

# CORE Series



## Product Operating Manual

---

# Legal Provisions

All the information in this document is the property of **Shenzhen BYD Electronic Co., LTD**. No part of this document could be reproduced in any way for business use. Internal use is allowed.

**Shenzhen BYD Electronic Co., LTD** makes no representations or warranties express or implied, with respect to this document or any of the equipment and/or software it may describe, including (with no limitation) any implied warranties of utility, merchantability, or fitness for any particular purpose. All such representations or warranties are expressly disclaimed. **Neither Shenzhen BYD Electronic Co., LTD** nor its distributors or dealers shall be liable for any indirect, incidental, or consequential damages under any circumstances.

The exclusion of implied warranties may not apply in all cases under some statutes, and thus the above exclusion may not apply.

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 battery system. **Shenzhen BYD Electronic Co., LTD** assumes no responsibility for the compliance or noncompliance with such laws or codes in connection with the installation of the battery system.

Specifications are subject to change without notice. Every effort has been made to make this document complete, accurate, and up-to-date. However, **Shenzhen BYD Electronic Co., LTD** may need to make some improvements under certain circumstances without advance notice. **Shenzhen BYD Electronic Co., LTD** shall not be responsible for any loss caused by this document, including, but not limited to, omissions errors, typographical errors, arithmetical errors, or listing errors in this document.

All trademarks are recognized.

## Limited Warranty

You can download the latest Limited Warranty from the Internet at [www.support.digitalenergy.byd.com](http://www.support.digitalenergy.byd.com).

## Shenzhen BYD Electronic Co., LTD

No.1, Yan'an Road Kuichong, Dapeng,  
Shenzhen, Guangdong Province, 518118, P.R.  
China

## Legal Provisions

### 1. Information on this Document

- 1.1. Validity
- 1.2. Target Group
- 1.3. Content and Structure of this Document
- 1.4. Declaration of Conformity
- 1.5. Levels of Warning Messages
- 1.6. Symbols in the Document
- 1.7. Designation in the Document

### 2. Safety

- 2.1. Intended Use
- 2.2. IMPORTANT SAFETY INSTRUCTIONS
  - 2.2.1. Battery Module Leakage
  - 2.2.2. Firefighting Measures
  - 2.2.3. Battery Modules Handling and Storage Guide
  - 2.2.4. Warning of Electric Shock
  - 2.2.5. Warning of Overvoltages
  - 2.2.6. Caution of Weight
  - 2.2.7. Notice of Property Damage

### 3. Scope of Delivery

### 4. Battery System Overview

- 4.1. Battery System Description
- 4.2. LCD Display Description
  - 4.2.1. Settings
  - 4.2.2. LED Indicator
  - 4.2.3. Status
  - 4.2.4. Comm Cable Status
- 4.3. Symbols on the System

## **5. Installation**

- 5.1. Requirements for Installation
  - 5.1.1. Requirements for Installation Location
  - 5.1.2. Tools
  - 5.1.3. Safety Gear
  - 5.1.4. Additionally Required Installation Material
- 5.2. Installation

## **6. Electrical Connection**

- 6.1. Overview of the Connection Area
- 6.2. Connection Diagram
  - 6.2.1. Single Tower
  - 6.2.2. Multiple Towers
- 6.3. Connecting the Grounding Conductor
- 6.4. Data Cable Connection
  - 6.4.1. Fit RJ 45 Connector into the Coupler
  - 6.4.2. Connect the Data Cable to an Inverter
  - 6.4.3. Connect to the Router
  - 6.4.4. Parallel Connection between Towers
- 6.5. DC Connection

## **7. Commissioning**

- 7.1. Switch on the Battery System
- 7.2. Make the settings on the LCD Display
- 7.3. Switch on and Commission the Inverter

## **8. Operation**

- 8.1. Switch on the Battery System
- 8.2. Switch off the Battery System
- 9. Decommissioning

## **10. Extension**

## **11. Troubleshooting**

## **12. Maintenance and Storage**

## **13. Disposal of the Battery System**

## **14. Technical Data**

## **15. Contact Information**

Appendix Connection Options with Inverters

## 1.1. Validity

This document is valid for the Power-CORE 5.53, 8.29, 11.6, 13.28, and Energy-CORE 9.6, 12.8, 16, 19.2, 22.4, 25.6.

## 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, system overview, installation, electrical connection, commissioning, decommissioning, expansion, troubleshooting, maintenance and storage, disposal, and technical data. 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.support.digitalenergy.byd.com](http://www.support.digitalenergy.byd.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 will result in death or serious injury.



**CAUTION**

Indicates a hazardous situation which, could result in minor or moderate injury.

**NOTICE**

Indicates a situation which, if noy 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	CORE series product
BMS	Battery Management System
SOC	State of Charge

### 2.1. Intended Use

The battery system is for residential and works with a photovoltaic system. It is a high voltage Li-ion battery storage system, with the control module on itself. It could be operated in on-grid, off-grid and backup 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 and outdoor use under the conditions mentioned in Section 5.1.

The battery system must only be operated in connection with a compatible inverter. The list (Power-CORE & Energy-CORE Compatible Inverter List) of these inverters could be found at [www.support.digitalenergy.byd.com](http://www.support.digitalenergy.byd.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 55°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 Electric Shock



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

The DC cables connected to an inverter may be live. Touching live DC cables results in death or serious injury due to electric shock.

- Disconnect the battery system and inverter 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 battery system.
- Observe all safety information of the inverter manufacturer.

### 2.2.5. 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 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.

### 2.2.6. Caution of Weight

#### CAUTION

##### **Risk of injury due to weight of the battery stack**

Injuries may result in the battery stack is lifted incorrectly or dropped while being transported or installed.

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

### 2.2.7. Notice of Property Damage

#### NOTICE

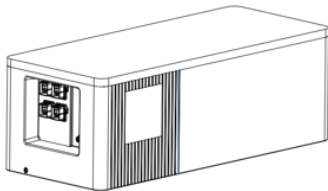
##### **Damage to the BMS due to sand, dust and moisture ingress**

Sand, dust and moisture penetration can damage the BMS and impair its functionality

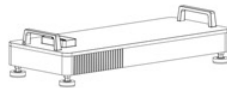
- Only open the BMS if the humidity is within the thresholds and the environment is free of sand and dust.

# 3. Scope of Delivery

## BMS and Base Package



1 - BMS



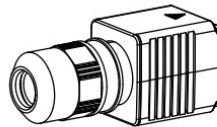
1 - Base



1 - Male power cable coupler



1 - Female power cable coupler



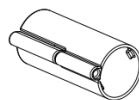
4 - Network cable coupler



1 - Documents

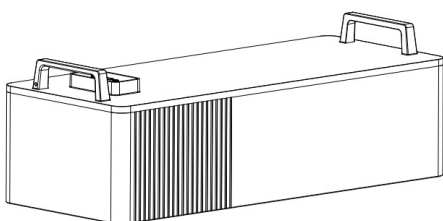


1 - Drilling template



2 - Power cable connector  
unlock protection sleeve

## Battery Module package



1 - Battery module



1 - Hanger

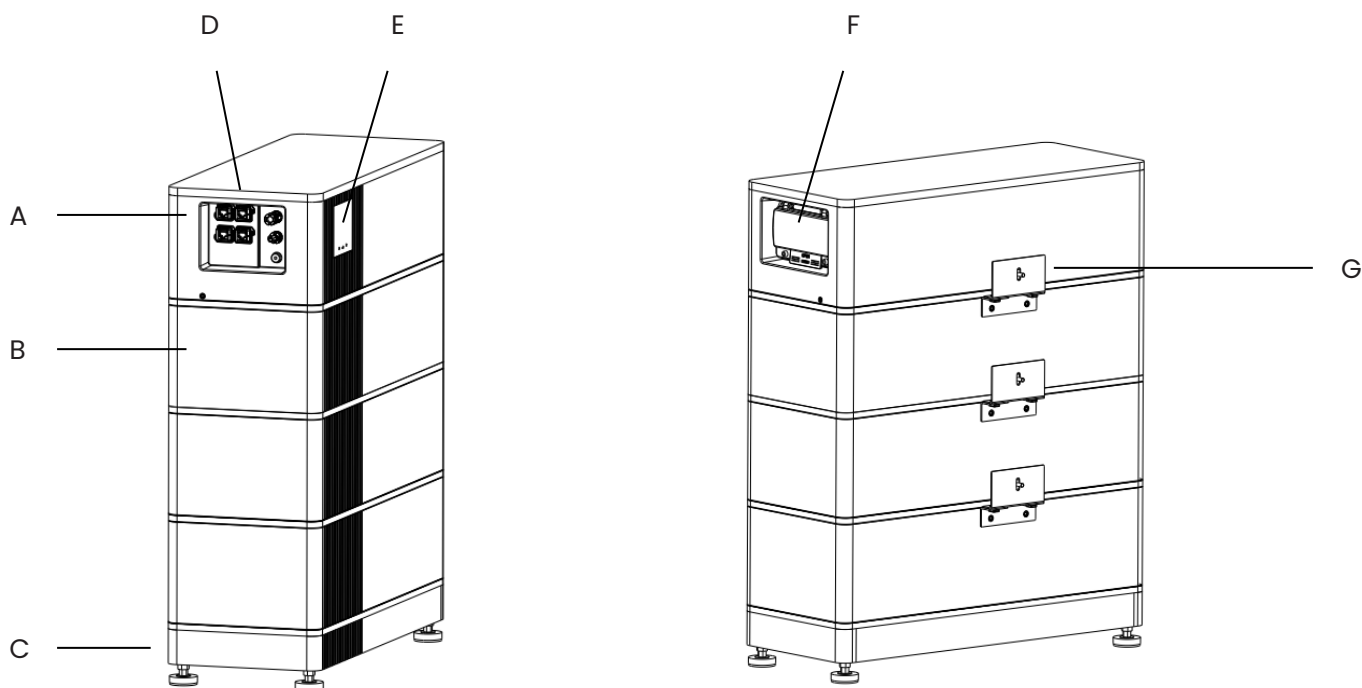


2 - Screw (M6X16)

## 4. Battery System Overview

### 4.1. Battery System Description

The CORE series battery product is used as a connected battery for the intermediate storage of excess PV energy in an inverter system.



- |   |                 |
|---|-----------------|
| A | BMS             |
| B | Battery Module  |
| C | Base            |
| D | Connection Area |
| E | LCD Display     |
| F | Air Switch      |
| G | Hanger          |

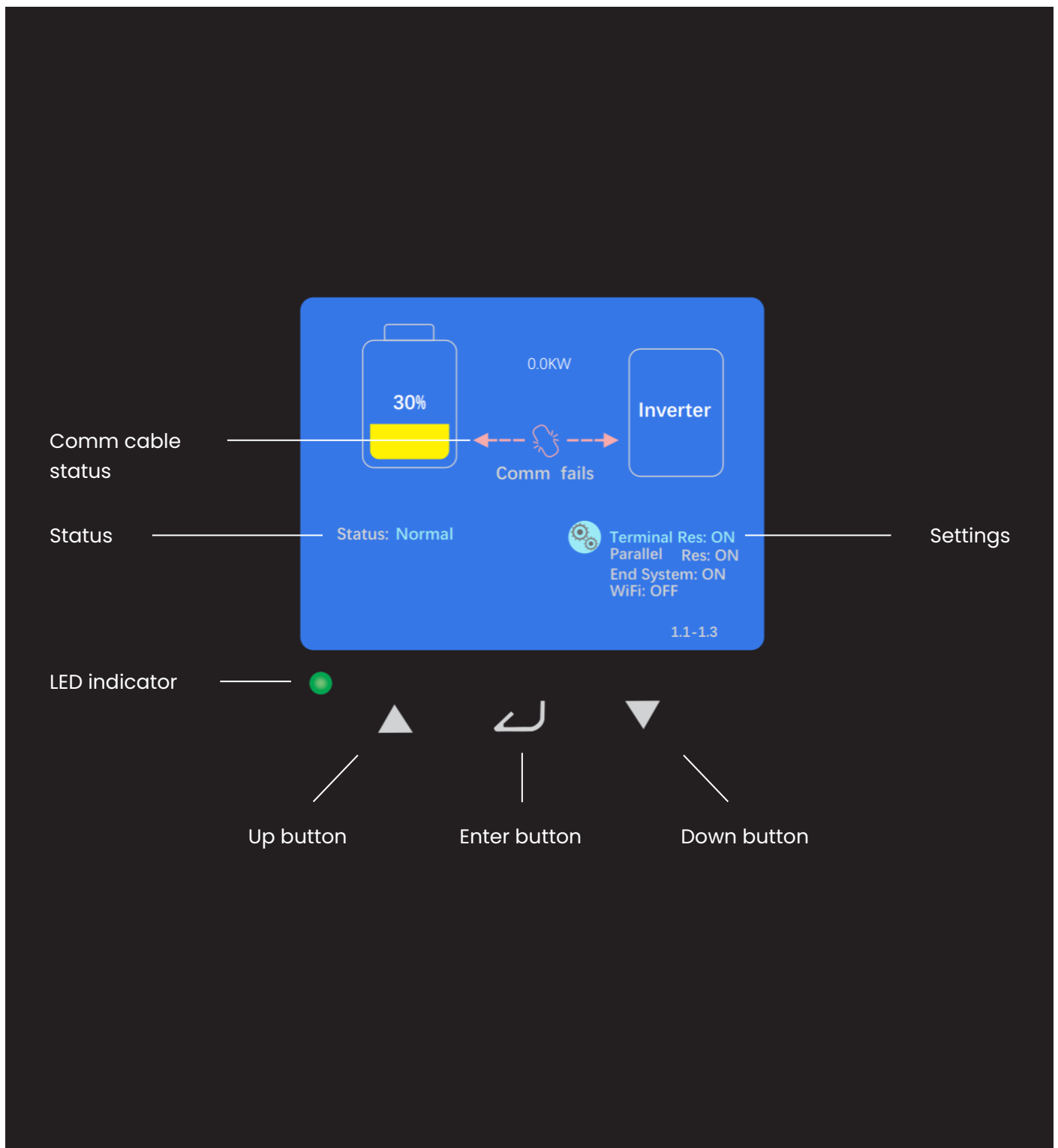
BMS, short for Battery Management System, is the control unit of the product. There are two types of battery modules, Power-CORE and Energy-CORE. The former one has a higher rated power while the later one has a higher rated usable energy. Two to five Power-CORE battery modules or three to eight Energy-CORE battery modules could be installed in one tower, and maximum six towers could be connected in parallel.

**Notice, these two battery modules cannot be mixed up during installation.**

# 4. Battery System Overview

## 4.2. LCD Display Description

In the display of the product, you can read the status of the product, and make settings.



## 4.2.1. Settings

There are four items that could be set.

### Terminal Res

Terminal Res means the terminal status for communication circuit with an inverter. Generally, it should be "ON" automatically. If the status is "OFF", please change it into "ON". (except Kostal PiKO MP Plus)

### Parallel Res

Parallel Res means the terminal resistors in the communication circuit of BMSes which are connected in parallel.

The status of Parallel Res on the master BMS and the last slave BMS should be "ON", and other BMS (if there is) should be "OFF".

### End System

End System means there is no tower coming after. If there is only one tower, the status should be "ON". For parallel tower connection system, only the last slave tower needs to be turned into "ON", and all the other towers should be "OFF".

The default status is "OFF".

**If the status is not set correctly, the product may not operate properly.**

### WiFi

The product is equipped with WiFi as standard. The WiFi will turn on as default after the battery switches on, but it will turn off automatically in 5 hours. You can activate the WiFi again here.

The password of the WiFi could be read at the end page of this document, and also the sticker on the BMS near the air switch.

You can update the product firmware and read more detailed product information by downloading CORE Link APP (mobile device) or CORE Link Plus (laptop), and making your devices access to the product WiFi.

### Black-Start

Black-Start is used to start up an inverter when the grid is outage. Keep pressing the Down button, and it will show.

### Procedure to make the settings:

1. Press Enter button to show the Setting menu.
2. Press Enter button again to change the status between Up button and Down button.
3. Press Up button and Down button to choose different items.

---

# 4. Battery System Overview

---

## 4.2.2. LED Indicator

The definition of the LED status could be read in the table below.

---

1	Initializing	Flashing green quickly (0.5 s interval)
2	Idle	Flashing green slowly (1.0 s interval)
3	Working	Static green
Error	Static yellow	



## 4. Battery System Overview

**4.2.3. Status** The statuses and errors could be read here. You can read the meaning of the statuses in the table below.







1	BTVH	The total pressure is too high.
2	BTVL	The total pressure is too low.
3	CVH	The voltage of cell is too high.
4	CVL	The voltage of cell is too low.
5	CTH_C	The temperature of cell while charging is too high.
6	CTL_C	The temperature of cell while charging is too low.
7	CTH_D	The temperature of cell while discharging is too high.
8	CTL_D	The temperature of cell while discharging is too low.
9	OC_C	Overcurrent occurs in charging.
10	OC_D	Overcurrent occurs in discharging.
11	CUB	The cell is in a serious unbalanced condition.
12	ENV_OT	The environment is overheated.
13	Null	Preservation
14	MemF	Memory fault
15	VSF	Voltage sensor failed.
16	TSF	Temperature sensor failed.
17	BICcomF_1#	BIC failed to circle back to multiple spots.
18	BVSF	Pressure sensor failed.
19	CSF	Current sensor failed.
20	RIF	Relay 1(Anode) failed.
21	PreCCF	Pre-charge circuit failed.
22	ENVTSF	Temperature sensor of environment failed.
23	MSOFF	Manual switch off
24	TSTri	Tamper switch is triggered
25	SCAla	Short circuit alarm
26	PamInc	The parameter is incorrect.
27	MTw_1#	The module type is abnormal.
28	MNInc	The number of parallel modules is inconsistent.
29	CANCOMF	Interior CAN communication fault
30	OHL	Cycle life fault(Low SOH or the failure of battery cell)
31	SecAla	Security alarm
32	InvComTO	Inverter communication timeout
33	IDDstF	Panel point failed to distribute ID.
34	PreCF	Inverter communication timeout
35	UpdF_Int	Panel point failed to distribute ID.

## 4. Battery System Overview

### 4.2.4. Comm Cable Status

The line will be yellow when the communication with an inverter is initiating. It will change into green when the communication is established. When color turns into orange, and also shows "Comm fails" indicating that the communication has been disrupted.

### 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.

## 4. Battery System Overview

### Symbol

### Explanation



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.

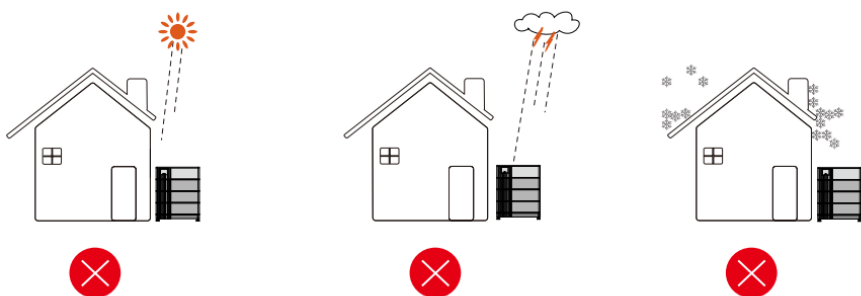
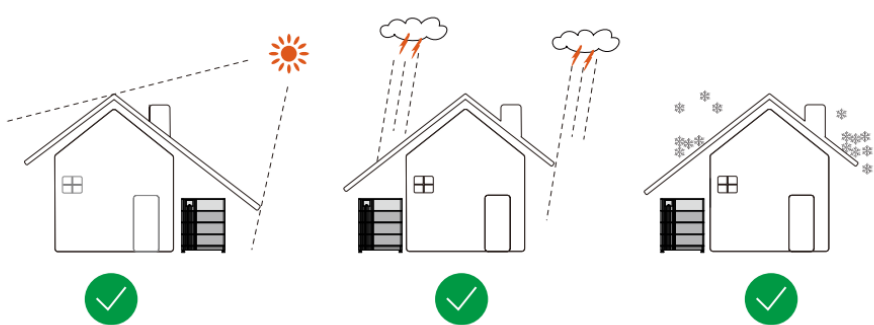
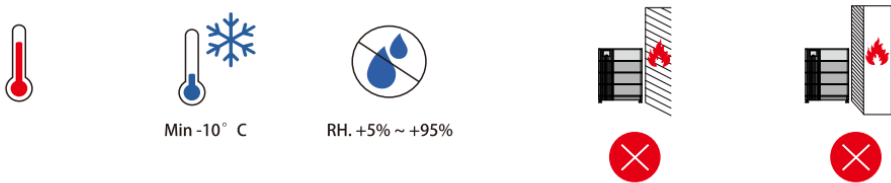


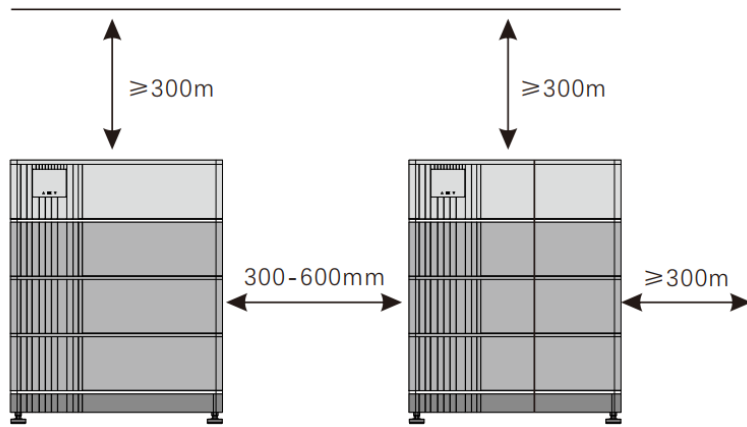
The product has been tested and certified by TÜV Rheinland.

## 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 the fire.
- f) The altitude of the installation location should be less than 3000m.
- g) The ambient temperature should be between  $-10^{\circ}\text{C}$  and  $+55^{\circ}\text{C}$ .
- h) The ambient humidity should be between 5-95%.





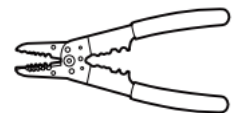
## 5.1.2. Tools



Network Wire Clamp



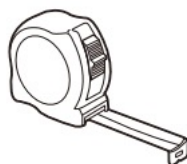
Torque Wrench



Wire Stripper



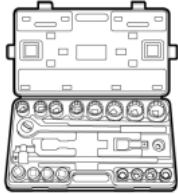
Wrench



Tape Measure



Drill



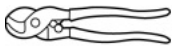
Torque Socket Wrench



Power Cable Connector Tool  
PV-MS-PLS



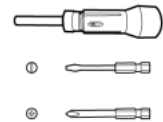
Rubber mallet



Cable cutter



Crimping tool PV-CZM-42100



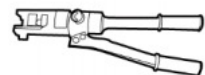
Screwdriver



Lever



Marker



Hydraulic pliers

## 5.1.3. Safety Gear



Safety Gloves



Safety Goggles



Dust Mask



Safety Boots

## 5.1.3. Safety Gear



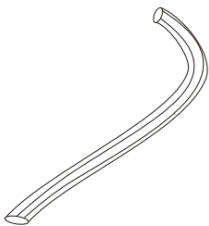
DC Cable



Expansion Anchor Bolt (M6)



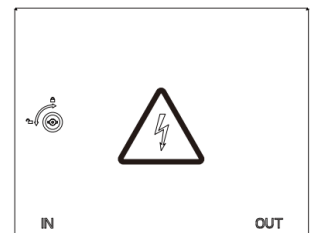
Network Cable  
CAT 5 or higher, metal shielded



Grounding cable



Right Cross Terminal



Combiner Box  
(only needed for multiple towers system)



## 5.2. Installation

### DANGER

#### **Danger to life due to electric shock due to live DC cables or connectors at the battery system**

The DC cables connected to the battery system may be live. Touching the DC conductors or the live components leads to lethal electric shocks.

- Do not touch non-insulated cable ends.

### CAUTION

#### **Risk of injury due to weight of the battery stack**

Injuries may result in the battery stack is lifted incorrectly or dropped while being transported or installed.

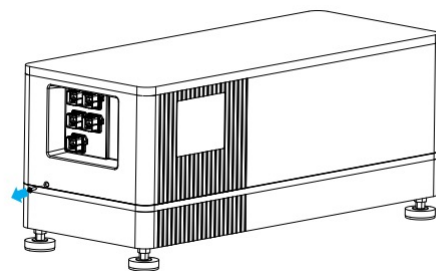
- Transport and lift the battery stack carefully. Take the weight of the battery stack into account.
- Wear suitable personal protective equipment for all work on the battery system.

### **Additionally required installation material (not included in the scope of delivery):**

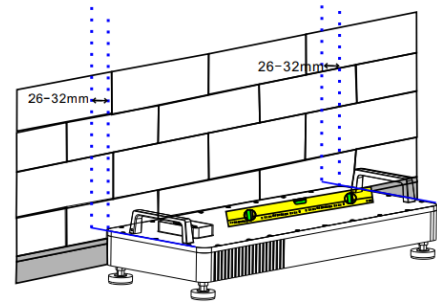
- Screws suitable for the support surface (diameter: 6 mm)
- Where necessary, screw anchors suitable for the support surface and the screws.

### **Procedure:**

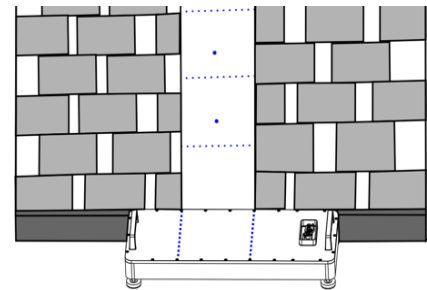
1. Take the BMS and base from the package out.
2. Loose the two screws (M4×16 plum screw×2) with screwdriver PH2.
3. Take the BMS from the base.



4. Put the base on the ground. Align the base with the wall surface and keep the edge of the base 26 mm to 32 mm away from the wall surface. Adjust the feet to make sure the base stands stable, and the surface of the base is horizontal.

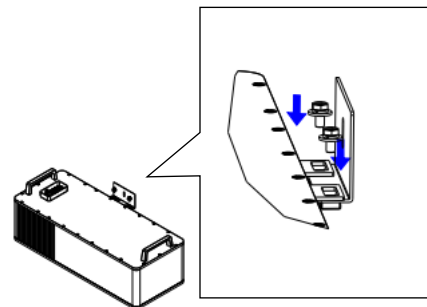


5. Aline the bottom of the drilling template with the top surface of the base, and the left and right edges of the paper template within outer edges of the middle four screws on the base top surface.



6. Mark the drilling holes according to how many modules you are going to install in one tower. Then remove the drilling template, drill holes and insert expansion bolt anchor. (Notice, when drilling holes, avoid the water pipes and power cables buried in the wall.)

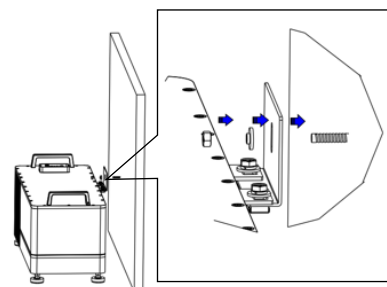
7. Unpack the battery module box, and preinstall the hanger on the module. (no need to tighten them at this step)



8. Fix the hanger on the wall with M6 screw expansion screw, and then fasten the two screw between the hanger and the module.(torque, 5.5 Nm)

9. Repeat the procedures for other modules.

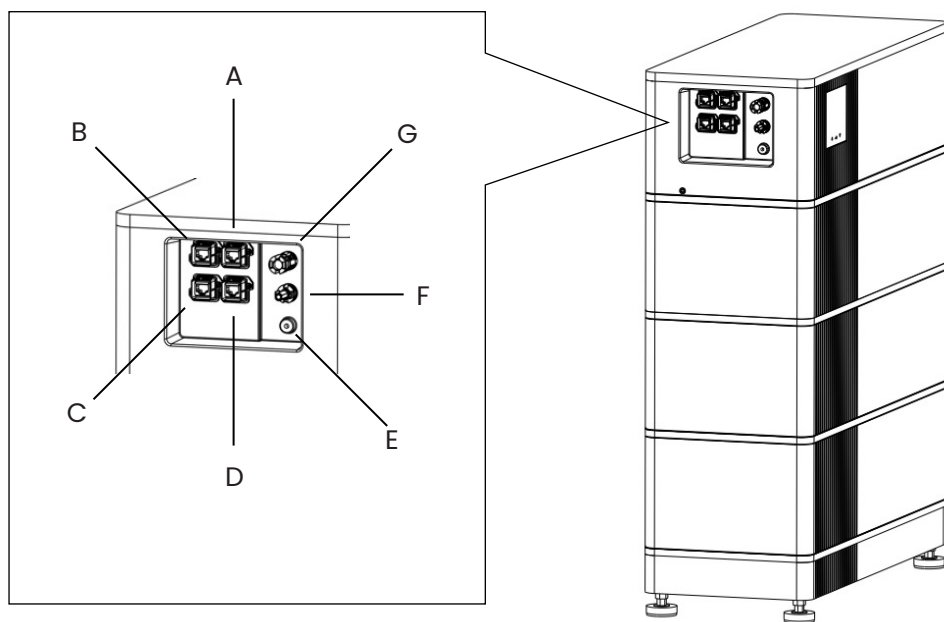
10. Put the BMS over the top battery module, and fix the connection between the top battery module and the BMS. To do this, insert the screws (M4x16) through the holes on them, using a Phillips screwdriver (PH2) and tighten them (torque: 2.0 Nm).



11. Mark the product type.

## 6.1. Overview of the Connection Area

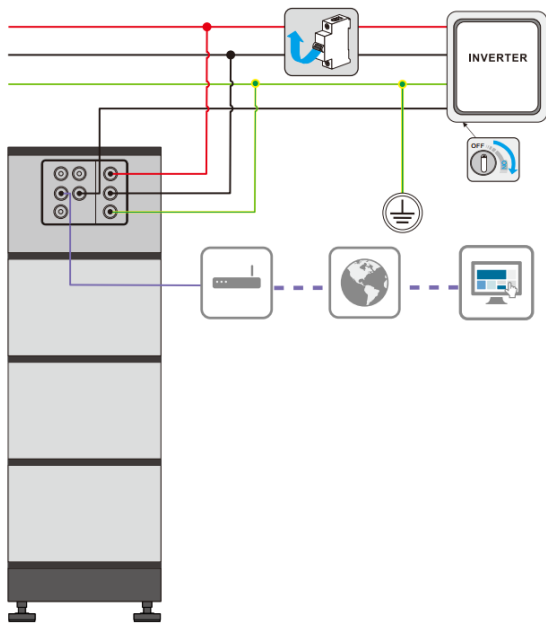
Exterior view



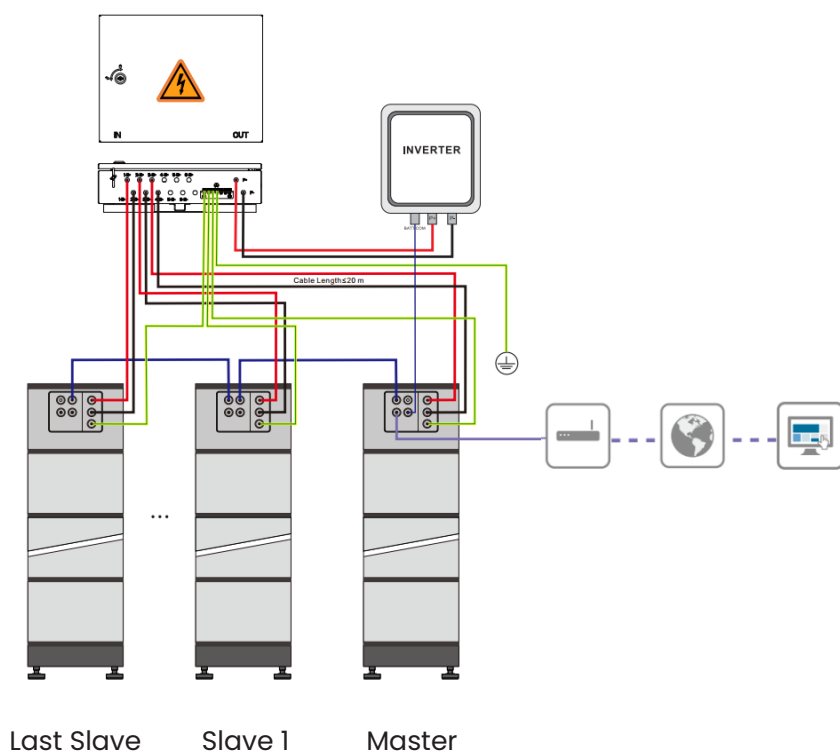
- A IN port for parallel tower connection
- B OUT port for parallel tower connection
- C Network port for connecting a router or network switch
- D Port for an inverter data cable
- E Grounding cable connecting point
- F DC-to inverter
- G DC-to inverter

## 6.2. Connection Diagram

### 6.2.1. Single Tower



### 6.2.2. Multiple Towers



## 6.3. Connecting the Grounding Conductor

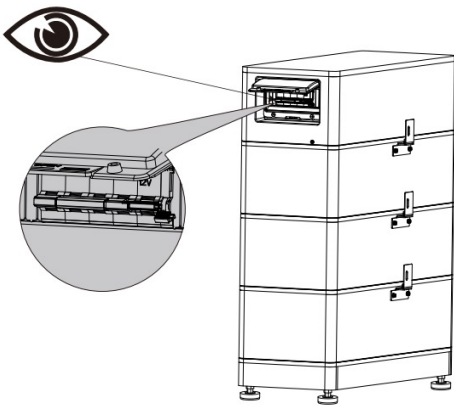


**Additionally required mounting material (not included in the scope of delivery):**

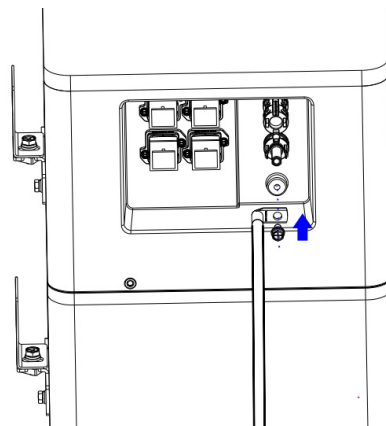
- a) Grounding cable cross-section: 10 mm<sup>2</sup>
- b) Conductor, 5mm, right angle type

**Procedure:**

1. Make sure the air switch of BMS is off.



2. Install the conductor on the grounding cable.
3. Remove the screw on the grounding point, lead the cable there, and tighten it with the same screw (M4x10). (torque, 2 Nm)



## 6.4. Data Cable Connection

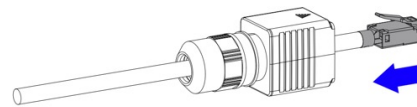
 **QUALIFIED PERSON**

The end of all the data cables to BMS is RJ 45 connector. The RJ 45 connector should be fitted into the network coupler before being plugged into corresponding ports.

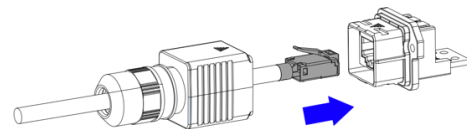
### 6.4.1. Fit RJ 45 Connector into the Coupler

The method of fitting RJ45 connector into the coupler is:

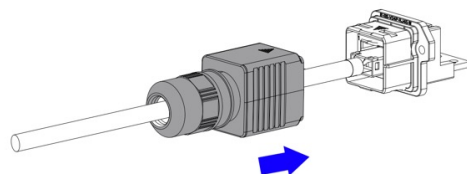
- A) Take the bushing out of the coupler.
- B) Lead the end of the cable without RJ45 plug through the coupler



- C) Fit the RJ45 connector into the bushing.



- D) Plug the assembled bushing and RJ45 connector into the coupler. (Make sure the installation signs of the bushing and coupler at the same side.)



## 6.1. Overview of the Connection Area

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

One network cable (Cat5, Cat5e or higher)

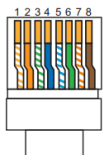
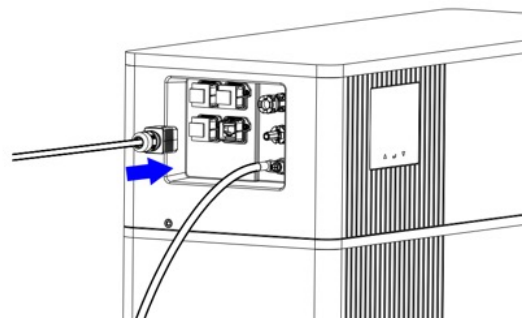
### Data cable requirements:

The cable length and quality affect the quality of the signal. 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.

### Data cable requirements:

1. Trim the cable according to the designation of Port D, and also of corresponding port at the inverter. The designation of Port D could be in the table below. The trim method for different inverters could also be read in Annex.
2. Fit the cable with RJ 45 connector in the coupler according to the method mentioned in 6.4.1
3. Take off the dust cover of port D.
4. Plug the coupler with cable into Port D.



Pin Number	1	1	1	1	1	1	1	1	1
Designation	RS485A	RS485B	EN	CAN H	CAN L	EN-GND	12V IN	12V IN_GND	

### 6.4.3. Connect to the Router

This step is not mandatory.



**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 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.

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

- Network cables (Cat5, Cat5e or higher)

**Data cable requirements:**

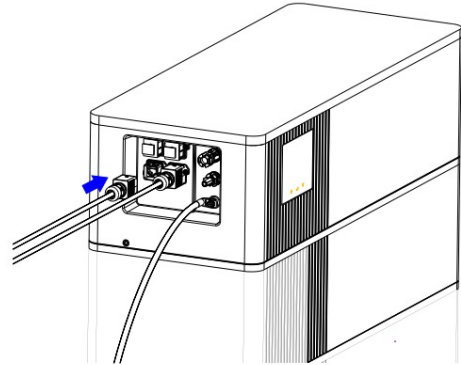
The cable length and quality affect the quality of the signal. Observe the following cable requirements.

- 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. Fit the cable with RJ 45 connector in the coupler according to the method mentioned in 6.4.1
2. Take off the dust covers of Port C.
3. Plug one end of the cable with coupler into Port C, and the other side to the LAN port of a router.



### 6.4.4. Parallel Connection between Towers

This step is only needed if multiple towers to be connected in parallel.

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

- Network cables (Cat5, Cat5e or higher)

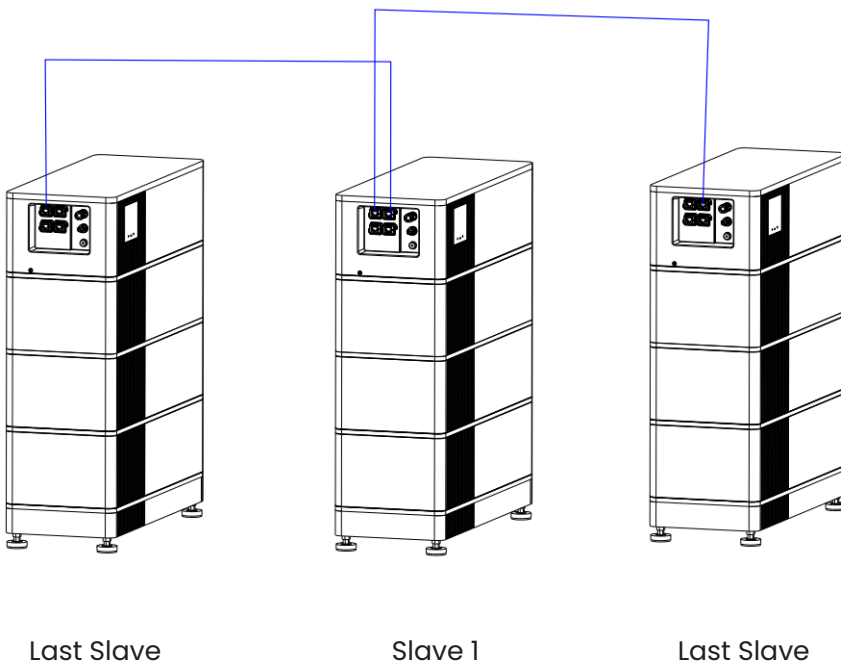
#### Data cable requirements:

The cable length and quality affect the quality of the signal. 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. Fit the cable with RJ 45 connector in the coupler according to the method mentioned in 6.4.1
2. Take off the dust covers of the OUT port of the master tower, IN port of the last slave tower and all the IN and OUT ports in other towers.
3. Connect the OUT port of the master tower with the IN port of the first slave tower, and the OUT port of the first slave tower with IN port of the second slave tower, and so on.



## 6.5. DC Connection



### Danger to life due to electric shock due to live DC cables or connectors at the battery system

The DC cables connected to the battery system may be live. Touching the DC conductors or the live components leads to lethal electric shocks.

- Do not touch non-insulated cable ends.

When multiple towers are connected, the positive power cable length of all the battery systems should be approximately equal, and so are the negative power cables. A junction box or Y-Bridge connectors are needed to combine these cables. BYD provides two types of combiner boxes, one is suitable for two or three towers, and the other one is for four to six towers. Please also follow the local, state, provincial, federal, or national laws, regulations, and instructions from the inverter manufacturer to choose the right junction box or Y-Bridge

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

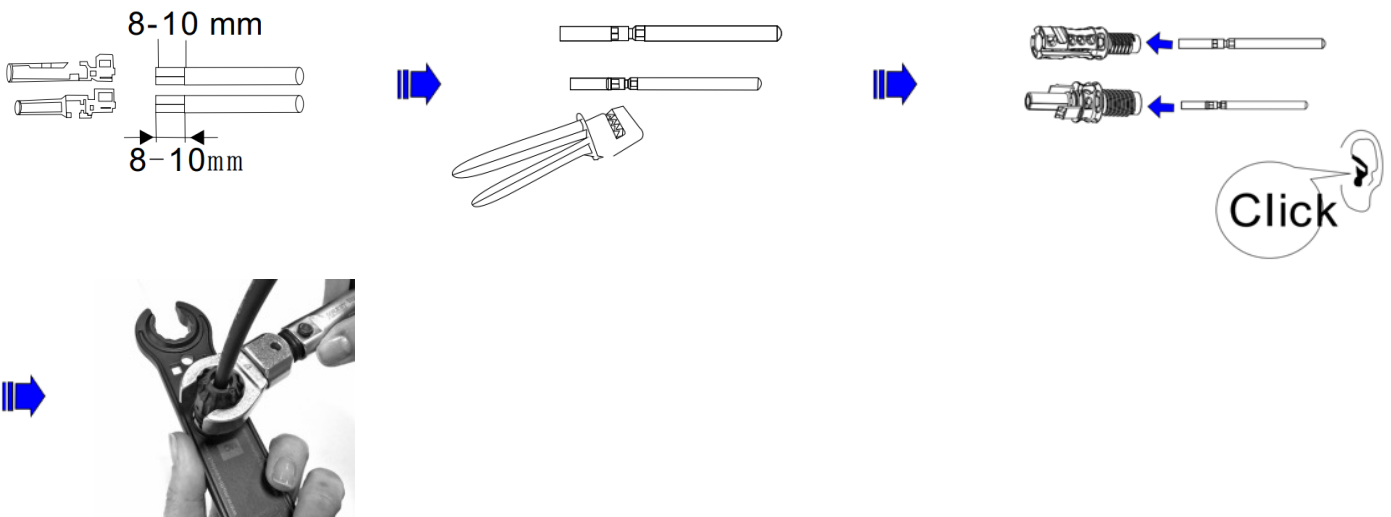
Two DC power cables per tower

### Cable requirements:

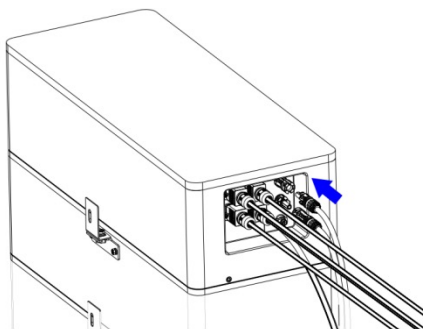
- Conductor cross-section: 10 mm<sup>2</sup>. Follow the requirements of the inverter manufacturer.
- Maximum cable length: 20 m

### Procedure

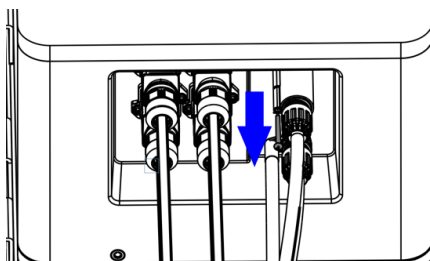
#### 1. Assembling DC connectors



2. Plug the connectors into the corresponding DC cable ports.



3. Cover each power cable connector with a plastic sleeve, and plug a bolt to fix two parts of the sleeve.



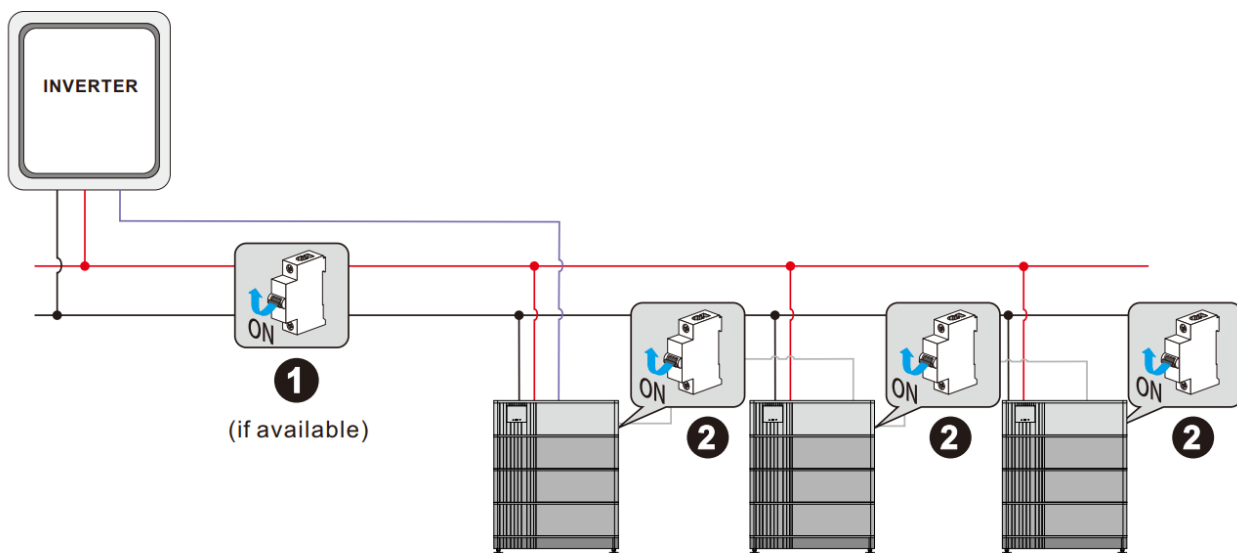
## 7.1. Switch on the Battery System



### Requirements:

- The power cable connection between the battery system and the inverter is switched 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. Open the plastic cover at the right side of the BMS.
3. Push up the air switch from the Off position to On. The LCD screen will light up, and shows the status of the battery system. If there is any error, please read our Service Guideline for the troubleshooting.

## 7.2. Make the settings on the LCD Display

### 1. End System

- A) Only one tower, set the End System as "ON"
- B) Multiple towers, set the End system at the last slave tower as "ON", and all the others as "OFF".

### 2. Parallel Res

- A) Only one tower, set the Parallel Res as "ON"
- B) Multiple towers, set the Parallel Res at the master tower and the last slave tower as "ON", and all the others as "OFF".

### 3. Terminal Res

You only need to make this setting for the master tower, and set it as "ON". (this is not including Kostal Piko MP Plus. For this inveterset it as "OFF")

## 7.3. Switch on and Commission the Inverter



**QUALIFIED PERSON**

### Requirements:

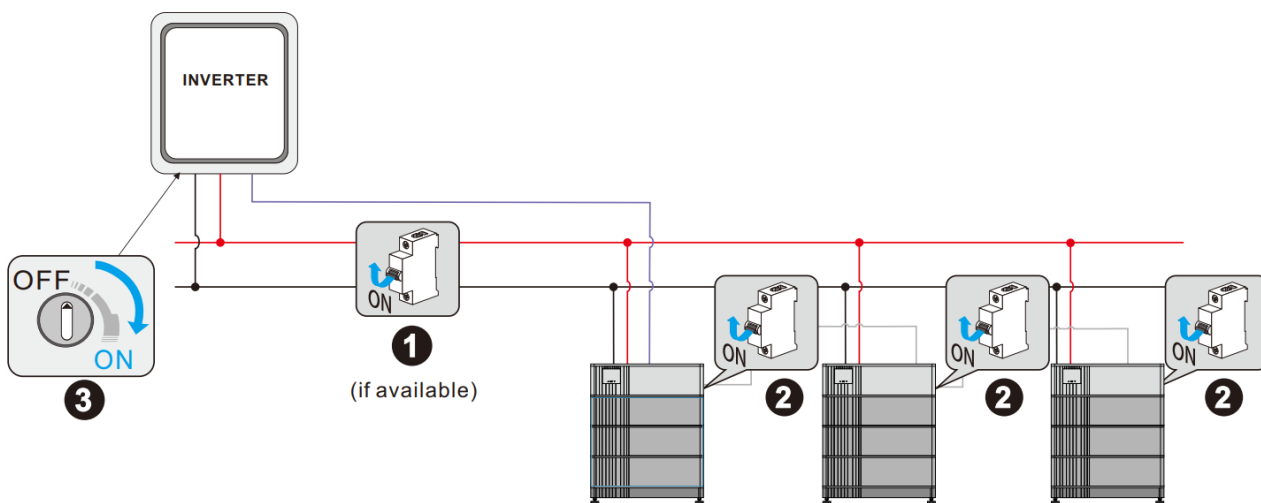
- The power cable connection between the battery system and the inverter is switched off.
- The inverter must be correctly mounted.
- All cables must be correctly connected.
- The battery has been commissioned.

### Procedure:

1. Switch on the inverter
2. Configure the inverter according to the inverter manufacturer's instruction.

## 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) turn on the switch between the inverter and battery if there is any; 2) switch on the switches on all the towers; 3) switch on the inverter.

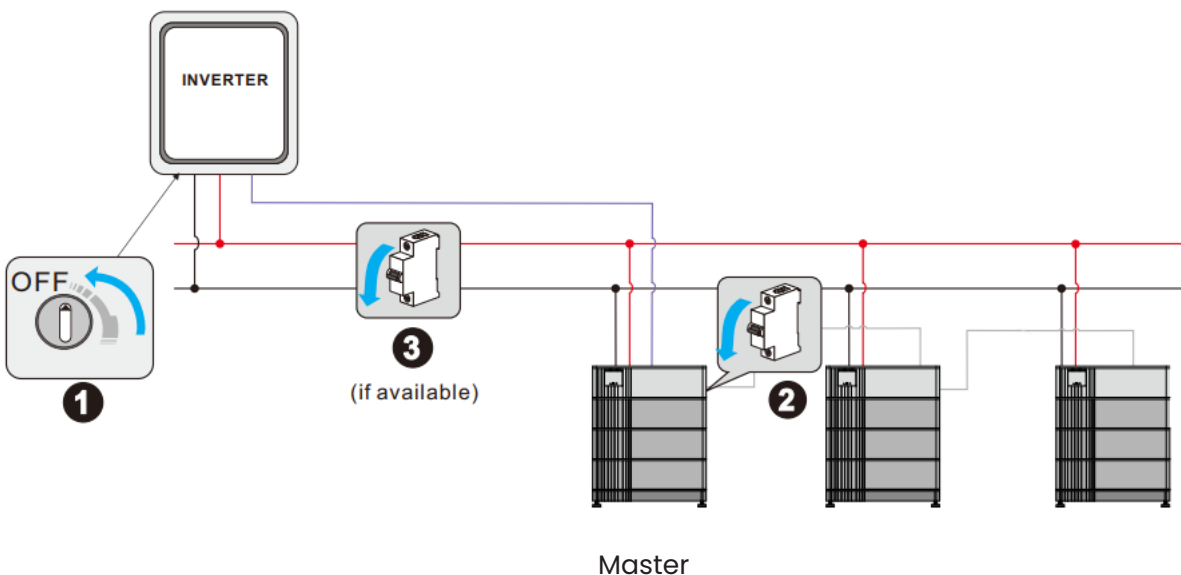


## 8.1. Switch on the Battery System

The procedure to switch off the battery system is: 1) switch off the inverter; 2) switch off the battery system; 3) switch off the air switch between the battery and the inverter if there is any.

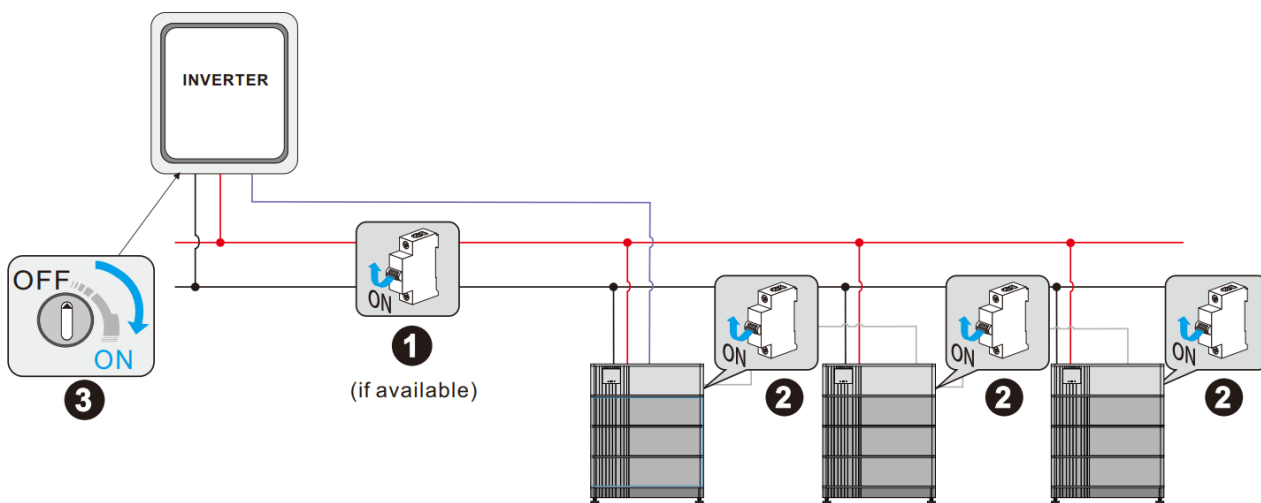
**To switch off the battery system, pull down the air switch on the BMS.**

For multiple towers system, you only need to pull down that on the master tower.



## 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) turn on the switch between the inverter and battery if there is any; 2) switch on the switches on all the towers; 3) switch on the inverter.

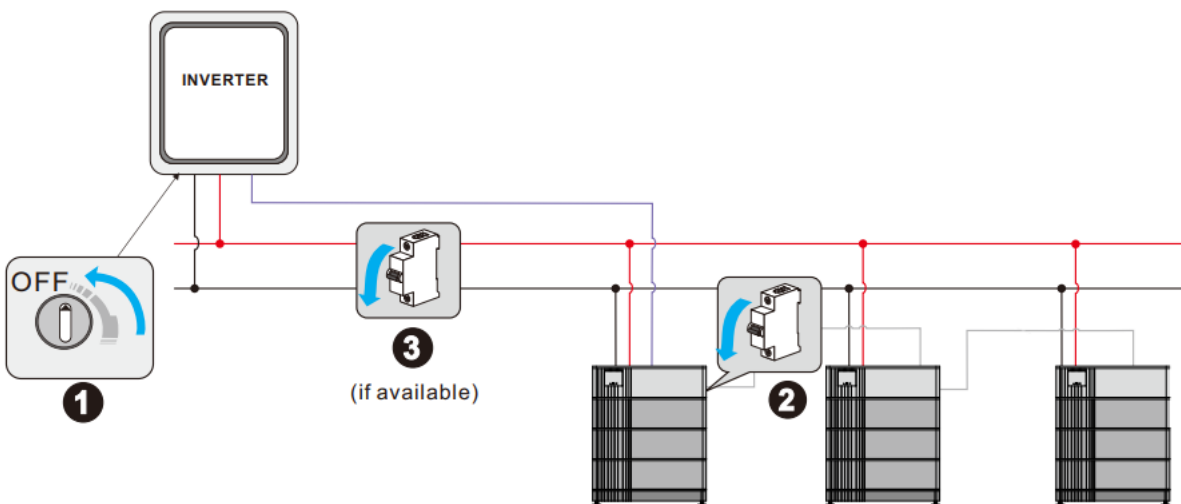


## 8.1. Switch on the Battery System

The procedure to switch off the battery system is: 1) switch off the inverter; 2) switch off the battery system; 3) switch off the air switch between the battery and the inverter if there is any.

**To switch off the battery system, pull down the air switch on the BMS.**

For multiple towers system, you only need to pull down that on the master tower.







QUALIFIED PERSON



DANGER

### **Danger to life due to electric shock due to live DC cables or connectors at the battery system**

The DC cables connected to the battery system may be live. Touching the DC conductors or the live components leads to lethal electric shocks.

- Do not touch non-insulated cable ends.



CAUTION

### **Risk of injury due to weight of the battery stack**

Injuries may result in the battery stack is lifted incorrectly or dropped while being transported or installed.

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

## **Procedure:**

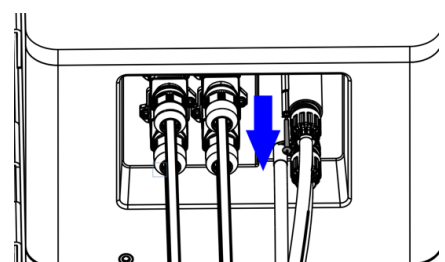
1. Shut off the inverter.
2. Switch off the battery system.
3. Switch off the breaker between the inverter and the battery system if there is any.
4. Remove all cables from the battery system.

### A) Remove the data cable coupler

Press two sides (either left and right sides or up and down sides) of the data cable coupler at the same time, and then remove it.

### B) Remove the power cable

Remove bolt on the plastic sleeve with a screwdriver.

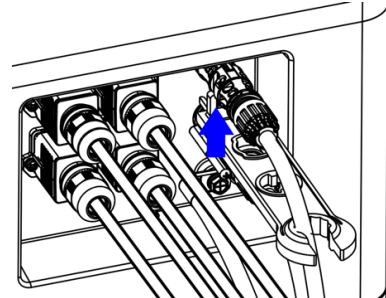


# 9. Decommissioning

Put the Stabali tool under the connector.

Remove the power cable from the BMS.

C) Remove the grounding cable.



5. Remove the screws between BMS and the battery module. And then lift the BMS from the tower.

6. Loose the nuts on the hanger between the module and the wall, remove the hanger and then remove the module from the tower.

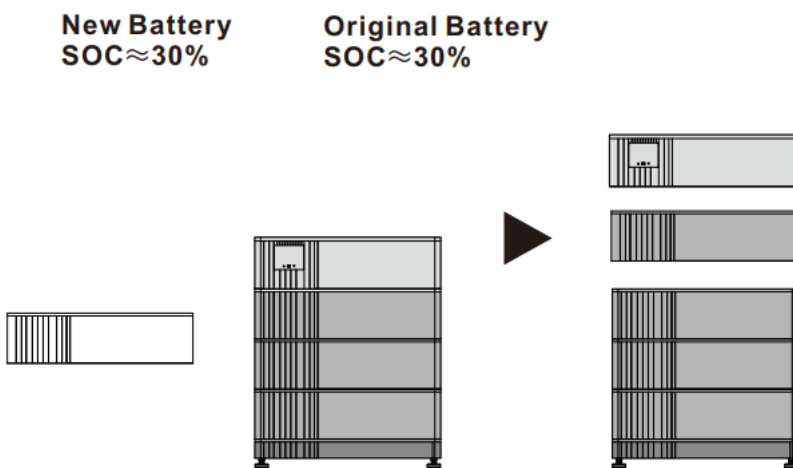
If the battery system is to be stored or shipped, pack the system. Use the original packaging or packaging that is suitable for the weight and dimensions of the system.

ç  
Dispose of the battery system in accordance with the locally applicable disposal battery regulations.

The SOC of the existing system and the module to be added should be similar before the module adding on the existing system.

**Procedure:**

1. Charge or discharge the existing system to an SOC of around 30%. Note: new modules have an SOC of around 30%
2. Shut off the inverter.
3. Switch off the battery system.
4. Switch off the breaker between the inverter and the battery system if there is any.
5. Loose the screw between the BMS and battery module, and then take the BMS off.
6. Add the new module on top of other battery modules, and fix it on the wall.
7. Put BMS back on top of the new battery module.
8. Switch on the breaker between the inverter and the battery system if there is any.
9. Switch on the battery system
10. Check the settings on the LCD display.
11. Start the inverter.



---

# 11. Troubleshooting

---

Please refer to CORE series Service Guideline and Checklist for troubleshooting. The latest version is available at our website [www.support.digitalenergy.byd.dom](http://www.support.digitalenergy.byd.dom).

## 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  $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$ , 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 30% after a long time of storage.

Storage environment temperature	Relative humidity of the storage environment	Storage time	SOC
Below $-10^{\circ}\text{C}$	/	Not allowed	/
$-10^{\circ}\text{C} \sim 25^{\circ}\text{C}$	5%~70%	$\leq 12$ months	$25\% \leq \text{SOC} \leq 60\%$
$25^{\circ}\text{C} \sim 35^{\circ}\text{C}$	5%~70%	$\leq 6$ months	$25\% \leq \text{SOC} \leq 60\%$
$35^{\circ}\text{C} \sim 50^{\circ}\text{C}$	5%~70%	$\leq 3$ months	$25\% \leq \text{SOC} \leq 60\%$
Above $50^{\circ}\text{C}$	/	Not allowed	/

---

## 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 team** (see contact details at the bottom of this document).

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 team** (see contact details at the bottom of this document).

## Power-CORE 1.0

Number of Stacks	2	3	4	5
Usable Energy (kWh)	5.52	8.28	11.04	13.80
Max Output Current (A)	25	25	25	25
Peak Output Current (A)	50 A (5s)	50 A (5s)	50 A (5s)	50 A (5s)
Nominal Voltage (V)	204.8	307.2	409.6	512
Operating Voltage Range (V)	172.8~233.6	259.2~350.4	345.6~467.2	432~584
Dimensions (H) (mm)	625* 650 *260	800* 650 *260	975* 650 *260	1150* 650 *260
Weight (kg)	90	125	160	195

## Energy-CORE 1.0

Number of Stacks	3	4	5	6	7	8
Usable Energy (kWh)	9.6	12.8	16.0	19.2	22.4	25.6
Max Output Current (A)	30 A	30 A	30 A	30 A	30 A	30 A
Peak Output Current (A)	50 A (5s)	50 A (5s)	50 A (5s)	50 A (5s)	50 A (5s)	50 A (5s)
Nominal Voltage (V)	192	256	320	384	448	512
Operating Voltage Range (V)	162~219	216~292	270~365	324~438	378~511	432~584
Dimensions (H) (mm)	800* 650 *260	975* 650 *260	1150* 650 *260	1325* 650 *260	1500* 650 *260	1675* 650 *260
Weight (kg)	129.5	166	202.5	239	275.5	312

## General Parameters

Operation Temperature	-10 ~ 55 °C
Protection Rating	IP65
Round-trip Efficiency	>96%
Certification & Compliance	VDE2510-50/IEC62619/CEC/CE/UN38.3
Applications	ON Grid /ON Grid Backup/OFF Grid
Warranty	10 Years



---

# 15. Contact Information

---

## **BYD Global Service**

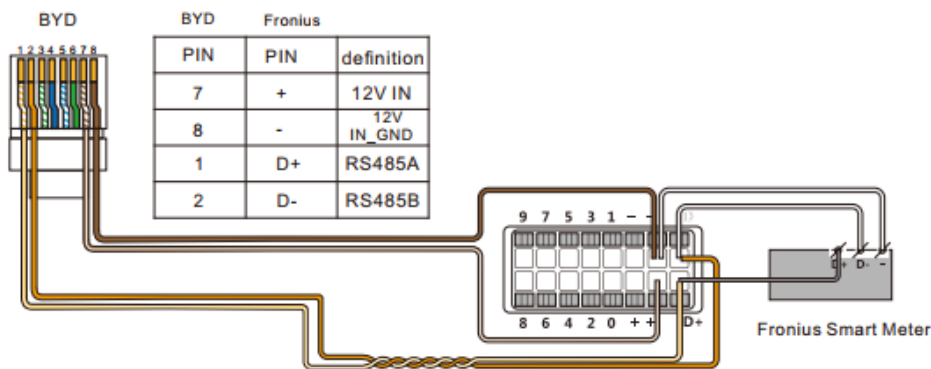
[dbsupport@byd.com](mailto:dbsupport@byd.com)

Telephone: +86 755 89888888-47175

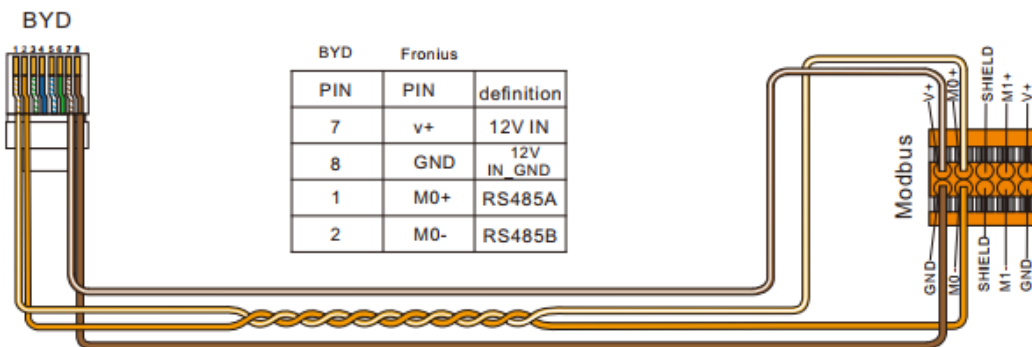
Address: No.3009, BYD Road,  
Pingshan, Shenzhen, 518118, P.R.China

Please first check if the planned configuration is already released according to the latest Power-CORE /Energy-CORE Compatible Inverter List, before the installation.

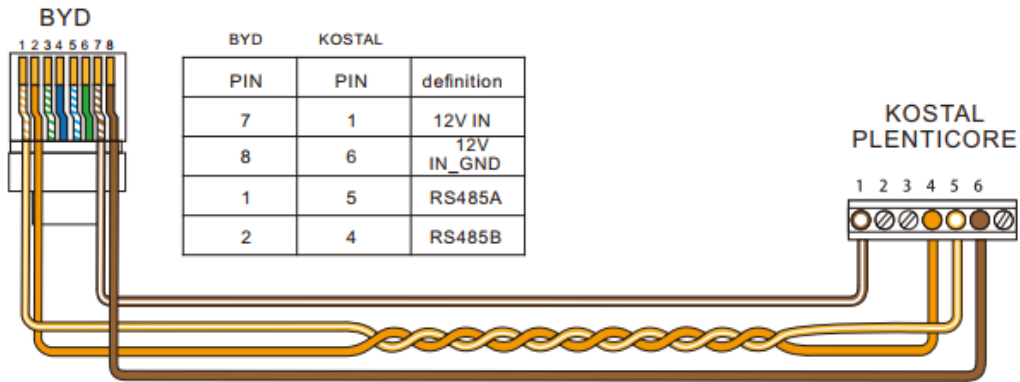
## a Fronius Symo Hybrid



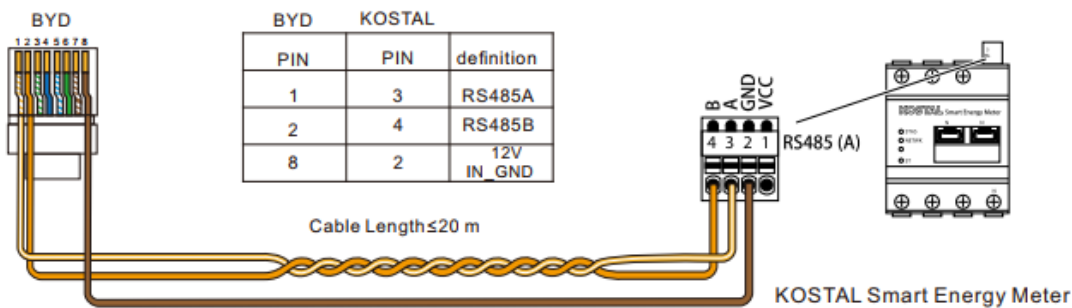
## b Fronius Primo Gen24Plus/Symo Gen24Plus



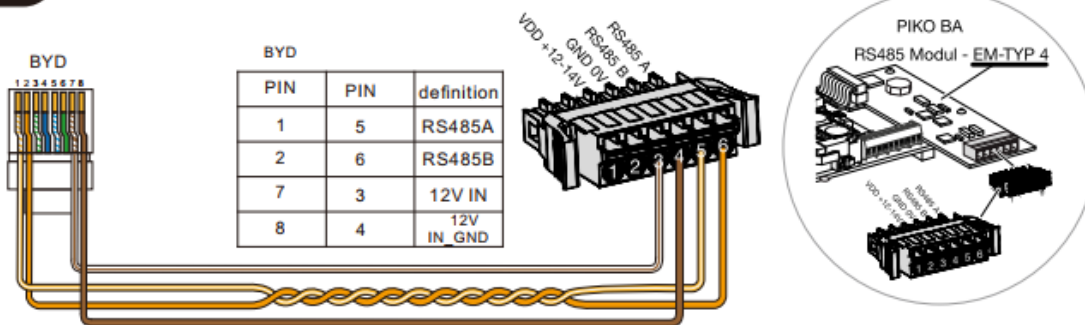
## e Kostal PLENTICORE Plus/ Plenticore BI



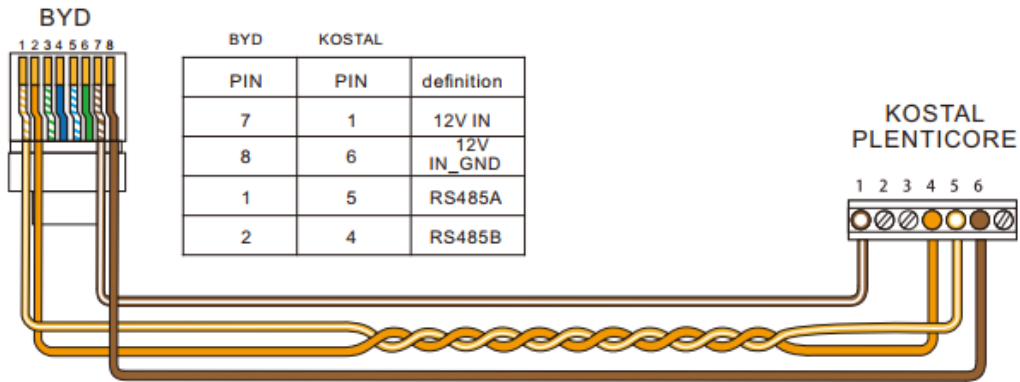
## f Kostal PIKO MP Plus



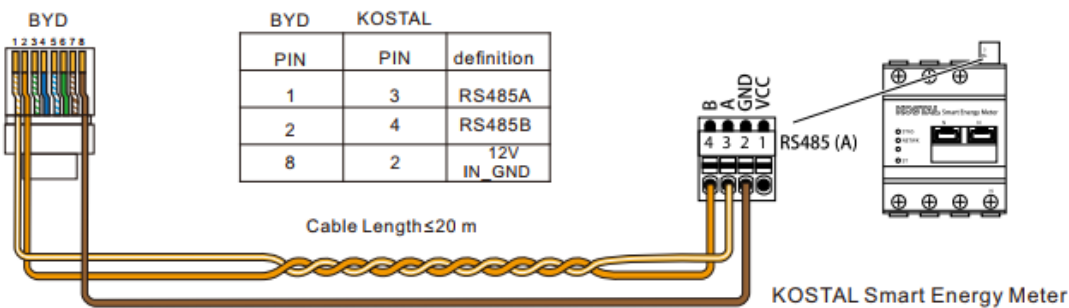
## g Kostal PIKO BA



## e Kostal PLENTICORE Plus/ Plenticore BI



## f Kostal PIKO MP Plus



## g Kostal PIKO BA

