

# BYD BATTERY BOX PREMIUM LVL 15.4 USER MANUAL

V1.0



 BATTERY  
BOX

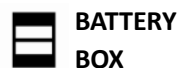


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## 1. Information On This Document

### 1.1 Validity

This document is valid for the Battery-Box Premium LVL 15.4 from firmware version 1.5.

### 1.2 Target Group

The instructions in this document may only be performed by qualified persons who must have the following skills:

- Knowledge of how batteries work and are operated
- Knowledge of how an inverter works and is operated
- Training in dealing with the hazards associated with the installation and operation of electrical equipment and batteries
- Training in the installation and commissioning of electrical equipment
- Knowledge of, and adherence to the locally applicable connection requirements, standards and directives
- Knowledge of, and adherence to this document and the associated system documentation, including all safety instructions

### 1.3 Content and Structure of This Document


This document describes the mounting, installation, commissioning, configuration, operation, troubleshooting and decommissioning of the product as well as the operation of the system user interface.

You can download the current Limited Warranty Letter from the Internet at BYD website <https://www.bydbatterybox.com>, or BYD service partner`s website <https://www.eft-systems.de> and <https://www.alpspower.com.au>.

You can also call up the E-Manual via the user interface of the system. Illustrations in this document are reduced to the essential information and may deviate from the real product.

### 1.4 Levels of Warning Messages

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

 <b>DANGER</b>
Indicates a hazardous situation which, if not avoided, will result in death or serious injury

**WARNING**

Indicates a hazardous situation which, if not avoided, could result in death or serious injury

**CAUTION**

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**NOTICE**

Indicates a situation which, if not avoided, can result in property damage.

## 1.5 Minimum Configuration List

Please see attached document.

## 1.6 BMU Parameters

Please see attached document.

## 2. Safety

### 2.1 Intended Use

BYD Battery-Box Premium LVL 15.4 is for residential and small business use, and works with photovoltaic system. It is a 48V Li-ion battery storage system, with control module on itself. It could be operated in either off-grid or on-grid mode with compatible inverters.

- The system could be connected with internet through network cable for maintenance and software update.
- The system must only be used as stationary equipment.
- The system is suitable for indoor use only.
- The system must only be operated in connection with a compatible inverter. The list of these inverters could be read at <https://www.eft-systems.de>.
- The system is not suitable for supplying life-sustaining medical devices. Please ensure that no personal injury would lead due to the power outage of the system.



- Alterations to the BYD system, e.g., changes or modifications are not allowed unless the written permission of BYD Europe B.V. is achieved.
- The enclosed document is an integral part of this system. Keep the documentation in a convenient, dry place for future reference and observe all instructions contained therein.
- The type label should be always attached to the system.
- Any use of the product other than that described in the Intended Use section does not qualify as the intended use.

This document does not replace and is not intended to replace any local, state, provincial, federal or national laws, regulations or codes applicable to the installation, electrical safety and use of the product. BYD Europe B.V. assumes no responsibility for the compliance or non-compliance with such laws or codes in connection with the installation of the product.

The type label must remain permanently attached to the product

## 2.2 Important Safety Instructions

The system has been designed and tested in accordance with international safety requirements. However, in order to prevent personal injury and property damage and ensure long-term operation of the system, please do read this section carefully and observe all safety information at all times.




### **DANGER**


#### ➤ **Battery Module Leakage**

If the battery modules leaks electrolyte, contacting with the leaking liquid or gas should be avoided. Electrolyte is corrosive and the contact may cause skin irritation and chemical burns. If one is exposed to the leaked substance, do these actions:

- Inhalation: Evacuate the contaminated area, and seek for medical help immediately.
- Eye contact: Rinse eyes with flowing water for 15 minutes, and seek for medical help immediately.
- Skin contact: Wash the affected area thoroughly with soap and water, and seek for medical help immediately.
- Ingestion: Induce vomiting, and seek for medical help immediately



 <b>WARNING</b>
<p>➤ <b>Firefighting Measures</b></p> <ul style="list-style-type: none"> <li>• The battery modules may catch fire when it is put into fire. In case of a fire, please make sure that an ABC or carbon dioxide extinguisher is nearby. Water cannot be used to extinguish the fire.</li> <li>• Full protective clothing and self-contained breathing apparatus are required for the firefighters to extinguish the fire.</li> </ul>

 <b>CAUTION</b>
<p>➤ <b>Battery Modules Handling and Storage Guide</b></p> <ul style="list-style-type: none"> <li>• The battery modules and its components should be protected from damage when transporting and handling.</li> <li>• Weight of system may cause injury risk, please take the weight of the system into account while the system is transported and lifted carefully.</li> <li>• Do not impact, pull, drag or step on the battery modules.</li> <li>• Do not insert unrelated objects into any part of the battery modules.</li> <li>• Do not throw the battery module into a fire.</li> <li>• Do not soak the battery modules in water or seawater.</li> <li>• Do not expose to strong oxidizers.</li> <li>• Do not short circuit the battery modules.</li> <li>• The battery modules cannot be stored in high temperature (more than 60 °C).</li> <li>• The battery modules cannot be stored directly under the sun.</li> <li>• The battery modules cannot be stored in high humidity environment.</li> <li>• Use the battery modules only as directed.</li> <li>• Do not use the battery modules if it is defective, or appears cracked, broken or</li> </ul>

otherwise damaged, or fails to operate.

- Do not attempt to open, disassemble, repair, tamper with, or modify the battery modules. The battery modules are not user serviceable.
- Do not use cleaning solvents to clean the battery modules.



### **DANGER**

#### ➤ **Surge protection**

Overvoltages (e. g. in the event of a flash of lightning) can be further conducted into the building and to other connected devices in the same network via the network cables or other data cables if there is no surge protection. Touching live parts and cables results in death or lethal injuries due to electric shock.

Ensure that the system is integrated into the existing surge protection

#### ➤ **Safety information of the inverter manufacturer**

Please read and observe all safety information of the inverter manufacturer.





### 3. Scope of Delivery



B1



B2

x1



C

x1



D

x6



M6X12

E

x4



M10X20

F

x6



M5X14

G

x1



RJ45

H

x5



I

x4



J

x4



K

x4



L

x1



M

x2



N

x1



O

Position	Designation
B1	Battery module 1
B2	Battery module 2
C	Power cable L2
D	Power cable L3
E	Screw M6×12 for fixing grounding conductor and connecting communication cable with “+”and “-”
F	Screw 10×20 for connecting power cable with “+”and “-”
G	Screw M5×14 for fixing the connector
H	Network cable
I	Gasket (small size)



<b>J</b>	Connector for connecting and fixing B1 and B2
<b>k</b>	Alignment pins
<b>L</b>	Bolts for fixing B2`s top cover
<b>M</b>	Communication cable for connecting the system and BMU
<b>N</b>	Gasket (big size)
<b>O</b>	Quick Start Guide, Minimum Configuration List



## 4. Product Overview

### 4.1 Product Description

The BYD Battery-Box Premium LVL 15.4 is a lithium iron phosphate (LFP) battery for use with an external inverter.

With its control and communication port (BMU), the Battery-Box Premium LVL 15.4 is capable of scaling to meet the different project requirements. Start with Battery-Box Premium LVL15.4 (15.36 kWh) and extend anytime to 983 kWh using parallel interconnection of up to 64 batteries. The functions of BYD Battery-Box Premium LVL 15.4 including:

- ✧ Scalable from 15.4 to 983 kWh
- ✧ On grid / Off grid
- ✧ Compatible with Inverters, and able to storage power from PVs
- ✧ Compatible with Backup function Inverters
- ✧ Compatible with 1 and 3 Phase Inverters, for specific inverter list, please see attached Minimum Configuration List.
- ✧ Cobalt Free Lithium Iron Phosphate (LFP) Battery: Maximum Safety, Life Cycle, and Power Capable of High-Powered Back-up and Off-Grid Function
- ✧ Space Saving via the Ability to Stack 2 Premium Plus Batteries
- ✧ Add Additional Batteries in Parallel to Expand System

### 4.2 Technical Parameters

Number of Modules	2 modules
Usable Energy [1]	15.36 kWh
Max Cont. Output Current [2]	250 A
Peak Output [2]	375 A, 10s
Dimensions (H/W/D)	500 x 575 x 650 mm
Weight	164 kg
Nominal Voltage	51.2 V



Operating Voltage	40-59 V
Operating Temperature	-10 °C to +50 °C
Communication	CAN/RS485
Enclosure Protection Rating	IP20
Round-trip Efficiency	≥95%
Scalability	Max. 64 in Parallel (983 kWh)
Certification	IEC62619 / IEC62040 / CE / CEC / UN38.3
Application	ON Grid / ON Grid + Backup / OFF Grid
Warranty [3]	10 years
Compatible Inverters	Refer to BYD Battery-Box Premium Inverter Compatible List and Minimum Configuration List

[1] DC Usable Energy, Test conditions: 100% DOD, 0.2C charge & discharge at + 25 °C. System

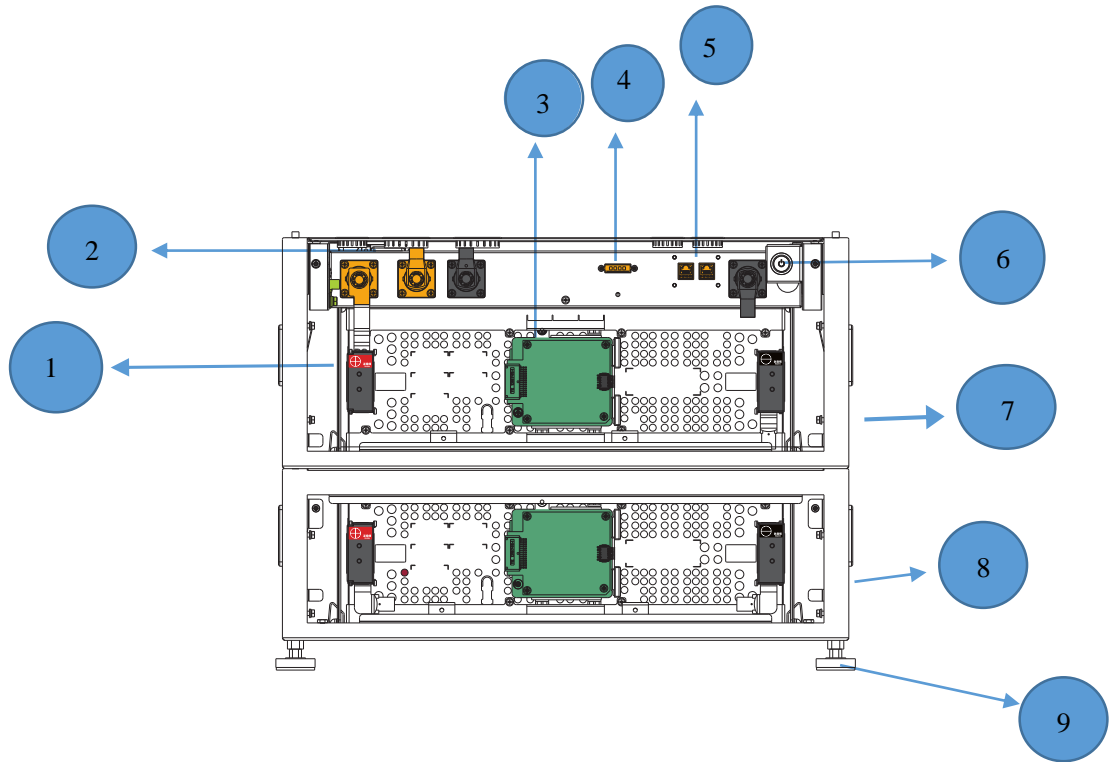
Usable Energy may vary with different inverter brands

[2] Charge/discharge derating will occur between -10 °C and +5 °C

[3] Conditions apply. Refer to BYD Battery-Box Premium Limited Warranty Letter.














4.3 System structure



Position	Designation
1	Terminal
2	Power cable port
3	BIC
4	SPI port
5	CON port
6	switch
7	B2 module
8	B1 module
9	Base



#### 4.4 Symbols on The Product

Symbol	Explanation
	Observe the documents Observe all documents supplied with the system.
	Grounding conductor This symbol indicates the position for connecting a grounding conductor.
	WEEE designation Do not dispose of the system together with the household waste but in accordance with the disposal regulations for electronic waste applicable at the installation site.
	CE marking The system complies with the requirements of the applicable EU directives.
	Place it straight up, without inclination or upside down.
	Handle with care
	Keep it dry
	Keep the battery modules away from open flame or ignition sources.
	Beware of electrical voltage.
	Beware of a danger zone This symbol indicates that the system must be additionally grounded if additional grounding or equipotential bonding is required at the installation site.
	Keep the battery modules away from children.



Beware of hot surface  
The system can get hot during operation.



Do not short circuit.

#### 4.5 LED Signals

LED signal	Explanation
White and blue LED are alternately flashing. 0.5s white then 0.5s blue	System is ON
White LED is always glowing	No charging and discharging Full charging
White LED is flashing slowly 2s on and 2s off	Charging
White LED is flashing quickly 1s on and 1s off	Discharging
White LED is flashing quickly(1s on and 1s off), blue LED is glowing	SOC $\leq$ 15%

#### BMS Failure Detection (read the switch LED color on the battery)

Failure starts as the white LED flashing for one time, then count blue LED flashing times  
Define flash for one time: 1s on and 1s off.

Blue LED is flashing for 1 time.	Short circuit or disconnection
Blue LED is flashing for 2 times.	MOS failure
Blue LED is flashing for 3 times.	BIC or communication failure



Blue LED is flashing for 4 times.	Battery temperature sensor failure
Blue LED is flashing for 5 times.	Voltage sensor failure
Blue LED is flashing for 6 times.	Current sensor failure
Blue LED is flashing for 7 times.	Battery cell failure
Blue LED is flashing for 8 times	Precharge failure
Blue LED is flashing for 9 times	BIC balance failure
Blue LED is flashing for 10 times	PCB temperature sensor failure
Blue LED is flashing for 11 times	BMS and BMU communication failure

**BMU Failure Detection (read the switch color on BMU)**

Failure starts as the white LED flashing for one time, then count blue LED flashing times

Define flash for one time: 1s on and 1s off.

Blue LED is flashing for 1 time	System parameters load failure
Blue LED is flashing for 2 times	Address register failure
Blue LED is flashing for 3 times	Precharge failure
Blue LED is flashing for 4times	BMS failure
Blue LED is flashing for 5 times	Communication with BMS failure
Blue LED is flashing for 5 times	Communication with inverter failure





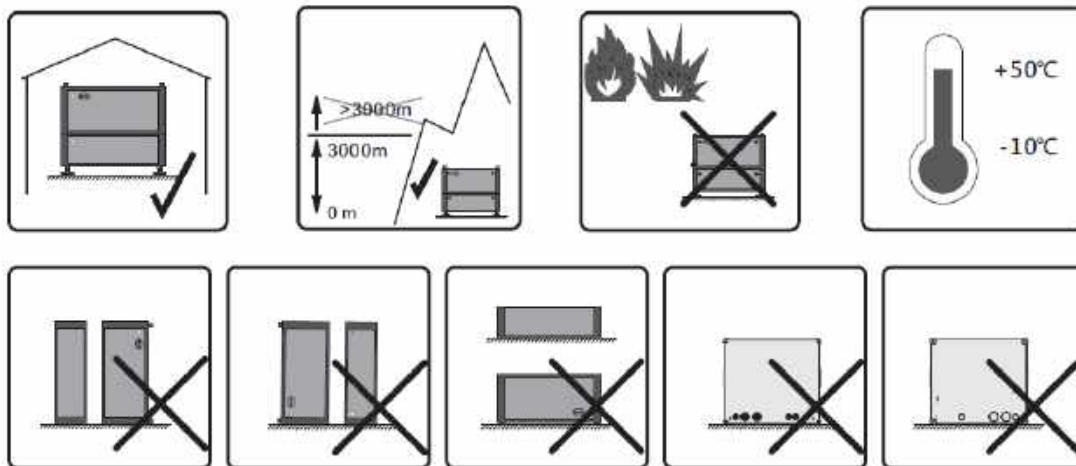
## 5. Mounting

### 5.1 Requirements for Mounting

#### 5.1.1 Requirements for Mounting Location

- A solid support surface must be available (e.g., concrete or masonry).
- The mounting location must be inaccessible to children
- The mounting location must be suitable for the weight and dimensions of the product (See "Technical Data").
- To ensure optimum operation, the ambient temperature should be between -10 °C to +50 °C
- Transport at end-customer side: The individual components of the Battery box premium series can weigh up to 88 kg and therefore should not be transported by a single person. It is recommended that the system is installed by at least two people.

#### 5.1.2 Permitted and Prohibited Mounting Positions










- The product may only be mounted in a permitted position. This will ensure that no moisture can penetrate the product.
- The product should be mounted such that the LED signals can be read off without difficulty
- The system mounting requires a flat and level surface

**5.2 Mounting The Product**

<b>NOTICE</b>
The instructions in this section may only be performed by qualified persons who must have the following skills:
<ul style="list-style-type: none"> <li>• Knowledge of how batteries work and are operated</li> <li>• Knowledge of how an inverter works and is operated</li> <li>• Training in dealing with the hazards associated with the installation and operation of electrical equipment and batteries</li> <li>• Training in the installation and commissioning of electrical equipment</li> <li>• Knowledge of, and adherence to the locally applicable connection requirements, standards and directives</li> <li>• Knowledge of, and adherence to this document and the associated system documentation, including all safety instructions</li> </ul>

 <b>WARNING</b>
<p>◆ <b>Risk of injury due to weight of product</b></p> <ul style="list-style-type: none"> <li>• Injuries may result if the product is lifted incorrectly or dropped while being transported or when attaching it to or removing it from the wall mounting bracket.</li> <li>• Transport and lift the product carefully. Take the weight of the product into account.</li> <li>• Wear suitable personal protective equipment for all work on the product.</li> </ul>


**5.2.1 Needed Tools**

Name	Remarks	Reference picture
Electric Screwdriver	For use in conjunction with screwdriver tips	
Diagonal Pliers	For removal of cable hole protector	
Torque Wrench	For confirmation of torques	
Straight Screwdriver	6.5 mm flat head, PD2 cross slot, 8mm hexagon, 6.5mm cross slot, 10mm hexagon, 14mm hexagon	
Ground Conductor	SC16-6	
Power Cable	7mm (maximum 5 m length)	
Network Cable	Shielded CAT5 (maximum 10 m length)	
Wrench		
Main loop cable size	70mm <sup>2</sup> (AWG 2/0), external diameter < 18mm	
Main loop cable terminal size	KST TLK70-10 or a similar one	



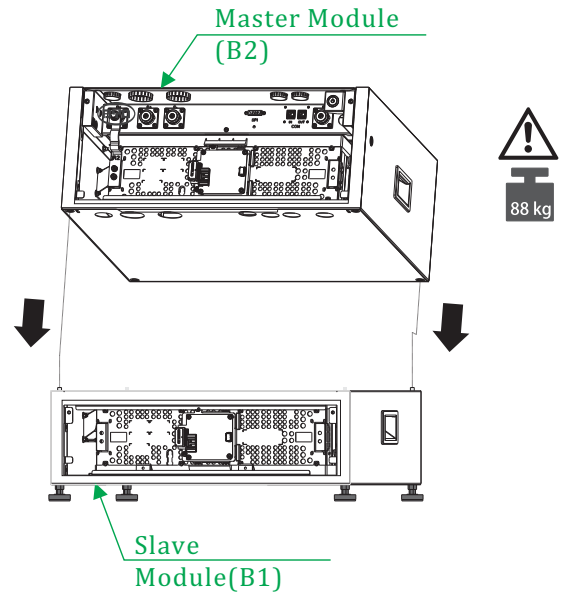
**5.2.2 Single System Mounting**

➤ **Unpacking the system**

- Unpacking the system, check the number and quality of delivered accessories

(See scope of delivery);

- Pile B2 above B1, make sure the two alignment pins are in the right place. Patience and slow motion are required for this step;
- Maximum 2 modules are allowed to be piled together, and maximum 2 system can be piled together
- Screw the 4 screws on top cover of B2 module

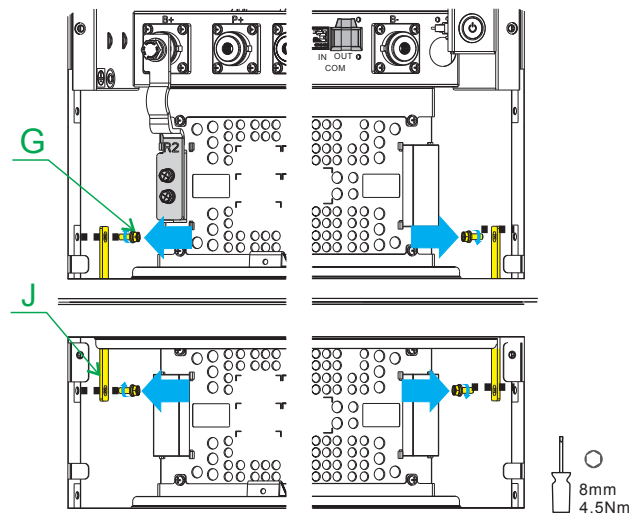


➤ **Remove front covers**

- Remove the front cover of B2 and B1;

➤ **Fix modules**

- Use the connector to fix B1 and B2 with screw M5×14, two connectors for two sides.

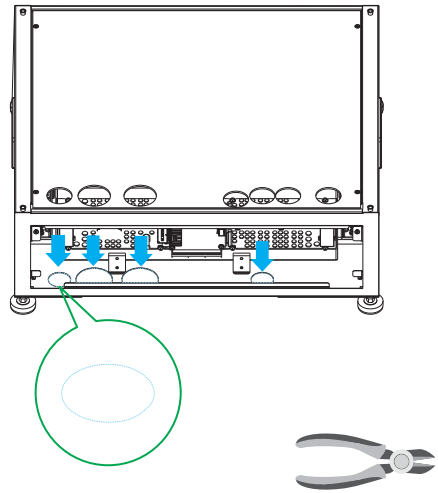




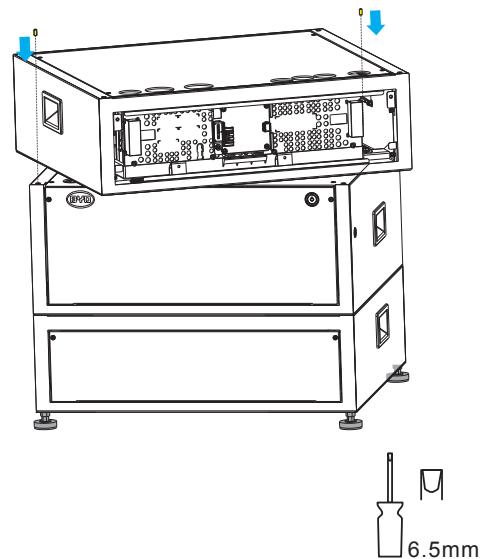
### 5.2.3 Single Stack Mounting

- A single stack is consisted of 2 systems, repeat the “system mounting” steps and mount the first system;

- Empty cable holes of B1 (second system) with Diagonal pliers;

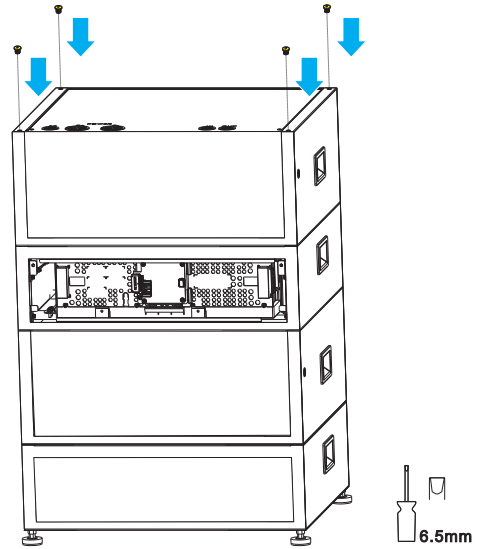


- Screw two alignment pins on top of B2 (first system);
- Remove the base of B1 (second system) with a wrench, and pile B1 above the first system;

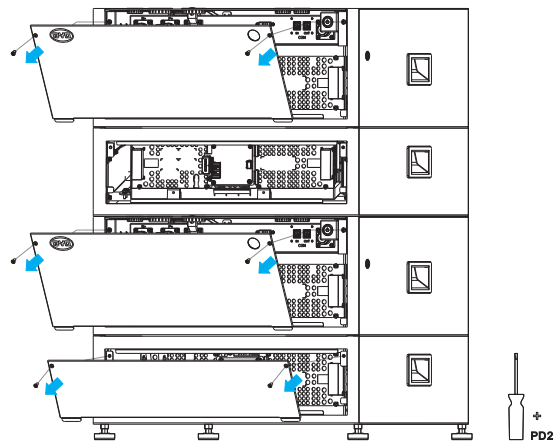




- Pile B2 above B1 (second system), fix B2 and B1 with two connectors, and screw 4 screws on top of B2;



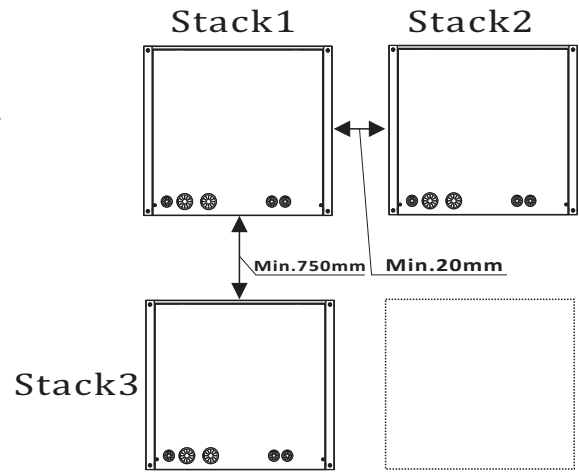
- Remove the front covers;





### 5.2.4 Multiple Stacks Mounting (Max. 3 in parallel)

- Selecting the mounting location for the stacks;
- Repeat the “mounting single stack” steps.





## 6. Electrical Connection

### NOTICE

The instructions in this section may only be performed by qualified persons who must have the following skills:

- Knowledge of how batteries work and are operated
- Knowledge of how an inverter works and is operated
- Training in dealing with the hazards associated with the installation and operation of electrical equipment and batteries
- Training in the installation and commissioning of electrical equipment
- Knowledge of, and adherence to the locally applicable connection requirements, standards and directives
- Knowledge of, and adherence to this document and the associated system documentation, including all safety instructions

### Output Short-circuit Current and Protective Device Characteristics

When the discharge current is bigger than 600A, the BMS short circuit protection (about 100uS delay) is triggered. First, the primary circuit discharge MOSFET is closed, then primary circuit is open and the battery stops discharging.

The Circuit breaker

Rated current	250A
Breaking capacity	25KA 415AC
Poles number	2P
Rated voltage	600VAC, 250VDC



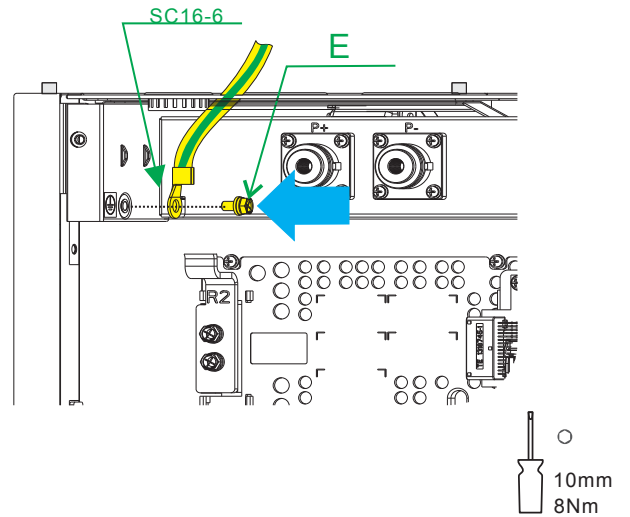


### 6.1 Single System Connection

➤ **Connect grounding conductor**

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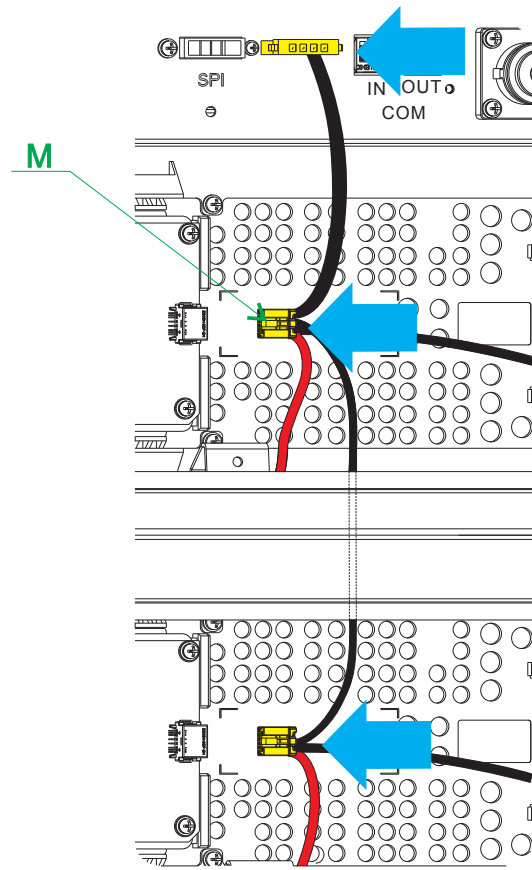
- Pass the ground conductor through PE port, and connect with grounding point, with screw M6×12 (torque, 8Nm.)





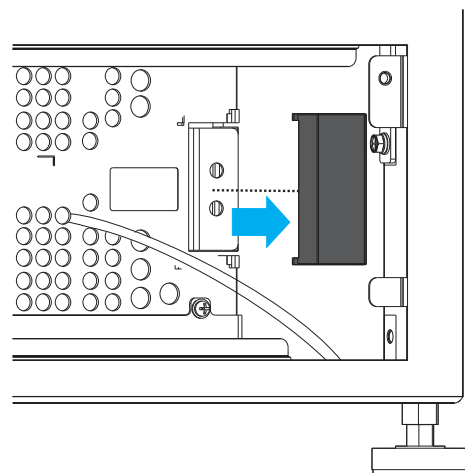
➤ **Connect communication cable**

- Pass communication cable through the first cable hole on right side of front bottom layer on B2;
- Connect communication cable to SPI port and two ports of two BIC boards
- The lights on the BIC boards will glow for a second once the boards are connected to the communication cable.
- Leave the red and black cable aside.



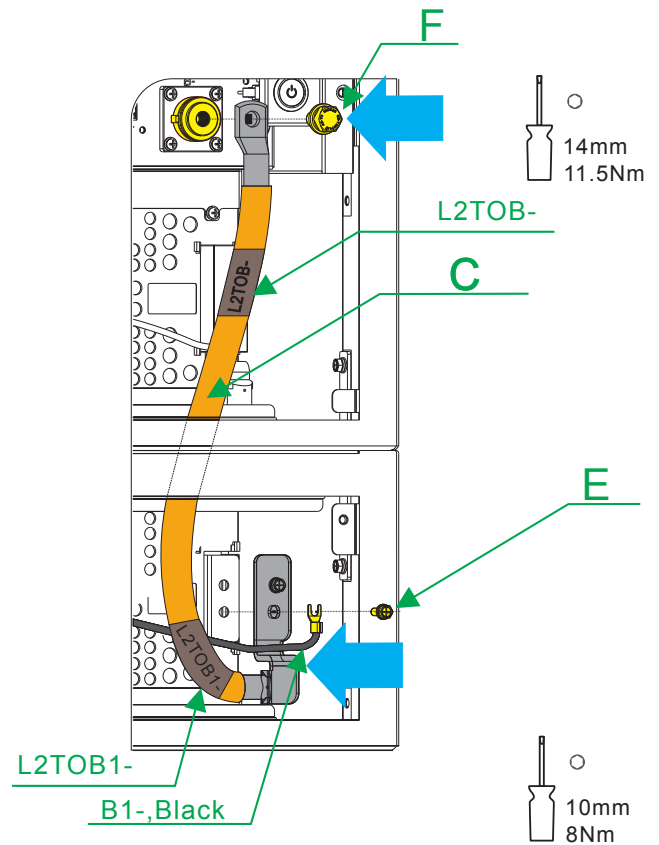
➤ **Connect power cable L2**

- Take off gasket of B1-;
- Gaskets are not needed after all power cables are connected.





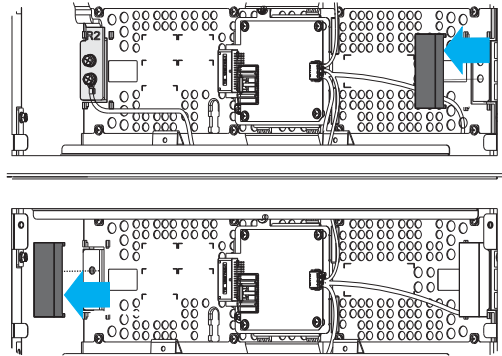
- Pass the cable (L2 To B- end) through the second cable hole on right side of front bottom layer on B2;
- Connect power cable (L2 To B- end) to B- with screw 10×20 (torque, 11.5Nm);
- Connect power cable (L2 To B1-end) to B1- with screw 10×20 (torque, 11.5Nm);
- Connect communication cable B1 black to B1- with screw M6×12 (torque, 8Nm)



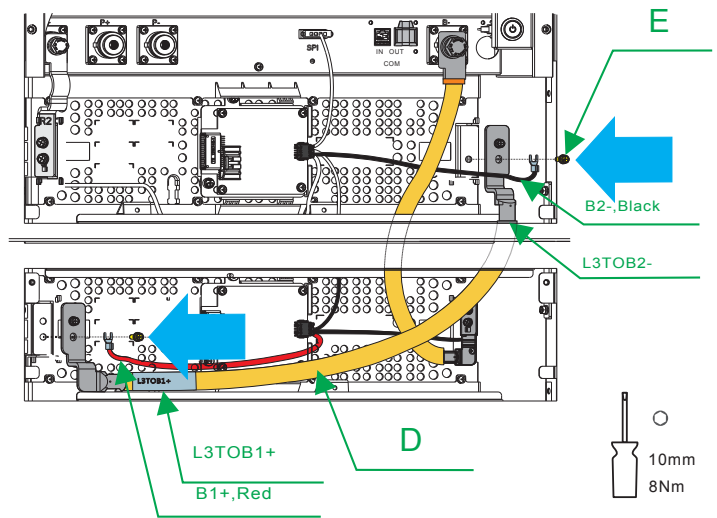


## ➤ Connect power cable L3

- Take off gaskets of B1+ and B2;



- Pass the power cable (L3 to B2- end) through the forth cable hole on right side of front bottom layer on B2 module;



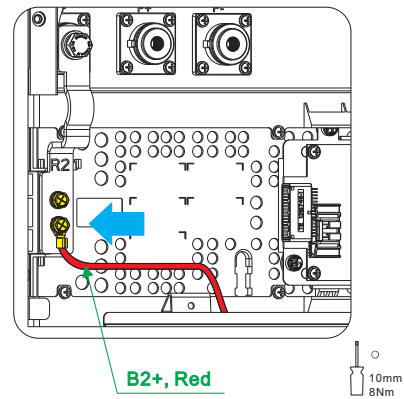
- Connect the cable (L3 to B2- end) to B- with screw M6×12 (torque, 8Nm)  
Connect black communication cable (B2-,Black) to B2-;

- Connect power cable(L3 to B1+ end) to B1+ with screw M6×12 (torque, 8Nm) ;
- Connect red communication cable(B1+, Red) to B1+ with screw M6×12 (torque, 8Nm) ;

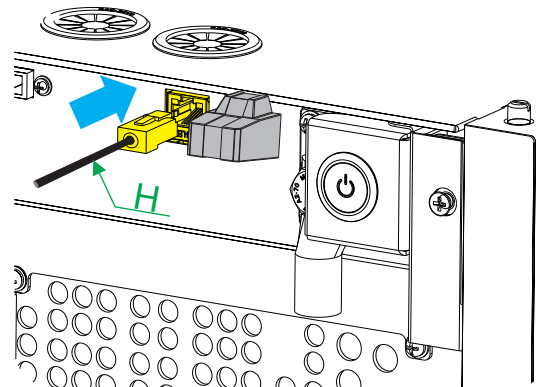


## ➤ Connect network cable, power cable

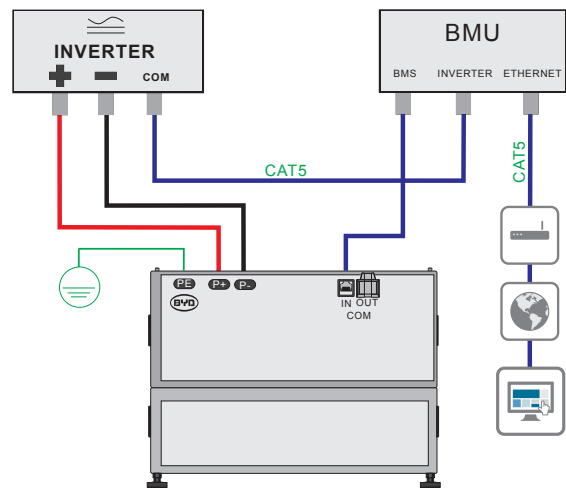
- Connect red communication cable (B2+. Red) to B2+ with screw M6×12 (torque, 8Nm)



- Connect COM port on inverter to inverter port on BMU with network cable,



- Connect BMS port on BMU to IN (COM) port on system with CAT5 network cable

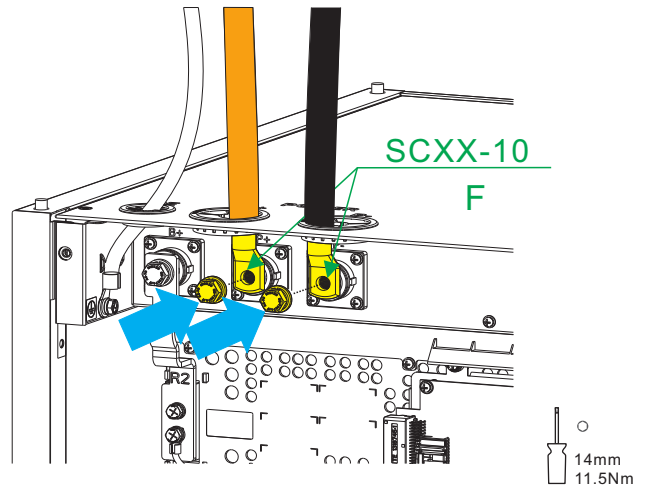


Inverter port of BMU assignment

	Battery-Box	SMA	GOODWE	VICTRON	SELECTIONIC
CAN H	4	4	4	7	1
CAN L	5	5	5	8	2

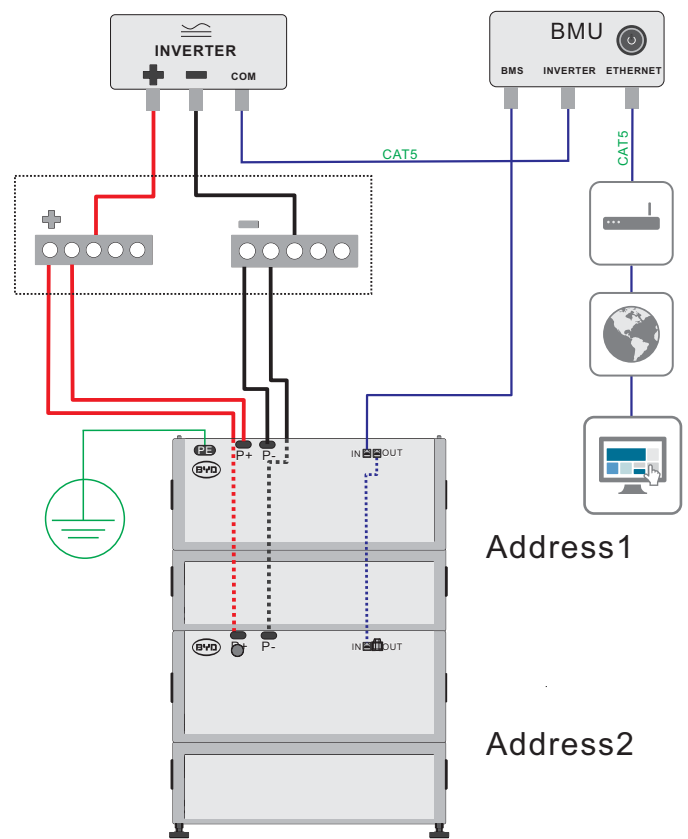


- Connect the power cables to P+ and P- connector with screw 10×20 (Torque 11.5Nm)



### 6.2 Single Stack Connection

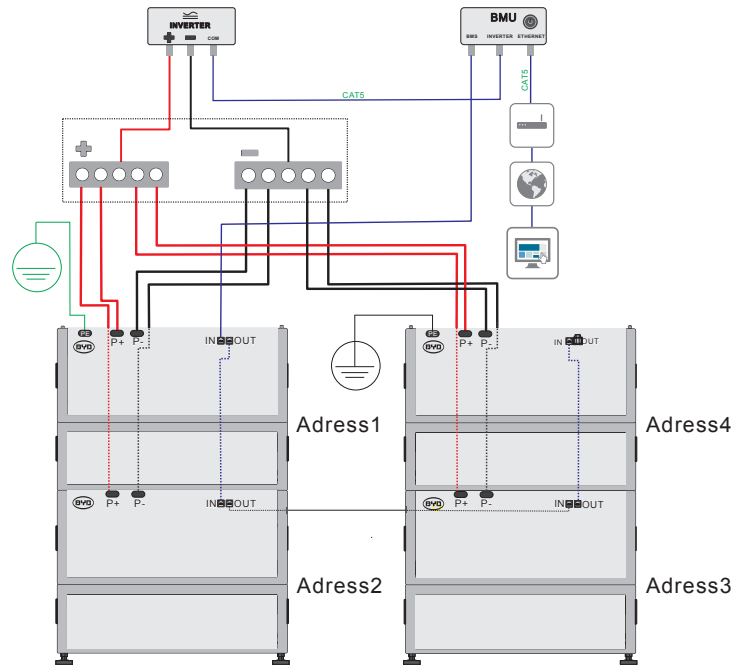
- Repeat the “single system connection” steps to connect communication cables and power cables;
- Connect IN port on Address 2 to OUT port on Address 1 with CAT5 network cable;
- Connect the P+ port on Address 2 to junction box, connect P- port to in Address 2 to junction box, Connect the P+ port on Address 1 to junction box, connect P- port on Address 1 to junction box.;





### 6.3 Multiple Stacks Connection (Max. 3 in Parallel)

- Repeat “single system and stack connection” steps;
- The rest parts of connections are as pictures:



### 6.4 Close the front cover

After electrical connection is finished, close the front cover.

## 7. Commissioning

### NOTICE

The instructions in this section may only be performed by qualified persons who must have the following skills:

- Knowledge of how batteries work and are operated
- Knowledge of how an inverter works and is operated
- Training in dealing with the hazards associated with the installation and operation of electrical equipment and batteries



- Training in the installation and commissioning of electrical equipment
- Knowledge of, and adherence to the locally applicable connection requirements, standards and directives
- Knowledge of, and adherence to this document and the associated system documentation, including all safety instructions

### 7.1 Prerequisites

The inverter must be installed according to the interconnection diagram specified by inverter manufacturer.

The power circuit breaker in the distribution system must be open

Check the wiring of the inverter and battery. See the Installation Instructions from inverter.

Close all components. This protects all live components from accidental contact.

Close the DC fuse (if used)

### 7.2 Start the system

Before switch on the system, make sure the inverter does not connect to the grid.

#### ➤ **Switch on the product**

Press the button for 3 seconds, the LED starts to flash (0.5s white, 0.5s blue), then it turns to glow (white). If fail to switch on the system, please check if all the electrical connection is correct; if the electrical connection is correct, still unable to switch on, please contact our local after sale service within 48 hours.

#### ➤ **Communication configuration: Be Connect**

- **Views and features of Be Connect application**

Be Connect is an application designed to help user to finish BYD battery box premium communication configuration, it can be downloaded from both android and IOS platform. This application requires a WIFI connecting with BYD battery box premium before using it, make sure that net cable between battery box premium and BMU is well connected, so that the system can release a WIFI signal.

The name and password of WIFI are attached on last page of Quick Start Guide Book.





➤ **Configuration steps by using Be Connect application**

✦ Accept or download the privacy policy then select the time

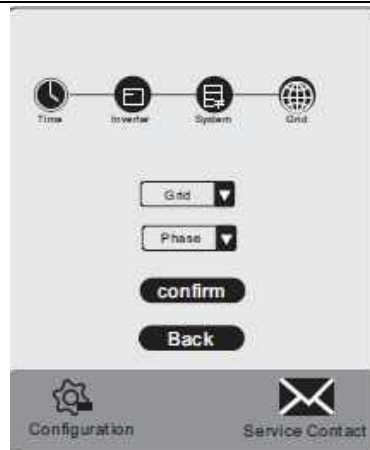
✦ Select the inverter on the inverter list,



✦ Choose the system quantity in parallel and model



✦ Choose the grid and phase:



✦ Finish the configuration



### 7.3 Stop the system

**NOTICE**

The instructions in this section may only be performed by qualified persons who must have the following skills:

- Knowledge of how batteries work and are operated
- Knowledge of how an inverter works and is operated
- Training in dealing with the hazards associated with the installation and operation of electrical equipment and batteries
- Training in the installation and commissioning of electrical equipment
- Knowledge of, and adherence to the locally applicable connection requirements, standards and directives
- Knowledge of, and adherence to this document and the associated system documentation, including all safety instructions

➤ **Switch off the inverter**

Please refer to the instructions of inverter manufacture.

➤ **Switch off Battery box premium**

Warning: Be aware of electric shock!

Press the Start button of BMU for 5s until LED stops glowing.

## 8. Trouble Shouting

### 8.1 Overview


**NOTICE**

The instructions in this section may only be performed by qualified persons who must have the following skills:

- Knowledge of how batteries work and are operated
- Knowledge of how an inverter works and is operated
- Training in dealing with the hazards associated with the installation and operation of electrical equipment and batteries
- Training in the installation and commissioning of electrical equipment
- Knowledge of, and adherence to the locally applicable connection requirements,



- standards and directives
- Knowledge of, and adherence to this document and the associated system documentation, including all safety instructions

 **DANGER**

➤ **Danger to life due to electric shock when live components or DC cables are touched**

- The DC cables connected to a battery may be live. Touching live DC cables results in death or serious injury due to electric shock.
- Disconnect the product and battery 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 remove the terminal block with the connected DC conductors from the slot under load.
- Wear suitable personal protective equipment for all work on the system.
- Observe all safety information of the inverter manufacturer.

- Make sure the screws of connectors are well tightened, or a product damage may be caused.
- The customer is not supposed to replace or change the parts, if a faults happens, please contact our local after sales service within 48 hours.

➤ **Event types**

The errors of products can be classified as 2 types:

Events after switching on system

Fail to switch on system

➤ **Symbols**

Symbols	Description
BMS-M	Battery Management System –Management
BMS-P	Battery Management System –Power
BMU	Battery Management Unit



BIC	Battery Information Collect
HBMS	High Voltage Battery Management System
COM	Serial Interface Board
B+	Battery Voltage

**8.2 Events detection after switching on the system**

LED (white and blue) on the switch releases the event message so that errors can be indicated. Read the LED signals and detect the events.

➤ **The definition of LED lights**

1	0	1
white LED starts flashing	flashing times of blue LED	flashing times of blue LED

➤ **Event Message, Cause and Measures**

Event Message	Cause	Measure 1	Measure 2
101	Loading system parameters failed	Replace BMU	
102	Address registering failed	Replace BMU	
103	Precharging failed	Replace BMS-M	
104	Fault occurs to BMS	Replace BMS-M	
105	Communicating with BMS failed	Replace BMU	Replace BMS-M
106	Connecting with inverter failed	Replace BMU	Replace BMS-M
107	Short circuit or + - misconnected	Check connection of inverter DC port	Check if inverter is short circuit
108	MOS failure	Replace BMS-P	
109	BIC sampling or communication failed	Replace BIC	
110	Battery temperature sensor failed	Replace BIC	Replace battery module / Replace NTC board
111	Voltage sensor failed	Replace BMS-M	
112	Current sensor failed	Replace BMS-M	Replace BMS-P
113	Cells failed or alarm level 3	Replace BIC	Replace battery module



114	Precharging failed	Replace BMS-P	Check inverter communication
115	BIC balance failed	Replace BIC	
116	PCB temperature sensor failed	Replace BMS-M	Replace BMS-P
117	Communication with BMU lost	Replace BMU	Replace BMS-M

**8.3 Fail to switch on the system**

If the system is failed to switch on, battery module should be firstly tested, testing methods are as followings:

Test the voltage of B+

if  $< 24V$ , replace battery module

if  $> 24v$ , battery module is normal

If battery module is normal, then check BMS-M.



## 9. Maintenance and Clean

### ➤ Maintenance

#### NOTICE

The instructions in this section may only be performed by qualified persons who must have the following skills:

- Knowledge of how batteries work and are operated
- Knowledge of how an inverter works and is operated
- Training in dealing with the hazards associated with the installation and operation of electrical equipment and batteries
- Training in the installation and commissioning of electrical equipment
- Knowledge of, and adherence to the locally applicable connection requirements, standards and directives
- Knowledge of, and adherence to this document and the associated system documentation, including all safety instructions



#### DANGER

#### ➤ **Danger to life due to electric shock when live components or DC cables are touched**


- The DC cables connected to a battery may be live. Touching live DC cables results in death or serious injury due to electric shock.
- Disconnect the product and battery 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 remove the terminal block with the connected DC conductors from the slot under load.
- Wear suitable personal protective equipment for all work on the system.
- Observe all safety information of the inverter manufacturer.

The Lithium-Ion cells used by BYD are maintenance-free. However, to ensure



hazard-free operation, qualified specialists should check all connections and screws and tighten them if necessary since temperature fluctuations may loosen the screws.

➤ **Clean**

 <b>DANGER</b>
➤ <b>Danger to life due to electric shock when live components or DC cables are touched</b>
<ul style="list-style-type: none"><li>• The DC cables connected to a battery may be live. Touching live DC cables results in death or serious injury due to electric shock.</li><li>• Disconnect the product and battery from voltage sources and make sure it cannot be reconnected before working on the device</li><li>• Do not touch non-insulated parts or cables.</li><li>• Do not remove the terminal block with the connected DC conductors from the slot under load.</li><li>• Wear suitable personal protective equipment for all work on the system.</li><li>• Observe all safety information of the inverter manufacturer.</li></ul>

Please use a mist-dampened cleaning cloth for cleaning the battery cabinet. Prevent any moisture from coming into contact with the battery connections.

Clean the inverter and remove dust from its casing and other components. Check the inverter manual.



## **10. Disposal of Products and Batteries**

- Disposal of product must comply with the local applicable disposal regulations for electronic waste and used batteries.
- Do not dispose of the product with your household waste.
- Avoid expose the batteries to high temperature or direct sunlight.
- Avoid expose the batteries to high humidity or **corrosive atmospheres**.
- For more information, please contact BYD.





## 11. Declaration of Conformity



Within the scope of the EU directives

- Electromagnetic compatibility 2014/30/EU (29.3.2014 L 96/79-106)

(EMC)

- Low Voltage Directive 2014/35/EU (29.3.2014 L 96/357-374) (LVD)

- Radio Equipment Directive 2014/53/EU (22.5.2014 L 153/62) (RED)

BYD Europe B.V. confirms herewith that the systems described in this document are in compliance

With the fundamental requirements and other relevant provisions of the abovementioned directives.

The entire EU Declaration of Conformity can be found at <https://www.eft-systems.de>, <https://www.alpspower.com.au>, or <https://www.bydbatterybox.co>



## 12. Contact Information

### ✧ Local Service Provider

Australia	Europe
Alps Power Pty Ltd	EFT-Systems GmbH
Mailbox: <a href="mailto:service@alpspower.com.au">service@alpspower.com.au</a>	Mailbox: <a href="mailto:service@eft-systems.de">service@eft-systems.de</a>
Telephone: +61 2 8005 6688	Telephone: +49 9352 8523999
Address: 14/47-51 Lorraine St Peakhurst NSW 221	Address: Buchenstr, Bruchtannenstraße 28, 63801 Kleinostheim
Website: <a href="http://www.alpspower.com.au">www.alpspower.com.au</a>	Website: <a href="http://www.eft-systems.de">www.eft-systems.de</a>

South Africa	Others
SOLARVILLAGE(PTY)LTD	BYD Headquarters
Mailbox: <a href="mailto:support@afriplusenergy.co.za">support@afriplusenergy.co.za</a>	Mailbox: <a href="mailto:bboxservice@byd.com">bboxservice@byd.com</a>
Telephone: + 27 83 3755 486	Telephone: +8689888888-47175
Address: UNIT 45 DENNEKAMP, SAILSBURY ROAD, KENILWORTH, CAPE TOWN, WESTERN CAPE, 7708	Address: No.3009,BYD Road, Pingshan,Shenzhen,5118118,P.R.China

Website: [www.bydbatterybox.com](http://www.bydbatterybox.com)

Social media link:

<https://www.facebook.com/BatteryBoxBYD/>

[https://twitter.com/BYD\\_BatteryBox](https://twitter.com/BYD_BatteryBox)

<https://www.linkedin.com/company/byd-battery-box>

