



GOODWE
YOUR SOLAR ENGINE



Lynx Home U Series (LV) User Manual

Ver 1.1
2021-07-19

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Limitation of Liability

GOODWE will not be liable for any consequences like battery damage or property loss under the following circumstances:

- Modify, alter, or replace parts of the system without authorization from GOODWE
- Anyone except technicians from GOODWE changes or erase the serial number.
- Establish a system that does not meet the criteria, safety regulations, and other related requirements.
- Non-observance to the User Manual.
- Improper use or misuse of the battery.
- Inadequate ventilation.
- The maintenance routine does not follow accepted standards.
- Force Majeure like earthquakes, storms, thunders, overvoltage, or fire hazards, etc.
- Any external factors.

Version	Date	Record
V1.0	2021-3-30	First Release

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**DANGER!**

- Please keep Power Off before any operations to avoid danger. Strictly follow all safety precautions outlined in this manual and safety labels on the equipment.
- All installation operations should be performed by trained and knowledgeable technical personnel who are familiar with local standards and electric systems.
- Do not use the battery if it is defective, broken, or damaged.
- Do not disassemble, modify, or replace any part of the battery without official authorization from GoodWe.
- Damaged battery may leak electrolyte. Do not contact with the liquid leakage or volatile matter. Please contact GoodWe Technical Support for help immediately.

**WARNING!**

- 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.
- Do not move the battery system if it is connected with external battery expansion modules. Please contact After-sales Service to replace batteries or add batteries.














**CAUTION!**

- **Transportation:**
- Protect the batteries and their components from damage during transportation and storage.
- Take the weight of the battery into account and carefully lift the batteries.
- Do not hit, pull, drag, or step on the batteries or put unrelated items into any part of the batteries.
- 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.
- 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 (ABC does not work for battery fire-fighting).
- Firefighters are required to wear full protective clothing and self-contained breathing apparatus when fighting fires.
- The battery may explode when the ambient temperature exceeds 150°C.
- Please use appropriate tools and take protective measures when installing and maintaining heavy equipment. Improper operations will cause 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 the high temperature.
- Tie the cables of the same type together, and place cables of different types at least 30mm apart. Do not place the cables entangled or crossed.

2.1 Product Description

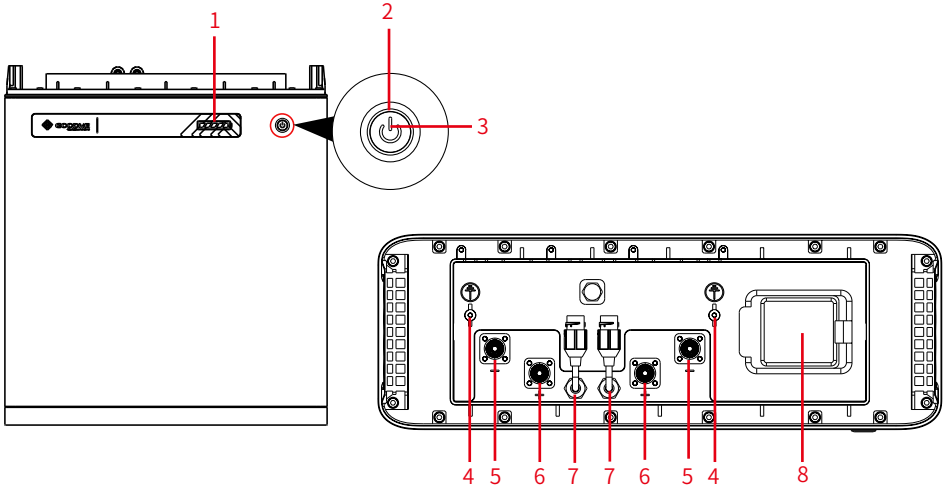
- This manual introduces Lynx Home U Series (LV) Battery System (hereinafter referred to as the Battery System), including the product introduction, application, installation, commission, and technical parameters, etc.
- The Battery System can match with GOODWE ES, EM, SBP, BP series inverters.
- At most 6 batteries can be connected in this Battery System.

2.2 Symbol Description

Symbol	Description
	A potential hazard exists when the equipment is working. Wear personal protective equipment during operation.
	High voltage danger. Power off the equipment before any operations.
	Operate the equipment properly to avoid explosion danger.
	The battery contains corrosive electrolytes. Please avoid contact with leaked liquid or gas.
	Refer to all manuals before any operations.
	Pay attention to safety protection during installation, operation, and maintenance.
	Keep the battery away from open flame or ignition sources.
	Keep the battery away from children.
	Put the battery in the right place and recycle it in compliance with local environmental regulations.
	Recycle the equipment following local environment regulations.
	CE Mark
	RCM Mark
	Grounding. To indicate PE cable connection position.

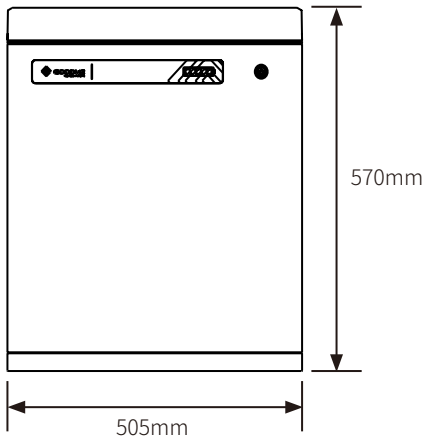
03 Battery Introduction

3.1 Appearance

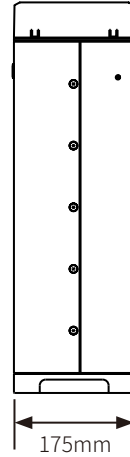


No.	Parts	Description
1	SOC Indicator	Remaining power display; indicates the battery state together with the button indicator.
2	Switch Button	Switch on/off the battery
3	Button Indicator	Green and red light; indicates the battery state together with the SOC indicator
4	Grounding Terminal	Grounding Protection
5	Negative Pole of the Battery	Power transmission
6	Positive Pole of the Battery	Power transmission
7	CAN COM Port	Communication transmission
8	Circuit-Breaker	Short circuit/break protection

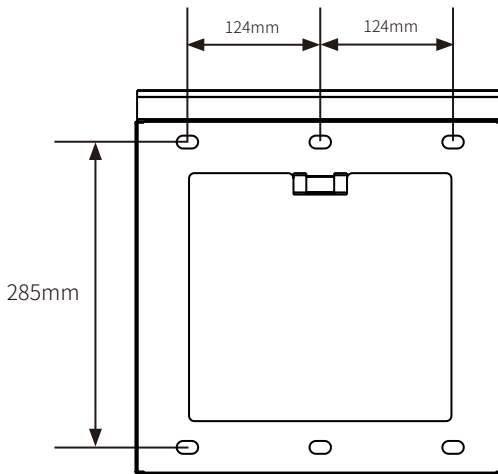
3.2 Dimensions



Front View



Side View



Wall Mounting Plate

04 Storage and Package

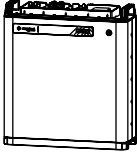

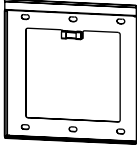
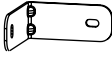

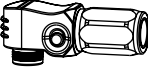
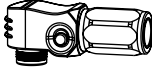
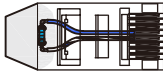
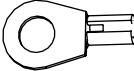


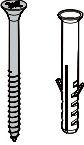
4.1 Storage Environment

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

- Pack the equipment using a packing box and put some desiccant in the box before sealing.
- Put the equipment back to the packing box if it is not to be installed in 3 days after unpacking.
- Storage SOC: 25%~50%SOC. Charge and discharge the battery every 3 months.
- Recommended storage temperature: -20°C~40°C(less than one month) or 0°C~35°C(less than one year).
- Recommended storage humidity: 0%~95%RH(no condensation). Do not install the battery if any moist or condensation is found.
- Place the equipment in a cool place where away from direct sunlight.
- Keep the equipment away from inflammable, explosive, and corrosive matters.
- Keep the equipment away from the rain.

4.2 Packing List

- Check outer packing for damage and model before unpacking it. If you find any damage or the model is not what you requested, do not unpack the product and contact the after-sales service as soon as possible.
- Check whether the deliverables are intact and complete first after unpacking the battery.If anything wrong, contact the after-sales service as soon as possible.

				
Battery x 1	Plastic Cover x1	Wall Mounting Plate x 1	Anti-dumping Bracket x 2	Wire Harness Fix Barx2
				
Red Power Connector x 2	Black Power Connector x 2	Terminal Resistance x 1	Grounding Terminal x 4	M5 Assembling Bolt x 8
		N/A	N/A	N/A
M10 Expansion Bolt x 6	Assembling Expansion Bolt x 2			

05 System Installation

5.1 Installation Environment

- Install the Battery System on the ground with sufficient bearing capacity and flatness. Increase the bearing capacity and flatness of the ground by laying the foundation, adding bearing plates and so on.
- The optimal temperature for the battery is 20~40°C.
- Avoid exposing the equipment to direct sunlight or rain.
- Install the equipment away from heat/cold source.
- Do not install the equipment in the place where the temperature changes extremely.
- Install the equipment away from strong interferences to ensure its regular work.
- Keep children away from the equipment.
- Do not install the equipment in places prone to accumulate water.
- Do not put inflammable or explosive matters near the equipment.

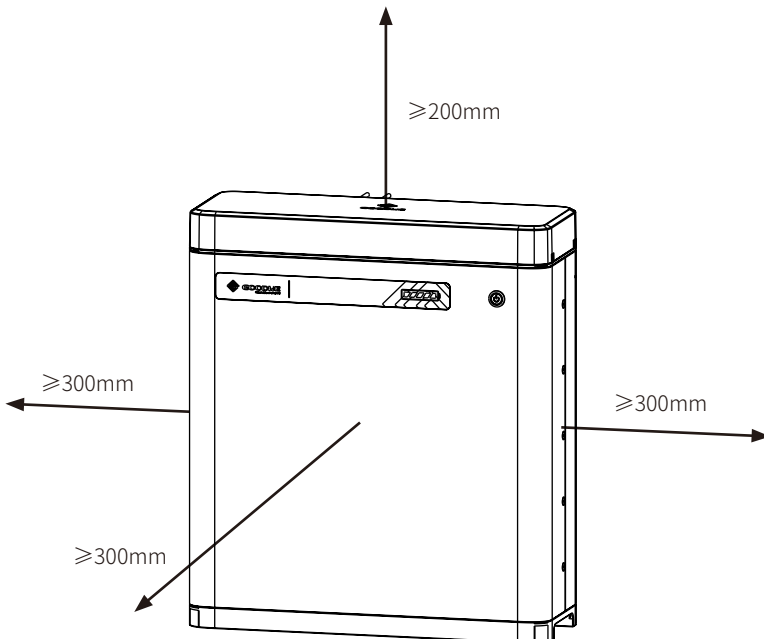
5.2 Mounting Space Requirements

5.2.1 Floor Mounting Space Requirements



NOTE

The space between the left and the right battery is a recommended distance. Keep the distance as short as you can if there is no influence to the operation.



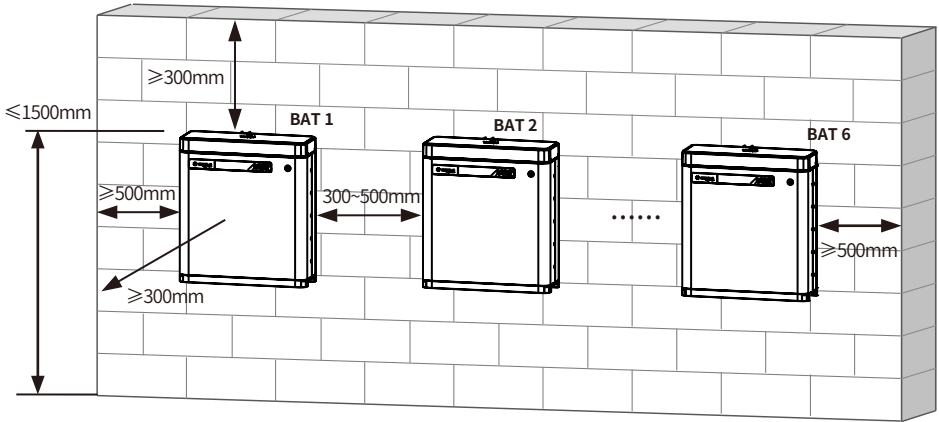
5.2.2 Wall Mounting Space Requirements



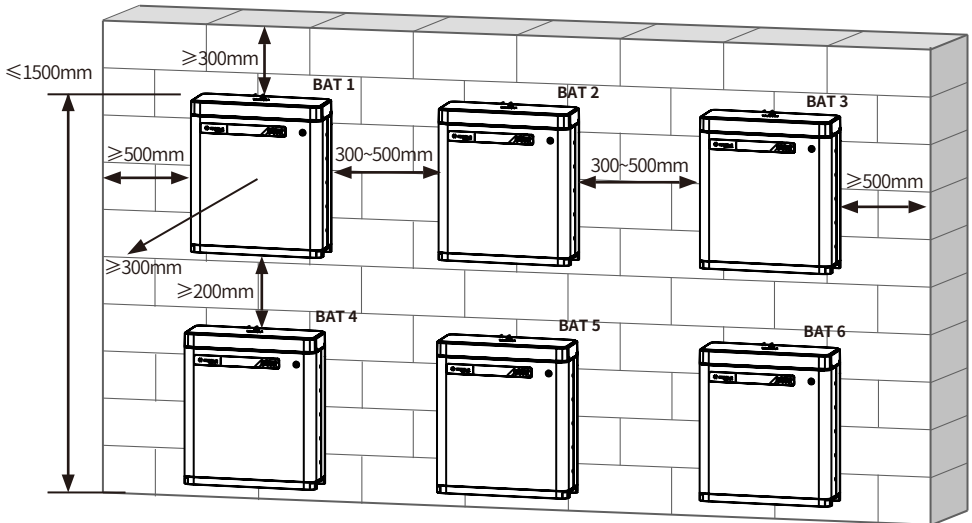
NOTE

The space between the left and the right battery is a recommended distance. Keep the distance as short as you can if there is no influence to the operation.

Single Row Installation



Double Row Installation



5.3 System Installation

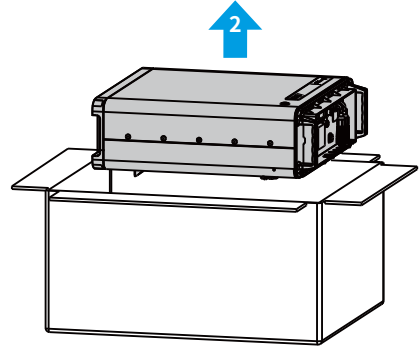
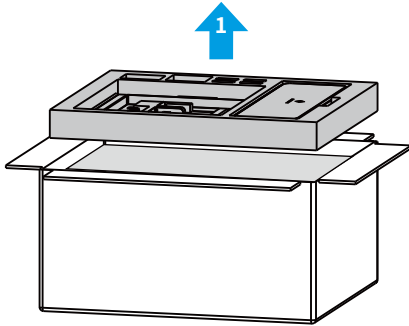


NOTE

If multi batteries are to be connected, check and select batteries with similar production date and a same cell grade.

5.3.1 Package Removing

Unpack the carton and take the accessory bag and battery out.



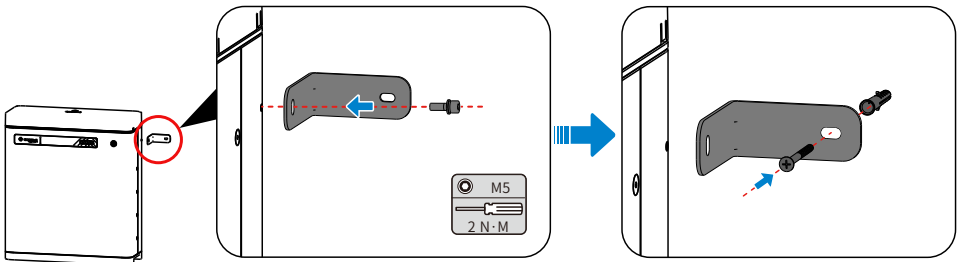
5.3.2 Floor Mounting



NOTE

Make sure that the floor is flat and horizontal. Install the anti-dumping bracket on both sides.

1. Screw the anti-dumping bracke on the battery.
2. Align the battery and the wall, then put the anti-dumping bracket close to the wall. Mark the drilling position and remove the battery.
3. Drill a hole on the wall using the driller. Hole diameter 10mm and depth 80mm.
4. Fix the expansion bolts, tightening torque: 10N · m.



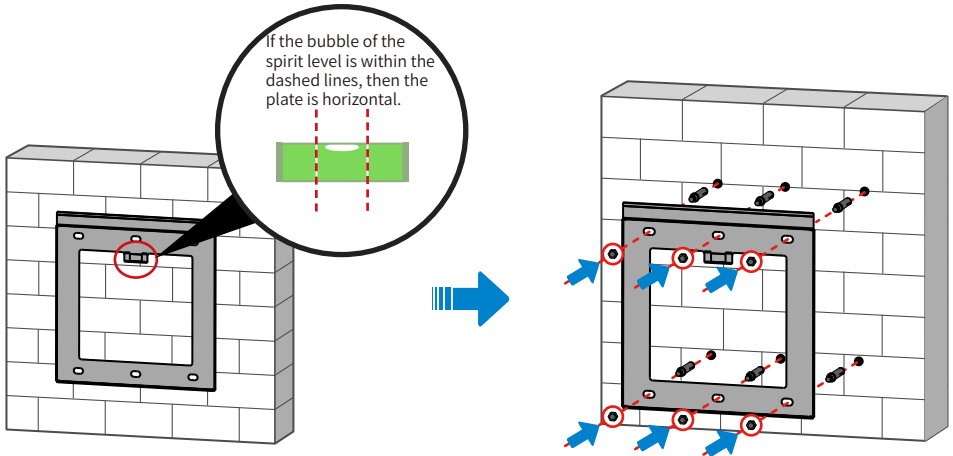
5.3.3 Wall Mounting



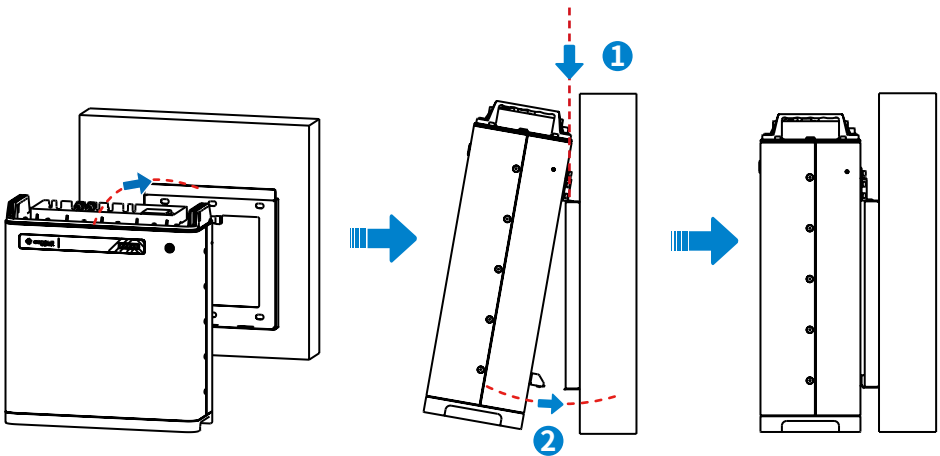
NOTE

Wall mounting needs to be done by two persons.

1. Mark the drilling position using the wall mounting plate and level using a spirit level.
2. Place the wall mounting plate close to the wall firmly, mark the drilling position and remove the wall mounting plate.
3. Drill a hole on the wall using the driller. Hole diameter 13mm and depth 65mm.
4. Fix the M10 expansion bolts, tightening torque: $10\text{N} \cdot \text{m}$.

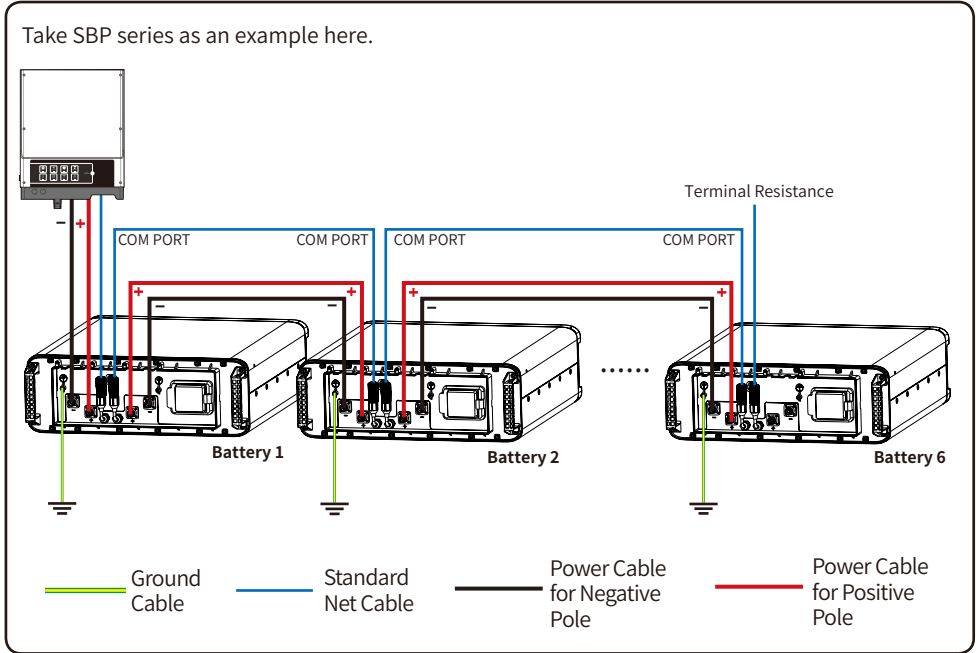


4. Lift the battery parallel to the ground.
5. Hang the upper part of the battery on the wall mounting plate.
6. Push the bottom part of the battery to the slot.



5.3.4 Cable Connection

Overview of the cable connection



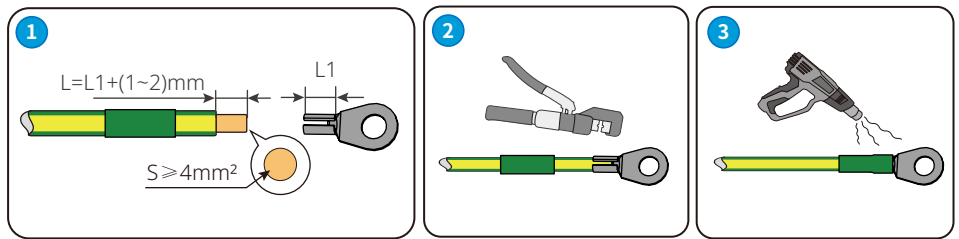
Ground Cable Connection



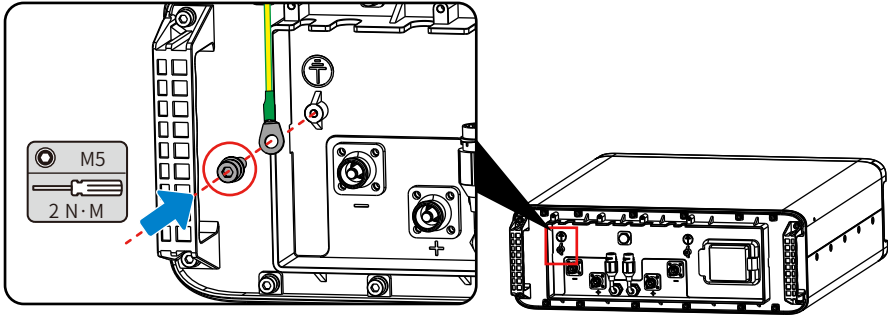
NOTE

- Connect the PE cable first before installing the equipment. Disconnect the PE cable before dismantling the equipment.
- The drawing force of the cables after crimping is at least 400N.
- Connect any one of the two ground cables to the ground. Reserve the other ground cable.
- The cross-sectional area of the PE cable conductor: 5mm^2 . The cable should meet standards for outdoor use.

1. Crimp the ground terminal.



2. Connect the ground cable to the battery.

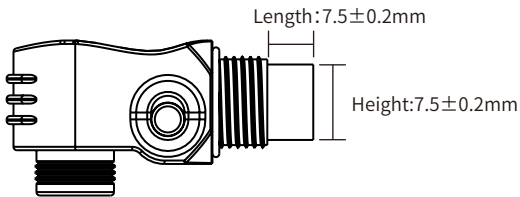


Power Cable Connection

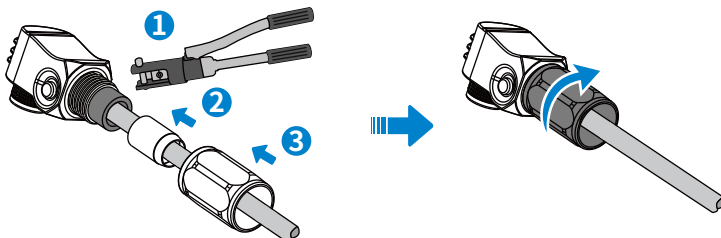


NOTE

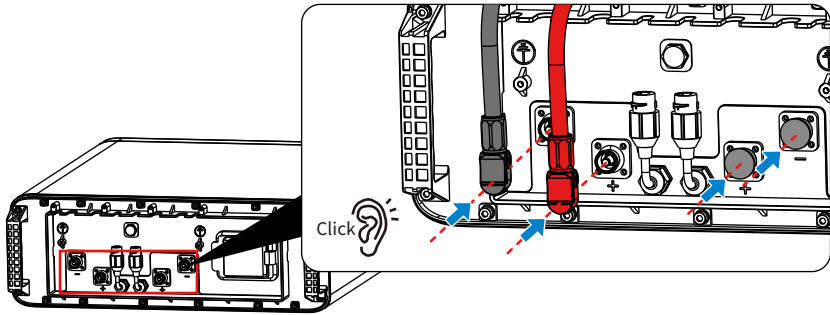
- Connect the red power cable to the red wire harness, and the black power cable to the black wire harness. The cross-sectional area of the crimping part is 25mm^2 .
- Withstand Voltage: DC1500V; Temperature: $-40^{\circ}\text{C}\sim 200^{\circ}\text{C}$.
- Stripped conductor length: $18\pm 1\text{mm}$.
- Secure the back shell and check whether there is any gap.
- Recommended tool: manual hydraulic press plier(mould: 25mm^2)
- Drawing force after crimping $\geq 1200\text{N}$.
- If a single battery is applied, you are suggested to connect any one of the two power ports and cover the other port using the protective cover.
- Connect power cables between multi batteries in parallel, which means connect positive pole of one battery to the positive pole of the next battery, and negative pole to negative pole. Cover and protect the reserved power port of the last battery.
- The power cable between the batteries should be as short as it can be and meet installation requirements.



1. Crimp the power cable.
2. Put the rubber seal ring.
3. Secure the back shell.



4. Connect the power cable.



Communication Cable Connection

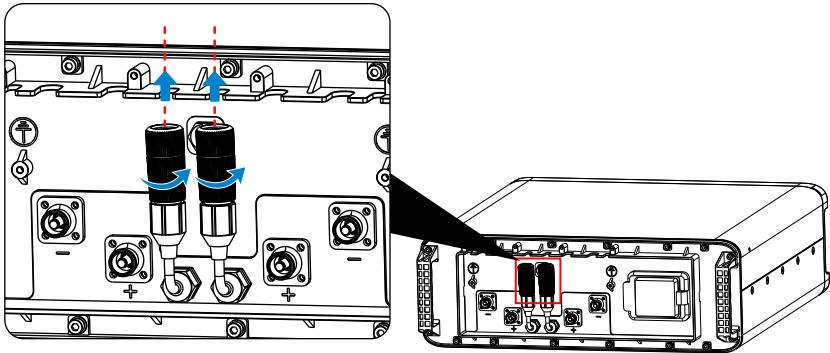


NOTE

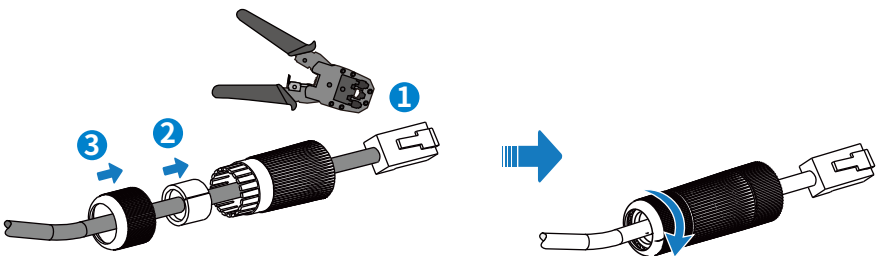
The two communication cables are the same.

- Do not use RJ45 cable with protective cover.
- When one battery is applied, connect one communication cable to the inverter by RJ45 connector and connect the other cable to the terminal resistance.
- When multiple batteries are applied, connect the communication ports in series using net cables. Connect one communication cable of the last battery to the terminal resistance.

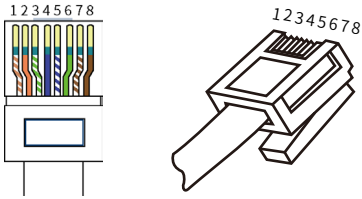
1. Remove the waterproof module.



2. Route the cable through the waterproof module.
3. Crimp the RJ45 Registered Jack.
4. Secure the back cover.



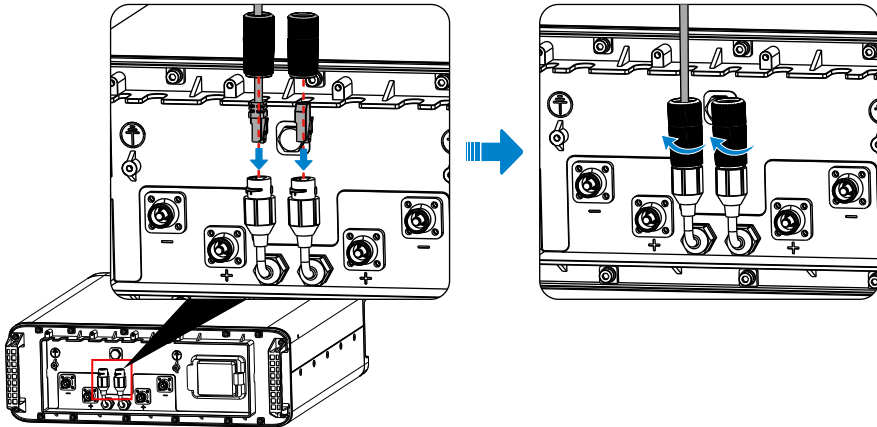
RJ45 Registered Jack



CAN COM Port

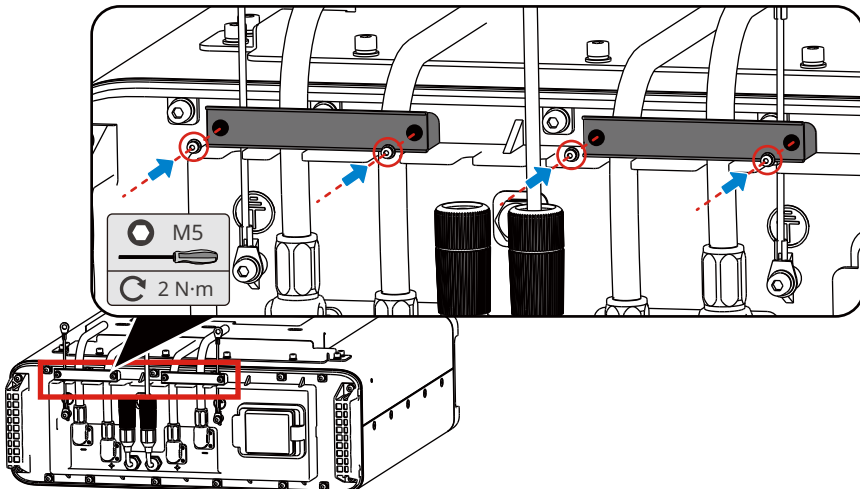
PIN	Definition
4	CAN_H
5	CAN_L
1,2,3,6,7,8	N/A

5. Connect the communication cable and the terminal resistance to the battery.
6. Secure the cover.



5.3.5 Install the Wire Harness Fix Bar

1. Put the wire harness on the corresponding slot.
2. Install the bar using M5 screws.



6.1 Check Before Power On

Check the following items before power on. Otherwise, the Battery System may be damaged.

No.	Items
1	The equipment is installed firmly in a place where is convenient for operation and maintenance. The installation place is clean and well ventilated.
2	The ground cable, power cable, communication cable and terminal resistance are connected correctly and securely.
3	The cable ties meet the cabling requirements and are reasonably distributed. No cables or ties are broken.
4	Unused ports are sealed.

6.2 Power On

1. Turn on the Circuit-Breaker.
2. Press the switch button of all batteries in 30s, otherwise the equipment will start alarming.

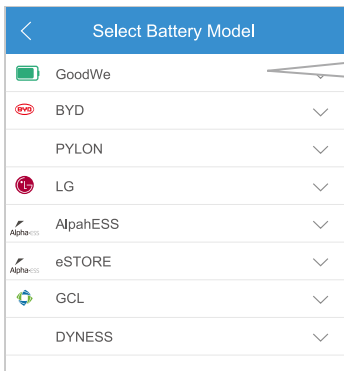
6.3 Battery Parameter Settings

Select the right options on PV Master after connecting the battery and the inverter.

APP Installatin and Connection:



Select the battery model on PV Master:



LX U5.4-L*1
LX U5.4-L*2
LX U5.4-L*3
LX U5.4-L*4
LX U5.4-L*5
LX U5.4-L*6

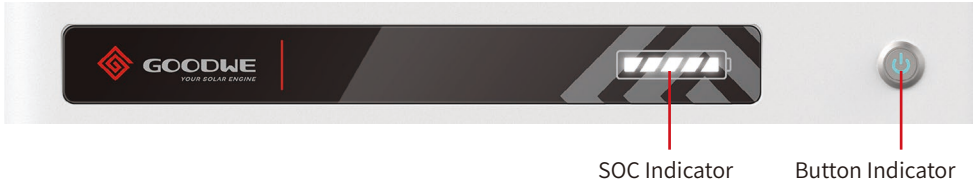
Select "LX U5.4-L" on PV Master.



NOTE

"Battery Selection Abnormal" will be displayed if you select the wrong battery model. Please select the right battery model accordingly.

6.4 Indicator Status



Button Indicator	Status
Green Light	Standby, Working, Alert
Red Light	Faulty

6.4.1 Normal State

Button Indicator	SOC Indicator	Description
Standby: green light blinking for 1s Working: green light on		$SOC < 5\%$
		$5\% \leq SOC < 25\%$
		$25\% \leq SOC < 50\%$
		$50\% \leq SOC < 75\%$
		$75\% \leq SOC < 95\%$
		$SOC \geq 95\%$

6.4.2 Alerting

Button Indicator	SOC Indicator	Alerting	Solutions
Green light blinking for 3s		Temperature Exception	Power off and restart after 2 hours.If the problem persists, please contact GoodWe.
		High Temperature	
		Low Temperature Discharging	Power off and Wait for the temperature to increase. Restart the battery. If the problem persists, please contact GoodWe.
		Overcurrent when Charging	Restart the battery. If the problem persists, please contact GoodWe.
		Overcurrent When Discharging	
		Overvoltage	
		Under voltage	Press the button consecutively for 5 times in 10s if you can charge the battery. The voltage will recover to normal.
		Low Temperature Charging	Power off and Wait for the temperature to increase. Restart the battery. If the problem persists, please contact GoodWe.
		The cell voltage difference is extremely high	Power off and restart after 2 hours.If the problem persists, please contact GoodWe.



NOTE

- Restart the battery by pressing the switch button.
- If the batteries power off under undervoltage protection and multiple batteries are connected, just press the button of any one battery consecutively for 5 times to activate them.

6.4.3 Faulty

Button Indicator	SOC Indicator	Fault	Solution
Red light blinking for 3s		Temp. sensor failure	Restart the battery. If the problem persists, please contact GoodWe for help.
		MOS Failure	
		Circuit-Breaker Failure	Turn on the Circuit-Breaker.If the problem persists, please contact GoodWe.
		Slaver Control Communication Lost	Power off and check the communication cable. Restart the battery.If the problem persists, please contact GoodWe.
		SN Failure	Contact GoodWe for help.
		Master Control Communication Lost	Power off and check the communication cable. Restart the battery.If the problem persists, please contact GoodWe.
		Inconsistent Software Version	Contact GoodWe for help.
		Multi Master Control Failure	Start all batteries in 30s after shutting down.
		MOS Overtemperature	Power off for 2 hours.If the problem persists, please contact GoodWe.
		Communication Failure	Power off and check the communication cable. Restart the battery. If the problem persists, please contact GoodWe.

6.5 Power Off

Please follow the steps to power off the Battery System, otherwise, the System may be damaged.

1. Press the switch button for at least 5s until the indicator lights off. Press the button of any one battery if multi batteries are connected.
2. Turn off the Circuit-Breaker.
3. Make sure that the SOC indicator of the battery is off.

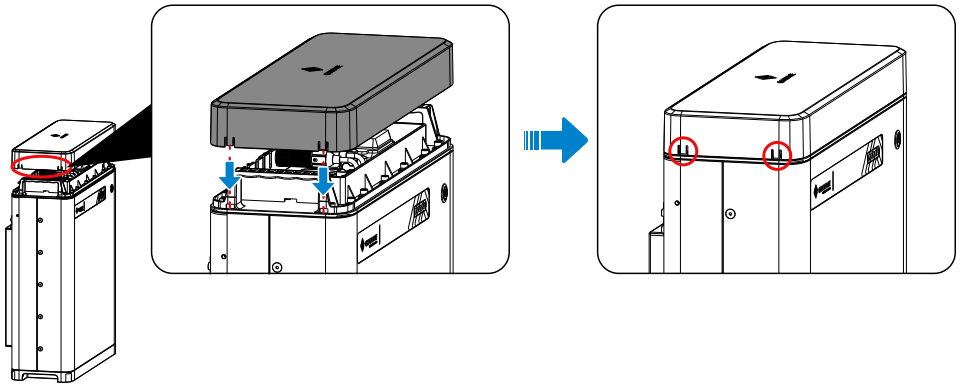
6.6 Install the Plastic Cover



NOTE

- Ensure that the battery can work normally before installing the cover.
- Do not press the cables during installation.

1. Install the plastic cover.
2. Push the snap of the cover into the slot.



Technical Data		LX U5.4-L	2*LX U5.4-L	3*LX U5.4-L	4*LX U5.4-L	5*LX U5.4-L	6*LX U5.4-L
Rated Energy (kWh)*		5.4 kWh	10.8 kWh	16.2 kWh	21.6 kWh	27 kWh	32.4 kWh
Usable Energy (kWh)*		4.8 kWh	9.6 kWh	14.4 kWh	19.2 kWh	24 kWh	28.8 kWh
Cell Type		LFP (LiFePO4)					
Cell Configuration		16S1P	16S2P	16S3P	16S4P	16S5P	16S6P
Rated Voltage (V)		51.2 V					
Operating Voltage Range (V)		48~57.6 V					
Max. Continuous Discharge Current (A)*		50A	100A				
Max. Discharge Power (kW)*		2.88 kW	5.76 kW				
Communication		CAN					
Weight (Kg)		57 Kg	114 Kg	171 Kg	228 Kg	285 Kg	342 Kg
Dimensions (W*D*H) (mm)		505*175*570 mm (LX U5.4-L)					
Operating Temperature (°C)		Charge:0<T<50°C / Discharge:-10<T<50°C					
Storage temperature (°C)		-20~40°C (≤One Month) / 0~35°C (≤One Year)					
Humidity		≤95%					
Altitude (m)		≤2000m					
Protection Degree		IP65 (Outdoor / Indoor)					
Installation Location		Wall-Mounted / Ground-Mounted					
Standard and Certification	Safety	IEC62619, CEC					
	EMC	CE, RCM					
	Transportation	UN38.3					
Rated Energy*: Test conditions, Cell Voltage 2.5~3.65V, 0.5C charge & discharge at +25±3 °C.							
Usable Energy*: Test conditions, 90% DOD, 0.5C charge & discharge at +25±3 °C.							
Max. Continuous Discharge Current*/Power*: Max. Continuous Charge/Discharge and power derating will occur related to Temperature and SOC.							

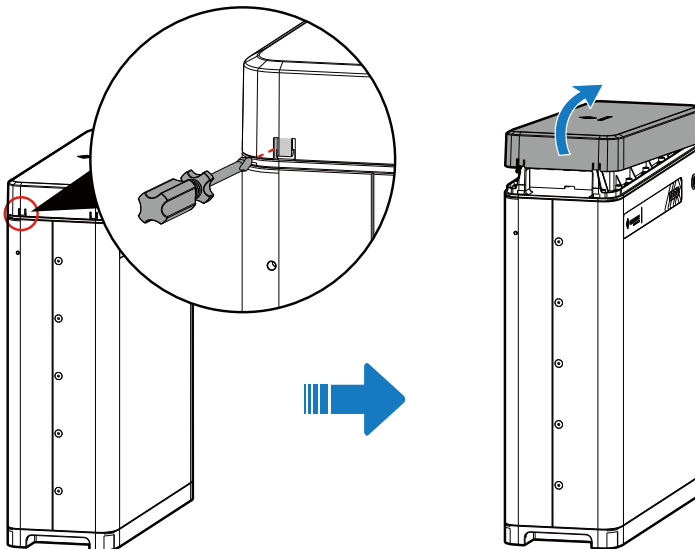
Item	Period
Fully charge the battery and discharge it to 25~50% if the battery is not in use.	Once Every 3 months
Check the wall mounting plate, fix it if it is not secured.	Once Every 6 months
Check whether the outer shell is broken. Repair the painting or contact after-sales service if there is any broken.	Once Every 6 months
Check whether there is an exposed cable. Replace the exposed cable or contact after-sales service for help.	Once Every 6 months
Check whether there is debris accumulation around the battery to avoid affecting heat dissipation.	Once Every 6 months
Check for water and pest to avoid prolonged intrusion.	Once Every 6 months

**WARNING!**

- Please contact after-sales for help if you find any problems that may influence the battery or the inverter. Disassemble without permission is strictly forbidden.
- Please contact after-sales for help if the conductive wire is exposed because high voltage danger exists. Do not touch or disassemble privately.
- In case of other emergencies, contact the after-sales as soon as possible. Please operate following the guidance of the after-sales, or just wait for the after-sales service operators.

Remove the Plastic Cover

Gently pry up two clips on one side using a screwdriver to remove the plastic cover.





PV Master APP



SEMS Portal APP



SEMS Portal website
www.semsportal.com



LinkedIn



GoodWe
Official Website

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