Rechargeable Lithium-Ion Battery System User Manual

IG-16K-U

Ver 1.0

For the latest product installation documents in all supported languages, visit: www.uzenergy.com.

> ***WARNING***
>
> Read this entire document before installing or using batteries. Failure to do so or to follow any of the instructions or warnings in this document can result in electrical shock, serious injury, or death, or can damage the batteries or attached power conversion systems, potentially rendering them inoperable.

Product Specifications

All specifications and descriptions contained in this document are verified to be accurate at the time of printing. However, because continuous improvement is a goal at UZ ENERGY, we reserve the right to make product modifications at any time.

The images provided in this document are for demonstration purposes only. Depending on product version and market region, details may appear slightly different.

Errors or Omissions

To communicate any inaccuracies or omissions in this manual, please send an email to: marketing@uzenergy.com

Electronic Device: Do Not Throw Away

Proper disposal of batteries is required. Refer to your local regulations for disposal requirements.

MADE IN CHINA

Revision History

Date	Revision	Description	Owner
2025-12-23	V1.0	Initial Release	Vera WU

Contents

1. Preface

1.1 About This Manual

This manual provides instructions for the installation, electrical connection, commissioning, operation, and maintenance of the IG-16K-U Rechargeable Lithium-Ion Battery System (hereinafter referred to as the “Product”).

This document is intended for use by qualified personnel only. All diagrams and illustrations are provided for reference purposes only. Product specifications and information are subject to change without notice. Always refer to the latest official product documentation for current requirements.

1.2 Intended Audience

Installation, commissioning, operation, and maintenance of the battery system shall only be performed by qualified personnel in compliance with applicable local electrical codes and regulations.

1.3 Scope

This manual is applicable to the following product:

- IG-16K-U

1.4 Symbols Used

These symbols indicate important safety information in this manual or on the equipment:

⚠ *DANGER*

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

⚠ *WARNING*

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

⚠ *CAUTION*

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

⚠ *NOTICE*

Indicates a potentially hazardous situation which, if not followed, could result in equipment failure or property damage.

⚠ *DO NOT*

Indicates ndicates a potentially hazardous situation that, if not avoided, may result in damage to the equipment.

2. Safety

2.1 Installation Requirements

Before installing, operating, or maintaining the product, personnel must be properly trained and must understand all safety precautions and correct operating procedures.

- Installation, operation, maintenance, repair, and any modification of the product must be carried out by qualified personnel only. Safety features must not be disabled, bypassed, or removed unless explicitly instructed by the manufacturer.
- The product must be installed and used strictly in accordance with the instructions and specifications provided in this manual. Failure to comply with these requirements may lead to product malfunction or component damage, which is not covered under the product warranty.

2.2 Grounding Requirement

- When installing the product, connect the protective earth (PE) conductor first. When removing the product, disconnect the protective earth conductor last.
- Do not damage the protective earth conductor. The product must not be operated without a properly connected protective earth conductor. Before operating the product, verify that all electrical connections are secure and that the product is correctly grounded.

2.3 Personal Safety

- Do not install, operate, or service the product during thunderstorms.
- Before opening the product for maintenance, wear appropriate personal protective equipment (PPE), remove conductive objects such as jewelry and watches, and take appropriate electrostatic discharge (ESD) protection measures when required.
- In the event of a fire, immediately evacuate the building, activate the fire alarm if available, and contact the local fire department. Do not re-enter the building under any circumstances.
- Do not turn on the product until installation has been fully completed and all safety checks have been performed.

2.4 Mechanical Installation Requirements

- Before operation, the product must be securely fixed to the floor or other stable structures, such as a wall or a mounting rack, to prevent movement or tipping.

  Wall-Mounting Requirements:

  The supporting wall must meet the following minimum strength requirements:

  • Concrete wall with a compressive strength of ≥ 11 MPa

  • Solid brick wall with a compressive strength of ≥ 12 MPa

> ⚠ *WARNING*
>
> Due to the weight of the product, wall-mounted installation is not recommended unless the supporting wall meets the specified strength requirements.

- Do not energize the product until installation is complete and all external fasteners have been securely tightened in accordance with the installation instructions.
- After installation, remove all packaging materials from the installation area to maintain a safe working environment.
- Replace any damaged, missing, or illegible hazard labels on the product promptly.
- Do not modify the structure of the product or the approved installation procedures without prior written approval from the manufacturer.
- Do not use water or liquid cleaners to clean electrical components inside or outside the battery system under any circumstances.
- Do not drill holes or make any unauthorized modifications to the enclosure.

2.5 Heavy Lifting Safety

> ⚠ *DANGER*
>
> The product is heavy. Improper handling or lifting may result in serious injury or equipment damage.

< 18 kg < 40 lb	18 to 32 kg 40 to 70 lb	32 to 55 kg 70 to 121 lb	> 55 kg > 121 lb

- Handling and lifting of the product must be performed in accordance with the transportation and handling methods and personnel requirements specified in this manual.

- When manual handling is required, use the number of personnel specified in the relevant handling instructions and follow proper lifting techniques. Do not attempt to lift or move the product alone.
- When handling the product manually, appropriate personal protective equipment (PPE), including protective gloves and safety footwear, must be worn.
- When lifting or moving the product, hold it only by the designated handles or bottom structural edges. Do not lift or support the product by installed modules or internal components.
- Avoid impact, dropping, or tipping of the product during handling and transportation. Prevent scratching or damage to the enclosure, components, and cables.
- When mechanical lifting equipment such as a forklift is used, secure the product with appropriate lifting straps and follow the handling procedures specified in this manual.
- Keep all personnel clear of the product during lifting and transportation.

2.6 Prohibited

- Do not damage cables. If you damage a cable, it can cause a fire or electric shock.
  1. Do not modify or damage a cable.
  2. Do not place heavy objects on a cable or pull the cable.
  3. Do not place a heater near the cable, which may result in the cable overheating.
  4. Do not tuck down a cable when installing in a rack.
  5. When you unplug a communication cable, be sure to hold the plug and pull it.
- Do not install in a tight closed area. If the module is installed in a closed area with no air-conditioning, heat may build up inside the module and cause a fire.
- Do not place in direct sunlight or near a heater. Doing so can cause deformation, a breakdown, or a fire. Pay extra attention when you place the unit near windows.
- Do not install the unit where the air is contaminated with excessive oil smoke, steam, moisture, or dust. If the unit is installed in such a place, it may cause a fire or electric shock.
- Do not place the set upside down or sideways.
- Do not place on a shag carpet or bed.
- Do not put anything on, stand or sit on the unit. If you put anything on the unit, it may fall and cause injury. Also, if it is used as a stool, for example, it may topple or crush and cause injury.

2.7 Precautions for Use

In the case of a failure, or any of the abnormalities shown below, turn off the Unit and contact customer services.

1. Abnormal sound, smell or smoke.
2. Water or particles inside the product.
3. The product is dropped, or the cabinet is damaged.

⚠ *DO NOT*

- Do not disassemble.
- Do not modify the product. Unauthorized modification can disable safety protections and may result in abnormal charging / discharging, overheating, gas venting, or fire.
- Do not touch the power output terminals except during installation.
- Do not expose to fire, heat, or open flame.
- Do not immerse in liquid or allow moisture ingress.
- Do not subject to impact, crushing, or dropping.
- Do not use for medical applications or life-support systems.
- Do not insert foreign objects into the product.
- Do not connect devices exceeding the specified voltage or current ratings.
- Do not disconnect the power connector while energized.
- Do not puncture, nail, or drill into the enclosure.

⚠ *DANGER*

If liquid is leaking from the module, observe the following measures.

Do not allow the liquid to come in contact with skin or clothing.

1. If liquid comes in contact with skin or clothing, wash thoroughly with plenty of water.
2. If liquid gets into the eyes or mouth, flush immediately with clean water, and immediately seek medical treatment.

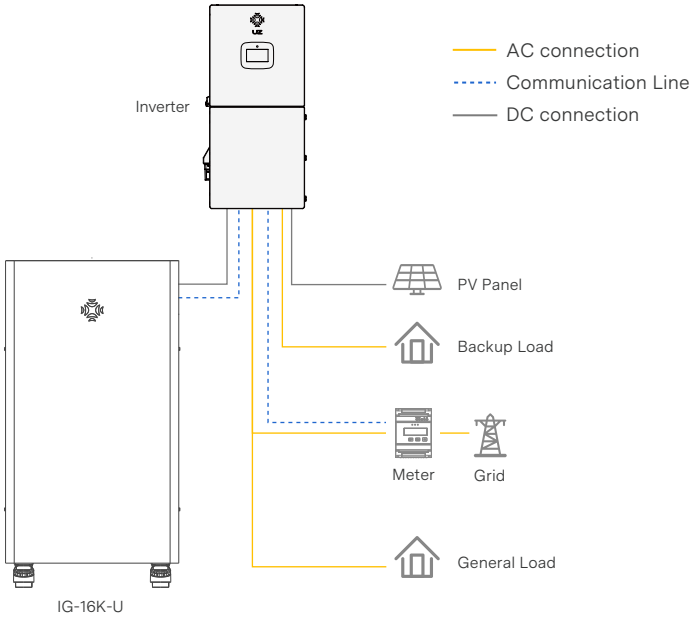
3. Product Introduction

3.1 Brief Introduction

The Product is a low-voltage battery energy storage system based on lithium iron phosphate ($LiFePO_4$) technology. It provides reliable power support for various types of equipment and systems.

3.2 Product System Diagram

Schematic diagram of the system.



NOTICE

The depicted inverter is not part of the product package and requires separate purchase. Use only with approved, interoperability-tested inverter models. Contact your supplier for the compatibility list and detailed specifications.

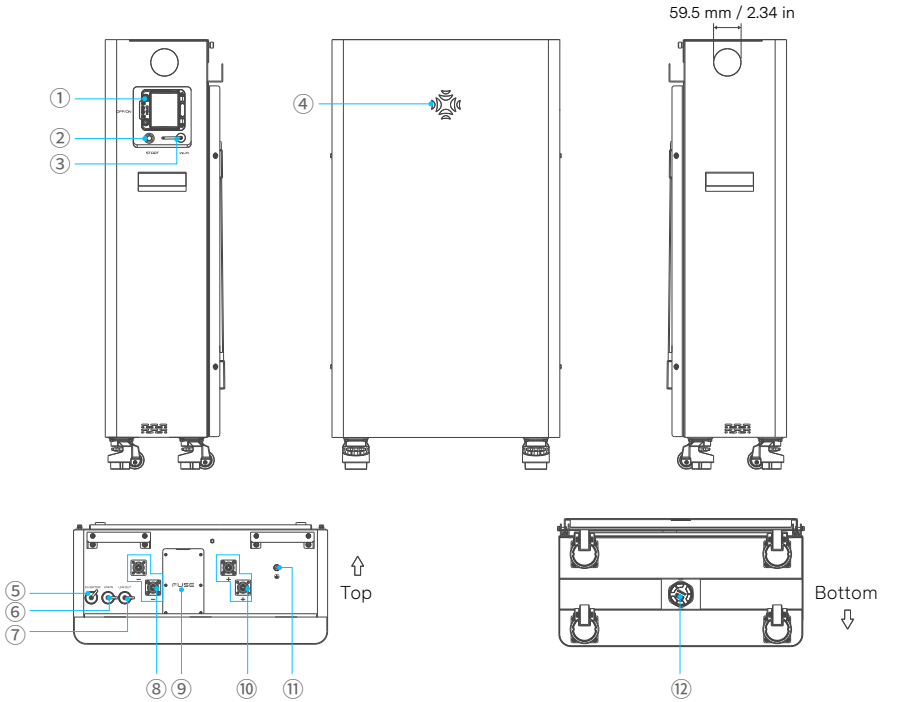
3.3 Technical Specifications

Technical Specifications of the product.

Item Name	Specification	Remark
Rated Capacity	314 Ah	
Rated Voltage	51.2 V	
Working Voltage Range	43.2 V - 58.4 V	
Rated Energy	16.0 kWh	
Max. Parallel Quantity	Max. 64 Sets in Parallel, 1028.48 kWh	
Rated / Max. Charge Current	160 A / 160 A	
Rated / Max. Discharge Current	160 A / 200 A	
Max. Charge / Discharge Power	8.2 kW / 10.24 kW	
Peak Discharge Current / Power	250 A / 12.8 kW, 15 s	
Standard Charge Method	CC at 0.5C to 57.6 V, then CV at 57.6 V until the current drops to 0.05C	25 ± 2 °C
Available SOC Range	0% to 100%	Adjustable
Transportation SOC Range	50% ± 5%	
Dimensions [W*D*H]	500 × 235 × 943 mm (±5) 19.7 × 9.3 × 37.1 in (±5)	
Weight	~125 kg / ~ 275.6 lbs	
Operating Temperature	Charge : -15 °C to 55 °C / 5 °F to 131 °F Discharge : -20 °C to 55 °C / -4 °F to 131 °F	Without Heating Function : Charge : 0 °C to 55 °C / 32 °F to 131 °F Discharge : -20 °C to 55 °C / -4 °F to 131 °F
Storage Temperature	-20 °C to 55 °C / -4 °F to 131 °F	
Working Humidity	5% to 95% RH (non-Condensing)	
Altitude	≤ 9,842 feet (≤ 3,000 m)	
Communication	CAN, RS485, Dry Contact, Wi-Fi	
Certifications	IEC 62619, IEC 61000, CEC, UL 9540, UL 9540A, UL 1973, UN 38.3, FCC	
Designed Cycle Life	8,000 Cycles	@ 0.5C, 90% DoD, 25 ± 2 °C, to 70% SOH
Warranty	10 Years	
IP Rating	IP65	
Cooling	Natural Cooling	
Heating Power	Optional	
Fire Extinguishing Device	Optional	

※ Information is subject to change without notice.

3.4 Interfaces and Functions



Item No.	Item Name	Details	Remarks
①	125 A DC Breaker × 2		
②	Main Power On / Off Switch		
③	Wi-Fi Antenna		
④	LED Indicator		
⑤	INVERTER	RJ45, Battery-to-inverter communication port	
⑥	LINK IN	RJ45, battery-to-battery communication port (in), upper computer communication port	
⑦	LINK OUT	RJ45, battery-to-battery communication (out)	
⑧	DC Negative Terminal × 2		
⑨	FUSE		
⑩	DC Positive Terminal × 2		
⑪	GND		
⑫	Pressure Relief Valve		

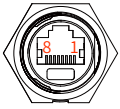
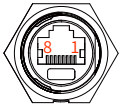
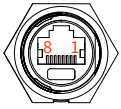
3.4.1 System Status LEDs

The system is equipped with a power switch indicator and LED status indicators.

Battery Status	Main Power On / Off Switch	LED Indicator
BOOT/FW Update	Red: ON	White: Flashing 0.1 s ON, Flashing 0.1 s OFF
Self-checking	Blue: Flashing 0.25 s	White: ON
Standby	Blue: ON	White: ON
Charge	Blue: Flashing 0.5 s ON, Flashing 0.5 s OFF	White: Flashing 0.5 s ON, Flashing 0.5 s OFF
Discharge	Blue: Flashing 1 s ON, Flashing 1 s OFF	White: Flashing 1 s ON, Flashing 1 s OFF
Short/Mos Error (Alarm LED)	Red: ON	White: ON
Protect Error (Alarm LED)	Red: Flashing 0.25 s ON, Flashing 0.25 s OFF	White: ON
Other Error (Alarm LED)	Red: Flashing 0.5 s ON, Flashing 0.5 s OFF	White: ON

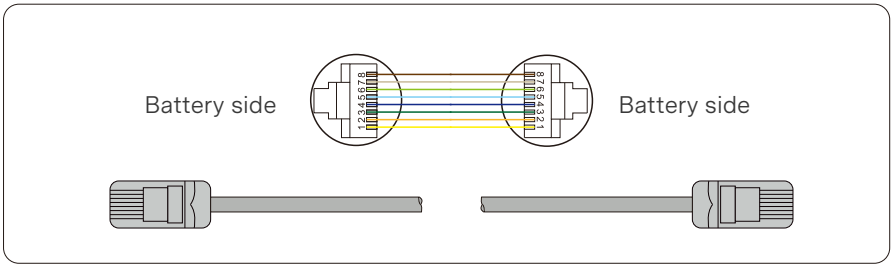
3.4.2 RJ45 Port Pin Definition

Note: Pin definitions may vary depending on inverter manufacturer. Always follow the inverter communication protocol.

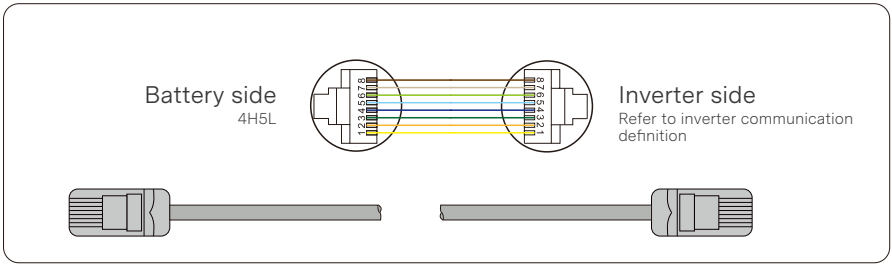
INVERTER		LINK IN		LINK OUT	
					
PIN 1	GND	PIN 1	RS232-TX	PIN 1	\
PIN 2	RS485-A	PIN 2	GND	PIN 2	\
PIN 3	RS485-B	PIN 3	RS232-RX	PIN 3	\
PIN 4	CAN-H	PIN 4	UP_IN+	PIN 4	DN_OP+
PIN 5	CAN-L	PIN 5	GND (UP_IN-)	PIN 5	DN_OP-
PIN 6	GND	PIN 6	GND-1	PIN 6	GND-1
PIN 7	\	PIN 7	RS485-A	PIN 7	RS485-A
PIN 8	\	PIN 8	RS485-B	PIN 8	RS485-B

3.4.3 Definition of Communication Cable Connection

Battery to Battery Communication Cable.



Battery to Inverter Communication Cable



NOTICE

If the inverter does not support the full-pin communication cable, a communication cable shall be fabricated according to the inverter's communication pinout definition. Alternatively, a standard straight-through CAT5 Ethernet cable may be used if it meets the required specifications.

4. Product Installation

4.1 Environmental Requirements

4.1.1 Cleaning

Before installation and energization, ensure that all dust and conductive particles (e.g., metal shavings) are removed to maintain a clean environment. The installation area must be kept dust-free. During operation, periodically inspect the area for dust accumulation and humidity levels to ensure ongoing safe performance.

4.1.2 Temperature

The working temperature ranges for the Battery System are as follows:

- Operating Temperature: -20 °C to 55 °C / -4 °F to 131 °F

⚠ CAUTION

Operating the battery system outside the specified temperature range may trigger over-temperature or under-temperature alarms and protection mechanisms, which can reduce the product's service life.

4.1.3 Cooling System

Cooling System: It is recommended to keep the battery system within the recommended temperature range.

⚠ CAUTION

Operating outside the working temperature range will cause the battery system to trigger alarms or protection mechanisms, which could reduce its cycle life.

4.1.4 Heating System

When equipped, the heating function is automatically activated when the ambient temperature falls below 5 °C and charging is required. The heating function is automatically deactivated once the battery temperature reaches approximately 15 °C.

The heating function is an optional feature. Actual availability and configuration depend on the delivered product.

4.1.5 Fire-extinguisher System

If the product is installed indoors, a fire protection system must be installed in accordance with applicable local codes and regulations for safety purposes. The fire protection system shall be inspected regularly to ensure it remains in proper working condition. Inspection, operation, and maintenance of fire protection equipment shall comply with all applicable local requirements.

4.1.6 Grounding System

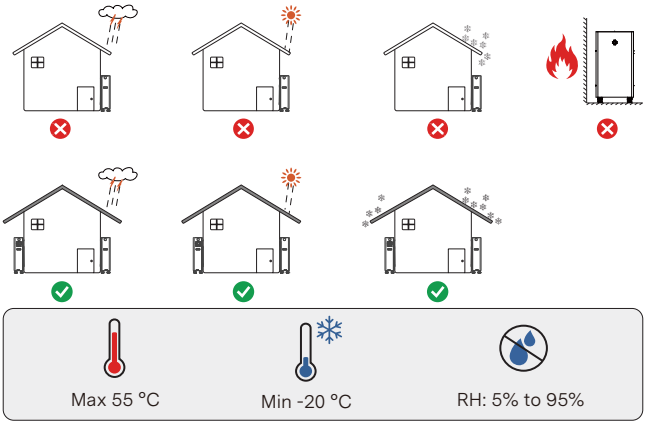
Before installation, ensure that the battery system is properly grounded in accordance with local electrical codes and regulations.
If the battery system is installed in a separate enclosure (e.g., a containerized enclosure), ensure that the enclosure itself is also properly grounded.

4.1.7 Low Battery Voltage Warning

When the battery is depleted, turn off the main battery switch.
If the battery will not be used for an extended period, turn off its main switch. Otherwise, the battery voltage may drop too low, preventing the system from starting up.

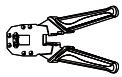
4.1.8 Requirements for Installation Location

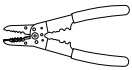
- A solid and level support surface (e.g., concrete or masonry) is required.
- The installation location must be out of reach of children.
- The installation location must be suitable for the weight and dimensions of the product.
- The installation location must be protected from direct sunlight.
- Keep away from metal dust or conductive particles.
- Keep away from water sources, heat sources, flammable materials, and explosive materials.
- The installation location must be away from fire.
- The operating temperature should be between -20 °C to 55 °C / -4 °F to 131 °F.
- The ambient humidity should be between 5% to 95% RH (non-condensing).
- Installation altitude: ≤ 9,842 feet (≤ 3,000 m) above sea level.

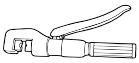


4.2 Tool and Instrument Preparation

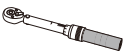
The following tools may be required for installation:


Network Wire Clamp


Wire Stripper


Crimping Pliers


Phillips Screwdriver

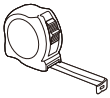

Torque Wrench


Hexagon Socket


Pen


Wire Cutter


Wrench


Tape Measure


Drill


Hammer

NOTICE

Always use properly insulated tools to prevent electric shock or short circuits. Do not use damaged or inadequately insulated tools.

The following personal protective equipment (PPE) must be worn when working with the battery system:


Insulated gloves

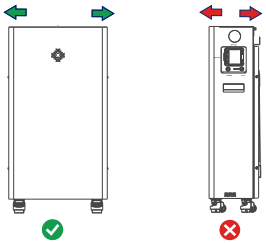

Safety goggles


Safety shoes

4.3 Transportation and Handling Precautions

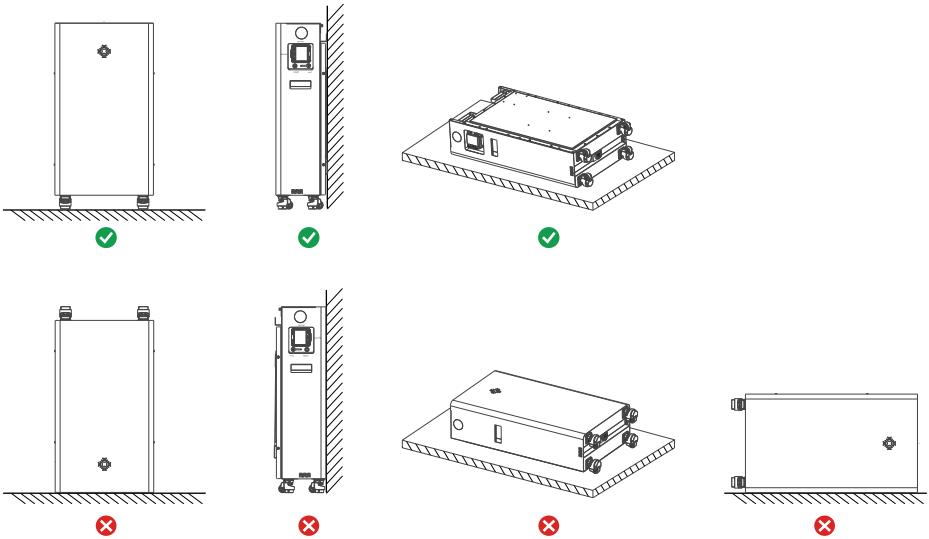
4.3.1 Battery Transport Direction When Using Roller

When transporting the product using the bottom rollers, move it only in the direction specified in this manual and shown in the illustrations. Do not move the product sideways or in any other direction.



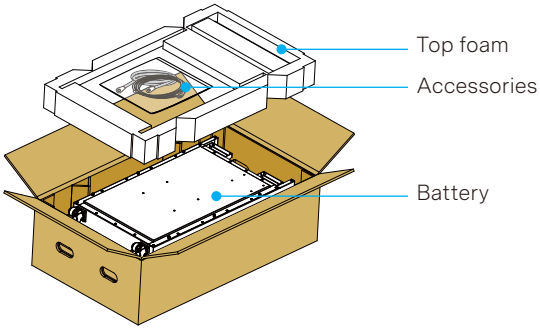
4.3.2 Battery Placement Direction During Transportation

During transportation and temporary placement, the product shall only be placed in the orientations shown as permitted in the illustrations. Do not invert or tilt it.

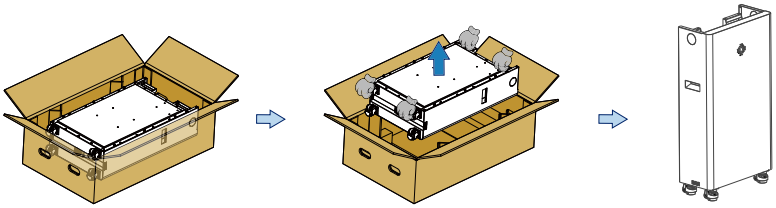


4.4 Unpacking and Handling

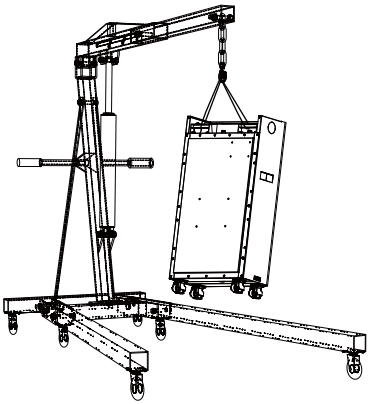
- Heavy Lifting Safety, Refer to Section 2.5.
- Confirm that the DC breaker is in the OFF position to ensure the product is de-energized.
- Select a suitable location to place the product.
- After opening the carton, remove the accessories and the top foam.



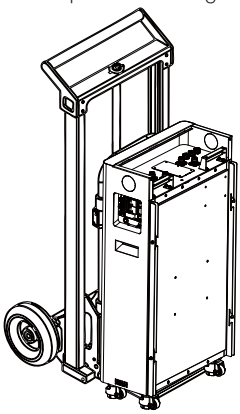
- Handling Option 1:
  Refer to Section 2.5 for the designated number of personnel required. Lift and carry the product manually using the provided handles and appropriate support points, then carefully position the product upright as illustrated.



- Handling Option 2:
  Use a hoist to lift and install the product during wall mounting.



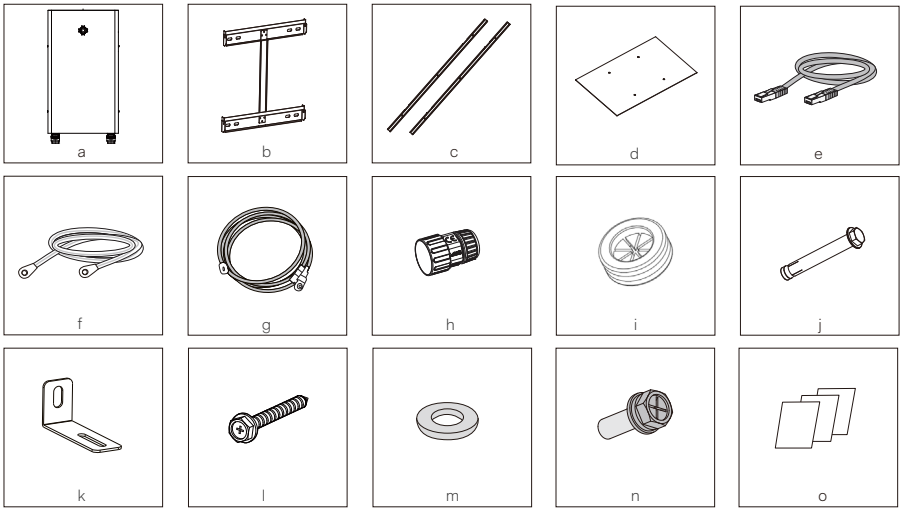
- Handling Option 3:
  Use a lift to move and install the product during wall mounting.



4.5 Delivery Receipt and Inspection

Upon arrival at the installation site, transport and unload the product in accordance with applicable regulations and handling requirements. Prevent the product from being exposed to direct sunlight during transportation, storage, and installation.

- Before unpacking, verify that the total number of packages matches the shipping documents and inspect the packaging for any visible damage.
- During unpacking, handle the product with care and protect the enclosure surface from scratches or impact.
- After unpacking, the installer shall review the technical documentation and verify the completeness of all delivered items by checking the packing list against the configuration table. If any internal packaging or components are found to be damaged, a detailed inspection shall be performed and the findings documented. Contact Customer Support using the contact information provided in this document.



Item	Item name	Quantity	Remarks
a	Pack	1 PC	
b	Back Plate Support	1 PC	Optional
c	Wall Mount Bracket	2 PCS	Optional
d	Mounting Positioning Board	1 PC	Optional
e	Communication Cable	1 PC	1.5 m / 59.06 in
f	Ground Cable	1 PC	1.5 m / 59.06 in
g	Positive DC Cable Negative DC Cable	1 SET	Positive: orange plug, 50 mm² or 0/1 AWG, L:1.5 m / 59.06 in to SC50-10 ring terminal. Negative: black plug, 50 mm² or 0/1 AWG, L:1.5 m / 59.06 in to SC50-10 ring terminal.
h	RJ45 Water-proof Wiring Terminal	2 PCS	
i	Wire Grommet	2 PCS	
j	Expansion Screw M6*60 mm	1 PC	
k	Fixed Support	1 PC	
l	Self-tapping Screw	4 PCS	Optional
m	Gasket	4 PCS	Optional
n	Screw M5*16 mm	4 PCS	Optional
o	User Manual / Packing List / Outgoing Inspection Report	3 PCS	

***Note:** This list is for reference only. For detailed accessory specifications, always refer to the Packing list. Updates to the Packing list will not be notified in this manual.

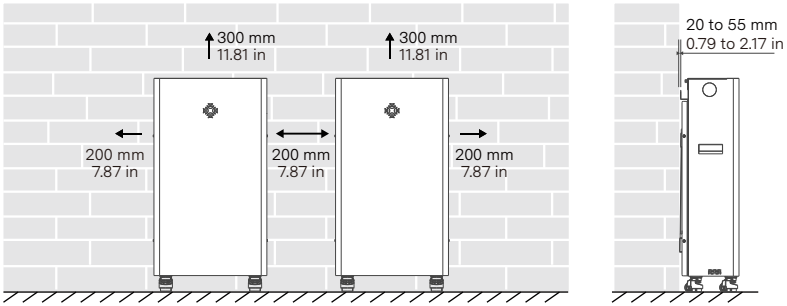
4.6 Installation Steps

- **Recommended Installation Clearance**

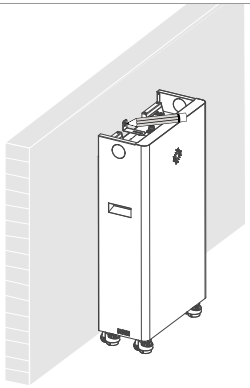
⚠ CAUTION

Please note that the battery should be installed with a minimum safe clearance from surrounding equipment or other batteries. Please refer to the minimum clearance diagram below for details.

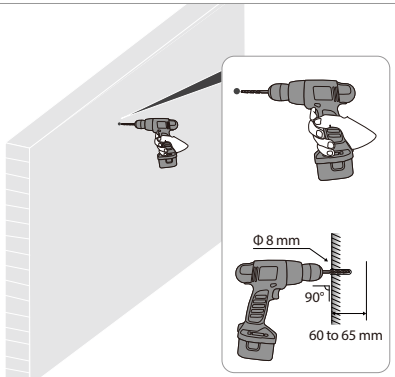
Clearance Requirements	
Min. clearance from left side	200 mm / 7.87 in
Min. clearance from right side	200 mm / 7.87 in
Min. clearance above Battery System	300 mm / 11.81 in
Min. clearance between side-by-side Battery System	200 mm / 7.87 in
Min. clearance from back	20 to 55 mm / 0.79 to 2.17 in



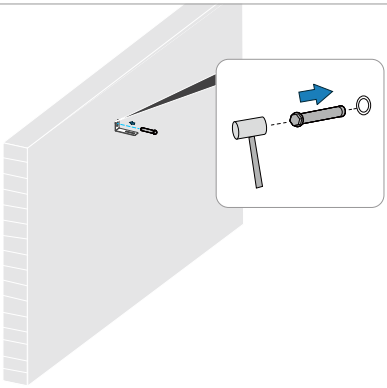
• Floor-mount Installation Procedure



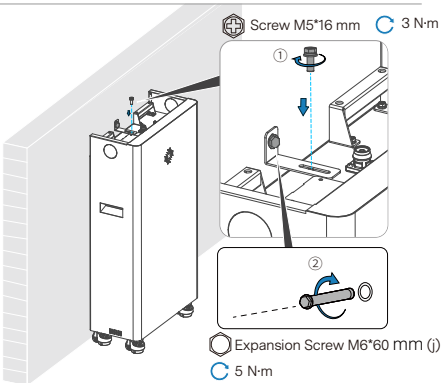
1 Install the Fixed Support (k) and mark the position



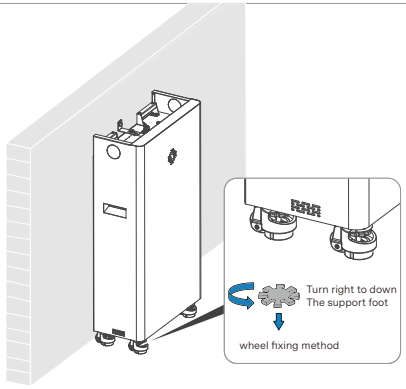
2 Drilling



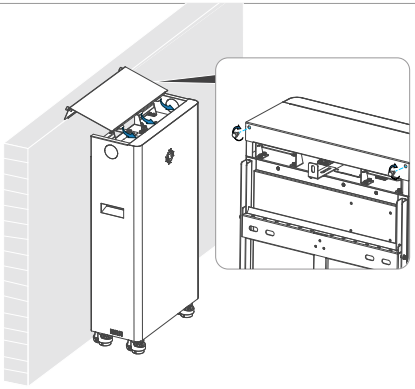
3 Install Expansion Screw M6*60 mm (j)



4 Install the Fixed Support (k).

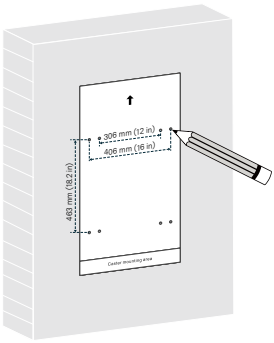


5 Secure the leveling caster.

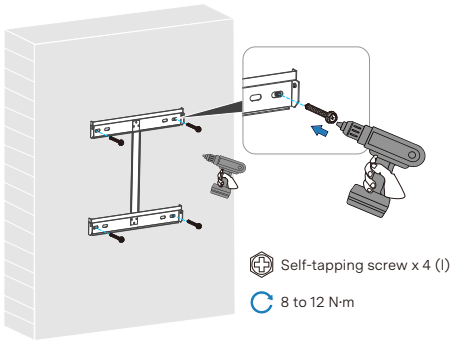


6 Install the cover.

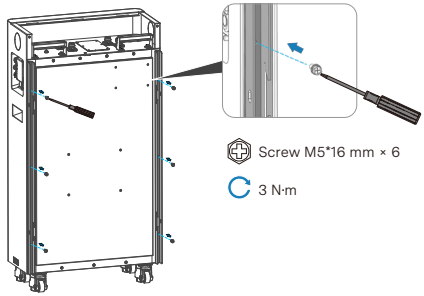
- **Wall-mount Installation Procedure (Optional)**



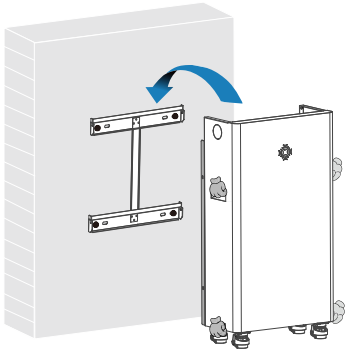
1 Mounting Positioning Board (d) – Location Markers



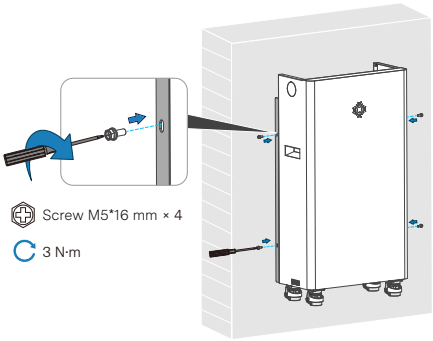
2 Secure the Back Plate Support (b)



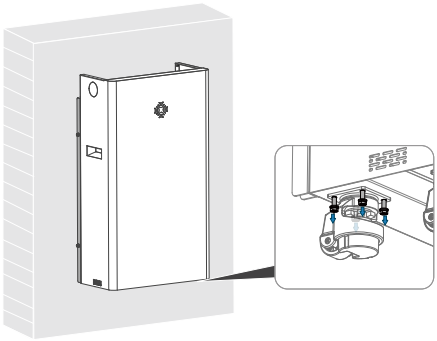
3 Install the Wall Mount Bracket (c)



4 Install the battery



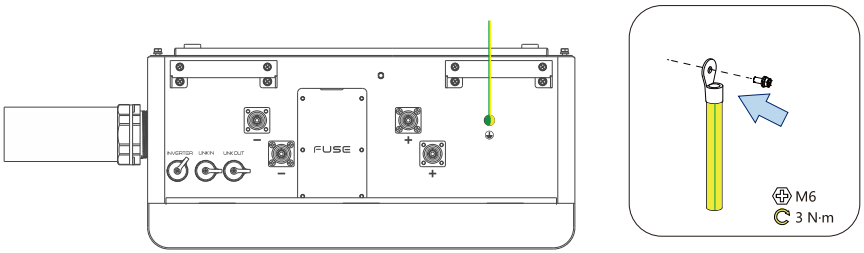
5 Secure the battery to the Back Plate Support (b)



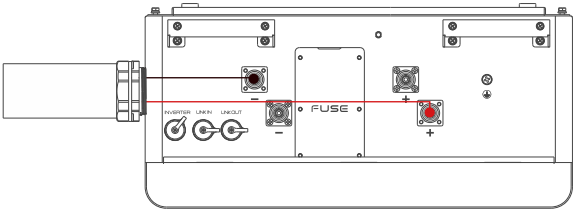
6 Remove or retain the leveling casters as needed.

4.7 Electrical Connection Steps

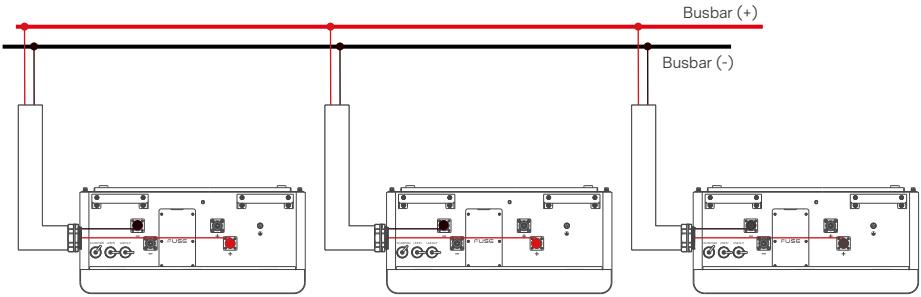
Step 1: Ground Cable Connection



Step 2: Power Cable Connection (Single Unit)



Step 2.1: Power Cable Connection (Parallel Connection with Busbar)



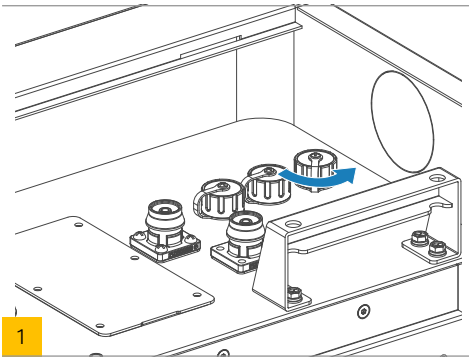
Step 3: Communication Cable Connection (Single Unit)

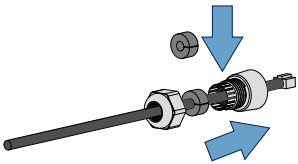
(1) Take off the RJ45 waterproof cover.

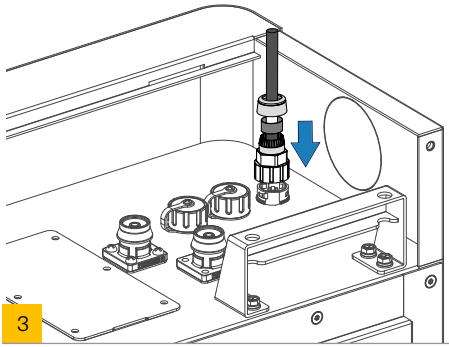
(2) Pass the communication cable through the RJ45 waterproof cable gland (h).

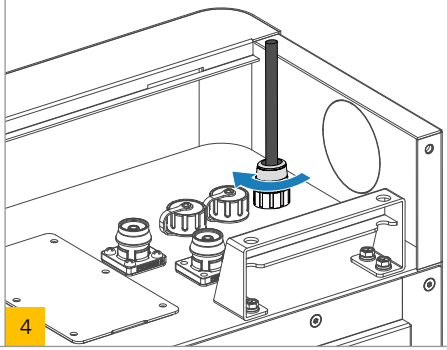
(3) Insert the communication cable to the corresponding RJ45 port.

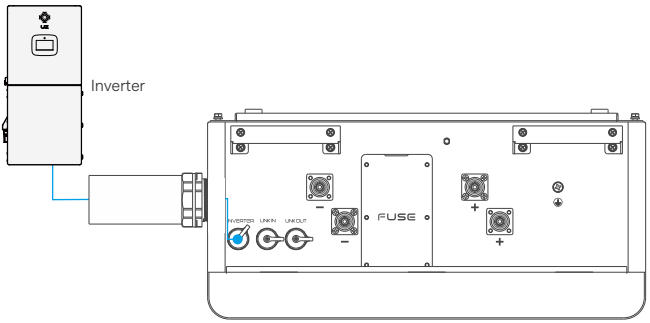
(4) Tighten RJ45 wiring cover.





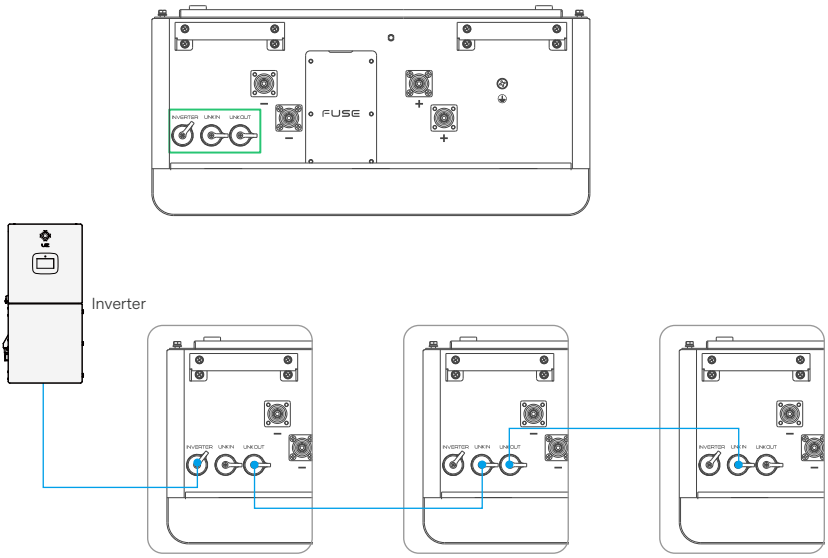






INVERTER	
PIN 1	GND
PIN 2	RS485-A
PIN 3	RS485-B
PIN 4	CAN-H
PIN 5	CAN-L
PIN 6	GND
PIN 7	NA
PIN 8	NA

Step 4: Communication Connection (Parallel Connection)



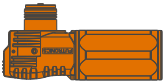
> ⚠ *NOTICE*
>
> Make sure to turn off the batteries first and then connect batteries with parallel cable, otherwise it may cause the battery to fail to connect in parallel.

4.8 DC Cable Instruction

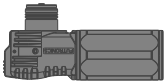
4.8.1 Preparation of DC Power Cable Materials

Material List (plug components may be purchased separately from supplier.)

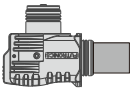
- Plug Components (A)



Positive Connector
PN: 2030000176-00



Negative Connector
PN: 2030000177-00



Plug (A-1)

Waterproof ring (A-2)

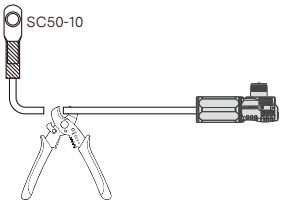
Plug protection cover (A-3)

- Positive DC Cable and Negative DC Cable (B)
  * This cable is already included in the accessories list.

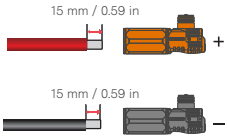
Positive DC Cable
PN: 3110000066-00

Positive DC Cable
PN: 3110000065-00

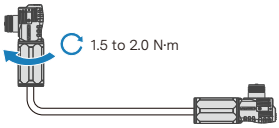
4.8.2 Convert Output Cables to Parallel Cables



1. Cut off the SC50-10 end of the Positive DC Cable and Negative DC Cable (B)



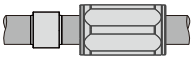
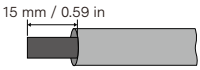
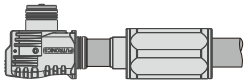
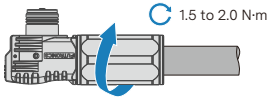
2. Strip 15.0 mm / 0.59 in of the cable insulation (+0.5 / –0).



3. Tighten the isolation cap and plug contact. For detailed instructions, refer to 4.8.3 Crimping Steps for Plug Components (A)

4. Parallel cables assembly completed.

4.8.3 Crimping Steps for Plug Components (A)

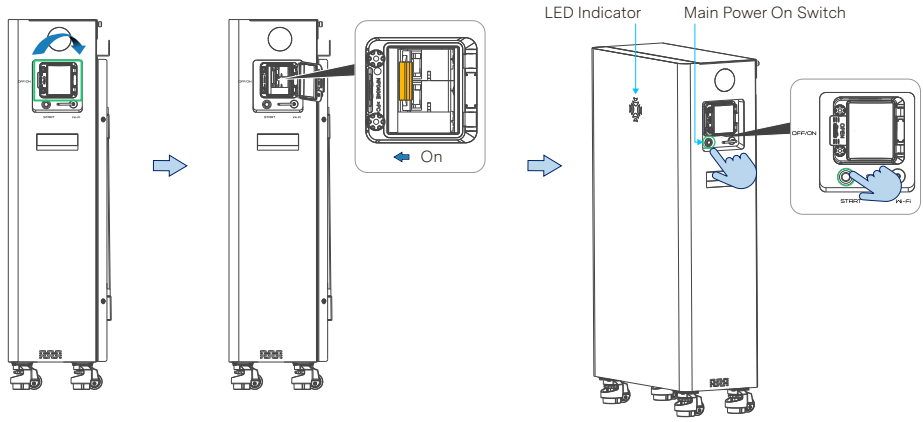
Procedure	Diagram
1. Pass the cable through the nut rear cover and the gland sealing ring in sequence.	
2. Strip 15.0 mm of the cable insulation (+0.5 / –0).	
3. The red plug is used for the positive, and the black is for the negative power cable. The end of the cable is crimped at the terminal using a crimping clamp.	
4. Tighten the isolation cap.	

4.9 Battery Power On and Power Off

> ⚠ *NOTICE*
>
> Failure to turn on all circuit breakers between the battery and inverter before turning on the battery power switch will cause the pre-charge/soft-start functionality not to function. This would cause very high currents to flow between the inverter and battery for a short duration, potentially damaging the battery, inverter or wiring.

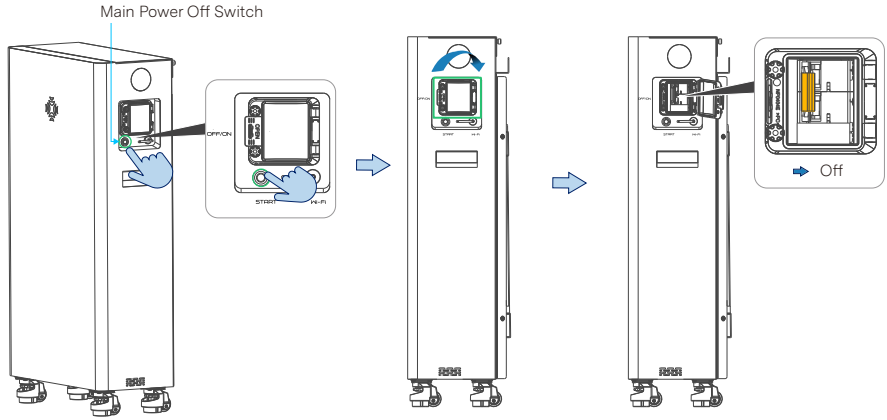
4.9.1 Turn On the Battery

1. Open the cover of the circuit breaker and turn on the circuit breaker.
2. Turn on the main power on switch. After approximately five seconds, the blue indicator will begin flashing, indicating normal operation.
3. Put on the cover.



4.9.2 Turn Off the Battery

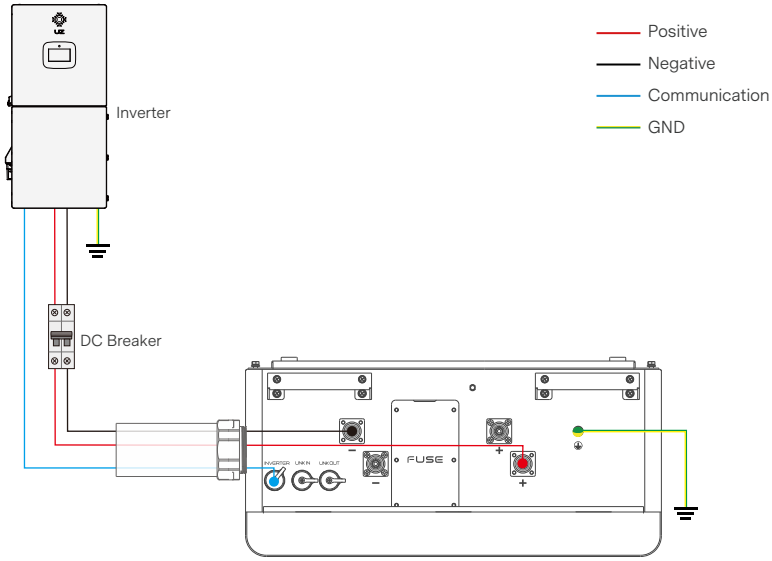
1. Turn off the main power off switch.
2. Open the cover of the circuit breaker and turn off the circuit breaker.
3. Put on the cover.



4.10 Cable Connection and Commissioning

4.10.1 Single Unit

1. Before electrical connection, ensure that the circuit breaker / power switch of the battery and all switches connected to the energy storage are in the OFF state. Otherwise, electric shock may occur.
2. The installation cable requires a 2-inch conduit.

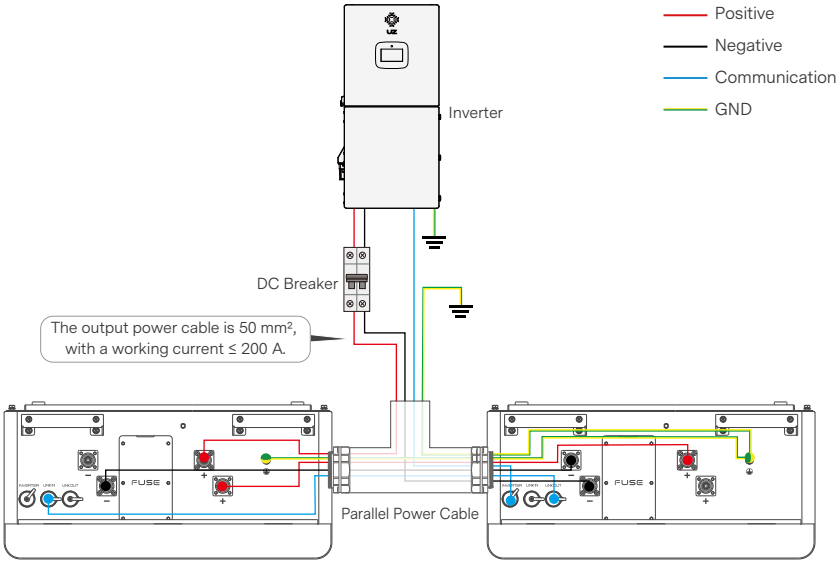


NOTICE

1. The rated output current/power for the cable connection is 160 A / 8.2 kW, with a maximum output of 200 A / 10.2 kW.
2. Install circuit breakers based on local regulations.

4.10.2 Two (2) Batteries in Parallel Connection

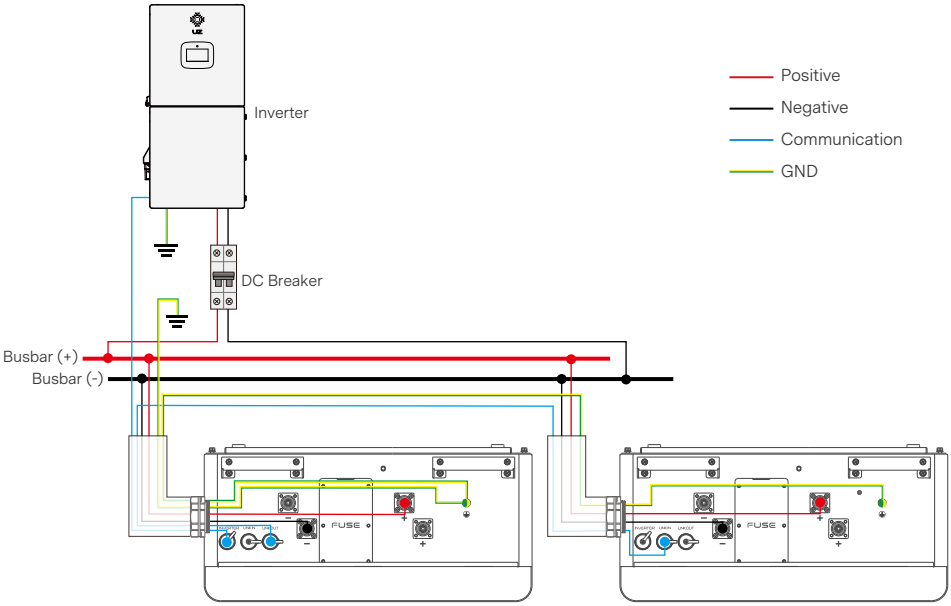
- Without Busbar



⚠ CAUTION

1. For parallel connections without a busbar, the maximum output current / power is 200 A / 10 kW. The output current must not exceed 200 A. Ensure the inverter's battery-side current limit is set to 200 A.
2. Output power will be equally distributed among parallel units.
3. The parallel power cable is an optional accessory and must be purchased separately. Alternatively, refer to Section 4.8 for assembly instructions.
4. Install circuit breakers based on local regulations.

- With Busbar

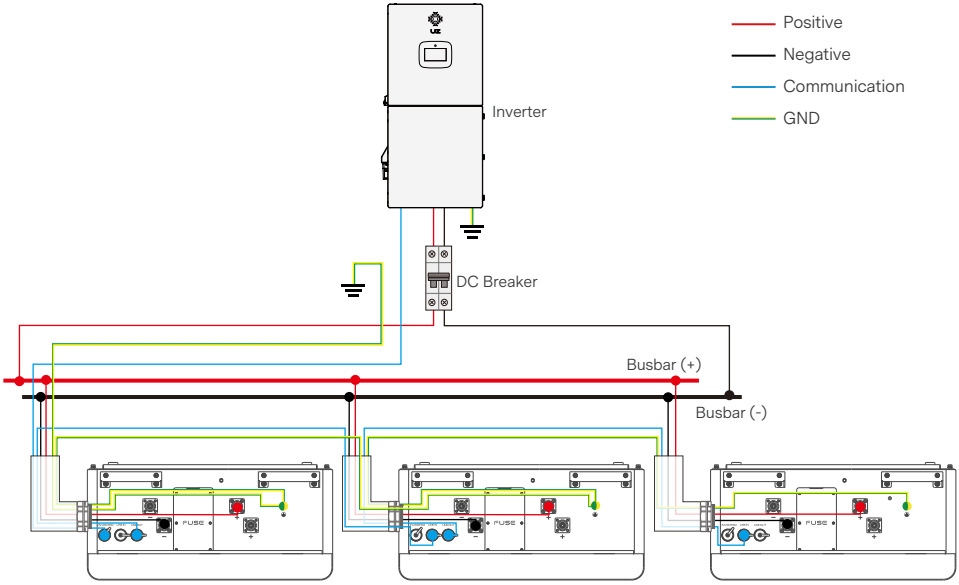


NOTICE

1. The cable connection method using busbars will provide a rated output of 320 A / 16.4 kW, with a maximum output of 400 A / 20.4 kW.
2. For example, when used with an 11.4 kW inverter, 70 mm² busbars and output power cables are recommended.
3. Install circuit breakers based on local regulations.

4.10.3 Three (3) Batteries in Parallel Connection

- Left and right parallel battery



NOTICE

1. The cable connection method using busbars provides a rated output of 480 A / 24.6 kW, with a maximum output of 600 A / 30.6 kW.
2. For example, when used with an 11.4 kW inverter, 70 mm² busbars and output power cables are recommended.
3. Max. number of parallel units: 64. Note that recommended charge and discharge power is 518.4 kW continuous.
4. Install circuit breakers based on local regulations.

5. Maintenance and Storage

5.1 Troubleshooting

Items	Solution	Measure
Unable to start	1. Press the Power Switch to the 'ON' state, but if the DC Breaker is not turned on, the LED indicator may not respond, or all LEDs may turn off after 1 second. 2. Charge the battery using a charger or inverter to provide 54 V to 57.6 V voltage and observe it can be started.	If the abnormal status persists after above steps, please contact your supplier.
Unable to charge	1. Check whether the cable connection between the battery and the inverter / charger is correct. 2. Check whether the inverter / charger setting is correct. 3. Check whether the battery is in charge protection mode, if yes, try to discharge the battery.	
Unable to discharge	1. Check whether the cable connection between the battery and the inverter / charger is correct. 2. Check whether the battery occurs short circuit, reverse connection, pre-charge failure during connection inverter etc. 3. Check whether the battery is in discharge protection mode, if yes, try to charge the battery.	If there is any other situation (s) excluding in this table, turn off the fault battery, contact your supplier.
High / Low temperature	1. Stop the battery system for a while, check whether the installation location temperature meet the requirement. 2. Avoid continuous full charging and discharging.	
High current	Check the configuration and parameters setting on the inverter / charger is correct.	
ALM always on	Turn off all the batteries, and remove the faulty battery from the system.	
Communication fail	1. Check the communication cable type is correct and is contacted well. 2. Check whether the inverter communication pin definition is 4H5L. If it is not, modify the communication cable according to the inverter's requirements. 2. Check the inverter protocol related setting is correct. 3. Check both battery and inverter are working properly.	

Note: Please restart after software upgrade.

5.2 Fuse Replacement

If the fuse is burnt out, please open the cover and replace it.

Fuse parameter:

Voltage ≤ 70 VDC;

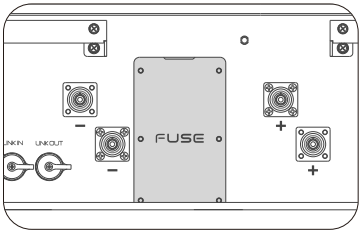
When the current is greater than 3,000 A, the fuse time is less than or equal to 500 us;

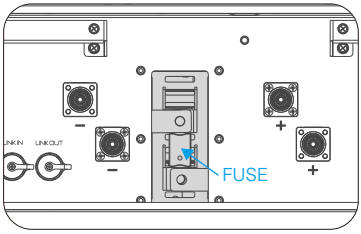
Steps to replace:

Step 1: Open the battery system repair window.

Step 2: Remove the old fuse.

Step 3: Install new fuse.





NOTICE

Non-professionals are not allowed to open this cover.

5.3 Routine Maintenance

To ensure the long-term running of the energy storage system, you are advised to maintain the Battery System regularly.

Check Content	Inspection Method	Maintenance Cycle
System cleanliness	Check whether the appearance of the system is damaged or deformed.	Once every 6 to 12 months
System running state	1. Check whether the Battery System generates abnormal noise during operation. 2. Check that the battery parameters are correctly set when the battery is running.	Once every 6 months
Electrical connection	1. Check that cables are secured. 2. Check that cables are intact, and that in particular, the parts touching the metallic surface are not scratched.	Once every 6 months
Ground reliability	Check that ground cables are securely connected.	The first inspection is 6 months after the initial commissioning. From then on, the interval can be 6 to 12 months.

5.4 Storage Recommendations

It is recommended that batteries not be stored for a long period. They should be used soon after being deployed onsite. The batteries should be handled according to the following requirements.

Required Storage Temperature	Actual Storage Temperature	Recharge Interval	Remarks
–20 °C < T ≤ 55 °C	T ≤ –20 °C	Not allowed	Not reaching the time for recharge: Use the batteries as soon as possible. Reaching the time for recharge: Recharge the batteries.
	–20 °C < T ≤ 0 °C	≤ 6 months	
	0 °C < T ≤ +25 °C	6 to 12 months	
	25 °C < T ≤ 55 °C	≤ 6 months	
	55 °C < T	Not allowed	

⚠ *CAUTION*

Failure to follow the above storage instructions will significantly reduce the battery's cycle life.

6. Decommissioning and Disposal

6.1 Decommissioning

Before decommissioning the battery system, all operations shall be performed by qualified personnel in accordance with local regulations and applicable safety standards.

1. Switch off the system using the Power Switch and confirm that all status indicators (LEDs) are off.
2. Disconnect the system from all external power sources, including the inverter, grid, and loads, and switch off all related DC and AC circuit breakers.
3. After shutdown, wait at least 5 minutes to allow internal capacitors to fully discharge.
4. Disconnect all power and communication cables in the reverse order of installation, and protect all connectors against short circuits.
5. If the battery shows signs of damage (such as deformation, leakage, overheating, smoke, or abnormal odor), immediately stop operation and isolate the battery. Do not open, disassemble, or attempt to repair the battery. Contact the installer, distributor, or manufacturer for further instructions.
6. Store decommissioned batteries in a dry, well-ventilated location, protected from moisture, direct sunlight, high temperatures, and mechanical impact.

6.2 Disposal

This section specifies mandatory legal and environmental requirements for the disposal of used or decommissioned batteries.

- Batteries, including rechargeable batteries, must not be disposed of in household or general waste.
- Used or damaged batteries shall be delivered to authorized collection or recycling facilities in accordance with applicable local regulations.
- Batteries may contain hazardous substances as well as valuable recyclable materials; improper disposal may harm human health and the environment.
- During storage and transportation, batteries shall be protected against short circuits, leakage, and mechanical damage.

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