

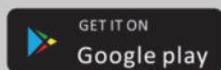


BYD Battery-Box LV Flex Operating Manual

V 1.1



Be Connect
2.0



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Limited Warranty

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

Shenzhen BYD Electronics Co., Ltd.

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Content

1. Information on this Document	1
1.1. Validity	1
1.2. Target Group	1
1.3. Content and Structure of this Document	1
1.4. Declaration of Conformity	1
1.5. Levels of Warning Messages	1
1.6. Symbols in the Document	2
1.7. Designation in the Document	2
2. Safety	3
2.1. Intended Use	3
2.2. Important Safety Instructions	3
2.2.1. Battery Module Leakage	3
2.2.2. Firefighting Measures	3
2.2.3. Battery Modules Handling and Storage Guide	4
2.2.4. Warning of Overvoltages	4
2.2.5. Caution of Weight	5
2.2.6. Notice of Property Damage	5
3. Scope of Delivery	6
4. Battery System Overview	7
4.1. Battery System Description	7
4.2. Interface	7
4.3. Symbols on the System	8
4.4. LED Signals	9
5. Installation	10
5.1. Requirements for Installation	10
5.1.1. Requirements for Installation Location	10
5.1.2. Tools	10
5.1.3. Safety Gear	11
5.1.4. Additionally Required Installation Materials	11
5.2. Installation	11

6. Electrical Connection	13
6.1. Overview of the Connection Area	13
6.2. Connection Diagram	14
6.3. PE Cable Connection	15
6.3.1. Connecting the PE Cable on Battery Modules	15
6.3.2. Connecting the PE Cable on Bus bar of the Cabinet	15
6.4. Data Cable Connection	16
6.4.1. Data Cable Connection between Inverter and BMU	16
6.4.2. Data Cable Connection between BMU and Battery Module	17
6.4.3. Data Cable Connection between Battery Modules	17
6.4.4. Data Cable Connection between BMU and Router	18
6.5. DC Connection	19
6.5.1. DC Connection on battery modules	19
6.5.2. DC Connection on Bus Bar of the Cabinet	19
7. Commissioning	20
7.1. Power on the Battery System	20
7.2. Configure the Battery System	21
7.3. Switch on the Inverter and Commissioning	23
8. Operation	24
8.1. Switch on the Battery System	24
8.2. Switch off the Battery System	24
9. Decommissioning	25
10. Extension	26
11. Troubleshooting	27
11.1. Battery System Behavior under Fault Conditions	27
11.2. LED Light Designation for Errors	27
11.2.1. Error codes on BMU	27
11.2.2. Error codes on BMS	28
12. Maintenance and Storage	29
13. Disposal of the Battery System	30
14. Technical Parameters	31
15. Contact Information	32
Appendix Data Cable Connection Instruction with Inverters	33

1. Information on this Document

1.1. Validity

This document is valid for the Battery-Box LV Flex.

1.2. Target Group

The instructions in this document may only be performed by a qualified person 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
- Trained in dealing with the hazards associated with the installation and operation of electrical equipment and batteries
- Trained 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 is 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, could result in property damage.

1.6. Symbols in the Document**⚠ QUALIFIED PERSON**

Sections with this symbol indicate actions only to be performed by a qualified person.

1.7. Designation in the Document

Designation in this Document	Complete Designation
Battery System	Battery-Box LV Flex
BIC	Battery Information Collector
BMS	Battery Management System
BMU	Battery Management Unit
BYD	Shenzhen BYD Electronics Co., Ltd.
SOC	State of Charge

2. Safety

2.1. Intended Use

The battery system is for residential use and works with a photovoltaic system. It is a 48V Li-ion battery storage system, with a 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 a network cable for maintenance and firmware updating.

The battery system must only be used as stationary equipment.

The battery system can only be suitable for indoor use under the conditions mentioned in Section 5.1.

The battery system must only be operated in connection with a compatible inverter. The list (BYD Battery-Box LV Flex 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 occur 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 granted. 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 the 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, please perform the following 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 their 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 modules into the fire.
- Do not soak the battery modules in water or seawater.
- Do not expose battery modules 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 they are defective, or appear cracked, broken or otherwise damaged, or fail 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 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 battery system or the inverter outdoors to the inside of a building.

2.2.5. Caution of Weight

CAUTION

Risk of injury due to the weight of the battery module

Injuries may occur 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

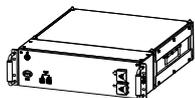
NOTICE

Damage to the battery system due to undervoltages

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

3. Scope of Delivery

Battery Module Package



A



B



C



D



E



F



G

Item	Quantity	Name
A	1	Battery Module
B	1	Terminal Resistor
C	1	Network Cable
D	1	Document
E	8	Screw
F	4	Bonding Strip (may not be used)
G	8	Rivet

Cabinet Package



O



I



L



M



P

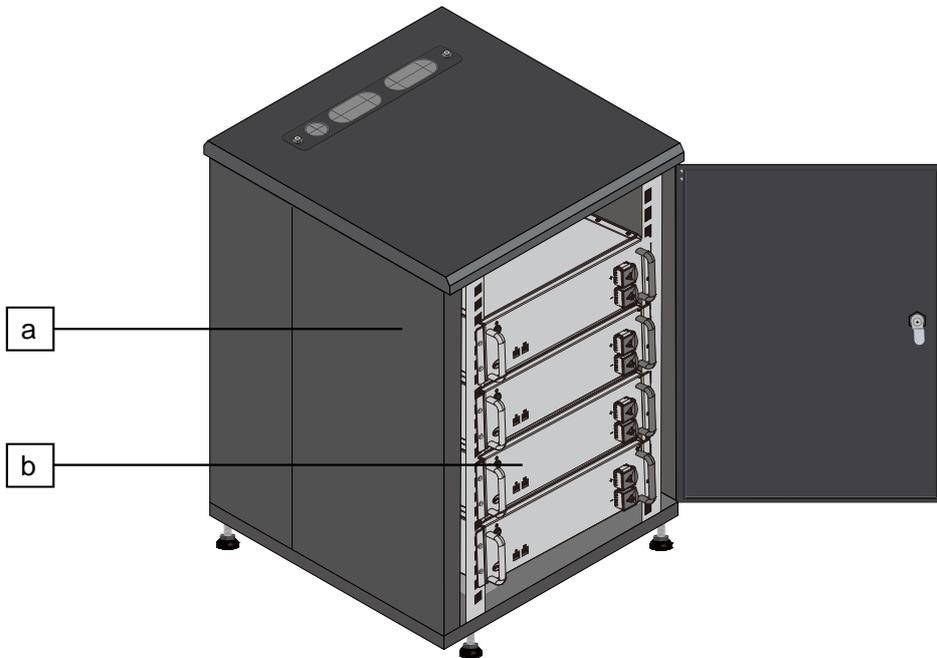
Item	Quantity	Name
O	1	BYD Pre-wired Cabinet
I	3	PE with Terminal
L	2	Key
M	16	Screw
P	1	Document

4. Battery System Overview

4.1. Battery System Description

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

It works together with the Battery-Box Premium BMU. The parameters and instruction of BMU could be read on our website. The battery system could support the backup function of inverters and is compatible with both single and three phase inverters.



a	Cabinet
b	Battery Module

4.2. Interface

Be Connect 2.0

Be Connect 2.0 is an app for Android and iOS system devices, which can be downloaded from Google Play or App Store. (Please search Be Connect 2.0 or scan the QR code on the cover of this document.)

With Be Connect 2.0, you can update the firmware, configure the battery system, read the information of the battery system, upload logs to the server, etc.

Be Connect Plus

Be Connect Plus is a PC app which can be downloaded 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, download historical events, etc.

Be Connect Monitoring

BMU is equipped with an "ETHERNET" port as a standard. When your battery system accesses the internet, it will join the Be Connect Monitoring, which is a platform for BYD's service team could diagnose your battery system, and update firmware remotely for customers. It is highly recommended you make the internet connection available to have a better service.

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's 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 electric shock.
	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 marking for electrical equipment approvals in Australia.



Do not short-circuit.

4.4. LED Signals

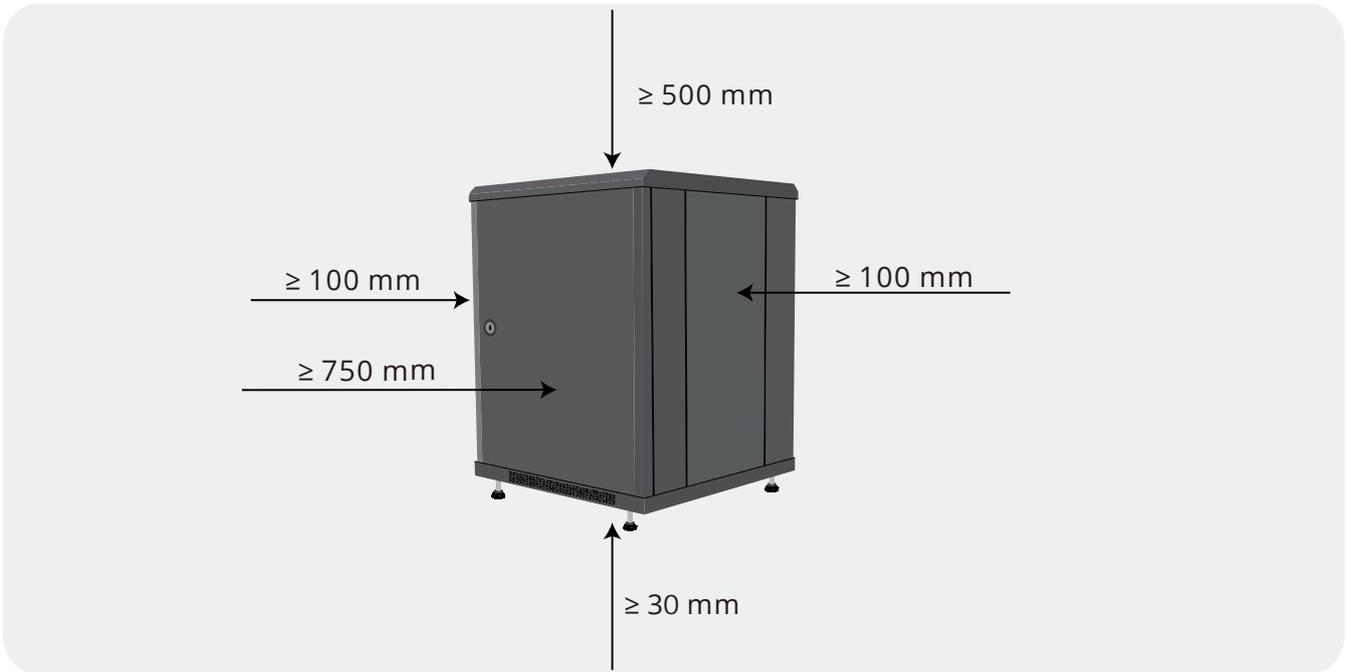
<p>Blinking white and blue alternately</p>	<p>White <input type="radio"/> ON <input type="radio"/> OFF</p> <p>Blue <input checked="" type="radio"/> ON <input type="radio"/> OFF</p>		<p>The battery system is initiating.</p>
<p>Solid white</p>	<p>White <input type="radio"/> ON <input type="radio"/> OFF</p> <p>Blue <input checked="" type="radio"/> ON <input type="radio"/> OFF</p>		<p>Idle (the battery system is neither charging nor discharging).</p>
<p>Blinking white slowly</p>	<p>White <input type="radio"/> ON <input type="radio"/> OFF</p> <p>Blue <input checked="" type="radio"/> ON <input type="radio"/> OFF</p>		<p>The battery system is charging.</p>
<p>Blinking white quickly</p>	<p>White <input type="radio"/> ON <input type="radio"/> OFF</p> <p>Blue <input checked="" type="radio"/> ON <input type="radio"/> OFF</p>		<p>The battery system is discharging.</p>
<p>Blinking white and solid blue</p>	<p>White <input type="radio"/> ON <input type="radio"/> OFF</p> <p>Blue <input checked="" type="radio"/> ON <input type="radio"/> OFF</p>		<p>The battery system is discharging, and the SOC is below 15%.</p>
<p>Blinking white and blue</p>	<p>White <input type="radio"/> ON <input type="radio"/> OFF</p> <p>Blue <input checked="" type="radio"/> ON <input type="radio"/> OFF</p>		<p>An error has occurred (refer to the Service Guideline and Checklist for further details)</p>

5. Installation

5.1. Requirements for Installation

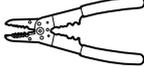
5.1.1. Requirements for Installation Location

- 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 sources.
- f) The altitude of the installation location should be less than 2000 m.
- g) The ambient temperature should be between -10 °C and +50 °C.
- h) Do not install the battery in a closed place where 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.

				
Network Wire Clamp	Wire Stripper	Phillips Screwdriver	Torque Wrench	Cylinder Screwdriver
				
Wrench				

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 Materials

H
DC Cable
(terminal: 8.4 mm; cable ≤ 70 mm²)

J
Cat5 Shield
(Metal Shielded RJ45 of Cat5 or higher)

K
PE with Terminal
(terminal: 4.3 mm; cable ≥ 10 mm²)

Battery-Box Premium LV BMU

or

Battery-Box Premium LV BMU-IP55

N

5.2. Installation



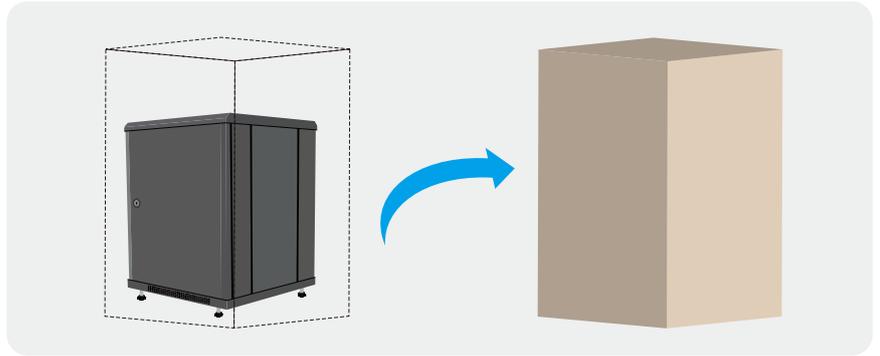
Risk of injury due to the weight of the battery module

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

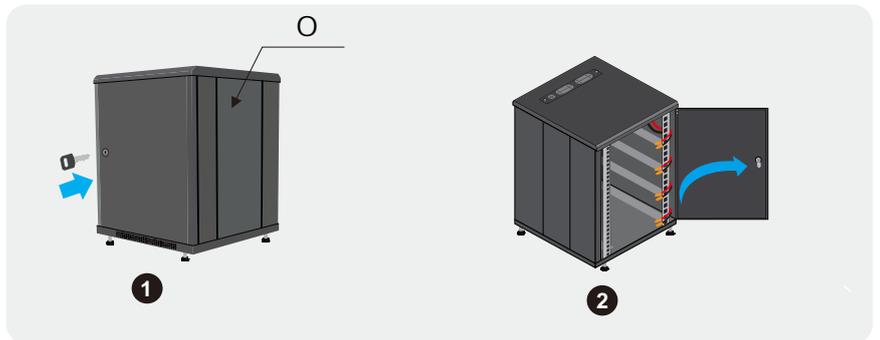
- Transport and lift the battery module carefully. Take the weight of the battery module into account.
- Wear suitable personal protective equipment for all work on the battery system.

Procedure:

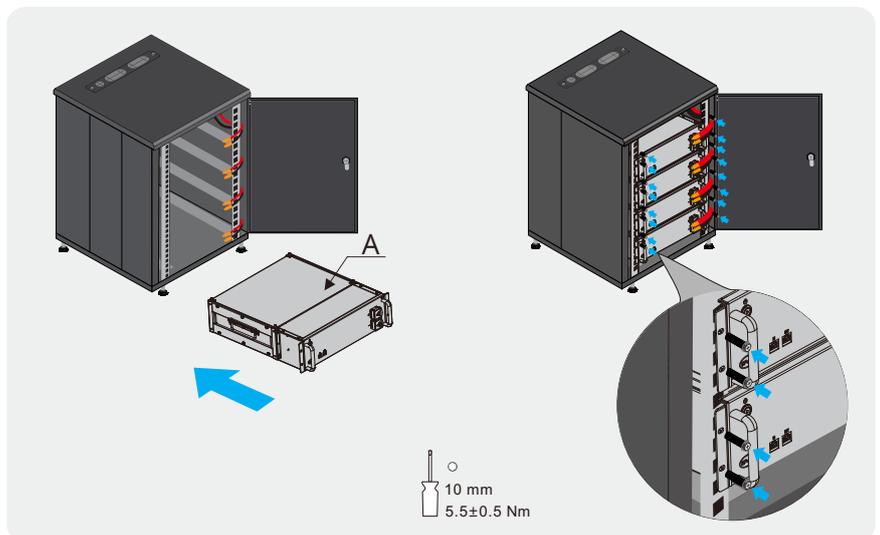
1. Open the package, and take the cabinet out.



2. Open the cabinet door with a key.

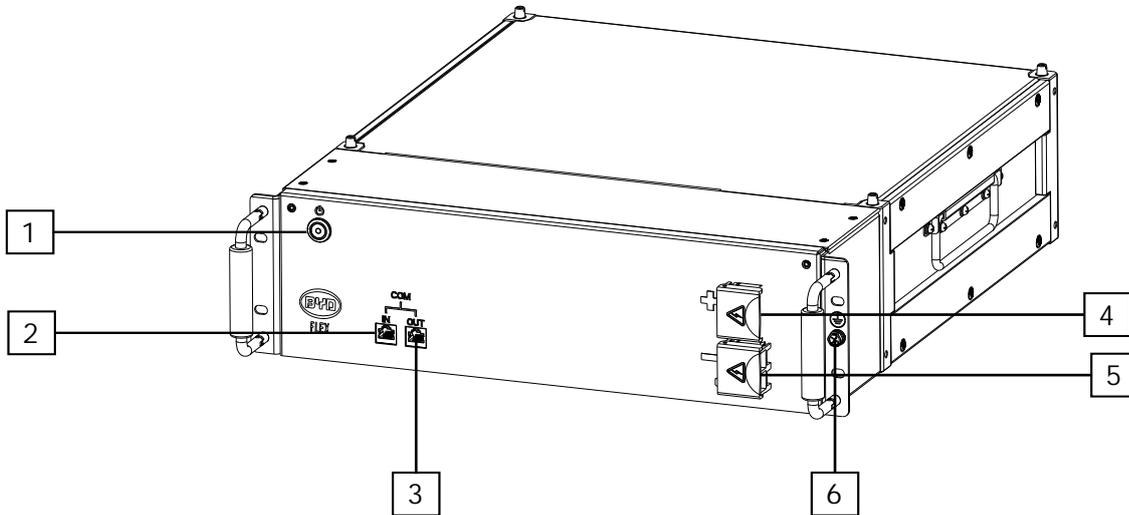


3. Put the modules into the dedicated positions of the cabinet. Install the screw and fasten the modules to the cabinet. (torque: 5.5 ± 0.5 Nm)



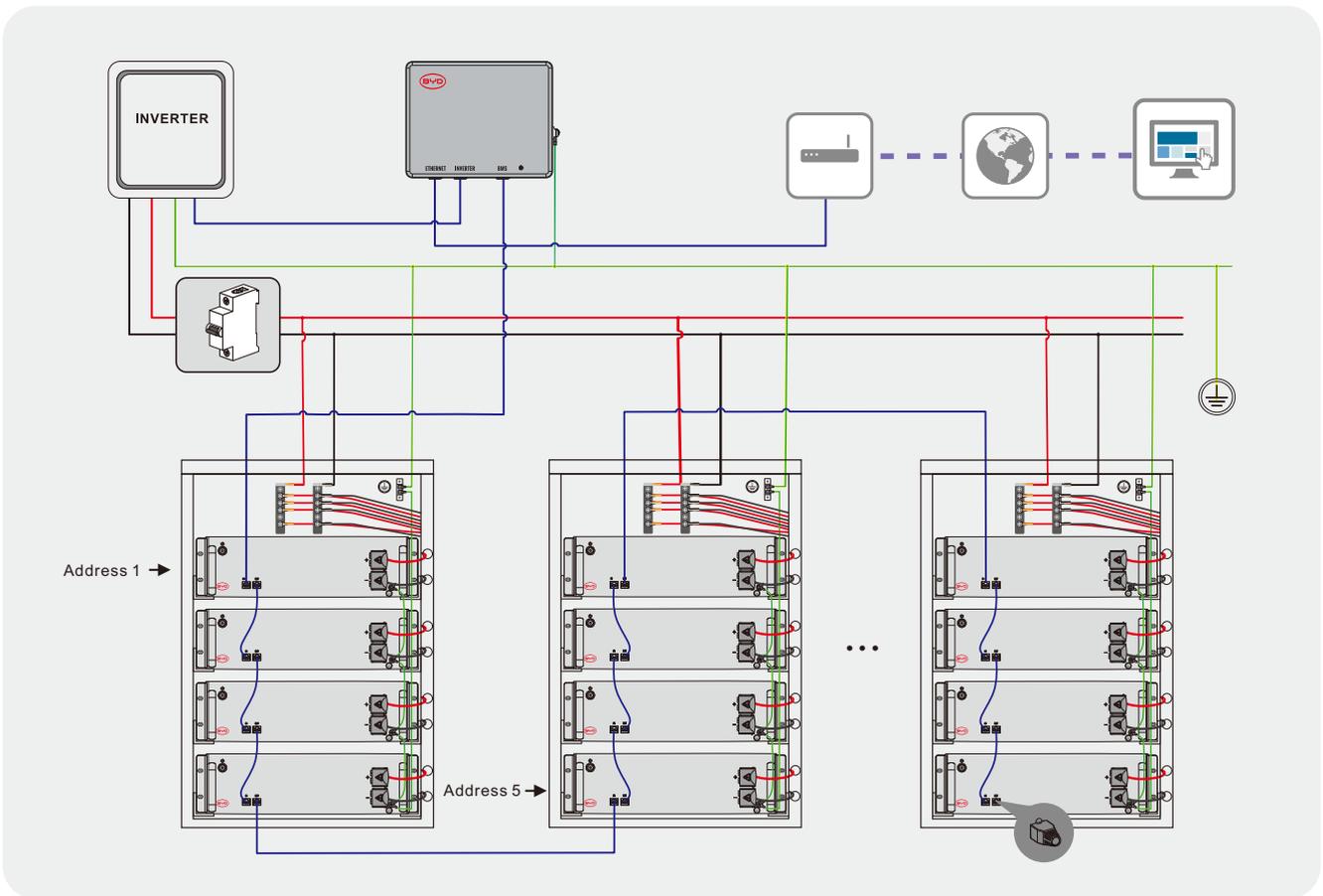
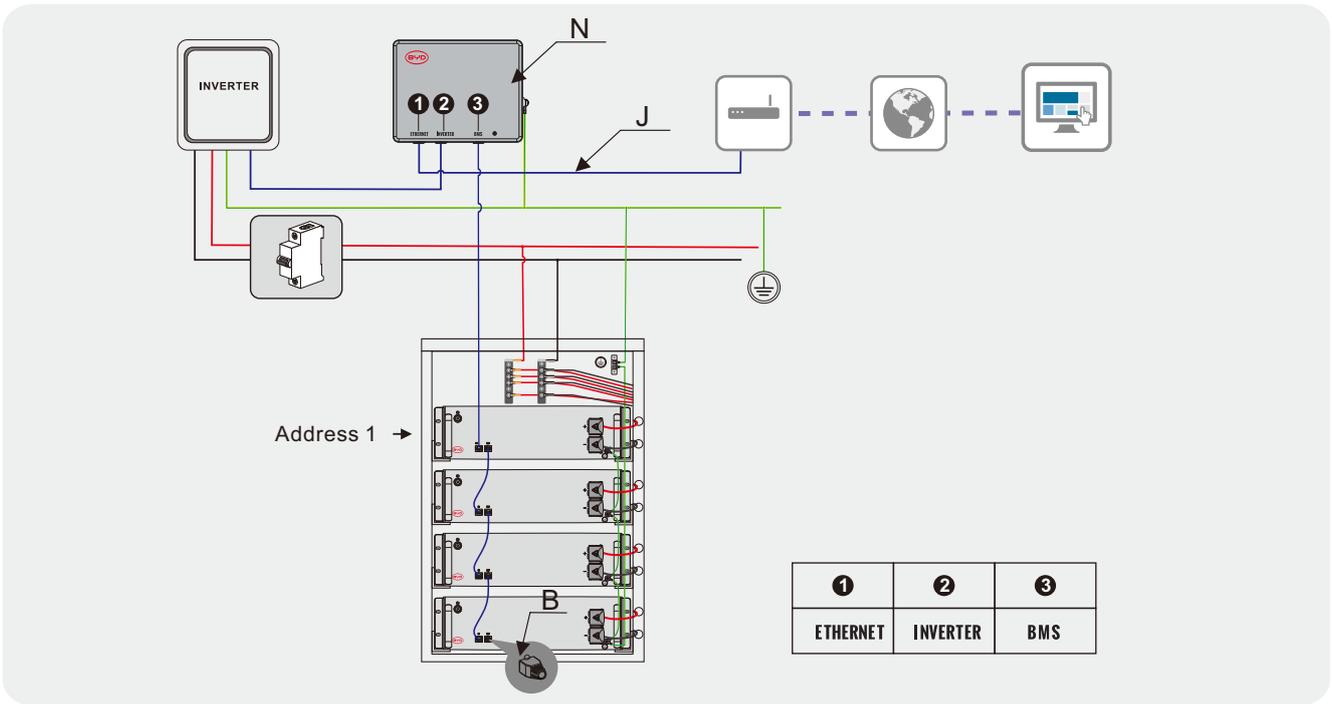
6. Electrical Connection

6.1. Overview of the Connection Area



1		LED Button
2	IN	Communication Port
3	OUT	Communication Port
4	P+	Power Cable Connection Point (P+)
5	P-	Power Cable Connection Point (P+)
6		Grounding Point

6.2. Connection Diagram



The connection to an 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 of the isolator.

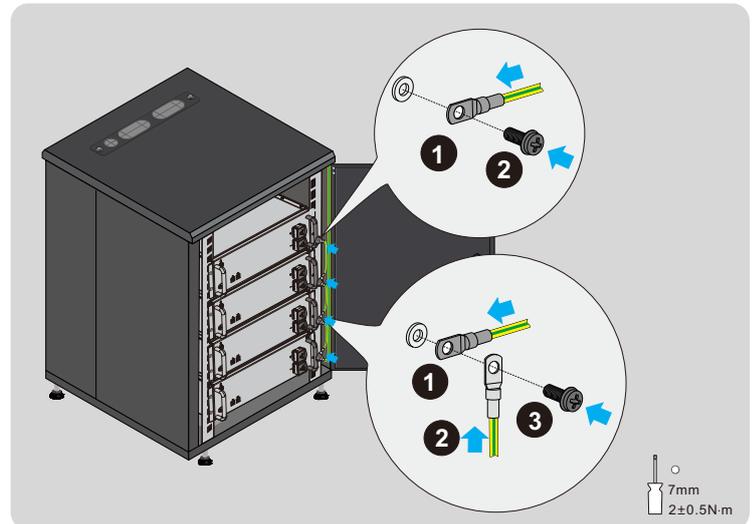
6.3. PE Cable Connection

⚠ QUALIFIED PERSON

6.3.1. Connecting the PE Cable on Battery Modules

Procedure:

1. Switch off all the modules.
2. Take out the grounding screw, and pull the PE cable to the position shown in the picture.
3. Get the original screw through the terminal, and then tighten it with a cylinder screwdriver (7 mm) (torque: 2 ± 0.5 Nm).



6.3.2. Connecting the PE Cable on Busbar of the Cabinet

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

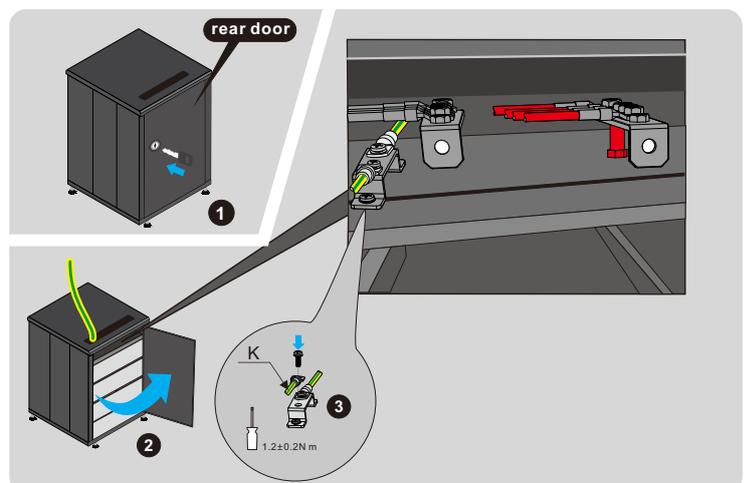
PE with terminal

PE and Terminal Requirement

- a) Terminal diameter: 4.3 mm.
- b) Minimum terminal cross-section area: 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. Open the rear door with a key.
2. Run the PE cable through the "Power" hole on the top panel of the cabinet.
3. Take out the grounding screw, and pull the PE cable to the position shown in the picture.
4. Fix them together with a screwdriver, and tighten the screw (torque: 1.2 ± 0.2 Nm).



6.4. Data Cable Connection

⚠ QUALIFIED PERSON

6.4.1. Data Cable Connection between Inverter and BMU

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

One data cable

Data cable requirements:

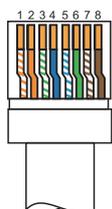
The length and quality of the cable will affect the quality of the signal. Please observe the following cable requirements.

- 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. Read the designation of the "INVERTER" port on BMU and the inverter manual, and decide whether to trim the data cable.

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



No.	Assignment
1	Unused
2	Unused
3	Unused
4	CAN H
5	CAN L
6	Unused
7	Unused
8	Unused

The designation of the communication ports connecting BMU and compatible inverters could be read below.

	BMU	SMA	STUDER	VICTRON	SELECTRONIC	GOODWE
CAN H	4	4	4	7	1	4
CAN L	5	5	5	8	2	5

The detailed connection diagrams with different inverters could be read in the Appendix.

Note:

- A) The information here is just for reference. If it is contrary to the inverter manufacture's manual, take the latter one into account.
 - B) If the data cable has to be trimmed, please apply a network wire clamp to crimp the RJ45 connector after the cable is cut and the position of wires is arranged.
2. Plug one side of the data cable to the "INVERTER" port of the BMU, and the other side to the corresponding port of the inverter.

6.4.2. Data Cable Connection between BMU and Battery Module

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

One data cable

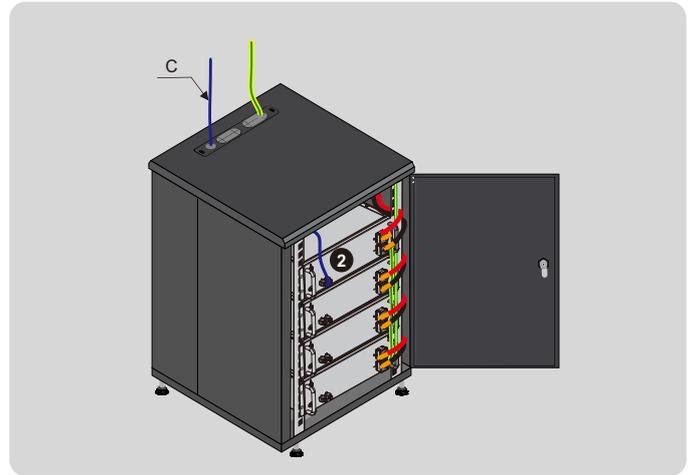
Data cable requirements:

The length and quality of the cable will affect the quality of the signal. Please observe 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. Run the cable through the "COM" hole on the top panel of the cabinet and then plug it to the "BMS" port of the BMU.
2. Plug the other side to the "IN" port of the top battery module.



6.4.3. Data Cable Connection between Battery Modules

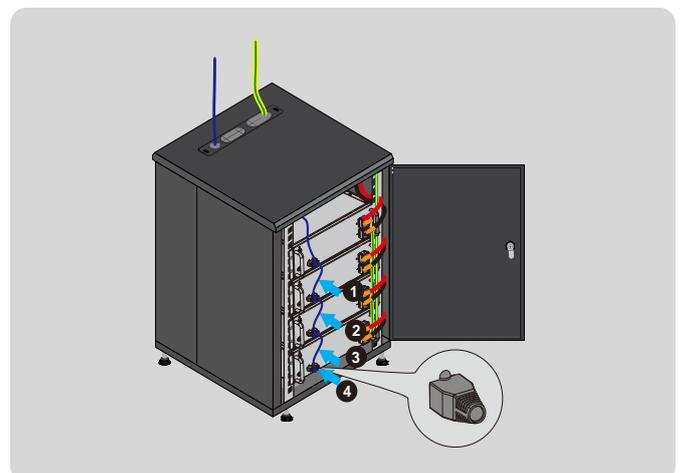
Data cable requirements:

The length and quality of the cable will affect the quality of the signal. Please observe 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. Plug the data cable to the "OUT" port of the top battery module.
2. Plug the other side to the "IN" port of another adjoining battery module.
3. Follow the above steps for the remaining battery modules.
4. Plug a terminal resistor in place at the "OUT" port of the end battery module.



6.4.4. Data Cable Connection between BMU and Router

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

One data cable

Data cable requirements:

The length and quality of the cable will affect the quality of the signal. Please observe 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. Plug the data cable to the "ETHERNET" port of the BMU.
2. Plug the other side to the "LAN" port of a router.

Note: Connecting to the internet is not compulsory but highly recommended. During the configuration by the Be Connect 2.0 or Be Connect Plus, temporary disconnection with the router will benefit the connection to the battery system.

6.5. DC Connection

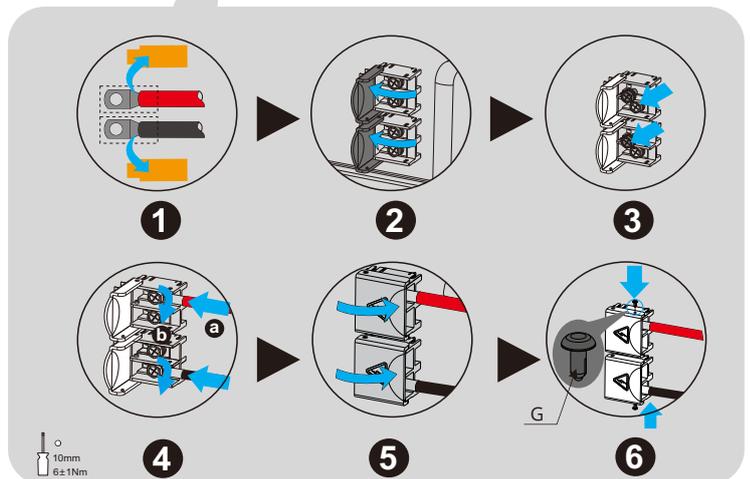
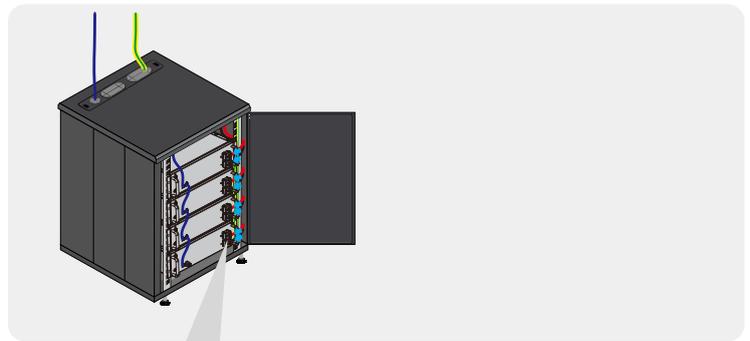
⚠ QUALIFIED PERSON

When multiple cabinets are connected, the positive power cable length for all the cabinets should be approximately equal, and so are the negative power cables. A junction box is needed to combine these cables. Please follow the local, state, provincial, federal, or national laws, regulations, and instructions from the inverter manufacturers to choose the right junction box.

6.5.1. DC Connection on battery modules

Procedure:

1. Open the cover of the DC connection port.
2. Get the bolts out.
3. Pull the DC cables to the position shown in the picture.
4. Get the original bolts through the terminal, and then tighten it with a screwdriver (10 mm) (torque: 6 ± 1 Nm).
4. Close the cover of cable terminals.
5. Seal the cover with plastic rivets.



6.5.2. DC Connection on Busbar of the Cabinet

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

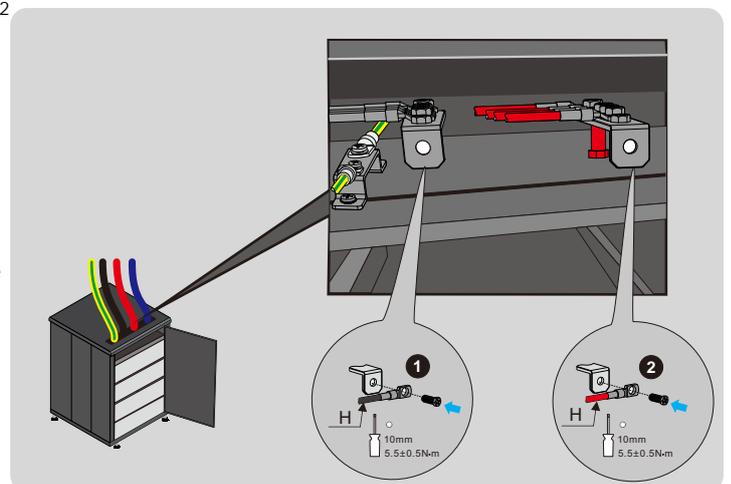
- Two DC power cables for each cabinet

DC cable requirements:

- Terminal diameter: 8.4 mm
- Maximum terminal cross-section area: 70 mm^2
- Maximum cable length: 10 m

Procedure:

1. Run two DC power cables through the "Power" hole on the top of the cabinet.
2. Take out the screws and pull the cables to the position shown in the picture.
3. Get the original screw through the cable terminal, and then tighten them with a screwdriver (10 mm) (torque: 5.5 ± 0.5 Nm).
4. Close the rear door and lock it.



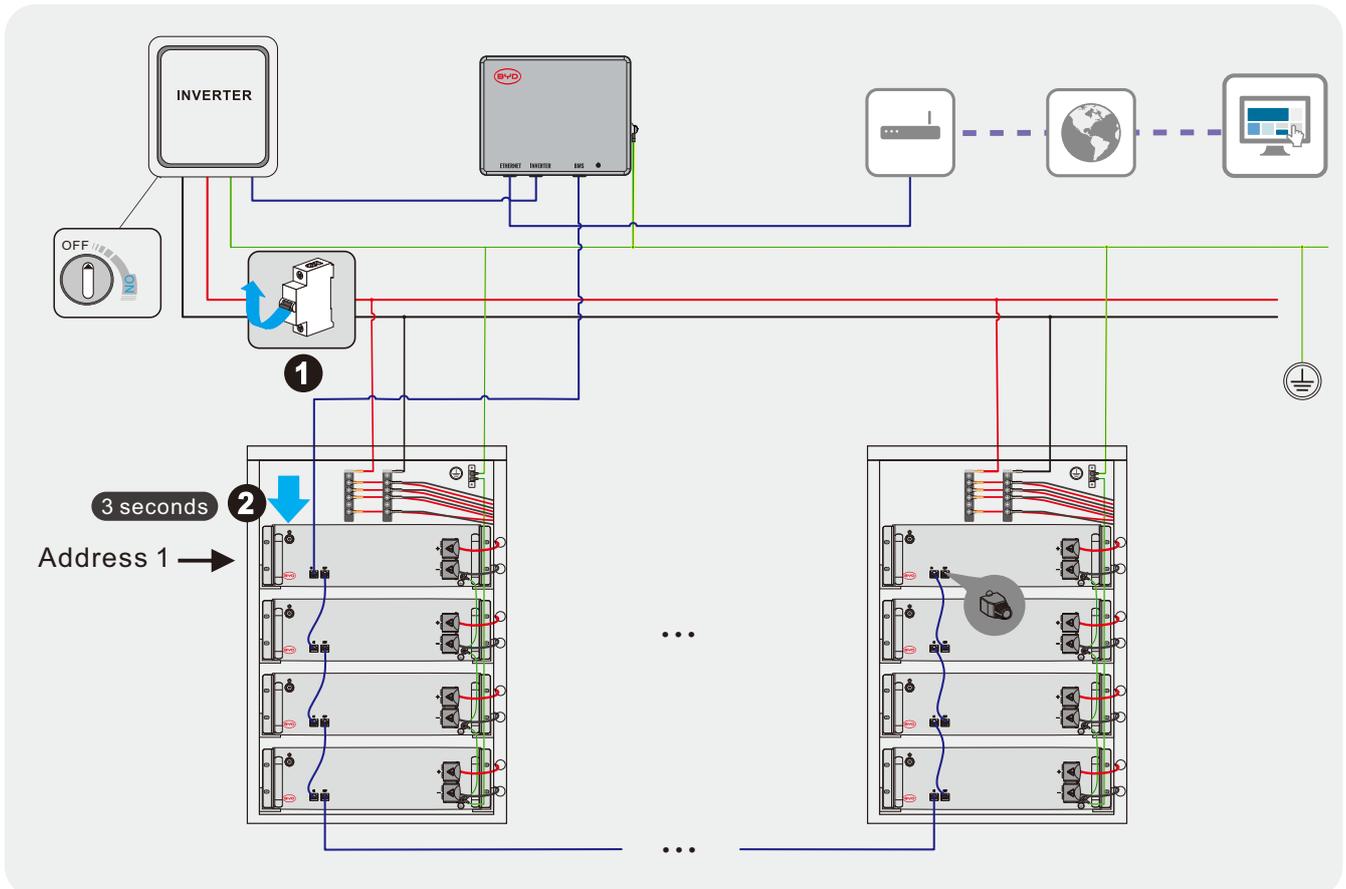
7. Commissioning

7.1. Power on the Battery System

⚠ QUALIFIED PERSON

Requirements:

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



Procedure:

1. Switch on the air switch between the battery and inverter if there is any.
2. Press the LED button on the module (Address 1) for 3 seconds. All the LED lights on the LV Flex battery modules and the BMU should be turned on immediately and start to blink 0.5 s white and 0.5 s blue alternately. If there is no error, the lights will change to solid white or blinking white later. For other cases, please refer to Chapter 11.

7.2. Configure the Battery System

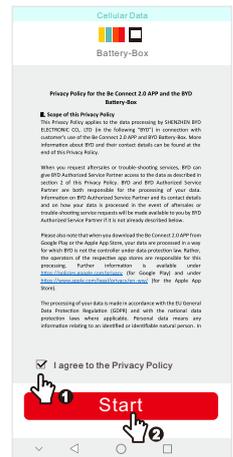
⚠ QUALIFIED PERSON

Procedure:

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



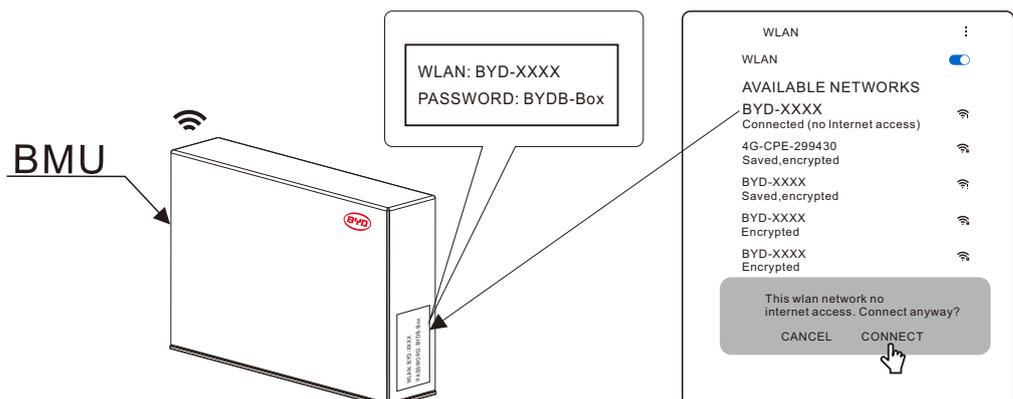
2. Tick the box in front of "I agree to the Privacy Policy", and then tap the "Start" button.



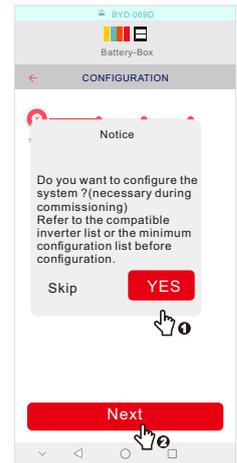
3. The app will check the firmware, and download it when the internet is available. If there is no internet available, you can tap "Skip" to skip the firmware checking.



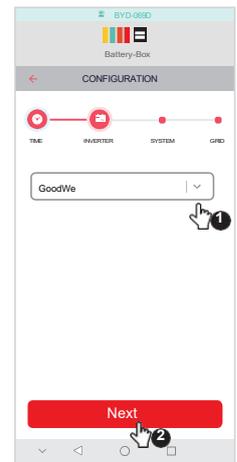
4. After downloading the firmware, tap the button "Check WIFI Settings" to connect the Wi-Fi of the battery, which begins with "BYD-", and the full name could be found at BMU. All the Wi-Fi shares the common password (BYDB-Box).



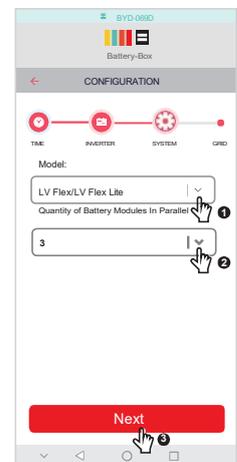
- The app will update the firmware automatically. After that, a notice will pop up. Tap "Yes" if you need to configure the battery system, and then tap "Next" on the page of the time confirm.



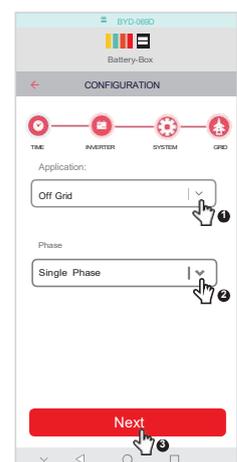
- Choose the inverter brand which will operate together with the battery system.



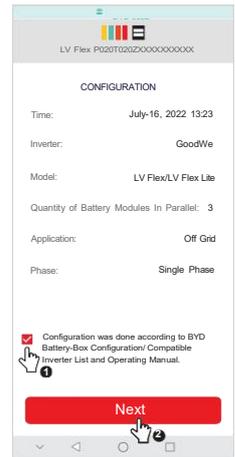
- Choose the battery system model "LV Flex/LV Flex Lite, and then set how many LV Flex battery modules are connected in parallel overall (not the number of battery modules in one cabinet).



- Choose the "Application" and "Phase" options according to the actual application.



- Check the summary of the configuration information. If no problem, tick the sentence, and tap “Next”, otherwise, go back and do the configuration again.



Note:

- Restart the Be Connect 2.0 if it is stuck 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 the Inverter and Commissioning

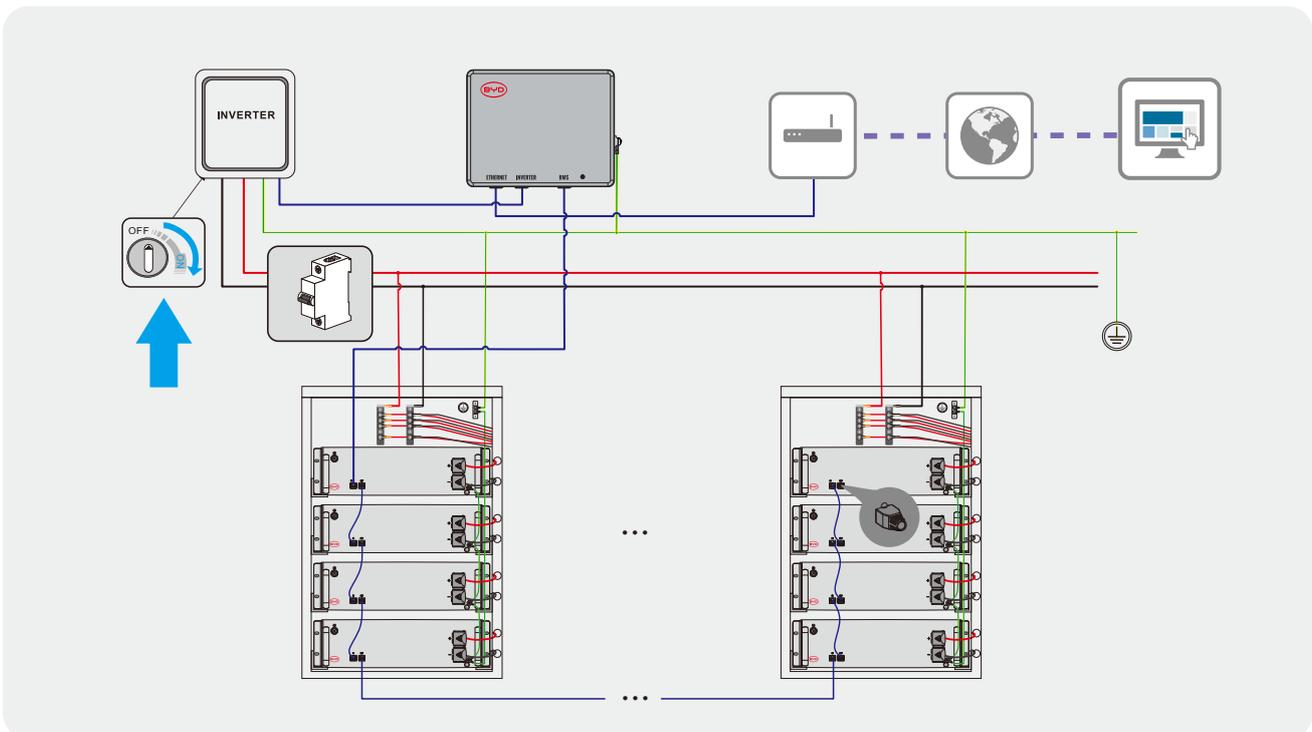
⚠ QUALIFIED PERSON

Procedure:

- Mount and connect the inverter according to the inverter manufacturer's instructions.
- Get the inverter commissioned and configured according to the inverter manufacturer's instructions.

If the battery information could be read correctly at the inverter, it means the connection is all right. In most cases, the LED of the BMU will also turn to white then, and the battery system is ready to work.

If the LED of BMU still blinks blue, and/or there are some battery errors shown at the inverter, please refer to the Chapter 11 of this manual.



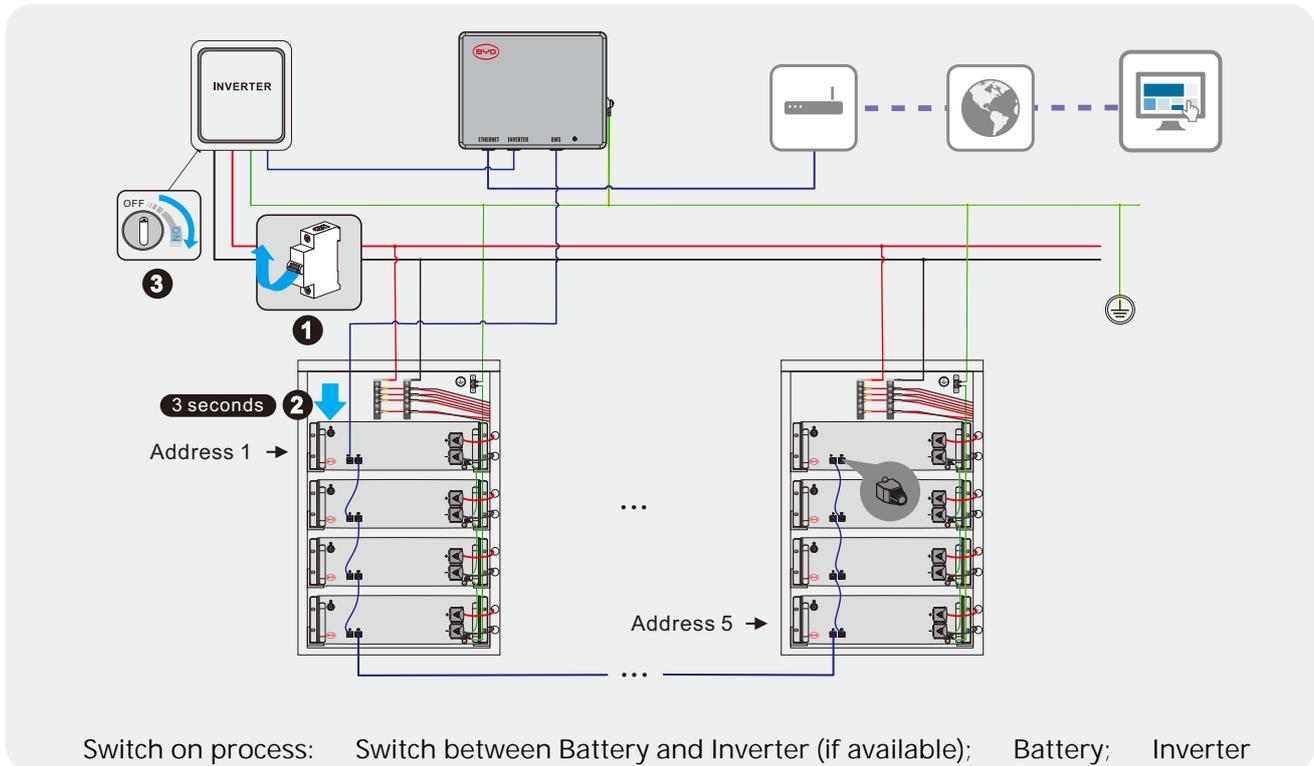
8. Operation

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 is:

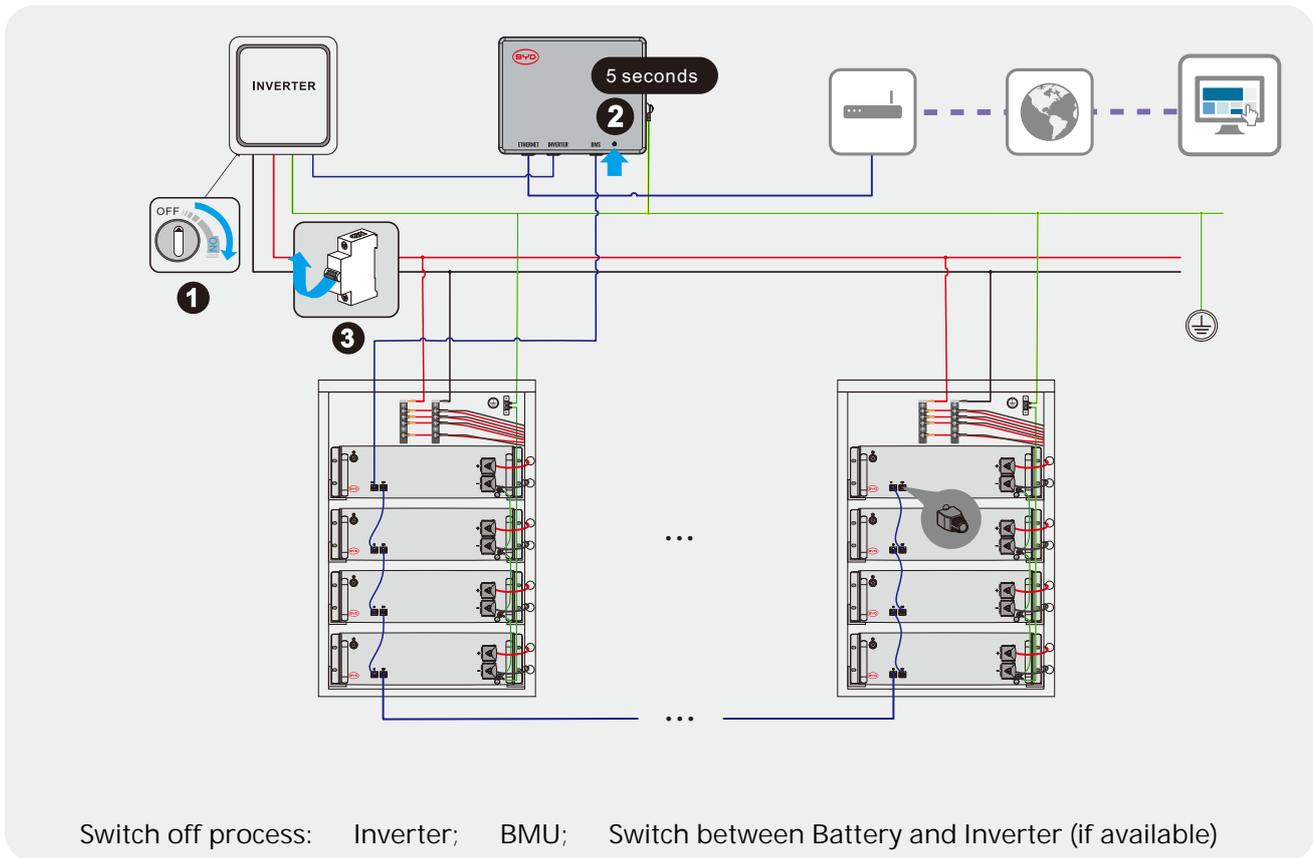
- 1) Switch on the air switch between the inverter and battery if there is any;
- 2) Press the LED button on the module (Address 1) for 3 seconds to switch on the battery system;
- 3) Switch on the inverter.



8.2. Switch off the Battery System

The procedure is:

- 1) Switch off the inverter;
- 2) Press the LED button on the BMU for 5 seconds to switch off the battery system;
- 3) Switch off the air switch between the battery and the inverter if there is any.



9. Decommissioning

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⚠ CAUTION

Risk of injury due to the weight of the battery module

Injuries may occur 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. Switch off the inverter.
2. Press the LED button on the BMU for 5 seconds to switch off the battery system.
3. Switch off the air switch between the inverter and the battery system if there is any.
4. Disconnect all the cables.
5. Loosen all the screws between the battery modules and the cabinet, and then remove all the battery modules from the cabinet.

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. Update the firmware of the original battery system to the latest version.
2. Shut off the inverter.
3. Switch off the battery system.
4. Switch off the air switch between the inverter and the battery system if there is any.
5. Add the new module.
6. Switch on the air switch between the inverter and the battery system if there is any.
7. Switch on and configure the battery system.
8. Switch on the inverter.

11. Troubleshooting

11.1. Battery System Behavior under Fault Conditions

Blue light blinking

If the blue LED blinks white and blue for one second each alternately, it indicates that an error has occurred. (When the system is initiating, the light alternates between white and blue every 0.5 s, which is not an error.)

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

Except for the LED light, BYD's service team can also get the error messages of the battery system through the remote server Be Connect Monitoring. Information read through that could help to identify the issues. It is highly recommended 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 undervoltages

- If the battery system doesn't start at all, please contact BYD's local after-sales service team 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 blinking once.	System initiating failed
Blue LED is blinking twice.	Address distribution failed
Blue LED is blinking three times.	Precharge failed
Blue LED is blinking four times.	BMS failure
Blue LED is blinking five times.	BMS and BMU communication failed
Blue LED is blinking six times.	Communication with an inverter failed

11.2.2. Error codes on BMS

Blue LED is blinking once	DC cable connection incorrect
Blue LED is blinking twice	MOS failure
Blue LED is blinking three times	BIC communication failed
Blue LED is blinking four times	Battery sensor failure
Blue LED is blinking five times	Voltage sensor failure
Blue LED is blinking six times	Current sensor failure
Blue LED is blinking seven times	Battery failure
Blue LED is blinking eight times	Precharge failed
Blue LED is blinking nine times	BIC balance failure
Blue LED is blinking ten times	Temperature sensor on battery control unit failure
Blue LED is blinking eleven times	BMS and BMU communication failure

12. Maintenance and Storage

Cleaning

It is recommended that the battery system be cleaned periodically. 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 (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°C	/	Not allowed	/
-10~25°C	5%~70%	≤ 12 months	25%≤SOC≤60%
25~35°C	5%~70%	≤ 6 months	25%≤SOC≤60%
35~50°C	5%~70%	≤ 3 months	25%≤SOC≤60%
Above 50°C	/	Not allowed	/

NOTICE

Damage to the battery system due to under voltages

- If the battery system doesn't start at all, please contact BYD's local after-sales service team 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 to arrange a collection please contact BYD's Service Partner (see contact details at the bottom of this document).

14. Technical Parameters

Technical Parameters	LV Flex
Usable Energy	5.0 kWh
Max Cont.Output Current	70 A
Peak Output Current	105 A, 5s
Dimensions(H/W/D)	132 × 482 × 525 mm
Weight	47 kg
Nominal Voltage	51.2 V
Operating Voltage	43.2 - 57.6 V
Operating Temperature	-10 °C to +50 °C
Battery Cell Technology	Lithium Iron Phosphate (cobalt-free)
Communication	CAN
Enclosure Protection Rating	IP20
Round-trip Efficiency	≥ 95%
Scalability	Max. 64 in Parallel (320 kWh)
Certification	IEC62619 / CE / UN38.3 / IEC62040 / CEC
Applications	ON Grid / ON Grid + Backup / OFF Grid
Compatible Inverters	Refer to BYD Battery-Box LV Flex Minimum Configuration List
Battery Designation	IFpP/50/160/119/(16S)M/-10+40/90
Optional Accessories	Pre-wired LV Flex Cabinet
Capacity	Maximum 4 modules in one cabinet
Weight	35 kg
Dimension (W/D/H)	600 x 600 x 800mm
Warranty	Three years
Enclosure Protection Rating	IP20

[1] DC Usable Energy, test conditions: 100 % DOD, 0.2 C charge & discharge at +25 °C. System Usable Energy may vary with different inverter brands.

[2] Charge derating will occur between -10 °C and +15 °C.

15. Contact Information

BYD Global Service	
Email	bboxservice@byd.com
Telephone	+86 755 89888888-47175
Address	No.3009, BYD Road, Pingshan, Shenzhen, 5118118, 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-batthey-box
Europe	EFT-Systems GmbH
Email	service@eft-systems.de
Telephone	+49 9352 8523999 +44 (0) 2037695998 (UK) +34 91 060 22 67 (ES) +39 0287 368364 (1T)
Address	Bruchtannenstraße 28, 63801 Kleinostheim, Germany
Website	www.eft-systems.de
Australia	Alps Power Pty Ltd
Email	service@alpspower.com.au
Telephone	+61 2 8005 6688
Address	14/47-51 Lorraine St, Peakhurst NSW 2210
Website	www.alpspower.com.au
South Africa	Afriplus Energy Group (Pty) Ltd
Email	support@afriplusenergy.co.za
Telephone	+27 21 140 3594
Address	The Pavilion, Corner Of Dock & Portwood Road, V&A Waterfront, 8001, Cape Town
Website	www.afriplusenergy.co.za

Appendix Data Cable Connection Instruction with Inverters

Connection with SMA

BMU	SMA
PIN	PIN
4	4
5	5

Connection with STUDER

BMU	STUDER
PIN	PIN
4	4
5	5

	NU		NU	
CAN H	1	CAN L	2	CAN H
	GND		GND	
CAN H	3	CAN L	4	CAN H
	NU		NU	
CAN H	5	CAN L	6	CAN H
	GND		GND	
CAN H	7	CAN L	8	CAN H
	NU		NU	

Connection with SELECTRONIC

BMU	SELECTRONIC
PIN	PIN
4	1
5	2

Connection with VICTRON

BMU	VICTRON
PIN	PIN
4	7
5	8

Connection with GOODWE

BMU	GOODWE
PIN	PIN
4	4
5	5