

USER MANUAL

Low-Voltage Wall-Mounted Energy Storage System



About This Manual

This manual applies only to the WSL48100 low-voltage parallel-connected battery system (referred to below as the battery system). It provides important product information and explains how to install, operate and maintain the WSL48100. Read this manual carefully before installation or operation and follow all instructions. Contact FENGRUI immediately if any requirement, instruction or safety procedure is unclear.

IMPORTANT: Damage caused by human error, incorrect installation or use that does not comply with this manual is not covered by warranty.

NOICE :

This manual is only applicable to the WSL48100 low-voltage parallel connection series battery pack (here in after referred to as the battery pack)

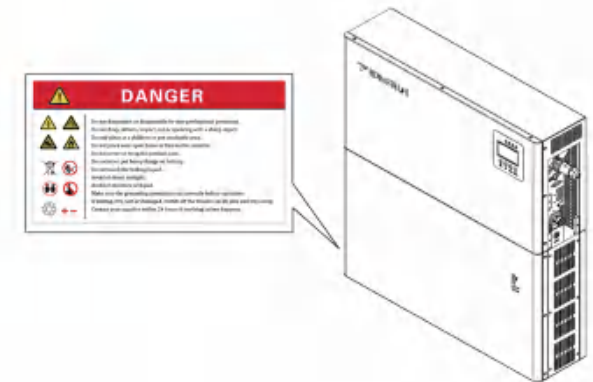
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1.Safety

1.1 Battery System Label Symbols

The battery system carries electrical and safety symbols. Make sure you understand every symbol before installation or operation.



Read the user manual before installing or operating the battery system.

-  The battery voltage is high enough to cause electric shock.
-  Make sure the positive and negative terminals are connected correctly.
-  Do not place the product near open flames or flammable materials.
-  Do not drop, deform, impact, cut, puncture or strike the battery with sharp objects.
-  Do not allow children to access the battery system.
-  Please keep the battery pack away from sources of fire.
-  Do not dispose of the battery system with household waste at the end of its service life.
-  The battery system can be recycled through an approved recycling channel.

1.2 Important Safety Instructions

For safety, read all precautions and instructions before installation. FENGRUI is not responsible for loss or damage caused by failure to follow this manual. In the document, we use the following symbols to highlight important information: When using the battery pack, these warnings and precautions must be followed.



WARNING

Indicates a dangerous situation that, if not avoided, may result in injury or death.

- Active lithium battery chemistry may cause shock/fire/explosion when exposed to air.
Li metal explodes violently upon O₂ contact. Take preventive measures:
 - * Do not crush, puncture, dismantle or modify the battery system.
 - * Do not dispose of the battery in a fire.
 - * Do not expose it to direct sunlight or excessive heat.
 - * Do not allow battery connectors to contact conductive objects such as loose wires or tools.
 - * Do not open, disassemble, tamper with or modify the battery system without prior written approval from FENGRUI.
 - * Do not allow children to come into contact with the battery pack.

- The battery system is heavy. Use suitable lifting equipment and safe handling practices.
- Do not touch internal components while the system is operating. Before installation, replacement or maintenance, make sure the inverter power switch and battery circuit breaker are OFF.
- Please read this document before installing or using the battery. If the battery is operated under non-standard conditions and requirements, it may cause electric shock, serious injury, or even death.
- Use the battery pack according to the instructions.



WARNING

Indicates a dangerous situation that, if not avoided, may result in minor injury or equipment damage.

- There is a risk of electric shock. Do not remove the cover plate, as there are non-removable parts inside. Please consult the staff.
- When PV modules are exposed to light, they supply DC voltage to the equipment.
- Do not use cleaning solvents to clean the battery pack, or expose the battery to flammable or irritating chemicals or vapors.
- For storage, switch off the battery system and maintain the state of charge above 50%. Recharge and maintain the battery within 90 days.

1.3 Personal Protective Equipment

Wear appropriate personal protective equipment during installation.

Installation personnel must comply with IEC60364 and all applicable local laws and electrical standards.



Goggles



Earplug



Insulating
gloves



Safety
gloves



Safety
shoes

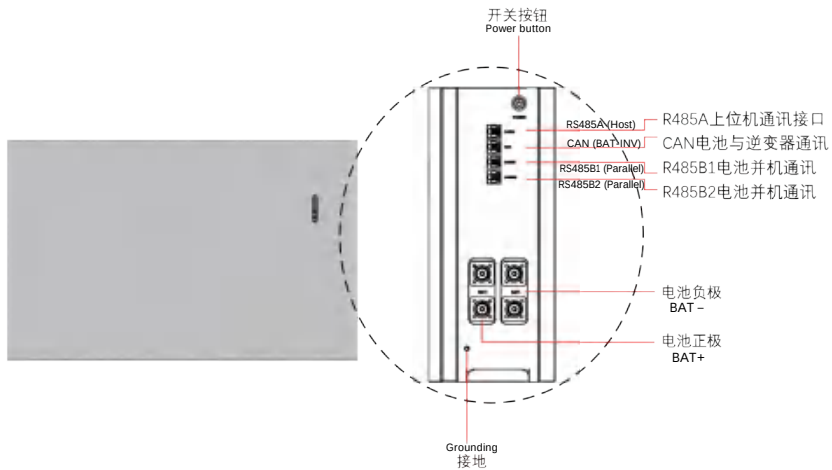
2. Product Introduction

2.1 Battery System Overview

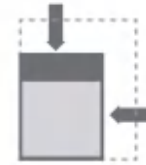
An energy storage battery system stores electrical energy using lithium iron phosphate (LFP) cells and an integrated battery management system (BMS). It supports renewable-energy utilisation, load balancing and backup power.

NOTE:

The WSL48100 supports parallel battery expansion.
The minimum operating configuration is one battery module.



Main Features



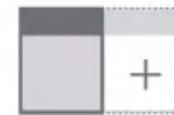
Compact size, easy to install

The lightweight and stackable design makes indoor installation easier and faster.



Safety

Integrated BMS monitors operation and keeps the battery within its design limits.



Scalability

By adding battery modules, the capacity of the battery pack can be increased.

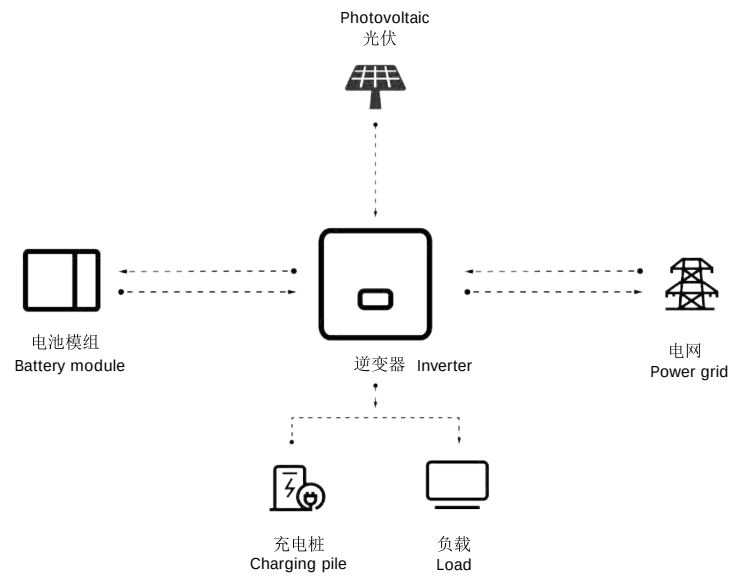


High compatibility

The battery pack is compatible with multiple inverters.

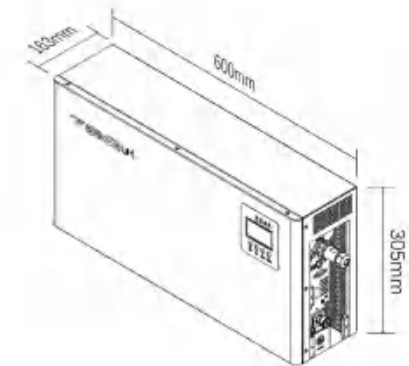
2.2 Technical Data

The WSL48100 is designed for charging and discharging to increase household energy independence and may reduce electricity costs when correctly configured.

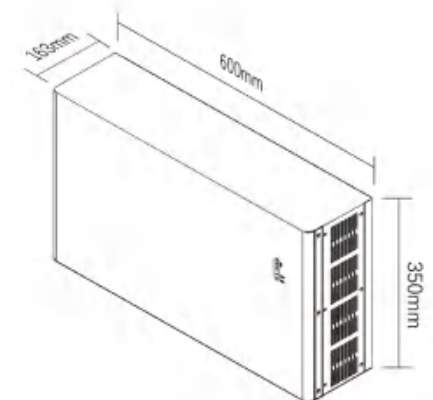


2.2.1 Dimensions and Weight

	Length(mm)	Width(mm)	Height(mm)	Weight(kg)
Inverter:	600	163	305	13.8

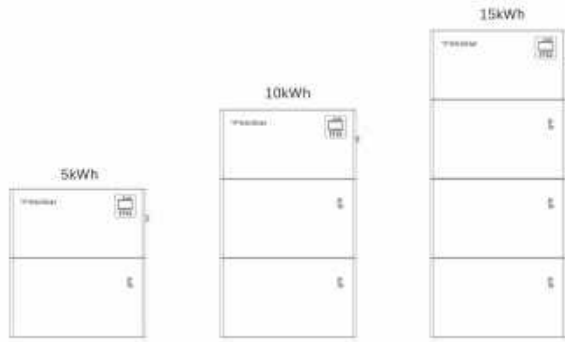


Battery module:	600	163	350	47.6
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Energy storage capacity description

- The energy storage system supports capacity expansion, with a battery module capacity of 5kWh, and can support up to 3 battery pack expansions.



2.2.2 Performance

Product composition	Inverter + battery pack(s)		
Battery module	51.2V/102AH		
Ingress protection	IP21		
Battery module quantity	1	2	3
Battery level (kWh)	5.22	10.44	15.66
Size/mm	600×655×163	634×1005×163	600×1355×163
Weight/kg	61.4	109	156.6
Communication	CAN/RS485		
MPPT voltage range	150-500V		
AC output voltage	220/230/240Vac		
Rated output power	5000W		
Max. DC charge/discharge current	100A		
Input voltage	120-300V (PV) / 220-240V (Grid)		
Maximum PV power	5000W		
Cycle life	6000		
Application	On-grid / off-grid		
AC phase	Single-phase		

2.2.3 Environmental Requirements

WSL48100	
Operating temperature	0~50° C
Optimal operating temperature	5~50° C
Storage temperature	0~35° C
Relative humidity	5%~95%
Maximum altitude	3000m
Cooling method	Natural convection

2.2.4 Cable Requirements

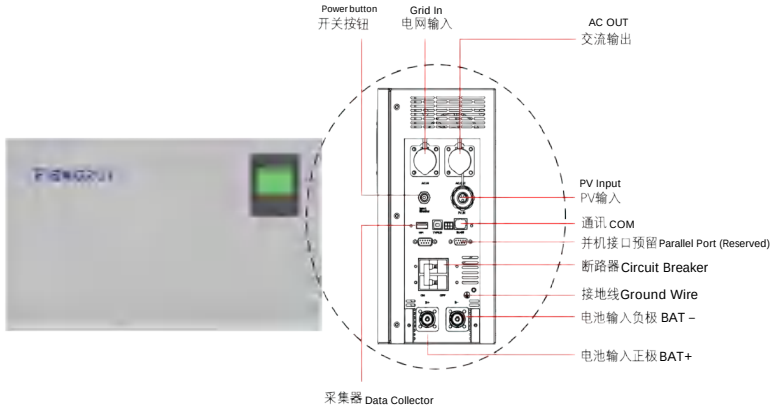
DC negative power cable	φ16mm ²
DC positive power cable	φ16mm ²
Communication cable	φ3mm ²
Protective earth conductor	φ2.5mm ²



WARNING

Undersized, damaged or non-compliant cables may cause faults, overheating or equipment damage.

2.3 Inverter Parameters



3.Installation

Rated power	5000W
Ambient temperature	0~50 ° C
Operating humidity	20%-95%
Input frequency	40-70Hz
Rated AC input voltage	208/220/230/240Vac
Input voltage range	120-300V (PV) 220-240V (Grid)
Output frequency	40-70Hz
Output voltage	220/230/240Vac
Battery mode peak efficiency	94%@48VDC
PV voltage range	120-430Vdc
PV input current	30A
Recommended PV voltage	300-340V
200-430V MPPT Recommended voltage	300V
Open-circuit voltage	370-430V

3.1 Preparation

3.1.1 Installation Materials and Tools

Before installation, make sure all required tools and materials are available. Typical tools include an impact drill, insulated screwdrivers, hex keys, needle-nose pliers, hydraulic crimping tools, wire strippers, cable cutters, crimping pliers, a rubber mallet and suitable wrenches.



Impact Drill



Insulated Cross-head Torque Screwdriver



Insulated Hex Torque Screwdriver



Insulated Hex Torque Screwdriver



Hex Wrench



Diagonal Cutters



Hydraulic Crimping Tool



Wire Strippers



Wrench for Disassembly



Rubber Mallet



Cable Cutters



Crimping Tool

3.1.2 Installation Location

Ensure that the installation location meets the following conditions:

- Install at least 1,000 m from the coastline where possible to reduce exposure to salt spray and moisture.
- The floor must be flat.
- Do not install near flammable or explosive materials.
- The recommended ambient temperature is 15 to 30 °C.

3.1.3 Package Inspection

Check the delivered quantity against the order and inspect all components for shipping damage or missing parts before installation.



Inverter and Battery Pack



Bracket



Grounding Cable



Anchor Bolt



Parallel Communication Cable



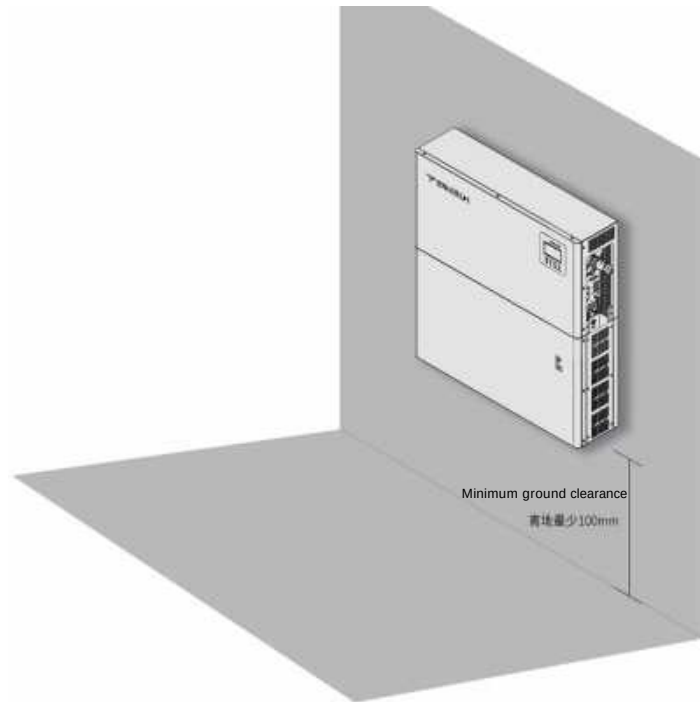
DC+ Parallel Cable



DC - Parallel Cable

3.2 Installation Procedure

3.2.1 Installation Space



NOTE :

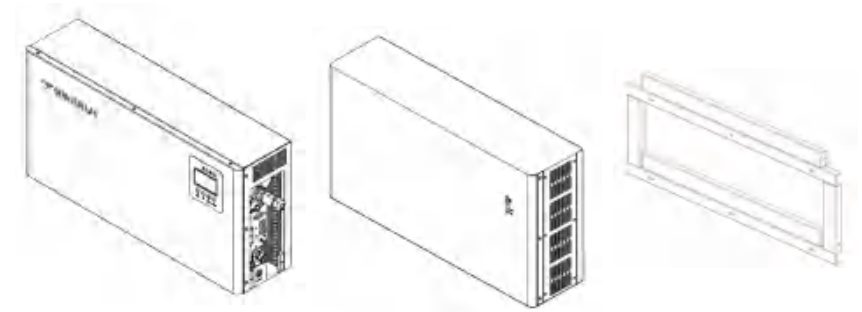
The battery system must remain exposed to ambient air. Covering the system fully or partially can restrict natural-convection cooling and may cause shutdown.

3.2.2 Mounting the Inverter and Battery Modules

Check and ensure that the following quantities meet the order requirements and that there are no parts damaged or lost during transportation.

Step1

- Place the base on the floor



NOTE :

WSL48100 can be installed on the ground and walls.

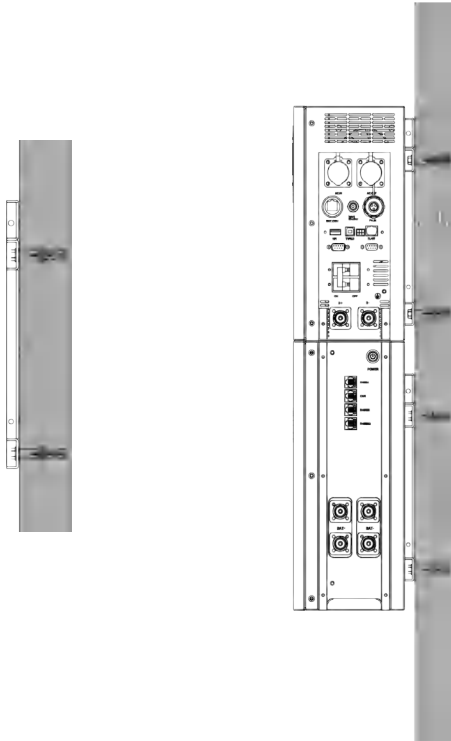


WARNING

The wall bracket must be firmly fixed. Use fasteners suitable for the wall material and total system weight. Keep the system away from water accumulation.

Step2

- Fix the bracket to the wall with expansion screws, and hang the inverter and battery pack according to the required quantity.

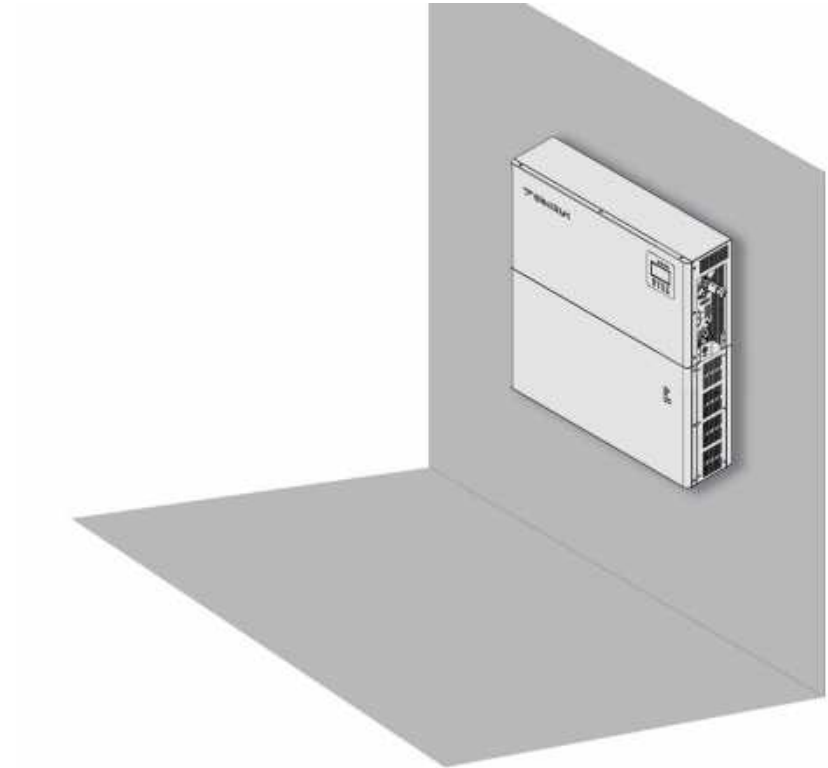


NOTE :

The installation of wall brackets must be firm.

Step3

- Connect the communication network cable to the inverter.



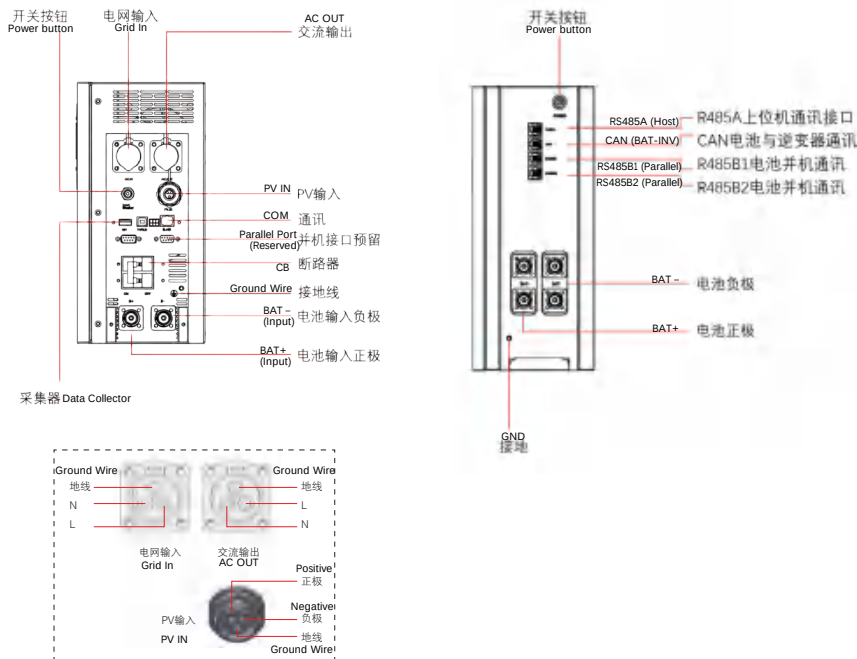
NOTE :

The positive and negative power lines are connected to the converter and cannot be reversed.

3.2.3 Cable Connections

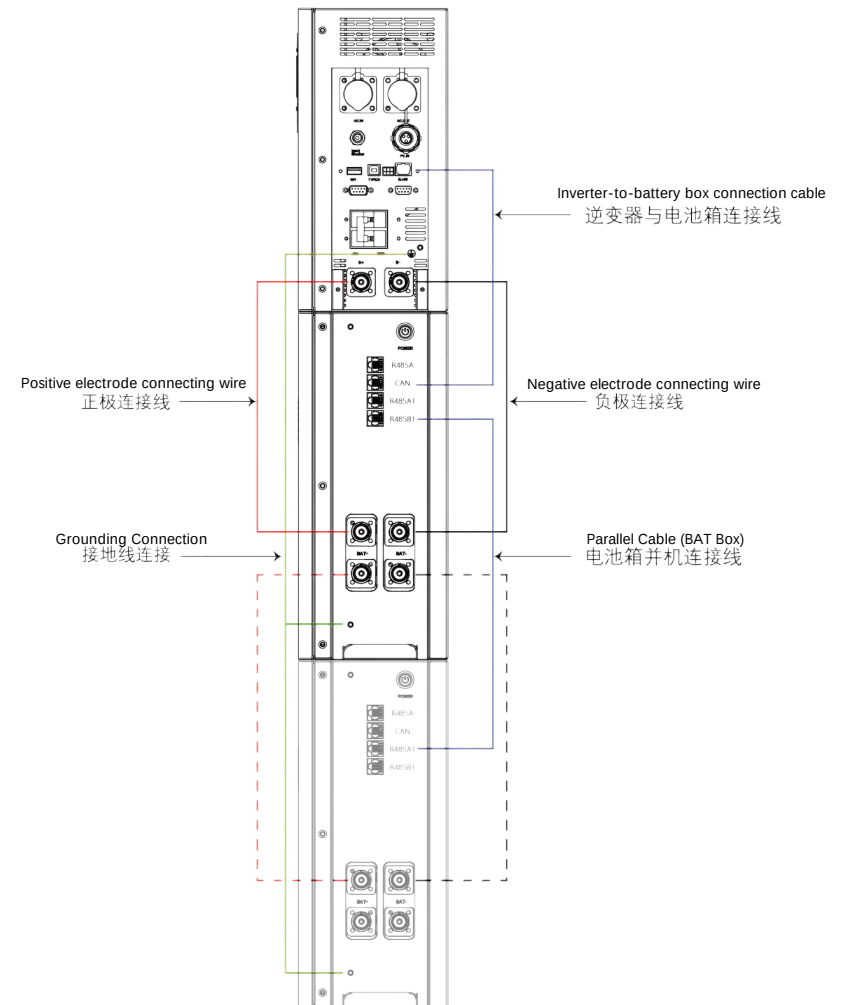
WARNING

Ensure that the inverter is turned off, and then connect the battery pack to the inverter.



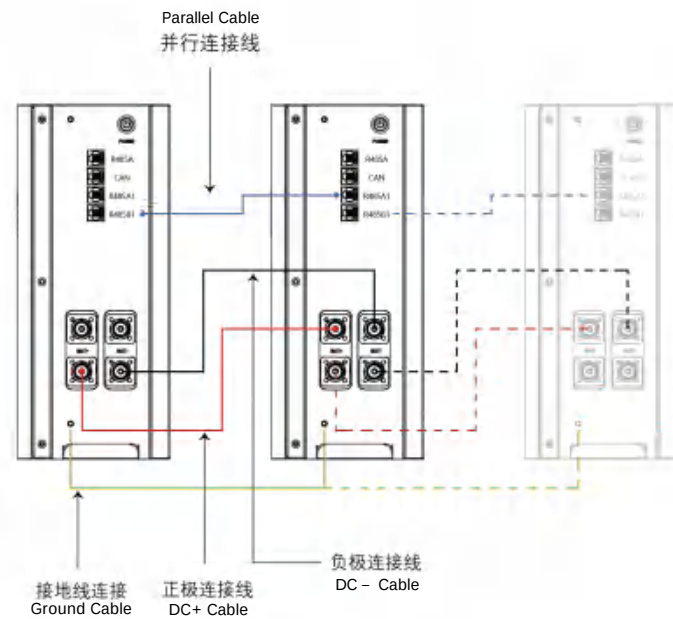
NOTE :

- *No polarity reversal; reversed connection causes battery pack damage.
- *Battery must communicate with inverter for normal operation.
- *Ensure wires to corresponding interface; otherwise battery damage.



3.2.4 Parallel Battery Mode

- WSL48100 parallel: Power line, communication line, red/black power lines (red to positive, black to negative).
- Ensure each connecting wire is correctly inserted into the corresponding hole.



4. Commissioning



WARNING

When connecting a battery pack to another battery pack, make sure the battery is turned off.



WARNING

If the sequence of power cables and communication cables is in a disordered state, it may cause faults.

4.1 Status Indicators



Six LED indicators on the front of the battery module show the operating status.

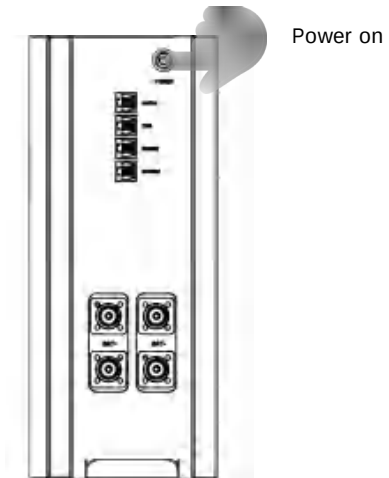
RUN : illuminated when the battery is operating normally, including charging and discharging.

ALM : illuminated when the battery is in an alarm state.

SOC : four LEDs indicate the approximate state of charge.

4.2 Power On

● Press the battery "SW" button to switch ON the battery system.

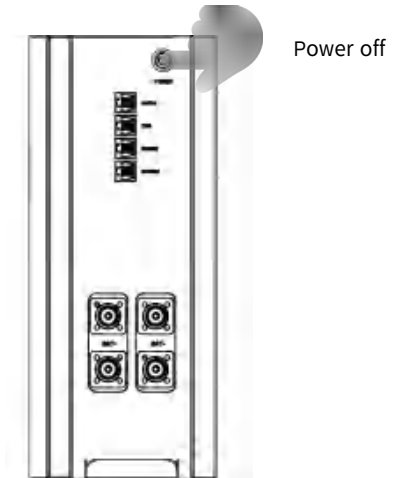


NOTE :

If communication with the inverter is not established within 3 minutes after power-on, battery output will switch off. The RUN indicator will turn off and the ALM indicator will remain on.

4.3 Power Off

- Press the battery “ SW ” button to switch OFF the battery system.



5. Troubleshooting

NOTE :

Confirm that all battery indicators are OFF before maintenance or cable work.

Check the front indicators to determine the battery-system status. An alarm is triggered when voltage, current or temperature exceeds the design limits. Use the monitoring software connected to the battery system to identify the cause.

Possible warning messages are as follows:

Battery charge over voltage

Battery under voltage

Battery over temperature

Battery under temperature

Discharge over current

Charge over current

BMS internal communication error

Cell voltage imbalance

NOTE :

The system may automatically recover from minor warnings after operating conditions return to normal. For persistent, severe or repeated alarms, stop operation and contact FENGRUI or a qualified local installer.

Contact Information

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