



BYD COMMERCIAL STORAGE SOLUTION

BATTERY-MAX LITEIN

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1. Information on this Document

1.1. Validity

This document is valid for: BYD Battery-Max LiteIn 30, 37.5, 45, 52.5, 60, 67.5, 75, 82.5.

1.2. Target Group

This document is intended for qualified persons and operators. Only qualified persons are allowed to perform the activities marked in this document with a warning symbol and the caption "QUALIFIED PERSON". Tasks that do not require any particular qualification are not marked and can also be performed by operators. Qualified persons must have the following skills:

- Knowledge of how to safely disconnect inverters
- Knowledge of how an inverter works and is operated
- Knowledge of how batteries work and are operated
- Training to deal with risks associated with installing, repairing, and using electrical devices, inverters, and batteries
- Training in the installation and commissioning of electrical devices and installations
- Knowledge of all applicable laws, regulations, standards, and directives
- Knowledge of and compliance with this document and all safety information
- Successful participation in a certification training program for the BYD Battery-Max LiteIn

1.3. Content and Structure of this Document

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

You will find the latest version of this document and further information on the product in PDF format at www.bydbatterybox.com or www.bydenenergy.com.

Illustrations in this document are reduced to the essential information and may deviate from the real product.

1.4. Levels of Warning Messages

DANGER

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

WARNING

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

CAUTION

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

NOTICE

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

1.5. Designations in the Document

Designation in this document	Complete designation
Battery Module	Liteln Module
Battery System	Battery-Max Liteln
BIC	Battery Information Collector
BYD	Shenzhen BYD Electronics Co., Ltd.
PDU	Power Distribution Unit

1.6. Explanation of Used Terms

Term	Explanation
Battery System	A battery system for the purposes of this document consists of at least one battery rack with one PDU and 4 battery modules. Depending on the system configuration, up to 32 battery racks can be connected in parallel.
BMS	Battery management system, a central processing unit of the battery system.
State of charge	The state of charge (SOC) indicates the amount of energy available in a battery, expressed as a percentage. A state of charge of 100% is equivalent to a fully charged battery. The battery management system is able to determine the state of charge of a cell or battery module based on parameters, and to terminate charging if required. This prevents overcharging of the battery. To prevent unnecessary stress on the cells, the software has the same function for discharging. The manufacturer defines battery limit conditions, at which the system terminates charging and discharging.

2. Safety

2.1. Intended Use

The Battery-Max LiteIn is an energy management system for commercial uses, e.g., increased self-consumption or peak shaving.

System requirements

The product must only be used as stationary equipment.

The product is not suitable for supplying life-sustaining medical devices. A power outage must not lead to personal injury.

Communication cables, network cables must always be laid separately from AC or DC cables to prevent electromagnetic coupling to interference during data transmission and any resulting malfunctions.

No additional loads or components in the DC intermediate circuit may be connected between the battery and inverter. Any changes to the system configuration must be agreed with Shenzhen BYD Electronics Co., Ltd.

All components must remain within their permitted operating ranges and their installation requirements at all times.

The product must only be used in countries for which it is approved or released by Shenzhen BYD Electronics Co., Ltd. and the grid operator.

The product is intended exclusively for use in industrial environments. The product must not be exposed to corrosive atmospheres.

Battery requirements

Battery-Max LiteIn is a lithium-ion battery. The battery components are designed in accordance with the state of the art and the product-specific standards.

The battery is designed for use at altitudes of up to 3000 m above mean sea level. Electrical safety cannot be guaranteed at altitudes above 3000 m.

The battery system can only be suitable for indoor use.

The battery energy storage system must be installed in a fireproof room. This room must have no fire source and must be equipped with an independent fire alarm device, which complies with local applicable regulations and standards. According to local applicable regulations and standards, the room must be separated by the fire door. Similar fire-proof requirements apply to other openings in the room (such as windows). Only qualified persons are allowed to enter and maintain this room.

On flood plains, care must be taken to ensure that the battery is always installed in an elevated position and protected from contact with water.

Statutory warranty

Use BYD products only in accordance with the information provided in the enclosed documentation and with the locally applicable laws, regulations, standards and directives. Any other application may cause personal injury or property damage.

Alterations to the BYD products, e.g., changes or modifications, are only permitted with the express written permission of Shenzhen BYD Electronics Co., Ltd. Unauthorized alterations will void guarantee and warranty claims and in most cases terminate the operating license. Shenzhen BYD Electronics Co., Ltd. shall not be held liable for any damage caused by such changes.

Any use of the product other than that described in the Intended Use section does not qualify as the intended

use.

The enclosed documentation is an integral part of this product. Keep the documentation in a convenient, dry place for future reference and observe all instructions contained therein.

This document does not replace any regional, state, provincial, federal or national laws, regulations or standards that apply to the installation, electrical safety and use of the product. Shenzhen BYD Electronics Co., Ltd. assumes no responsibility for the compliance or non-compliance with such laws or codes in connection with the installation of the product.

2.2. IMPORTANT SAFETY INSTRUCTIONS

Keep the manual for future reference.

This section contains safety information that must be observed at all times when working.

The product has been designed and tested in accordance with international safety requirements. As with all electrical or electronical devices, some residual risks remain despite careful construction. To prevent personal injury and property damage and to ensure long-term operation of the product, read this section carefully and observe all safety information at all times.

DANGER

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

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

- Have the inverter and the battery mounted, installed and commissioned only by qualified persons with the appropriate skills.
- Disconnect the system from voltage sources and make sure it cannot be reconnected before working on the device.
- Do not touch non-insulated parts or cables.
- Wear suitable personal protective equipment for all work on the product.

DANGER

Danger to life due to electric shock when live components are touched because the battery grounding is connected to grounding conductor terminals

Due to the connection of the battery grounding to the grounding conductor terminals, high voltages might be present on the enclosure of the inverter. Touching live parts and cables results in death or lethal injuries due to electric shock.

- Only the grounding conductors of the AC power cables may be connected to the grounding conductor terminals of the inverter.
- Ground the battery storage system as described in this document.
- If the locally applicable standards and directives require battery grounding, connect the battery system grounding to the grounding busbar in the distributor.

 **DANGER**

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

Overvoltages (e. g. in the event of a flash of lightning) can be further conducted into the building and to other connected devices in the same network via the network cables or other communication 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 battery are integrated into the existing surge protection.
- When laying the network cables or other communication cables indoors, it must be ensured that a suitable surge protection device is provided at the transition point of the cable from the inverter or the battery to the inside of a building.

 **DANGER**

Danger to life due to fire or explosion due to improper handling of the battery modules

Improper handling can cause the lithium inside the battery to ignite. This can cause a fire or explosion. Death or lethal injuries due to hot or flying debris can result.

- Never use defective or damaged battery modules.
- Do not open, pierce, or drop battery modules.
- Do not install or operate the battery modules in potentially explosive atmospheres or areas of high humidity.
- Do not expose the battery modules to high temperatures.
- Never throw the battery modules on a fire.
- Store the battery modules dry and within the specified temperature range.
- If a fire starts from the battery, contact the fire department. Extinguishing is a high risk due to toxic gases, risk of explosion and rapid spread.
- If a fire breaks out in the vicinity of the battery, use an ABC fire extinguisher.

 **DANGER**

Danger to life due to electric shock due to touching live parts of the battery modules

A high voltage is present at the DC terminals of each battery module. When the DC cables are installed within the battery rack, the DC voltages of the individual battery modules add up. Touching the DC terminals or connected DC cables results in death or lethal injuries due to electric shock.

- Do not touch any live components.
- Wear suitable personal protective equipment for all work on the product.
- Observe all warning messages on the product and in the documentation.
- Observe the local health and safety regulations.

 **DANGER**

Danger to life due to electric shock due to touching live components or cables with insufficient or no grounding

If there is insufficient or no earthing, high voltages can be present at the battery rack enclosure in the event of a fault. Touching live parts and cables results in death or lethal injuries due to electric shock.

- Earth the battery rack.

 **WARNING**

Risk of injury due to toxic substances, gases and dusts.

In rare cases, damage to components can result in the formation of toxic substances, gases, or dusts inside the battery. Touching toxic substances and inhaling toxic gases and dusts can cause skin irritation, burns or poisoning, trouble breathing and nausea.

- Do not expose the battery modules to severe jolts.
- Do not open, dismantle, or perform mechanical work on the battery modules.
- Only perform work on and battery (e.g., troubleshooting, repair work) when wearing personal protective equipment for handling of hazardous substances (e.g., safety gloves, eye and face protection, respiratory protection).
- Ensure that unauthorized persons have no access to the system.
- In case of contact with electrolyte, rinse the affected area immediately with water and consult a doctor without delay.

 **WARNING**

Danger to life due to fire when failing to observe tightening torque specifications on live bolted connections

Failure to follow the specified tightening torques reduces the ampacity of live bolted connections and the contact resistances increase. This can cause components to overheat and catch fire. Death or lethal injuries can result.

- Ensure that live bolted connections are always tightened with the exact tightening torque specified in this document.
- Only use suitable tools when working on the device.
- Avoid repeated tightening of live bolted connections as this may result in inadmissibly high tightening torques.

 **WARNING**

Danger to life due to burns caused by electric arcs through short-circuit currents

Short-circuit currents in the battery can cause heat build-up and electric arcs. Heat build-up and electric arcs may result in lethal injuries due to burns.

- Disconnect the inverter and battery from voltage sources before performing any work on the battery-storage system.
- Remove watches, rings and other metal objects prior to carrying out any work on the battery.
- Use insulated tools and wear insulated gloves for all work on the battery.
- Do not place tools or metal parts on the battery modules or PDU.

 **WARNING**

Risk of injury due to the weight of the battery components

Injuries may result if the battery components are lifted incorrectly or dropped while being transported or installed.

- Transport and lift the battery components carefully. Take the weight of each individual component into account.
- Transport battery components individually only.
- Wear suitable personal protective equipment, at a minimum safety footwear with a non-slip sole and steel cap, for all work on the battery.

 **CAUTION**

Risk of burns due to hot battery modules

The battery modules in the battery rack can get hot during operation. Touching hot battery modules can cause burns.

- Keep the battery rack closed at all times during operation.
- Before opening the battery rack, wait until the battery modules have cooled down.

 **CAUTION**

Risk of injury due to sharp edges

The battery components contain sheet metal parts with sharp edges. Touching the sharp-edged sheet metal parts may result in injuries.

- Wear safety gloves for mounting and disassembling the battery.

NOTICE

Damage to the battery system due to sand, dust and moisture ingress

Sand, dust and moisture penetration can damage the products of the system and impair its functionality.

NOTICE

Damage to the product due to cleaning agents

The use of cleaning agents may cause damage to the product and its components.

- Clean all battery components with a dry cloth only.

NOTICE

Damage to the battery due to incorrect installation or connection

The PDU and battery modules can be damaged by incorrect installation or incorrect electrical connection.

- Install the PDU and battery modules in accordance with the specifications in this manual only.
- Make all electrical connections on the PDU and battery modules in accordance with the specifications in this manual only.

NOTICE

Damage to the battery due to short circuit

Incorrect assembly of the DC cables can trigger a short circuit. High currents due to short circuit lead to damage to the battery modules or PDU.

- Always connect red DC cables to the red DC terminals.
- Always connect black DC cables to the black DC terminals.
- Always replace damaged battery modules without delay.

NOTICE

Damage to the battery modules due to moisture or corrosive substances

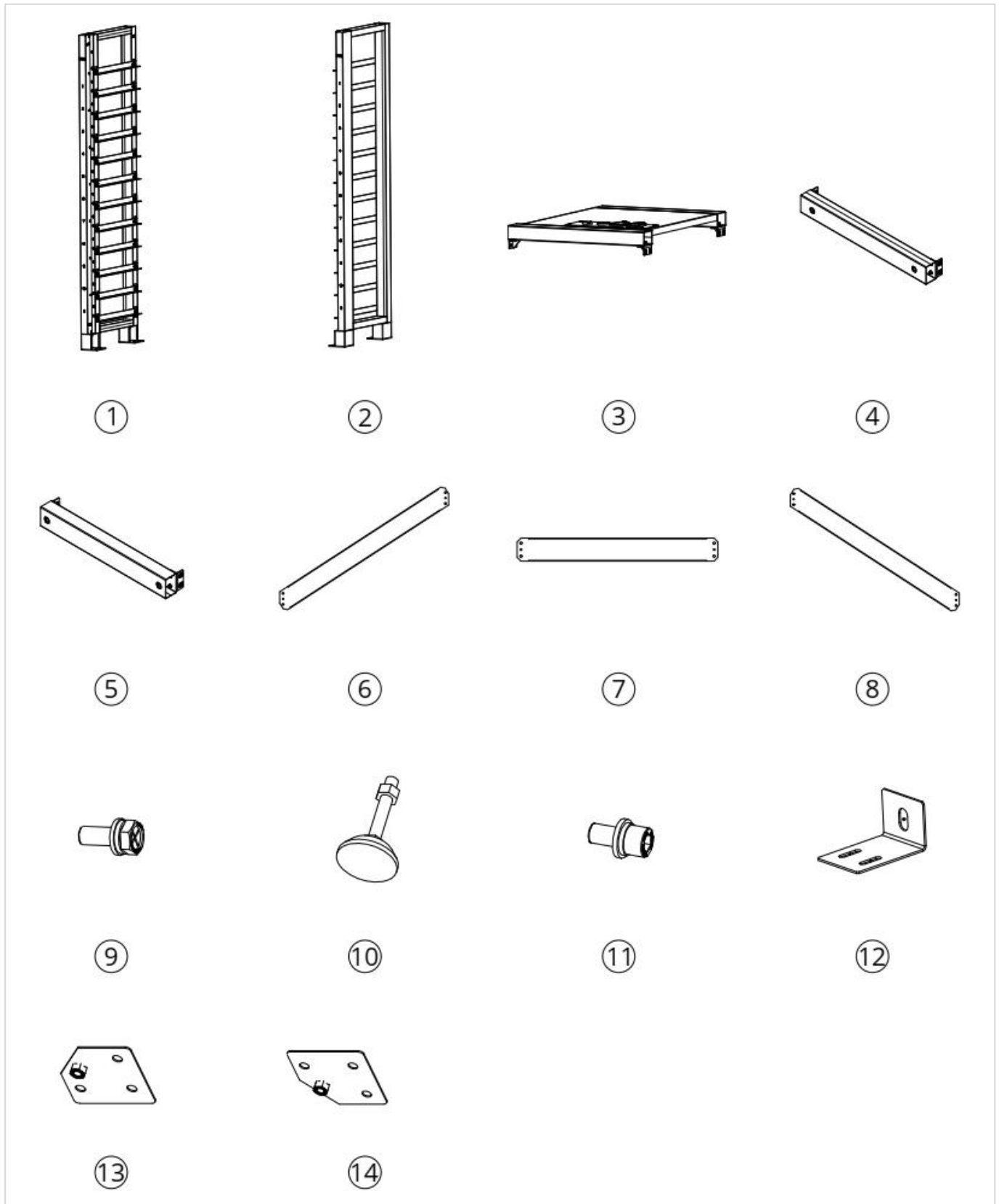
Moisture or corrosive substance penetration can damage the product and impair its functionality.

- Do not expose battery modules to rain and do not immerse in liquid.
- Do not expose battery cells to corrosive substances (e.g., ammonia, salt).

3. Scope of Delivery

3.1. Scope of Delivery of the Battery Rack

Check the scope of delivery for completeness and any externally visible damage. Contact the Service if the delivery is incomplete or damaged. Never commission the battery if components are damaged.

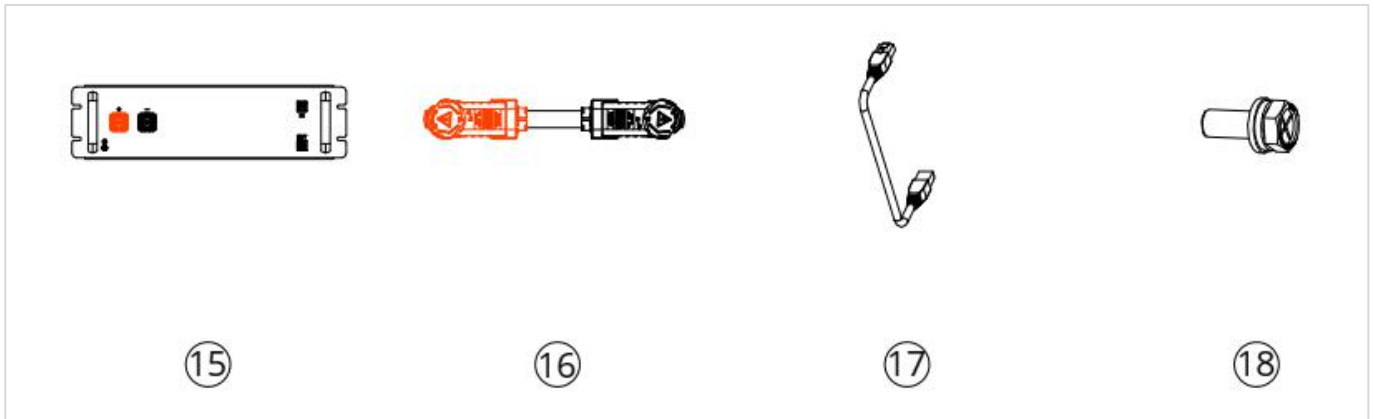


Position	Quantity	Designation
①	1	Left main bracket component
②	1	Right main bracket component
③	1	Top cover component
④	1	Front bottom beam
⑤	1	Rear bottom beam
⑥	1	Left diagonal brace
⑦	1	Horizontal brace
⑧	1	Right diagonal brace
⑨	35	M6×16 cross recessed hexagon head bolt
⑩	4	Feet
⑪	14	M12×25 Hexagon socket head bolt
⑫	2	Wall mounting component
⑬	2	Left base plate unit
⑭	2	Right base plate unit

Note: There are two ways to assemble a battery rack.

3.2. Scope of Delivery of the Battery Module

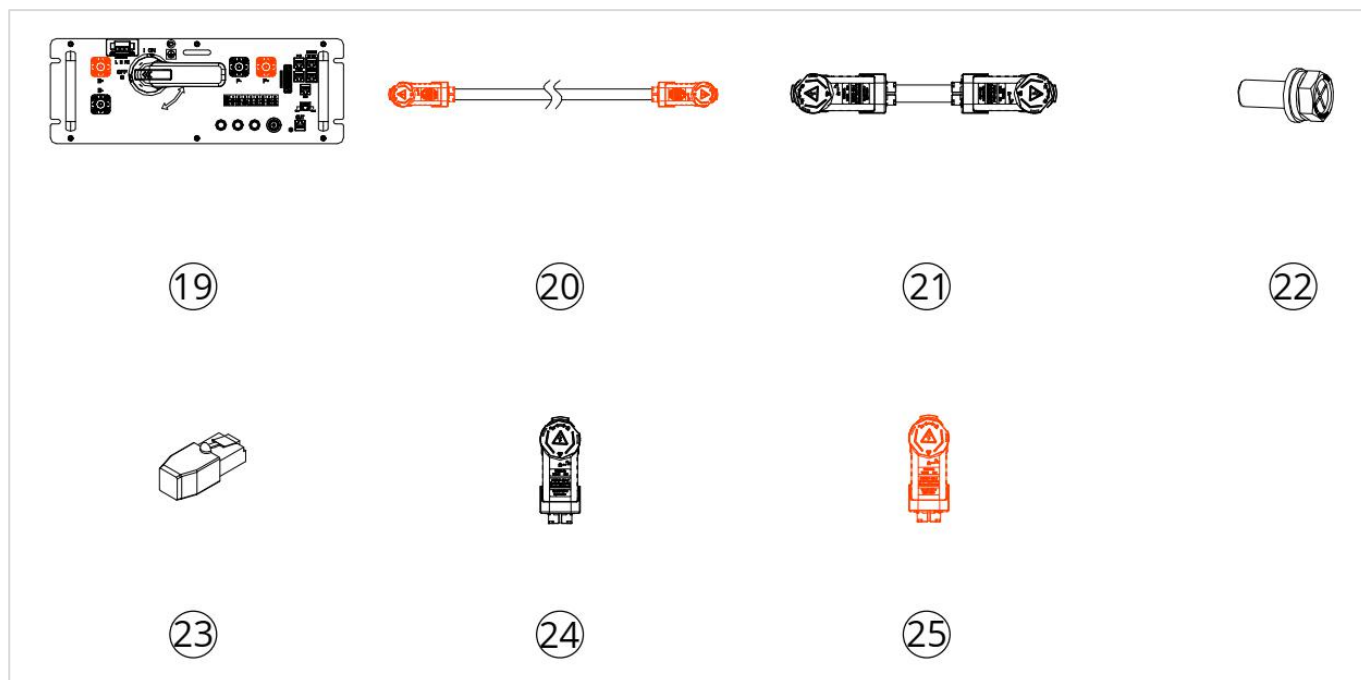
Check the scope of delivery for completeness and any externally visible damage. Contact the Service if the delivery is incomplete or damaged. Never commission the battery if components are damaged.



Position	Quantity	Designation
⑮	1	Battery module
⑯	1	DC cable (with one orange connector and one black connector)
⑰	1	Communication cable
⑱	5	M6×16 cross recessed hexagon head bolt

3.3. Scope of Delivery of the PDU

Check the scope of delivery for completeness and any externally visible damage. Contact the Service if the delivery is incomplete or damaged. Never commission the battery if components are damaged.



Position	Quantity	Designation
19	1	PDU
20	1	DC cable (with two orange connectors)
21	1	DC cable (with two black connectors)
22	5	M6×16 cross recessed hexagon head bolt for fixing the battery module
23	1	Terminal resistor (white)
24	1	Negative power connector (black)
25	1	Positive power connector (orange)

4. Product Overview

4.1. Model Description

This document involves the product model: Battery-Max LiteIn 30, 37.5, 45, 52.5, 60, 67.5, 75, 82.5.

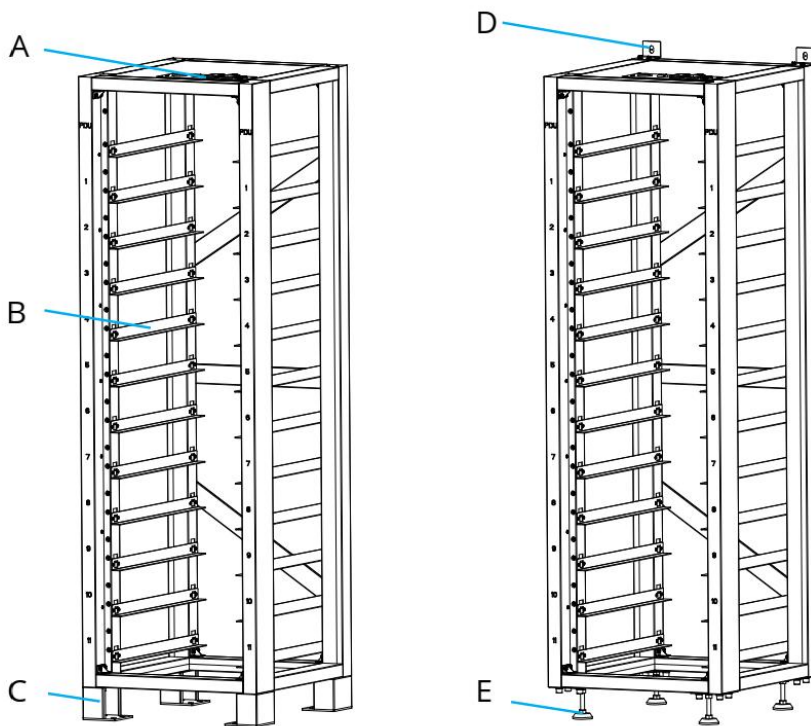
4.2. Product Introduction

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.

One Battery-Max LiteIn provides capacities of 30 to 82.5 kWh. Connecting up to 32 Battery-Max LiteIn in parallel allows for system capacities up to 2.64 MWh.

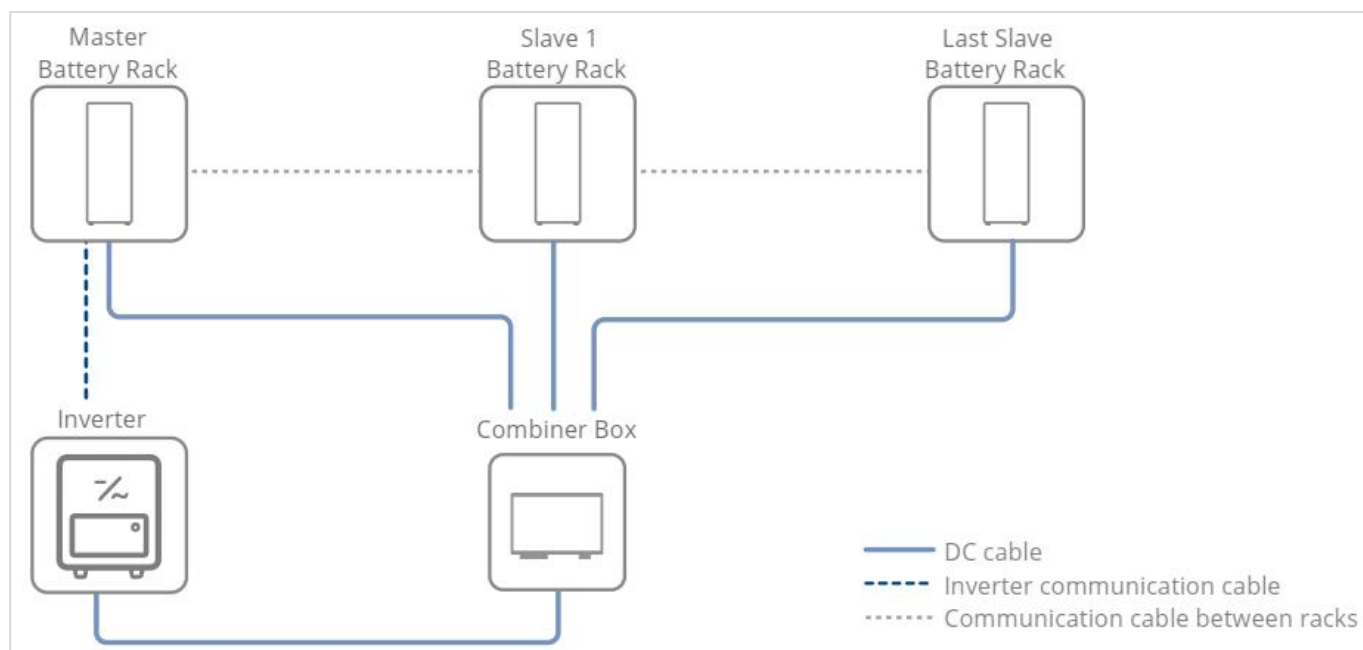
Note: Four to eleven battery modules could be installed in one rack and the quantity of the battery modules per rack should be equal when multi racks are parallel installed.

4.3. Design of the Battery Rack



Position	Designation
A	Wiring hole
B	Sliding rails
C	Foot pier
D	Wall mounting component
E	Feet

4.4. Modular Extension of the Battery



The energy content can be extended by operating up to three battery racks via a common combiner box and connecting them to the inverter. The PDU of the master battery rack controls and monitors the entire battery-storage system. The PDU of the other slave battery racks act as secondary battery racks and follow the instructions of the master battery rack.

4.5. Alarm LED Signals of the PDU

The LED on the PDU indicates the battery operating state.

Battery Status	Red LED signal ●	Yellow LED signal ●	Green LED signal ●
Normal	Off	Off	On
Alarm	Off	On	Off
Shutdown due to fault	On	Off	Off
Shutdown failed	On	Off	On

4.6. LED Signals of the PDU

Battery Status	LED signal
Normal	Blinking for a cycle of 1 second
Shutdown	Off
Black start	Blinking for 5 cycles with a cycle of 0.4 second (0.2s is on, 0.2s is off)
Wi-Fi reset	Blinking for 5 cycles with a cycle of 0.4 second (0.2s is on, 0.2s is off)
Shutdown failed	On

4.7. Interface

BYD Max Lite

BYD Max Lite is an app for Android and iOS system devices which can be downloaded from Google Play or App Store.

With BYD Max Lite, you can update the firmware, configure the battery system, read the battery status and events, download logs, etc.

BYD Max Lite Plus








BYD Max Lite Plus is a PC application which can be downloaded from our website: www.bydbatterybox.com or www.bydenenergy.com.

With BYD Max Lite Plus, you can configure and diagnose the battery system, read the general battery status information and events, update the firmware, download historical events, etc.

Be Connect Monitoring

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

4.8. Symbols on the Battery

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 team (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.
	UKCA marking The product complies with the regulations of the applicable laws of England, Wales and Scotland.
	This side up.
	Handle with care.



Keep dry.



Do not press the top.



Keep the battery modules away from open flame or ignition sources.



Beware of electrical shock.



Beware of the 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.

5. Transporting the battery

QUALIFIED PERSON

This section contains safety information that must be observed at all times when transporting the battery.

WARNING

Risk of injury due to the weight of the battery components

Injuries may result if the battery components are lifted incorrectly or dropped while being transported or installed.

- Transport and lift the battery components carefully. Take the weight of each individual component into account.
- Transport battery components individually only.
- Wear suitable personal protective equipment, at a minimum safety footwear with a non-slip sole and steel cap, for all work on the battery.

CAUTION

Risk of injury due to inappropriate transport of the battery rack

Inappropriate transport or insufficient transport securing devices can cause the battery rack to slip or tip over. The battery rack can cause injuries if it slips or tips over during transport.

- Transport and lift the battery rack carefully. Take the weight of the battery rack into account.
- Wear suitable personal protective equipment, at a minimum safety footwear with a non-slip sole and steel cap, for all work on the battery.
- Position the battery rack upright in the vehicle and prevent it from slipping.
- Secure the battery rack against slipping and tipping over with restraining straps.

NOTICE

Damage to the battery due to transporting the battery rack with battery modules installed

Transporting the battery rack with battery modules installed can cause mechanical overload. Mechanical overload can damage the battery.

- Always transport the battery rack and battery modules separately.
- Never move the battery rack with battery modules installed.

Transport and installation with at least two people

The battery components weigh up to 65 kg and therefore are not suitable for transport by one person.

- Transport and install the battery components with at least two people.
- Use suitable transport means of transport, e.g., hand truck or crane. Do not damage the enclosure of the battery components.

All requirements of the Dangerous Goods Ordinance on Road, Rail, and Inland Navigation and the Convention on the International Carriage of Dangerous Goods by Road must always be complied with:

- Only trained and instructed personnel are allowed to transport the battery modules on public roads. The instruction must be documented and repeated.
- Smoking is not permitted in the vehicle during the journey.

- Smoking is not permitted in the vehicle itself or in the immediate vicinity during loading and unloading.
- Two tested fire class D metal fire extinguishers (minimum capacity 2 kg) and one set of hazardous goods equipment in accordance with the Convention on the International Carriage of Dangerous Goods by Road must be carried in the vehicle.
- The outer packaging of the battery module must not be opened during transport.

6. Installation and Preparing the Connection

6.1. Requirements for installation

6.1.1. Requirements for the Battery Installation Site

WARNING

Danger to life due to fire or explosion

Despite careful construction, electrical devices can cause fires. This can result in death or serious injury.

- Do not mount the product in areas containing highly flammable materials or gases.
 - Do not mount the product in potentially explosive atmospheres.
-
- The installation location must be suitable for the weight and dimensions of the battery.
 - The surface at the installation site must be sufficiently dry, horizontal and flat.
 - The installation site can not be exposed to direct solar irradiation, snow and rain water.
 - There must be no heat sources in the immediate vicinity of the installation site.
 - All ambient conditions must be met.
 - A homogeneous temperature distribution within the battery room must be guaranteed and the ambient temperature should be between -10 °C and +50 °C.
 - The ambient humidity should be between 5% and 75% (non-condensing).
 - The installation site must be less than 3000 m above mean sea level. If you would like to use the battery at altitudes above 3000 m, contact service team.
 - On flood plains, the installation site must be elevated and always protected from contact with water.
 - The installation site must meet the requirements of the local fire protection regulations.
 - During transport, the available height must always be greater than the tilt dimension of the battery rack.

6.1.2. Requirements for Installation Space

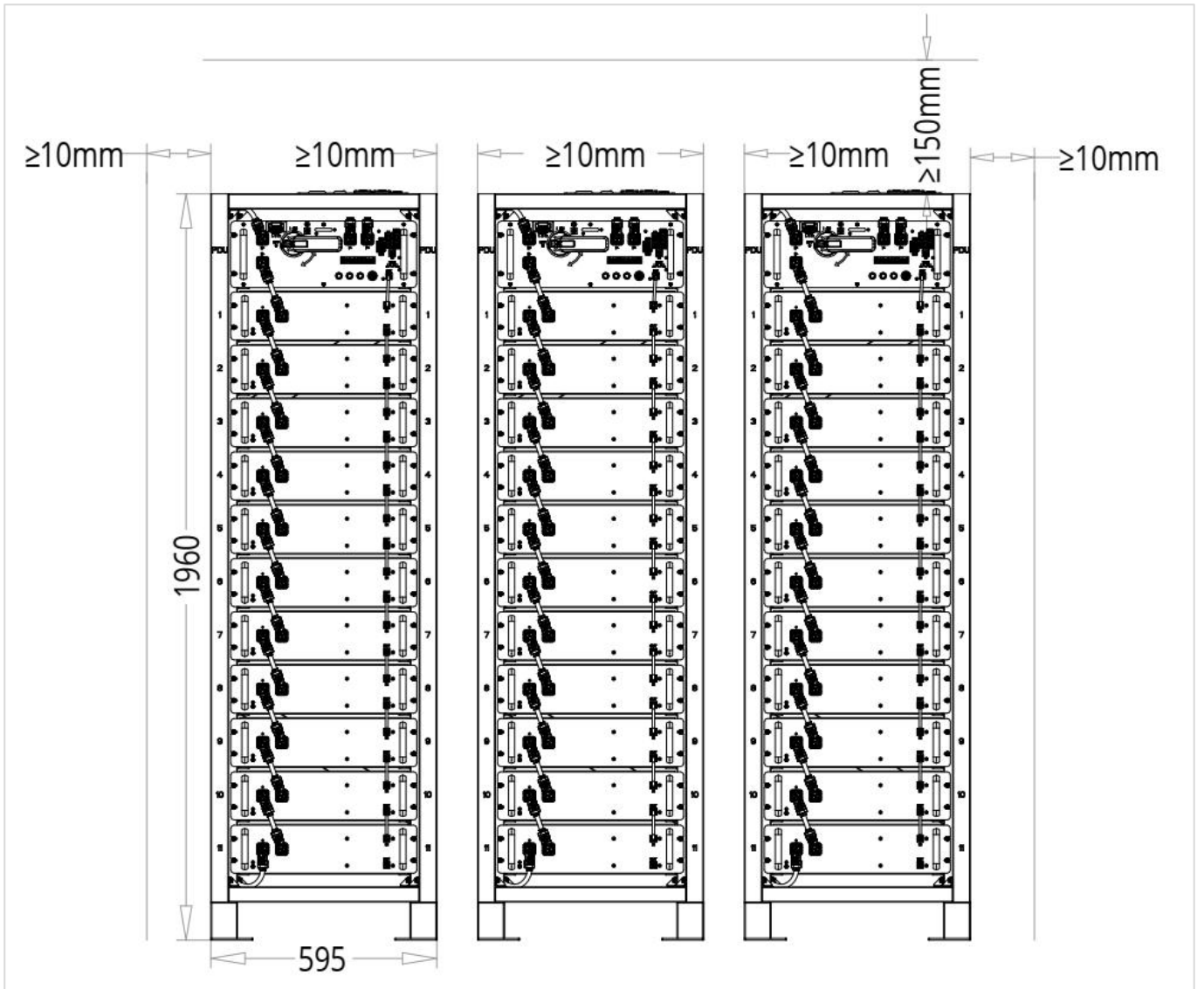
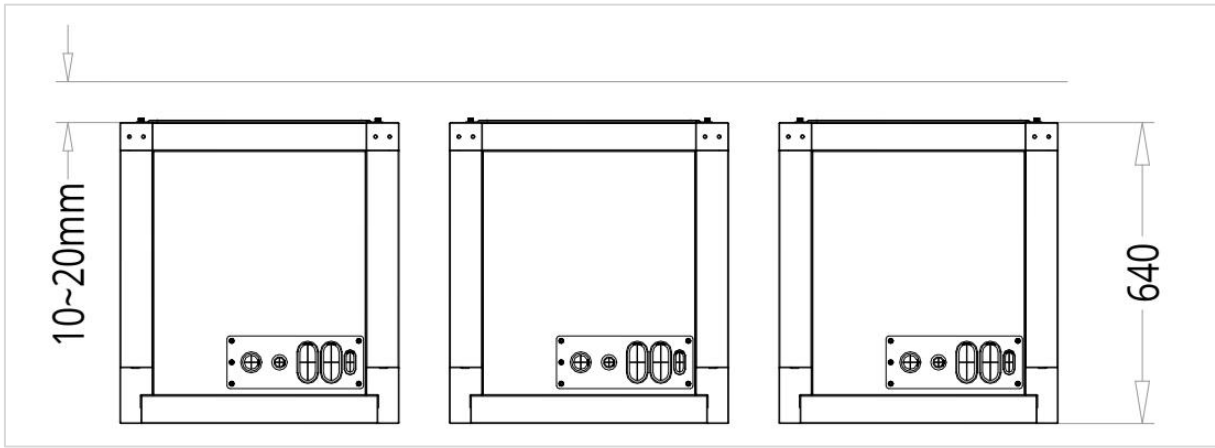
NOTICE

Do not place a battery rack under an inverter

If a battery rack is placed under an inverter, the waste heat produced by the inverter may be blown behind the battery rack. It is therefore not permitted to place a battery rack under an inverter.

In a system configuration with a number of battery racks, it is recommended to install the combiner box centrally between the battery racks so that the DC cables to each battery rack can be kept as short as possible and the same length. Take the length of the supplied DC cables into account.

Battery racks can be placed directly next to each other with a minimum clearance of 10 mm required between them. A clearance of 10–20 mm between the battery rack and the wall must be observed.

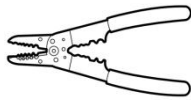


6.2. Tools

The following tools may be required during the installation process :



Marker



Wire Stripper



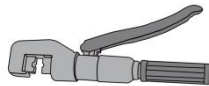
Phillips Screwdriver Bit



Torx screwdriver Bit



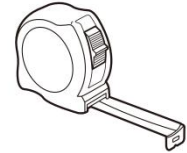
Flat-Head Screwdriver



Hydraulic pliers



Drill



Tape Measure



Ladder



Forklift



Torque Wrench



Network Wire Clamp



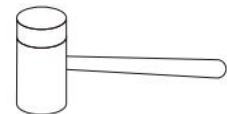
hot wind



Socket Wrench



Multimeter



Rubber Mallet

6.3. Safety Gear

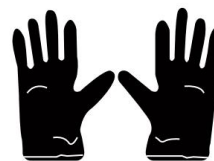
Wear the following safety gear when dealing with the battery system.



Dust Mask



Safety Goggles



Safety Gloves



Safety Shoes

6.4. Additionally Required Installation Materials (Not Included In the Scope of Delivery)

a)	Live wire, neutral wire, and earth wire of external mains	1	10 AWG / 6 mm ²
b)	Network cable	3	CAT5 or CAT5 higher
c)	Power cable to inverter	2	3 AWG / 25 mm ²
d)	ground cable	1	6 AWG / 16 mm ²
e)	OT terminal	1	suitable for M6 screw
f)	Heat shrink tubing	1	

6.5. Mounting the Battery Rack

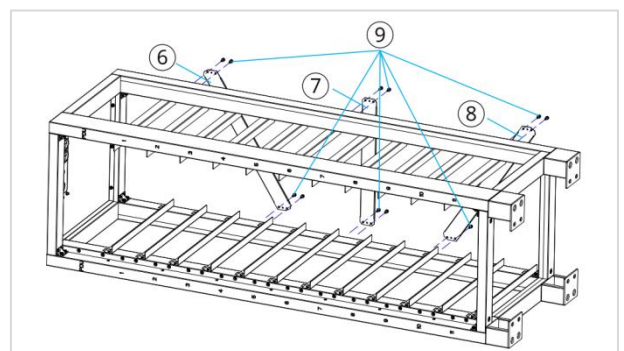
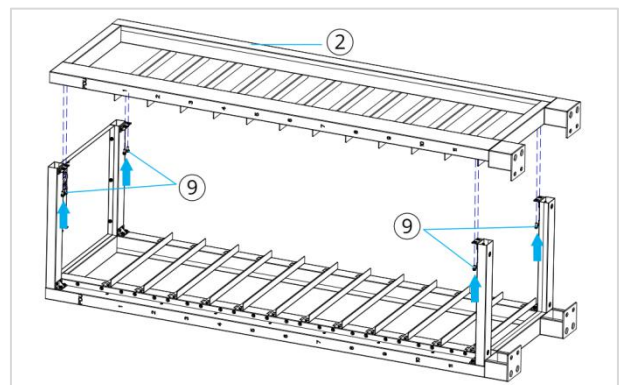
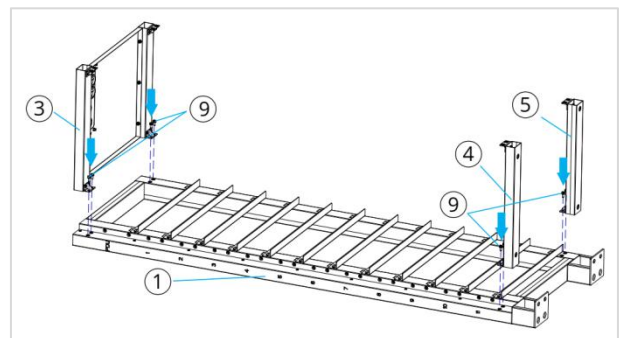
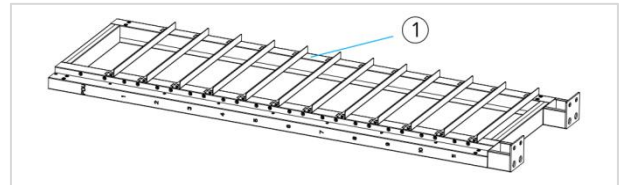
6.5.1. Assembling the Battery Rack

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There are two methods to assemble a battery rack. The first assembly method is as follows:

Procedure:

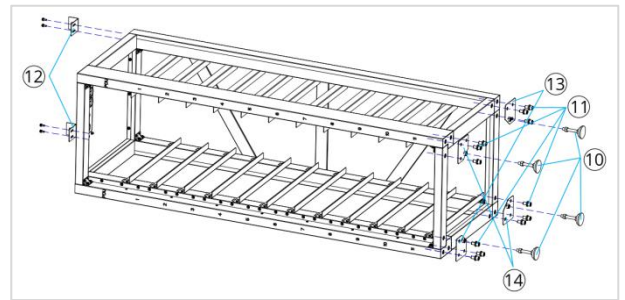
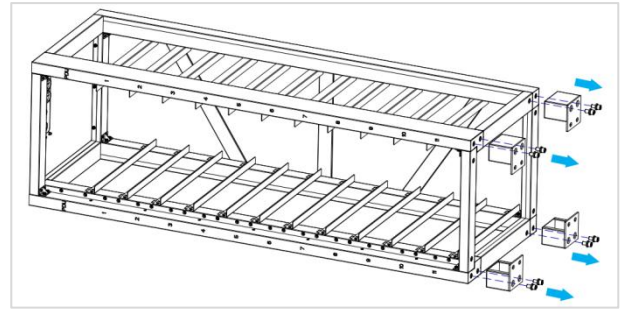
1. Place the left main bracket component flat on the foundation.
2. Fix the top cover component, front bottom beam, and rear bottom beam to the left main bracket component using M6×16 cross recessed hexagon head bolts.
3. Place the right main bracket component horizontally relative to the left main bracket component, and fasten it to the front bottom beam, rear bottom beam and top cover component using M6×16 cross recessed hexagon head bolts.
4. Fix the left diagonal brace, the horizontal brace and the right diagonal brace to the right main bracket component and the left main bracket component respectively using M6×16 cross recessed hexagon head bolts.



The second assembly method could be read below:

Procedure:

1. Based on the first assembly method, place the rack horizontally on the foundation, loosen the screws on all the feet, and then remove all the feet.
2. Fix the wall mounting component and the top cover component using M6×16 cross recessed hexagon head bolts.
3. Install and fix the left and right base plate units on the base of the rack.
4. Install all the feet of the rack.



6.5.2. Positioning the Battery Rack

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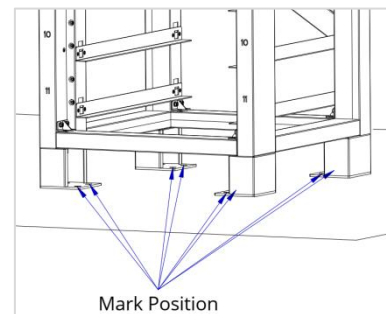
For the first method of assembling the rack, please follow the steps below to position the rack:

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

- Eight suitable screw anchors (M12×70 is recommended) for positioning the battery rack.

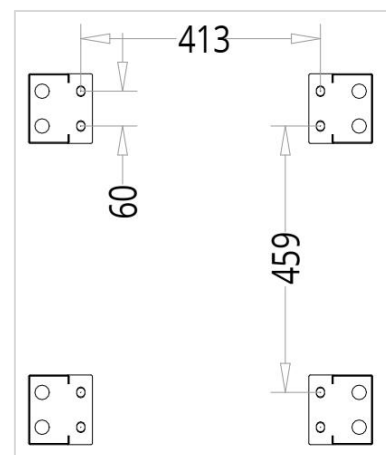
Procedure:

1. Move the battery rack to the intended position with suitable equipment. (Forklift recommended).
2. Mark the position of the drill holes shown on the right drawing.

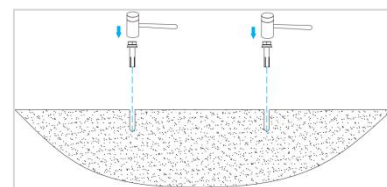


3. Move the battery rack aside and then drill holes at the marked locations.

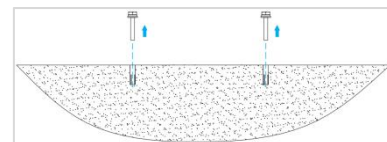
Note: There are eight holes to be drilled here, and the diameter and depth of the holes need to be matched with M12 x 70 expansion screws. (M16 drill bit is recommended).



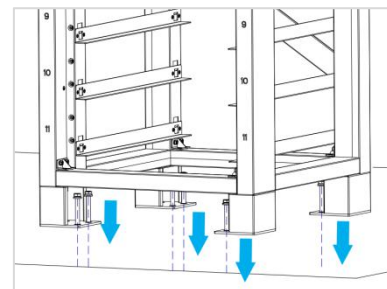
4. Hammer the eight expansion screws into the holes with a rubber mallet.



5. Loosen the screw part of the expansion screw and remove it.



6. Move the rack to the initial position to make the mounting holes of the foot piers are aligned with the drilled holes, and then tighten the screws with a socket wrench (suitable for M12 screw).



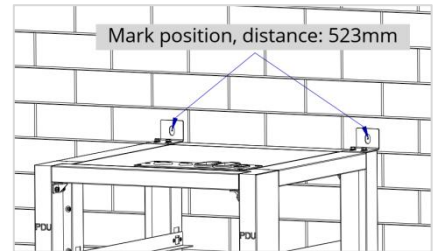
For the second method of assembling the rack, please follow the steps below to position the rack:

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

- Two suitable screw anchors (M12×70 is recommended) for positioning the battery rack.

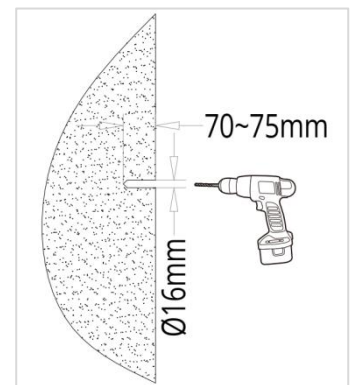
1. Move the battery rack to the intended position with suitable equipment. (Forklift is recommended).
2. Mark the position of the drill holes shown on the right drawing. Please pay attention that there may be power cables or other supply lines (e.g., gas or water) routed in the wall. Ensure that no lines are laid in the wall, which could be damaged when drilling holes.

Note: It is recommended that an equipment ladder be used to assist in completing the drilling operation.

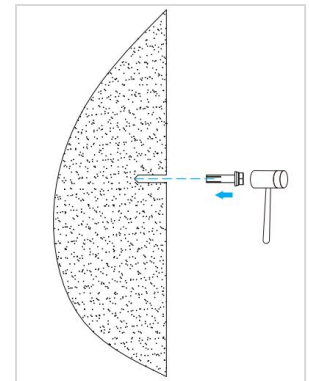


3. Move the battery rack aside and then drill holes at the marked locations.

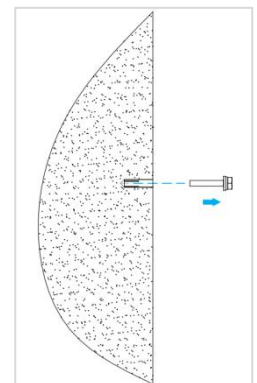
Note: There are two holes to be drilled here, and the diameter and depth of the holes need to be matched with M12 x 70 expansion screws. (M16 drill bit is recommended).



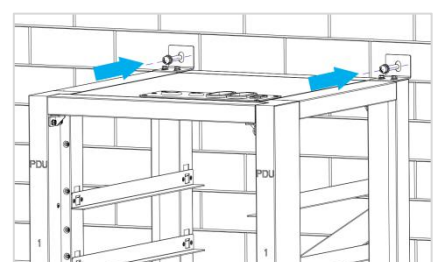
4. Hammer the two expansion screws into the holes with a rubber mallet.



5. Loosen the screw part of the expansion screw and remove it.



6. Move the rack to the initial position to make the mounting holes of the wall mounting component are aligned with the drilled holes, and then tighten the M12 x 25 screws.



6.6. Installing the Battery Modules

6.6.1. Notes for Unpacking and Handling the Battery Module

Before unpacking the battery module, please check whether the packaging and battery module are damaged. If damaged, please contact BYD or BYD authorized service partner.

CAUTION

- One battery module weight is about 65 kg.
- When moving the module, prevent the module from falling and being damaged.
- It is recommended to use a lift device to move and install the battery module(s).
- During the operation, be sure to wear safety gears, such as safety shoes, safety helmets, protective gloves, etc.

6.6.2. Measure the Voltage of All the Battery Modules

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Before installing the battery modules, please measure the voltage of each battery module and record it in the **checklist**, which can be see in Appendix 2.

Refer to the following table to find out the SOC corresponding to the above measured voltage. Only when the SOC difference of all battery modules is within 5% can be installed. Otherwise, it is not allowed.

SOC	23%	24%	25%	26%	27%	28%	29%	30%	31%	32%	33%
Voltage/V	78.96	79.1	79.2	79.22	79.3	79.34	79.38	79.42	79.42	79.44	79.44

6.6.3. Install the Battery Modules

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NOTICE

Potential for damage to sliding rails due to battery modules

The battery modules can knock against sliding rails when inserting the battery modules into the battery rack. This can damage the sliding rails.

- Always move the battery modules slowly and carefully when inserting them into the battery rack.

NOTICE

Potential for damage to battery modules due to incorrect insertion of battery modules

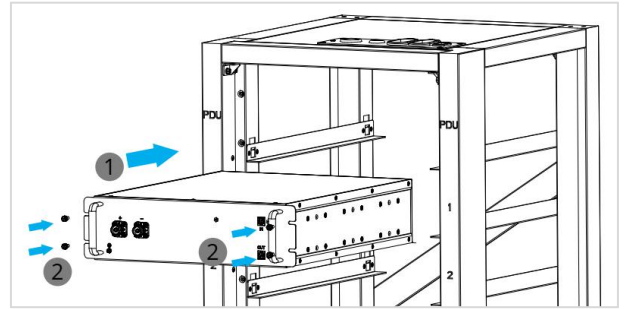
The weight of a battery module may lead to a mechanical overload of another battery module. This overload will result in damage to the battery module.

- Never rest battery modules on already mounted battery modules during installation.
- Use a suitable lifting aid to mount the battery modules.

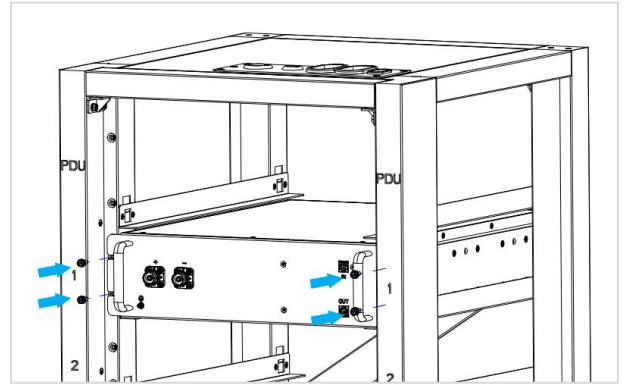
A rack supports up to 11 modules, and at least 4 battery modules need to be installed (from top to bottom). Note that the battery modules are mounted one below the other in the battery rack.

Procedure:

1. Insert the first battery module in the two sliding rails of the second mounting level from the top. Slide in the battery module carefully.



2. Fix the first battery module using four M6×16 screws with a sleeve electric screwdriver (bit model A/F10) (Torque: 69±13 kgf.cm)



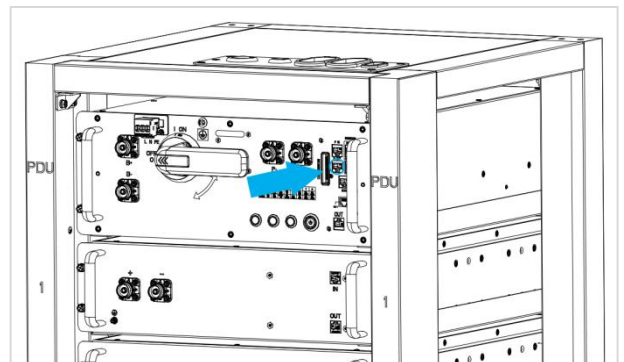
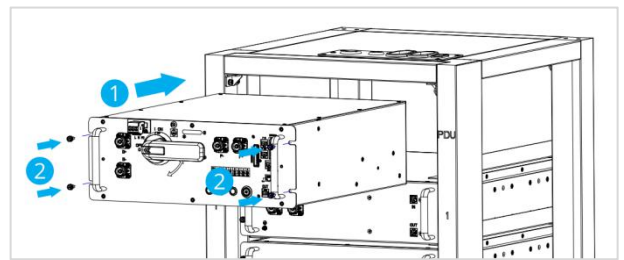
3. Mount the rest of the battery modules, working from the the top to bottom. Proceed as described for the first battery module.

6.7. Installing the PDU

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Procedure:

1. Before installing the PDU, record its serial number in the **checklist**, which can be see in Appendix 2. The serial number can be found on a label on the front of the PDU.
2. Insert the PDU at the topmost sliding rail in the battery rack. Slide in the PDU carefully.
3. Fix the PDU using four M6×16 screws with a sleeve electric screwdriver (bit model A/F10) (Torque: 69±13 kgf.cm)
4. Ensure that the terminal resistor (gray) on the PDU is plugged into the "P OUT" port. The battery system will not work without this terminal resistor (gray).



7. Electrical Connection

7.1. Precautions

DANGER

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.

DANGER

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

Overvoltage (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 communication cables if there is no surge protection. Touching live parts and cables results in death or lethal injuries due to electric shock.

- When laying the network cables or other communication cables indoors, 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 to the building.

WARNING

- Check and ensure that the polarity of all input cables is correct before wiring.
- Do not forcibly pull any wires or cables during electrical installation, as this may compromise the insulation performance.
- Ensure that all cables and wires have sufficient space for any bends.
- Adopt the necessary auxiliary measures to reduce the stress applied to cables and wires.
- Check carefully that the connection is correct and secure after completing each connection.

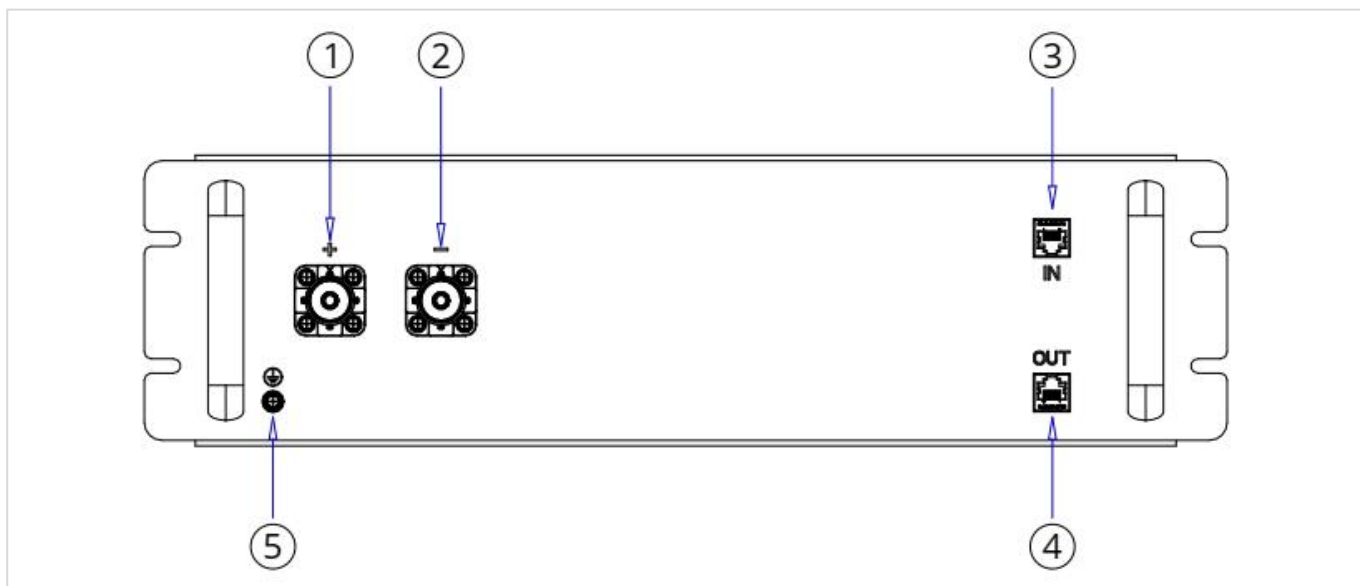
NOTICE

Damage to the electrical equipment in the rack, or impair their functionality due to sand, dust and moisture ingress.

- Perform electrical connection when there is no sandstorm and the weather is fair and dry.

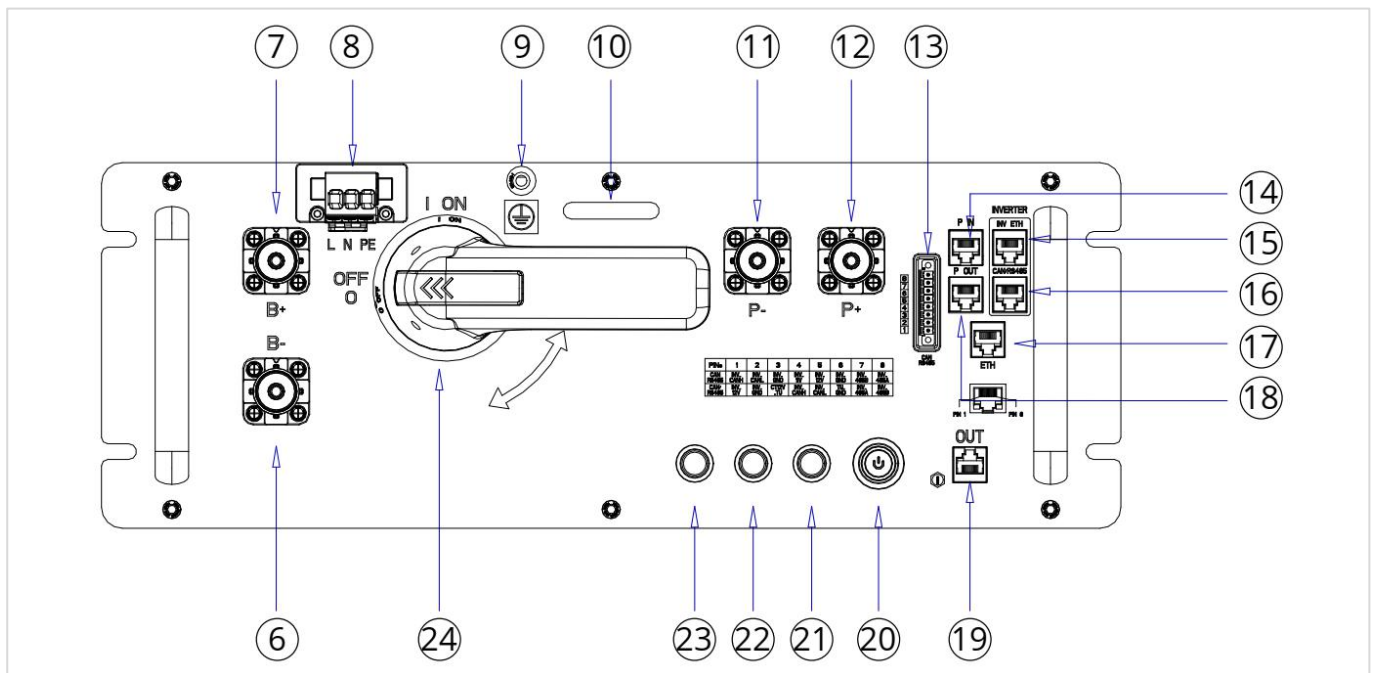
7.2. Battery Module and PDU Wiring

7.2.1. Battery Module Connection Interface Instruction



Position	Designation
①	"+" port
②	"-" port
③	BIC Communication Port
④	BIC Communication Port
⑤	Grounding Port

7.2.2. PDU Interface Instruction



Position	Designation
⑥	B+ port
⑦	B- port
⑧	Port of the auxiliary AC power supply
⑨	Port for the ground cable connection
⑩	Wi-Fi module
⑪	P- to inverter
⑫	P+ to inverter
⑬	8-pin terminal blocks for connecting an inverter's communication cable
⑭	"P IN" port for parallel communication
⑮	"INV ETH" port for inverter communication
⑯	"CAN/RS485" port for inverter communication
⑰	"ETH" port for Ethernet cable connection
⑱	"P OUT" port for parallel communication
⑲	"OUT" port for the BIC communication
⑳	LED button
㉑	Green alarm LED
㉒	Yellow alarm LED
㉓	Red alarm LED
㉔	Handle switch

7.3. Connecting a Ground Cable for the PDU

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To ensure safety and avoid electric shock, please connect the ground cable first.

Additional required materials (not included in the scope of delivery) :

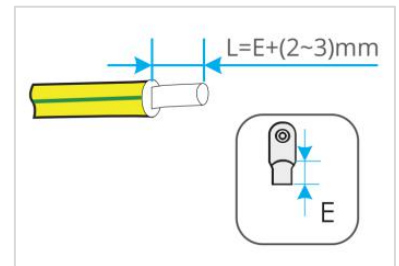
- One ground cable per battery rack

Cable requirements:

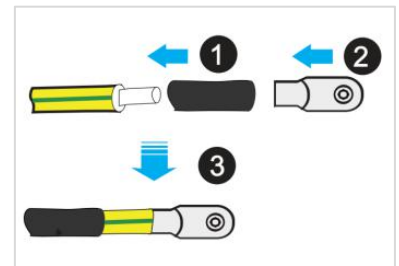
- Ground cable cross-section: 6 AWG/16 mm².
- OT terminal: suitable for M6 screw.

Procedure:

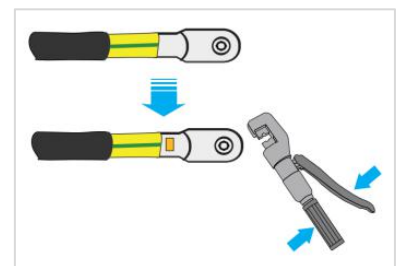
1. Strip the ground cable and make the Length (L on the following drawing) stripped 2-3 mm longer than the tube of the conductor.



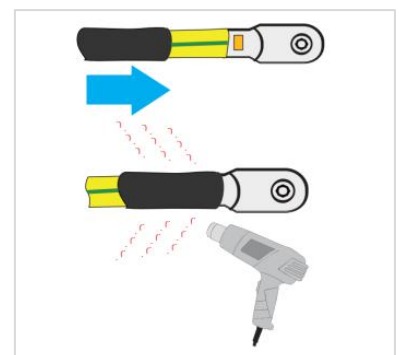
2. Get the cable through the heat shrink tubing and plug the OT terminal on the cable.



3. Squeeze the tube of the OT terminal with a pair of hydraulic pliers.



4. Get the heat shrink tubing back to cover the connection part of the cable and the OT terminal.
5. Blow the heat shrink tubing with hot wind.

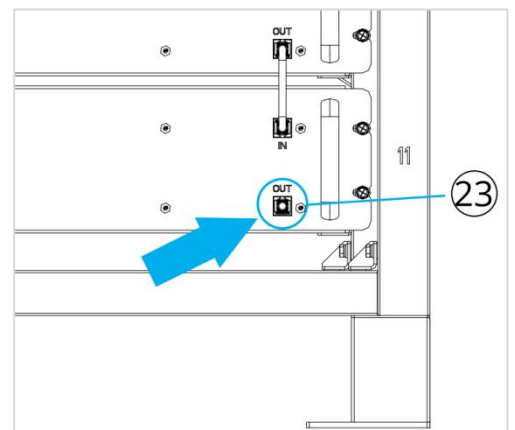
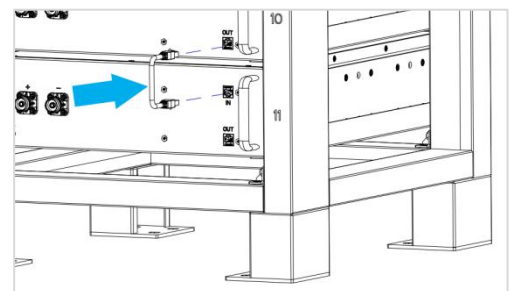
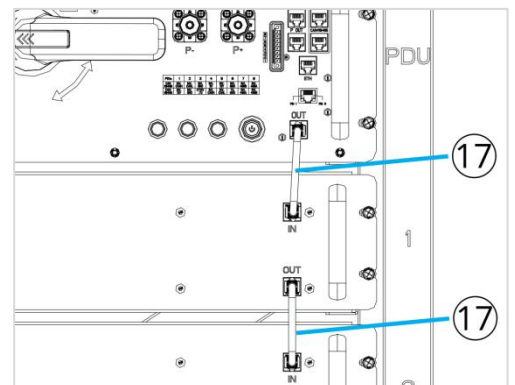
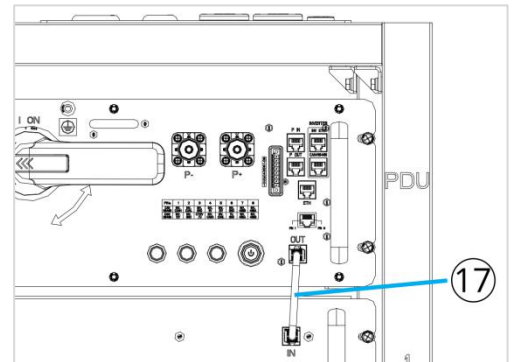


6. Take out the M6 screw and then get it through the OT terminal. Tighten them with a with a sleeve electric screwdriver (bit model A/F10) (Torque: 7 Nm)

7.4. Connect the Communication Cable

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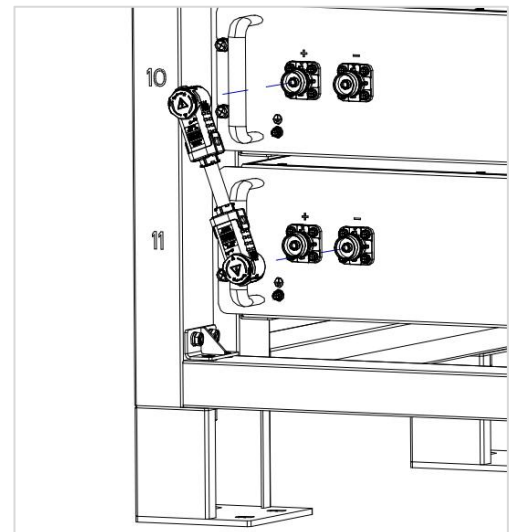
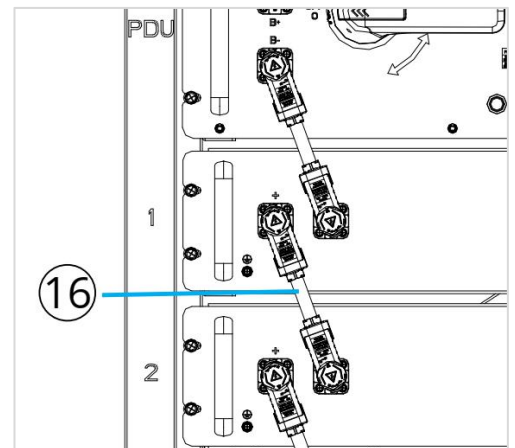
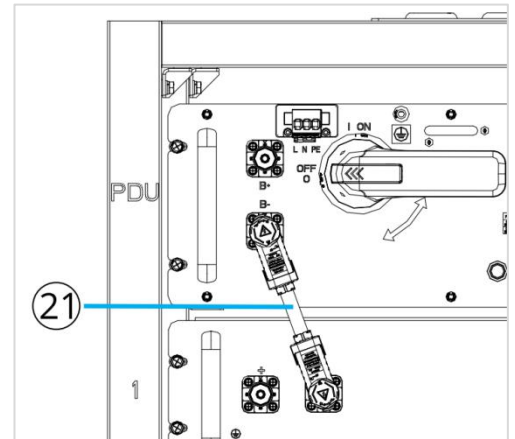
1. Plug one side of the the communication cable to the **"OUT"** port of the PDU.
2. Plug the other side of the communication cable to the **"IN"** port of the topmost battery module.
3. Plug one side of the communication cable to the **"OUT"** port of the topmost battery module.
4. Plug the other side of the communication cable to the **"IN"** port of the adjacent battery module of the topmost battery module.
5. Connect the communication cable of the rest battery modules, working from the the top to bottom. Proceed as described in procedure 3 and 4.
6. Insert the terminal resistor (white) into the **"OUT"** port of the bottom battery module.



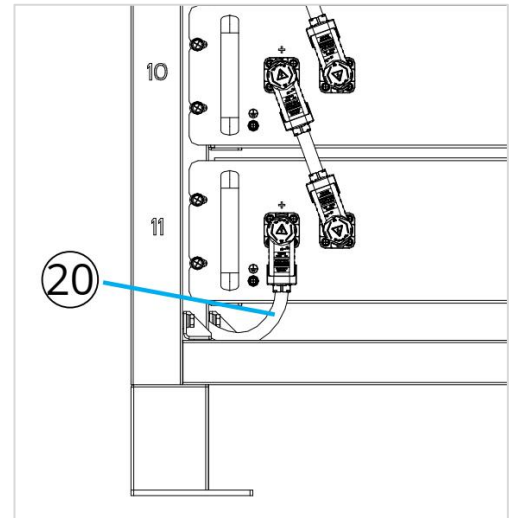
7.5. Connect the DC Cable

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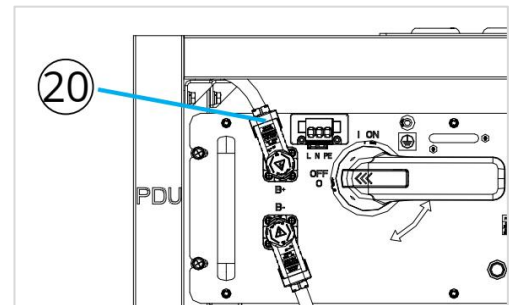
1. Plug one side of the DC cable (with two black connectors) to the "B-" port of the PDU.
2. Plug the other side of the DC cable (with two black connectors) to the "-" port of the topmost battery module.
3. Plug the orange connector of the DC cable (with one orange connector and one black connector) to the "+" port of the topmost battery module.
4. Plug the black connector of the DC cable (with one orange connector and one black connector) to the "-" port of the adjacent battery module of the topmost battery module.
5. Connect the DC cable (with one orange connector and one black connector) of the rest battery modules, working from the top to bottom. Proceed as described in procedure 3 and 4.



6. Plug one side of the DC cable (with two orange connectors) to the “+” port of the bottom most battery module.



7. Plug the other side of the DC cable (with two orange connectors) to the “B+” port of the PDU.



7.6. Power Cable Connection

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When two or three battery racks are connected in parallel, the positive power cable length of all the battery systems should be approximately equal, and so are the negative power cables. A combiner box or Y-Bridge connectors are needed to combine these cables. You can refer to Battery-Max LiteIn Combiner Box Basic Technical Requirement, which is available at our website. Please also follow the local, state, provincial, federal, or national laws, regulations, and instructions from the inverter manufacturer to choose the right combiner box or Y-Bridge connectors.

Additional required materials (not included in the scope of delivery) :

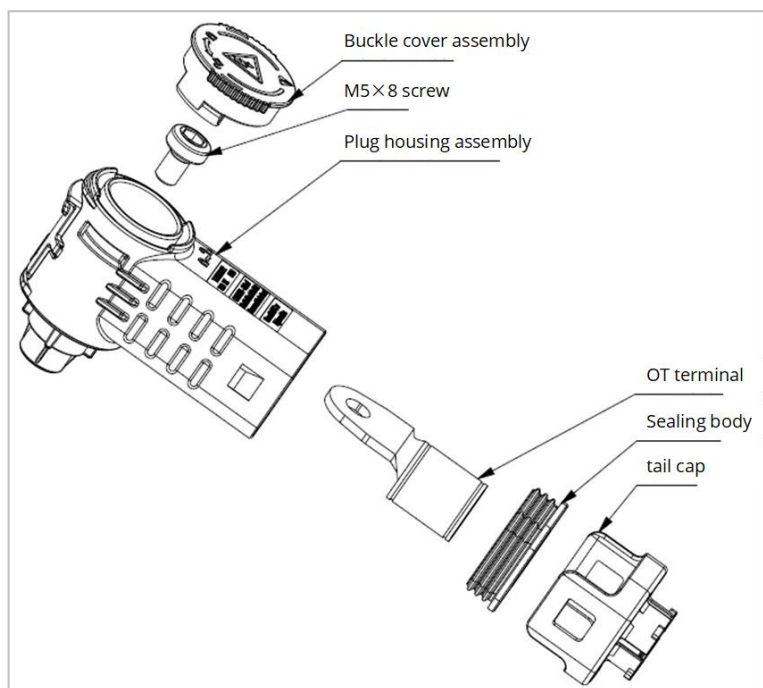
Two power cables per rack

Power cable requirements:

Conductor cross-section: 25~35 mm². The diameter of the cable should be 10.6 ± 0.4 mm . Follow the requirements of the inverter manufacturer.

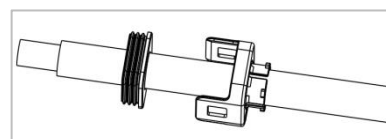
Insulation stripping length: 16.5±0.5 mm.

Power connector composition could see below:

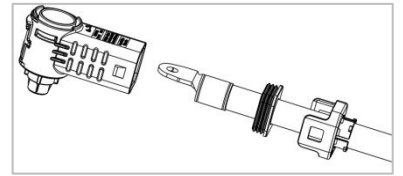


Procedure:

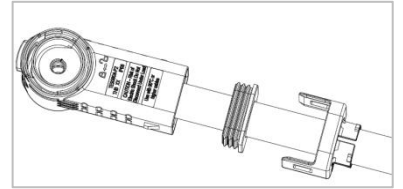
1. Before crimping, install the tail cap and sealing body on the wire in sequence and leave the crimping area open, as shown in right Figure.
2. Crimp the OT terminal.



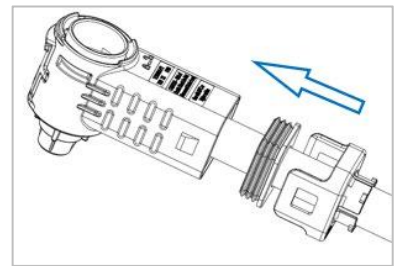
3. Insert the cable into the rear end of the plug housing assembly as shown in the right figure to make the bolt mounting hole of the plug housing assembly coincides with the circular hole of the OT terminal.



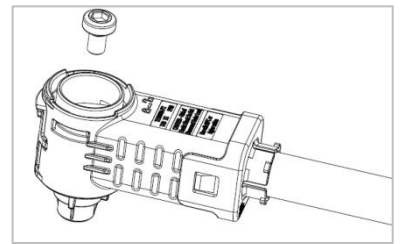
4. Install the sealing body and tail cap onto the housing of the plug housing assembly, making sure the tail cap is fully installed onto the housing and a "click" is heard.



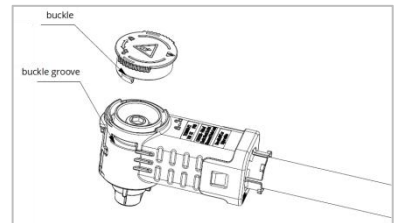
5. Tighten the OT terminal and the socket terminal using a M5×8 screw with a Torx electric screwdriver (T25) (Torque: 5-6 Nm).



6. Assemble the buckle cover assembly to the plug housing assembly. Note: the buckle should correspond to the buckle groove on the housing.

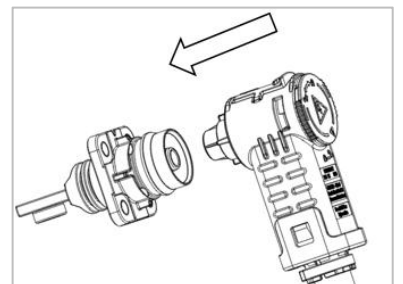
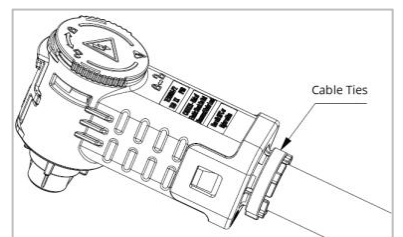


7. Tie the cable tie around the spring tabs on the tail cap.

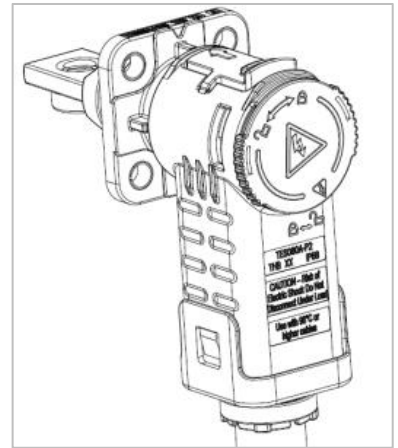


8. Plug the plug and socket together along the axis of the terminal (as shown in the right picture)

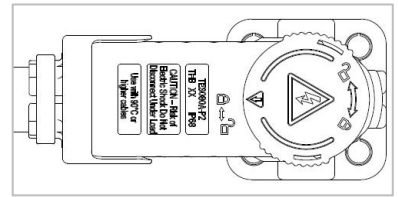
Note: Plugs and sockets can be plugged together at any angle of 360° along the axis



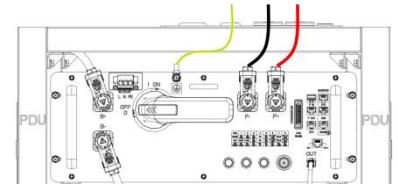
9. Push the plug until you hear a click.



10. Rotate the buckle cover so that the arrow points to the locked position, refer to the right drawing.



11. Put the power cables through the wiring hole.



7.7. Communication Cable Connection to an Inverter

⚠ QUALIFIED PERSON

The connection options with different inverters could be read in the Appendix 1.

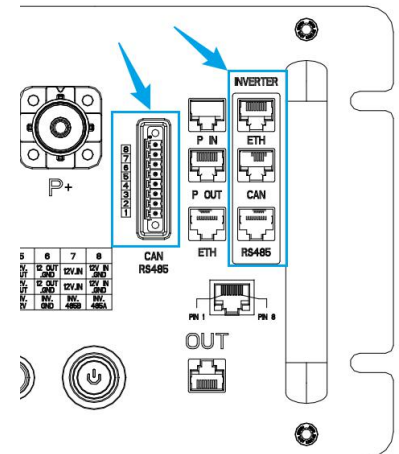
Additional required materials (not included in the scope of delivery) :

- One communication cable to an inverter

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 Pin designation of the communication interface of the PDU and the corresponding interface at the inverter, and decide whether to trim the communication cable.

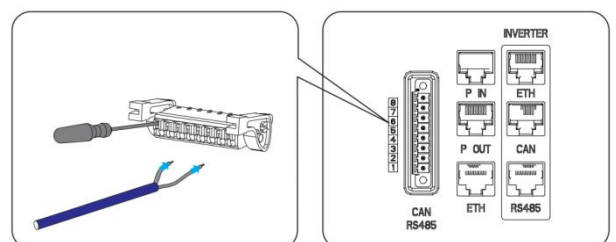
Pin	1	2	3	4	5	6	7	8
CAN RS485	INV_CAN H	INV_CAN L	INV_GND	INV_11V	INV_12V	INV_GND	INV_485B	INV_485A
CAN/RS485	INV_12V	INV_GND	CT12V_TU	INV_CAN H	INV_CAN L	TU_GND	INV_485A	INV_485B

Note: 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 the RJ45 plug of the communication cable to the corresponding RJ45 port.
3. Put the communication cable through the wiring hole.

The method to plug the data cable into the 8 pin terminal block:

1. Strip the communication cable by 50 mm.
2. Strip the insulation on the insulated conductors each by 6 mm. The CAN H and CAN L (or RS485A and RS485B) must be a twisted pair.
3. If necessary, trim unused insulated conductors flush with the cable sheath or fold it over the cable sheath.
4. Press the button with a flat-head screwdriver, as shown in the drawing.
5. Plug the conductors into the 8-pin terminal blocks. Pay attention to the assignment of the terminal block and communication connection on the inverter.
6. Make sure that the conductors are plugged into the terminal points tightly by pulling slightly on the conductors.
7. Put the communication cable through the wiring hole.



7.8. Network Cable Connection to External Router

QUALIFIED PERSON

The connection to the internet is not mandatory, but recommended.

Additional required materials (not included in the scope of delivery) :

- One network cable

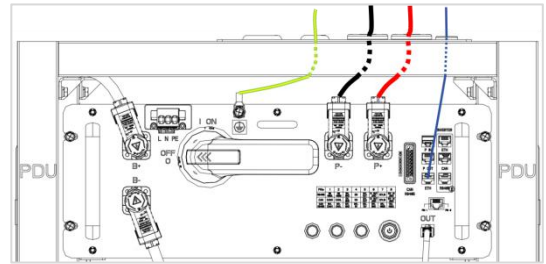
Communication cable requirements:

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 RJ45 plug of the network cable into the **“ETH”** port of the PDU.
2. Put the other side of the network cable through the wiring hole and then plug it to the **“LAN”** port of a router.



7.9. Auxiliary AC Power Supply Connection

QUALIFIED PERSON

When a battery module failure occurs, the battery system supports access to an external auxiliary AC power supply to power the PDU.

Please refer to the following auxiliary AC power supply parameter requirements:

Input voltage range	90~264 V AC
Input frequency	47~63 Hz
Maximum output power	105.6 W
Surge current	Cold start 60 A /230 V AC
Leakage current	<1 mA / 240 V AC

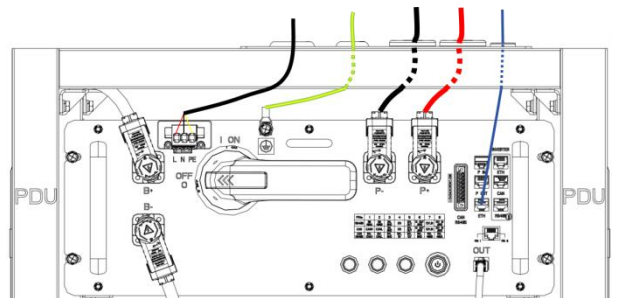
Additionally required mounting materials (not included in the scope of delivery):

live cable, neutral cable and ground cable

Cable requirements:

Conductor cross-section: 0.75~100 mm² (18~8 AWG)

Insulation stripping length: 16-18 mm



Procedure:

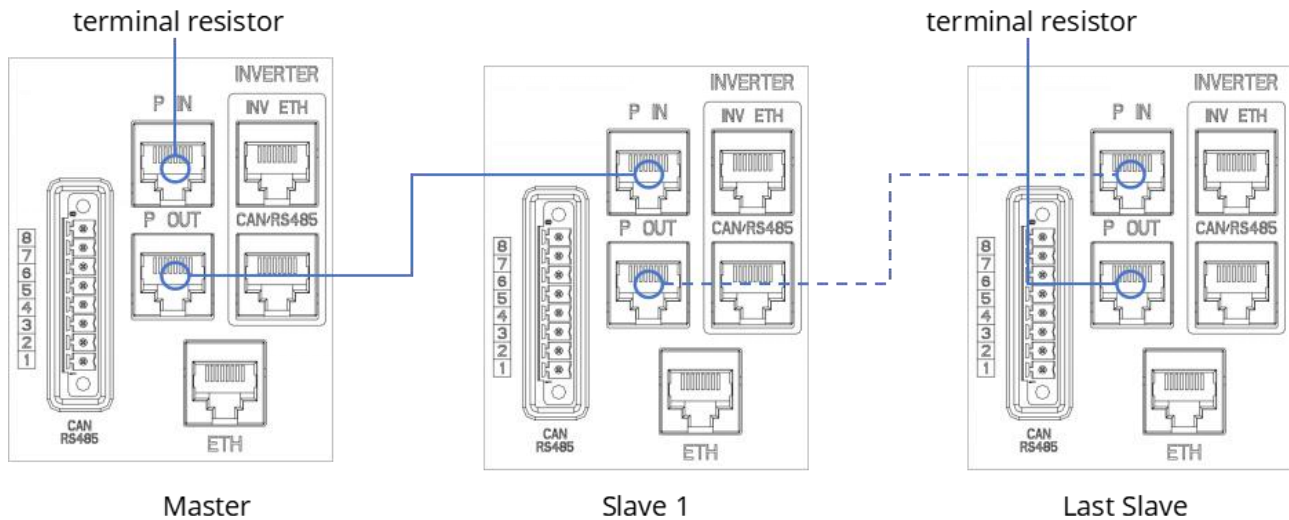
1. Strip the cable and make the length stripped 16-18 mm.
2. Push the terminal lever of the plug and pull terminal up and then insert the live cable, neutral cable and ground cable into the corresponding terminal point. Ensure that the conductors are plugged completely into the terminal points all the way to the insulation.
3. Pull the terminal of the plug and pull terminal up lever down. Ensure that the terminal points are allocated to the correct conductors.
4. Put the other side of the cable through the wiring hole.

7.10. Parallel Communication Connection between Battery Racks

QUALIFIED PERSON

This connection could only need to be made when **2 to 32** racks are connected in parallel.

The connection diagram of 2 to 32 battery systems could be read below.



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

One network cable per battery rack

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 RJ45 plug of the network cable to the **"P OUT"** port of the master battery rack.
2. Get the other end of the network cable through the wiring hole of the master rack and the first slave battery rack. And then plug the RJ45 plug to the **"P IN"** Port of the first slave rack.
3. Follow the above steps for the remaining racks.
4. Connect the network cable of the rest battery modules. Proceed as described in procedure 1 and 2.
5. Plug the terminal resistor (gray) into the **"P IN"** port of the master battery rack and the **"P OUT"** port of the last slave battery rack.

8. Commissioning

8.1. Switch On the Battery System

QUALIFIED PERSON

Notice: Make sure the handle switch is off before any commissioning operation.

Requirements:

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

Only after all the above requirements are confirmed, the battery system can be switched on.

Procedure:

1. Switch on the the air switch between the battery system and the inverter if there is any.
2. Rotate the handle switch 90° clockwise.
3. Press the button on the PDU for 3 seconds.

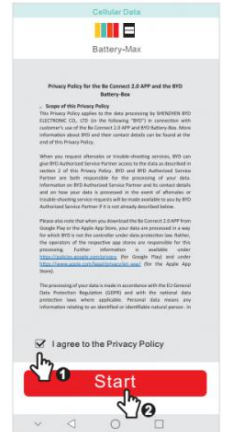
If it failed to switch on the battery system, please read Chapter 12 Troubleshooting and also the Service Manual. **IF THE PROBLEM STILL CANNOT BE SOLVED, CONTACT OUR LOCAL AFTER-SALE SERVICE TEAM WITHIN 48 HOURS.**

8.2. Configuration

⚠ QUALIFIED PERSON

Procedure

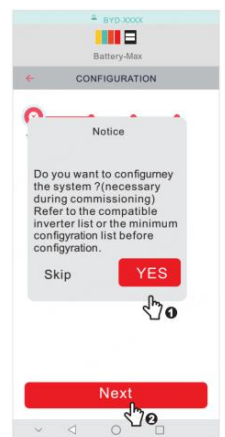
1. Download the **BYD Max Lite** from Google Play or APP Store. The battery system requires the latest version of firmware to operate. So please make sure you have downloaded the latest firmware in your device (cell phone, iPad, etc.), or your device could access the internet during configuration.
2. Tick the box in front of "I agree to the Privacy Policy", and then 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 the label on the PDU.



5. 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 "Time Confirm" page.



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

Notice: If the inverter brand is "Kaco" or "SMA", there will be two more configurations of "IP" and "Port".

IP: the static IP address of the battery

Port: the TCP service port number of the battery

1. If the inverter brand is "Kaco", the suggest configuration is as follows:

Inverter: SMA_CML

IP: 192.168.12.131~192.168.12.254

Port: 502

2. If the inverter brand is "Kaco", the configuration is as follows:

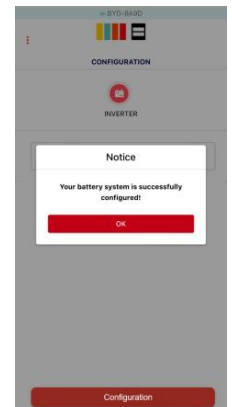
Inverter: KACO/SMART1

IP: The same network segment as the router

Port: 502



7. Tap "configuration" and a notice of "successfully configured" will pop up. Tap "OK" and the APP will jump to the battery information homepage.



8. If there is some problem, go back and do the configuration again.

Note:

1. Restart the **BYD Max Lite** if it is stuck somewhere.
2. Please note that the SOC of the battery may not be accurate before a full charge and discharge after the configuration.

8.3. Switch On and Commission the Inverter

Procedure:

1. Mount and connect the inverter according to the inverter manufacturer's instruction.
2. Switch on the inverter.
3. Configure the inverter and do the commissioning according to the inverter manufacturer's instruction.

If the battery information could be read correctly at the inverter, it means the connection is all right.

9. Operation

9.1. 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 the air switch between the battery system and the inverter if there is any.
2. Rotate the handle switch 90° clockwise.
3. Press the button on the PDU for 3 seconds.
4. Switch on the inverter.

Note: Please switch on all the battery systems in sequence, when multiple racks are connected in parallel

9.2. Switch Off the Battery System

Procedure:

1. Switch off the inverter.
2. Press the button on the PDU for 5 seconds.
3. Rotate the handle switch 90° counterclockwise.
5. Switch off the the air switch between the battery system and the inverter if there is any.

Note: Please switch off all the battery systems in sequence, when multiple racks are connected in parallel

9.3. Black Start Function

The battery system could support the black start function of compatible inverters. Press LED button for around 3 second while the system is on could enable this function.

If two or thirty-two battery racks are connected in parallel, only the LED button on the master system needs to be pressed.

The ways to trigger that are different for different inverters. Please follow the inverter manufacturer's instructions here.

9.4. Wi-Fi

Restart the system or press the LED button for around one second while the system is on if the Wi-Fi is disappeared could activate the Wi-Fi again.

Press the LED button three times (each time around one second) within six seconds could reset the Wi-Fi.

10. Decommissioning

DANGER

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.

DANGER

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

Overvoltage (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.

- When laying the network cables or other data cables indoors, 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 to the inside of a building.

Procedure:

1. Switch off the battery system refer to the **section 9.2**.
2. Remove all cables from the battery modules and the PDU.
3. Remove all the battery modules and the PDU form the rack.
4. Remove all screws securing the rack.

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 battery disposal regulations for electronic waste.

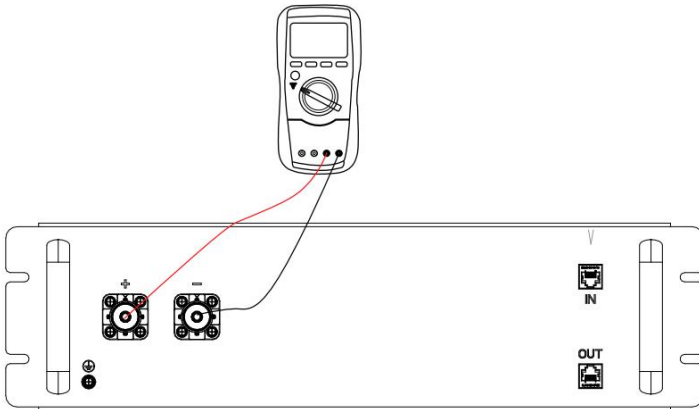
11. Extension

The SOC of the original battery system and the new battery module should be similar before the new battery module is added to the original battery system.

Note: Within 5 days before extension, it is recommended to fully charge the original battery system to SOC 100%.

Procedure:

1. Measure the voltage of the new battery module with a multimeter, get a value (X).



2. Refer to the following table to find out the SOC (Y) corresponding to the X.

Voltage(X)/V	$X < 75.8$	$75.8 \leq X < 77.52$	$77.52 \leq X < 78.1$	$78.1 \leq X < 78.6$	$78.6 \leq X < 79.2$	$79.2 \leq X < 79.4$
SOC (Y)	0-5%	5-10%	10-15%	15-20%	20-25%	25-30%

3. Charge or discharge the original battery system until the SOC is almost equal to Y.
4. Switch off the battery system refer to the **section 9.2**.
5. Adjust the position of the positive cable junction box.
6. Add the new battery module(s) and connect all the required cables.
7. Switch on the battery system refer to the **section 9.1**.

12. Troubleshooting

Refer to **sections 4.4 and 4.5** for definitions of alarm lights and LED to determine the battery system status. Please also see the BYD Battery-Max LiteIn Service Manual for troubleshooting. The latest version is available at our website: www.bydbatterybox.com or www.bydenenergy.com.

BYD service team can get the error messages of the battery system through the remote server. Information read through that could help to identify the issues. It is highly recommended to connect the battery system to the internet.

The app (**BYD Max Lite**) and PC application (**BYD Max Lite Plus**) can display battery errors (refer to **section 4.7** for more information regarding these tools.)

13. Maintenance and Storage

13.1. 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.

13.2. Storage

- To prevent possible condensation or its bottom from being soaked by rain water in the rainy season. The battery system should be stored on higher ground.
- Raise the rack foundation due to site conditions. The specific height should be reasonably determined based on site geological and meteorological conditions.
- Store the battery system on a dry, flat, and stable ground with sufficient carrying capacity and without any vegetation cover.
- Long-term storage of batteries is not recommended because it may cause the decrease in battery capacity. Even if the battery is stored at the recommended storage temperature, irreversible capacity fade will still occur during periods of rest. The longer it has been stored, the greater the capacity fade.
- The relative humidity should be between 5~75%, without condensation.
- Carry out periodic inspections. Check the rack and the inner equipment for damage at least every half a month.
- Before installing a rack that has been stored for more than six months, open the door to visually check and ensure that there is no condensation. Check the rack and the inner equipment for damage. Check the product after it is powered on and starts. If necessary, request professionals for testing before installation.
- The battery module should be stored in an environment with a temperature range between -20°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 charged and 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°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	/

14. Disposal of the Battery

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

- Avoid exposing the batteries to high temperatures or direct sunlight.
- Avoid exposing the batteries to high humidity or corrosive atmospheres.
- All requirements for safe transport of the battery must be observed.
- Batteries may only be disposed of in accordance with the regulations for used batteries valid at the time of disposal.
- There is a legal obligation to return used batteries. Batteries must not be disposed as with household waste.
- Used batteries may contain harmful substances which may harm the environment or your health if not properly stored or disposed of.
- Batteries contain important raw materials, such as iron, zinc, manganese, copper, or nickel, and can be recycled.
- For more information or to arrange a collection please contact BYD Service Partner (see contact details at the bottom of this document).

15. Technical Specifications

PERFORMANCE								
Battery Module	LITEIN Module (7.5 kWh, 76.8 V, 65 kg)							
Number of Modules	4	5	6	7	8	9	10	11
Usable Energy ^[1]	30 kWh	37.5 kWh	45 kWh	52.5 kWh	60 kWh	67.5 kWh	75 kWh	82.5 kWh
Nominal Voltage	307 V	383 V	460 V	537 V	614 V	691 V	767 V	844 V
Operating Voltage	259~355 V	324~444 V	389~532 V	453~621 V	518~710 V	583~799 V	648~888 V	712~976 V
Weight	344 kg	409 kg	474 kg	539 kg	604 kg	669 kg	734 kg	799 kg
GENERAL DATA								
Dimensions (H x W x D)	1960 x 595 x 640 mm							
Rated capacity	100 Ah							
Max. Charge Current ^[2]	100 A							
Max. Discharge Current ^[2]	100 A							
Peak Output Current ^[2]	170 A, 3 s							
Operating Temperature	-10 °C to +50 °C							
Battery Cell Technology	Lithium Iron Phosphate (cobalt-free)							
Communication	CAN / RS485 / Modbus TCP							
Battery Module IP class	IP20							
Round-trip Efficiency	≥ 95%							
Certification	CE / UN38.3 / IEC62040 / IEC62619							
Applications	ON Grid / ON Grid + Backup / OFF Grid / Black Start / Start from AC / Pre-charge Circuit							
Warranty ^[3]	Max 10 Years							
Compatibilities	Please refer to BYD Battery-Max LiteIn Compatibility List							
Battery Design	IFpP/51/161/119/[24S]M/-10+50/90							

[1] DC Usable Energy, Test conditions: 100% DOD, 0.2 C charge & discharge at + 25 °C. System usable energy may vary due to system configuration parameters.

[2] Power derating will occur between -10 °C and +5 °C.

[3] Conditions apply. Refer to BYD Battery-Max LiteIn Limited Warranty Letter.

16. Contact Information

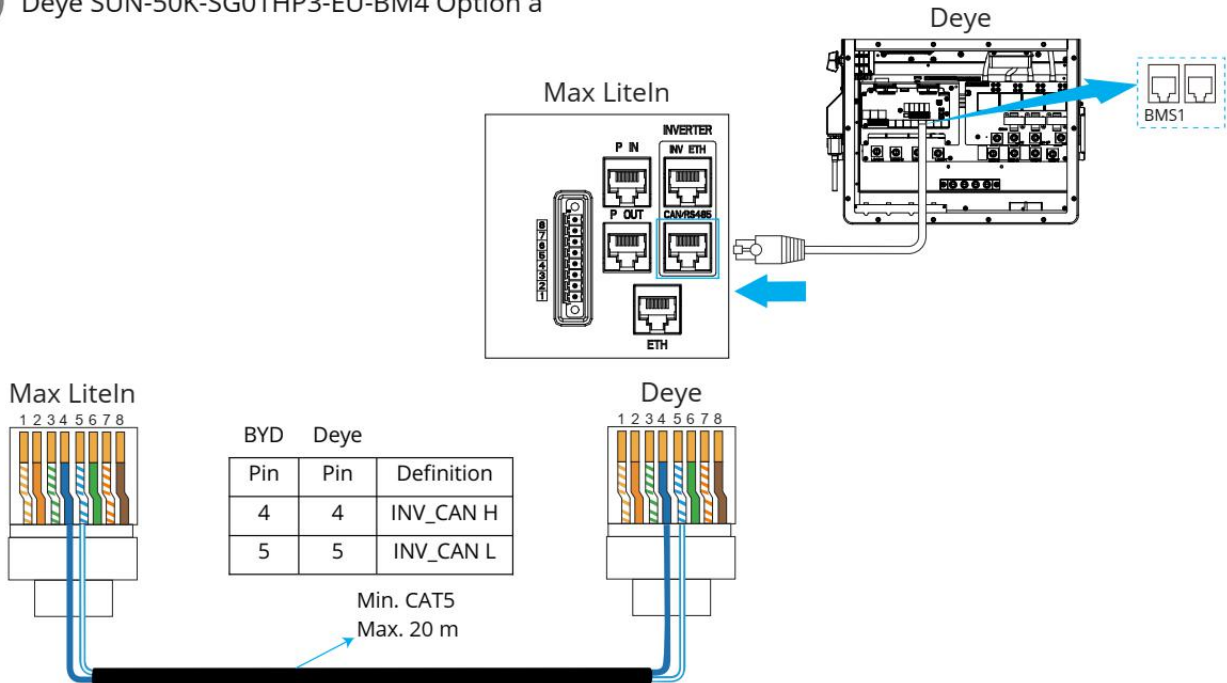
Note: Please also see the Battery-Max LiteIn Service Manual for troubleshooting. The latest version is available at our website: www.bydbatterybox.com or www.bydenenergy.com.

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 / www.bydenenergy.com
Social Media Link	https://www.facebook.com/BatteryBoxBYD https://x.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 02 87368364 (1T)
Address	Bruchtannenstr. 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	2/62 Belmore Road, Riverwood, 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 & Portswood Road, V&A Waterfront, 8001, Cape Town
Website	www.afriplusenergy.co.za
USA BYD US Service	
Email	us.homeenergy@byd.com
Telephone	626-491-2333
Address	888 E Walnut St, Suite 200A, Pasadena, CA 91101, USA

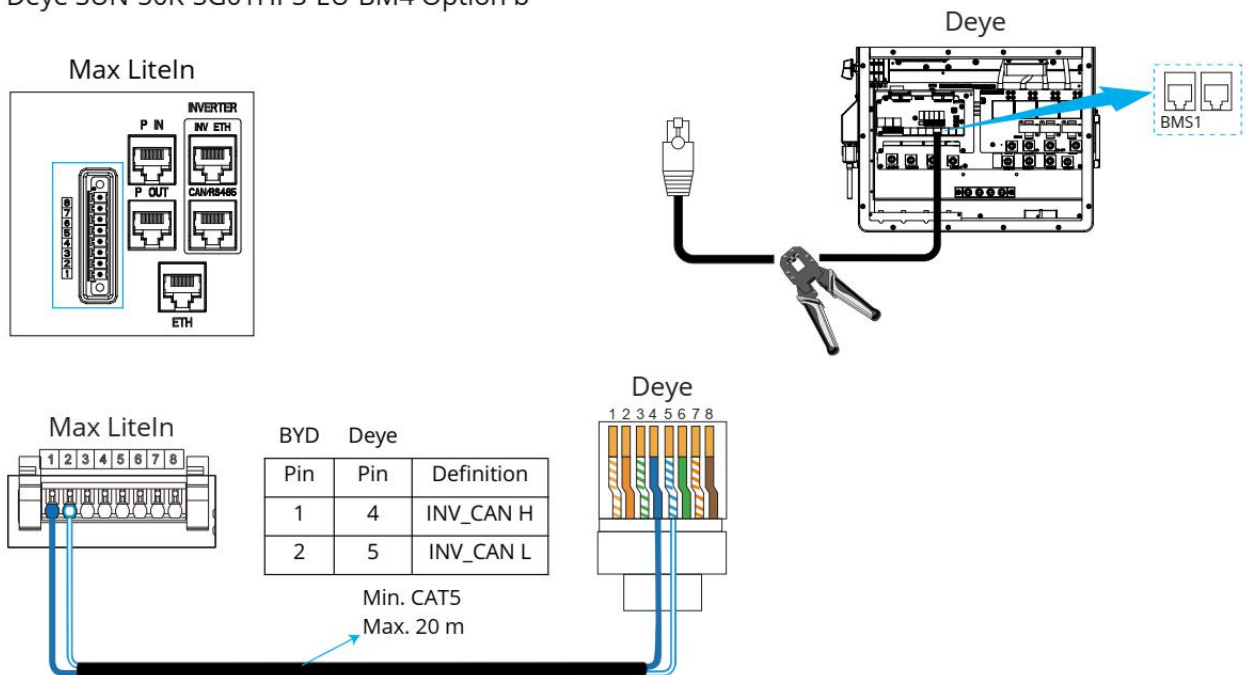
Appendix 1 Connection Options with Inverters

Before the installation, please first check if the planned configuration is already released according to the latest Battery-Max LiteIn Compatible Inverter List.

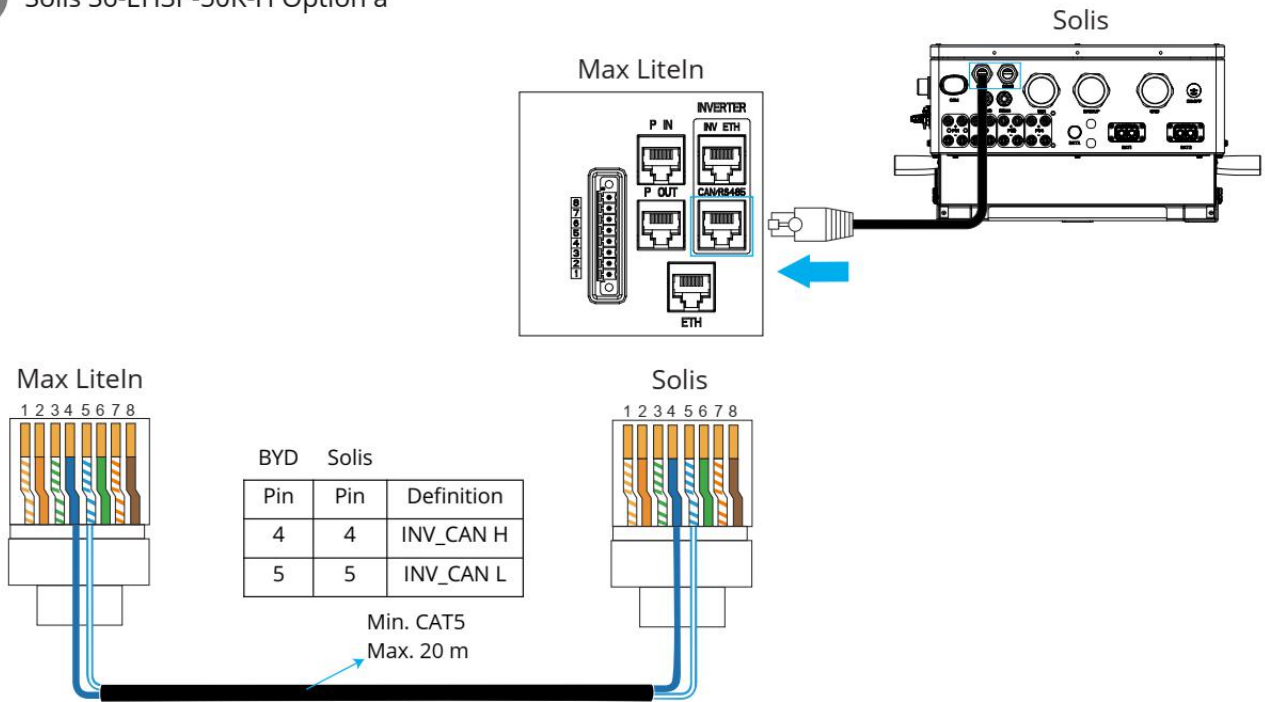
1 Deye SUN-50K-SG01HP3-EU-BM4 Option a



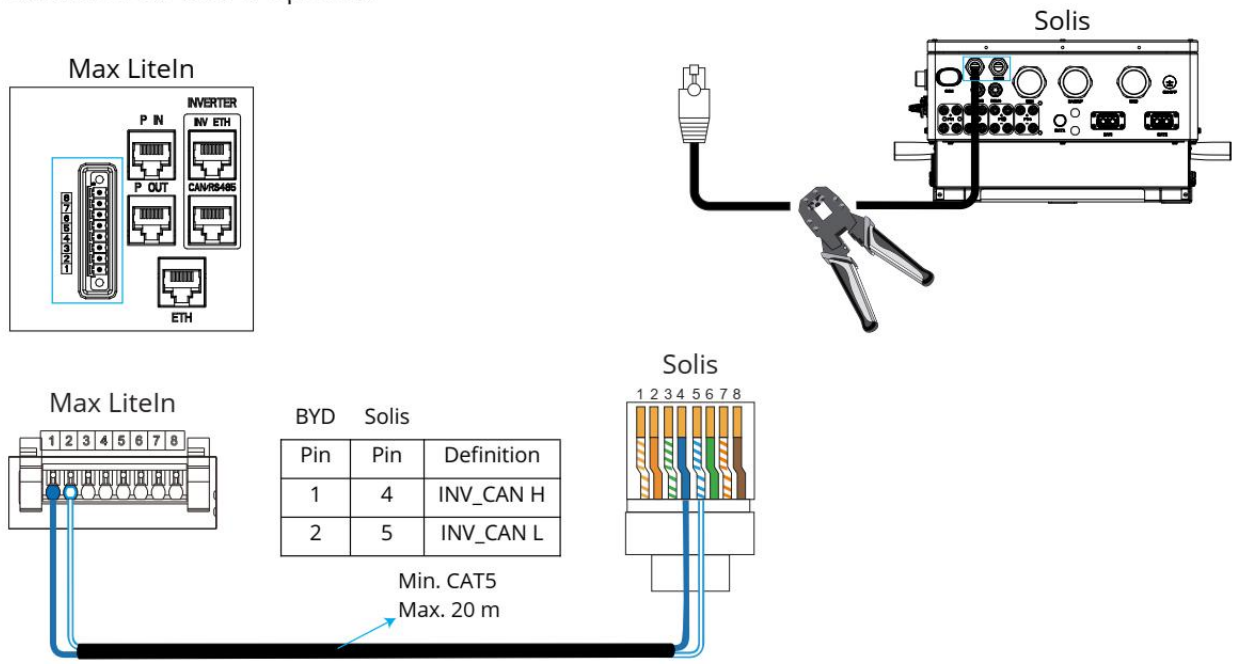
2 Deye SUN-50K-SG01HP3-EU-BM4 Option b



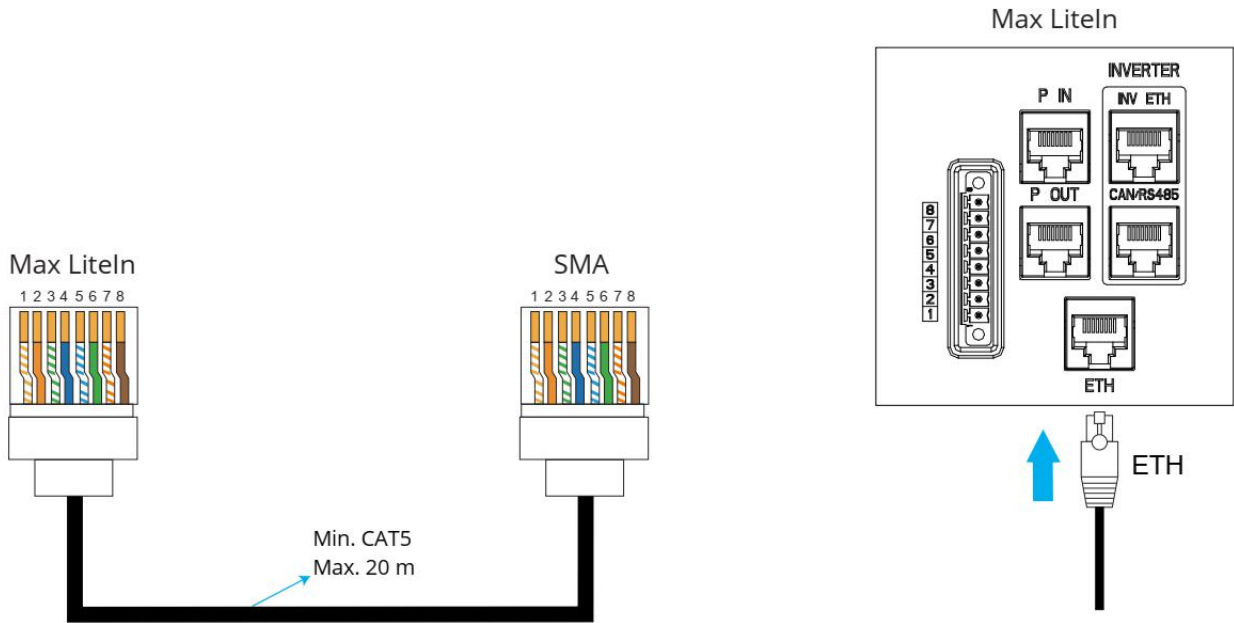
3 Solis S6-EH3P-50K-H Option a



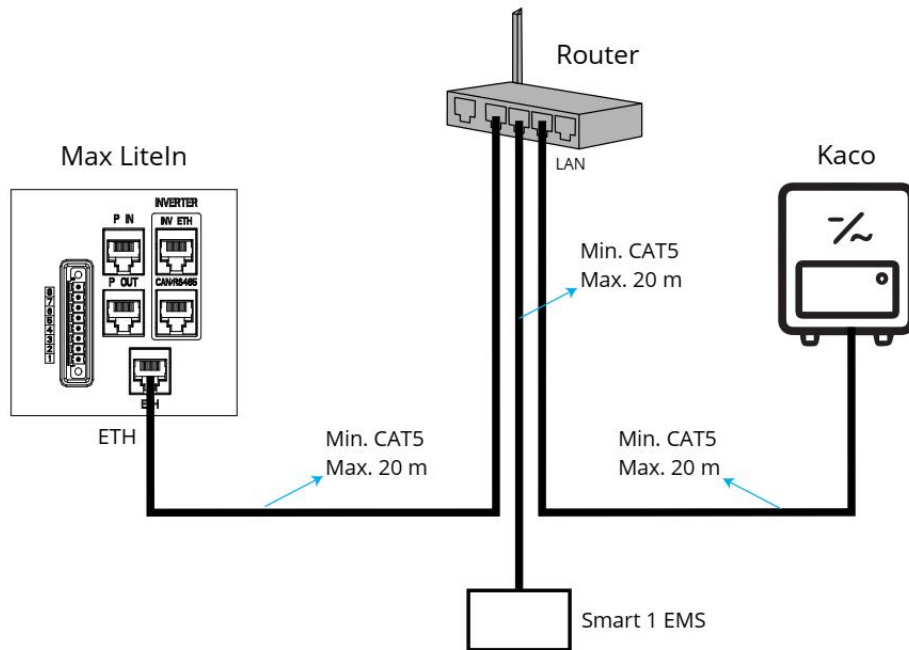
4 Solis S6-EH3P-50K-H Option b



5 SMA Sunny Tripower Storage X 50



6 Kaco blueplanet gridsave 92.0 TL3-S



Appendix 2 Checklist

Please fill all available information in below table. If there are multiple racks in parallel, please print multiple copies of this page separately.

Installer / Delivery Address / Contact:

Company		ZIP / City	
Contact Person		Phone	
Street / No.		Email	

The voltage of all the battery modules in a rack before installation

Battery Module	Serial Number	Voltage/V	Battery Module	Serial Number	Voltage/V
#1			#7		
#2			#8		
#3			#9		
#4			#10		
#5			#11		
#6					

System Information:

Battery Configuration (e.g., LITEIN 60)		PDU Serial Number	
PDU Firmware		PDU Connected to Internet	Yes <input type="radio"/> No <input type="radio"/>
Inverter Brand + Model		Inverter Serial Number	
Inverter Firmware		System Name on Inverter Portal	
Commissioning Date			



17643617-00