User Manual

FENGRUI [2025]-WSL48100

About This Manual

It introduces important product information and explains how to install the WSL48100 battery group. Please read this manual carefully before attempting to install or use the product, and follow all instructions during the installation process. If you have any questions regarding any requirements, instructions, or safety procedures described herein, please contact Fengrui Company immediately for advice. Note that any damage caused by human error or failure to adhere to the instructions in this manual will void the warranty.

Note:

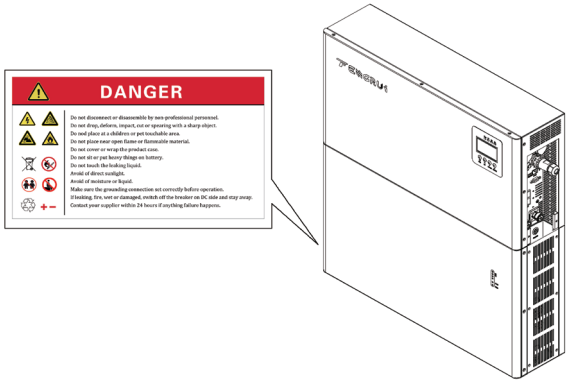
This manual applies exclusively to the WSL48100 low-voltage parallel-connected battery group (hereinafter referred to as the "battery group").

Table of Contents

1. Safety

1.1 Battery Group Label Symbols

There are electrical symbols related to electrical safety on the battery.
Please make sure you fully understand these symbols before installation.



Refer to the user manual prior to battery pack installation or operation.

- High Voltage Warning: The voltage of this battery group is strong enough to cause electric shock.
- Polarity: Ensure that the battery polarity is connected correctly.
- Flammable Materials: Do not place the battery group near open flames or flammable materials.
- Physical Damage: Do not drop, deform, impact, cut, or spray the battery group with sharp objects.
- Child Safety: Keep the battery group out of the reach of children.
- Fire Hazard: Keep the battery group away from any sources of fire.
- Disposal: At the end of its service life, the battery group should not be disposed of with household waste.
- The battery group is recyclable.

1.2 Important Safety Instructions

For safety reasons, please read the safety precautions and instructions in this manual carefully before installation. Fengrui Company will not be liable for any loss resulting from non-compliance with these instructions.

In this document, the following symbols are used to highlight important information. When using the battery group, you must adhere to these warnings and cautions.

Warning

Indicates a hazardous condition that, if not avoided, may result in injury or death.

- Because the battery contains active chemicals, there is a high risk of electric shock, fire, or even explosion when exposed to ambient air. For example, when lithium metal is exposed to air, it can react violently with oxygen and explode. Please adhere to the following precautions:

  * Do not crush or puncture the battery.
  * Do not throw the battery into fire.
  * Do not expose the battery group to direct sunlight.
  * Ensure that battery connectors do not contact conductive objects, such as wires.
  * Do not attempt to open, disassemble, tamper with, or modify the battery group without prior written approval from Fengrui Company.
  * Keep the battery group out of reach of children.

- The battery group is heavy! It is recommended to use lifting equipment.
- During operation, do not touch the internal components. Always ensure that the power switch and the battery group ' s circuit breaker are off before any installation, replacement, or maintenance work.
- Read this document before installing or using the battery. Operating the battery under conditions or requirements not specified in this manual may result in electric shock, serious injury, or even death.
- Always use the battery group as directed.

Warning

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

- Electric Shock Hazard: Do not remove the cover; it contains non-removable parts. Please consult personnel.
- Electric Shock Hazard: When the photovoltaic panel is exposed to light, it provides DC voltage to the device.
- Cleaning: Do not use cleaning solvents to clean the battery group, and do not expose the battery to flammable or irritating chemicals or vapors.
- Storage: Do not store the battery group for more than one month. If storage is necessary, disconnect the battery group from power, ensure that the battery charge remains above 50%, and recharge the battery within 90 days for maintenance.

1.3 Personal Protective Equipment

Personal Protective Equipment: Wear the appropriate safety gear when installing. Installers must comply with relevant standards (e.g., IEC60364) or local legal requirements.

Safety goggles

Earplugs

Insulating gloves

Safety gloves

Safety shoes

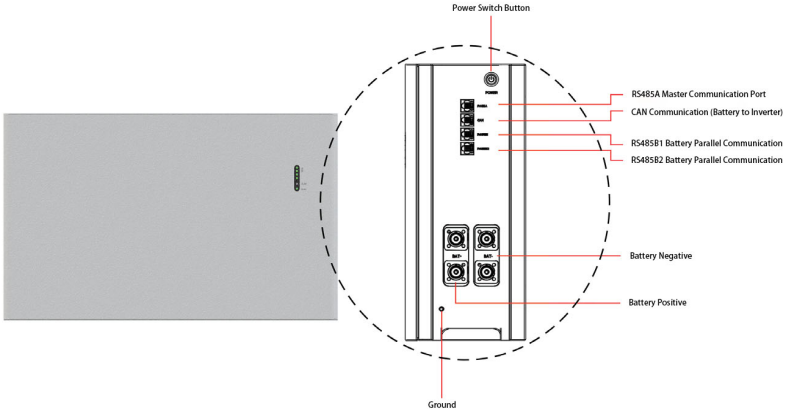
2. Product Introduction

2.1 Battery Group Overview

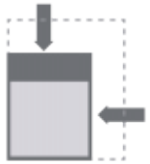
A storage battery group is a device used for storing electric energy, comprising multiple individual batteries combined with a Battery Management System (BMS). It plays a key role in modern energy management, especially in balancing power grid supply and demand, increasing the utilization of renewable energy, and enhancing the responsiveness of the power system.

Note:

The WSL48100 battery supports parallel connection of multiple units, with a minimum operating quantity of one battery group.



Main Features



Compact Design

The small and stackable design facilitates easy and quick indoor installation.

Excellent Security

The battery group utilizes LFP (lithium iron phosphate) cells for energy storage, with an integrated BMS to monitor performance and prevent operation beyond design limits.

Scalability

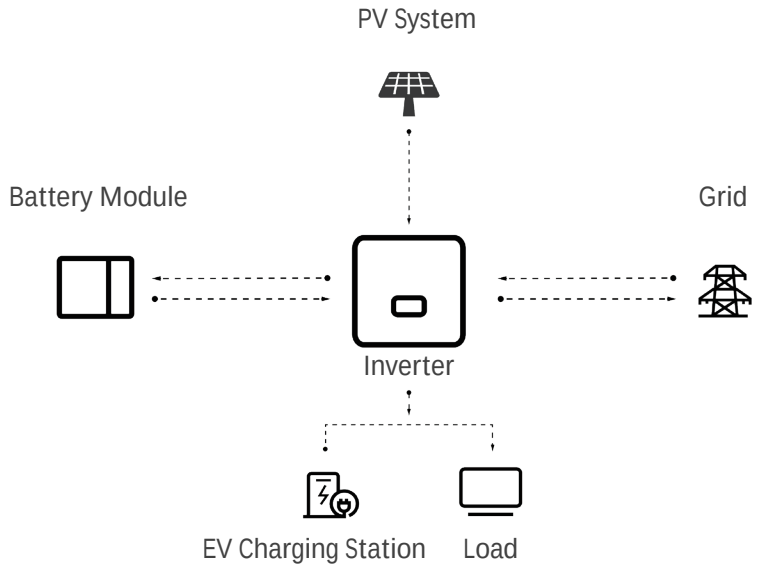
Battery capacity can be increased by adding battery modules.

High Compatibility

It is highly compatible with various inverters.

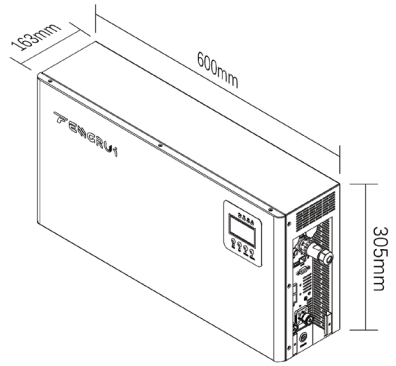
2.2 Technical Data

The WSL48100 battery group is designed for charging and discharging to maximize your energy independence and potentially reduce your electricity bill.

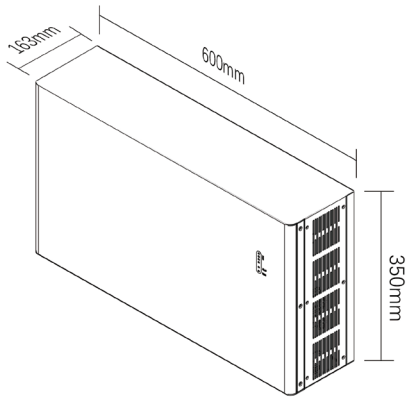


2.2.1 Dimensions and Weight

	Length (mm)	Width (mm)	Height (mm)	Weight (kg)
Inverter Size：	600	163	305	13.6

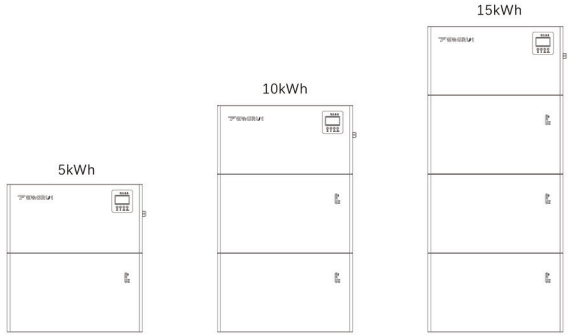


Battery Enclosure:	600	163	305	47.2



Energy Storage Capacity Information

- The manual further explains the capacity expansion of the energy storage system: each battery module has a capacity of 5 kWh, and the system can support expansion up to three battery groups.



2.2.2 Performance

Product Composition	Inverter+Pack		
Module Specifications	51.2V/102AH		
IP Rating	IP21		
Battery Modules	1	2	3
Battery Capacity	5.22 (kWh)	10.44 (kWh)	15.66 (kWh)
Dimensions (mm)	600×655×163	634×1005×163	600×1355×163
Weight (kg)	60.8	108	155.2
Communication Method	CAN/RS485		
MPPT Voltage Range	150-500V/DC		
Output Voltage	220/230/240Vac		
Output Power	5000W		
Maximum Charge /Discharge Current	100A (DC)		
Input Voltage	120-300V (PV) / 220-240V (Grid)		
Maximum PV Power	5000W		
Cycle Life	6000		
Application	Grid-tied/Off-grid		
Wiring method	Single-phase		

2.2.3 Environmental Requirements

WSL48100	
Operating Temperature Range	0~50° C
Optimal Operating Temperature	5~50° C
Storage Temperature Range	0~35° C
Humidity Range (RH)	5%–95%
Maximum Altitude	3000m
Cooling Strategy	Natural Convection

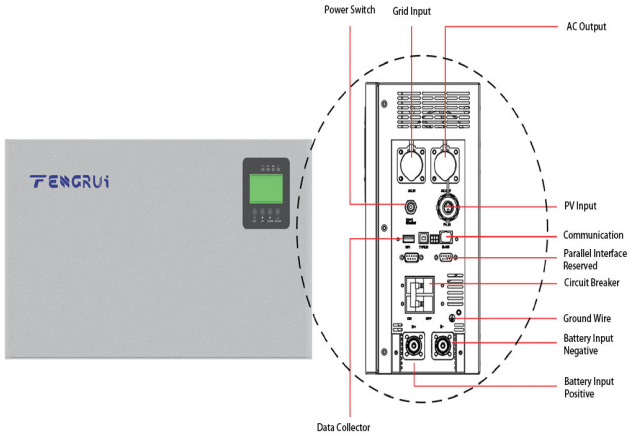
2.2.4 Cable Requirements

Power Negative Cable	ϕ 16mm 2
Power Positive Cable	ϕ 16mm 2
Communication Cable	ϕ 3mm 2
Ground Electrode	ϕ 2.5mm 2

Warning

Using cables that do not meet the specified requirements may lead to malfunctions.

2.3 Inverter Parameters



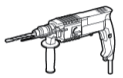
Power	5000W
Ambient Temperature	0~50°C
Operating Humidity (RH)	20%-95%
Input Frequency	40-70Hz
Rated Input Voltage	208/220/230/240Vac
Input Voltage Range	120-300V (PV) 220-240V (Grid)
Output Frequency	40-70Hz
Output Voltage	220/230/240Vac
Battery Mode (Peak Efficiency)	94%@48V DC
PV Voltage	120-430Vdc
PV Current	30A
Recommended Voltage	300-340V
MPPT Recommended Voltage	300V (200-430V)
Open Circuit Voltage (Voc)	370-430V

3. Installation

3.1 Preparation

3.1.1 Installation Materials and Tools

Before beginning installation, verify that the quantity of each component matches the order, and ensure that no parts have been damaged or broken during transport. Use the provided unboxing checklist to confirm.

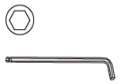


Impact Drill

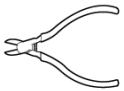
Insulated Torque Phillips Screwdriver

Insulated Torque Hex Screwdriver

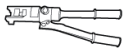
Insulated Torque Socket Wrench



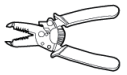
Hex Key / Allen Wrench



Diagonal Cutting Pliers



Hydraulic Pliers

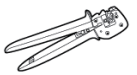


Wire Strippers

Disassembly Wrench

Rubber Mallet

Wire Cutters



Crimping Pliers

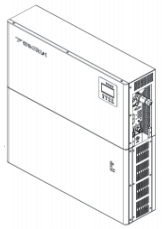
3.1.2 Installation Location

Ensure that the installation location meets the following conditions:

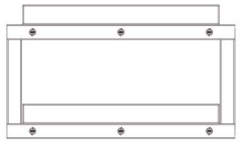
- It is recommended to set the installation at least 1000 meters from the coast to avoid exposure to saltwater and moisture.
- The floor must be level.
- There should be no flammable or explosive materials nearby.
- The ideal temperature is between 15 ° C and 30 ° C.

3.1.3 Packaging Inspection

Verify that all items and their quantities correspond with the order.
Check that no components are missing or damaged from transportation.



Inverter and Battery Pack



Mounting Bracket

Grounding Cable

Expansion Bolt

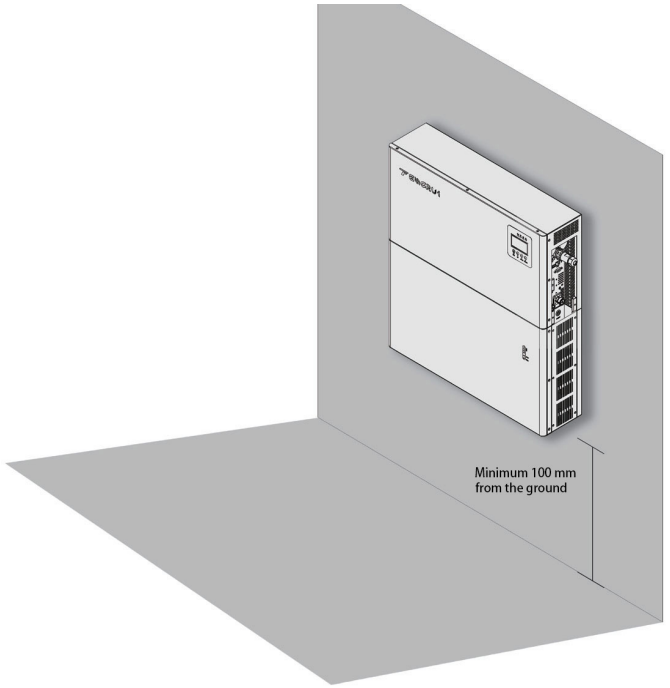
Parallel Positive Cable

Parallel Network Cable

Parallel Negative Cable

3.2 Installation Procedures

3.2.1 Installation Space



Note:

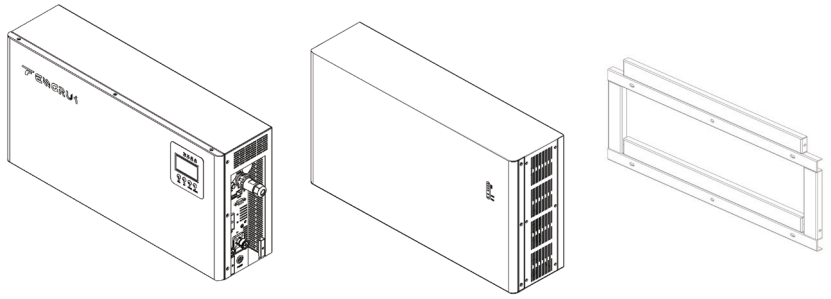
Ensure the battery group remains exposed to ambient air. Since cooling is achieved through natural convection, covering the battery group wholly or partially may cause it to stop operating.

3.2.2 Stacking Battery Groups

Check all delivered components against the order and verify that none are damaged or missing.

Step 1

- Place the base on the floor.



Note:

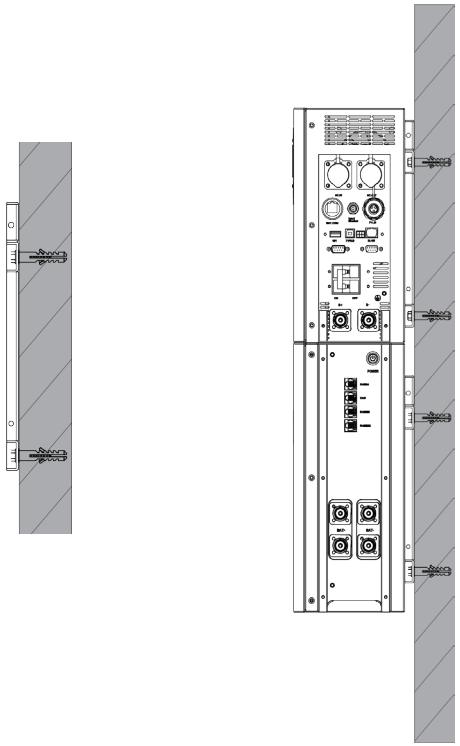
The WSL48100 battery group can be installed both on the ground and on the wall.

Warning

Ensure the floor is level; use a leveling tool if necessary and keep the area free from water accumulation.

Step 2

● Secure the bracket to the wall using expansion screws. Hang the inverter and battery group according to the required quantities.

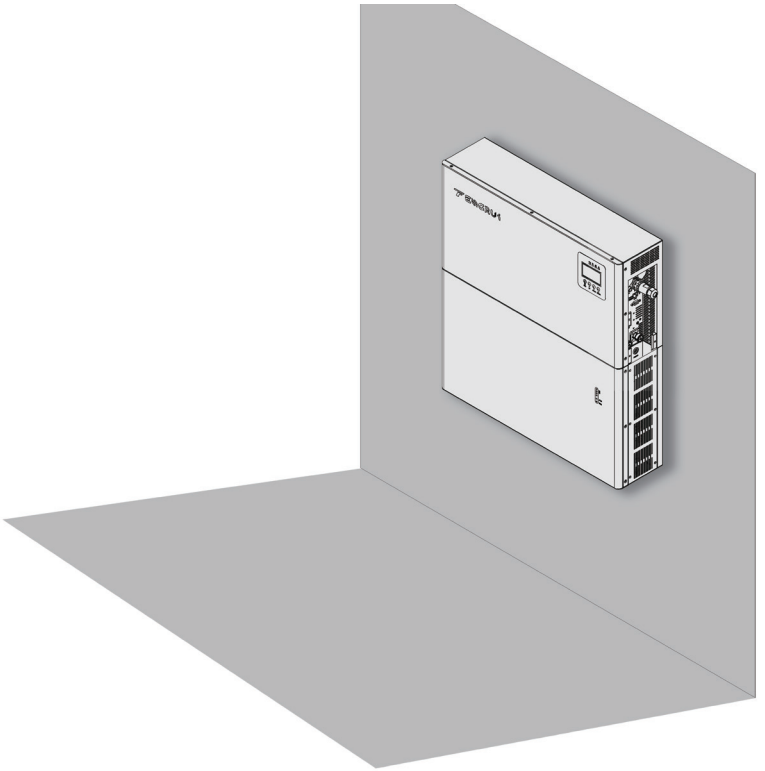


Note:

The wall-mounted bracket must be firmly fixed.

Step 3

● Connect the communication network cable to the inverter.



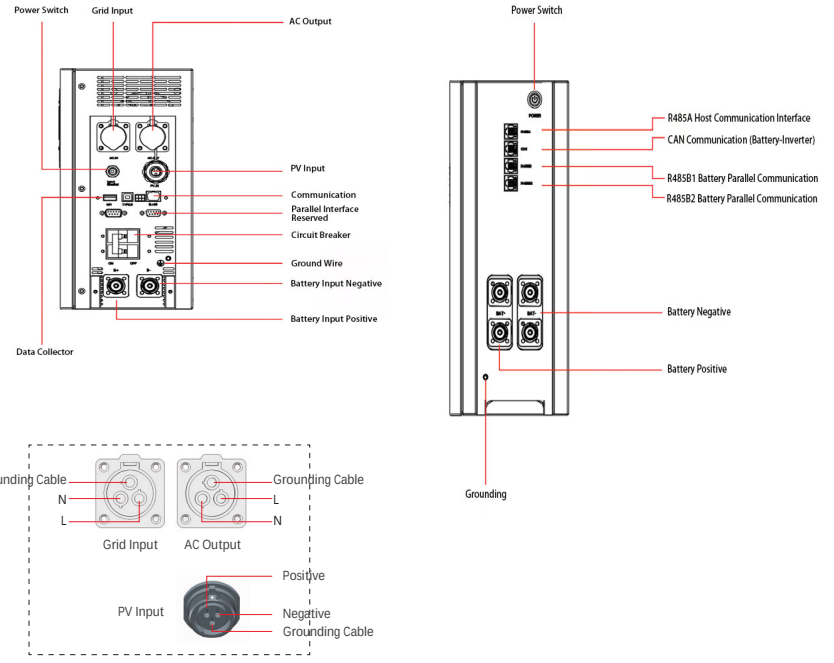
Note:

Ensure that the positive and negative power cables are connected to the inverter without reversing the polarity.

3.2.3 Cable Connection

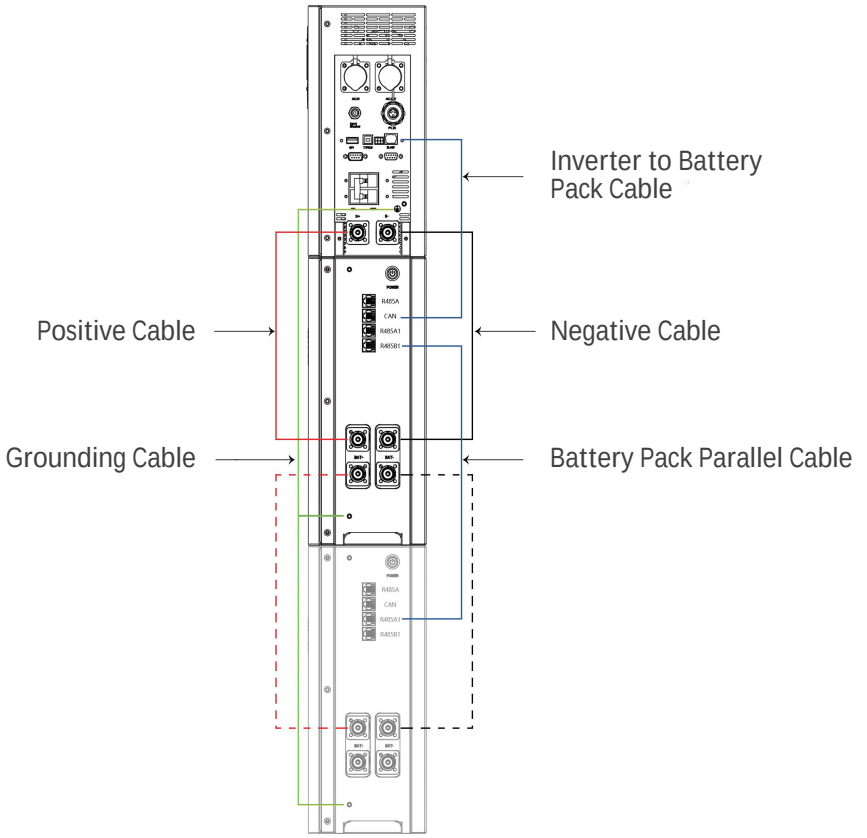
Warning

Make sure the inverter is turned off before connecting the battery group.



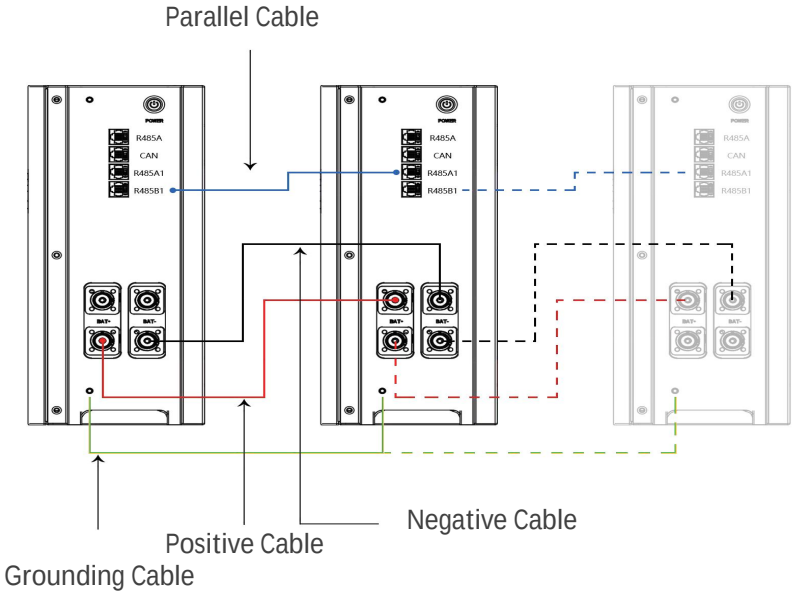
Note:

* Do not reverse the polarity; doing so can cause severe damage to the battery group.
* To ensure proper operation, the battery group must communicate with the inverter.
* Ensure each cable is connected to its corresponding port to avoid damage.



3.2.4 Parallel Mode

- For the parallel connection of WSL48100 battery groups, prepare the power cables, communication cables, and the red/black power cables (red for positive, black for negative).
- Ensure that each cable is correctly inserted into its designated port.



Warning

When connecting one battery group to another, ensure that all battery groups are turned off.

Warning

If the order of the power and communication cables is mixed up, it may lead to system malfunctions.

4. Debugging

4.1 Status Indicator Lights

There are six LED indicator lights on the front of the battery group to display its operating status:

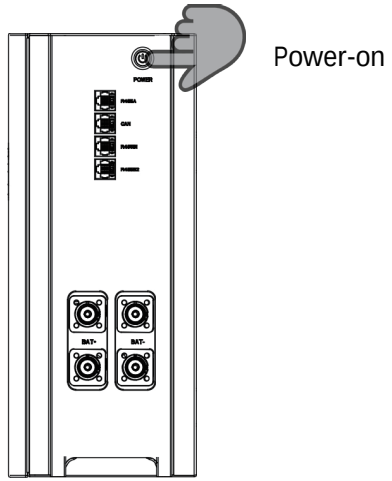
· RUN: Illuminated when the battery group is operating normally (charging or discharging).

· ALM: Illuminated when the battery group is in an alarm state.

· SOC: Four energy indicator lights monitor the state of charge (SOC) at different levels.

4.2 Turning On the Battery Group

● Press the “ SW ” button to turn on the battery group.

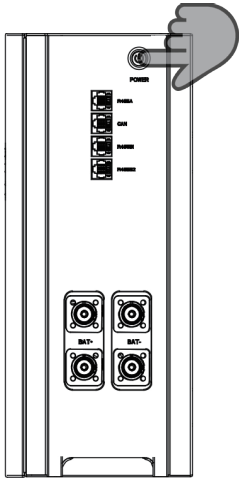


Note:

If, within 3 minutes after powering on, the inverter does not establish communication with the battery group, the output power will shut off. The RUN indicator will turn off, while the ALM indicator remains lit.

4.3 Turning Off the Battery Group

- Press the “ SW ” button again to turn off the battery group.



Power-Off

Note:

Ensure that all indicator lights on the battery group are off when it is turned off.

5. Troubleshooting

Troubleshooting

Examine the LED indicators on the front panel to determine the battery group ' s status. The system will trigger a warning state if conditions such as voltage, current, or temperature exceed design limits.

Use the monitoring software connected to the battery group to diagnose the cause of any warnings. Possible warning messages include:

- Battery overcharge voltage
- Insufficient battery voltage
- Battery temperature too high
- Battery temperature too low
- Over-current discharge from the battery
- Excessive battery charging current
- BMS internal communication error
- Battery cell voltage imbalance

Note:

The system can automatically recover from minor risks, hazards, and unacknowledged warnings after a period of time. For critical warnings or alarms, contact Fengrui Company or your local installer.

Contact Information

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