BYD Battery-Box HV Installation Guidance

Battery-Box H 5.1/6.4/7.7/9.0/10.2/11.5(AU)

Version2.0

Content

1 Safety

This section contains safety information that must be observed at all times when working on or with batteries. To prevent personal injury or property damage and to ensure long-term operation of the batteries, read this section carefully and observe all safety information at all times.

- BYD Battery-Box HV 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.
- All operations of BYD Battery-Box HV relating to electrical connection must be done by professionals.
- Please cut off the power supply and turn off the battery in emergency. For example, when there is an emergency such as smoke, fire, burning, explosion, etc.
- All batteries store chemical energy and contain electrolyte materials, which are usually a fluid or gel. In the event of an accident which damages the battery casing, electrolyte leakage can create a hazard. At this time, please contact the after-sales service provider for processing.
- Please read the quick installation guide and installation manual carefully, and follow the installation steps to complete the installation. If the installation is not carried out in accordance with the requirements and steps, the installer is responsible for the losses caused.

Skilled personnel only:

This manual and the tasks and procedures described herein are intended for use by skilled personnel only. A skilled worker is defined as a trained and qualified electrician or installer who has all of the following skills and experience:

a) Knowledge of the function principles and operation of on-grid systems.
b) Knowledge of the dangers and risks associated with installing and using electrical devices and acceptable mitigation methods.
c) Knowledge of the installation of electrical devices
d) Knowledge of and adherence to this manual and all safety precautions and best practices.

Warning

Product harm related warnings:

- The system switch should only be engaged once the system is ready to be commissioned.
- The BCU software must updated to the latest version during commissioning.
- In case any issue arises during commissioning, the system must be shut down immediately and reported to the after sales service.
- Observe all safety information of the inverter.
- 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.
- Please do not stack up batteries without protective package when storing or handling batteries, unless in the case of installation.
- When there is a UV3 alarm in the batteries history, the system must be stopped. Continued use may cause material damage to property or to the user personal health. The after-sale service partner should be contacted immediately.
- The battery can be stored from UV1 to UV3 for a month. When the battery appears UV1 alarm and the inverter cannot charge the battery, or when the set mandatory charging point is reached, the inverter does not charge the battery, please contact the after-sales service partner immediately. A solution must be found and go to the site to resolve it within a month. Otherwise, the battery will be damaged and unusable.
- When the battery cell voltage is 1.5 V to 2.5 V, if the inverter can not charge the battery system, the battery can be charged separately with a charger.

Human harm related warnings:

- High Voltage Storage! Improper handling can cause danger and damage.
- Do not touch any live components.
- Ensure that disconnected devices can’ t be reconnected.
- Cover or isolate any adjacent live components.
- 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.
- When adding battery, first disconnect the power supply of the battery and other power input.
- To avoid danger, do not remove the BCU or battery module when the system is in operation.
- The battery must be powered off and disconnected from the inverter and the load during installation and maintenance for our products.

- Continuous operation on a damaged battery can result in dangerous situation that may cause severe injury due to electrical shock.
- Installers must ensure the installation connections and settings are correct before activating the whole system.
- Avoid product damage and human injury during loading, unloading and handling of the products.
- Installation workers may not wear metal accessories, etc. in order to avoid short circuit and personal injury.
- Wear high voltage insulating gloves when installing the battery system.
- If you smell a pungent odor or electrolyte. Please stop the use of the system immediately, and then contact the after-sales service partner.
- Do not disassemble the battery modules.
- Do not touch the battery pack with wet hands.
- Do not crush, drop or puncture the battery.
- Do not short circuit the terminals, remove all jewelry items that could produce a short circuit.

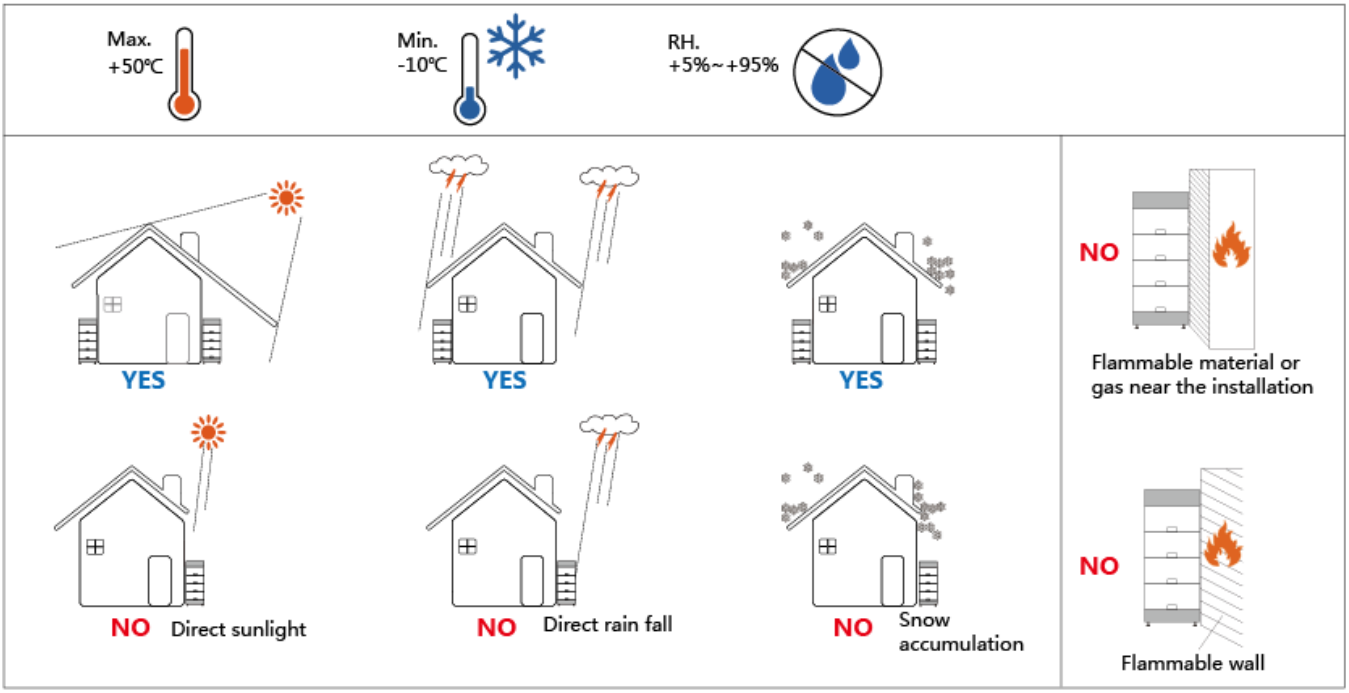
Warning:

- When adding a new battery module, please contact after-service providers and carry it out according to the instruction released by BYD.
- You must read the inverter installation manual carefully before matching the battery system with the inverter.
- If the battery is deformed or damaged please do not use it and report it to the after sales service.
- Batteries must be installed and maintained by qualified installers or technicians.
- The battery system has the function of protecting from overcharging. When the protective function fails, please do not continue to charge the battery and report it to the after sales service, so as to avoid personal or material damages.
- Always dispose according to local safety regulations.
- Store and recharge battery according to user manual strictly.
- Ensure reliable grounding.
- Do not reverse polarity.
- Once the protective packaging has been removed please do only stack the batteries as specified in this guide to avoid damage to the external surfaces
- Do not stack up batteries without package.
- The packed batteries are not allowed to be stacked up more than specified layers stipulated on the package.
- Do not expose the battery to temperature above 50℃.
- Do not place the battery near any heat sources and avoid sparks.
- Do not expose the battery to moisture or liquids.
- Stay away from corrosive gases and liquids, as well as radiation.
- Do not expose the battery to direct sunlight.

- Place battery in secure location away from children and animals.
- Do not allow the battery power terminals to touch conductive objects such as wires.
- The Battery-Box HV system can be installed at altitudes of up to 2000m above Mean Sea Level.
- The battery system shall be installed in a ventilation location and reserved for at least 0.9m safe passage distance.
- Due to the heavy weight of Battery-Box H 5.1-11.5, please use strong packaging and safety protection equipment during transportation, to ensure safety and avoid accidental damage.
- Battery cabling should be kept as short as possible to reduce voltage drop at high currents.
- In the process of transportation and storage, the goods are not allowed to be stacked in layers or at a height greater than specified.
- The installation should be clean, flat, and dry. Not be installed in damp situations, including:
  - Baths, showers and other fixed water containers
  - Swimming pools, paddling pools and spa pools or tubs
  - Fountains and water features
  - Saunas
  - Refrigeration rooms
  - Sanitization and general hosing-down operations
- In domestic dwellings, batteries shall not be located in habitable rooms. Habitable rooms including, but are not limited to, the following:
  - Bedroom, lounge room, living room, music room, television room, kitchen room, dining room, sewing room, study, playroom, family room, home theatre, sunroom, bathroom, toilet room, laundry room.

Temperature requirement

Following installation pictures are some common issues you may meet, some are right and some are wrong. Please pay attention to it.



If the ambient temperature is outside the operating range, the battery pack stops operating to protect itself.

Frequent exposure to harsh temperatures may deteriorate the performance and life of the battery pack.

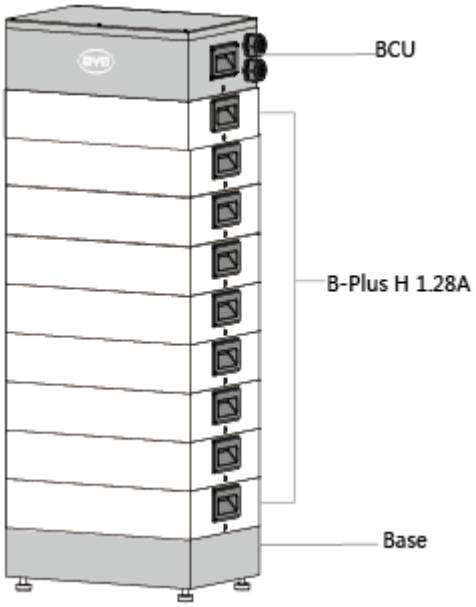
For more safety requirements, please install in accordance with local laws and regulations.

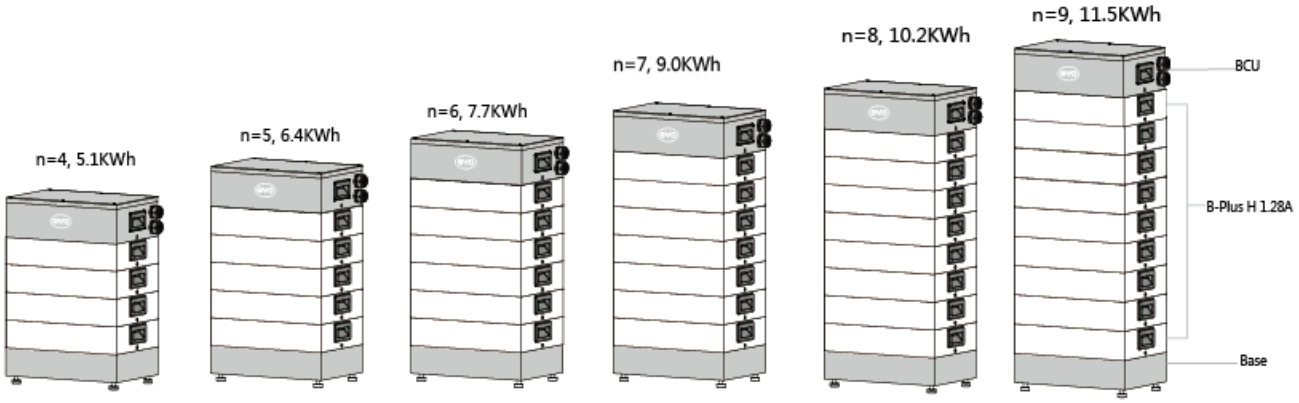
2 Information

2.1Product Overview

Battery-Box H 5.1-11.5 is the abbreviation of high-voltage battery box, with the operating voltage range within 160~500V. 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 4~9 battery modules.

2.2 Appearance dimension

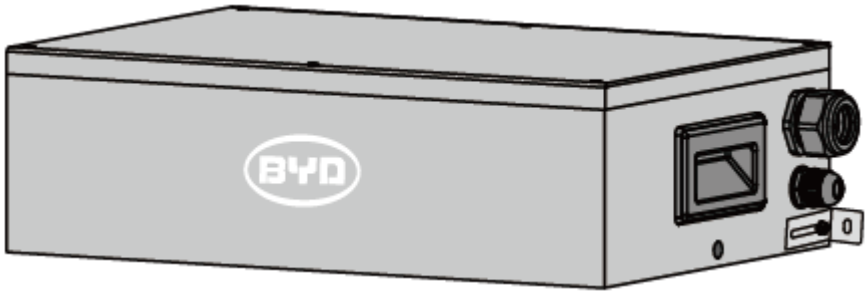


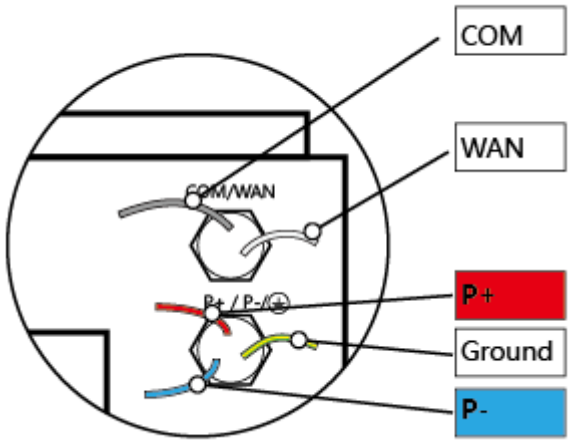


2.3 BCU Module Introduction

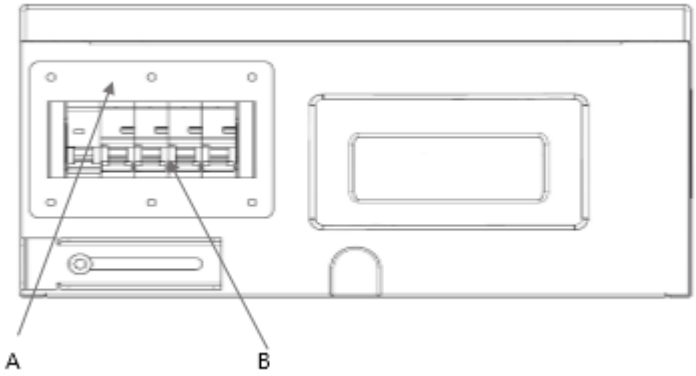
The BCU (Battery Control Unit) is the management or control part of a battery tower. It contains the circuit board and a system switch. It can be connected to the towers battery modules underneath and to an inverter or a different BMU above.

2.3.1 Left side of BCU





2.3.2 Right side of BCU



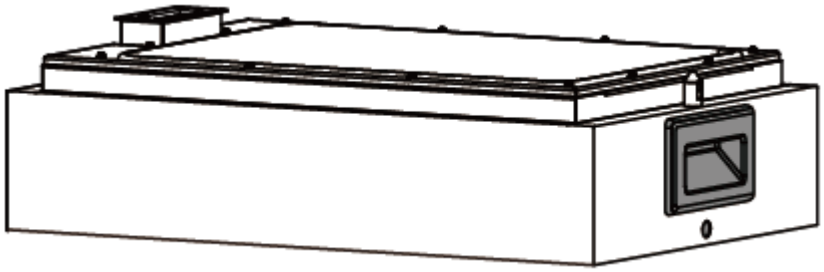
Position	Designation
A	System switch waterproof cover
B	System switch

2.3.3 Definition of BCU Functional Interfaces:

2.4 Description of B-Plus H 1.28A

The battery modules B-Plus H 1.28A can be used to store and provide energy. They have to be located in the middle of a tower in between the BCU and the base module. Consisting of batteries and the BIC circuit board inside the module sends information about the cell voltage and the temperature to the connected BCU above.

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. Must be connected to the common ground. Do not connect it to the ground on the inverter.
4	WAN	Connected to the Ethernet, to complete the functions of communication and remote program update.
5	COM	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.



2.5 Delivery contents

Type	5.1 KWh	6.4 KWh	7.7 KWh	9.0 KWh	10.3 KWh	11.5 KWh
BCU + Base	1	1	1	1	1	1
B-Plus H 1.28AA	4	5	6	7	8	9

3 Preparation

3.1 Preparation

3.1.1 Installation Instructions

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

b) Wear appropriate labor protection products before installation.

c) The battery shall be installed in a place away from heating source and avoid sparks. The safety distance is greater than 1 m.

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

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

f) After installation, ensure the ground cable, communication cable, positive and negative cables of BCU and inverter are connected correctly.

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

h) Batteries must be installed and maintained by qualified installers or technicians.

i) In order to ensure the normal operation of the Battery-Box, please be sure to update the firmware to the latest version and finish the configuration on Battery-Box webpage in accordance with this document or quick reference guide.

j) Please make sure the system switch is off in case the system is not working.

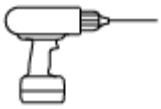
k) The installation and correct working mode should be finished in any case within one week to avoiding overdischarge or other irreversible damages.

3.1.2Tools & safety gears required

3.1.2.1 Tools

The following tools are required to install the battery and BCU.

Phillips screwdriver



Churn drill

Wire clamp

Diagonal cutters

Adjustable wrench

Inclinometer (Level)

Slotted screwdriver

M6 /M4 Precision screwdriver

3.1.2.2 Safety gears for personal protection

High Voltage Storage! Improper handling can cause danger and damage.
Wearing suitable personal protective equipment for all work on the product.
It is recommended to wear the following safety gears when handing the battery and BCU.

Safety shoes: In the installation process, when the battery accidentally dropped, can act as a buffer to protect the foot.

High voltage insulation protective gloves: prevent high voltage, protect human life.

Insulated gloves

Safety shoes

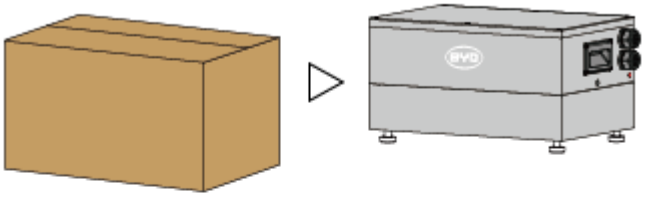
3.2 Unpacking the package

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

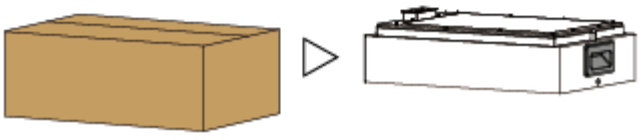
3.2.1 Unpacking

Tool: Knife

BCU + Base

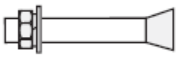


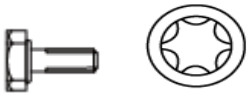
B-Plus H 1.28A



3.2.2 Items in the package

Packing of BCU & BASE

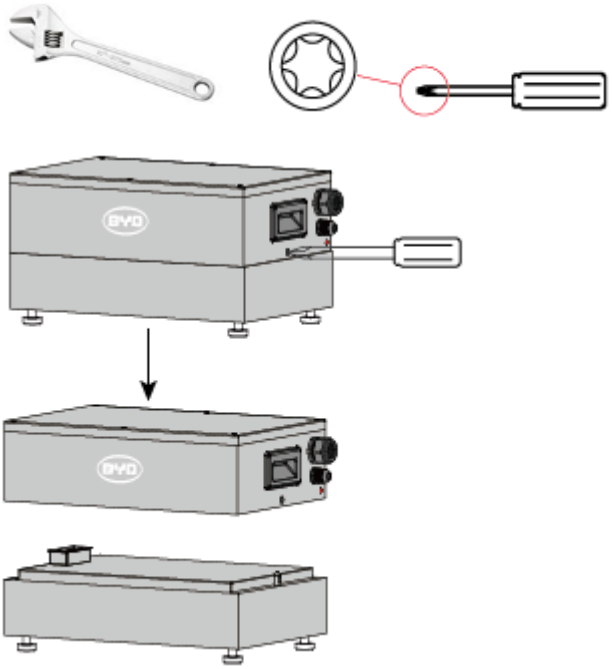
Name	Quantities	Picture
M6 hexagon pan head screw	2	
M4 hexagon pan head screw	3	
M6 expansion bolt	3	
OT terminal for Ground	1	
Black Sealing plug	3	
White Sealing plug	2	
Quick reference guide	1	
User manual	1	
Notice	1	

Packing of B-Plus H 1.28A		Picture
M6 hexagon pan head screw	2	
White Sealing plug	2	
MSDS	1	

3.2.3 Separate BCU and base

BCU & Base are locked and packed in the same box, unlock the lock with precision screwdriver, separated the BCU and the base. BCU and Base are locked together with anchor bolts, disassemble all the anchor bolts with adjustable wrench.

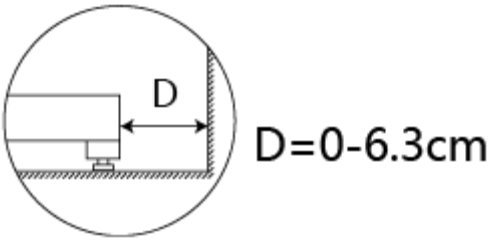
Tools: Adjustable wrench, M6 Precision screwdriver

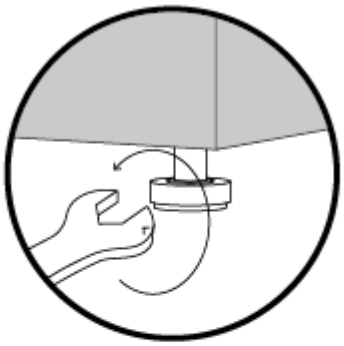


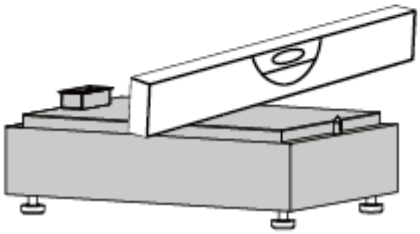
3.3 Adjust the level of the base

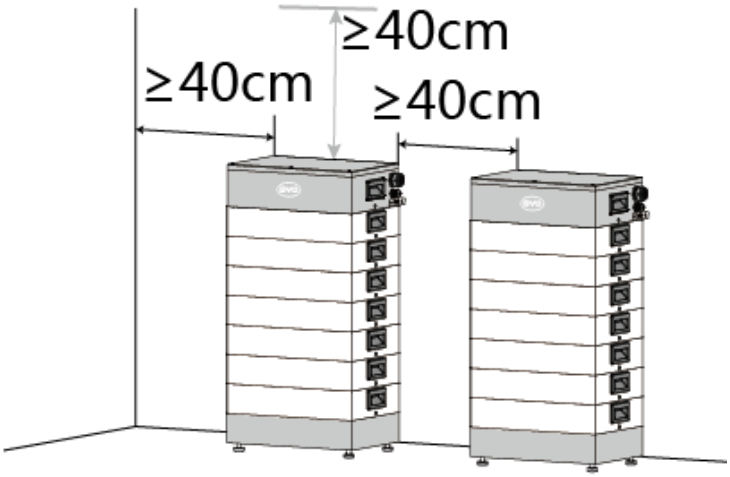
The anchor bolts should be screwed into the lower part of the base at first. The installation distance from the base module to the wall should be between 52mm and 60mm. The anchor bolts can be adjusted in height to levelize the base module. Counter nuts should be tightened to fix the anchor bolts.

Tools: Inclinometer，Wrench





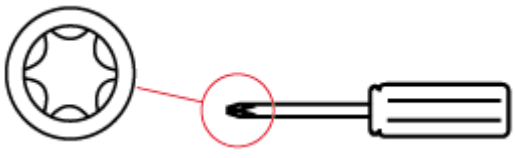




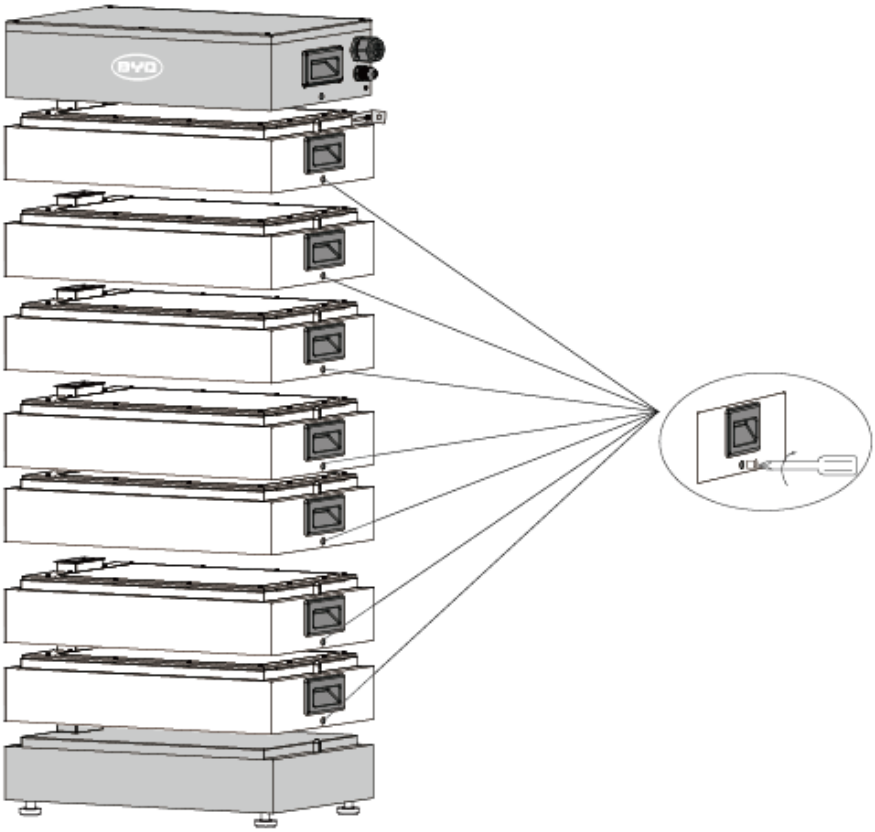
3.4Install battery modules and BCU

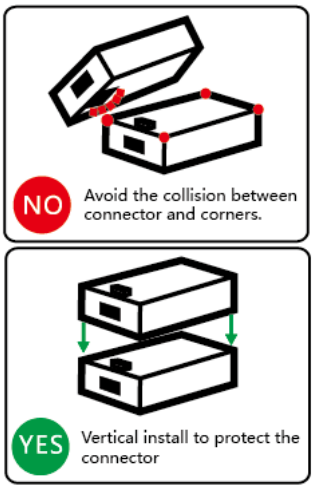
The battery modules should be installed on top of the base module. Each module should be carefully placed on the top of the lower one and the side-locks should be closed using the M6 Precision screwdriver . Avoid collision of the connectors and corners. After installing all battery modules the BCU module should be placed at the top of the tower and also be fixed with the side-locks.

Tools: M6 Precision screwdriver



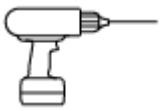
Avoid collision of the connectors and corners

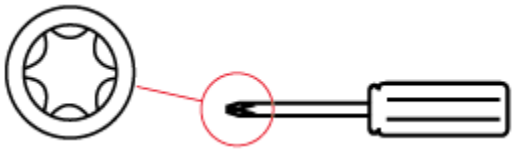




3.5 Install wall plate

Tools: Churn drills，Pencil, M6 Precision screwdriver



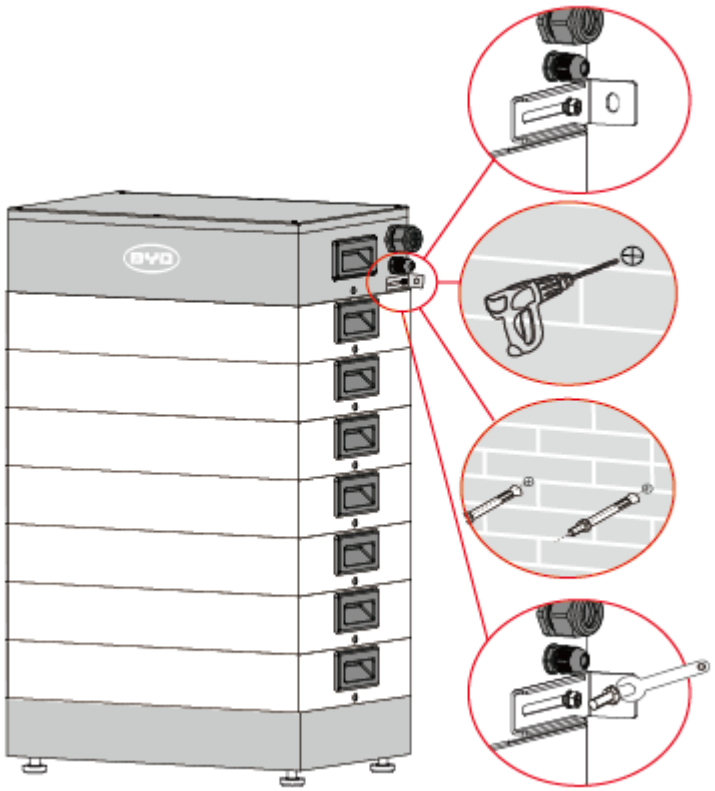


1 Use a pencil to mark the location of the hole to be drilled.

2 Remove the BCU, punch holes in the wall with hammer drill.

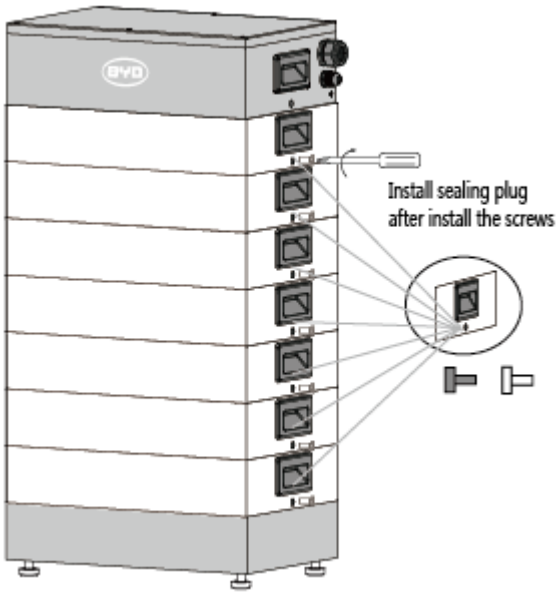
3 Install expansion bolt in punched holes.

4 Install the BCU, then lock the crews and expansion bolt.



3.6 Install screws and sealing plug

To prevent water or dust coming inside the batteries sealing plugs should be installed in the holes on the side of each module. This must be done to ensure IP55 protection level.

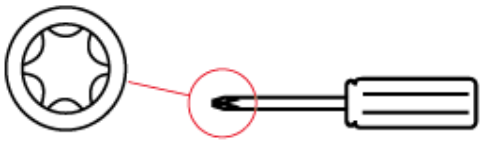


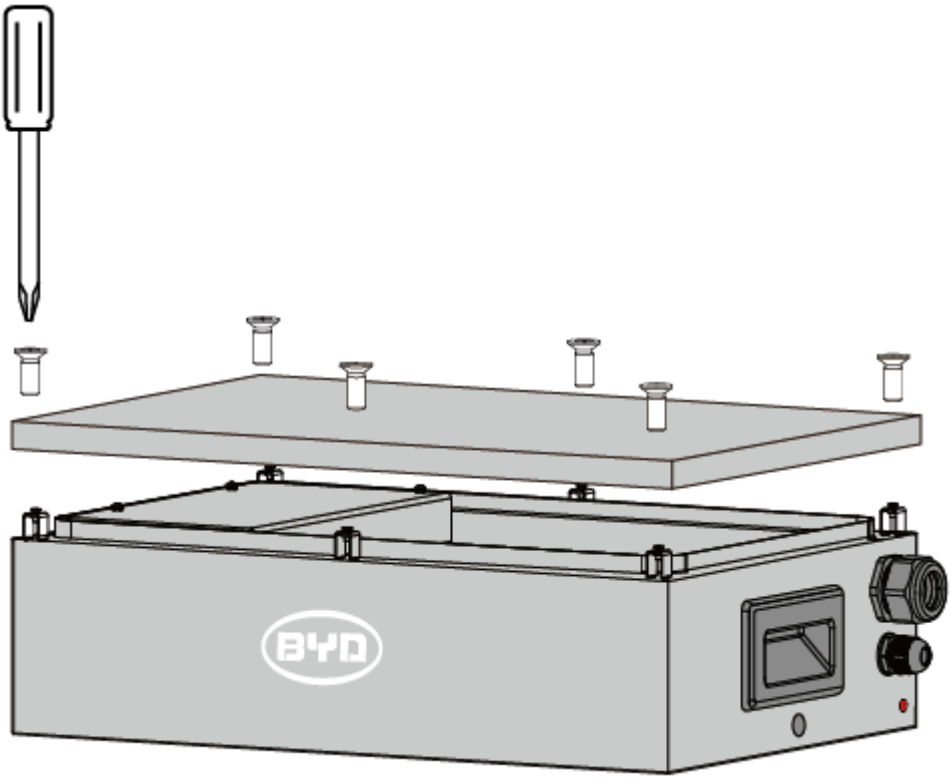
3.7 Open the top cover of the BCU

To demount the cover of the BCU the M6 Precision screwdriver screws around the edge has to

be screwed out. Ensure that the seal of the cover is not broken when demounting and mounting the cover. This is needed to ensure IP 55 protection level. - Warning: The system switch of the BCU should be turned off when opening the cover. Danger of high voltage.

Tools: M4 Precision screwdriver

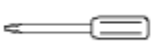




3.8 Power Cables, Ground Cable, Communication Cable & LAN Cable Connection.

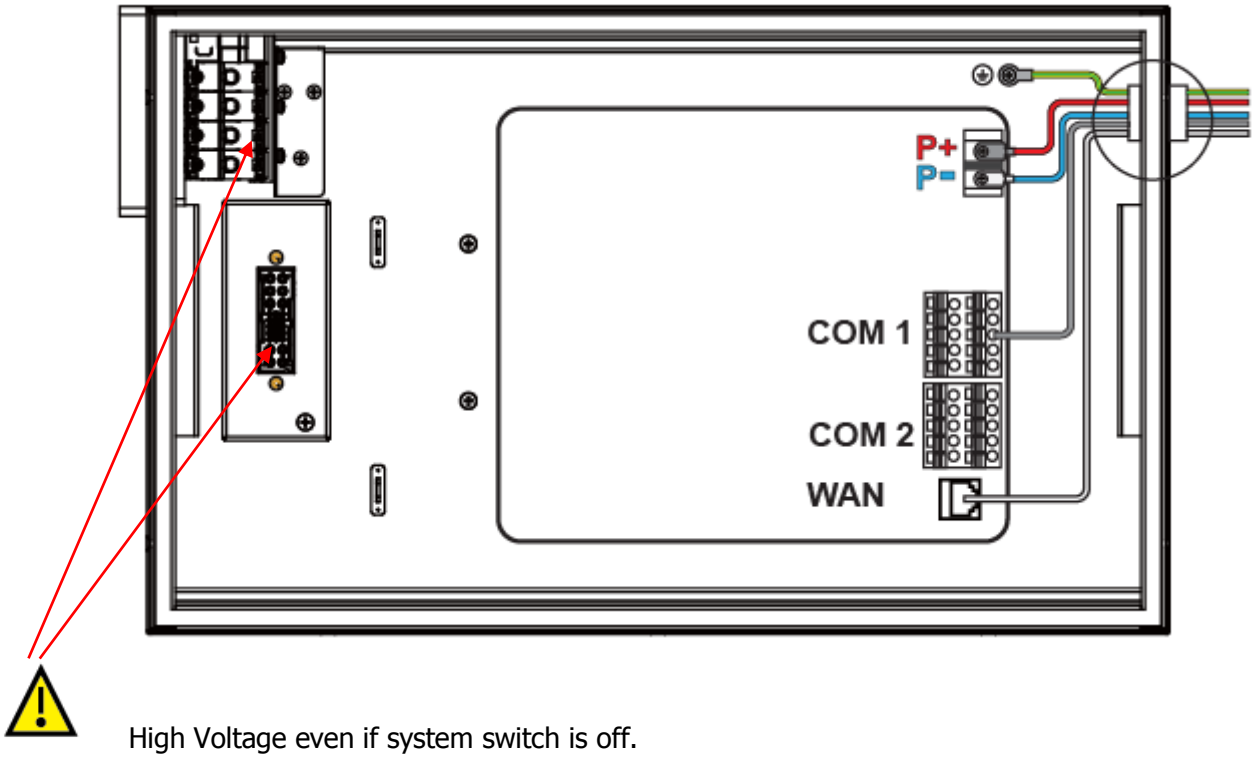
After demounting the cover of the BCU the circuit board can be seen. Warning: Touching anything else than the terminals or scratching the circuit board with tools may damage the whole system. Due to high voltage it may be dangerous to life to get in contact with the circuit board. The system switch must be turned off when working on the circuit board.

Tools: M4 Precision screwdriver; Wire clamp

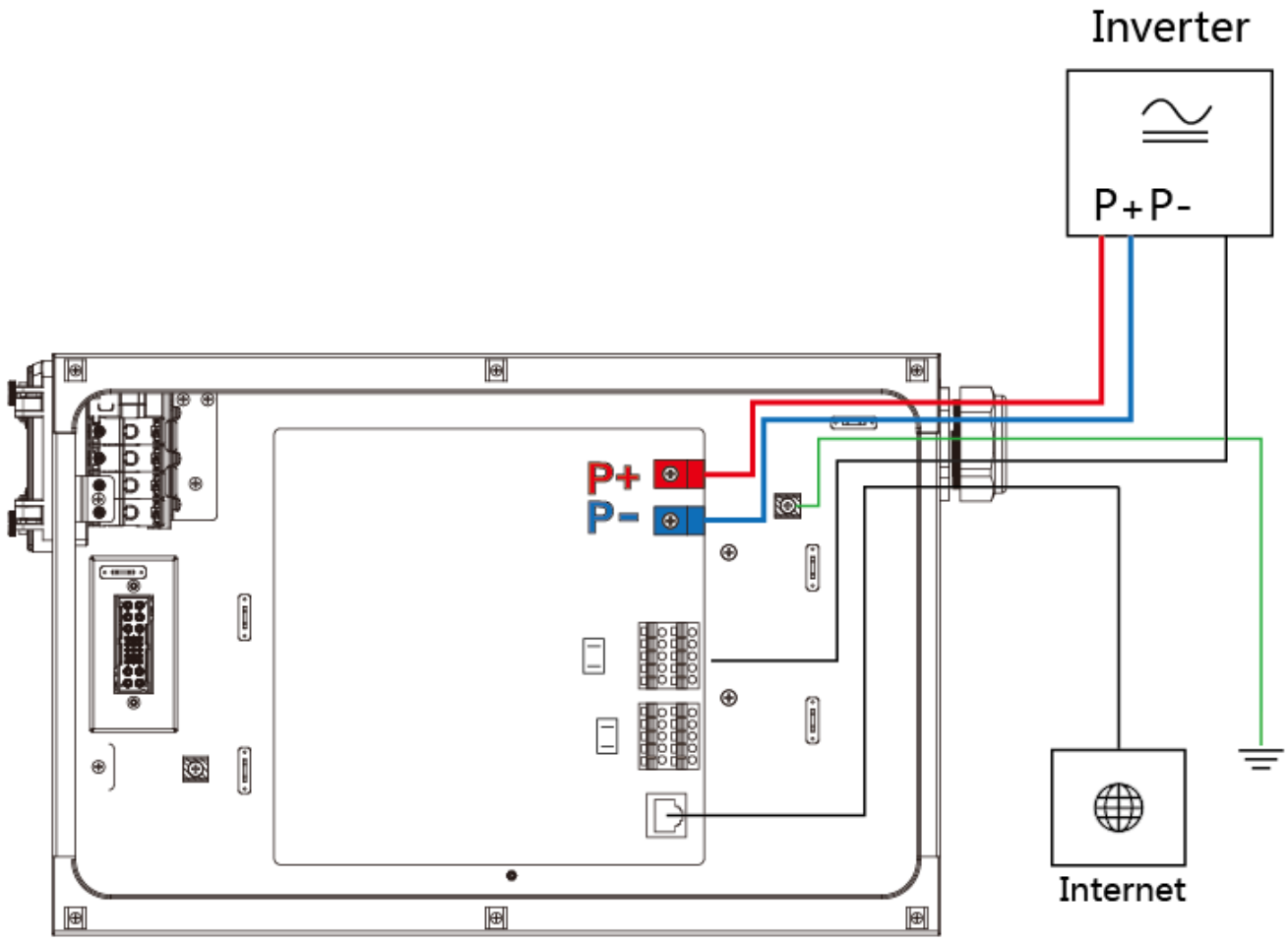


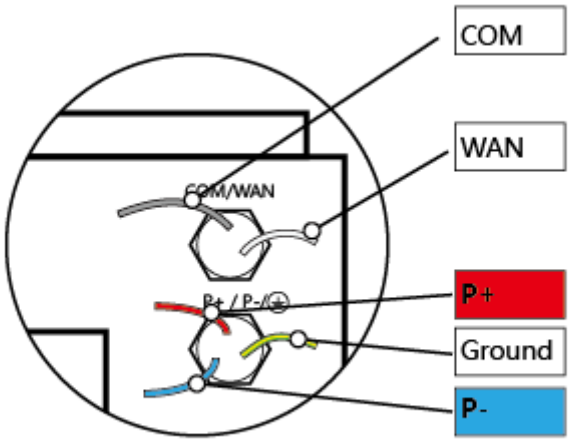
The cables must comply the recommended cable standard shown in the table below. The

connection has to be realized according to regional technical standard. --- The connection sequence at the BCU should be: 1. Ground cable (attached to the case), 2. Negative cable (P- Terminal on circuit board, 3. Positive cable (P+ Terminal on circuit board), 4. Communication cable, 5. Network cable. The pin assignment of the Communication cable is depended on the inverter in use and shown in the relevant chapter.



High Voltage even if system switch is off.

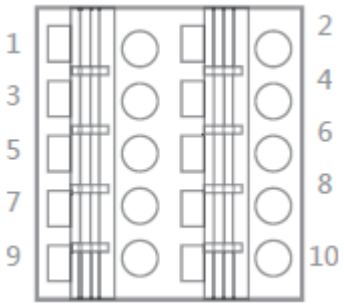

Inverter
P+P-
P+
P-
Internet


COM
WAN
COM/WAN
P+ / P-/
P+
Ground
P-

Function of the cables connected with external devices

No.	Interface Name	Description
1	P+	The systems positive terminal. Must be connected to the inverters positive terminal for battery.
2	P-	The systems negative terminal. Must be connected to the inverters negative terminal for battery.
3	GND	Grounding terminal. Must be connected to the common ground. Do not connect it to the ground on the inverter.
4	Ethernet	Connected to the Ethernet, to complete the functions of communication and remote program update.
5	Inverter communication	Contain RS485, CAN, and EN enable signals, outputting 13V power.

The COM1 and COM2 terminals share the same pins. The table below show the pin assignment.



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	RS485 Bus
6	CANH	CAN-Bus
7	RS485B	RS485 Bus
8	CANL	CAN-Bus
9	Shield	Shield line
10	NC	Reserved

CAN_H and CAN_L use twisted-pair。

Cable standard recommended

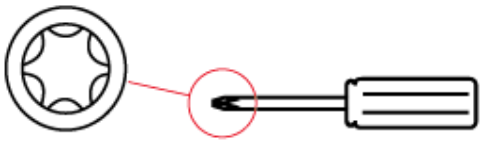
Cable definition	Cable diameter (mm)	Sectional area (mm²)	Recommended cable type
P+ connection cable	Φ4~Φ6.8	6-10	UL1015 10AWG-8AWG
P- connection cable	Φ4~Φ6.8	6-10	UL1015 10AWG-8AWG
Grounding cable	Φ4~Φ6.8	6-10	UL1015 10AWG-8AWG
Communication cable	Φ4~Φ6.8	/	cat5e or above
Ethernet cable	Φ4~Φ6.8	/	cat5e or above

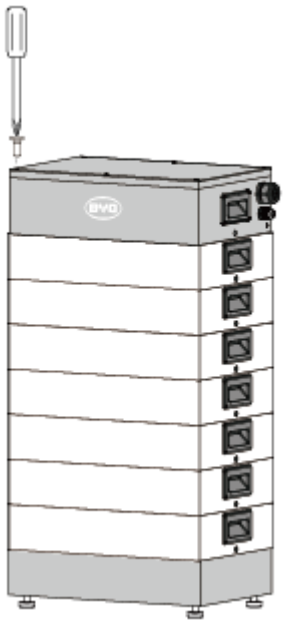
1. If there are relevant local cable technical standard requirements, please use the local standard.
2. After accomplishing the installation, the wiring should be double checked. You can use the checking list in chapter 4 for this. Please check steps 1-13.

3.9 Install the cover of BCU

Before mounting the cover of the BCU again the installed cables should be checked if they are connected well. Mounting the cover the seal should not be harmed to ensure IP55 protection level. All screws of the cover should be tightened carefully to prevent them from harm.

Tool: M4 Precision screwdriver





4 Checking List

The purpose is to check the connection and parameters setting between the Battery-Box H 5.1-11.5 and the inverters. The above inspection is only related to BYD Battery-Box HV. For other inspection, please refer to the inverter user manual and installation manual.

After installation, please check following items according to quick reference manual.

Task	Check
1 Sealing plug of batteries and BCU	☐Yes ☐No
2 Hangers of BCU	☐Yes ☐No
3 Positive cable connection	☐Yes ☐No
4 Negative cable connection	☐Yes ☐No
5 Ground cable connection	☐Yes ☐No
6 Network cable connection	☐Yes ☐No
7 Communication cable connection(SMA, Fronius,Goodwe,Ingeteam)	☐Yes ☐No
8 CAN_H and CAN_L use twisted-pair	☐Yes ☐No
9 Check the installation of jumper(For Fronius second connect method)	☐Yes ☐No
10 Ground cable, power cables and communication cable have a reliable connection and there is no short circuit.	☐Yes ☐No
11 Update the latest software	☐Yes ☐No
12 Installation time and country and inverter type and battery' s quantity correctly setting on Battery-Box HV web	☐Yes ☐No
13 Battery-Box type and parameters correct setting on inverter' s web or App.	☐Yes ☐No

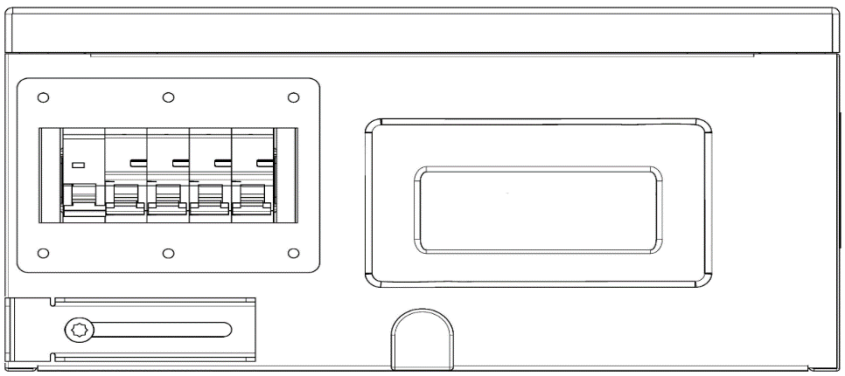
Turn off the inverter and battery system switch before installation;
Confirm the power cables are not connected reversely;
Ensure reliable and correct connection of communication cable between battery and inverter.
Make sure communication cable connection follows the requirement of different types of inverters.
After connecting the wires according to the installation manual, gently pull down each wire to ensure that it is secure;
Before power on the system the wiring must be double checked if it' s done correctly;
Use twisted-pair wire for CAN_H and CAN_L, which will help to improve the stability of CAN communication.
Check the installation of jumper caps (The second installation method for Fronius)

5 Run and shut down the Battery-Box HV system

Note: Before activating the system, please check the following items:
Confirm the inverter is not connected reversely;
Ensure reliable connection of communication cable between battery and inverter.
Warnings: The battery must work together with an inverter. If the battery, the inverter or the whole system is not used, please keep the system switched off. Leaving the system turned on may lead to deep discharge and harm the battery.

5.1 Switch on the Battery-Box HV system

1. Before switch on the system switch, make sure all connections are correct.
2. Open the system switch waterproof cover of BCU.
3. The battery-box system can be turned on by operating in the direction indicated by the system switch.
4. The system switch is the final on-off switch of the battery-box system. The BCU will be powered on by the battery.



5.2 Updating and Configuration of the Battery-Box HV via web interface

The commisioning of the battery system and the inverter has to be finished on the same day. The battery must not left switched on, if there is an interruption of the commisioning process. This might lead to a deep discharge of the battery and harm the battery system or even damage it permanently.
The commisioning procedure is finished if there is a normal communication with the inverter and the ability to charge the battery. In case of any interruption the batteries system switch should be turned off before leaving the side. --- After the mechanical and electrical installation of the batteries and the BCU, the system has to be configured using the Battery-Box HV’ s web interface. --- 1. Update the latest software. 2. Configure the system information (Installation time, installation country, inverter type, number of batteries) 3. Reboot the system (Both the update and the configuration are restarted automatically). 4. Configuration of the inverter.

The installer shall bear the consequences and losses arising from the failure to operate in accordance with the above requirements, and BYD shall not bear the consequences and losses arising therefrom.

5.2.1 Login the Battery-Box HV web interface

There are three ways to log in to the Battery-Box HVs web interface. Using one of the browsers (Microsoft Internet Explorer, Google Chrome, Mozilla Firefox) is recommended. The installers initial account number and password are as follows. (Login ID: installer; password: byd@12345).

1. WIFI

Turn the main switch of the Battery-Box on to power on the battery system. 2. Connect the computer to the Battery-Box systems WIFI. Search in the computer for new WIFI networks. The name of the WIFI will be BYD and the last 11 numbers of the serial number. (Example: Products serial number: "BYD100171708-00000" will have the WIFI name: "BYD171708-00000") WIFIs password is "123456789". 3. Open a recommended browser and call the IP address of the Battery-Box where you are usually put in the URL of a web page. The Battery-Box IP address is "192.168.5.1" 4. You will be asked for account number and the login password. Please fill in "installer" and as a password "byd@12345".

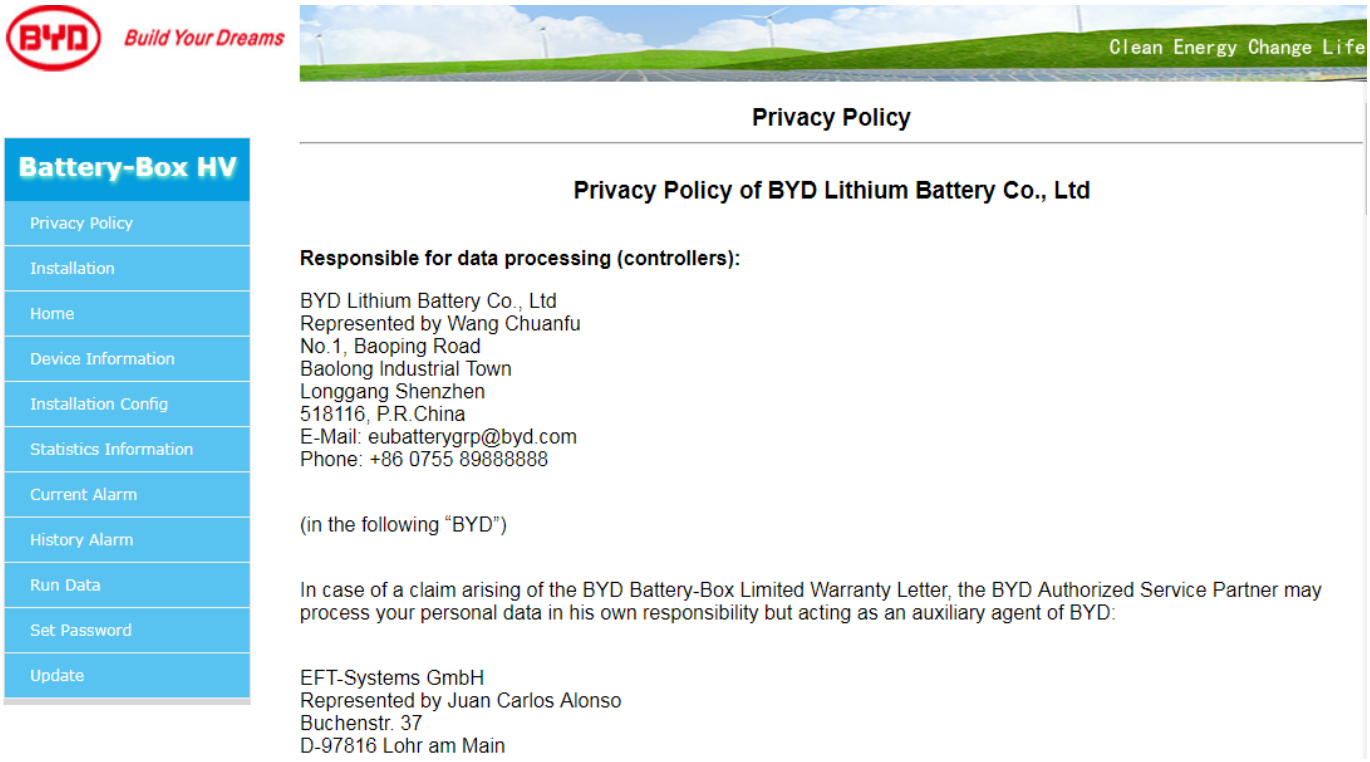
2. LAN

The LAN cable has to connect the Battery-Box with the router. Your computer has to be

connected with the same router to be in the same LAN. 2. Turn on the main switch of the Battery-Box system. The Battery-Box IP address will be shown on the routers web page. 3. You can access the Battery-Box web interface calling in a recommended browser the IP address, or its host name. The host name is "BYD" and the last 11 numbers of the serial number.(E.g. Product serial number "BYD100171708-00000" will have the host name "BYD171708-00000") 4. You will be asked for account number and the login password. Please fill in "installer" and as a password "byd@12345".

3. Direct connection with network cable

The LAN cable has to be connected directly to your computer. 2. Turn on the main switch of the Battery-Box system. 3. Set your computers IP address on the same subnet like the Battery-Box IP address. (E.g. Computer IP address: 192.168.6.100) 4. Enter the IP address of the Battery-Box system in the recommended browser "192.168.6.1" and call the page. 5. You will be asked for account number and the login password. Please fill in "installer" and as a password"byd@12345". After successful login the web interface will look like shown below. Please read the privacy statement carefully before operating the Battery-Box HV system.



5.2.2. Update the latest software of Battery-Box system

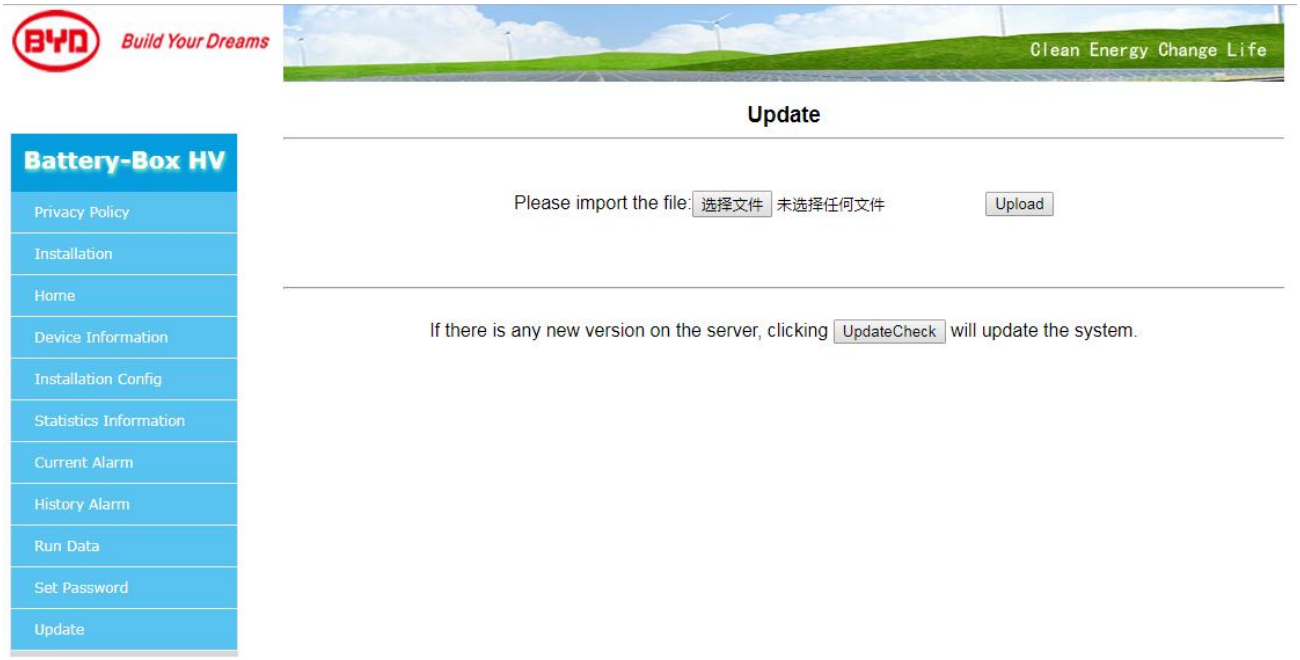
To update the Battery-Box with the latest software, you should click on "Update" in the left bar. A web page appears which allows you to browse for the update file. Please upload the file from your computer and then click "Upgrade" to finish the updating process. After updating the system will restart automatically. Please wait patiently. It can take up to some minutes. --- The newest software will be available on the webpage of the after-sales-service provider of the

Battery-Box. In the appendix you will find the web address depending on your region.

Select file

After updating, the system will restart automatically, please wait patiently.

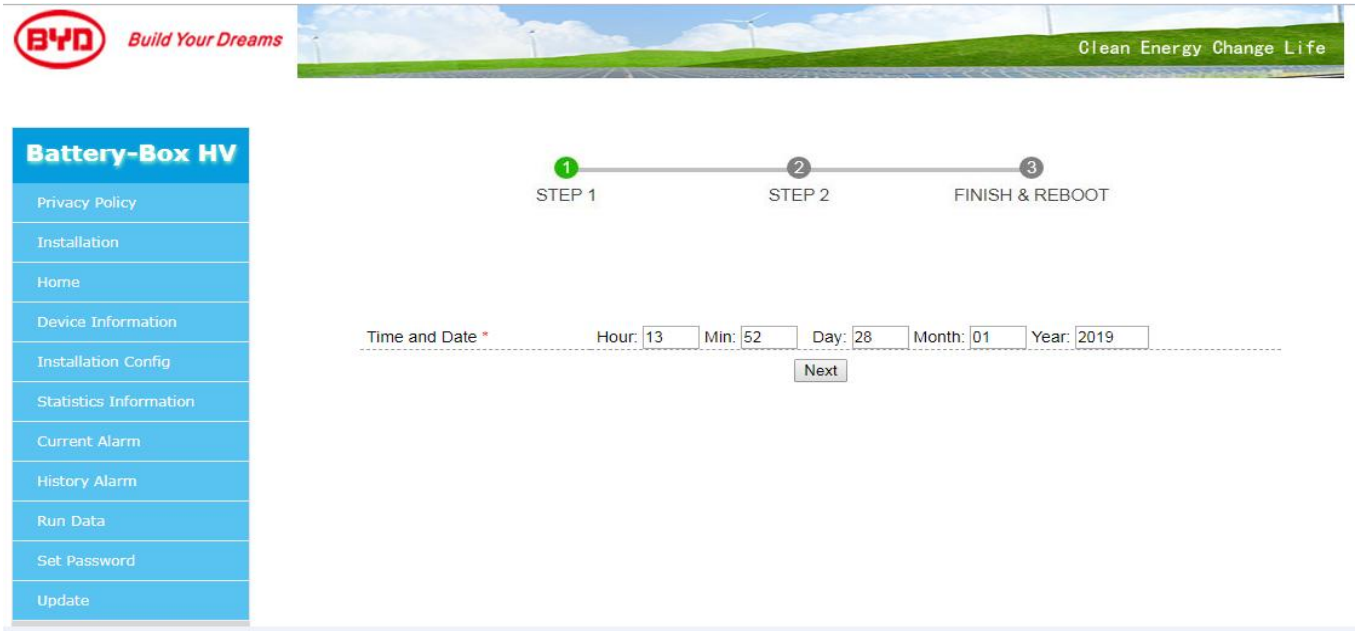
Download the firmware: www.eft-systems.de(Support->Downloads)

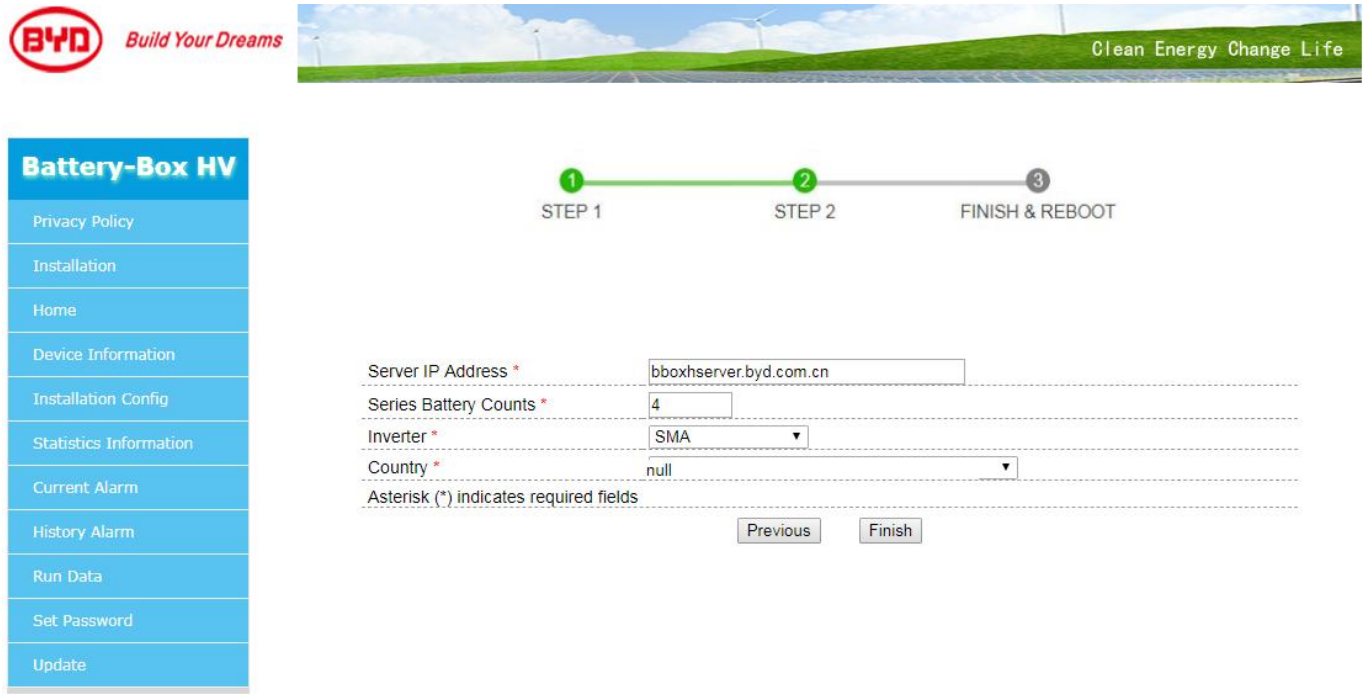


5.2.3 Configuration system information

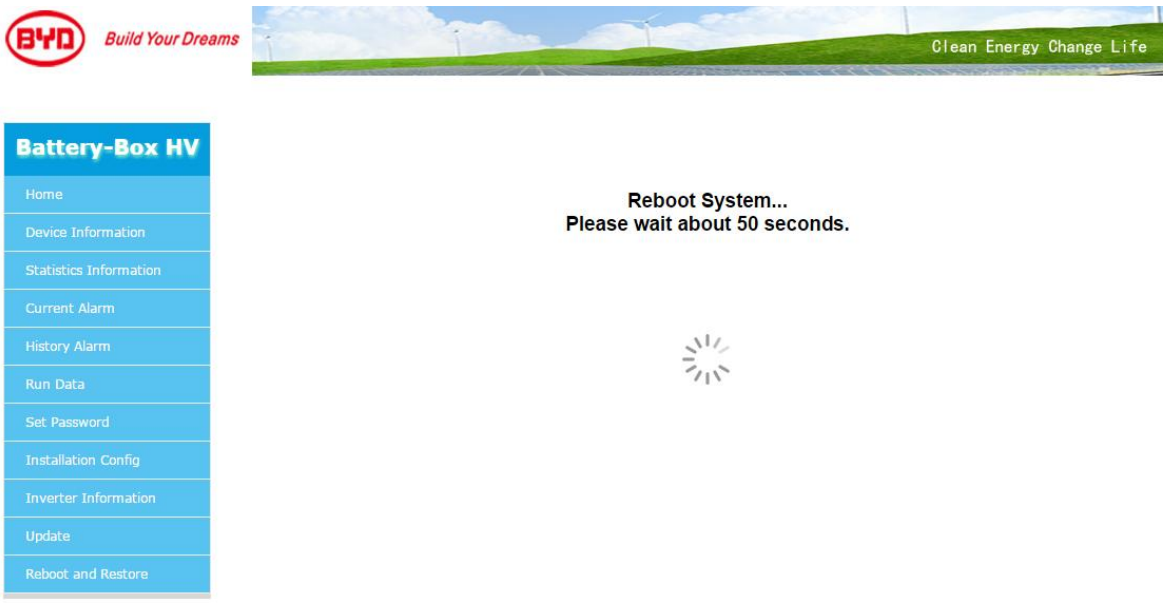
Click on the "Installation" menu in the left list to set the system's user information (e.g. the installation time and date, the server IP, the quantity of batteries, the type of inverter, the geographic location. etc.). The number of B-Plus H 1.28A (according to actual modules of the system, 4~9pcs), inverter model (e.g SMA, KOSTAL etc.).

These parameters are crucial for the proper work of the system. They must be configured correctly. Incorrect information may lead to damage of the system.





After clicking on "Finish" button on the step 3, the system will set the parameters automatically. Please wait patiently for about one minute and ensure that the system will not be powered off. If the system is powered off the configuration might fail.

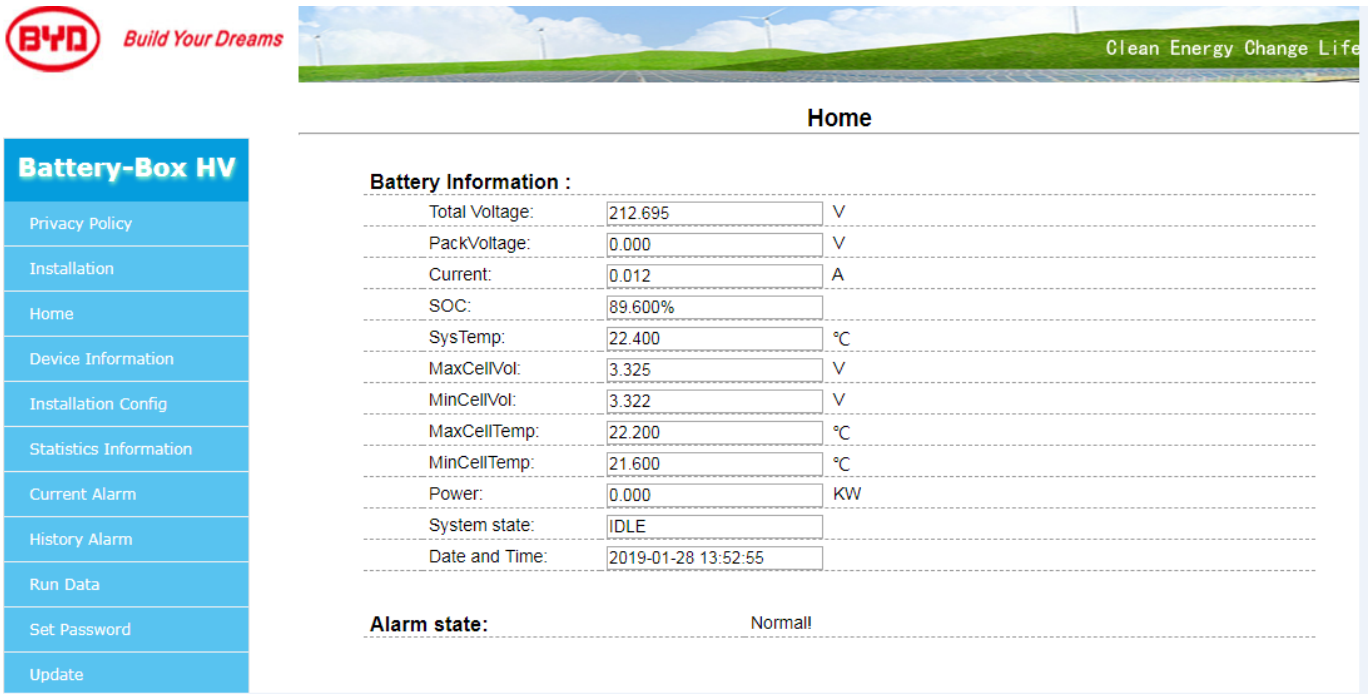


Note: After setting, the system will be restarted automatically.

*Warning: Incorrect configuration can lead to malfunction of the system and might cause damage.
*If the system is not working, please switch off the air switch of Battery-Box H 5.1-11.5 before leaving to avoid further damage.
When the system restarts successfully, you can check the" Installation Config" page to see if the configuration is successful. If the configuration is not successful, you need to reconfigure it

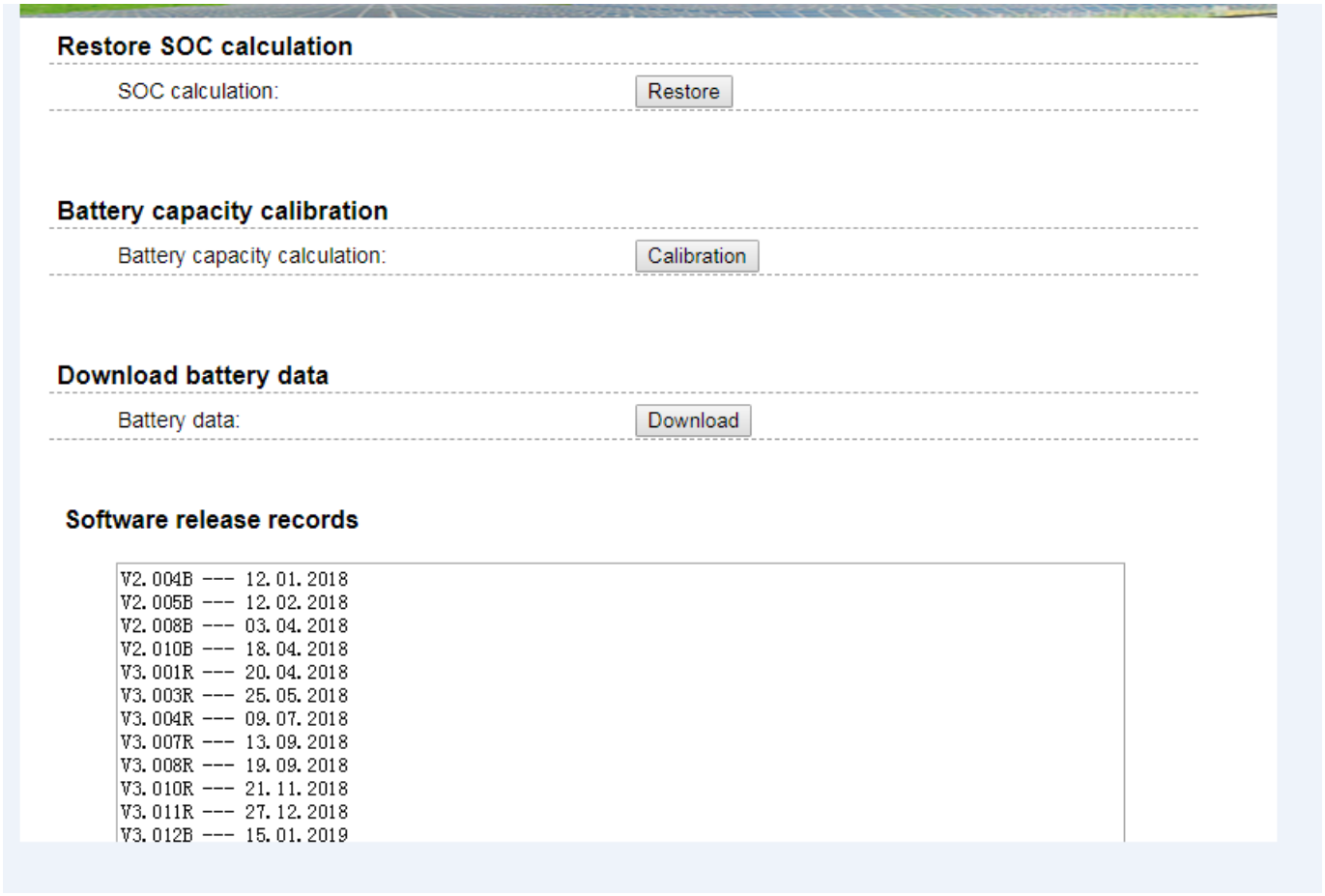
5.3 Other functions of the webpage

1) Main information page "Home" --- Clicking on "Home" in the left bar the user can view the main battery information such as voltages, the actual current and the systems temperature. The page also shows the SOC and the alarm state.



2) Device Information

Clicking on "Device Information" in the left bar the user can view the main device information such as serial numbers, firmware version and the main network information.



After running for a period of time (usually more than 30 days), the Battery-Box HV automatically performs capacity calibration functions on a regular basis to ensure the accuracy of the battery SOC, and most inverters that match the Battery-Box HV can support the battery capacity calibration function.

The battery performs capacity calibration with the cooperation of the inverter. the calibration process needs to fill and discharge the battery, so it may have some impact on the normal use of the user, and return to normal after the calibration process.

In addition to automatic calibration of the system, you can force calibration by manually clicking the Battery capacity Calibration button on the web management page of the battery in the following cases:

1. After the inverter and battery are installed for the first time, the whole system works normally, and a capacity calibration can be done to make the capacity calculation more accurate.

2. After the battery module is replaced, a capacity calibration can be performed to make the capacity calculation more accurate.

3. During use, if you find or think SOC is inaccurate, you can click the Battery capacity Calibration and SOC Calibration button.

In manual forced calibration, the system should be allowed to charge and discharge normally according to this strategy until the end of the process.

SMA doesn't have this feature, but Fronius and Goodwe do. SMA do not support this feature unless BYD and Inverter manufacturers update information.

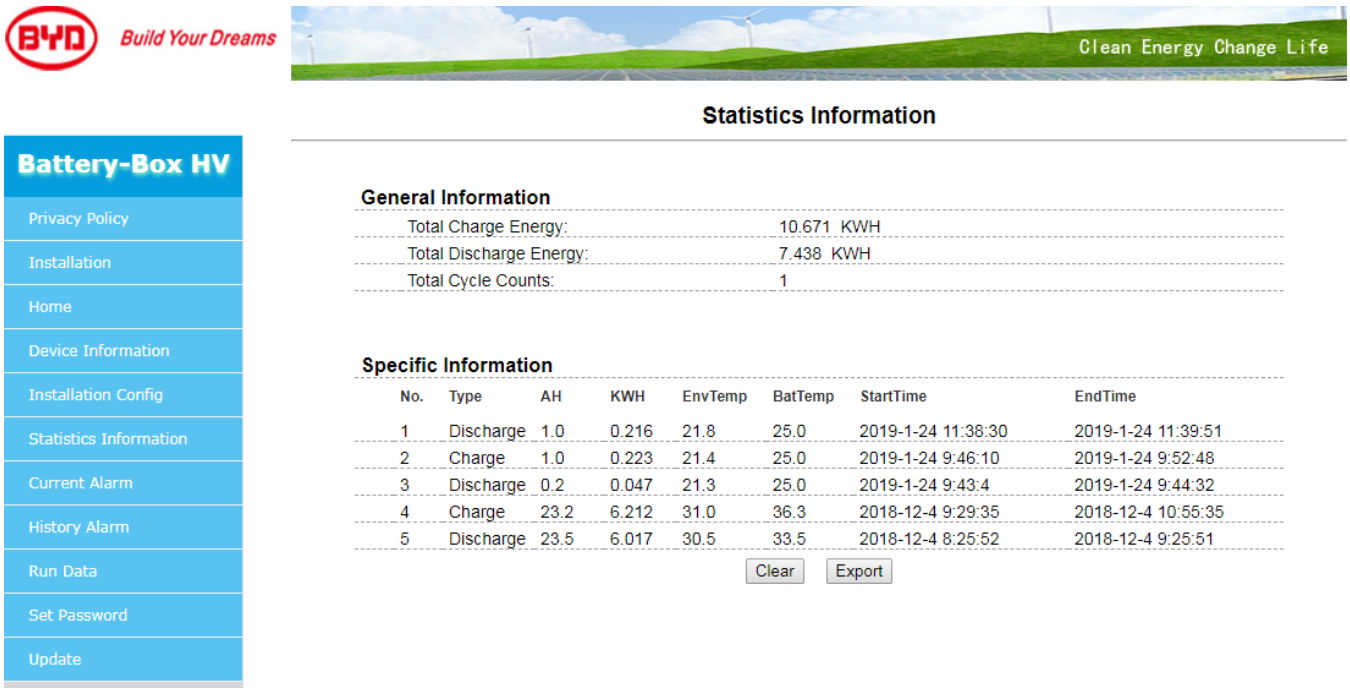
When you need help, you can use the download function button to download all the battery information to the after-sales service provider.

3) Installation Config

Clicking on "Installation Config" in the left bar the user can view the main installation information like the Servers IP Address, Array counts (which is the number of Battery-Box towers), Series Battery Counts (which is the number of battery modules in the tower), Installation Time, Inverter Type and the set Country.

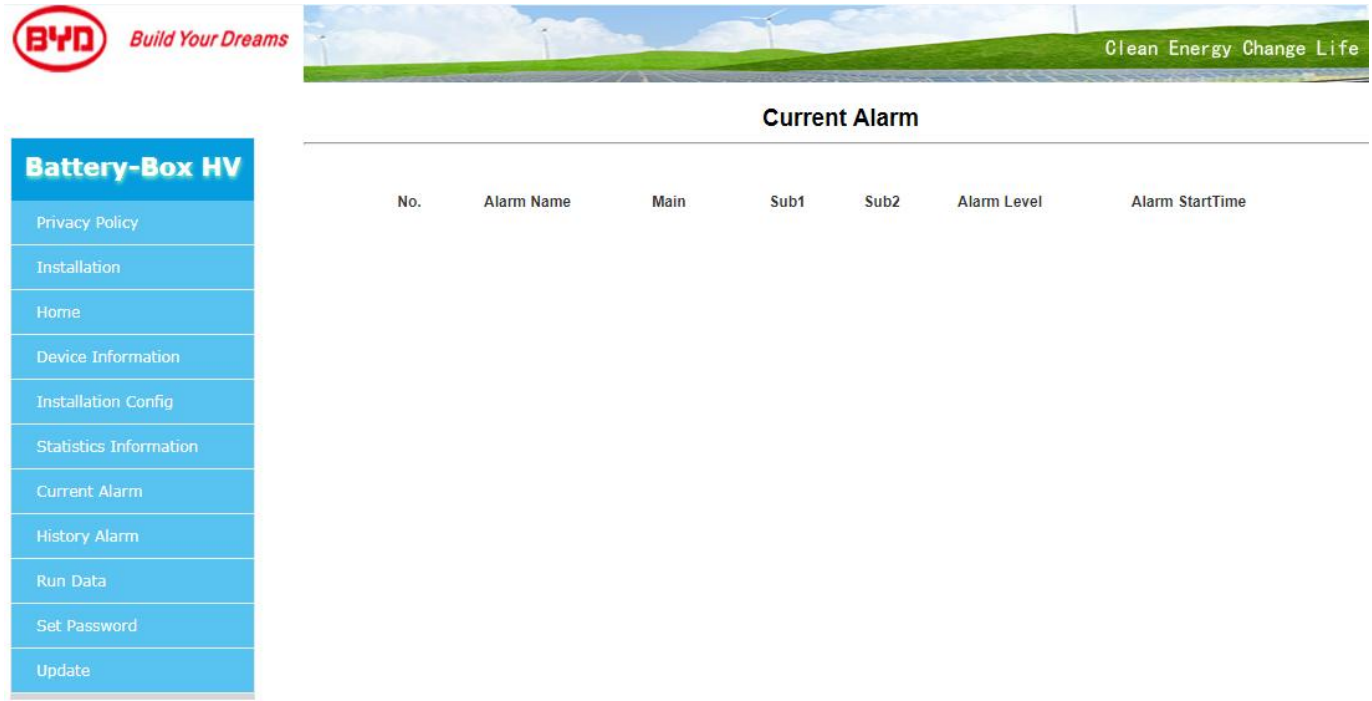
4) View charging and discharging records

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.



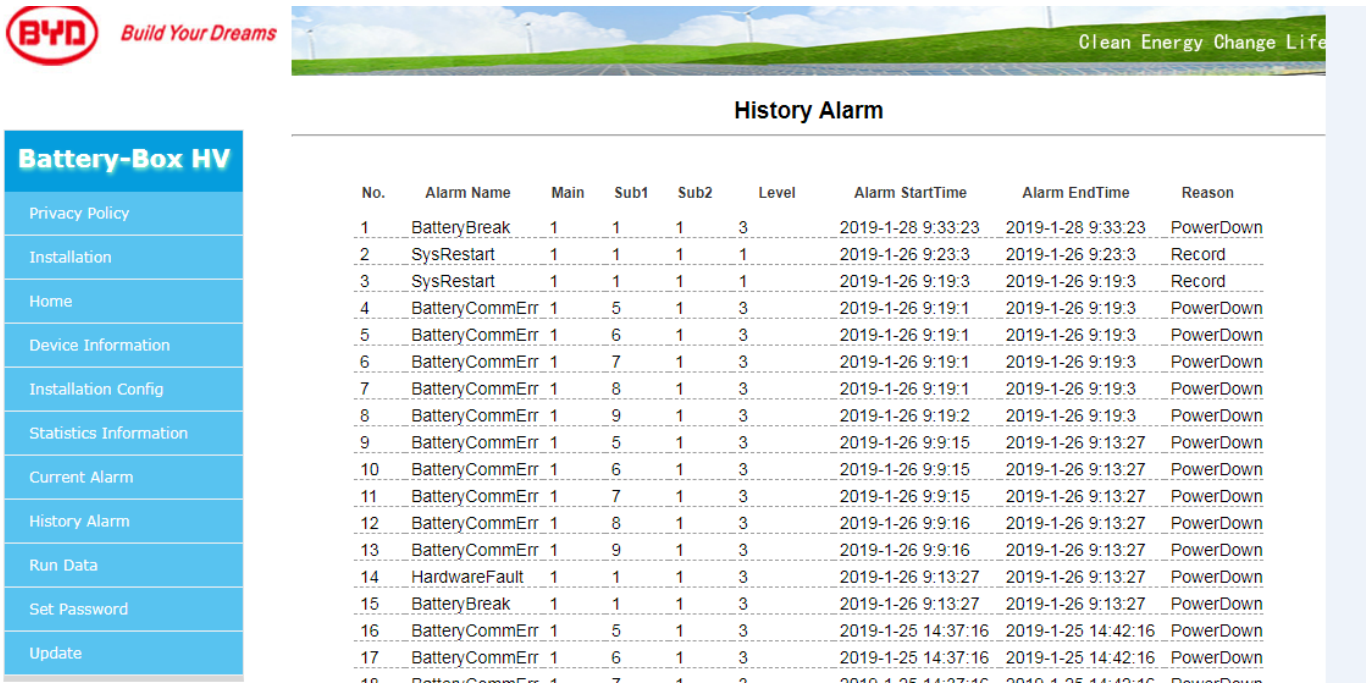
5) View current alarm

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



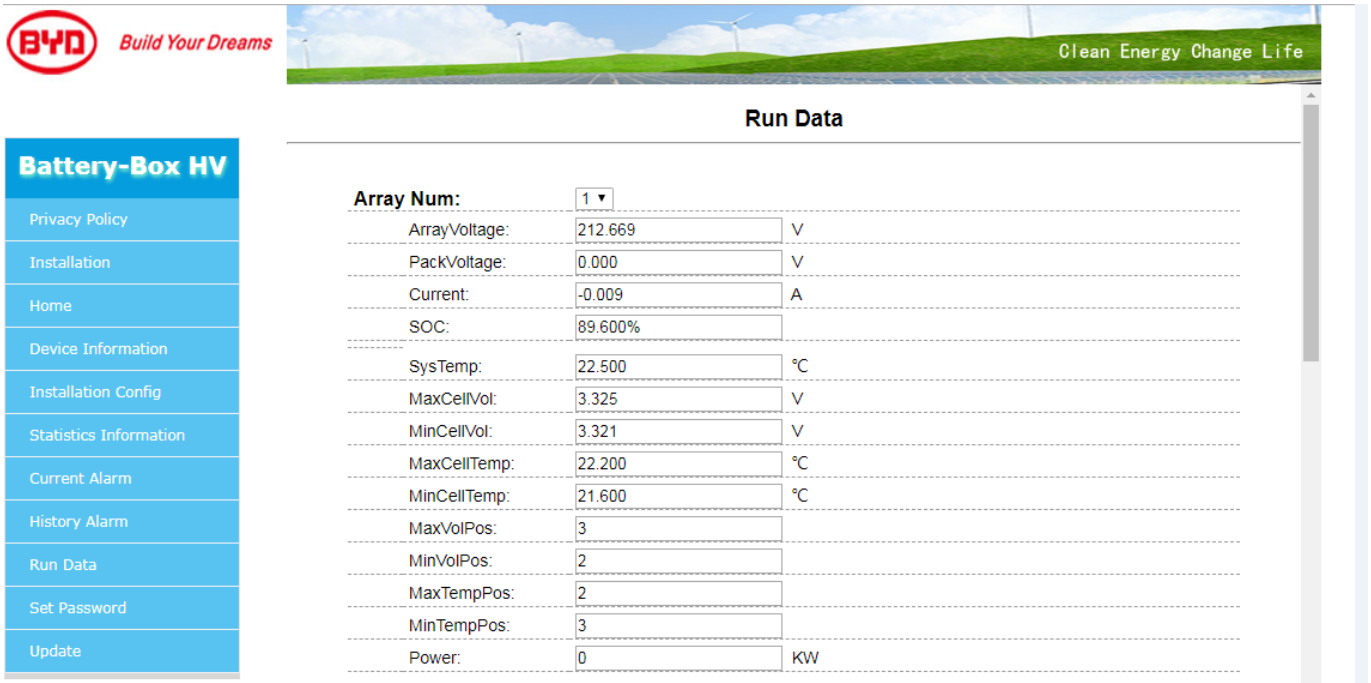
6) View history alarm

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



7) View Run Data

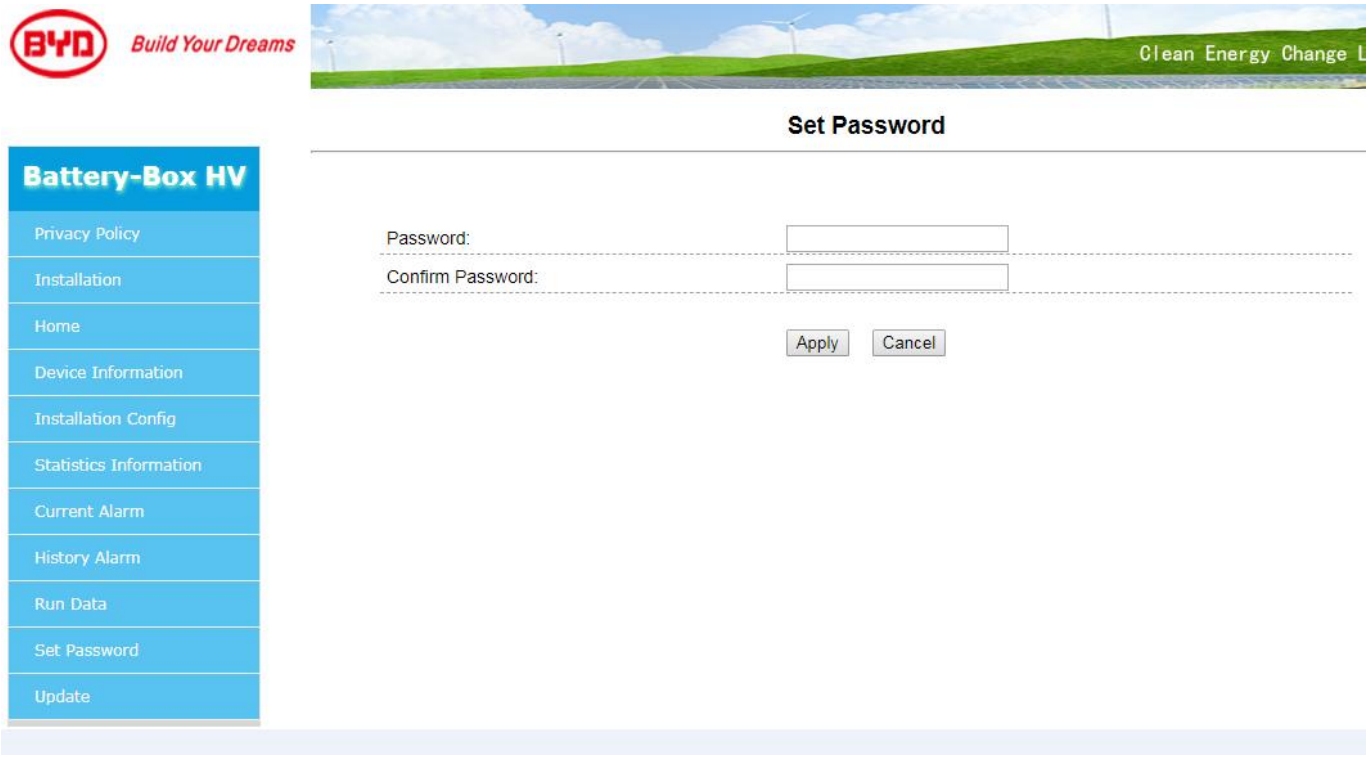
Choosing the modules individually in the drop down menu "Series Battery Num", the data of each module can be seen. The data shown is the actual sensor data of each temperature and voltage sensor in the battery module. One is able to analyze the voltages even down to cell level. The number of the module is defined by the serial number of the battery modules in the tower. The serial number shows the production week of a module with the four digits in the middle after "1C". The last digits of the SN show a rising number per production week. (E.g. Serial number: "PGM00001903-1C361708-00125" - The module had been produced in year 2017 and week 36. It was the 125th module produced in this week.)



8) Set the password

Click the "Set Password" on the left, the user can set the new password. If the password get lost that the customer couldn't log in to the Battery-Box HV web interface.

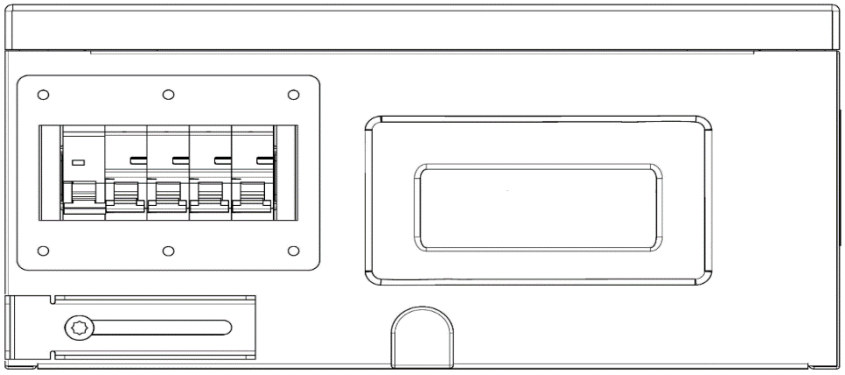
If you forget your password, contact your after-sales partner, and eventually BYD will help reset the password. In order to ensure your normal use, please remember your password.



6 System Shutdown

To shut down the whole system it is important to follow this sequence. --- 1. Loads and inputs at the inverter should be shut off. 2. Switch off the inverter according to the inverters manual. 3. Switch off the system switch of the Battery-Box. (Left hand side of the BCU) 4. After stopping the whole system please ensure that the a) inverter is powered off. b) the battery system is powered off.

If it is intended to not use the system for a longer time (Like more than 15 days.), we suggest the batteries system switch turned off. At this point, the SOC of the system should be kept at a higher SOC to prevent the battery from overdischarge. The requirements of storing the battery modules should be respected.



System switch

7. Contact

If you have technical problems with our products, please contact the customer service .The following data is required in order to provide you with the necessary assistance:

• Battery system:

– Type

–Serial number of BCU and each Batteries

– Quantities of battery

– Software version of BCU

-Provide a battery data file through the download function on Device information of Battery-Box wepage.

– Event message and Error discription

– Mounting location

– Installation date(for the first time) and Installation environment(out door or indoor) and （recent 5 days temperature when OT or UT alarm happened）

• Battery inverter:

– Device type

– Serial number

– Firmware version

– Event message

–Use the name and account and password of the system in inverter remote monitoring (if available)

– Type of automatic transfer switch (if available)

– Optional equipment, e.g. communication products

– Access data for Inverter remote monitoring (if available)

– Special country-specific settings (if available)

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