GOODWE

User Manual

Rechargeable Li-ion Battery System

Lynx Home A Series

V1.0-2023-08-25

Trademarks

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NOTICE

The information in this user manual is subject to change due to product updates or other reasons. This guide cannot replace the product labels or the safety precautions in the user manual unless otherwise specified. All descriptions in the manual are for guidance only.

CONTENT

1 About This Manual

This manual describes the product information, installation, electrical connection, commissioning, troubleshooting and maintenance. Read through this manual before installing and operating the product. All the installers and users have to be familiar with the product features, functions, and safety precautions. This manual is subject to update without notice. For more product details and latest documents, visit https://en.goodwe.com/.

1.1 Applicable Model

This manual applies to the listed models below:

- LX A5.0-10

1.2 Target Audience

This manual applies to trained and knowledgeable technical professionals. The technical personnel has to be familiar with the product, local standards, and electric systems.

1.3 Symbol Definition

Different levels of warning messages in this manual are defined as follows:

DANGER
Indicates a high-level hazard that, if not avoided, will result in death or serious injury.
WARNING
Indicates a medium-level hazard that, if not avoided, could result in death or serious injury.
CAUTION
Indicates a low-level hazard that, if not avoided, could result in minor or moderate injury.
NOTICE
Highlights key information and supplements the texts. Or some skills and methods to solve product-related problems to save time.

1.4 Updates

V1.0 8/25/2023

- First Issue

The latest document contains all the updates made in earlier issues.

2 Safety Precaution

Strictly follow the safety instructions in the user manual during the operation.

NOTICE
The products are designed and tested strictly to comply with related safety rules. Read and follow all the safety instructions and cautions before any operations. Improper operation might cause personal injury or property damage as the products are electrical equipment.

2.1 General Safety

NOTICE
• The information in this user manual is subject to change due to product updates or other reasons. This manual cannot replace the safety instructions or labels on the equipment unless otherwise specified. All descriptions in the manual are for guidance only. • Before installations, read through the user manual to learn about the product and the precautions. • All operations should be performed by trained and knowledgeable technicians who are familiar with local standards and safety regulations. • Use insulating tools and wear personal protective equipment (PPE) when operating the equipment to ensure personal safety. Wear anti-static gloves, clothes, and wrist strips when touching electronic device to protect the equipment from damage. • Strictly follow the installation, operation, and configuration instructions in this manual. The manufacturer shall not be liable for equipment damage or personal injury if you do not follow the instructions. For more warranty details, please visit: https://www.goodwe.com/support-service/warranty-related.

2.2 Battery Safety

DANGER

- Power off the battery system before any operations to avoid danger. Strictly follow all safety precautions outlined in this manual and safety labels on the equipment during the operation.
- The inverter used with the battery shall be approved by the battery manufacturer. The approved list of battery and the matched inverter can be obtained through the official website.
- Do not disassemble, modify, or replace any part of the battery or the power control unit without official authorization from the manufacturer. Otherwise, it will cause electrical shock or damage the equipment, which shall not be borne by the manufacturer.
- Do not hit, pull, drag, squeeze or step on the equipment or put the battery into fire. Otherwise, the battery may explode.
- Do not place the battery in a high temperature environment. Make sure that there is no direct sunlight and no heat source near the battery. When the ambient temperature exceeds 60 ℃, it will cause fire.
- Do not use the battery or the power control unit if it is defective, broken, or damaged. Damaged battery may leak electrolyte.
- To protect the battery pack and its components from damage during transportation, please ensure that the transportation personnel are professionally trained. All operations during the transportation have to be recorded. The equipment shall be kept in balance to avoid falling down.
- The battery equipment is heavy. Please equip the corresponding personnel according to its weight, so that the equipment does not exceed the weight range of the human body can carry, and cause personnel injury.
- Contact after-sales service immediately if the battery is not able to be started. Otherwise, the battery might be damaged permanently.
- Do not move the battery system when it is working. Contact after-sales service if the battery shall be replaced or added.

CAUTION

- Protect the battery system from damage during transportation and storage.
- The transportation must be carried out by trained professionals. All operations during the process have to be recorded.
- Keep the equipment stable to avoid dumping, which can result in equipment damage and personal injuries.
- Place the cables at least 30mm away from the heating components or heat sources, otherwise the insulation layer of the cables may be aging or broken due to high temperature.
- Tie the same type cables together, and place cables of different types at least 30mm apart. Do not place the cables entangled or crossed.

Label Description

Symbol	Description	Symbol	Description
	Potential risks exist. Wear proper PPE before any operations.		Keep the equipment away from open flame or ignition source.
	HIGH VOLTAGE HAZARD. High voltage exists during the equipment's running. Ensure the equipment is power off before any operations.		Keep the equipment away from children.
	Operate the equipment properly to avoid explosion.		No extinguishing with water.
	The equipment contains corrosive electrolytes. In case of a leak in the equipment, avoid contact the leaked liquid or gas.		Do not dispose of the equipment with household garbage at its end of life. Dispose it according to local laws and regulations. Or send it to the manufacturer.
	Batteries contain flammable materials. Beware of fire.		Put the battery in the right place and recycle it in compliance with local environmental regulations.
	Read through the user manual before any operations on the equipments.		Pay attention to safety protection during installation, operation and maintenance.
	Read through the user manual before any operations on the system.		Grounding. To indicate PE cable connection position.
	CE Marking.		TUV Marking.
	RCM Marking.	-	-

2.3 Emergency Measures

Battery Electrolyte Leakage

If the battery module leaks electrolyte, avoid contact with the leaking liquid or gas. The electrolyte is corrosive. It will cause skin irritation or chemical burn to the operator. Anyone contact the leaked substance accidentally has to do as following:

- **Breath in the leaked substance**: Evacuate from the polluted area, and seek immediate medical assistance.
- **Eye contact**: Rinse your eyes for at least 15 minutes with clean water and seek immediate medical assistance.
- **Skin contact**: Thoroughly wash the touch area with soap and clean water, and seek immediate medical assistance.
- **Ingestion**: Induce vomiting, and seek immediate medical assistance.

Fire

- The battery may explode when the ambient temperature exceeds 150℃. Poisonous and hazard gas may be released if the battery is on fire.
- In the event of a fire, please make sure that the carbon dioxide extinguisher or Novac1230 or FM-200 is nearby.
- The fire cannot be put out by water or ABC dry powder extinguisher. Firefighters are required to wear full protective clothing and self-contained breathing apparatus.

2.4 EU Declaration of Conformity

GoodWe Technologies Co., Ltd. hereby declares that the inverter without wireless communication modules sold in the European market meets the requirements of the following directives:

- Electromagnetic compatibility Directive 2014/30/EU (EMC)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)
- Battery Directive 2006/66/EC

You can download the EU Declaration of Conformity on the official website: https://en.goodwe.com/.

3 Product Introduction

3.1 Product Overview

Intended usage

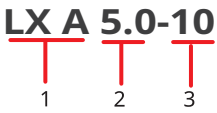
The battery system stores and releases the electric energy according to the requirements of the solar energy storage system. The input and output ports of the battery system are low voltage direct current ports.

Model Description

This manual applies to the listed models below:

- LX A5.0-10

Model



No.	Referring to	Explanation
1	Series code	Lynx Home A Series.
2	Usable energy	5.0: The usable energy of the battery system is 5 kWh.
3	Version code	10: Version of the battery system is 1.0.

Usable energy description

NOTICE

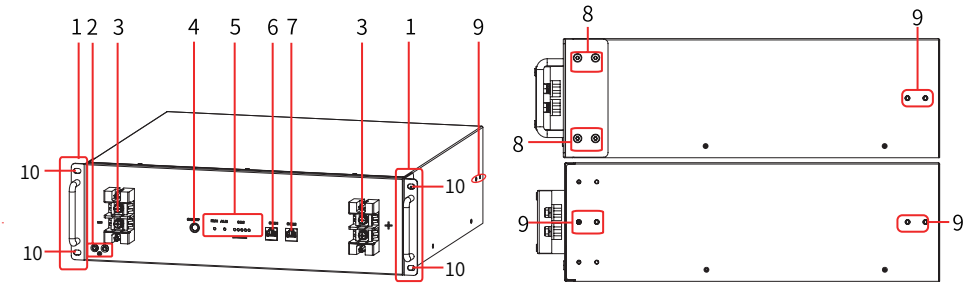
- The battery system supports capacity expansion. A maximum of 15 batteries can be used to extend the usable energy of the battery system. Expand the battery system capacity in strict compliance with the expansion requirements. Contact the dealer or manufacturer for more details.
- Failure to follow the expansion requirements may result in fault in the battery system.

Approved Inverter List

Scan the QR code below or visit the official website to get the Approved Battery Options Statement.

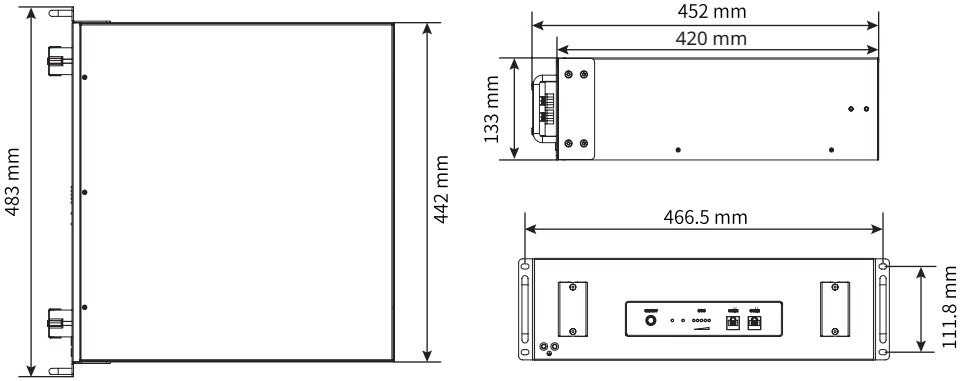
GoodWe Inverter GE Inverter

3.2 Appearance



No.	Parts	Descriptions
1	Hanger	Used to move the battery.
2	PE Terminals	Used to connect grounding cables to the battery for protection.
3	Power Input & Output Ports	Used to connect DC cables of the battery system. Each battery has 2 BAT+ ports, 2 BAT - ports, and each are functionally identical.
4	Power Button	Used to control ON, OFF and Black-start of the battery system.
5	Indicator	• SOC indicator: indicates the SOC status of the battery. • RUN indicator: indicates the working status of the battery. • ALM indicator: indicates the alarm status and fault status of the battery. • Combines the SOC indicator RUN indicator and alarm indicator to check the battery system working status, alarm status and fault status.
6	Communication port (COM1)	Used to connect the communication cable between the battery and inverter or two batteries, and used to connect the terminal resistance. COM1 and COM2 are functionally identical.
7	Communication port (COM2)	
8	Hanger Fixing Holes	Used to connect the hanger and the battery.
9	Bracket Fixing Holes	Used to connect the bracket to the battery.
10	Battery Fixing Holes	Used to connect the battery to the cabinet.

Dimension



4 Check and Storage

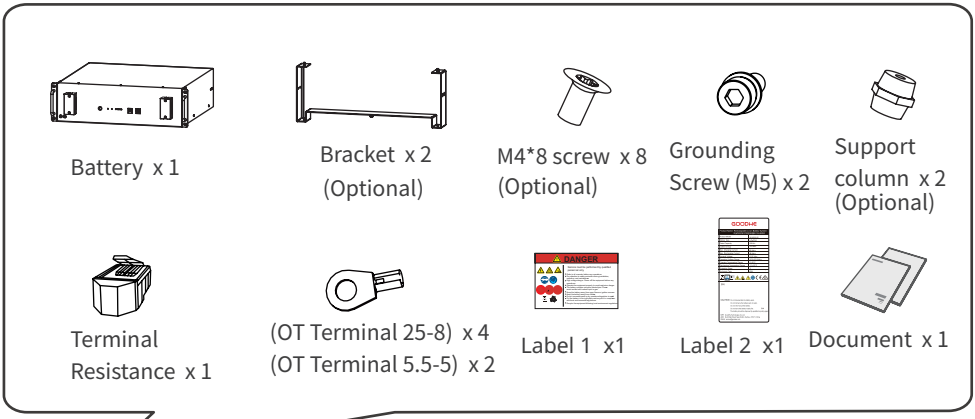
4.1 Check Before Receiving

Check the following items before receiving the product.

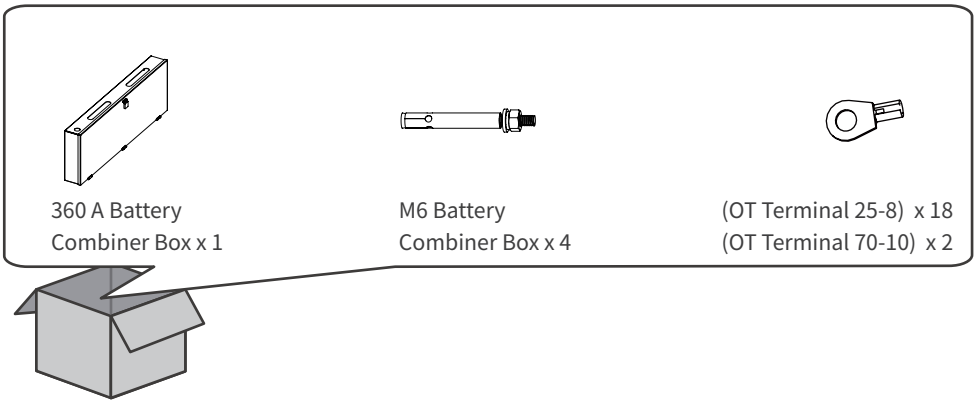
1. Check the outer packing box for damage, such as holes, cracks, deformation, and other signs of equipment damage. Do not unpack the package and contact the supplier as soon as possible if any damage is found.
2. Check the product model. If the product model is not what you requested, do not unpack the product and contact the supplier.
3. Check the deliverables for correct model, complete contents, and intact appearance. Contact the supplier as soon as possible if any damage is found.

4.2 Deliverables

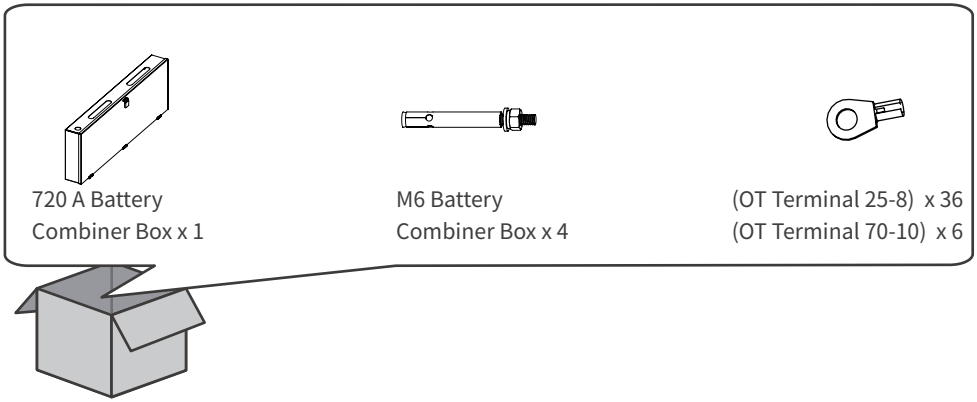
Battery



Battery Combiner Box (BCB-11-WW-0) (Optional)



Battery Combiner Box (BCB-22-WW-0) (Optional)



4.3 Storage

If the equipment is not to be installed or used immediately, please ensure that the storage environment meets the following requirements:

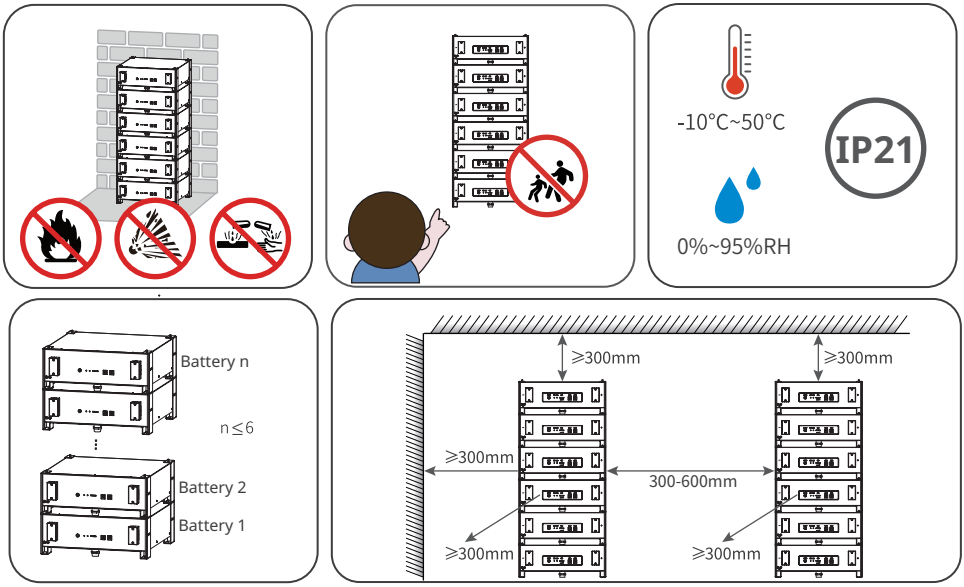
1. Do not unpack the outer packing box or throw the desiccant away.
2. Complete the equipment installation in three days after unpacking under proper storage . Pack and store the equipment using the original packing box if it is not installed.
3. Stack the equipment complying with the labels and requirements on the packing box.
4. The equipment must be stacked with caution to prevent them from falling.
5. Keep the equipment away from flammable, explosive, and corrosive matters.
6. Place the equipment in a cool place where away from direct sunlight.
7. Store the equipment in a clean place. Make sure the temperature and humidity are appropriate and no condensation.
8. Storage SOC: 25%~50% SOC.
9. Recharge the battery within 6 months.
10. Storage temperature (T):
    - When -20℃≤T＜0℃, and 40℃＜T≤45℃, the storage period cannot exceed 1 month.
    - When 0℃≤T≤40℃, the storage period cannot exceed 1 year.
11. Recommended storage humidity: 0%~95%RH (no condensation). Do not install the battery system if there is any moisture or condensation.

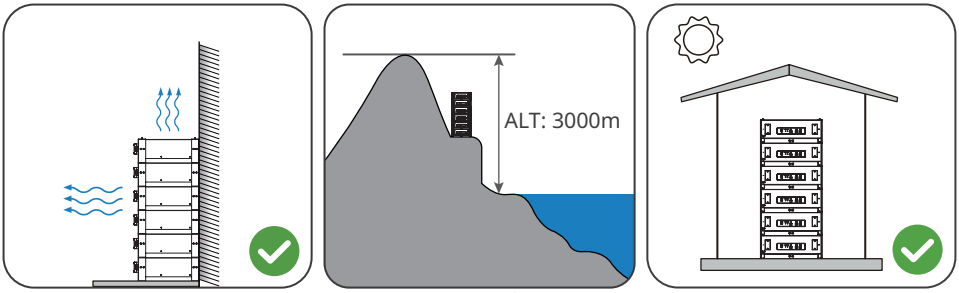
5 System Installation

5.1 Installation Requirements

Installation Environment Requirements

1. Do not install the equipment in a place near flammable, explosive, or corrosive materials.
2. Do not install the equipment in a place that is easy to touch, especially within children's reach. High temperature exists when the equipment is working. Do not touch the surface to avoid burning.
3. Install the equipment in a well-ventilated place to ensure good dissipation. Also, the installation space should be large enough for operations.
4. The equipment with a high ingress protection rating can be installed indoors. The temperature and humidity at the installation site should be within the appropriate range.
5. The altitude to install the equipment shall be lower than the maximum working altitude 3000m.
6. No more than 6 batteries are recommended for one stack.
7. Install the equipment at a height that is convenient for operation and maintenance, electrical connections, and checking indicators and labels.
8. Install the product away from electromagnetic interference. If there is any radio or wireless communication equipment below 30MHz near the equipment, make sure that the inverter is at least 30m far away from the wireless equipment.



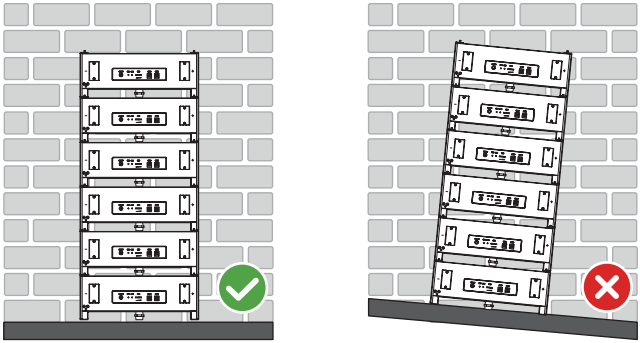


Mounting Support Requirements

- The mounting support shall be nonflammable and fireproof.
- Install the equipment on a surface that is solid enough to bear the product weight.

Installation Angle Requirements

Install the equipment horizontal, no tilt or upside down.



5.2 Installing the Battery System

5.2.1 Moving the Equipment

CAUTION

- Operations such as transportation, turnover, installation and so on must meet the requirements of the laws and regulations of the country or region where it is located.
- Move the equipment to the site before installation. Follow the instructions below to avoid personal injury or equipment damage.
  1. Consider the weight of the equipment before moving it. Assign enough personnel to move the equipment to avoid personal injury.
  2. Wear safety gloves to avoid personal injury.
  3. Keep the equipment in balance to avoid its falling down during moving.

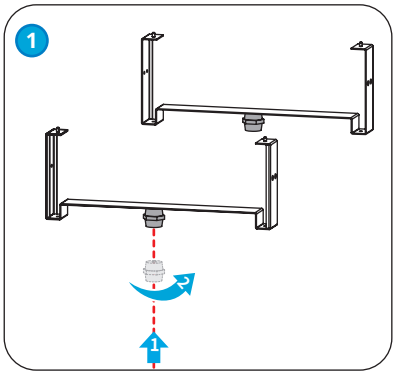
5.2.2 Bracket Installation

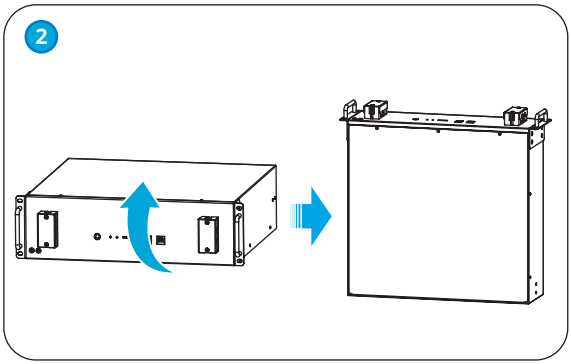
Notice

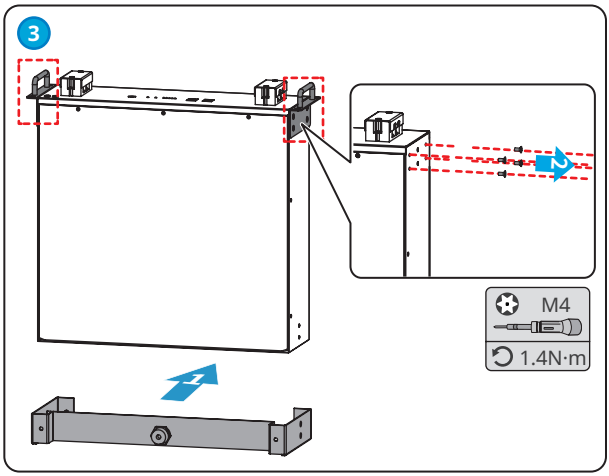
No more than 6 batteries are recommended for one stack.

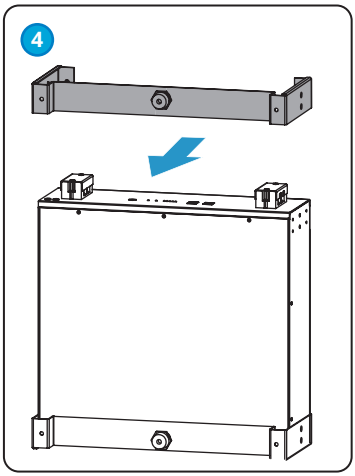
Step 1: Tighten the support columns to the brackets.
Step 2: Place the battery upright.
Step 3: Install one bracket to the battery, and remove the hangers on both sides of the battery.
Step 4: Install the other bracket to the battery.
Step 5: Secure the bracket to the battery with screws, and place the battery horizontally.
Step 6: Stack multiple batteries.

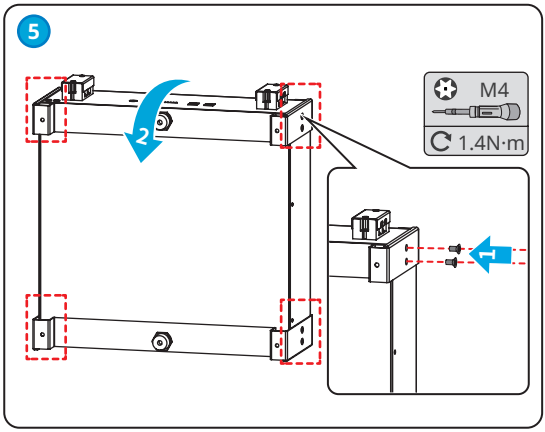
- Align the positioning pin on the lower battery bracket with the positioning hole on the upper battery bracket, and insert the positioning pin into the positioning hole.
- Loosen the support columns of the second layer or above layer to the left until them reaching the battery box of the lower layer.

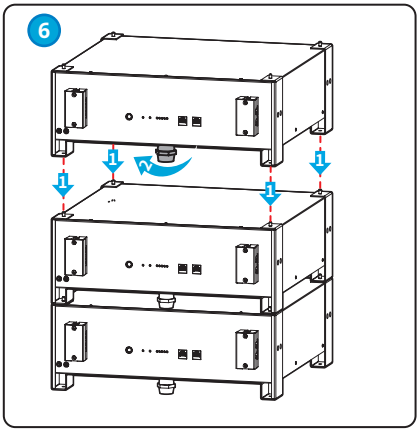












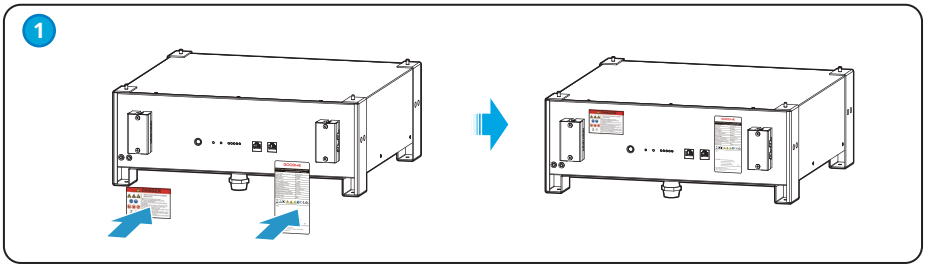
5.2.3 Cabinet Installation

NOTICE
• A 19 inch standard cabinet is recommended. The physical length and width of a cabinet can be 600 * 800mm or above. The height that can be selected based on the number of parallel led batteries. • A electrical label and warning label, which is in the scope of delivery, need to be affixed to the front panel of any battery for cabinet installation.

Step 1: Paste the electrical label and warning label on the front panel of any battery.

Step 2: Install batteries to the cabinet.

- Place the batteries on the rails of the cabinet.
- Fasten the batteries to the cabinet using screws.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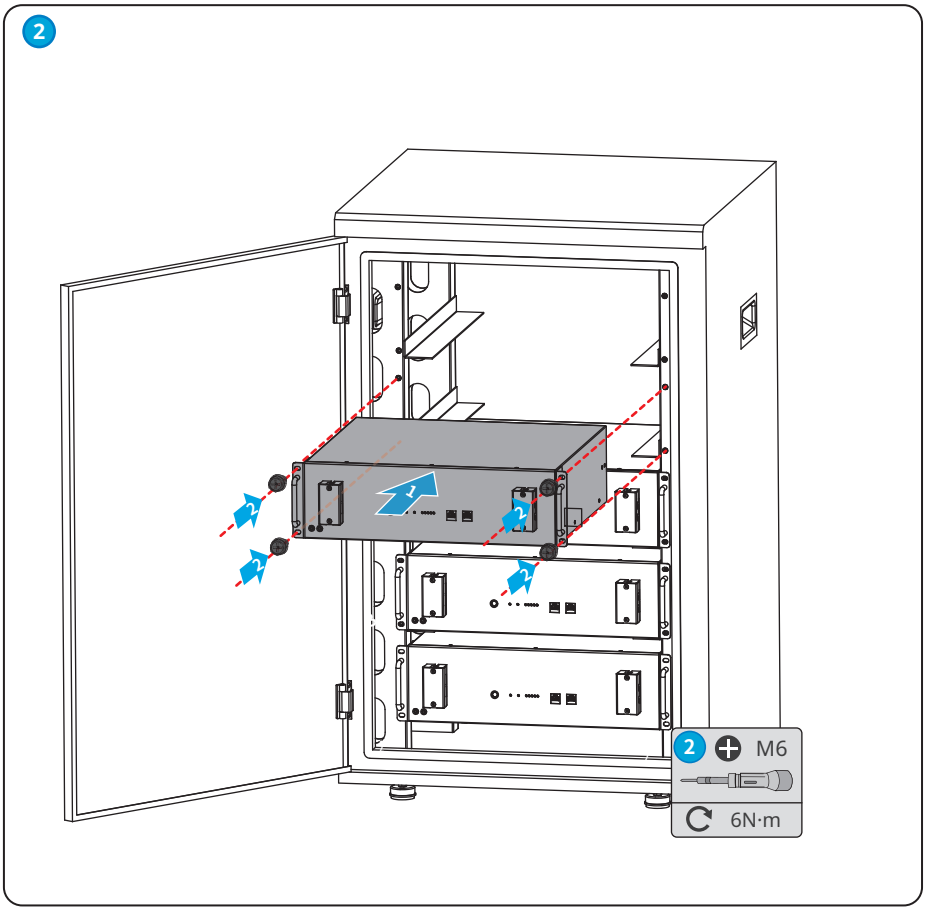
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6 Electrical Connection

6.1 Safety Precaution

DANGER

- Power off the battery system before any operations to avoid danger. Strictly follow all safety precautions outlined in this manual and safety labels on the equipment during the operation.
- All operations, cables and parts specification during the electrical connection shall be in compliance with local laws and regulations.
- Tie the same type cables together, and place them separately from cables of different types. Do not place the cables entangled or crossed.
- Make sure that the cable conductor is in full contact with the terminal and the cable insulation part is not crimped with the terminal when crimping the terminal. Otherwise, the device may not be able to work properly, or the connection may be unreliable during working, which may cause terminal block damage, etc.

NOTICE

- Wear personal protective equipment like safety shoes, safety gloves, and insulating gloves during electrical connections.
- All electrical connections should be performed by qualified professionals.
- Cable colors in this document are for reference only. The cable specifications shall meet local laws and regulations.

6.2 Battery System Installation

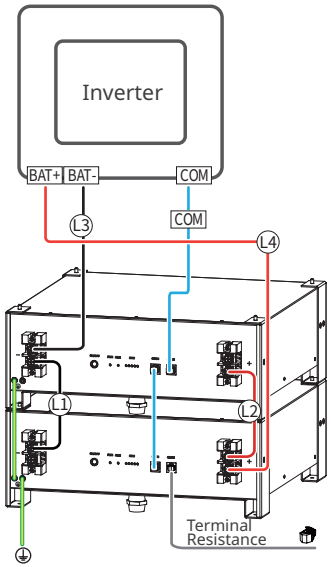
NOTICE

- A maximum of 15 batteries can be parallel connected in one energy storage system. Batteries of any SOC and voltage can be parallel connected.
- Parallel connection method: disconnect the power source of inverters and batteries , connect the new and old batteries in parallel according to the user manual, and then restart the batteries and inverters.
- If use a DC Bus, the DC bus need to be designed or adjusted by the installers, and the communication cable interface need to be adjusted according to the guidance in **Chapter 6.5.**
- If over 15 batteries are needed, please contact the manufacturer for a solution.
- The cable between batteries need to be of the same length（(300 mm is recommended)), and the cable between the batteries and inverters need to be of the same length (≤3 m is recommended).
- The equipment in the dashed boxes are optional.

6.2.1 Direct Connection Mode

Type	Type	Recomended Cross-sectional Area of Conductor
Power Cable	Copper-core cable	25 mm²
PE Cable	Copper-core cable	4 - 6 mm²
Communication Cable	Straight-through Ethernet Cable	-

Battery Quantity n	System Operation Current (A)	System Operation Power (kW)
n=1	60	3
n>1	120	6



L:Length
L1=L2
L3=L4

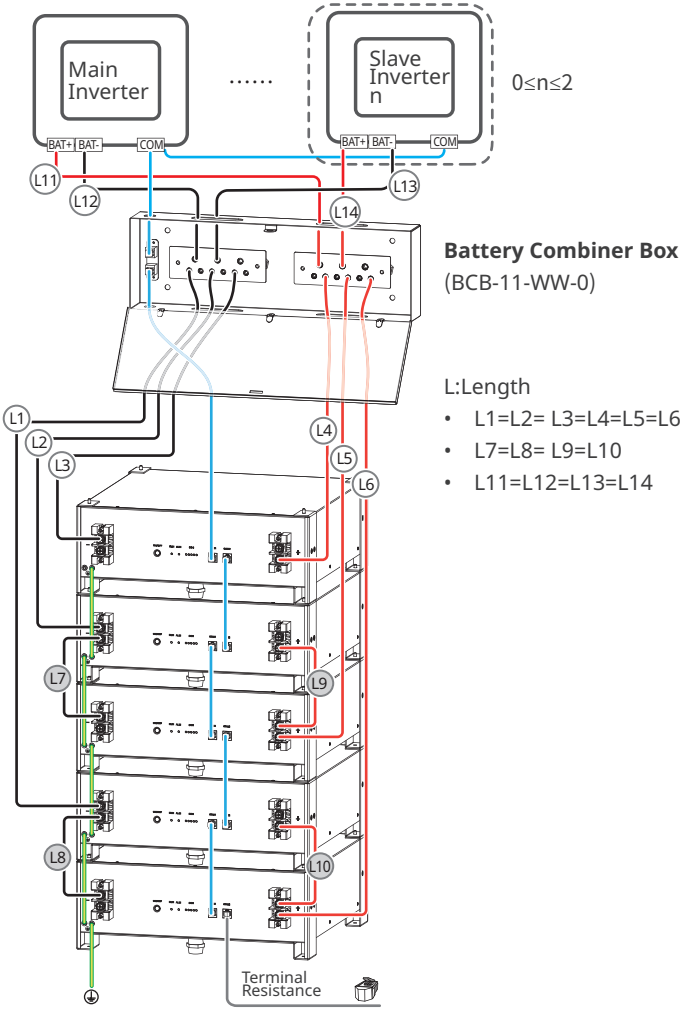
6.2.2 Battery Combiner Box Mode / DC Bus Mode

Cable	Type	Location	Normal Output Power of Inverter	Recomended Cross-sectional Area of Conductor
Power Cable	Copper-core cable	Between Inverter and Battery Combiner Box	3 kW - 6 kW	25 mm² [1]
			8 kW - 12 kW	70 mm² [1]
		Between Battery and Battery Combiner Box & Between Battery and Battery	-	25 mm²
PE Cable	Copper-core cable	-		4 - 6 mm²
Communication Cable	Straight-through Ethernet Cable[2]	-		-

[1]: The specification of cable should be decided by the normal charging and discharging current of inverters.
[2]: If use non-GoodWe battery combiner box, please make the cable according to the guide of **Chapter 6.5 of this manual.**

360 A Battery Combiner Box

Battery Quantity n	System Operation Current (A)	System Operation Power (kW)	Note
n<6	n*60	n*3	-
n≥6	360	18	Since the maximum bearable current of the battery combiner box is 360 A, please ensure that the total battery charging and discharging power by the inverter does not exceed 18 kW.



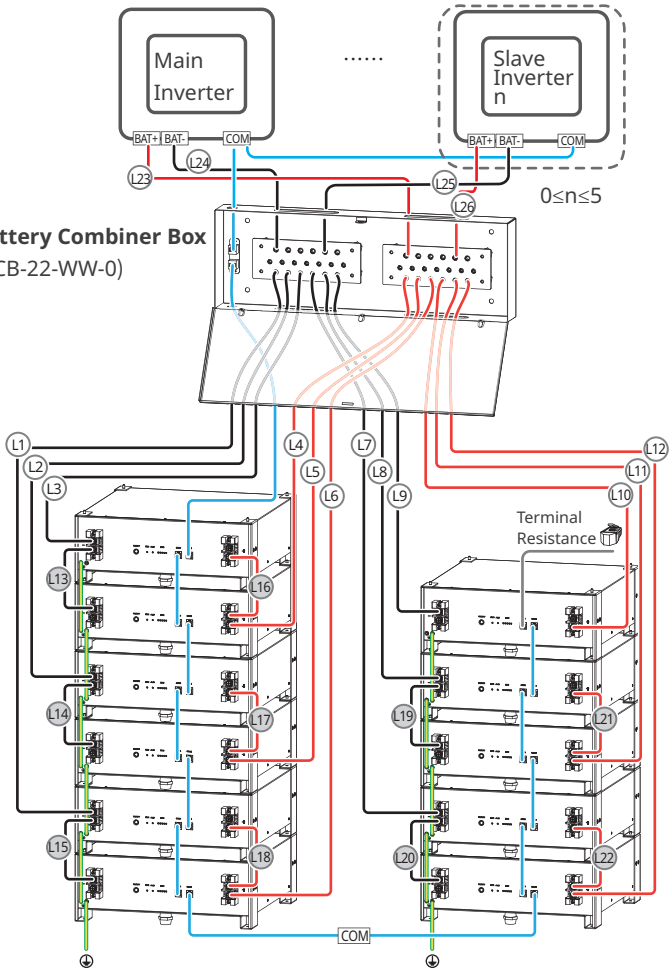
720 A Battery Combiner Box

Battery Quantity n	System Operation Current (A)	System Operation Power (kW)	Note
n<12	n*60	n*3	-
n≥12	720	36	Since the maximum bearable current of the battery combiner box is 720 A, please ensure that the total battery charging and discharging power by the inverter does not exceed 36 kW.

L:Length

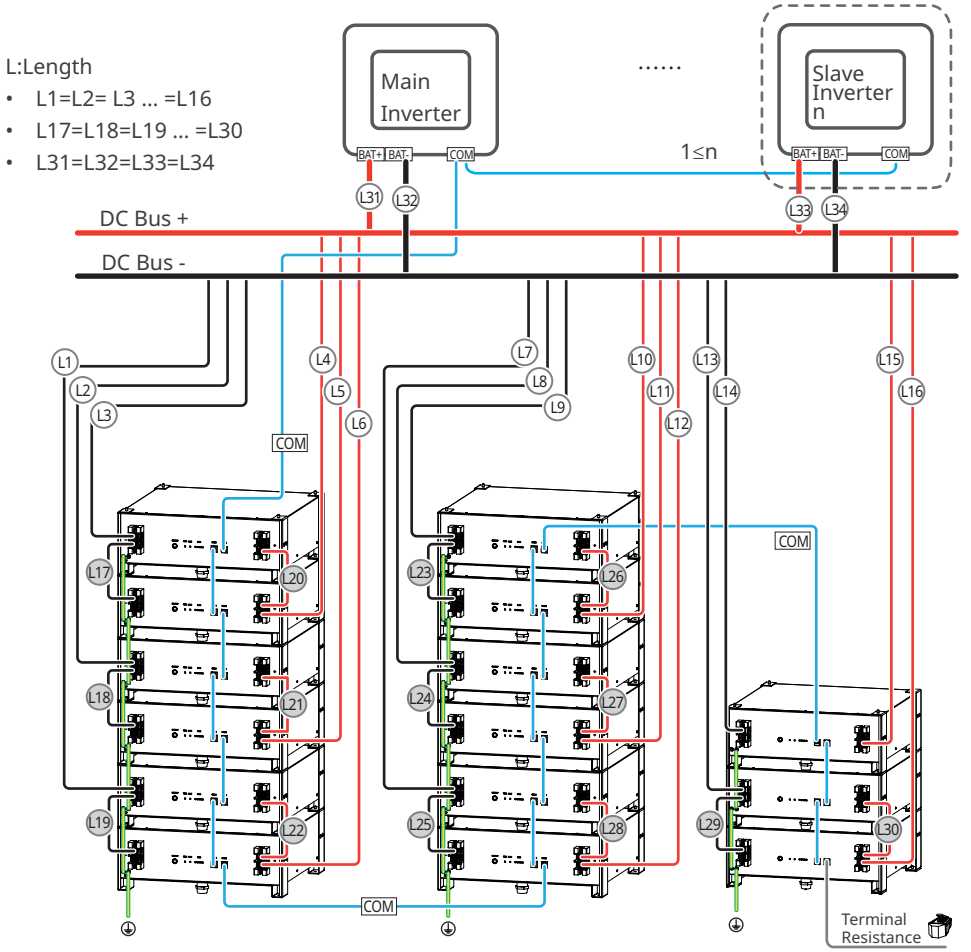
- L1=L2= L3 ... =L12
- L13=L14= L15 ... =L22
- L23=L24=L25=L26

Battery Combiner Box
(BCB-22-WW-0)



DC Bus

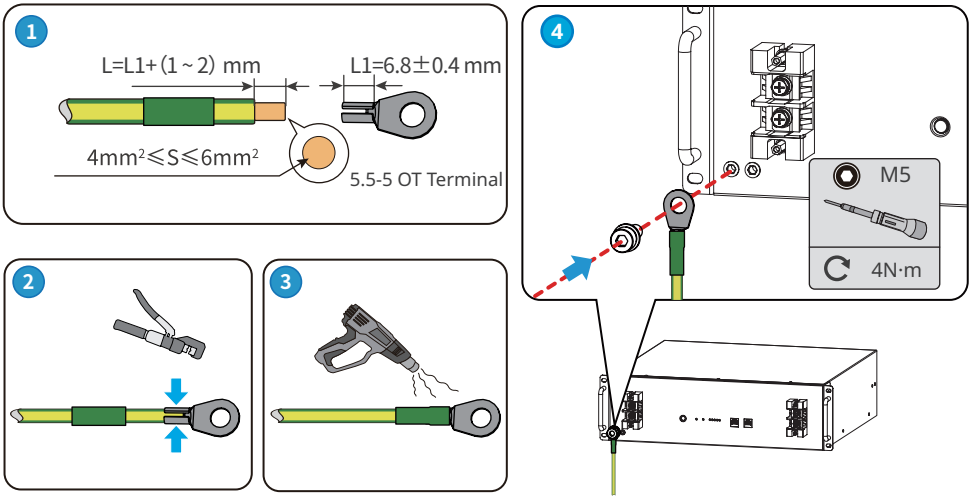
Battery Quantity n	System Operation Current (A)	System Operation Power (kW)
n	n*60	n*3



6.3 Connecting the PE cable

NOTICE

- Connect the PE cable first before installing the equipment. Disconnect the PE cable at last when dismantle the equipment.
- Use a hydraulic plier to crimp the battery grounding terminal. Recommended hydraulic plier model: YQK-70.
- The drawing force of the cable of 4 mm^2 should be >270 N, and that of the cable of 6 mm^2 should be >450 N.
- The PE cable should be prepared by the customer. Recommended specifications:
- Type: single-core outdoor copper cable.
- Cross-sectional area: 4-6 mm^2.

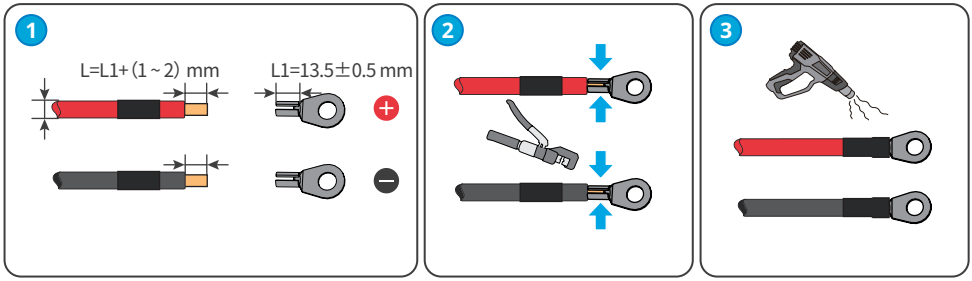


6.4 Connecting the Power Cable

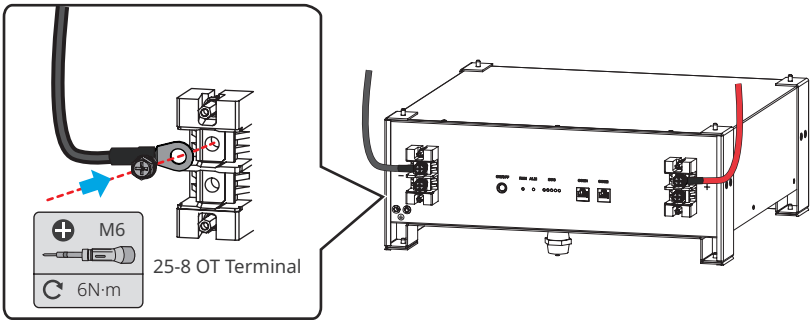
WARNING

- The DC cable should be prepared by the customer. Recommended Type of cable: single-core outdoor copper cable
- Use a hydraulic plier to crimp the battery DC terminal. Recommended hydraulic plier model: YQK-70.
- The recommended wiring method and cable parameters in this manual are based on copper core cable only.

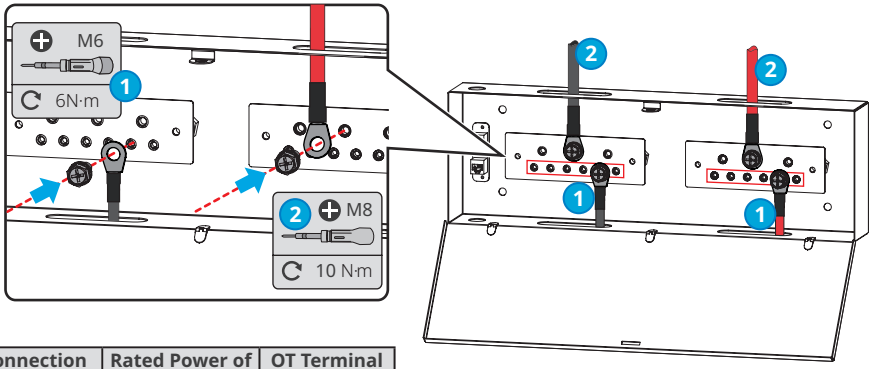
Crimping Power Cable



Connecting Cable of Batteriess Power Input & Output Ports



Connecting Cable between Battery Combiner Box and Inverter



Connection Port	Rated Power of the inverter	OT Terminal Specification
Inverter Port	3 - 6kW	25-8
	8 - 12kW	70-10
Battery Port	-	25-8

6.5 Connecting the Communication Cable

WARNING

If the communication cable between the inverter and the battery system is supplied by the inverter manufacturer, you can decide whether to use the supplied cable or not according to the actual situation. Refer to the user manual of the inverter and battery system for detailed cable specifications.

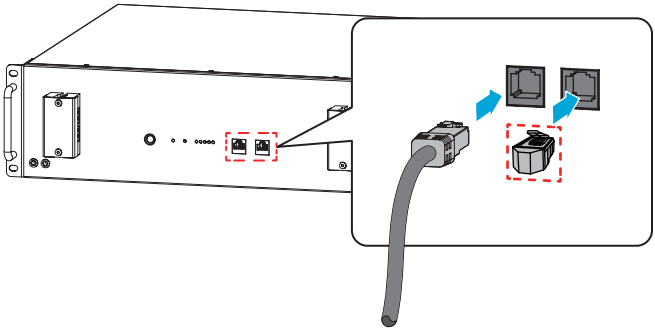
NOTICE

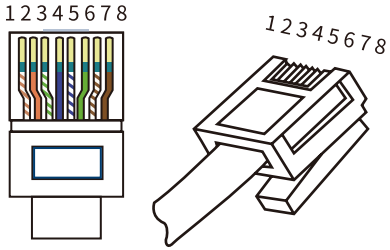
Battery to inverter communication cable:

- When the junction box is not used or when a GoodWe junction box is used, the commmmunication cable included in the inverter delivery can be used.
- If use non-GoodWe battery combiner box, you need to short-circuit Pin3 and Pin8 to make a special communication cable according to the **Non-GoodWe Battery Combiner Box Mode** below. If omit the short-circuit step, the maximum output current of the battery system will be 120 A when the quantity of batteries exceeds 2.

Battery to battery communication cable:

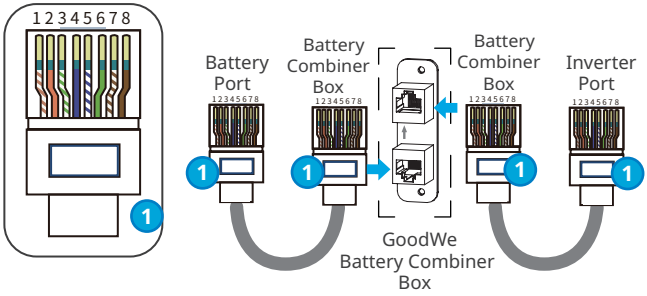
- Standard Straight-through Ethernet Cable can be used, and self-made cables if made must be made strictly according to the interface definition.
- Do not omit the terminal resistance of the battery system, otherwise it will cause parallel interlocking fault of the battery system and cause problem.



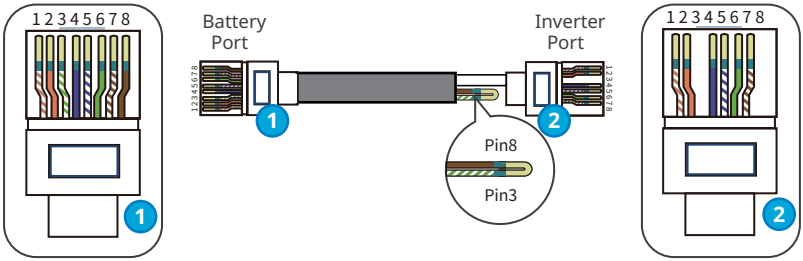


No.	Color	COM1&COM2
1	Orange and White	-
2	Orange	-
3	Green and White	Parallel OUT+
4	Blue	CAN H
5	Blue and White	CAN L
6	Green	-
7	Brown and White	-
8	Brown	Parallel OUT -

GoodWe Battery Combiner Box Mode



Non-GoodWe Battery Combiner Box Mode



7 Equipment Commissioning

7.1 Check Before Power ON

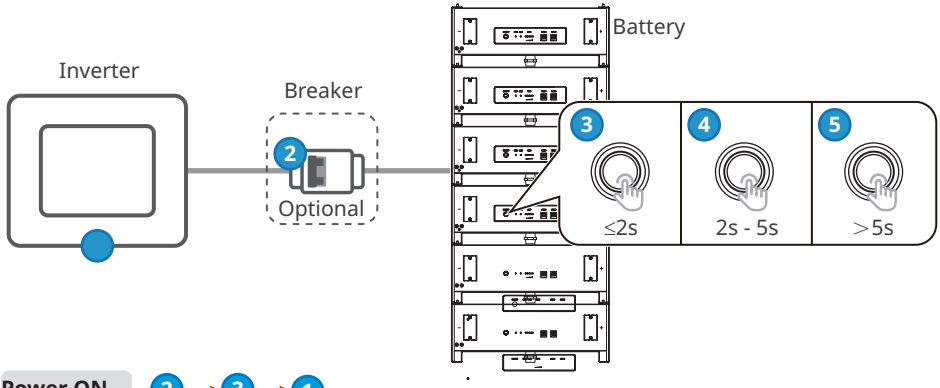
Check the following items before power on to avoid the battery system being damaged.

No.	Checking Item
1	The system is firmly installed in a clean place where is well-ventilated and easy to operate.
2	The PE cable, power cable, communication cable, and termination resistor are connected correctly and securely.
3	Cable ties are intact, routed properly and evenly.
4	Unused ports and terminals are sealed.

7.2 Power On

NOTICE

- The equipment in the dashed boxes are optional.
- Install the circuit breaker between the inverter and the battery and the circuit breaker between the two battery systems in compliance with local laws and regulations.
- Strictly follow the power on requirements to avoid damaging the system.
- With multiple batteries in one system, all batteries can be turned on by pressing the power button of any one battery.



Power ON 2 → 3 → 1

Step 1: (Optional) Close the breaker between the inverter and the battery.
Step 2: Short press the battery Power Button (≤2s), and release it.
Step 3: Power on the inverter in the system. Please refer to the corresponding inverter user manual for detailed operations.

Black-start[1] 2 → 1 → 3 → 4

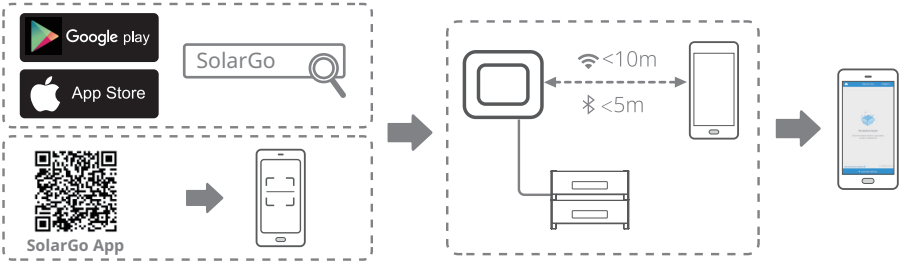
Step 1: (Optional) Close the breaker between the inverter and the battery.
Step 2: Short press the battery Power Button (≤2s), and release it.
Step 3: Long press the battery Power button (2s-5s).

[1]: Battery black-start application scenario:
1. The inverter needs to be started up via the battery; 2. The battery needs to be charged and discharged without an inverter, etc.

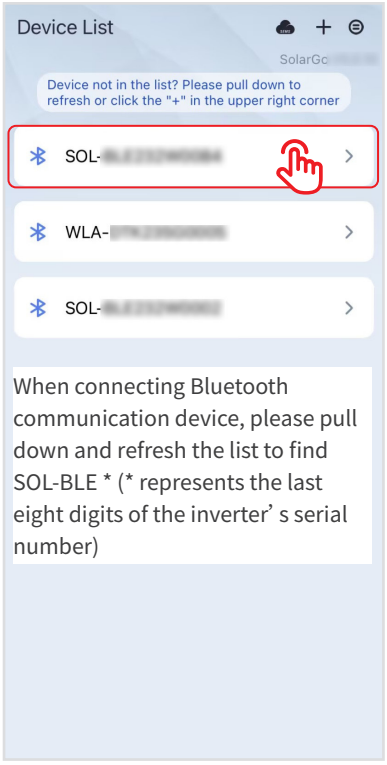
7.3 Setting the Battery Parameters

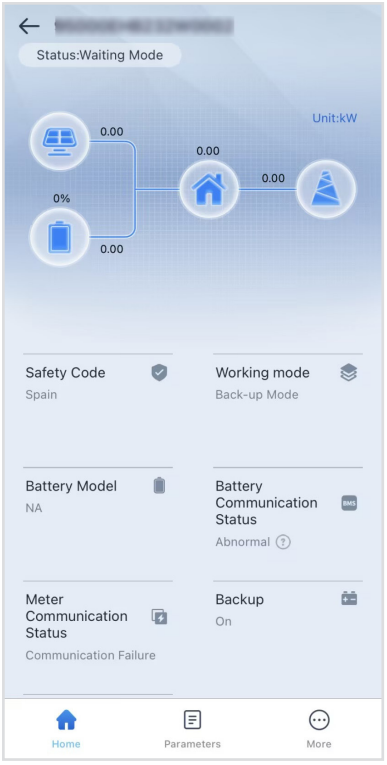
NOTICE
Select the battery model via SolarGo app after powering on the battery system. So that the battery system can work properly.

Step 1: Download SolarGo app.



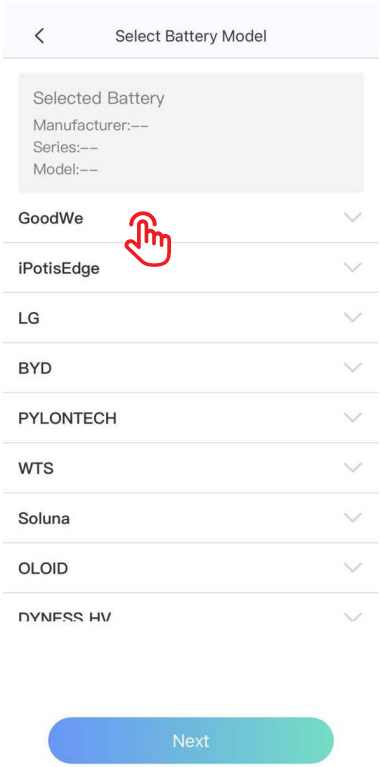
Step 2: Connect inverter.

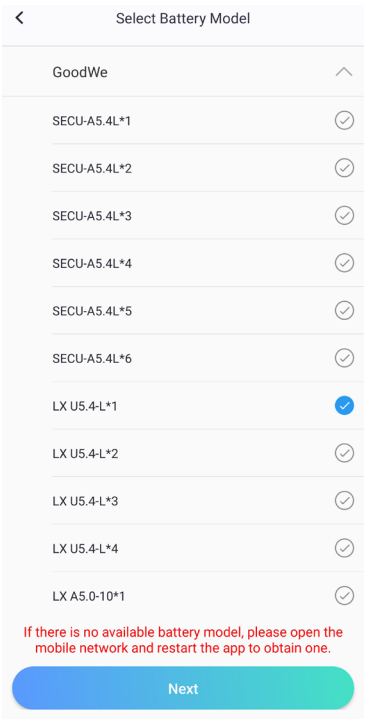




Step 3: Go to homepage, then click **More >Quick Setting >Battery Access** to enter the parameter setting page. Follow the prompts on the interface to enter the battery model selection interface and set the battery model.

NOTICE
• Incorrect battery model may cause system failure. Please set the battery model correctly. • Select the quantity of batteries based on the actural number of batteries connected, otherwise the power output will be influenced.





7.4 Indicator Status

Normal status

SOC indicator status (SOC1 SOC2 SOC3 SOC4 SOC5)	Button Indicator status	Battery system status
SOC indicator indicates SOC of the battery system. ○○○○○ SOC<5% ●○○○○ 5%≤SOC<25% ●●○○○ 25%≤SOC<50% ●●●○○ 50%≤SOC<75% ●●●●○ 75%≤SOC<95% ●●●●● 95%≤SOC≤100%	Green light blink 1 time/s	The battery system is in standby status
	Green light blink 2 times/s	The battery system is in idle status.
	Steady green light	The battery system is in charging status.
The last SOC indicator blinks 1 time/s. • When 5%≤SOC<25%, SOC 1 blinks. • When 25%≤SOC<50%, SOC 2 blinks. • When 50%≤SOC<75%, SOC 3 blinks. • When 75%≤SOC<95%, SOC 4 blinks. • When 95%≤SOC≤ 100%, SOC 5 blinks.	Steady green light	The battery system is in discharging status.

Abnormal status

Button indicator	Battery system status	Solutions
Red light blink 2 times/s	Battery system alarm	Once an alarm occurs, the battery system will perform a self-check. After the battery system self-check is complete, the battery system enters operation or fault mode.
Steady red light	Battery system fault	Check both the button indicator and the SOC indicator status to determine the fault that has occurred and handle the problem follow the methods recommended in the Troubleshooting section.

8 Maintenance

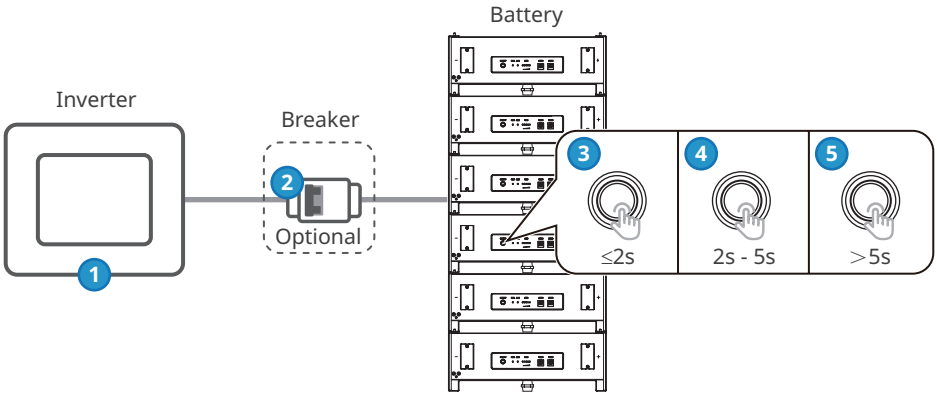
8.1 Power OFF the Battery System

DANGER

- Power off the battery system before operations and maintenance. Otherwise, the equipment may be damaged or electric shocks may occur.
- Strictly follow the power off requirements to avoid damaging the system.

NOTICE

- The equipment in the dashed boxes are optional.
- Install the circuit breaker between the inverter and the battery and the circuit breaker between the two battery systems in compliance with local laws and regulations.
- With multiple batteries in one system, all batteries can be turned off by pressing the power button of any one battery.



Power OFF 1 → 5 → 2

Step 1: Power OFF the inverters. Please refer to the corresponding inverter user manual.
Step 2: Long press the battery Power switch and release to turn off the battery (>5s).
Step 3: Disconnect the breaker between the inverter and the battery system.

8.2 Routine Maintenance

⚠ WARNING

- Contact the after-sales service for help if you find any problems that may influence the battery or the hybrid inverter. Disassemble without permission is strictly forbidden.
- Contact after-sale service for help if the copper conductor is exposed. Do not touch or disassemble privately because the high voltage danger exists.
- In case of other emergencies, contact the after-sales service as soon as possible. Operate following the instructions or wait for the after-sales service personnel.

Maintaining Item	Maintaining Period
Check whether the locking bracket is secured, tighten it if not.	Once every 6 months
Check whether the outer enclosure is broken. Repair the painting or contact the after-sales service if there is any broken.	Once every 6 months
Check whether the cables are exposed. Replace the exposed cable or contact the after-sales service for help.	Once every 6 months
Check whether there is any dust around the battery module. Clean the dust if there is any to avoid affecting heat dissipation.	Once every 6 months
Check whether there is any liquid or pest near the battery to avoid intrusion in a long term.	Once every 6 months

8.3 Troubleshooting

The battery system may power off automatically and some functions may not work properly once the battery system fails. Follow the troubleshooting methods below. If the troubleshooting methods cannot solve the problem, contact the after-sales service. Collect the information below before contacting the after-sales service, so that the problems can be solved quickly.

1. Battery information, such as: serial number, software version, when the device was installed, when the fault occurred, how often it occurred, etc.
2. Ambient environment, such as: weather conditions and installation environment. Photos, videos and other files can be provided to assist in the analysis of the problem.

● ALM ON

SOC indicator status	Fault	Solutions
	Battery Overvoltage	Power off and wait for 2 hours. Contact the after-sale service if the problem persists.
	Battery Undervoltage	Contact the after-sale service.
	High Cell Temperature	Power off and wait for 2 hours. Contact the after-sale service if the problem persists.
	Low Charging Temperature	Power off and wait for the temperature to recover. Contact the after-sale service if the problem persists.
	Low Discharging Temperature	Power off and wait for the temperature to recover. Contact the after-sale service if the problem persists.
	Overcurrent Charging	Restart the battery. Contact the after-sale service if the problem persists.
	Overcurrent Discharging	Restart the battery. Contact the after-sale service if the problem persists.
	Low Insulation Resistance	Contact the after-sale service.
	Temperature Difference Exception	Power off and wait for 2 hours. Contact the after-sale service if the problem persists.
	Voltage Difference Exception	Restart the battery and leave it for 12 hours. Contact the after-sale service if the problem persists.
	Inconsistent Cell	Contact the after-sale service.
	Wire Harness Exception	Restart the battery. Contact the after-sale service if the problem persists.
	MOS Connection Failure	Restart the battery. Contact the after-sale service if the problem persists.
	MOS Adhesion	Restart the battery. Contact the after-sale service if the problem persists.
	Cluster Fault	Check the battery model. Contact the after-sale service if the battery model is incorrect.
	Interlock Failure	Check whether the termination resistor is installed properly and restart the battery. Contact the after-sale service if the problem persists.
	BMU Communication Fault	Restart the battery. Contact the after-sale service if the problem persists.
	MCU Internal Communication Fault	Restart the battery. Contact the after-sale service if the problem persists.

●○●○○	Air Switch Adhesion	Contact the after-sale service.
●○●○●	Precharge Failure	Restart the battery. Contact the after-sale service if the problem persists.
●○●●○	Relay Overtemperature	Power off and wait for 2 hours. Contact the after-sale service if the problem persists.
●○●●●	Current Diverter Overtemperature	Power off and wait for 2 hours. Contact the after-sale service if the problem persists.
●●○○○	Reverse Connection Fault	Contact the after-sale service.
●●●●●	Microelectronic Fault	Contact the after-sale service.

9 Technical Parameters

Technical Parameters		LX A5.0-10	2*LX A5.0-10	n*LX A5.0-10
Usable Energy (kWh) *1		5	10	n×5
Battery Module		LX A5.0-10：51.2V 5.0kWh		
Number of Modules		1	2	n
Cell Type		LFP ($LiFePO_4$)		
Nominal Voltage (V)		51.2		
Operating Voltage Range (V)		47.5~57.6		
Nominal Dis-/Charge Current(A) *2		60	120	n×60*3
Nominal Power (kW) *2		3	6	n×3*3
Operating Temperature Range (℃)		Charge: 0~+50; Discharge: -10~+50		
Relative Humidity		0~95%		
Max. Operating Altitude (m)		3000		
Communication		CAN		
Weight (kg)		40	80	n×40
Dimensions (W×H×D mm)		LX A5.0-10 Module：442×133×420 (excluding hanger); 483x133x452 (include hanger)		
Ingress Protection Rating		IP21		
Storage Temperature(℃)		0~+40(＜One Year); -20~0(≤One Month); 40~45(≤One Month)		
Mounting Method		Cabinet/Floor stacked		
Round-trip Efficiency*4		95%		
Standard and Certification	Safety	IEC62619, IEC63056, IEC62040-1, INmetro		
	EMC	EN IEC61000-6-1, EN IEC61000-6-2, EN IEC61000-6-3, EN IEC61000-6-4		
	Transportation	UN38.3, ADR		

*1: Test conditions: new battery, 100% DOD, 0.2C charge & discharge at +25±2 °C. System Usable Energy may vary with different Inverters.
*2: Nominal Dis-/Charge Current and Nominal Power may be influenced by temperature and SOC.
*3：Based on using Battery Combiner Box to parallel connect battery modules.
*4：Based on 2.5~3.65V new cell at 25±2℃ and under 0.2C/0.2C cell test condition. Cell 0.6C/0.6C Round-trip Efficicency is approximately 94%~95%.
n：n≤15.

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