BYD Battery-Box Premium
Operating Manual
LVL 2021

V2.1

Be Connect 2.0

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You can download the latest Limited Warranty from the Internet at www.bydbatterybox.com.

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Content

1. Information on this Document

1.1. Validity

This document is valid for the Battery-Box LVL 2021.

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

• 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

• 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

Failure to do so will make any manufacturer's warranty, guarantee or liability null, and void unless you can prove that the damage was not due to non-compliance.

1.3. Content and Structure of this Document

This document contains safety information and instructions, scope of delivery, battery system overview, installation, electrical connection, commissioning, operation, decommissioning, extension, troubleshooting, maintenance and storage, disposal of the battery system, technical parameters and contact information. Please finish reading this document before taking any actions on the battery system.

1.4. Declaration of Conformity

The battery system described in this document complies with the applicable European directives. The certificate is available in the download area at www.bydbatterybox.com.

1.5. Levels of Warning Messages

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

DANGER
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.

1.6. Symbols in the Document

⚠ QUALIFIED PERSON	Sections describing activities to be performed by qualified persons only.

1.7. Designation in the Document

Designation in this document	Complete designation
Battery System	Battery-Box LVL 2021
BIC	Battery Information Collector
BMS	Battery Management System
BMU	Battery-Box Premium LV BMU
BYD	Shenzhen BYD Electronic Co., LTD
SOC	State of Charge

2. Safety

2.1. Intended Use

The battery system is for residential and works with a photovoltaic system. It is a 48V Li-ion battery storage system, with the control module on itself. It could be operated in on-grid and off-grid modes with compatible inverters.

The battery system could be connected to the Internet through network cable for maintenance and firmware updating.

The battery system must only be used as stationary equipment.

The battery system is suitable for indoor use under the conditions mentioned in Section 5.1. If the battery is protected quite well, and the overall system (together with the additional rack or cabinet outside it) could reach IP55, the battery system could be used for outdoor.

The battery system must only be operated in connection with a compatible inverter. The list (BYD Battery-Box Premium LVL Minimum Configuration List) of these inverters could be found at www.bydbatterybox.com.

The battery 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 battery system.

Alterations to the battery system, e.g., changes or modifications are not allowed unless the written permission of BYD is achieved. Unauthorized alterations will void the guarantee and warranty claims. BYD shall not be held liable for any damage caused by such changes.

The type label should always be attached to the battery system.

2.2. IMPORTANT SAFETY INSTRUCTIONS

The battery 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 battery system, please do read this section carefully and observe all safety information at all times.

2.2.1. Battery Module Leakage

If the battery modules leak electrolytes, contact with the leaking liquid or gas should be avoided. The 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 medical help immediately.

Eye contact: Rinse eyes with flowing water for 15 minutes and seek medical help immediately.

Skin contact: Wash the affected area thoroughly with soap and water and seek medical help immediately.

Ingestion: Induce vomiting and seek medical help immediately.

2.2.2. Firefighting Measures

The battery modules may catch fire when it is put into the 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.

Full protective clothing and self-contained breathing apparatus are required for the firefighters to extinguish the fire.

2.2.3. Battery Modules Handling and Storage Guide

• The battery modules and its components should be protected from damage when transporting and handling.

• Do not impact, pull, drag, or step on the battery modules.

• Do not insert unrelated objects into any part of the battery modules.

• Do not throw the battery module into a fire.

• Do not soak the battery modules in water or seawater.

• Do not expose to strong oxidizers.

• Do not short circuit the battery modules.

• The battery modules cannot be stored at high temperatures (more than 50°C).

• The battery modules cannot be stored directly under the sun.

• The battery modules cannot be stored in a high humidity environment.

• Do not use the battery modules if it is defective, or appears cracked, broken or 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.

2.2.4. Warning of Overvoltages

DANGER

Danger to life due to electric shock in case of overvoltages and if surge protection is missing

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 all devices in the same network and the inverter are integrated into the existing surge protection.

• When laying the network cables or other data cables outdoors, it must be ensured that a suitable surge protection device is provided at the transition point of the cable from the system or the inverter outdoors to the inside of a building.

2.2.5. Caution of Weight

⚠ CAUTION

Risk of injury due to weight of the battery module

Injuries may result if the battery module is lifted incorrectly or dropped while being transported or installed.

• Transport and lift the battery module carefully. Take the weight of the battery module into account.

• Wear suitable personal protective equipment for all work on the battery system.

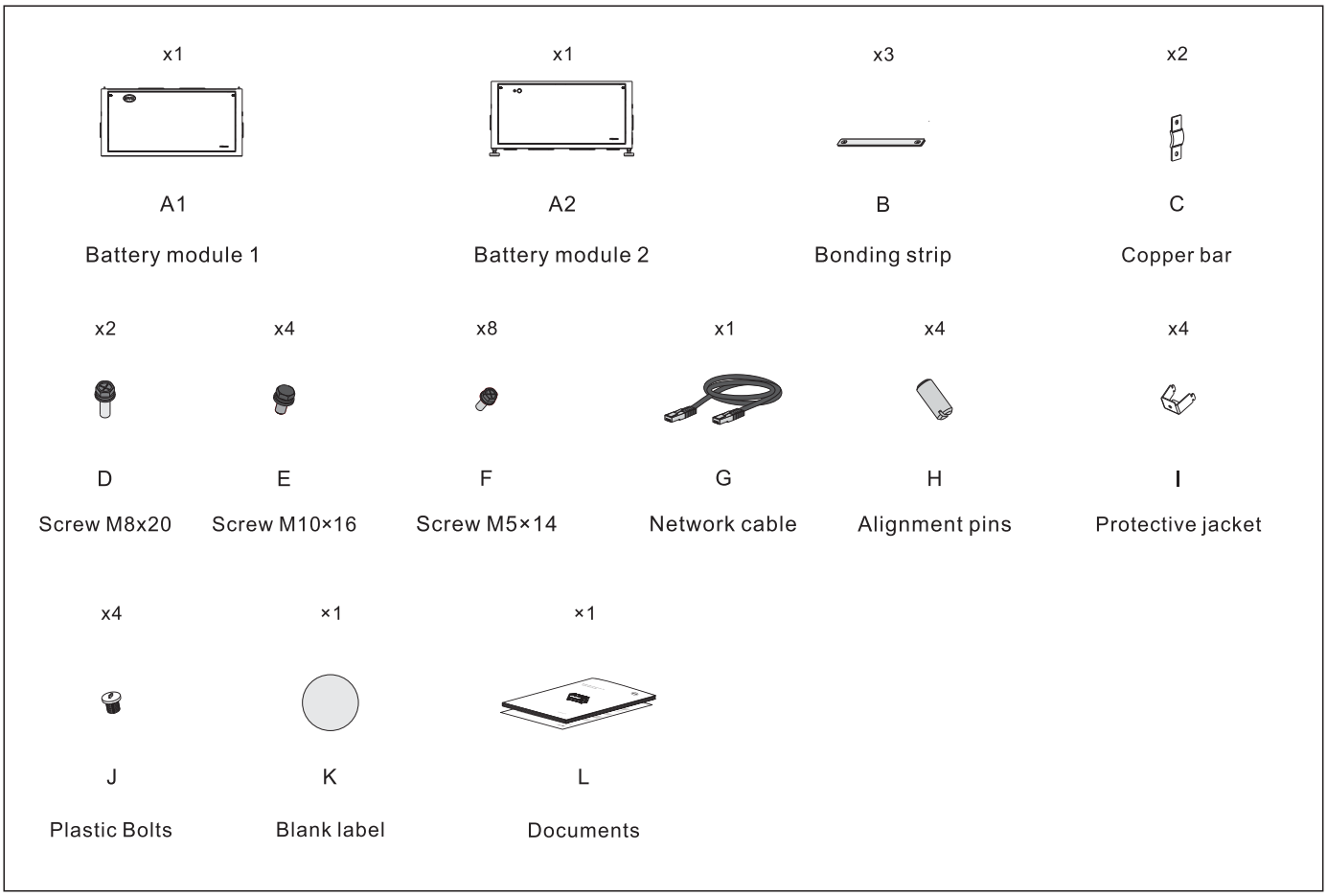
2.2.6. Notice of Property Damage

NOTICE

Damage to the battery system due to under voltages

• If the battery system doesn't start at all, please contact BYD local after-sales service within 48 hours. Otherwise, the battery could be permanently damaged.

3. Scope of Delivery



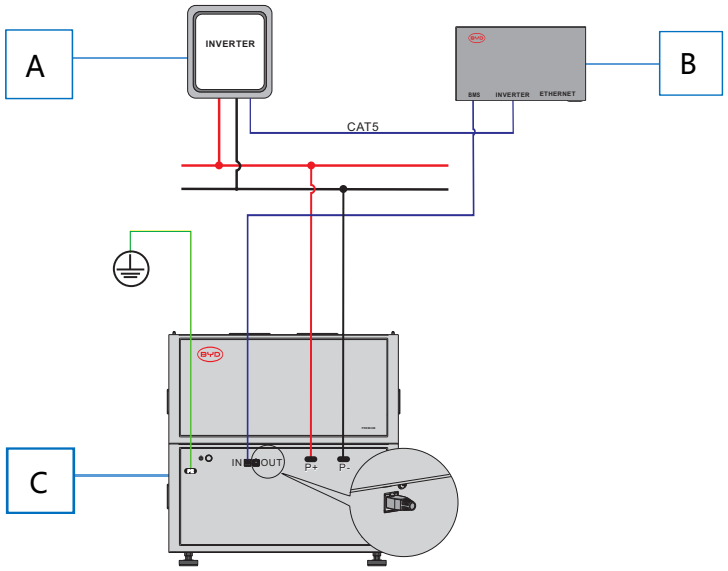
A1	Battery module 1
A2	Battery module 2
B	Bonding strip
C	Copper bar
D	Screw M8 x20
E	Screw M10 ×16
F	Screw M5 ×14
G	Network cable
H	Alignment pins
I	Protective jacket
J	Plastic bolts
K	Blank label
L	Documents

4. Battery System Overview

4.1. Battery System Description

The Battery-Box Premium LVL 2021 is used as a connected battery for the intermediate storage of excess PV energy in an inverter system.

It works together with BMU. (The parameters and instruction of BMU could be read on our websites) The battery system could support the backup function for both 1 and 3 phase inverters.



A	Inverter
B	BMU
C	Battery module

Maximum two LVL systems could be installed in one stack, and up to 64 LVL systems could be connected in parallel.

It is compatible on the installation and connection with the previous LVL 15.4.

4.2. Interface

Be Connect 2.0

Be Connect 2.0 is an app for Android and iOS system devices. You can download it from Google Play or App Store. Search Be Connect 2.0 or scan the QR code on the cover page of the document .

With Be Connect 2.0, you can update the firmware, configure and read the information of the battery system, etc.

Be Connect Plus

Be Connect Plus is a PC app. You can download from our website: (https://www.bydbatterybox.com/downloads).

With Be Connect Plus, you can configure and diagnose the battery system, read the general battery information, update the firmware, etc.

Be Connect Monitoring

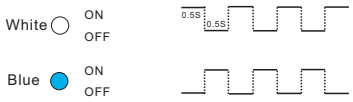
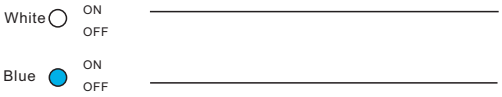
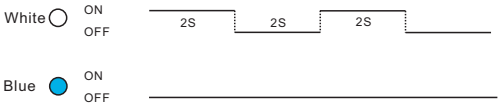
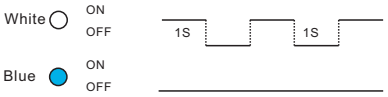
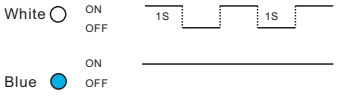
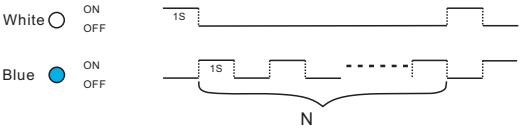
BMU is equipped with an Ethernet interface as a standard. When your battery system accesses to the Internet, it will join our Be Connect Monitoring, which is a platform for BYD to provide remote service to customers. BYD service team can diagnose your battery system, and update the firmware through it. Therefor, it is highly recommended you to access your system to the Internet.

4.3. Symbols on the System

Symbol	Explanation
	Observe the documents Observe all documents supplied with the system.
	Grounding conductor This symbol indicates the position for connecting a grounding conductor.
	Disposal Do not dispose of the system together with household waste, please contact BYD service partner (contact information at the end of this document) to dispose of it in accordance with regulations for electronic waste and used batteries.
	CE marking The system complies with the requirements of the applicable EU directives.
	This side up.
	Handle with care.
	Keep 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.

	RCM (Regulatory Compliance Mark), a brief guide to Electrical equipment approvals in Australia
	Do not short circuit.

4.4. LED Signals

Flashing white and blue alternatively		The battery system is initiating.
Static white		Idle (the battery system is neither charging nor discharging).
Flashing white slowly		The battery system is charging.
Flashing white quickly		The battery system is discharging.
Flashing white and glowing blue		The battery system is discharging, and the SOC is below 15%.
Flashing white and blue		An event message has occurred (refer to the Service Guideline and Checklist for further details)

5. Installation

5.1. Requirements for Installation

5.1.1. Requirements for Installation Location

a) A solid support surface must be available (e.g., concrete or masonry).

b) The installation location must be inaccessible to children.

c) The installation location must be suitable for the weight and dimensions of the battery system.

d) The installation location must not be exposed to direct solar irradiation.

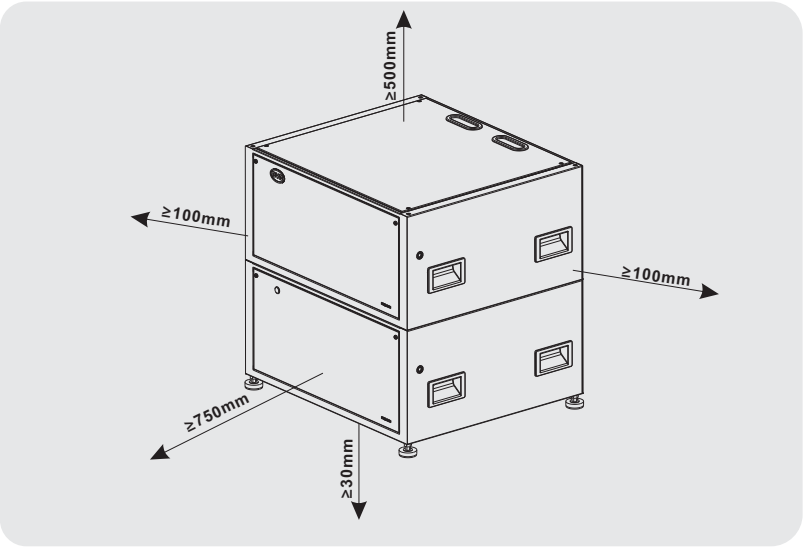
e) The installation location must not be close to heat source.

f) The altitude of the installation location should be less than 2000m.

g) The ambient temperature should be between -10°C and +50°C.

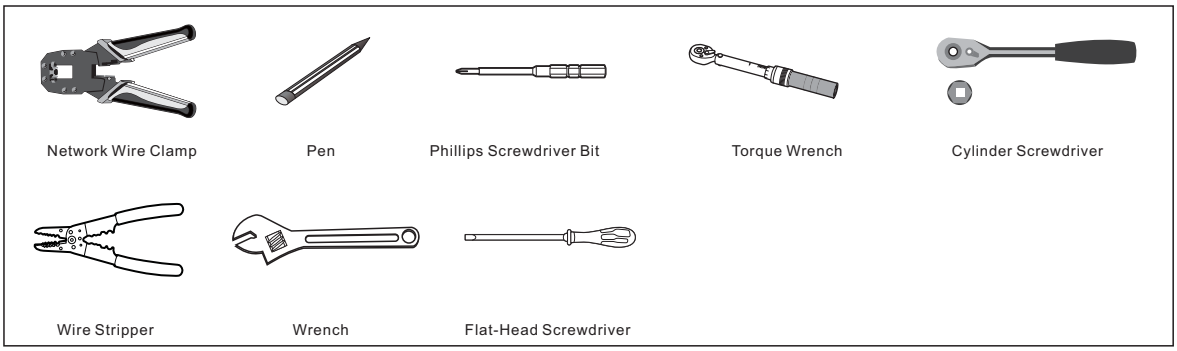
h) Do not install the battery in a closed place where the ventilation is not available.

i) Follow the minimum clearance requirements as shown in the drawing below.



5.1.2. Tools

The tools in the following table could be needed during the installation.



5.1.3. Safety Gear

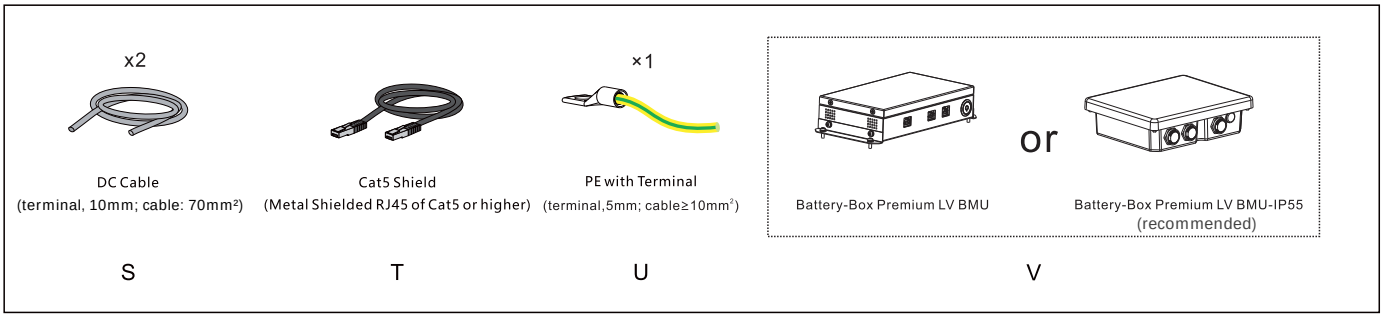
Wear the following safety gear when dealing with the battery system.

Insulated gloves

Safety goggles

Safety shoes

5.1.4. Additionally Required Installation Material



5.2. Installation

⚠ QUALIFIED PERSON

⚠ CAUTION

Risk of injury due to weight of the battery module

Injuries may result if the battery module is lifted incorrectly or dropped while being transported or installed.

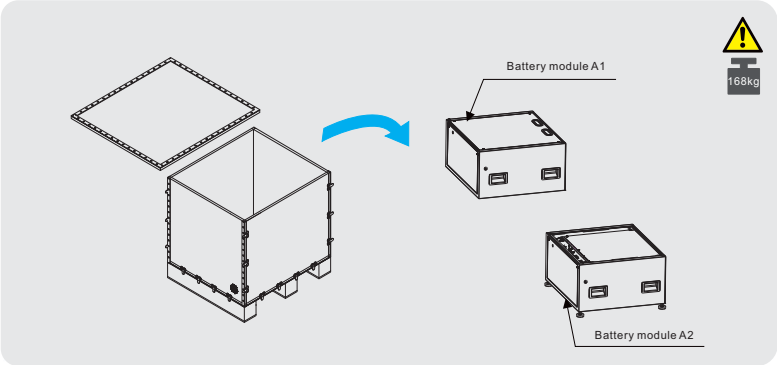
• Transport and lift the battery module carefully. Take the weight of the battery module into account.

• Wear suitable personal protective equipment for all work on the battery system.

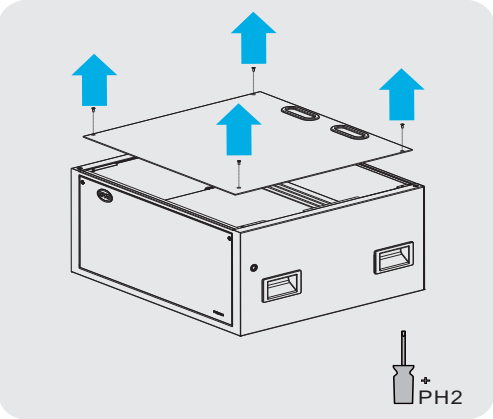
5.2.1. Common installation steps

Procedure:

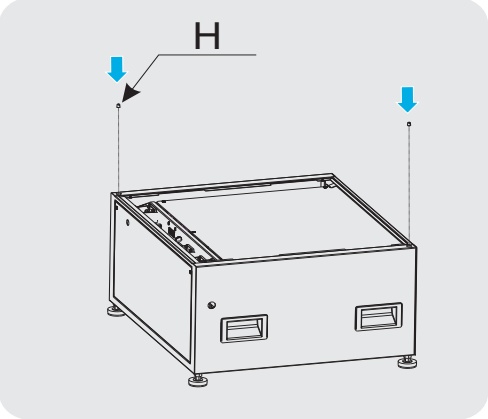
1. Open the package, and put two modules on the ground separately.



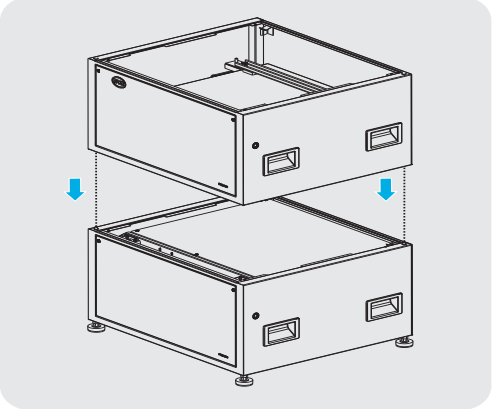
2. Remove the top panel of A1.



3. Install alignment pins (H in the Scope of Delivery, 2 Pcs) on the diagonal of A2.

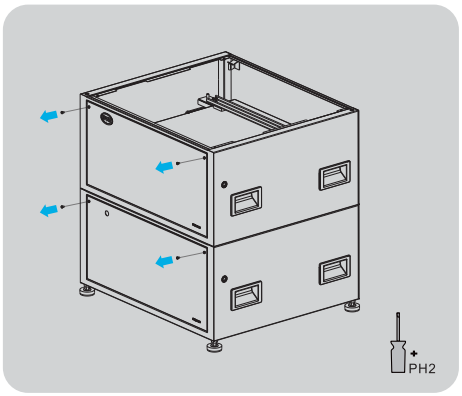


4. Pile A1 on A2. Make sure the holes at the bottom of A1 are just right above the alignment pins, and then lay A1 down on A2.

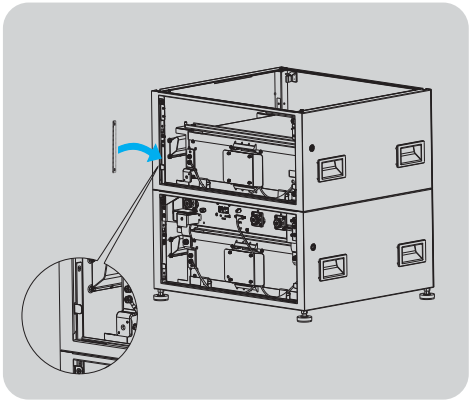


5.2.2. Further installation instruction for single system

1. Remove the front covers of A1 and A2.



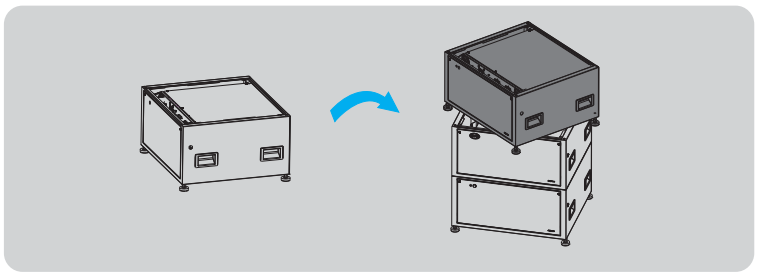
2. Install the bonding strips (B in the Scope of Delivery to between A1 and A2 (Torque, 4.5 Nm).



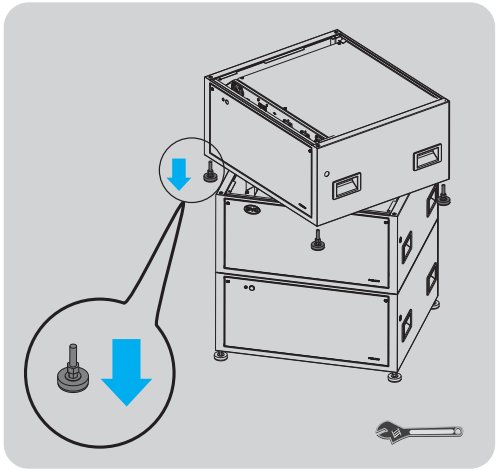
5.2.3. Further installation instruction for a single stack

Procedure:

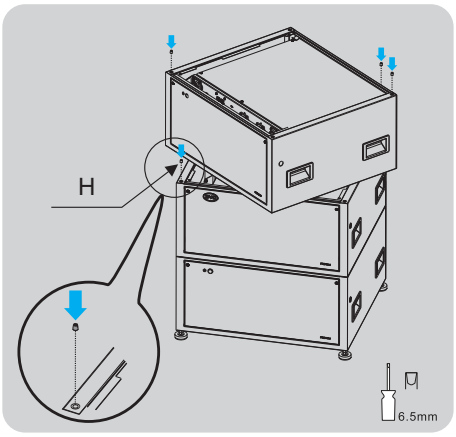
1. Lift A2 (the top LVL) on the top of A1 (the bottom LVL). Please take care that, not right above, but with an angle.



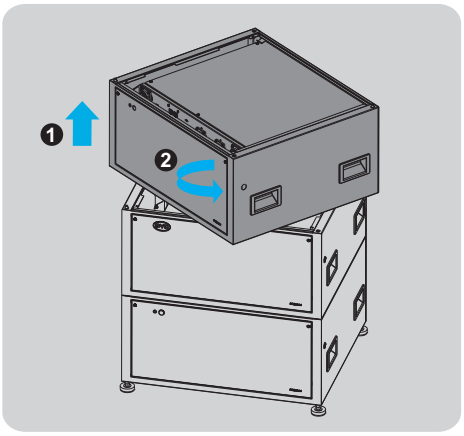
2. Remove four feet of A2 (the top LVL).



3. Insert two alignment pins on top of A1 (the bottom LVL) and A2 (the top LVL).

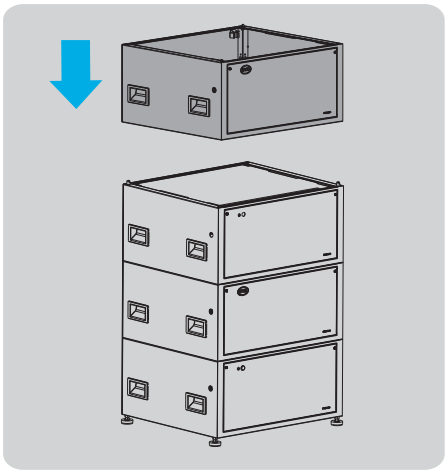


4. Lift A2 (the top LVL), and rotate it a little bit to make sure the holes of it right above the alignment pins of A1(the bottom LVL), and then put it down.

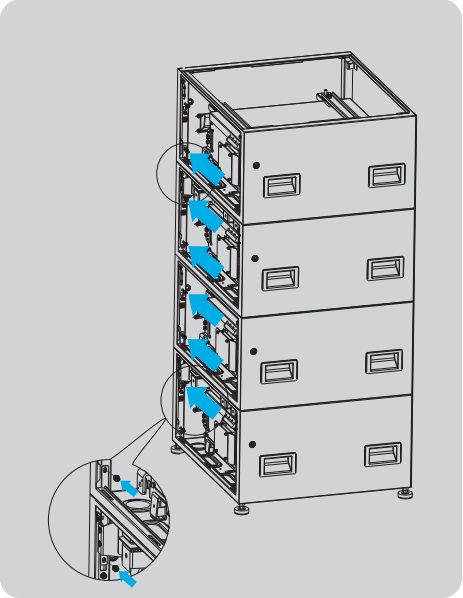


5. Put A1 (the the top LVL) on the top of the stack.

6. Remove the front covers of all the modules



7. Connect the all the modules together with bonding strips. (three stripes each sides, and six strips in total. Torque, 4.5 Nm).



Note: LVL 2021could be installed mixedly with LVL 15.4 in one stack (no matter which one is on the top) or both on the ground.

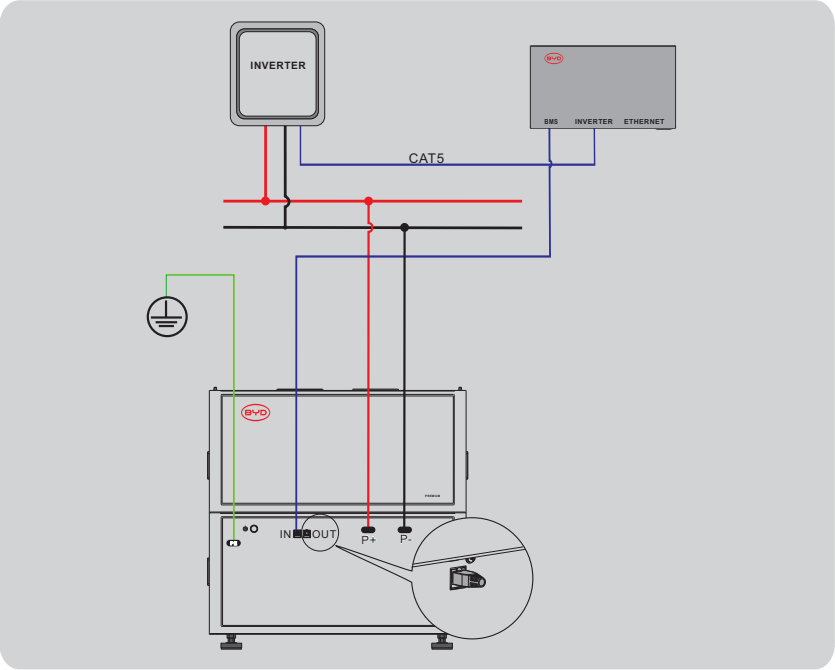
6. Electrical Connection

6.1. Connection Diagrams

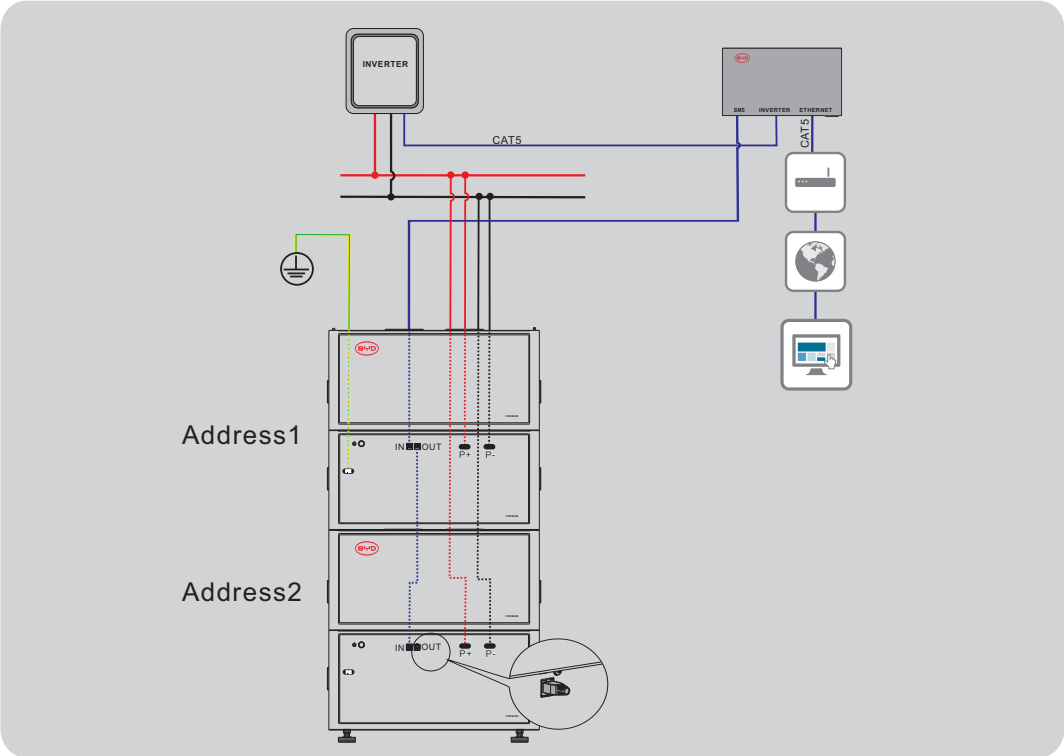
The connection to Ethernet cable is recommended, not compulsory.

In Australia, an external isolator between each battery system and inverter is required. Please refer to installation standard AS 5139 and the maximum current of the inverter.The protection of cables should be considered when choosing the right size isolator.

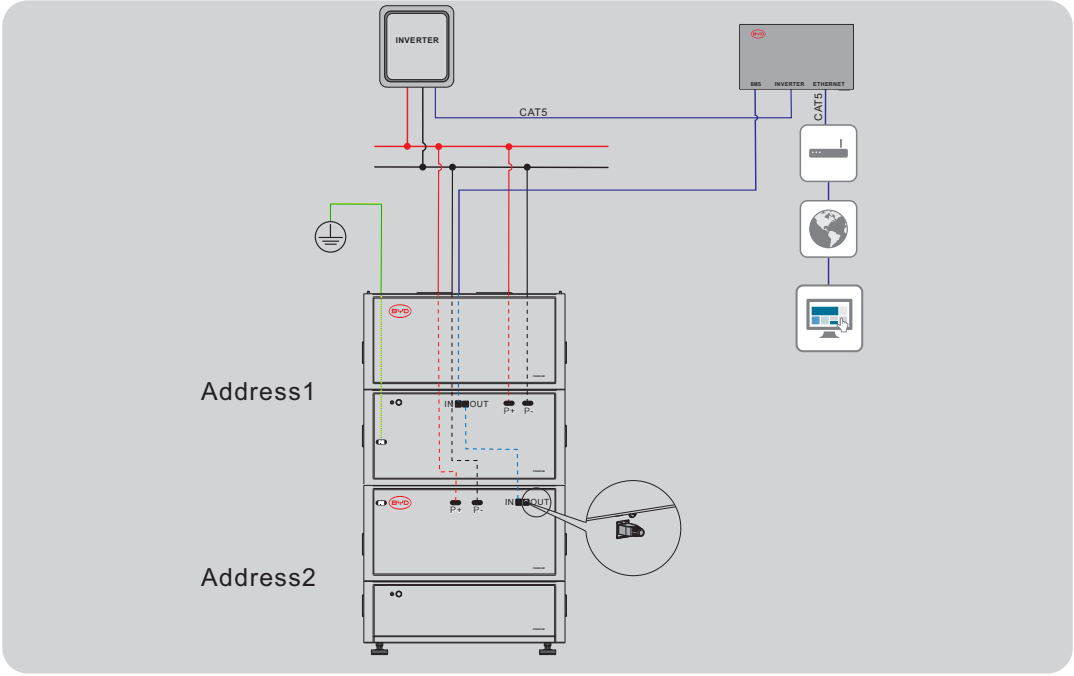
A) Single Battery System



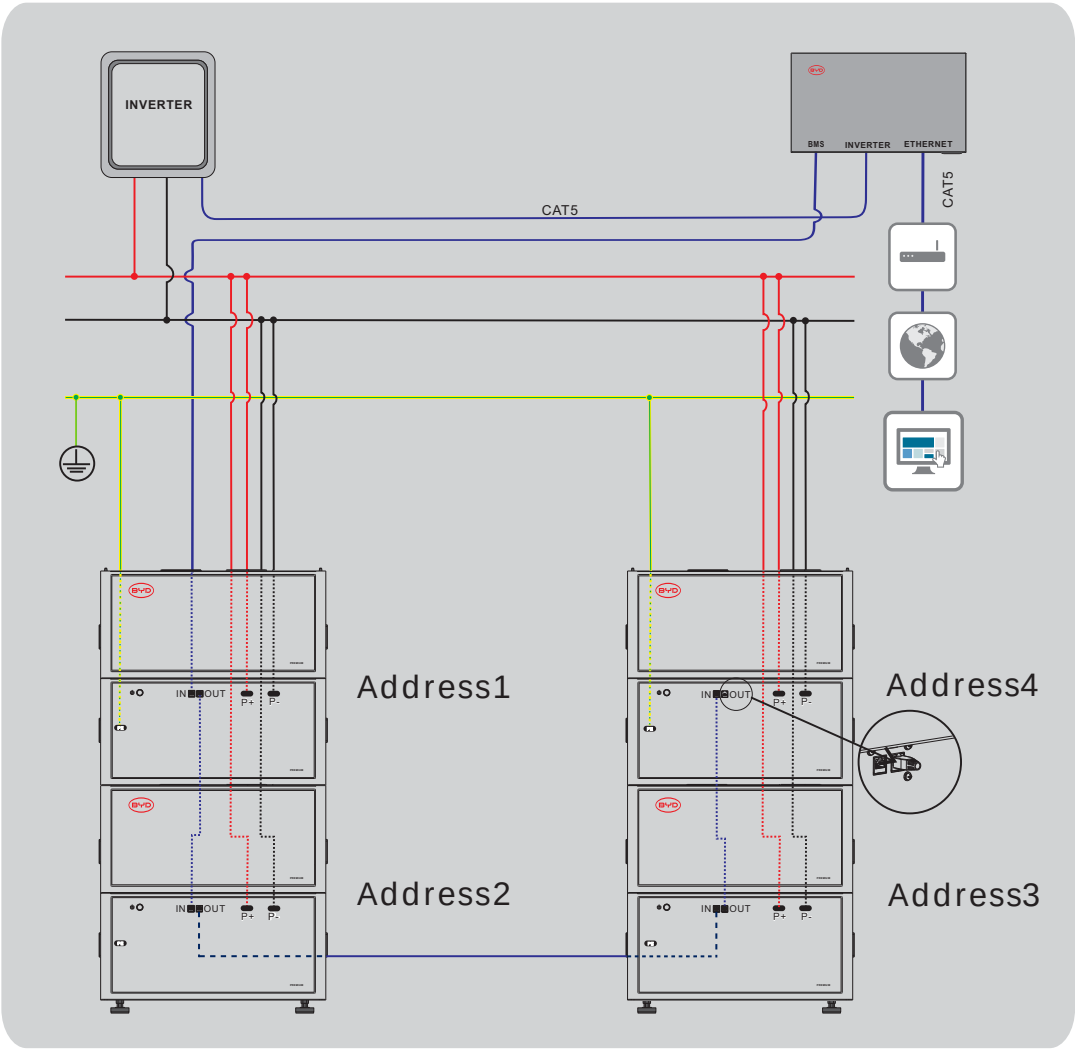
B) Single Stack of Battery System



C) Single Stack of LVL 15.4 and LVL 2021



D) Multiple Battery Systems



6.2. Connecting the PE

⚠ QUALIFIED PERSON

Additionally required mounting material (not included in the scope of delivery):

PE with terminal

PE and Terminal Requirement

a) Terminal, 5mm.

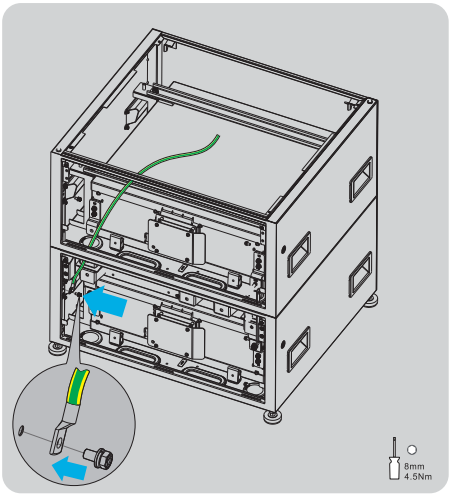
b) Minimum terminal cross-section: 10 mm²

c) The cross-section of the grounding terminal must comply with the locally applicable standards and directives

d) PE Material: Copper wire

Procedure:

1. Make sure all the modules are switched off.
2. Lead the PE cable through the “Power” hole of the top panel on A2 to the grounding point.
3. Take out the grounding screw, and get the PE conductor through it.
4. Fix them together, with a cylinder screwdriver 8 mm, and tighten it (torque, 4 Nm).
5. For the single stack installation systems, only the top LVL system needs grounding.

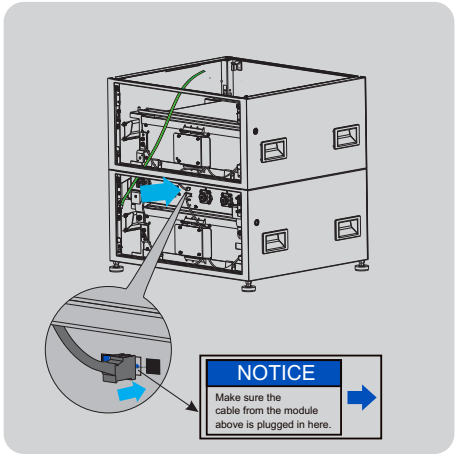


6.3. Data Cable Connection

6.3.1. Internal Communication Cable Connection

Procedure:

1. Get the internal communication cable connector from the upper module to the lower module through the hole between them.
2. Plug it into the port as shown in the right side drawing .



6.3.2. Data Cable Connection between Inverter and BMU

Additionally required mounting material (not included in the scope of delivery):

One data cable

Data cable requirements:

The cable length and quality affect the quality of the signal. Check the following cable requirements.

• Cable category: Cat5, Cat5e or higher

• Plug type: Metal Shielded RJ45 of Cat5, Cat5e or higher

• Shielding: Yes

• UV-resistant for outdoor use

• Straight- through wired cables

Maximum cable length: 20 m.

Procedure:

1.R ead the designation of the INVERTER port on BMU and the inverter manual, and decide whether to modify the data cable.

The designation of INVERTER port on BMU could be read below.

No.	Assignment
1	485-A
2	485-B
3	Unused
4	CAN H
5	CAN L
6	Unused
7	Unused
8	Unused

Our compatible inverters communication ports with BMU designation could be read below.

	BMU	SMA	STUDER	VICTRON	SELECTRONIC	GOODWE/VIESSMANN	SOLIS	SCHNEIDER
CAN H	4	4	4	7	1	4	4	14
CAN L	5	5	5	8	2	5	5	12

The detailed connection instruction with different inverters could be read in the Appendix of this manual.

Note: A) The information here is just for reference. If it is contrary to the inverter manufacturer`s manual, take the later one into account. **B)**If the data cable needs to be modified, please make sure the retrofitting is done well , otherwise it may cause the communication errors .

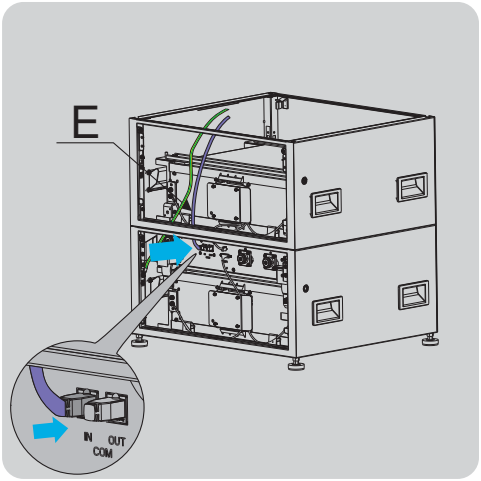
2. Plug RJ 45 connector to the “Inverter” port of BMU, and the other side to the corresponding port of the inverter.

6.3.3. Data Cable Connection between BMU and LVL 2021

⚠ QUALIFIED PERSON

Procedure:

1. Lead the RJ45 connector of data cable (G in the Scope of Delivery) to the “IN”port on the control unit of A2 through the “COM” hole on the top panel of A1.
2. Connect another side of the cable to the BMS port of BMU.

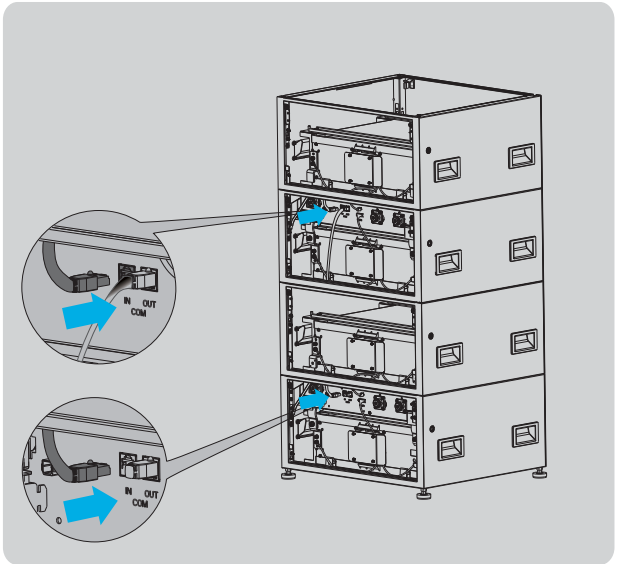


6.3.4. Cable Connection between LVL systems

This step is only needed if more than one LVL systems are connected in parallel. The connection method for LVL 15.4 and LVL 2021 is the same.

Procedure:

1. Plug in the RJ45 connector of the data cable to the”OUT”port of the Address One LVL.
2. Plug in the other side RJ 45 connector to the “IN”port of Address Two LVL.
3. If there are more than two LVL systems, connect the remaining LVL systems as from the “OUT”port of the former one to the “IN”port of the coming one.
4. Plug in the terminal resistor at the “Out” port of the last LVL.

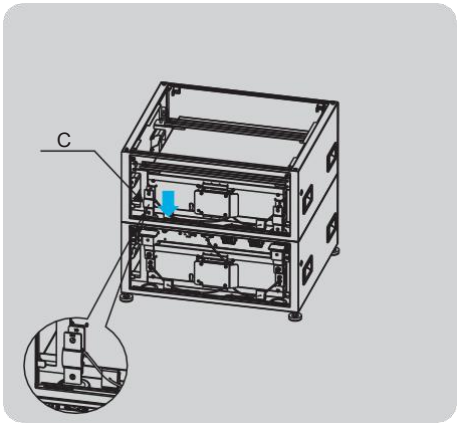


6.4. DC Connection

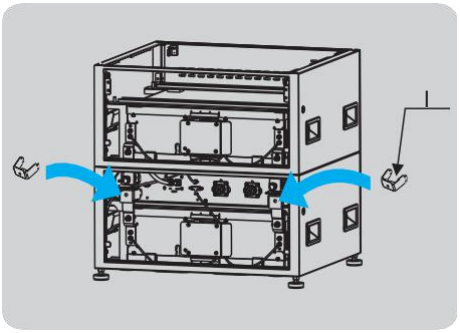
6.4.1. Internal copper bars connection

Procedure:

1. Lead a copper bar (C in the Scope of Delivery) through the hole on the separation panel between two modules at the positive pole of the upper module and the “B+”port on the control unit.
2. Fix the copper bar with D (screw M8x20) on the module positive pole and E (screw M10x16) on the “B+” port. The torque requirement for D is 8 Nm, and for B is 11.5 Nm.
3. Do the same operation on the negative pole of the upper module and the “B-” port on the control unit.



4. Put the protective jackets (I in the Scope of Delivery) above the screws.



6.4.2. Power Cables Connection

Additionally required mounting material (not included in the scope of delivery):

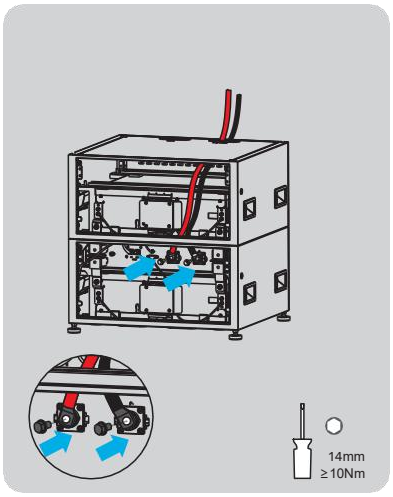
Two DC power cables for LVL system

Cable requirements:

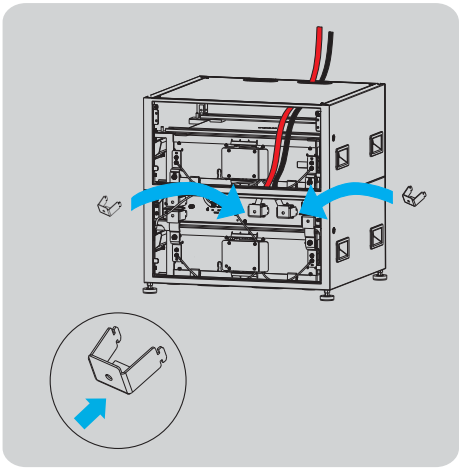
1. Conductor cross-section: Up to 70 mm², and following the requirements of the inverter.
2. Maximum cable length: 5 m.
3. Conductor SCXX-10

Procedure:

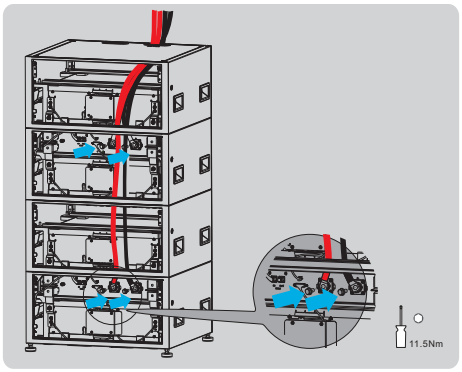
1. Lead the external DC power cables to the “P+” and “P-” port on the control unit through the “Power” hole on the top panel of A1 and also the hole on the separation panel.
2. Fix the power cables with screws M10 (G in the Scope of Delivery). The torque requirement is 11.5 Nm.



3. Put the protective jackets (I) above the screws.

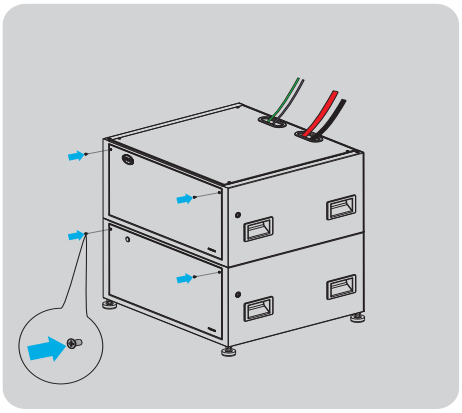


4. For the single stack installation systems, the power cables should be leaded to the “P+” and “P-”ports on A2 of the top and bottom LVL systems through the“Power” hole and also holes on the separation panels. All the other operations are as the same as the single system.

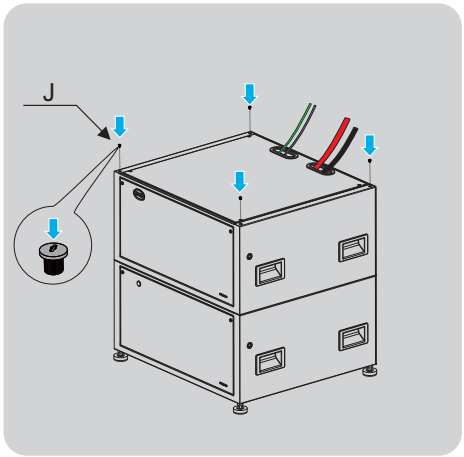


6.5. Close Up

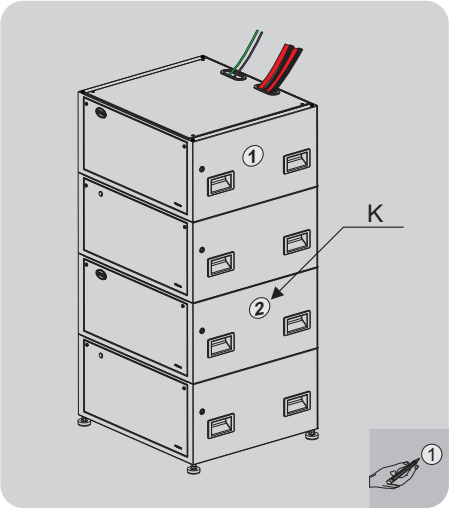
1. Plug in the cables for LED light behind the front cover, and then install all the front covers back



2. Insert the plastic bolts (J in the delivery scope) on four corners of A2 top side. Meanwhile, fix the top panel of A2 with original screws there.



3. For the multiple systems connected in parallel, write the address numbers on the blank labels (K in the Scope of Delivery) , and put them on the enclosure of the products. The first system connected with BMU is Address One, and the one connected with Address One with data cable is Address Two, etc.



7. Commissioning

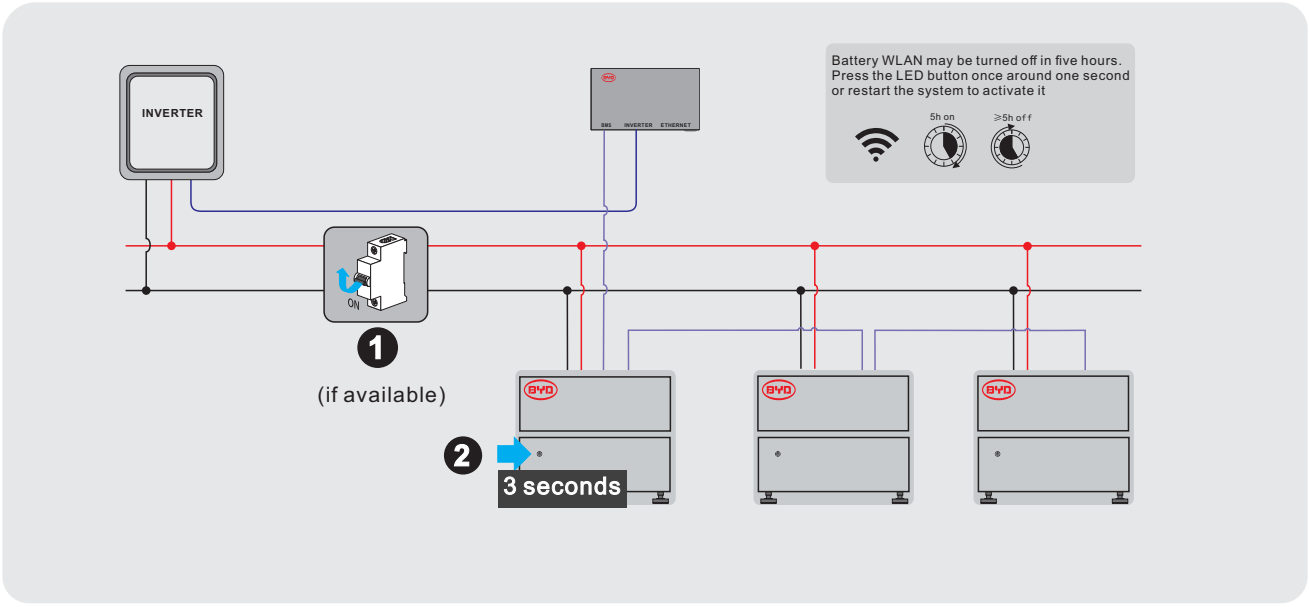
7.1. Power on the Battery System

⚠ QUALIFIED PERSON

Requirements:

- The power cable connection between the battery system and the inverter is switched off.
- All cables must be correctly connected.

Procedure:



1. Switch on the air switch between the battery and inverter if there is any;
2. Pressing the LED button on the system Address One for 3 seconds; All the LED lights on the LVL systems and BMU should be turned on immediately, and then turns to static white. (Refer to Section 4.4 LED Signals, and Section 11.2 LED Light Designation for Errors for more LED status information)

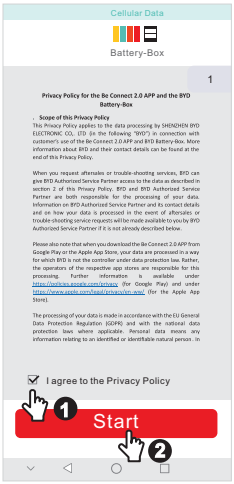
7.2. Configure the Battery System

⚠ QUALIFIED PERSON

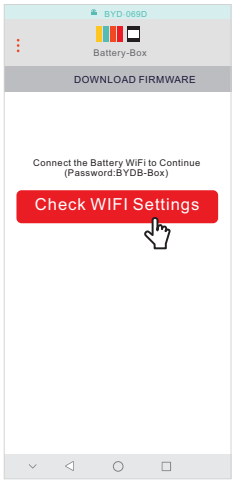
Procedure:

1. Download Be Connect 2.0 from Google Play or App Store. The battery system requires the latest version firmware to operate. So please make sure you either have downloaded the latest firmware in your device (cell phone, Ipad, etc.), or your device could access the Internet during configuration.

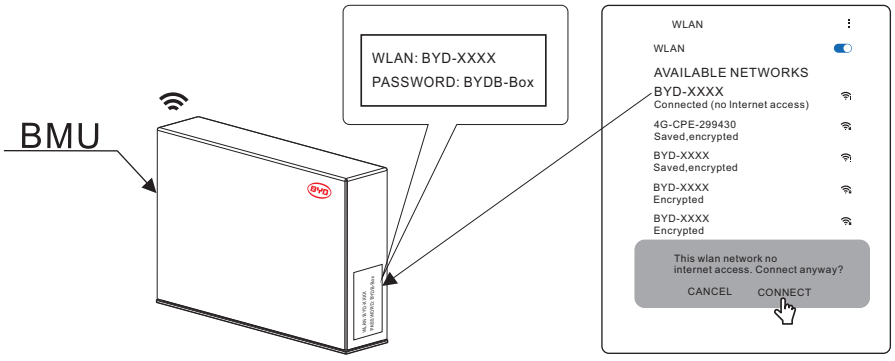
2. Tick the box in front of “I agree to the Privacy Policy”, and then press the “Start” button.



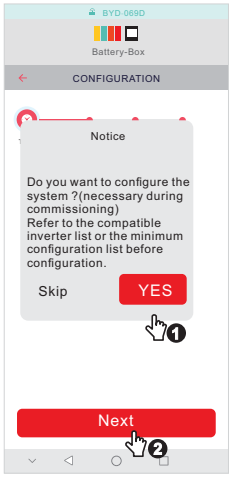
3. The app will check the firmware, and download if needed when Internet is available. If there is no Internet available, you can press “Skip” to skip the firmware checking.



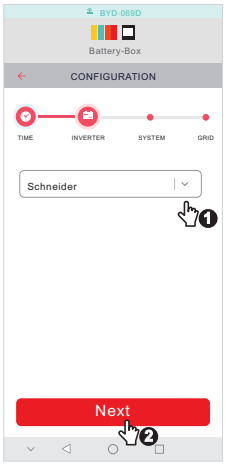
4. After the firmware downloaded, press the button“Check WIFI Settings” to connect the battery Wi-Fi, which begins with “BYD-”, and the full name could be found at BMU. All the Wi-Fi shares the common password (BYDB-Box).



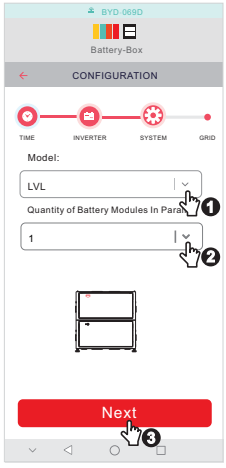
5. The app will update the firmware automatically. After that a notice will show. Click “Yes” if you need to configure the battery system, and then click “Next” on the Time Confirm page.



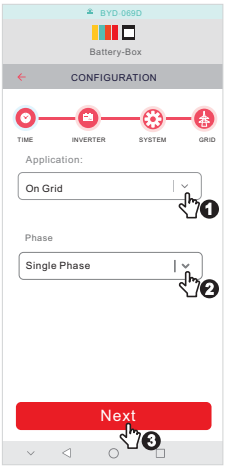
6. Choose the inverter brand which will operate together with the battery system.



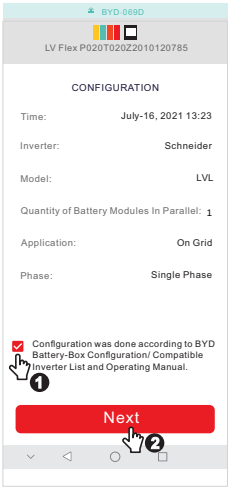
7. Choose the battery system model, LVL. And then set how many battery LVL systems are connected in parallel overall.



8. Choose the Grid and Phase options according to the actual application.



9. Check the summary of the configuration information, tick the box, and press the button “Next”.



Restart the Be Connect 2.0 if it stucks somewhere.

Please note that the SOC of the battery may not be accurate before a full charge or discharge after the configuration.

7.3. Switch on and Commission the Inverter

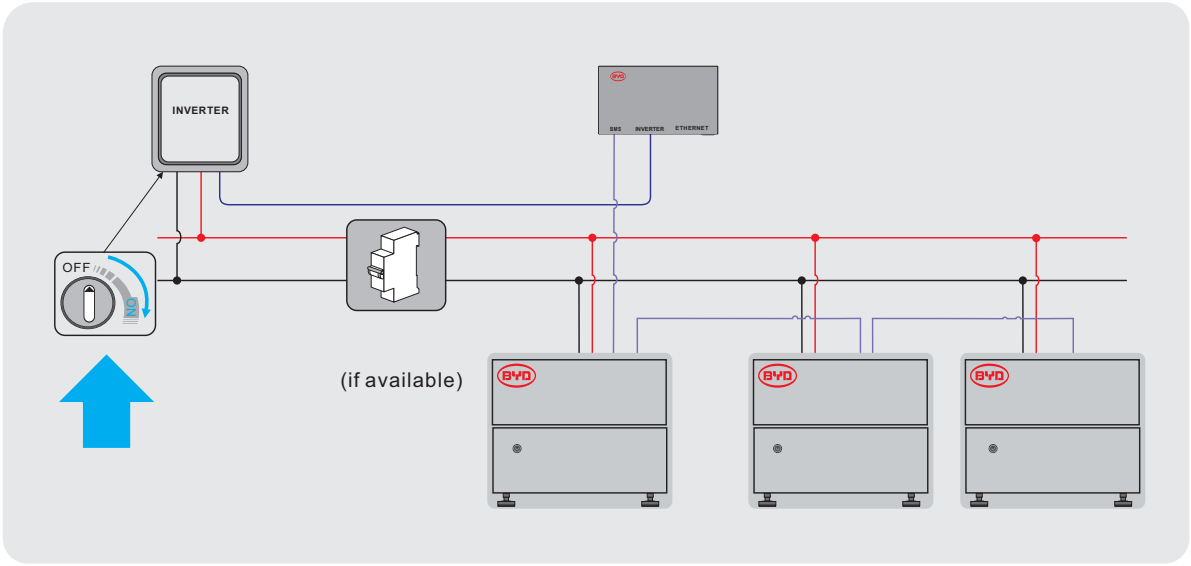
⚠ QUALIFIED PERSON

Procedure:

1. Mount and connect the inverter according to the inverter manufacturer`s instruction.
2. Commission and configure the inverter according to the inverter manufacturer`s instruction.

If the battery information could be read correctly, it means the connection between the battery system and the inverter is all right. The LED of the BMU will be static white, and the battery system is ready to work.

If the light on BMU is not static white, refer to Section 4.4 LED Signals, and Section 11.2 LED Light Designation for Errors for more LED status information.



8. Operation

8.1. Switch on the Battery System

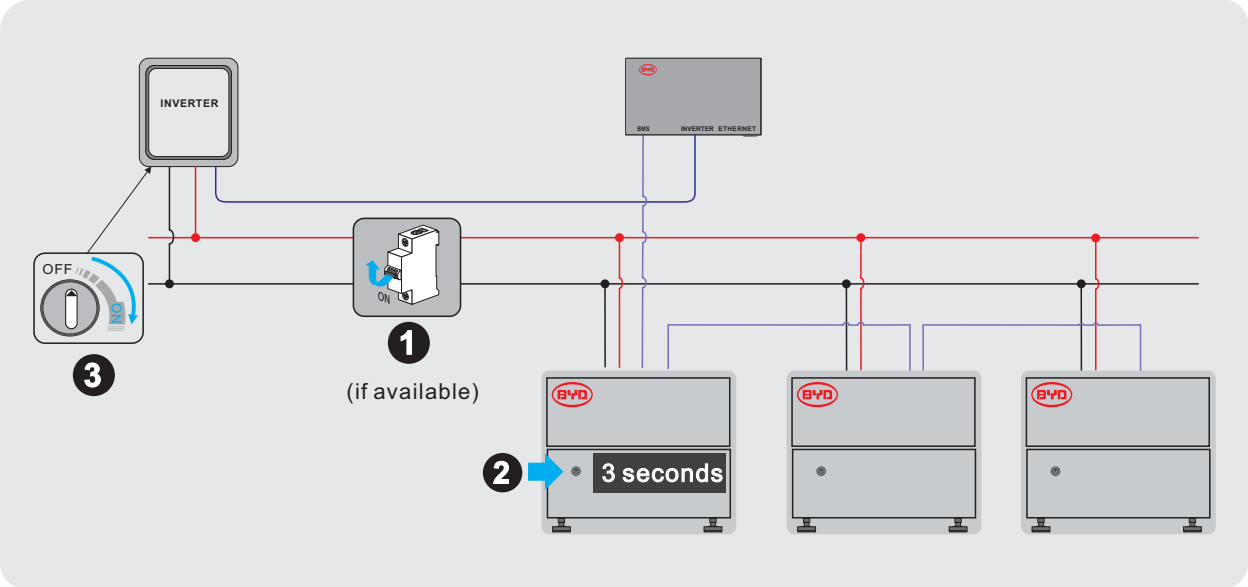
To make sure the battery system can work well with the inverter, please follow the right procedure to start them.

The procedure to switch on the battery systems is:

1) Turn on the switch between the inverter and battery if there is any;

2) Press the LED button on Address One LVL for three seconds;

3) Switch on the inverter.



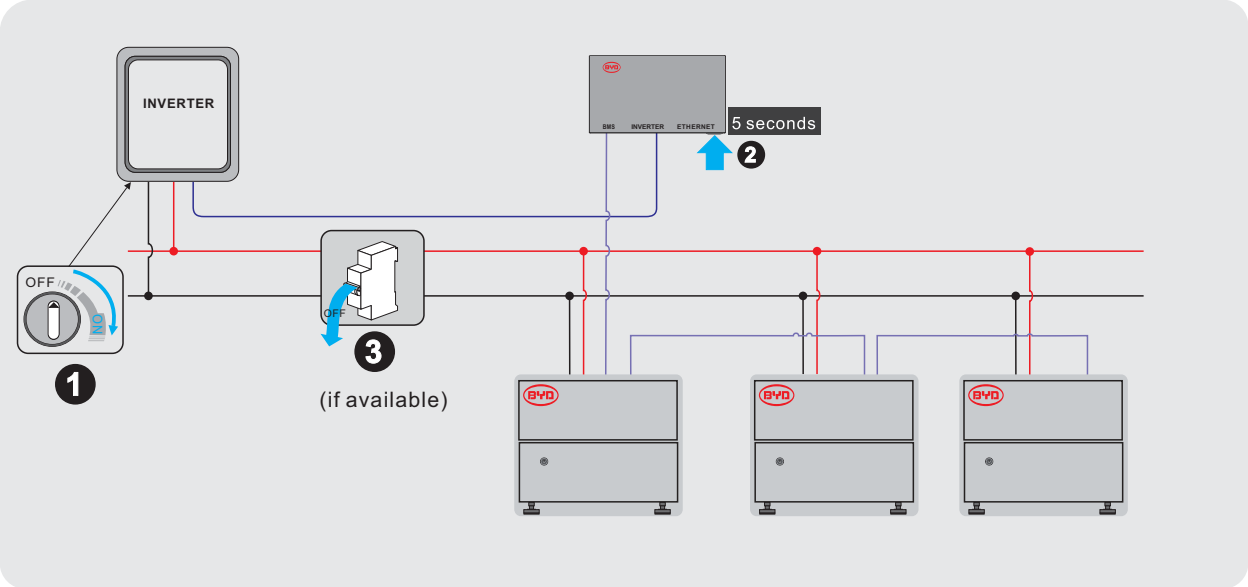
8.2. Switch off the Battery System

The procedure to switch off the battery system is:

1) Switch off the inverter;

2) Press the LED button on BMU for 5 seconds;

3) Switch off the air switch between the battery and the inverter if there is any.



9. Decommissioning

⚠ QUALIFIED PERSON

⚠ CAUTION

Risk of injury due to weight of the battery module

Injuries may result if the battery module is lifted incorrectly or dropped while being transported or installed.

• Transport and lift the battery module carefully. Take the weight of the battery module into account.

• Wear suitable personal protective equipment for all work on the battery system.

Procedure:

1. Shut off the inverter.
2. Switch off the battery system.
3. Switch off the breaker between the inverter and the battery system if there is any.
4. Disconnect the DC cables between inverter and the battery system, PE, and data cable among battery system, inverter, BMU and router (if applicable).
5. Loose the screws between battery modules.

If the battery system is to be stored or shipped, pack the system. Use the original packaging or packaging that is suitable for the weight and dimensions of the system.

Dispose of the battery system in accordance with the locally applicable disposal regulations for electronic waste.

10. Extension

The battery system could be extended at any time.

Procedure:

1. Shut off the inverter.
2. Switch off the battery system.
3. Switch off the breaker between the inverter and the battery system if there is any.
4. Add the new module on top of other battery modules.
5. Switch on the breaker between the inverter and the battery system if there is any.
6. Switch on and configure the battery system.
7. Start the inverter.

Note, LVL 2021 can be added into the existing LVL 15.4 systems, vice versa.
Update the firmware to the latest version before extension.

11 Trouble shooting

Please also see the BYD Battery-Box Premium LVL Service Guideline and Checklist for troubleshooting. The latest version is available at our website www.bydbatterybox.com.

11.1. Battery System Behavior under Fault Conditions

Blue light flashing

If blue LED flashes, and the interval time between two flashes is 1 second, which means an error occured. (When the system is initiating, the white light and blue light flash alternatively every 0.5s. That is not an error.)

The detailed designation for errors of each LED lights could be read in 11.2.

Except the LED light, we can also get the faulty messages of the battery through the remote server Be Connect Monitoring. Information read through that could help to identify the issues. It is highly recommend to connect the battery system to the Internet.

The app Be Connect 2.0 and PC app Be Connect Plus can display battery errors. (refer to Section 4.2 for more information regarding these tools.)

NOTICE

Damage to the battery system due to under voltages

• If the battery system doesn't start at all, please contact BYD local after-sales service within 48 hours. Otherwise, the battery could be permanently damaged.

11.2. LED Light Designation for Errors

11.2.1. Error codes on BMU

Blue LED is flashing for one time.	System initiating failed
Blue LED is flashing two times.	Address distribution failed
Blue LED is flashing three times.	Precharge failed
Blue LED is flashing for four times.	BMS failure
Blue LED is flashing five times.	BMS and BMU communication failed
Blue LED is flashing six times.	Communication with an inverter failed

11.2.2. Error codes on BMS

Blue LED is flashing once	DC cable connection incorrect
Blue LED is flashing two times	MOS failure
Blue LED is flashing three times	BIC (battery information collector) communication failed
Blue LED is flashing four times	Battery sensor failure
Blue LED is flashing five times	Volt sensor failure
Blue LED is flashing six times	Current sensor failure
Blue LED is flashing seven times	Battery failure
Blue LED is flashing eight times	Precharge failed
Blue LED is flashing nine times	BIC balance failure
Blue LED is flashing ten times	Temperature sensor on battery control unit failure
Blue LED is flashing eleven times	BMS and BMU communication failure

12. Maintenance and Storage

Cleaning

If the enclosure is dirty, please use a soft, dry brush or a dust collector to remove the dust. Liquids such as solvents, abrasives, or corrosive liquids should not be used to clean the enclosure.

Maintenance

The battery module should be stored in an environment with a temperature range between -10°C ~ +50°C, and charged regularly according to the table below with no more than 0.5 C (A C-rate is a measure of the rate at which a battery is discharged relative to its maximum capacity.) to the SOC of 40% after a long time of storage.

Storage environment temperature	Relative humidity of the storage environment	Storage time	SOC
Below -10℃	/	Not allowed	/
-10~25℃	5%~70%	≤ 12 months	25%≤SOC≤60%
25~35℃	5%~70%	≤ 6 months	25%≤SOC≤60%
35~50℃	5%~70%	≤ 3 months	25%≤SOC≤60%
Above 50℃	/	Not allowed	/

NOTICE

Damage to the battery system due to under voltages

• If the battery system doesn't start at all, please contact BYD local after-sales service within 48 hours. Otherwise, the battery could be permanently damaged.

13. Disposal of the Battery System

Disposal of the system must comply with the local applicable disposal regulations for electronic waste and used batteries.

• Do not dispose of the battery system with your household waste.

• Avoid exposing the batteries to high temperatures or direct sunlight.

• Avoid exposing the batteries to high humidity or corrosive atmospheres.

• For more information or arrange a collection please contact BYD Service Partner (see contact details at the bottom of this document).

14. Technical Parameters

	LVL 2021
Number of Modules	2
Usable Energy [1]	15.36 kWh
Max Cont. Output Current [2]	250 A
Peak Output Current [2]	375 A, 5 s
Dimensions (H/W/D)	660×650×575 mm
Weight	168 kg
Nominal Voltage	51.2 V
Operating Voltage	40-57.6 V
Operating Temperature	-10 °C to +50°C
Battery Cell Technology	Lithium Iron Phosphate (cobalt-free)
Communication	CAN/RS485
Enclosure Protection Rating	IP20
Round-trip Efficiency	≥95%
Scalability	Max. 64 in Parallel (983 kWh)
Certification	IEC62619 / CE / CEC / UN38.3
Applications	ON Grid / ON Grid + Backup / OFF Grid
Warranty[3]	10 Years
Compatible Inverters	Refer to BYD Battery-Box LVL 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 derating will occur between -10 °C and +5 °C

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

15. Contact Information

BYD Global Service

Mailbox: bboxservice@byd.com

Telephone: +86 755 89888888-47175

Address: No.1, Yan'an Road, Kuichong, Dapeng, Shenzhen, Guangdong Province, 518119,P.R. China

Website: www.bydbatterybox.com

Social media link

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

https://twitter.com/BYD_BatteryBox

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

Australia

Alps Power Pty Ltd

Mailbox:

service @alpspower.com.au

Telephone: +61 2 8005 6688
Address: 14/47-51 Lorraine St Peakhurst NSW 221

Website: www.alpspower.com.au

Europe

EFT-Systems GmbH

Mailbox:

service@eft-systems.de

Telephone: +49 9352 8523999

+44 (0) 2037695998(UK)

+34 91 060 22 67(ES)

+39 02 87368364(IT)

Address: Bruchtannenstraße 28, 63801 Kleinostheim, Germany

Website: www.eft-systems.de

South Africa

AFRIPLUS ENERGY GROUP (PTY) LTD

Support@afriplusenergy.co.za

Telephone: +27 21 140 3594

Address: The Pavilion, Corner of Dock & Portswood Road, V&A WATERFRONT, 8001, CAPE TOWN

USA

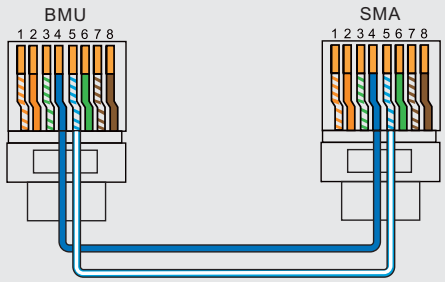
BYD US Service

bboxusservice@byd.com

Telephone: +1(833) 338-8721

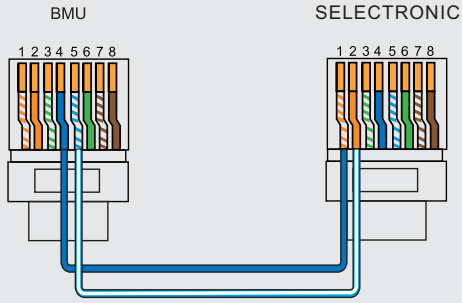
Appendix: Data Cable Connection Instruction with Inverters

Connection with SMA

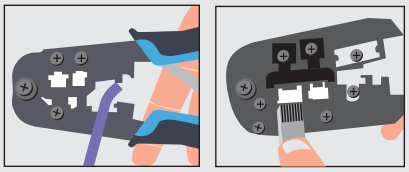


BMU	SMA
PIN	PIN
4	4
5	5

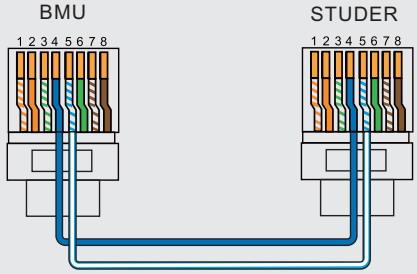
Connection with SELECTRONIC



BMU	SELECTRONIC
PIN	PIN
4	1
5	2

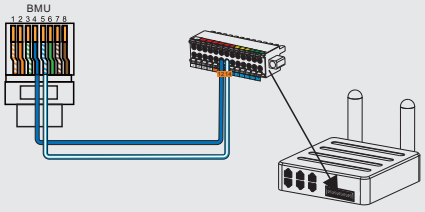


Connection with STUDER



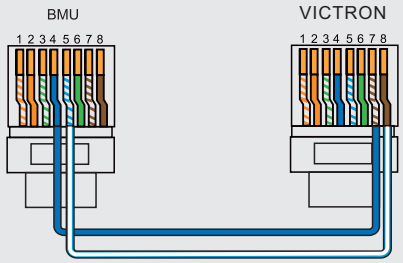
BMU	STUDER
PIN	PIN
4	4
5	5

Connection with SCHNEIDER

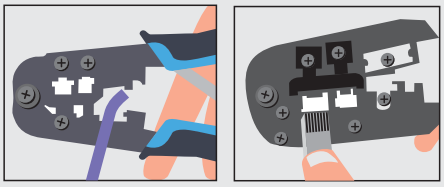


BMU	SCHNEIDER
PIN	PIN
4	14
5	12

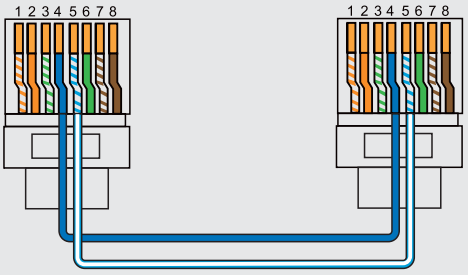
Connection with VICTRON



BMU	VICTRON
PIN	PIN
4	7
5	8

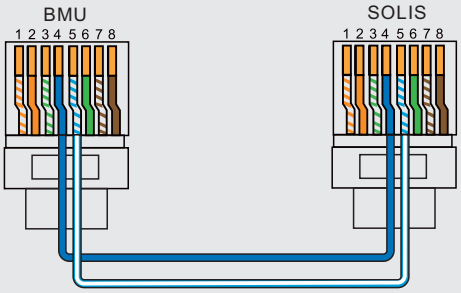


Connection with GOODWE/VIESSMANN



BMU	GOODWE/VIESSMANN
PIN	PIN
4	4
5	5

Connection with SOLIS



BMU	SOLIS
PIN	PIN
4	4
5	5