step 1: open the battery package;

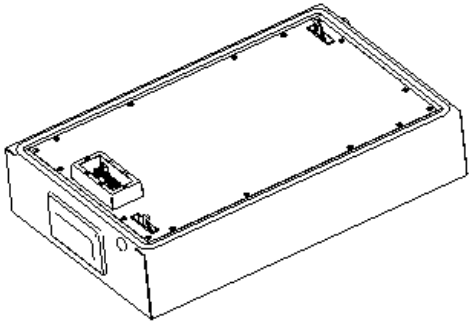


Step 2: Take out the BCU & Base, BCU & Base are locked and packed in the same box (the method is the same as the first step); unlock the lock with inner hexagon spanner, separate the BCU and the base.

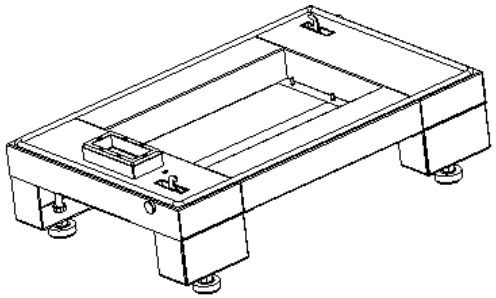
Tool: Inner hexagon spanner



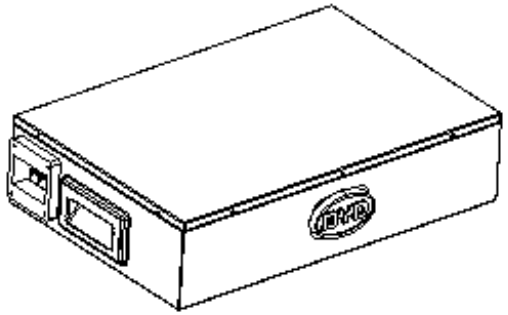
BCU & Base



B-Plus-H



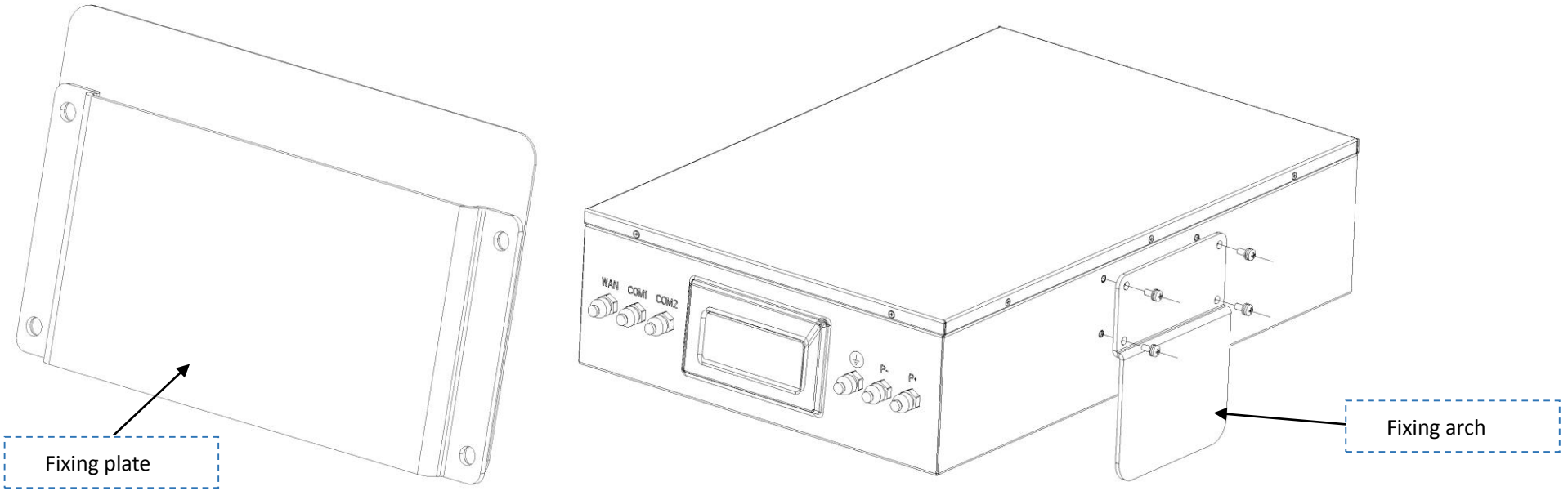
Base

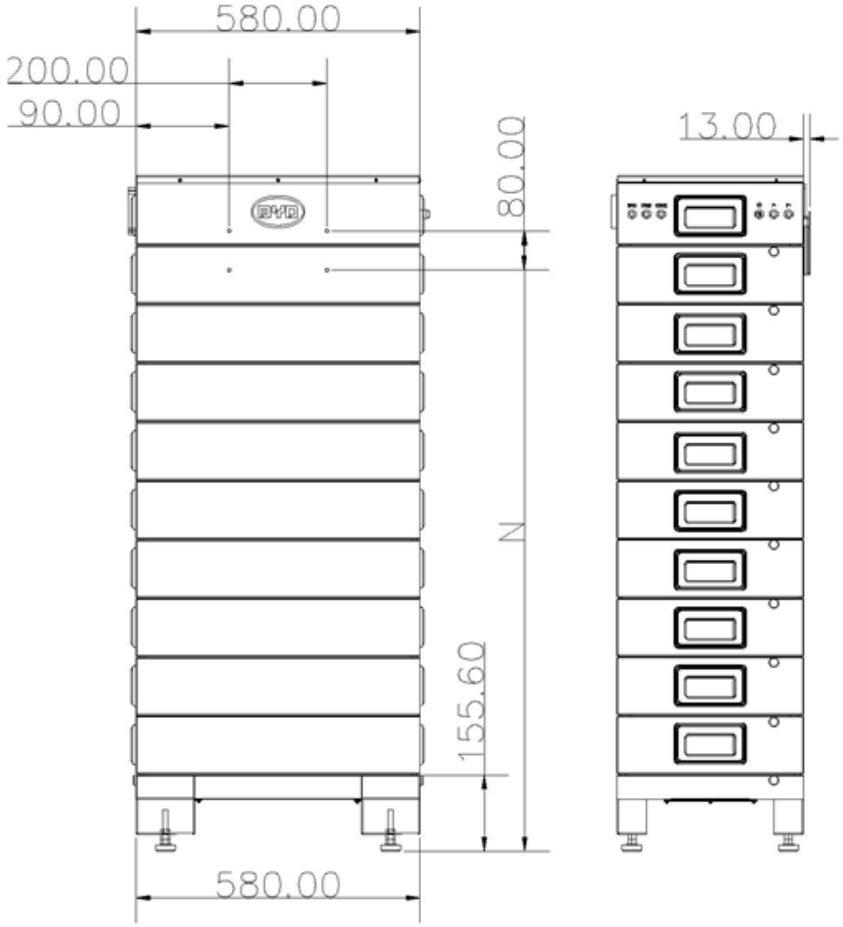


BCU

Step 3: adjust the support of the base; drill 4 holes on the wall with M6 expansion bolt (the distance between ground and the bottom holes depends on different module numbers, please refer to picture below; the distance between the bottom two holes and upper two holes is 80mm; the distance between the right two holes and left two holes is 200mm; the distance between the right edge to the right two holes is 190mm; the distance between the left edge to the left two holes is 190mm.); mount the fixing plate to the wall, and install the fixing arch onto the BCU module.

Tools: Cross screwdriver, impact drill, adjustable wrench

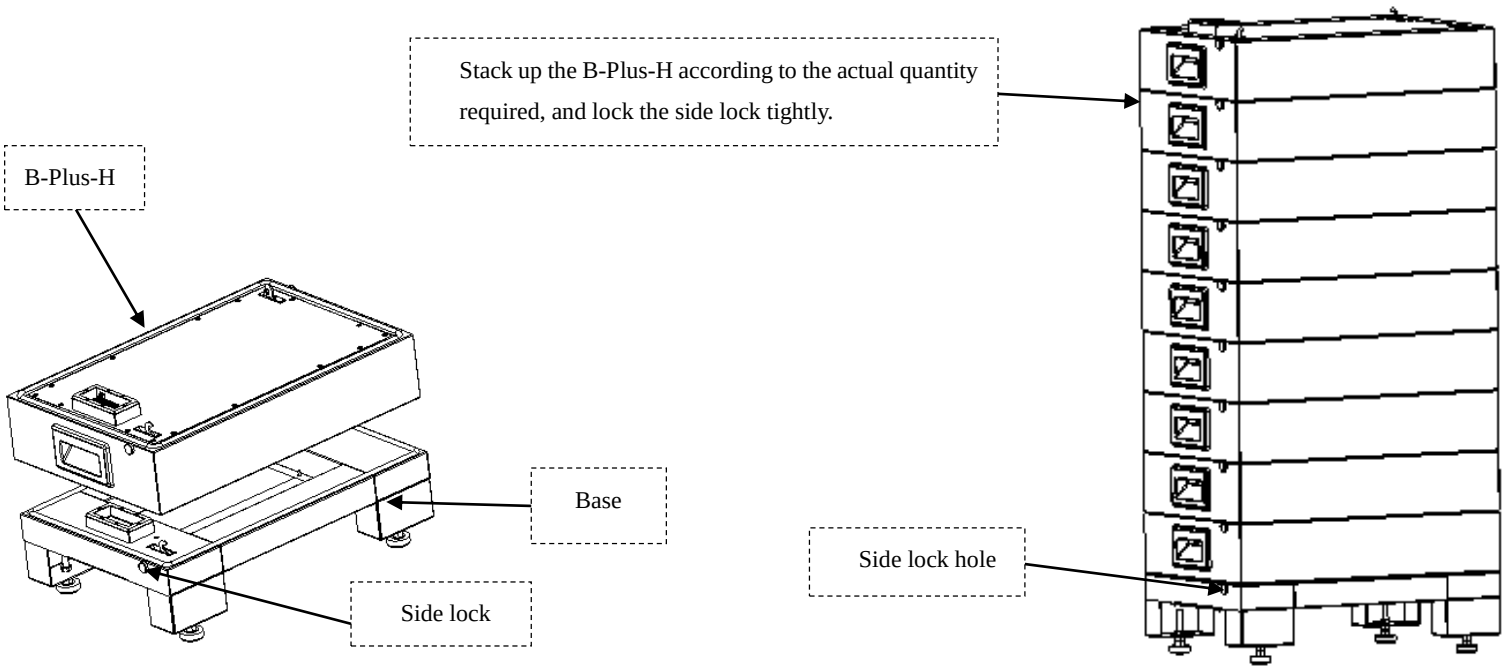


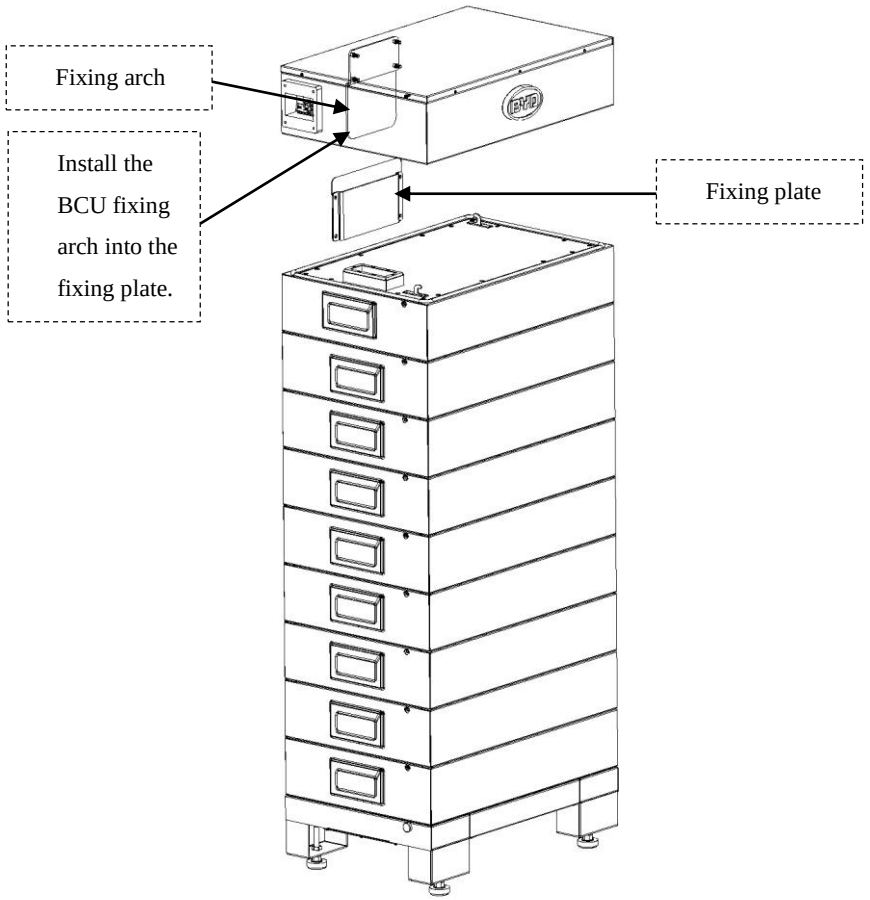


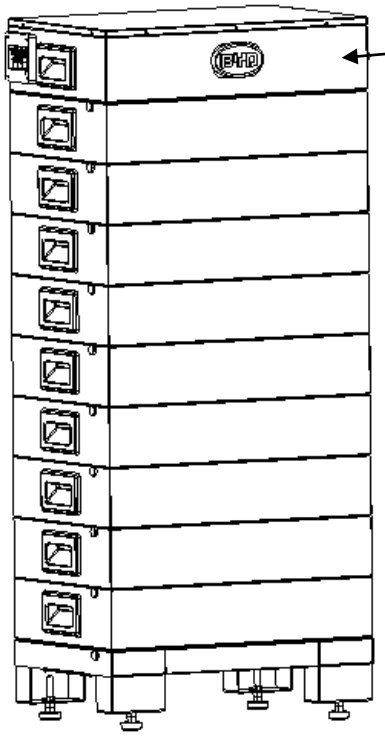
Serial number	5	6	7	8	9
Bottom hole height(mm) N	786.1	906.1	1026.1	1146.1	1266.1

Step 4: Install the batteries (5pcs~9pcs), and lock the batteries with the base, ; then install BCU, and lock the batteries with BCU; the installation is completed.

Tool: Inner hexagon spanner




Fixing arch
Install the BCU fixing arch into the fixing plate.
Fixing plate

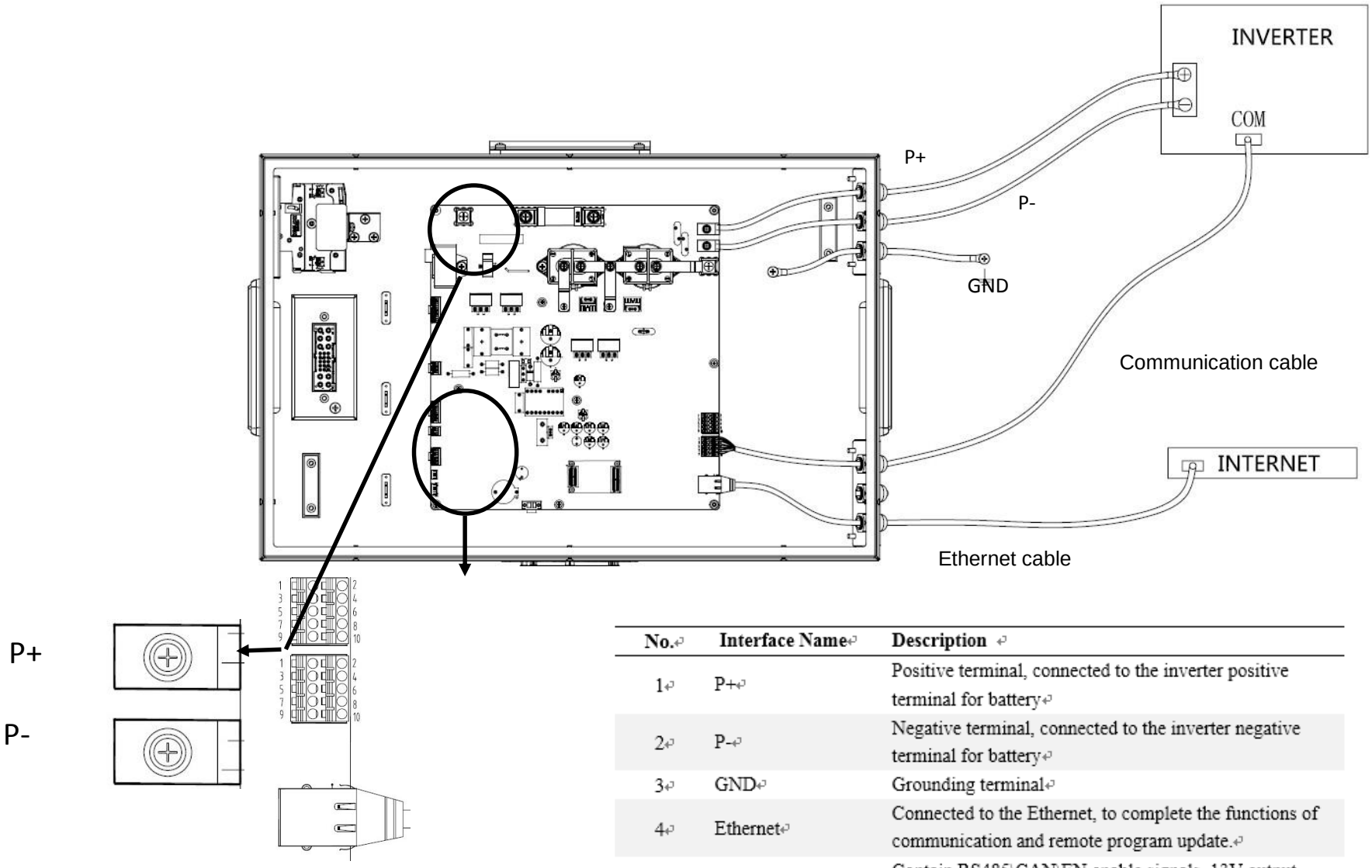

Fit in the BCU, lock the side lock, installation finish.

7 Connecting with the Inverter

Tools: Cross screwdriver, with torque force: 25±2.5Nm.

1. Open the top cover of the BCU.
2. Connect the power cable: get the positive and negative cables through the PG head, connect them into BCU case, and then install them onto the positive and negative terminals respectively.
3. Connect the communication cable and Ethernet cable: connect the communication cable. The definition of communication cable is as follows:

Pin	Definition	Description
1	13V+	Positive terminal of 13V output
2	EN 11V+	Positive terminal for inverter enable signal interface
3	13V-	Negative terminal of 13V output
4	EN 11V-	Negative terminal for inverter enable signal interface
5	RS485A	
6	CANH	
7	RS485B	
8	CANL	
9	Shield	Signal line shielding layer
10	NC	Null



No.	Interface Name	Description
1	P+	Positive terminal, connected to the inverter positive terminal for battery
2	P-	Negative terminal, connected to the inverter negative terminal for battery
3	GND	Grounding terminal
4	Ethernet	Connected to the Ethernet, to complete the functions of communication and remote program update.
5	CAN(Inverter)	Contain RS485\CAN\EN enable signals, 13V output power.

Cable recommendation:

Cable definition	Cable diameter (mm)	Sectional area (mm^2)	Recommended cable type
P+ connection cable	Φ4~Φ6.8	6~10	UL1015 10AWG-8AWG
P- connection cable	Φ4~Φ6.8	6~10	UL1015 10AWG-8AWG
Grounding cable	Φ4~Φ6.8	6~10	UL1015 10AWG-8AWG
Communication cable	Φ4~Φ6.8	/	cat5e or above
Ethernet cable	Φ4~Φ6.8	/	cat5e or above

8 System Boot

Note: Before activating the system, please check the following items:

1,Confirm the inverter is not connected reversely;

2.Ensure reliable connection of communication cable between battery and inverter.

3.If the matched inverter is CAN communication, Jumper Cap on JP1 position; If the matched inverter is 485 communication, is the Jumper Cap in JP2 position.

4.Before not configured batteries and inverters, banned batteries and inverter to electricity at the same time.

8.1 Switch on the Air Switch of Battery

8.2 Set the BCU

Ⅰ. Log in

Enter correct IP address in the browser (IE, Google Chrome or Mozilla Firebox browsers are recommended), and then enter the account number and password to log in (the login ID: installer; password: byd@12345).

Log in the WEB interface by selecting one of the following ways:

1. WIFI

First, connect the computer to the system's WIFI (name: BYD+ product serial number without the first three numbers (for example: product serial number is BYD100171708-00000, then WIFI name will be BYD171708-00000, password: 123456789); then enter the IP: 192.168.5.1 in the browser, and enter the account number and password to log in.

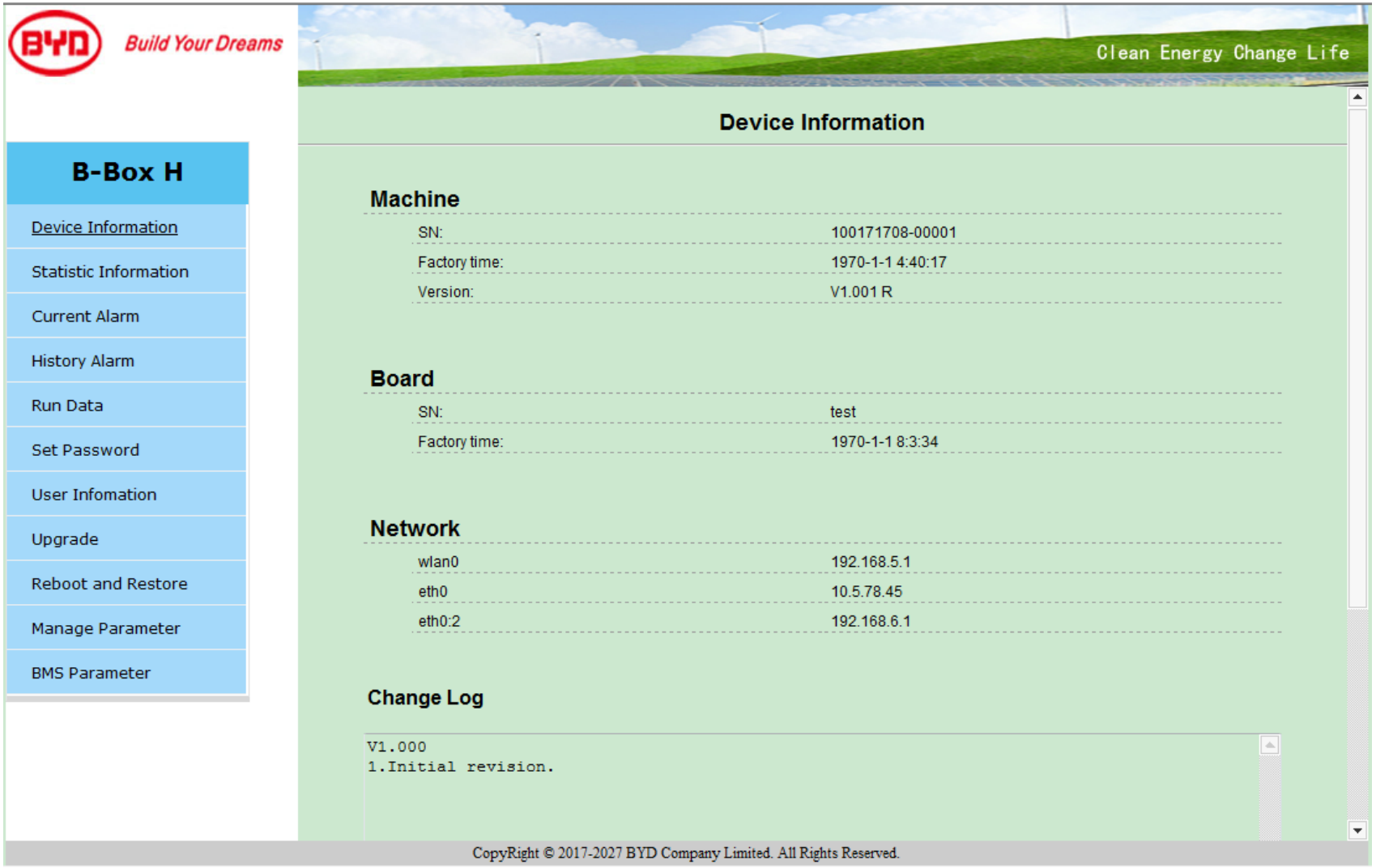
2. LAN

Connect the battery system and the computer in the same LAN through router, get the system's IP address on the router web page, then enter the system's IP address or its host name (e.g. BYD171708-00000) in the browser, and enter the account number and password to log in.

3. Direct connection with network cable

Directly connect the computer to the network interface of battery system with the network cable, set the computer's IP address to put the computer and the system on the same network segment, enter the IP: 192.168.6.1 in the browser, and enter the account number and password to log in.

The interface after successful login is shown as below:


Build Your Dreams
Clean Energy Change Life
B-Box H
Device Information
Statistic Information
Current Alarm
History Alarm
Run Data
Set Password
User Infomation
Upgrade
Reboot and Restore
Manage Parameter
BMS Parameter
Device Information
Machine
SN: 100171708-00001
Factory time: 1970-1-1 4:40:17
Version: V1.001 R
Board
SN: test
Factory time: 1970-1-1 8:3:34
Network
wlan0 192.168.5.1
eth0 10.5.78.45
eth0:2 192.168.6.1
Change Log
V1.000
1.Initial revision.
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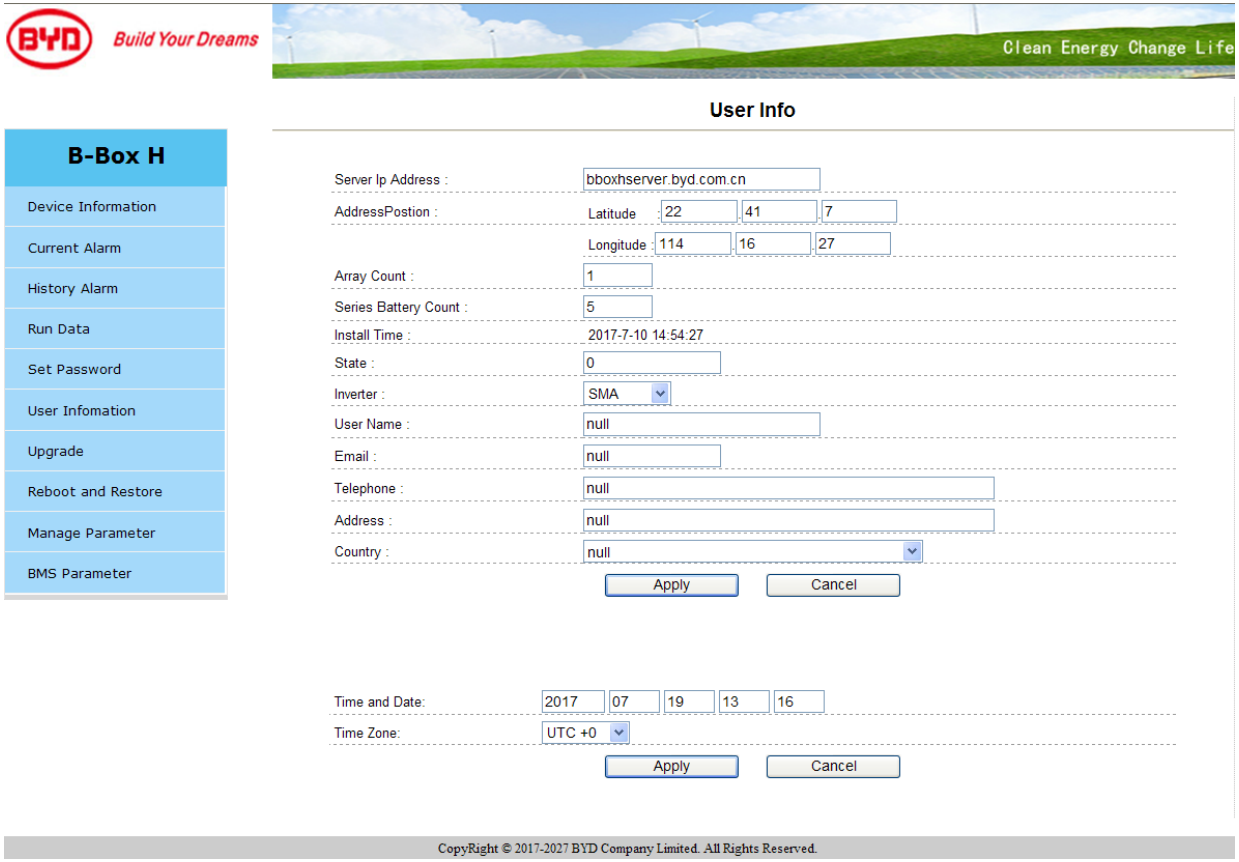
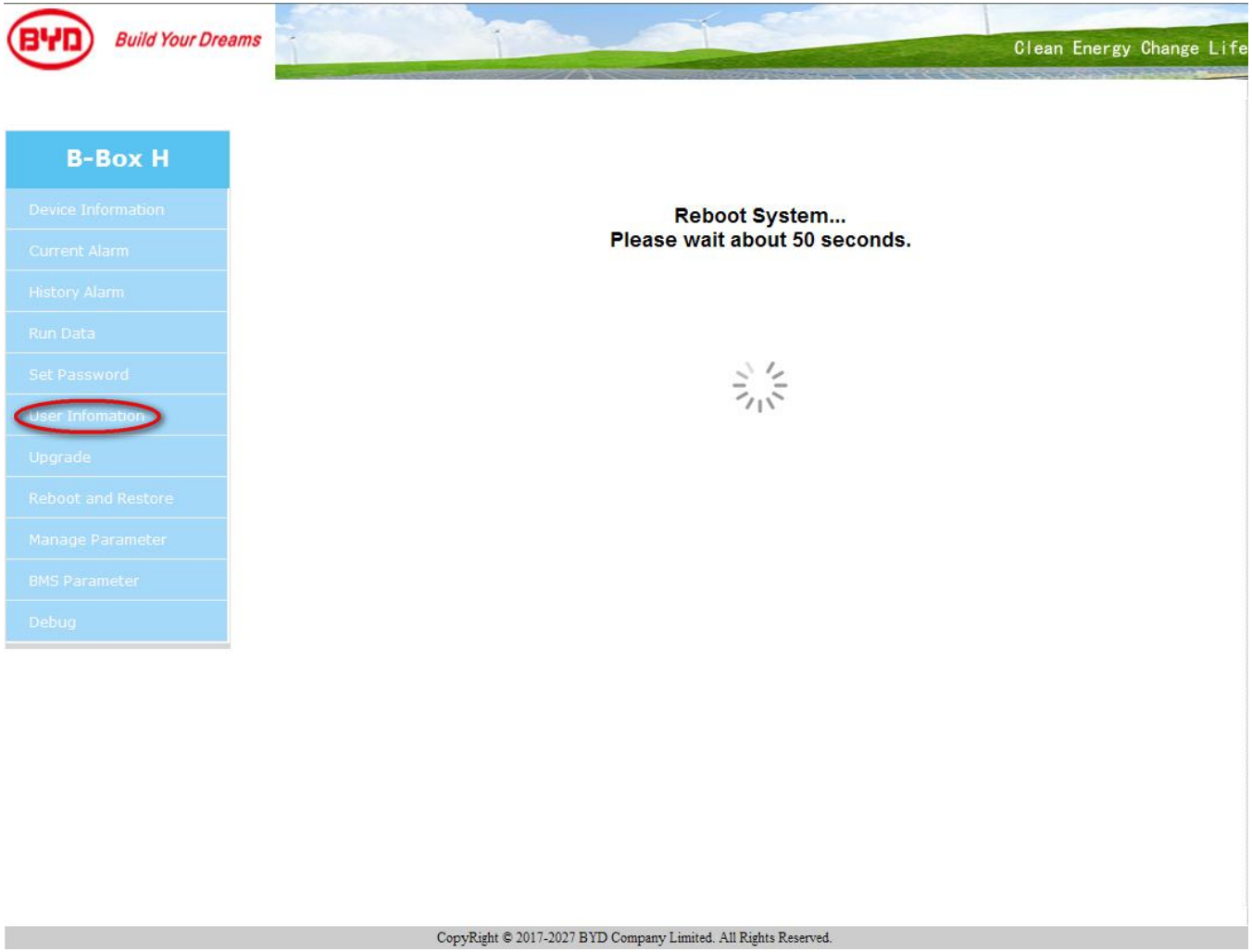
Ⅱ. View and Set User Information

Click on the “User Information” menu in the left list to view or set the system’s user information (e.g. the server IP, the geographic location, the number of system groups, the quantity of batteries of one group of system, etc.). First set related parameters, mandatory parameters including sever IP (set as bboxhserver.byd.com.cn), installation latitude and longitude, array count (set as 1), number of B-Plus-H (according to actual modules of the system, 5~9pcs), inverter model (e.g SMA, KOSTAL etc.), timezone and tiem, other information is optional.

Click on “Apply” button to reset the user information, and after that, the system will restart automatically. Click on “Cancel” button, and the original user information will be displayed.



After clicking on “Apply” button, the system will set the parameters automatically, and please wait patiently, and ensure the system will not be powered off; otherwise, the setting might fail. After setting, the following interface will appear on the webpage:

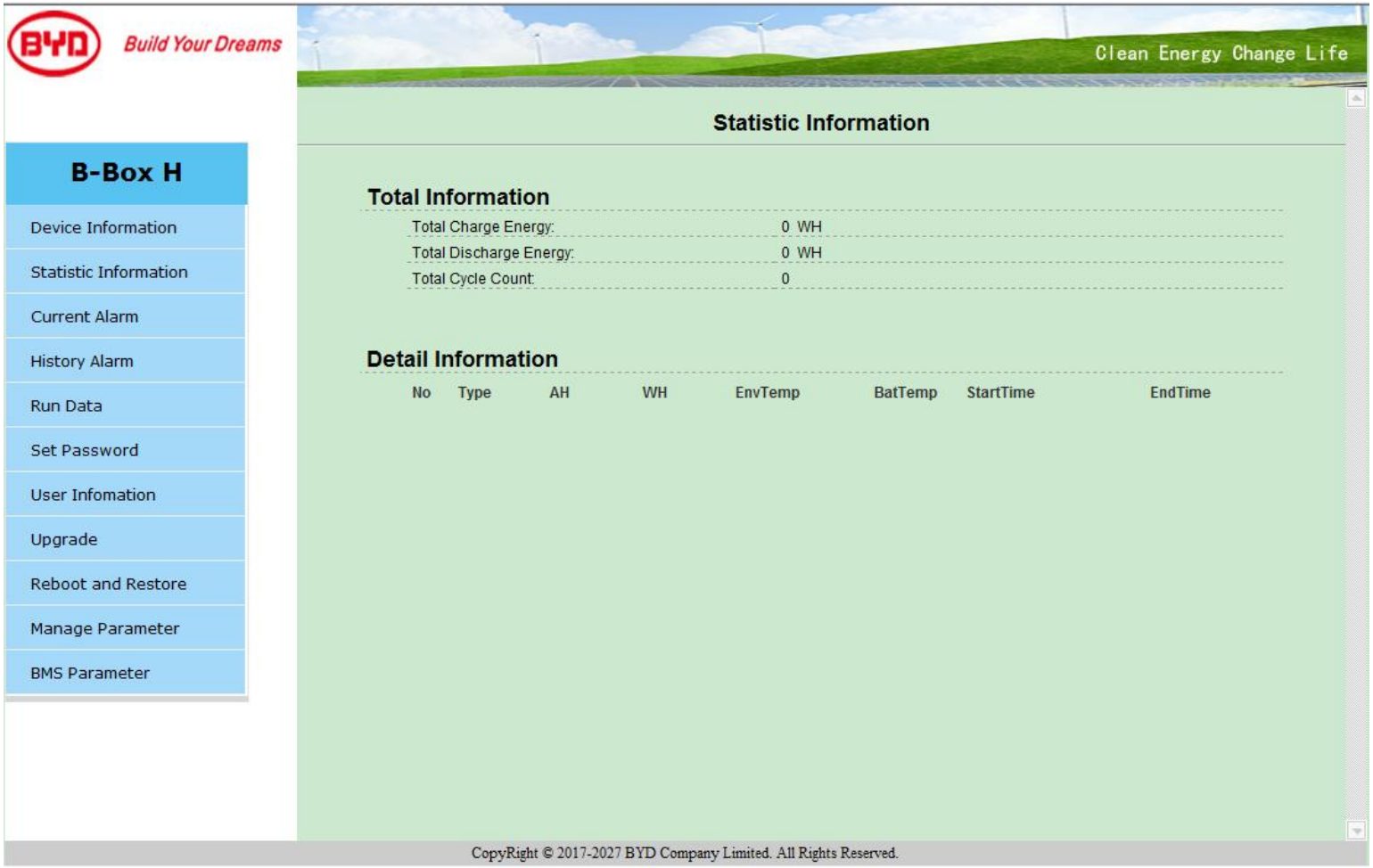


Note: After setting, the system will be restarted automatically.

Ⅲ. Other functions of the webpage

1) View charging and discharging records

Click the ‘Statistic information’ on the left, the user can check the total charging and discharging data, and the charging and discharging history as well.

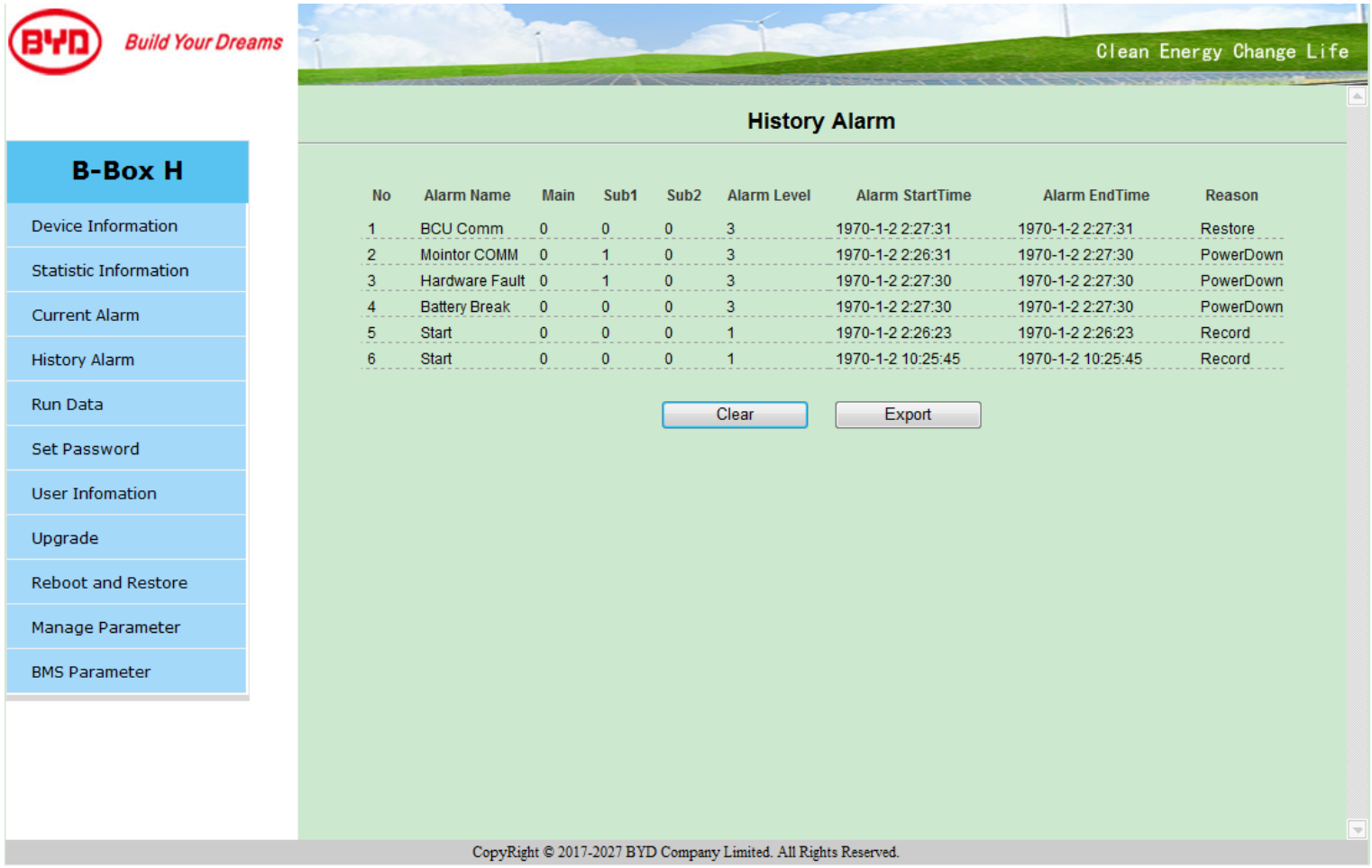


2) View current alarm

Click the ‘Current Alarm’ on the left, the user can check the current alarm of the system.

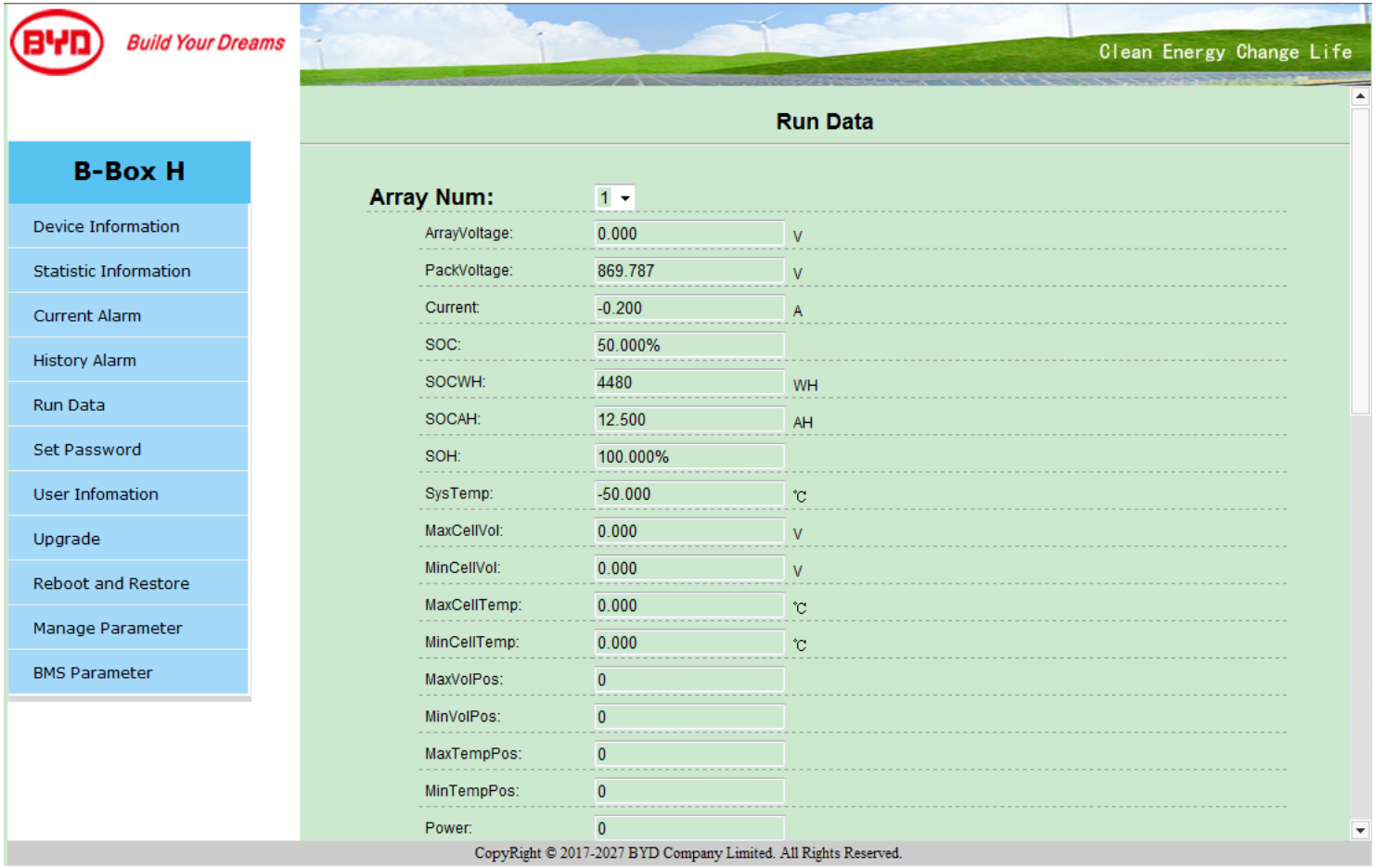
3) View history alarm

Click the ‘History Alarm’ on the left, the user can check the history alarm.



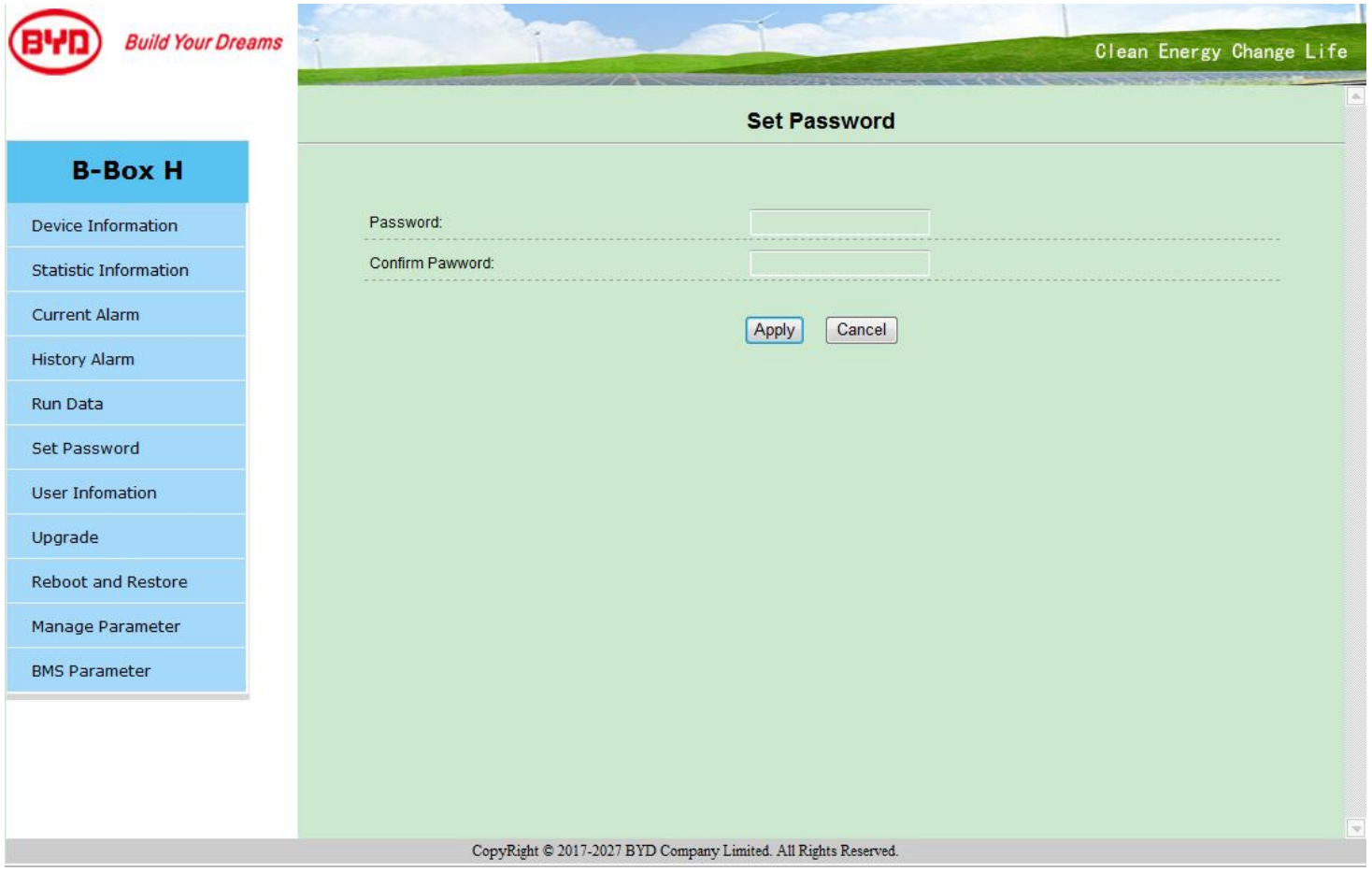
4) View the run data

Click the “Run Data” on the left, the user can view the run data of the system, including battery voltage, current and temperature etc.



5) Set the password

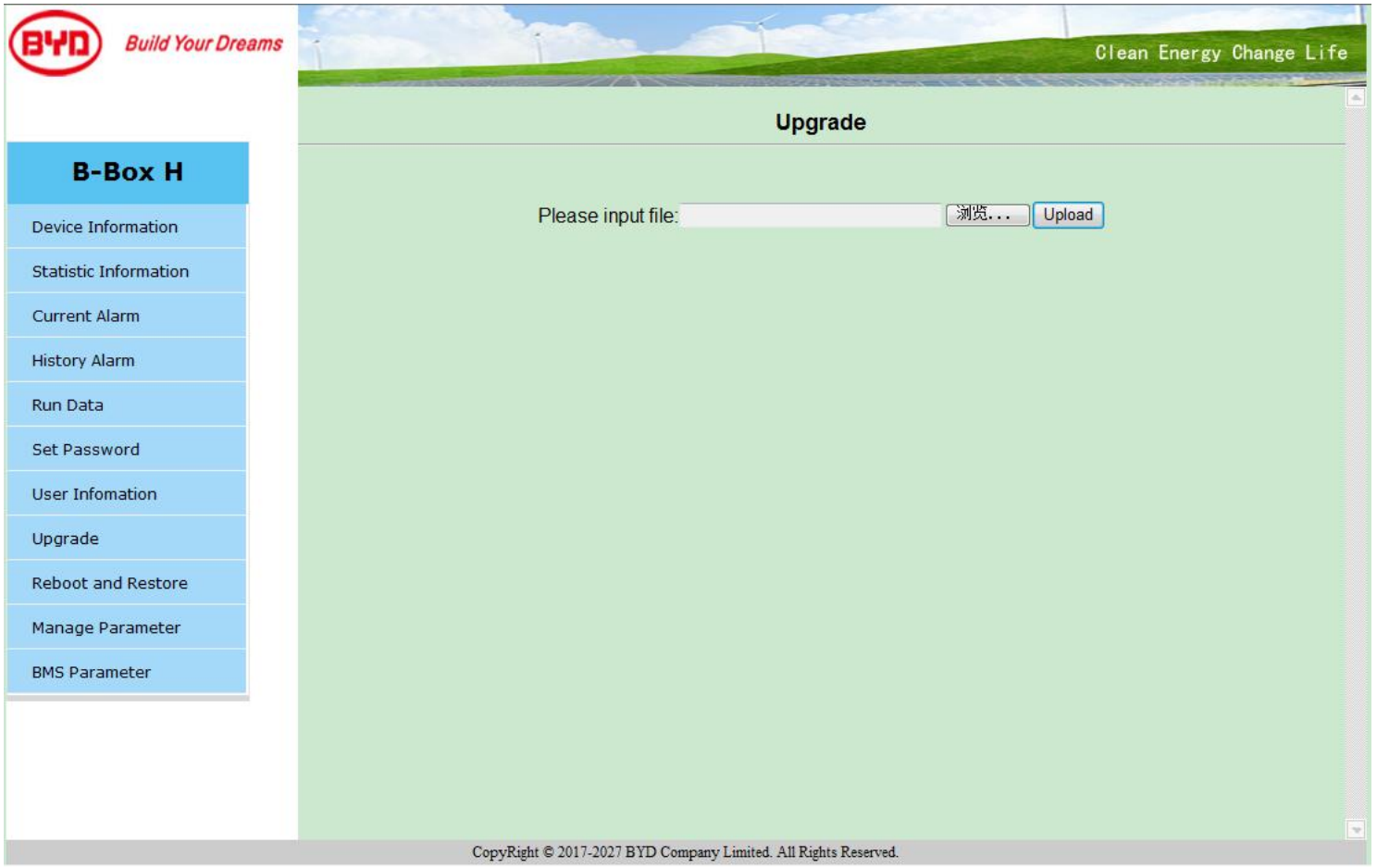
Click the “Set Password” on the left, the user can set the new password.



6) Software update

Click the ‘Upgrade’ on the left, click ‘Browse’ and upload the updating file, and then click ‘upgrade’ to finish the updating.

NOTE: after updating, the system will restart automatically, please wait patiently.



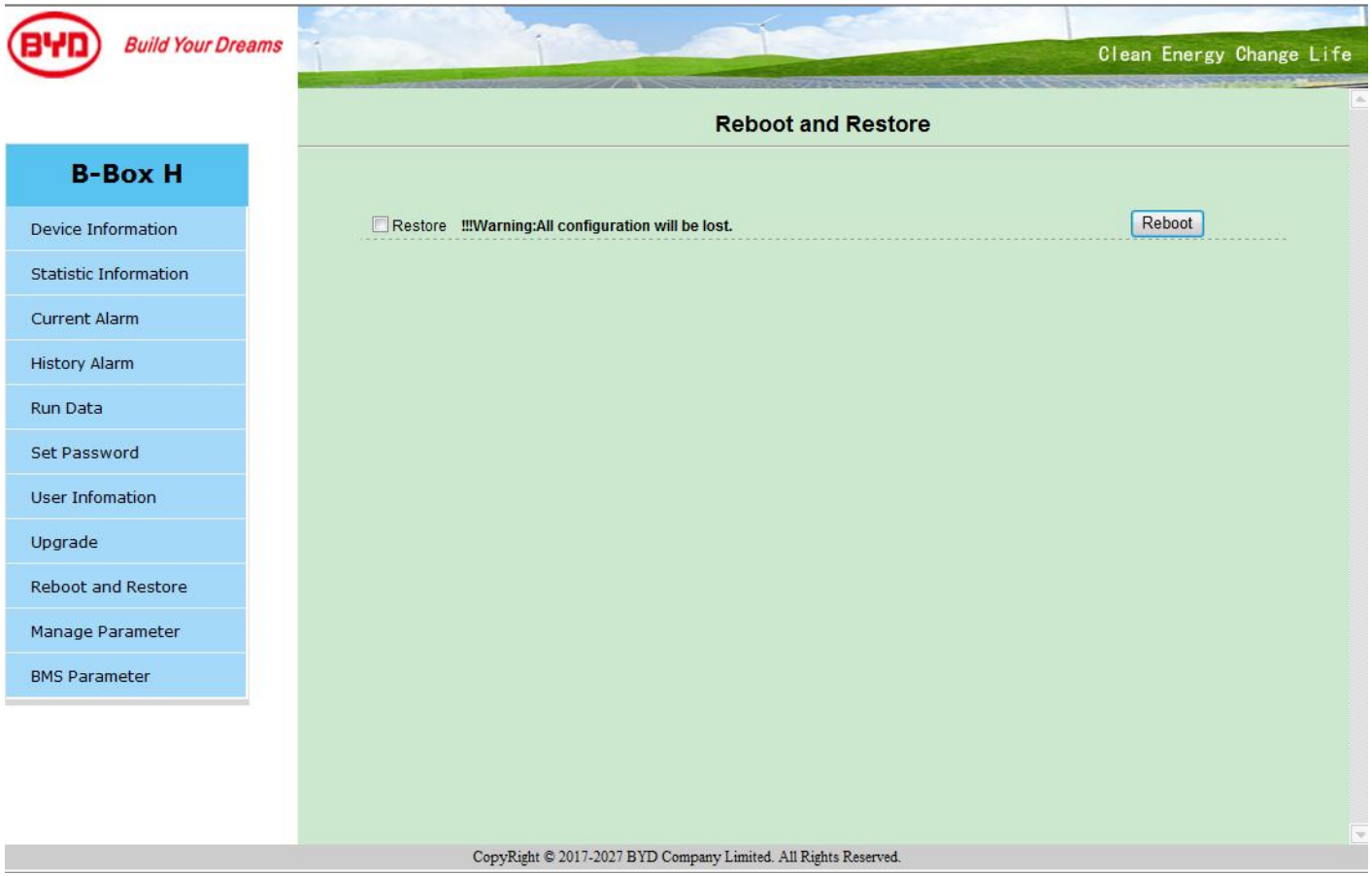
7) Reset to default

Click the ‘Reboot and Restore’ on the left, select ‘Restore’, and then press ‘Reboot’.

NOTE: 1. Be cautious, all configuration settings will be lost after restore;

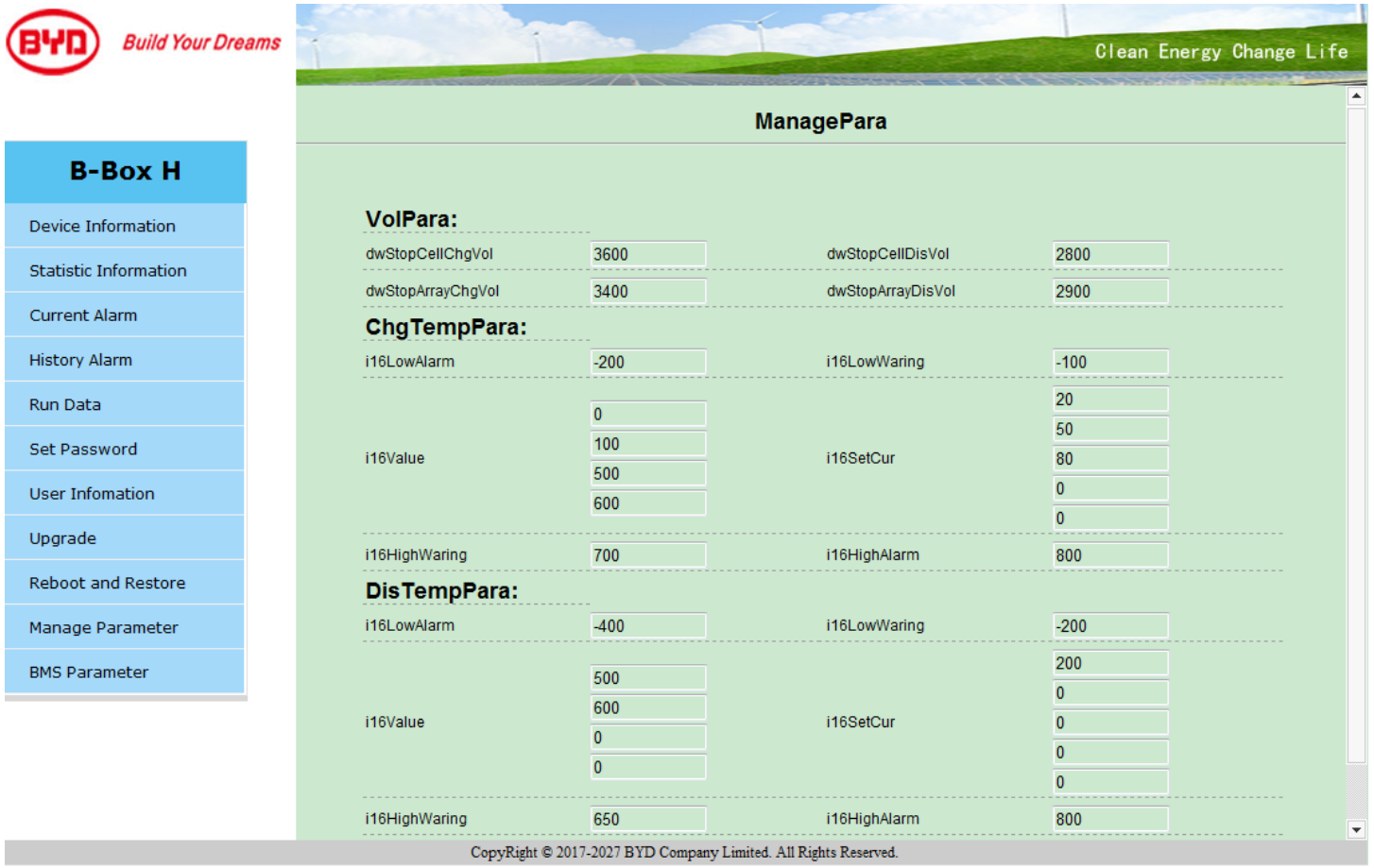
2. Press ‘Reboot’, system will restart automatically.

3. Used for professionals maintaining only, DO NOT reset to default by yourself.



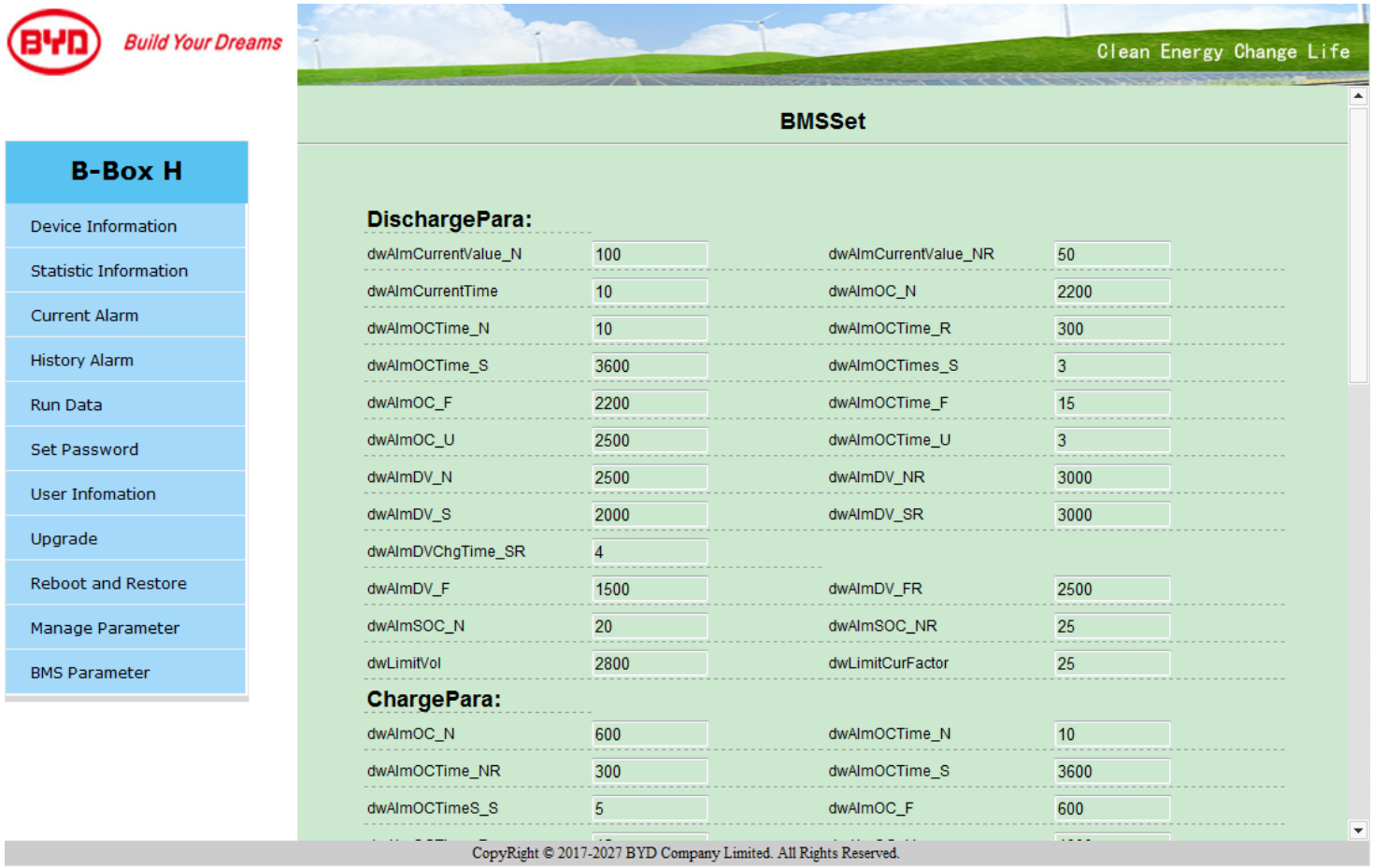
8) View the managing parameters

Click the ‘Manage Parameter’ on the left, the user can view the managing parameters, including charge and discharge cut voltage, charge and discharge limit current, temperature and etc.



9) View the BMS parameters

Click the 'BMS Parameter' on the left, the user can view the BMS parameters, including charging protection parameters, discharging protection parameters, temperature and etc.



8.3 Switch off the system switch of the battery

8.4 Switch on the Inverter, set up the inverter parameter

8.5 Switch on the air switch of the battery, and the system can work normally

9 System Shutdown

Note: Please power off the inverter before shutting down the system.

After the system is shut down, check the following items:

The inverter is powered off.

The battery system is switch off.