
Energy Storage
Max LiteIn
Product Introduction

BYD Energy Storage

Battery-Max LiteIn

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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/W/D)	1960 x 595 x 640 mm
Max Output 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
Enclosure Protection Rating	IP20
Round-trip Efficiency	≥ 95%
Certification	CE / UN 38.3 / IEC62040 / IEC62619
Applications	ON Grid / ON Grid + Backup / OFF Grid / Black Start
Warranty	Max 10 Years
Compatibilities	Deye GOODWE KACO MEGAREVO solis

Technical specification-System

Number of modules	4-11 in series
Usable energy	30-82.5kWh
Operating voltage range	259-976V
Max output current	100A
Peak output current	170A，3s
Dimension (H*W*D)	1960*595*640mm
Weight	344-799kg
Rack weight	84kg
Operating temperature	-10-50℃
Enclosure protection rating	IP20
Communication	CAN/RS485 / Modbus TCP
Certification	CE / UN 38.3 / IEC62040 / IEC 62619
Warranty	10 years
Number of racks	32 in maximum - up to 2.86MWh

Competitiveness-Flexibility

Flexible capacity options

Module	Capacity
Minimum 4 per rack	30kWh
Maximum 11 per rack	82.5kWh
32 racks in parallel	2.64MWh

30kWh-2.64MWh，

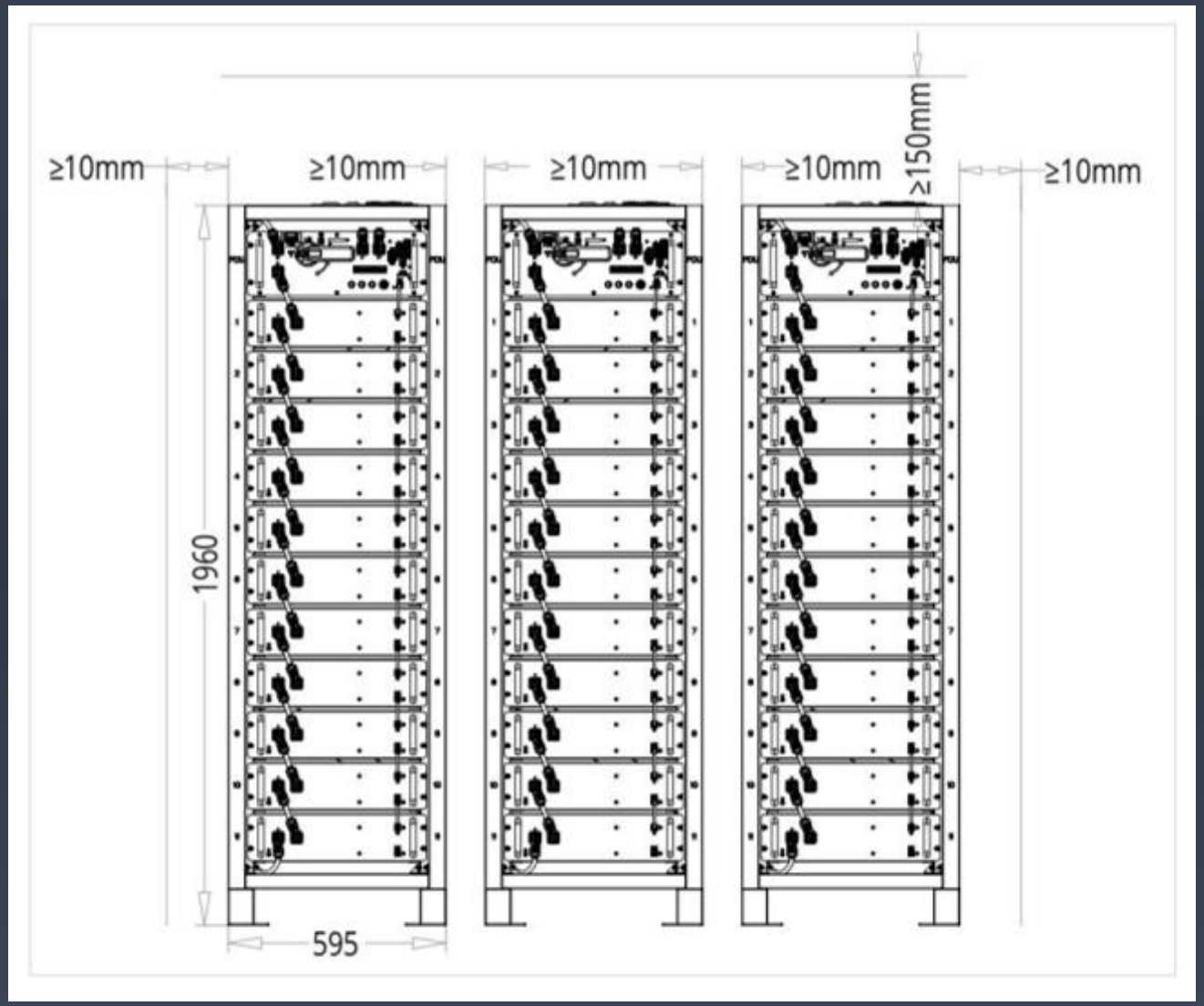
Involve both small and large capacity requirements

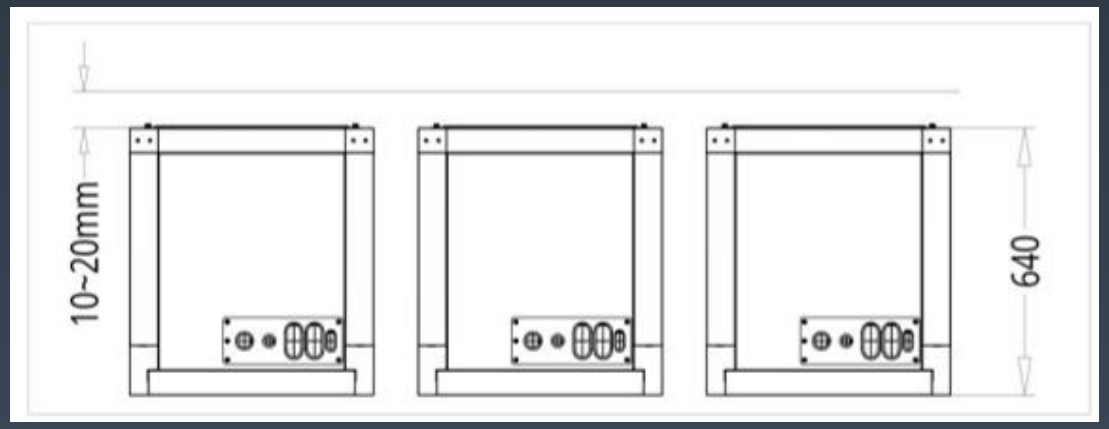
Technical specification-Pack

Battery Module	LITEIN
Cell type	LFP
Connection of cells	24 in series
Capacity	100Ah
Usable energy	7.5kWh
Nominal voltage	76.8V
Voltage range	60~91.2 V
Max output current	100A
Peak output current	170A，3s
Enclosure protection rating	IP20
Weight	65kg

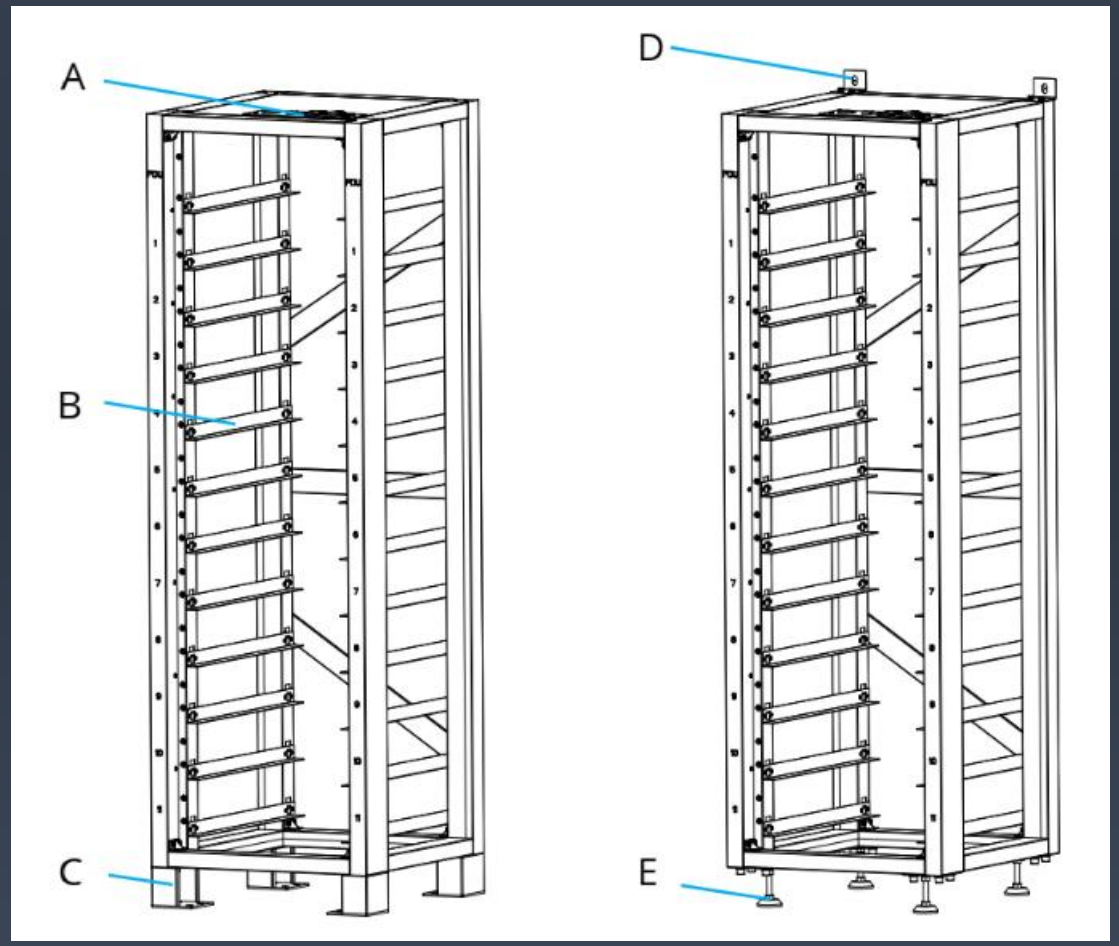
Battery Rack - Dimensions and Clearance

- A gap of at least 10mm is required between each tower and the next tower or wall
- please allow at least 150mm space between the top of the tower and the roof / ceiling





Product Overview-Rack



No.	Name
A	Wiring holes
B	Sliding rails
C	Foot pier
D	Wall mounting component
E	Feet

Inverter compatibility - Recommended number of Modules

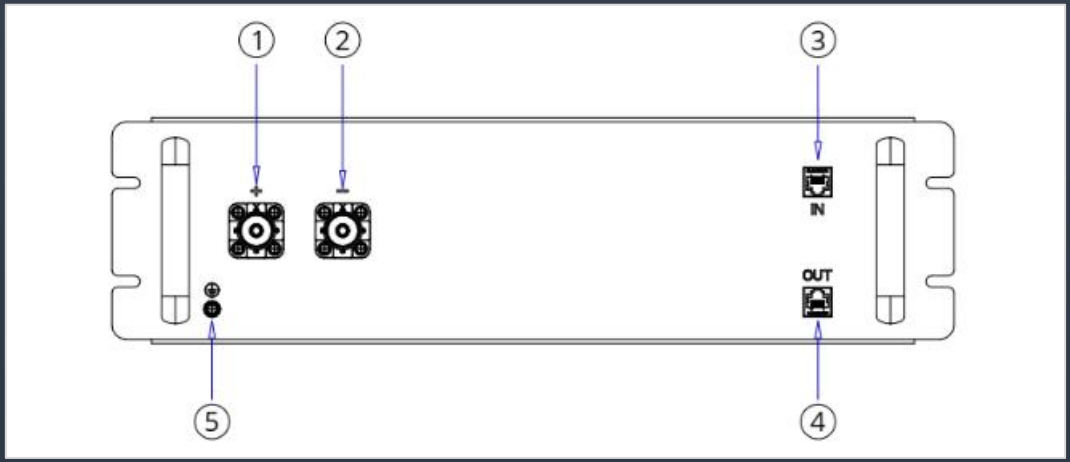
Product Make	Product Model	Recommended Number of Modules per tower
Deye	3SUN-29.9K-SG01HP3-EU-BM3	4 - 9
	SUN-30K-SG01HP3-EU-BM3	
	SUN-35K-SG01HP3-EU-BM3	
	SUN-40K-SG01HP3-EU-BM4	
	SUN-50K-SG01HP3-EU-BM4	
Goodwe	GW(40-50)K-ET-10	4-9
Kako (on Grid Only)	Blueplanet gridsave 92.0 TL3-S	11
Megarevo	MPS0030 / MEGA0030TS	4-9
	MPS0050 / MEGA0050TS	5 - 9
	MPS0100 / MPS0250	7 - 9
	MEGA0100TS / MEGA0150TS /MEGA0250TS	7 - 9
	MEGA0500TS	8 - 9
Solis	S6-EH3P(29.9-50)K-H	4 - 9

Competitiveness-Flexibility

Flexible inverter options

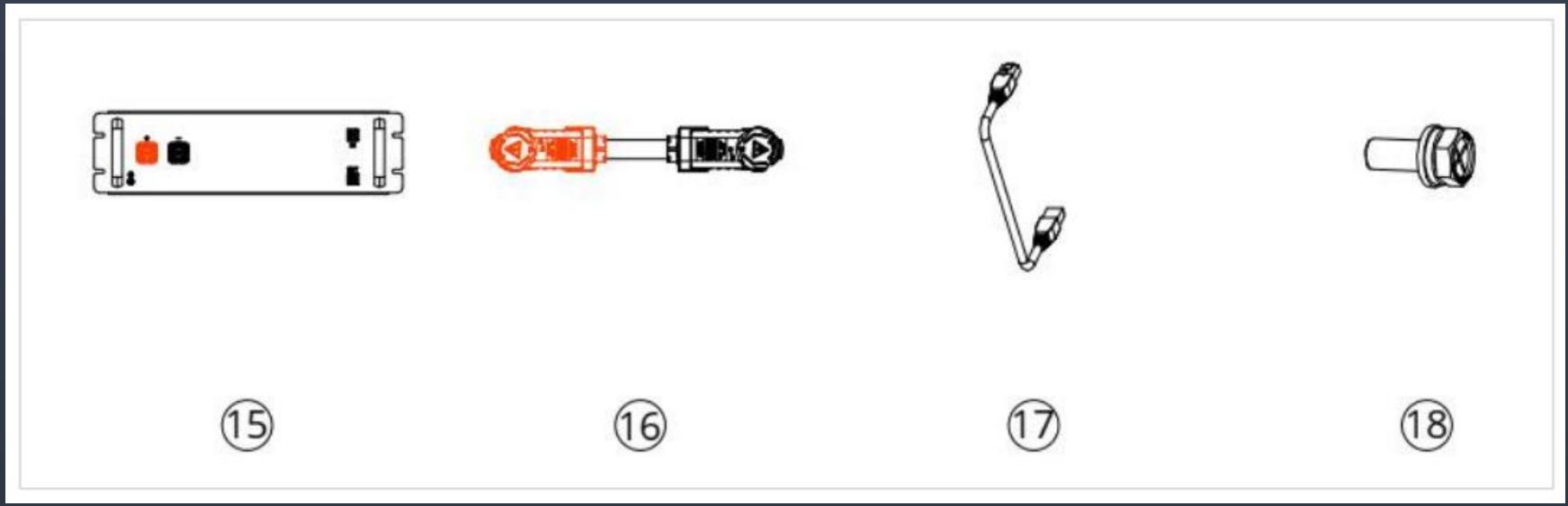
Select inverter according to capacity, power and application scenario

Product Overview-Max Lite In Module



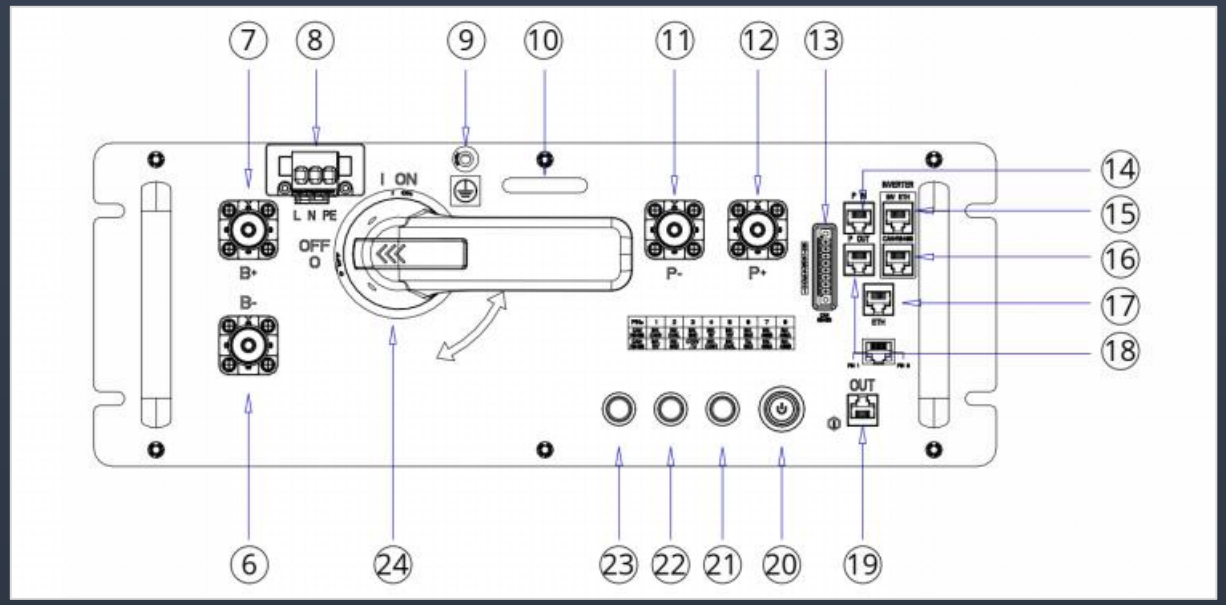
No.	Name	No.	Name
1	Positive port of battery module	4	BIC communication OUT port
2	Negative port of battery module	5	Ground cable port
3	BIC communication IN port		

Product Overview-Max Lite In scope of delivery, module



No.	Name	No.	Name
15	Max Lite In Battery Module	17	BIC communication OUT port
16	DC cable (with one orange connector and one black connector)	18	M6×16 cross recessed hexagon head bolt

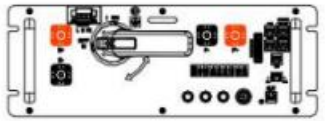
Product Overview-PDU



No.	Name
6	B- port
7	B+ port
8	Port of the auxiliary AC power supply
9	Ground cable port
10	Wi-Fi module
11	P- to inverter
12	P+ to inverter
13	8 pin terminal block

No.	Name	No.	Name
14	“P IN” port for parallel communication	19	“OUT” port for the BIC communication
15	“INV ETH” port for inverter communication	20	LED button
16	CAN/RS485 port	21-23	Alarm LED (green&yellow&red)
17	“ETH”port for Ethernet cable connection	24	Handle switch
18	“P OUT” port for parallel communication		

Product Overview-Max Lite In scope of delivery PDU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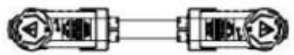
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23


24


25

No.	Name	No.	Name
19	Max Lite In PDU	23	Terminal resistor (white)
20	DC cable (with two orange connectors)	24	Negative power connector (black)
21	DC cable (with two black connectors)	25	Positive power connector (orange)
22	M6×16 cross recessed hexagon head bolt for fixing the battery module		

Limited Performance Warranty

- 10 years SOH70%
- Minimum Throughput Energy

Product Model	Usable Energy (kWh)	Minimum Throughput Energy (MWh)
LiteIn 30	30	73.88
LiteIn 37.5	37.5	92.35
LiteIn 45	45	110.82
LiteIn 52.5	52.5	129.29
LiteIn 60	60	147.76
LiteIn 67.5	67.5	166.23
LiteIn 75	75	184.70
LiteIn 82.5	82.5	203.17

Competitiveness-Safety

Cell

LFP battery

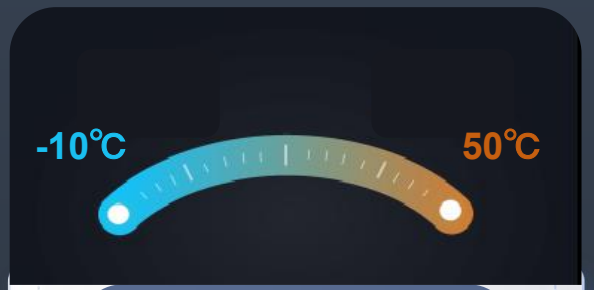
Explosion-proof design

Leak-proof design

Certification: IEC62619

UN38.3

UL1642



Module

Explosion-proof design

Design to prevent thermal spread

Overvoltage protection

Overcurrent protection

Over-temperature protection

Short circuit test

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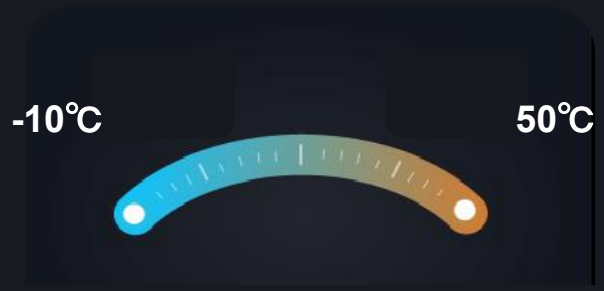
Competitiveness-High performance

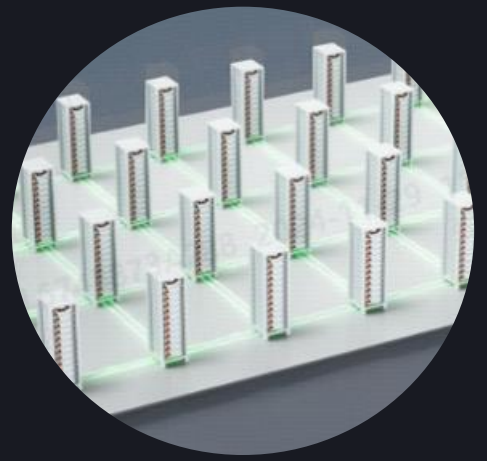
High power

1C charging and discharging

Wide operating temperature range



Uninterrupted operation



Each rack operates independently

Competitiveness-Installation

Easy installation

- No screws needed for DC connection between modules
- Customized cables

Competitiveness-Smart battery management

- Remote monitoring
- Remote upgrade
- Remote failure analysis


Energy Storage
Finer Storage Greener Energy

Energy Storage

BATTERY-MAX LITEIN

Battery Installation Video

Max Lite In - Manuals and Safety

The purpose of this presentation is to familiarize installers with the installation process of a BYD Max Lite In. This presentation is not designed to replace the user manual. please always refer to the user manual when installing

Please pay special attention to the Safety part of the Installation Manual

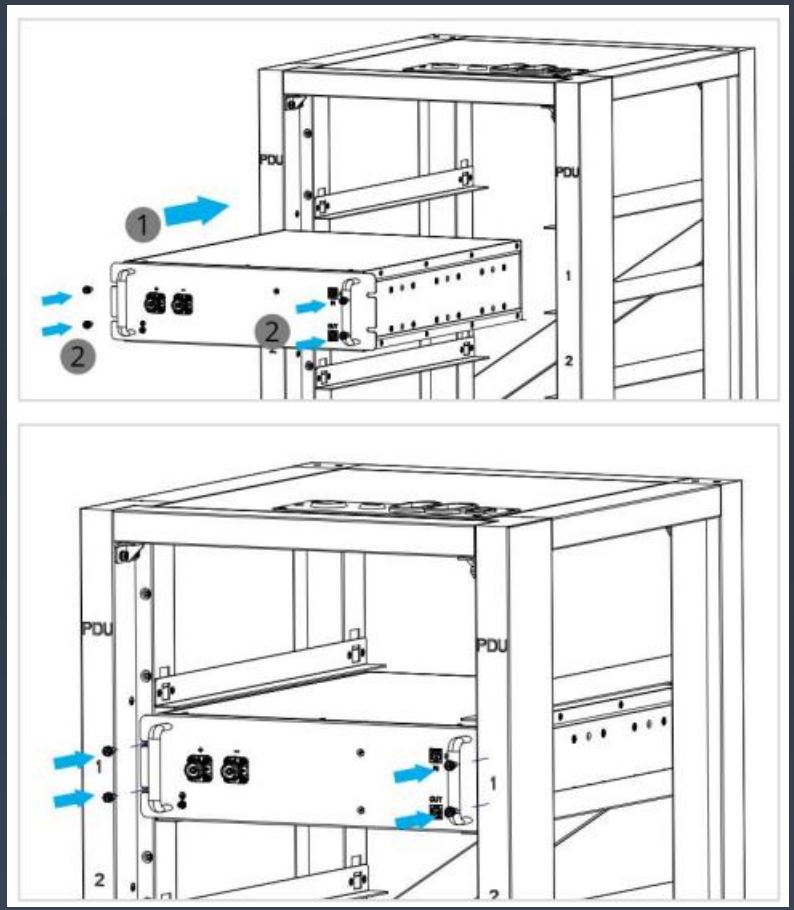
The installation manual **can be downloaded from our website: www.bydbatterybox.com/downloads or www.bydenergy.com.**

Max Lite In - Installing the Battery Modules

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



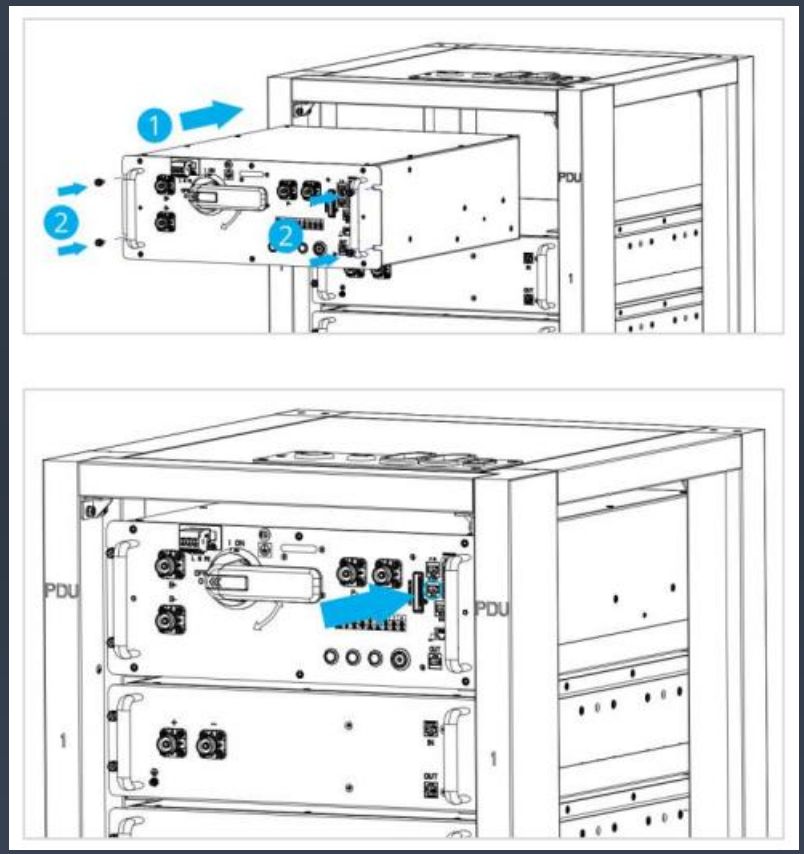
Max Lite In - Installing the PDU

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.

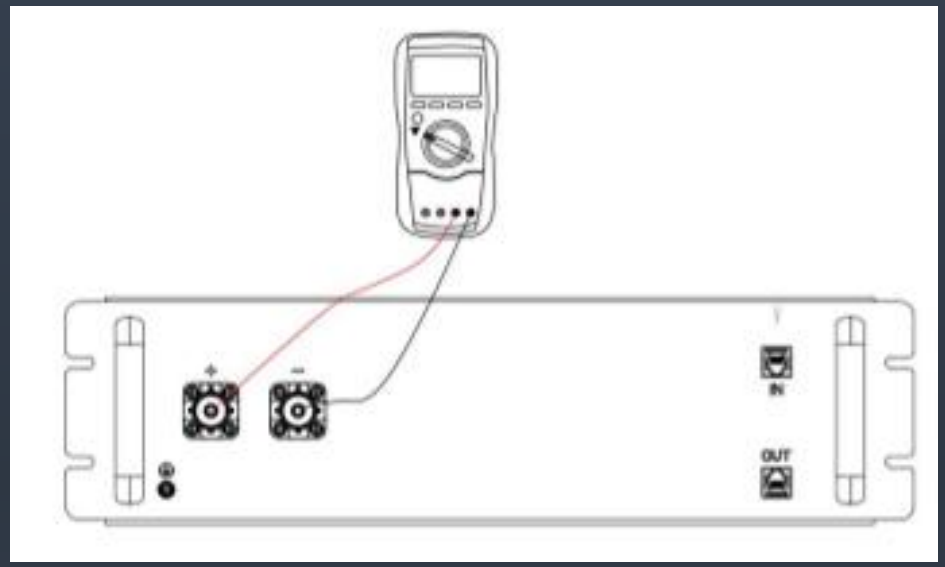
3. Fix the PDU using four M6×16 screws with a sleeve electric screwdriver (bit model A/F10) (Torque: 69±13 kgf.cm)

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).



Max Lite In - Record the battery module voltage

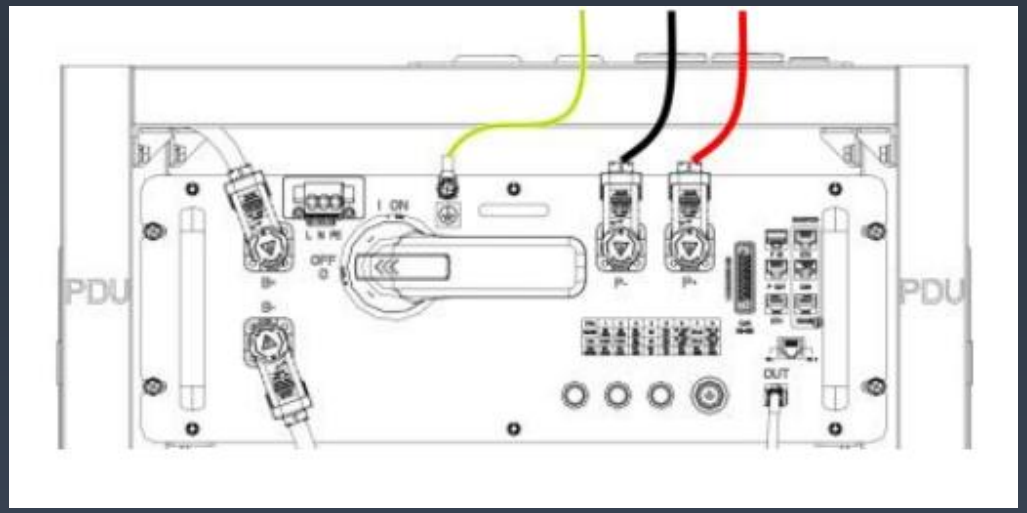
Before installing the battery modules, please measure the voltage of each battery module and record it in the checklist, which can be see in Appendix 2 of the installation manual. Refer to the following table to find out the SOC corresponding to the above measured voltage. Only when the SOC difference of all battery modules is within 5% can be installed. Otherwise, it is not allowed.

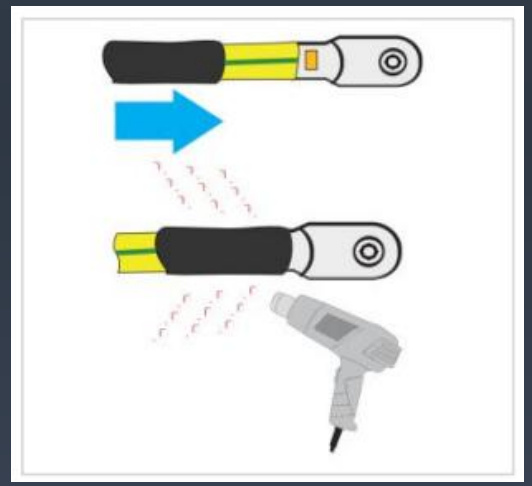


SOC	23%	24%	25%	26%	27%	28%	29%	30%	31%	32%	33%
VDC	78.96	79.1	79.2	79.22	79.3	79.34	79.38	79.42	79.42	79.44	79.44

Max Lite In - Connecting a Ground Cable for the PDU

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.

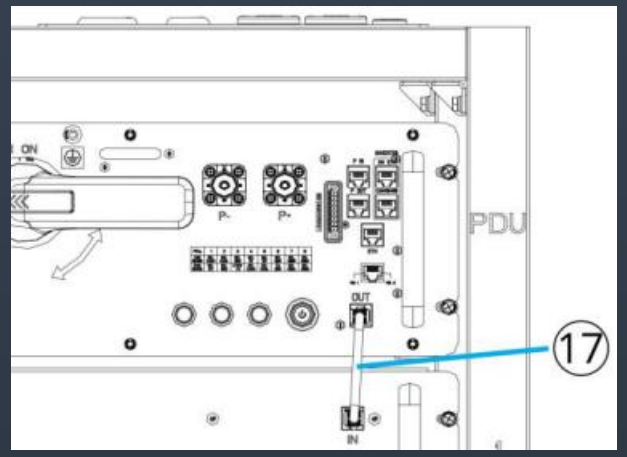




Max Lite In - Connect the module communication cables

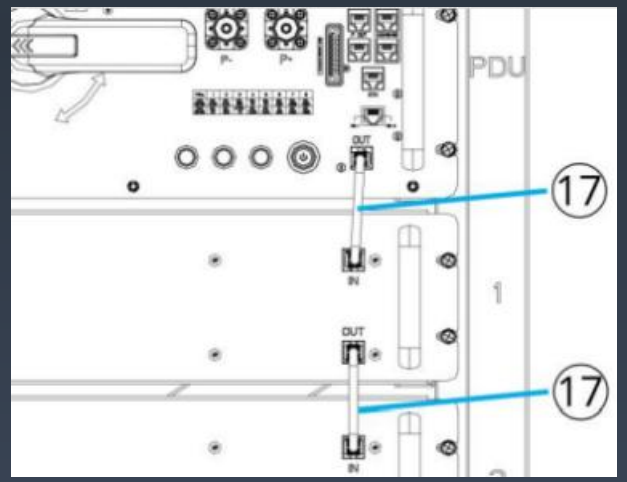
1. Plug one side of the the communication cable to the “OUT” port of the PDU. (17)

2. Plug the other side of the communication cable to the “IN” port of the topmost battery module. (17)



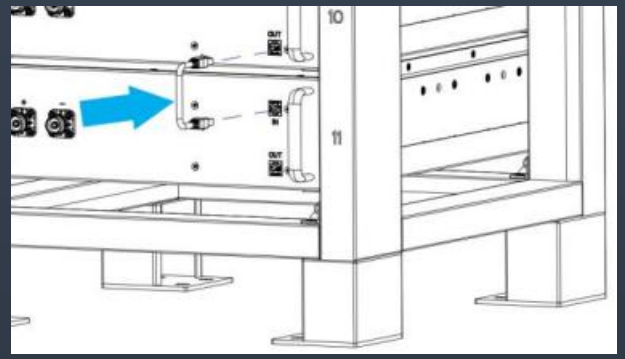
3. Plug one side of the communication cable to the “OUT” port of the topmost battery module. (17)

4. Plug the other side of the communication cable to the “IN” port of the adjacent battery module of the topmost battery module. (17)

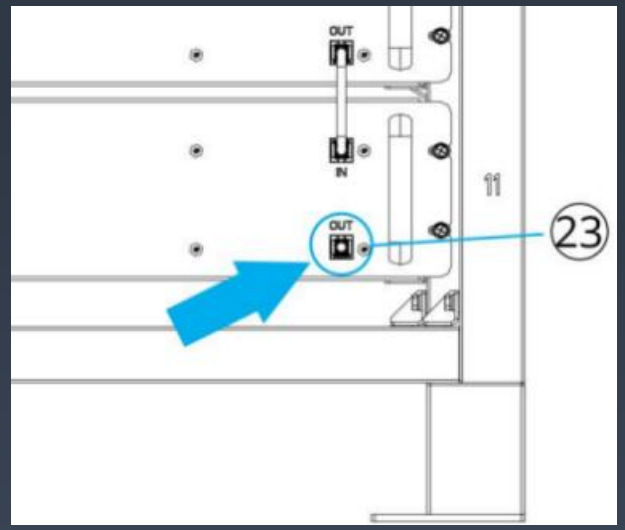


Max Lite In - Connect the module communication cables

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.



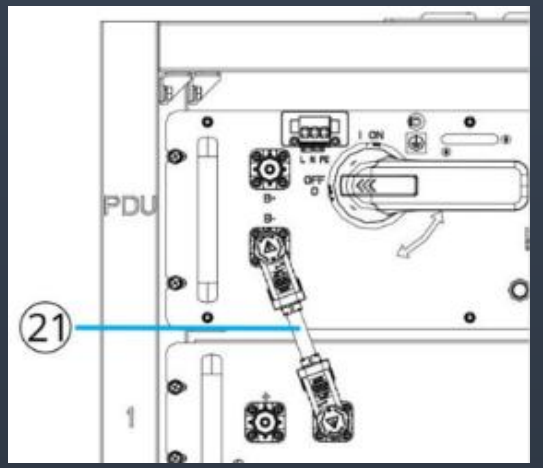
6. Insert the terminal resistor (white) into the “OUT” port of the bottom battery module.



Max Lite In - Connect the module DC cables

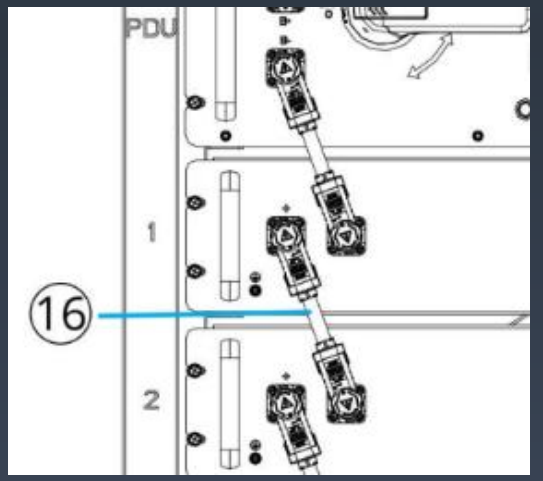
1. Plug one side of the DC cable (with two black connectors) to the “B-” port of the PDU. (21)

2. Plug the other side of the DC cable (with two black connectors) to the “-” port of the topmost battery module. (21)



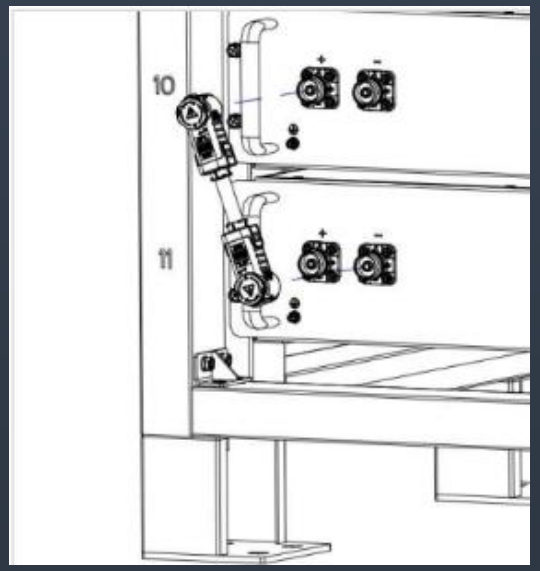
3. Plug the orange connector of the DC cable (with one orange connector and one black connector) to the “+” port of the topmost battery module. (16)

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. (16)



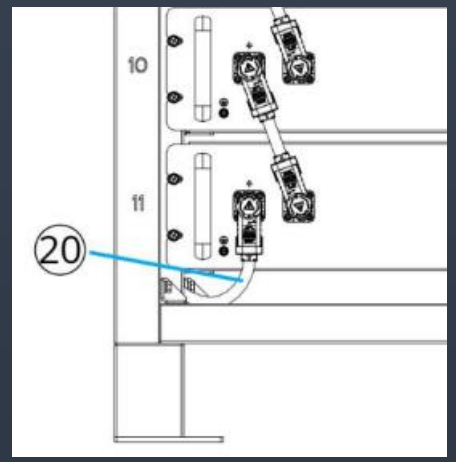
Max Lite In - Connect the module DC cables

5. Connect the DC cable (with one orange connector and one black connector) of the rest battery modules, working from the the top to bottom. Proceed as described in procedure 3 and 4.

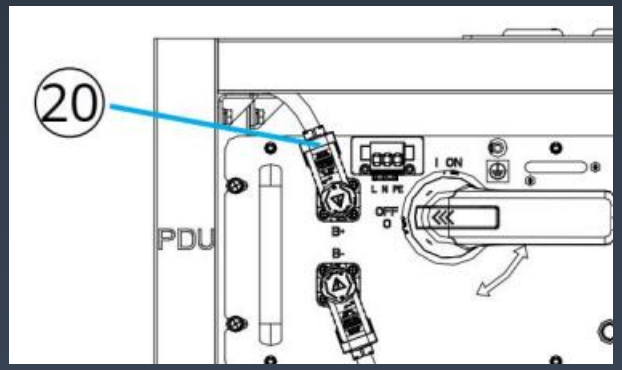


Max Lite In - Connect the module DC cables

6. Plug one side of the DC cable (with two orange connectors) to the “+” port of the bottom most battery module. (20)

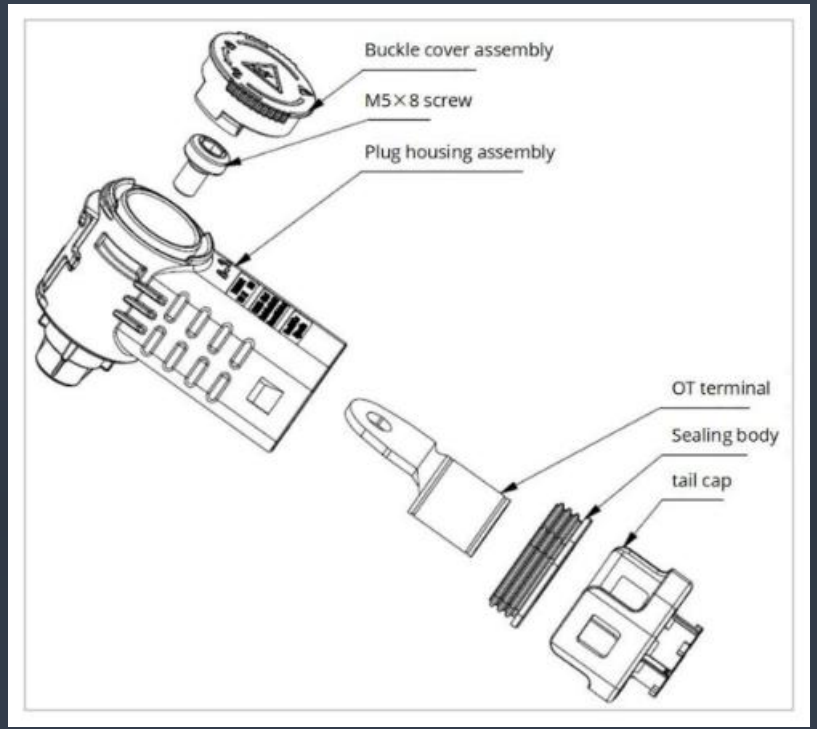


7. Plug the other side of the DC cable (with two orange connectors) to the “B+” port of the PDU



Max Lite In - Power Cable Connection

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:

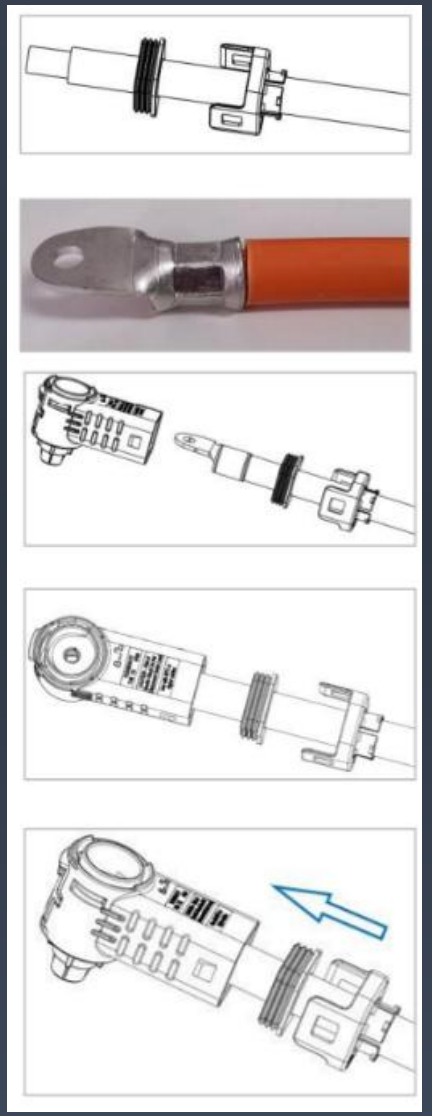
Max Lite In - Power Cable Connection

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.



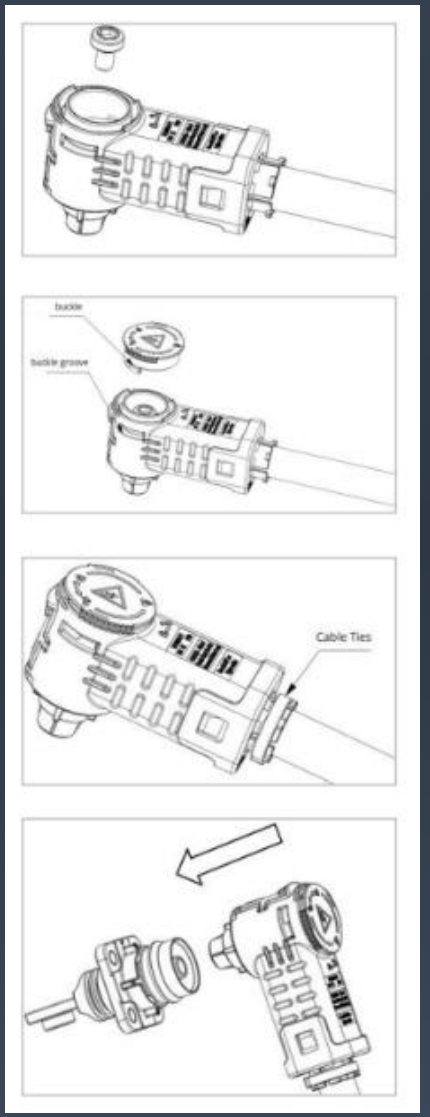
Max Lite In - Power Cable Connection

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.

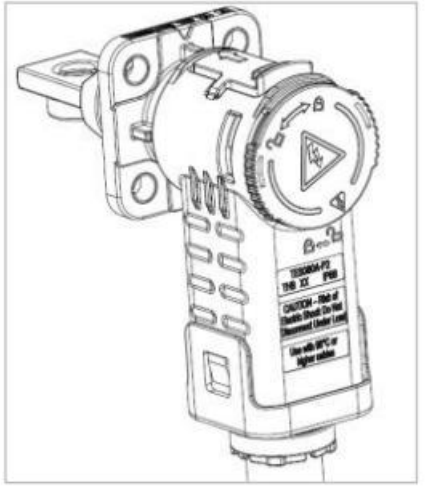
7. Tie the cable tie around the spring tabs on the tail cap.

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°

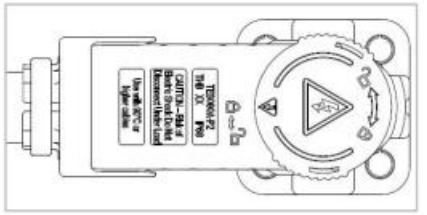


Max Lite In - Power Cable Connection

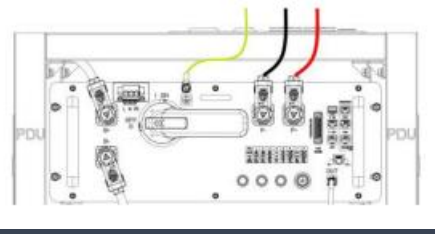
9. Push the plug until you hear a click.



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.



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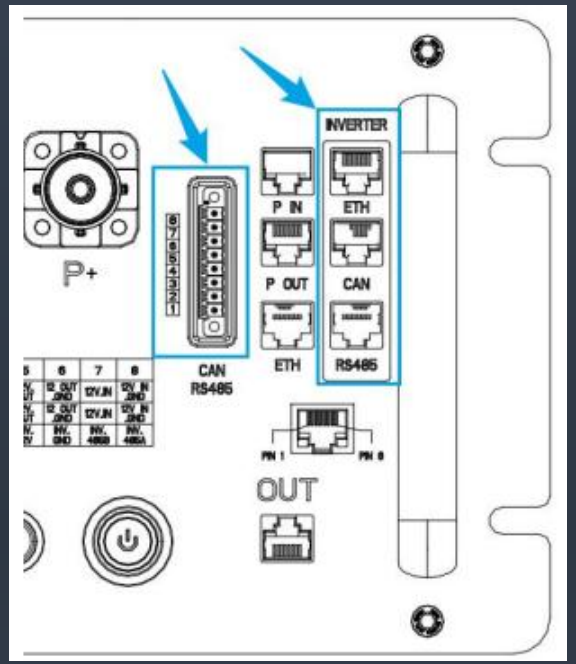
Max Lite In - Communication Cable Connection to an Inverter

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 the communication cable.



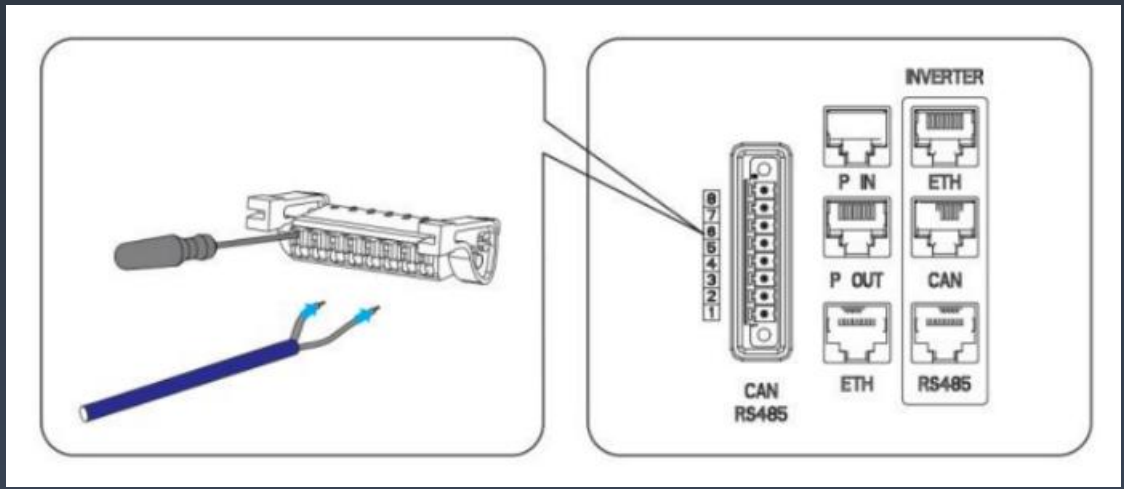
PIN	1	2	3	4	5	6	7	8
CAN RS485	INV_CAN H	INV_CAN L	INV_GND	INV_11V	INV_12V	INV_GND	INV_485B	INV_485A
CAN/RS485	INV_12V	INV_GND	CT12V_TU	INV_CAN H	INV_CAN L	TU_GND	INV_485A	INV_485B

Max Lite In - Communication Cable Connection to an Inverter

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



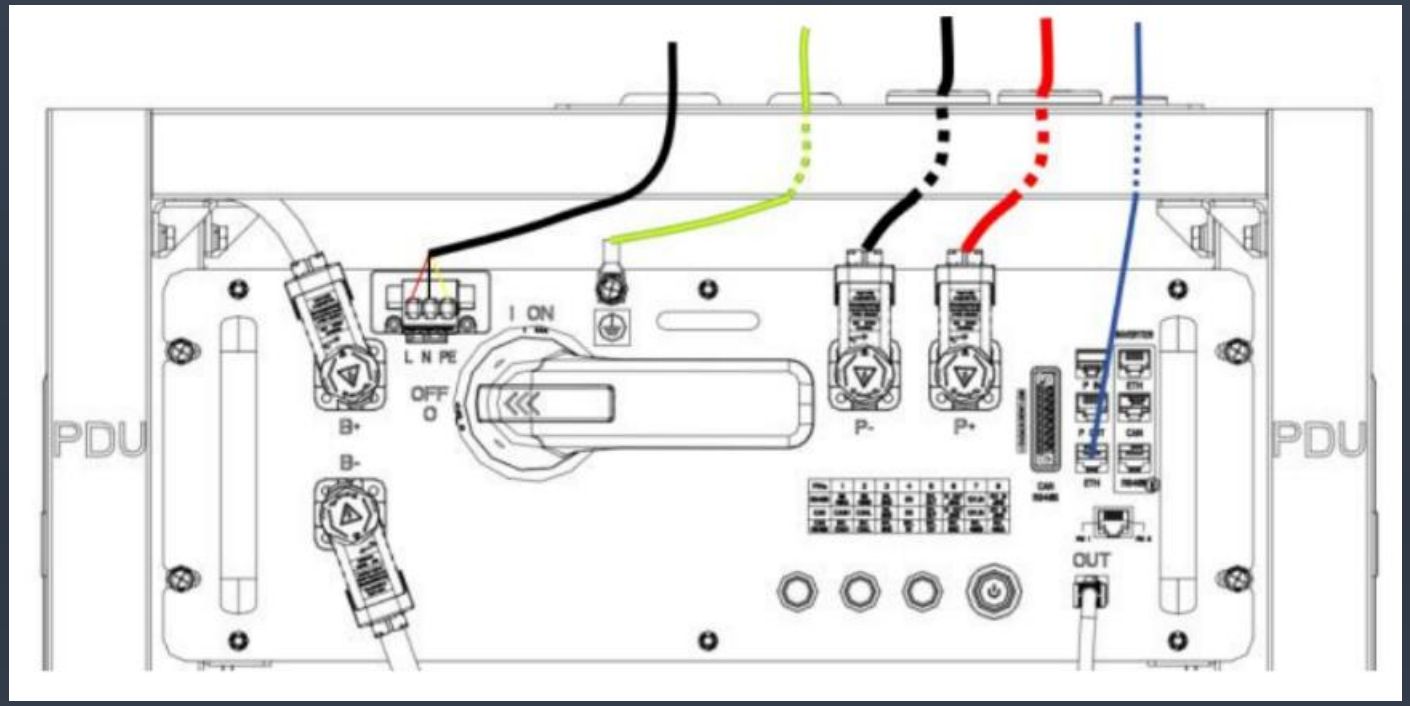
Max Lite In - PDU AUX AC connection

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

Max Lite In - PDU AUX AC connection



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.

Max Lite In - Parallel Communication Connection between Battery Racks

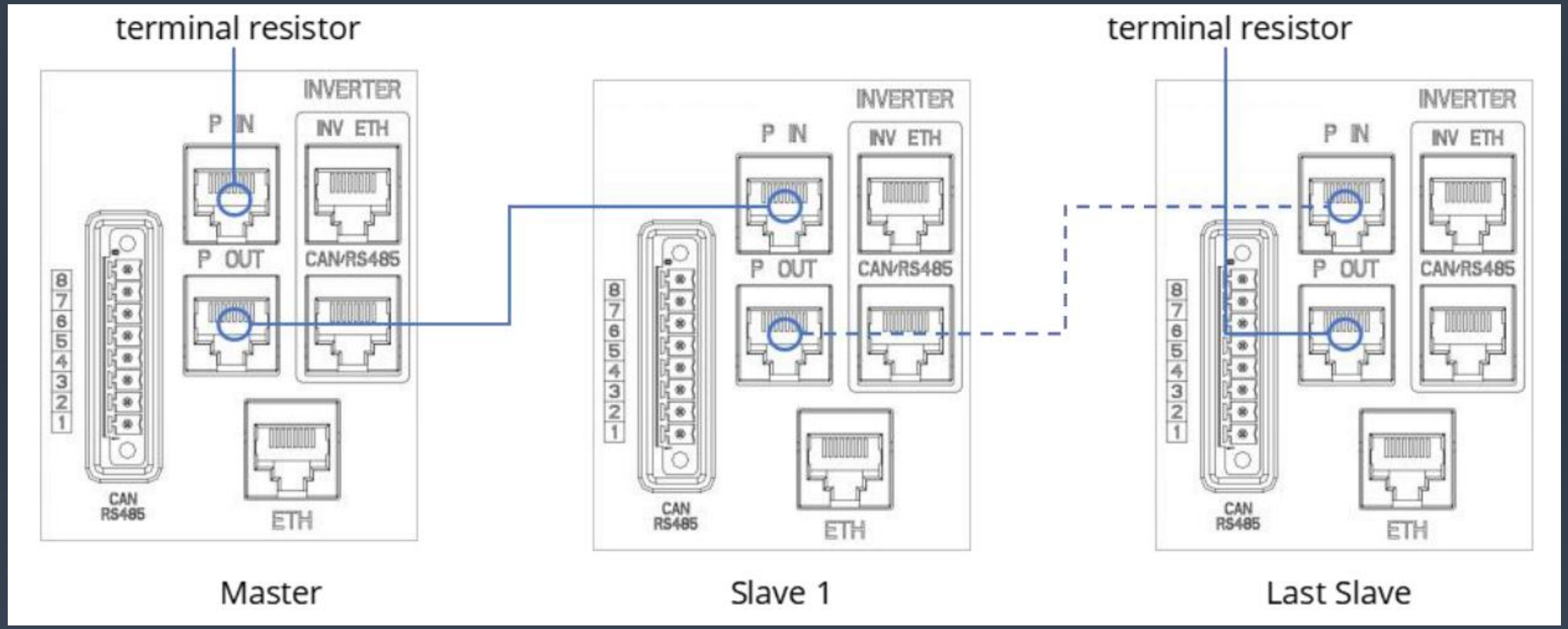
For a single Max Lite rack, Plug the terminal resistor (gray) into the “P OUT” port

Below are the instructions for 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 “POUT” port of the last slave battery rack.

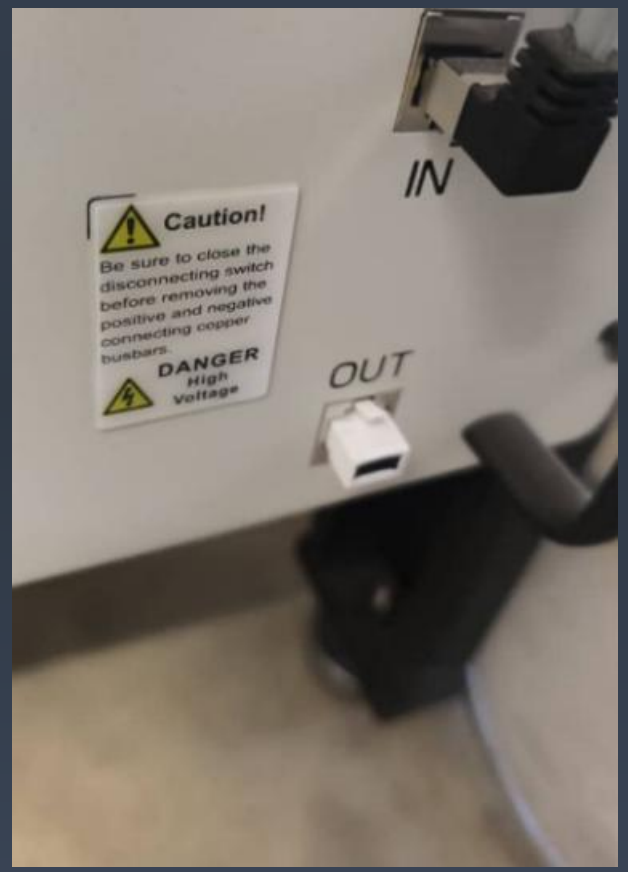
Max Lite In - Parallel Communication Connection between Battery Racks



Max Lite In - Termination Resistors

PDU PARALLEL - LIGHT GREY

MODULE - WHITE



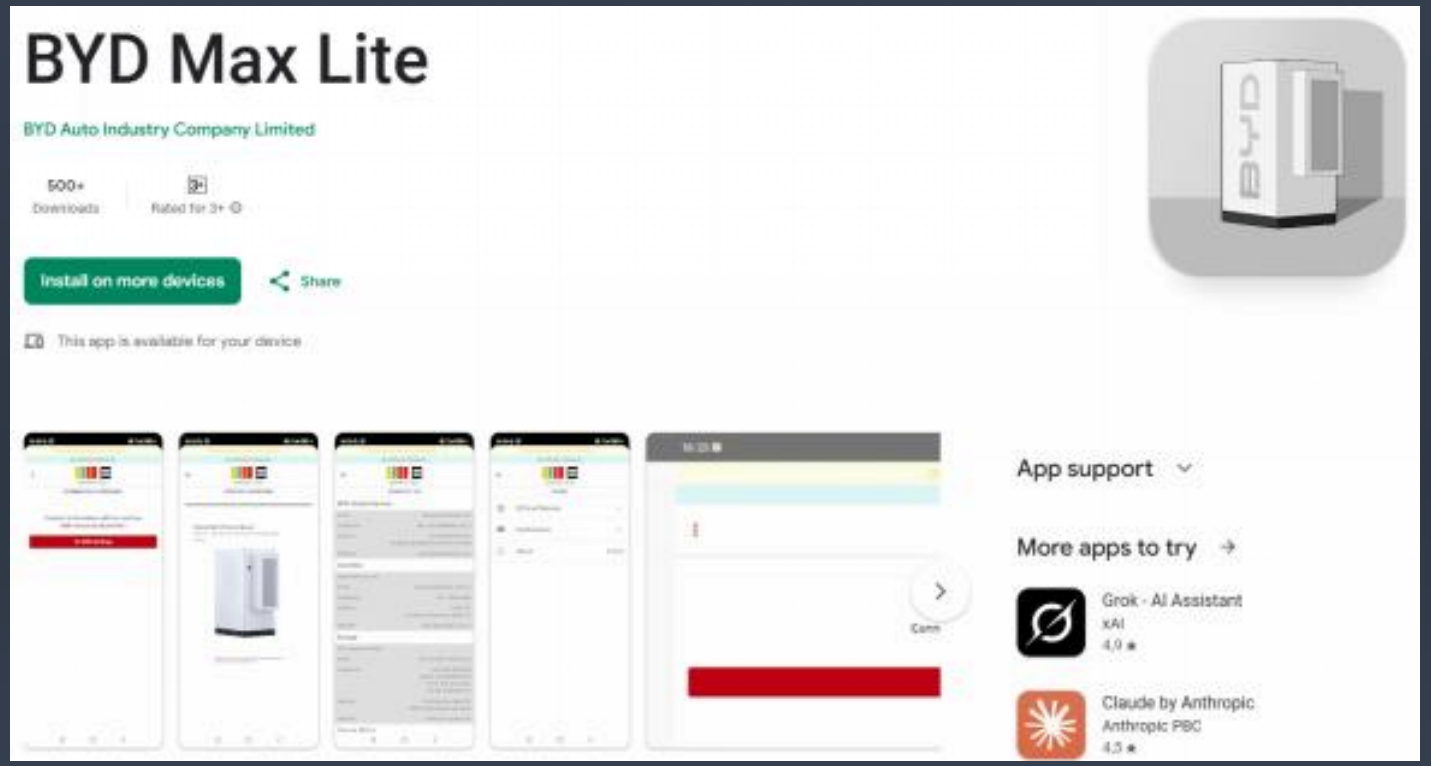
Max Lite In - COMMISSIONING

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 SERVICETEAMWITHIN 48 HOURS.

Max Lite In - COMMISSIONING APPS - 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



Max Lite In - COMMISSIONING APPS - BYD Max Lite Plus

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

Max Lite In - Configuration

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.

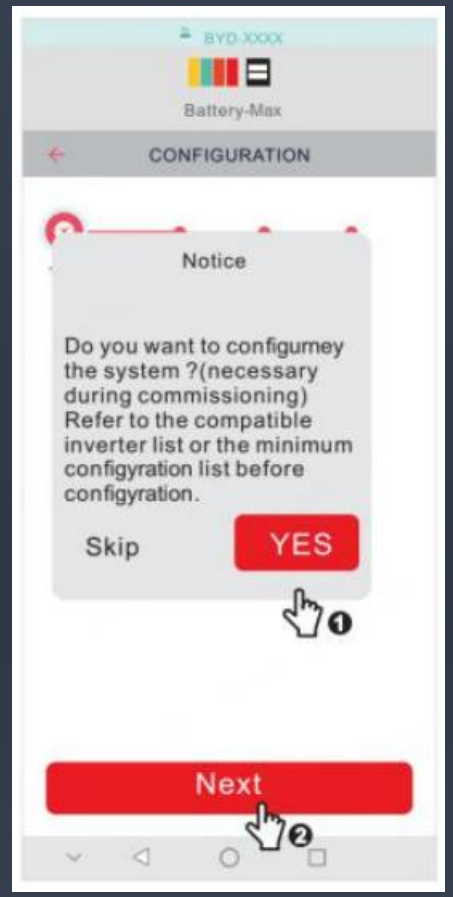
2. Tick the box in front of “I agree to the Privacy Policy”, and then tap the “Start” button.

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

Max Lite In - Configuration

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”.

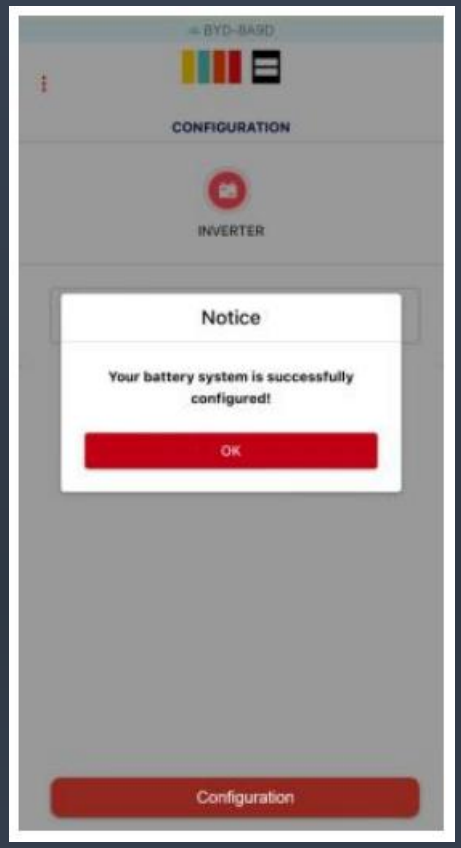
Max Lite In - Configuration

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:

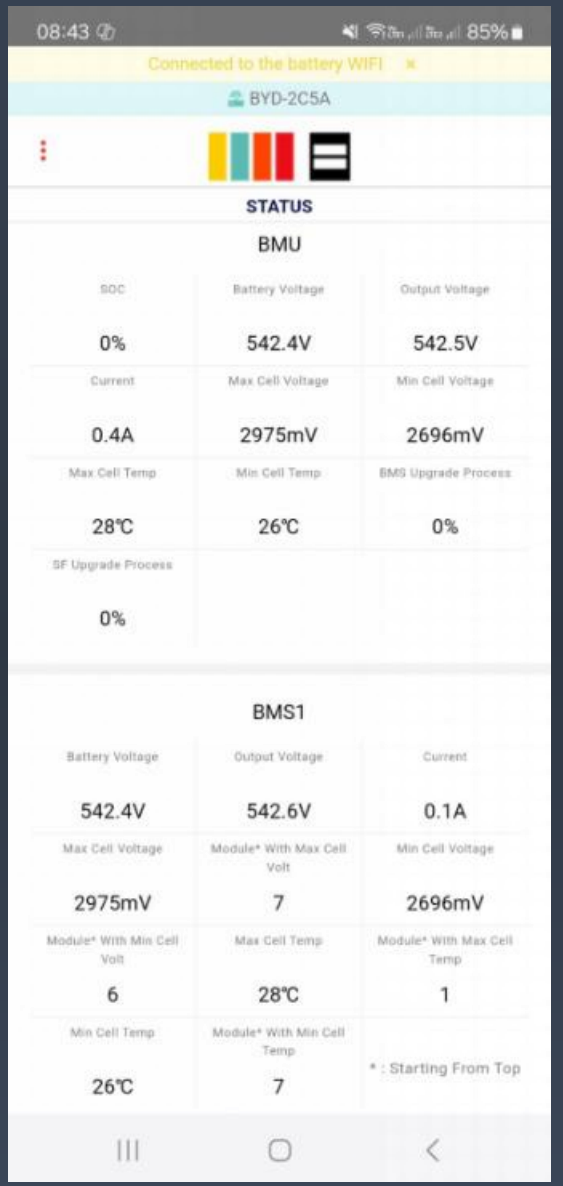
Restart the BYD Max Lite if it is stuck somewhere.

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



Max Lite In - example of commissioned battery

-+



Max Lite In - correct procedure to turn the battery ON / OFF

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

Switch Off the Battery System

- The procedure is: 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

Max Lite In - BLACKSTART and WIFI activation

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.

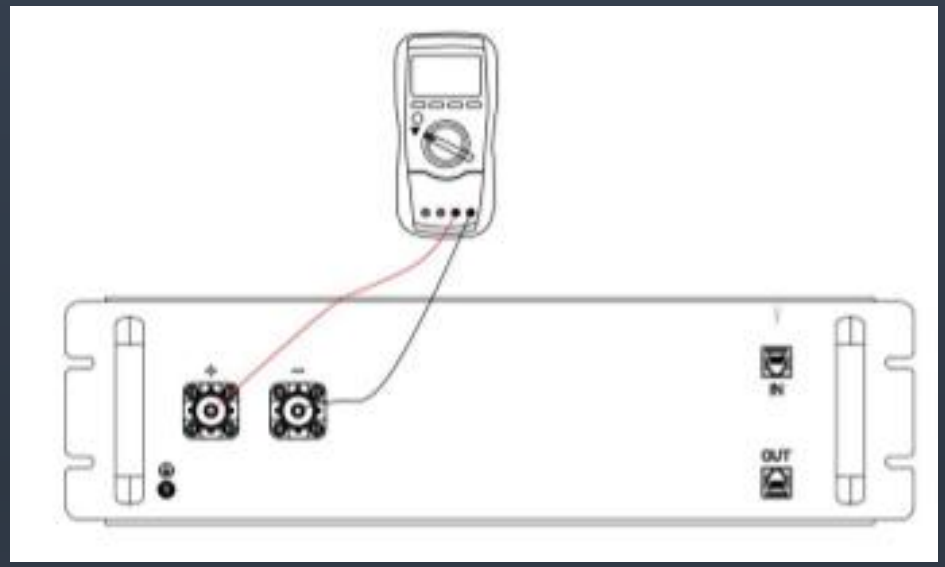
Wi-Fi activation

- 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.

Max Lite In - Extension

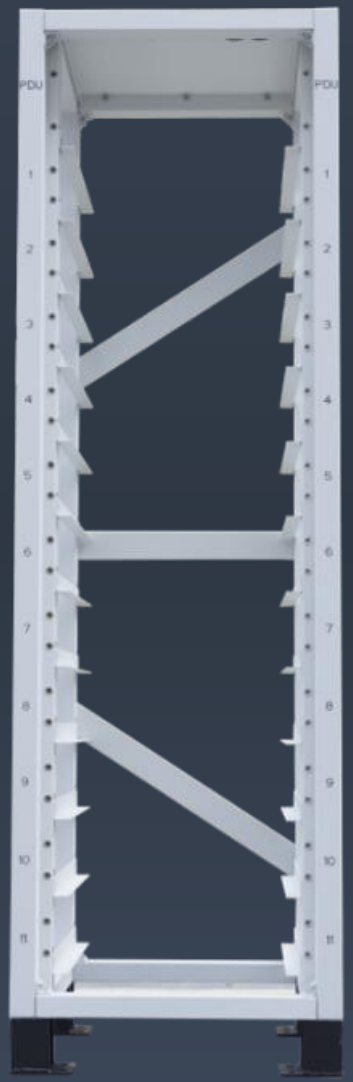
. Extension
The SOC of the original battery system and the new battery module should be similar before the new battery module is added to the original battery system. Note: Within 5 days before extension, it is recommended to fully charge the original battery system to SOC 100%.

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



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

Max Lite In - Images



Max Lite In - Images

Max Lite In - Images

Max Lite In - Alarm LED Signals of the PDU

The LED on the PDU indicates the battery operating state.

Battery Status	Red LED	Yellow LED	Green LED
Normal	off	off	on
Alarm	off	on	off
Shutdown : fault	on	off	off
Shutdown failed	on	off	on

LED Signals of the PDU

Battery Status	
Normal	Blinking for a cycle of 1 second
Shutdown	Off
Blackstart	Blinking for 5 cycles with a cycle of 0.4 second (0.2s is on, 0.2s is off)
WiFi Reset	Blinking for 5 cycles with a cycle of 0.4 second (0.2s is on, 0.2s is off)