



**RED POLE
ENERGY**



Vital-5 **Lithium Battery**

51.2V 5.12KWH

Installation Manual





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Technical Data



Performance

Nominal Voltage	51.2 Vdc
Nominal Capacity	100Ah
Battery Energy ¹	5120 Wh
Charge Voltage	55.68~56.16Vdc
Discharge Voltage	45.6-56.16 Vdc
Standard Charge / Discharge Current	20A - 50A
Standard Charge / Discharge Power	1000W - 2500W
Max Charge / Discharge Current	100A
Max Charge / Discharge Power	5000W
Short Circuit Current	350A

Communication

Display	SOC status indicator, LED indicator
Communication	RS232 / RS485 / CAN

General Specification

Dimension(W×D×H mm)	520 x 470 x 141.5mm
Weight (Kg)	47.2kg
Installation	Floor stand or Wall mounted
Working Temperature ²	0°C ~ 55°C
Storage Temperature	-20°C ~ 60°C
Operating / Storage / humidity	≤ 95%RH
Max Operating Altitude	≤2000m
IP Rating	IP65
Cell Technology	LiFePO ₄ , Lithium Iron Phosphate
Cycle life ³	6000 Cycles @ 80% DOD / 25°C / 0.5C, 60% EOL
Scalability	Max 15 batteries in parallel

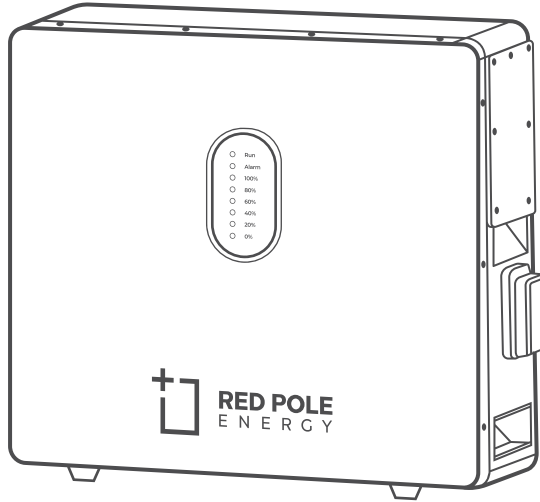
Standard Compliance

Certification	CB,CE (EMC&LVD) UL1973, UL9540A
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1. Test conditions: 100% depth of discharge (DoD), 0.2C rate charge & discharge at 25°C.
2. Charge/discharge derating occurs when the operating temperature from -10°C to 5°C, & 45°C to 55°C.
3. Condition apply. Refer to **Vital-5** lithium battery Warranty Letter.

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Product Overview



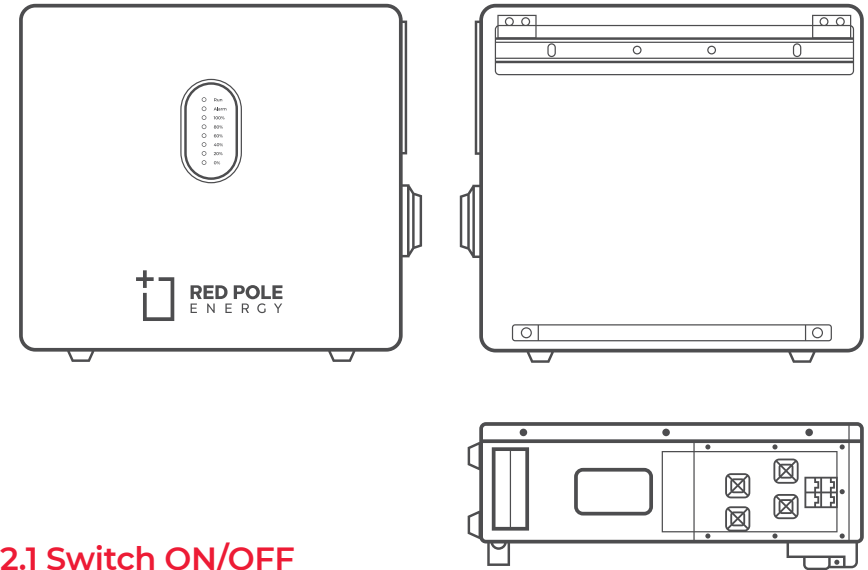
2.1 Brief Introduction

Vital-5 is a lithium battery with an operating voltage range between 45.6~56.16V. It is designed for residential energy storage applications and works together with a 48v battery hybrid inverter. **Vital-5** lithium battery is not suitable for supporting life-sustaining medical devices.

Vital-5 lithium battery has a built-in BMS (Battery Management System), which can manage and monitor cells information including voltage, current and temperature. Besides that, the BMS keeps the cells balanced to extend cycle life. The BMS protects the battery against over-discharge, over-charge, over-current and high/low temperature; the system can automatically manage the charge state, discharge state and balance state.

Multiple **Vital-5** lithium batteries can be connected in parallel to expand capacity and power, 15 **Vital-5** lithium battery can be connected in parallel at most.

2.2 Interface Introduction



2.2.1 Switch ON/OFF

1. Single Battery Installation

ON: Switch ON the isolator switch (under plastic cover), then long press (more than 3 seconds) the power button (near the positive/negative connectors). The LED will flash and the battery will turn on. L1 to L6 shows the battery SOC, L7/L8 shows battery status.

OFF: Push the power button for more than 3 seconds and release the button then the battery will shut down. Then turn off the isolator switch.

2. Multiple Battery Installation

ON: Switch ON the isolator switch (under plastic cover) of all batteries. Then long press (more than 3 seconds) the power button (near the positive/negative connectors) of the MASTER battery. The LED will flash and the battery will turn on. The MASTER battery will then automatically pick up and assign an ID to each SLAVE battery. The SLAVE batteries will turn on one by one. L1 to L6 shows the battery SOC, L7/L8 shows battery status.

OFF: Push the power button of the MASTER battery for more than 3 seconds and release the button. The SLAVE batteries will start shutting down. The MASTER battery will shut down after all the SLAVE batteries have shut down. Turn off the isolator switch on the MASTER battery first, and then turn off the isolator switch on all the SLAVE batteries.

2.2.2 LED Indicator Definition

NOTE

Flash 1 - 0.25s light / 3.75s off

Flash 2 - 0.5s light / 0.5s off

Flash 3 - 0.5s light / 1.5s off

Led indicators instructions

		RUN	ALM	BATTERY LEVEL INDICATOR						
Status		L8	L7	L6	L5	L4	L3	L2	L1	Descriptions
Shut Down		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	All OFF
Standby		Flash 1	OFF	According to the battery level						Indicates Standby
Charging	Normal	Light	OFF	According to the battery level						The highest capacity indicator LED flashes (flash 2), others lighting
	Full Charged	Light	OFF	Light	Light	Light	Light	Light	Light	Turn to standby status when charger off
	Protection	OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
Discharge	Normal	Flash 3	OFF	According to the battery level						
	UVP	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
	Protection	OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharge
Fault		OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging & Discharge

Charging battery level indicators instructions

		STATUS		CHARGING					
Battery Level Indicator		L8	L7	L6	L5	L4	L3	L2	L1
Battery Level %	0 ~ 17%	Light	OFF	OFF	OFF	OFF	OFF	OFF	Flash 2
	18 ~ 33%			OFF	OFF	OFF	OFF	Flash 2	Light
	34 ~ 50%			OFF	OFF	OFF	Flash 2	Light	Light
	51 ~ 66%			OFF	OFF	Flash 2	Light	Light	Light
	67 ~ 83%			OFF	Flash 2	Light	Light	Light	Light
	84 ~ 100%			Flash 2	Light	Light	Light	Light	Light
Full Charged				Light	Light	Light	Light	Light	Light

Discharging battery level indicators instructions

		STATUS		DISCHARGE					
Battery Level Indicator		L8	L7	L6	L5	L4	L3	L2	L1
Battery Level %	0 ~ 17%	Light	OFF	OFF	OFF	OFF	OFF	OFF	Light
	18 ~ 33%			OFF	OFF	OFF	OFF	Light	Light
	34 ~ 50%			OFF	OFF	OFF	Light	Light	Light
	51 ~ 66%			OFF	OFF	Light	Light	Light	Light
	67 ~ 83%			OFF	Light	Light	Light	Light	Light
84 ~ 100%				Light	Light	Light	Light	Light	Light

2.2.3 CAN / RS485 Port

CAN / RS485 Communication Terminal (RJ45 port), connect to the inverter, follow CAN / RS485 protocol.

PIN	Definition
Pin 1 / Pin 8	RS485-B (to INV, reserved)
Pin 2 / Pin 7	RS485-A (to INV, reserved)
Pin 3	NC
Pin 4	CANH (to INV)
Pin 5	CANL (to INV)
Pin 6	GND

2.2.4 RS232 Port

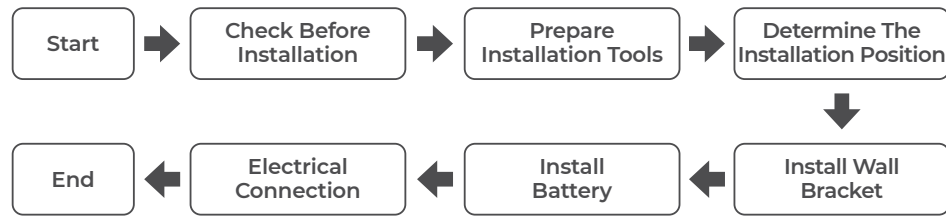
RS232 Communication Terminal (RJ45 port) follows RS232 protocol, for the manufacturer or professional engineer to debug or service.

PIN	Definition
Pin 1 / Pin 8	GND
Pin 2 / Pin 7	RS232_TX
Pin 3 / Pin 6	RS232_RX
Pin 4 / Pin 5	NC

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Installation Guide

Installation Flow Chart



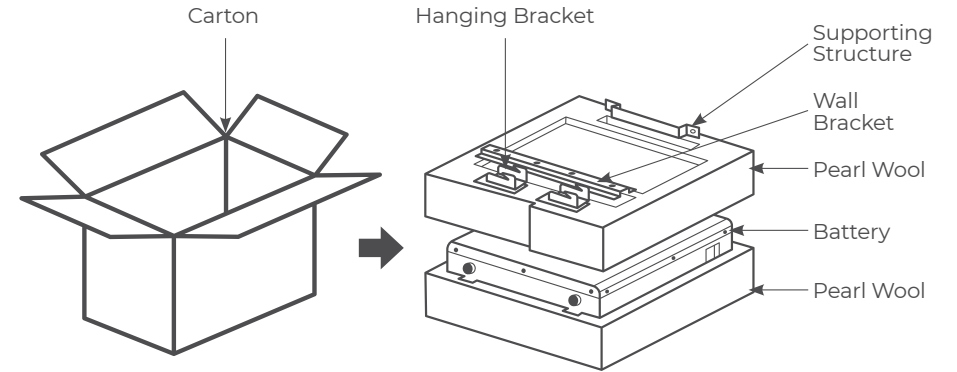
3.1 Checking Before Installation

3.1.1 Checking Outer Packing Materials

Packing materials and components may be damaged during transportation. Therefore, check the outer packing materials before installing the battery. Checking the surface of packing materials for damage, such as holes and cracks. If any damage is found, do not unpack the battery and contact the dealer as soon as possible.











3.1.2 Checking Deliverables

After unpacking the battery, check whether the deliverables are intact and complete. If any damage is found or any component is missed, contact the dealer. The below table shows the components and mechanical parts that should be delivered.



No	Quantity	Description
1	1 PCS	Battery
2	1 PCS	Wall Bracket
3	2 PCS	Hanging Bracket
4	1 PCS	Supporting Structure
5	4 PCS	M8*60
6	10 PCS	M6*16
7	2 PCS	M4*20
8	1 PCS	Installation Manual

3.2 Tools

Tools				
Installation				
	Knife	Measuring Tape	Socket Wrench (8mm)	Rubber Mallet
Protection				
	Cross Screwdriver	Hammer Drill (10mm)		
Protection				
	ESD Gloves	Safety Goggles	Anti-dust Respirator	Safety Shoes

3.3 Installation Requirements

3.3.1 Installation Environment Requirements

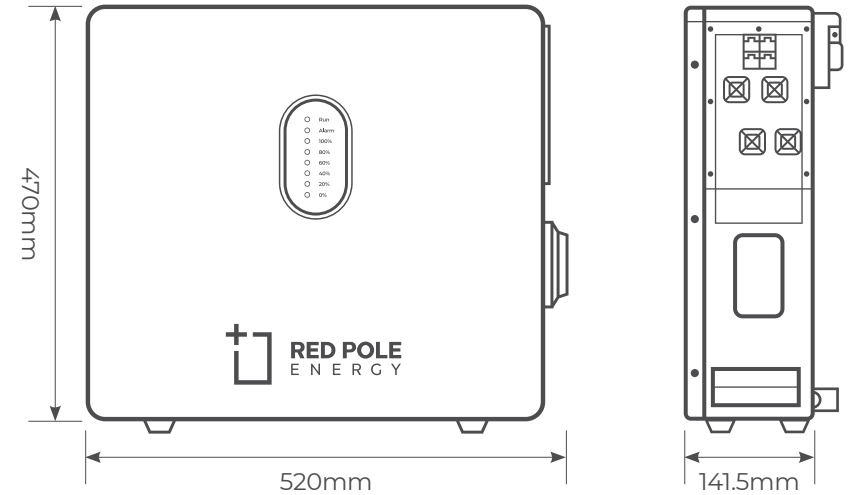
- Battery should be installed indoors.
- Place the battery in a secure location away from children and animals.
- Do not place the battery near any heat sources and avoid sparks.
- Do not expose the battery to moisture or liquids.
- Do not expose the battery to direct sunlight.

3.3.2 Installation Carrier Requirements

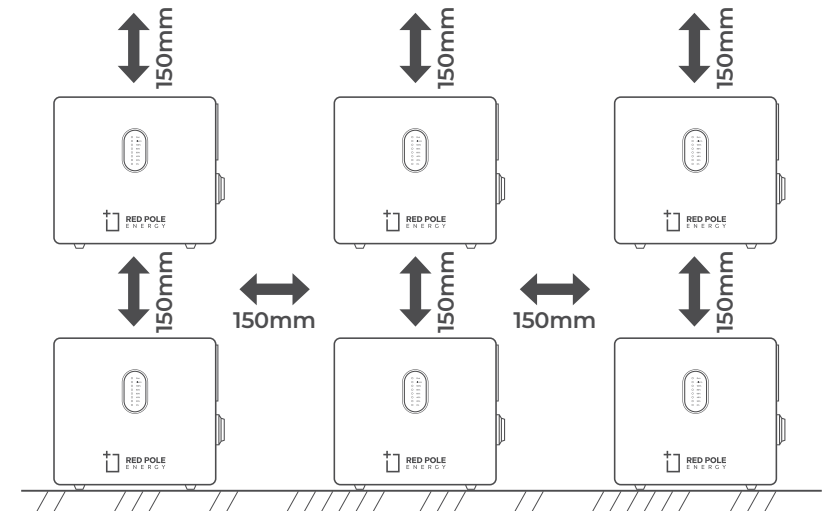
- Only mount the battery in a fire-resistant building. Do not install batteries in flammable buildings.
- Battery is quite heavy, make sure the wall/ground can meet the load-bearing requirements.

3.4 Installation Instructions

3.4.1 Dimensions



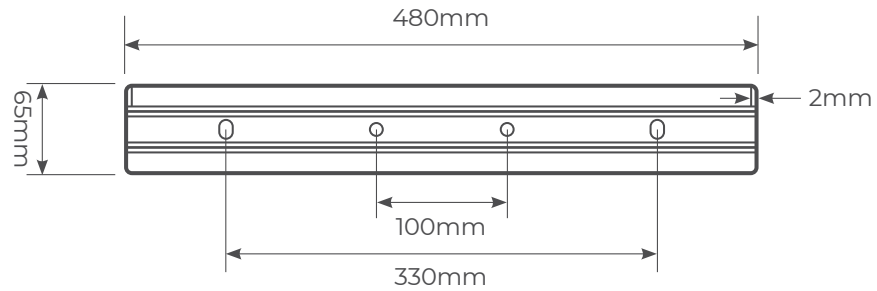
Minimum mounting distance between battery pack and equipment:



3.4.2 Installation Procedure

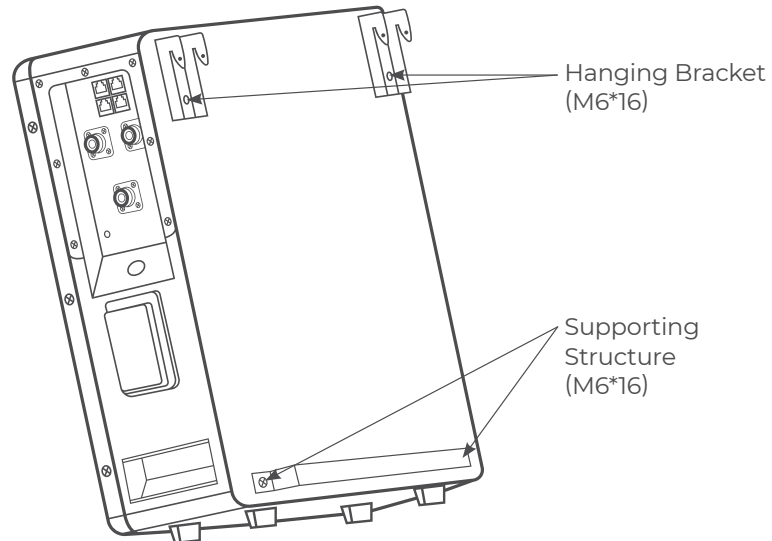
STEP 1

Drill the hole with a 10mm drill bit as follows and fix the wall bracket to the wall.



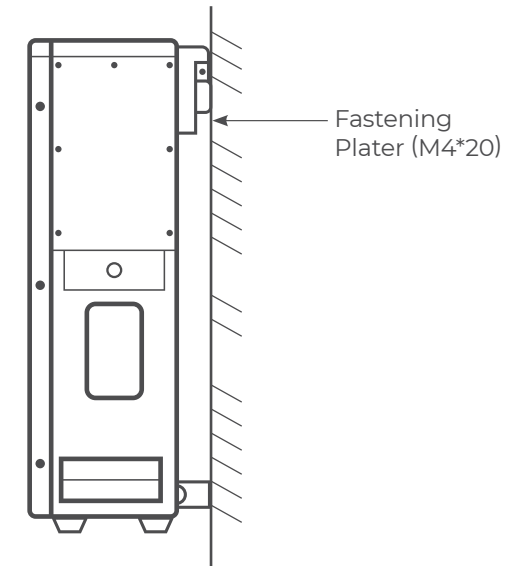
STEP 2

Install the hanging brackets.



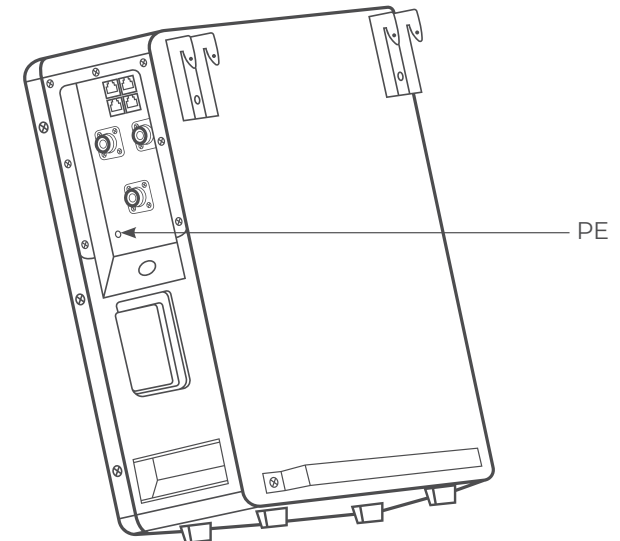
STEP 3

Hang the Vital-5 on the wall bracket and tighten it.



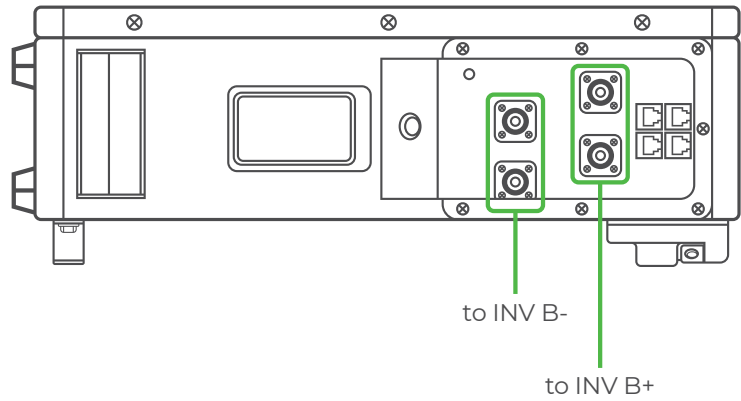
STEP 4

Connect to ground.



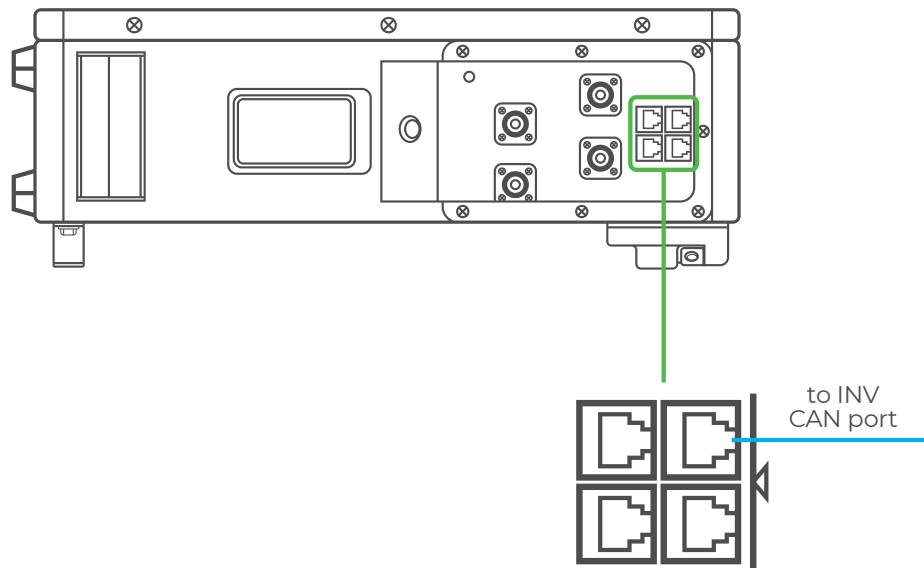
STEP 5

Connect the power cable.



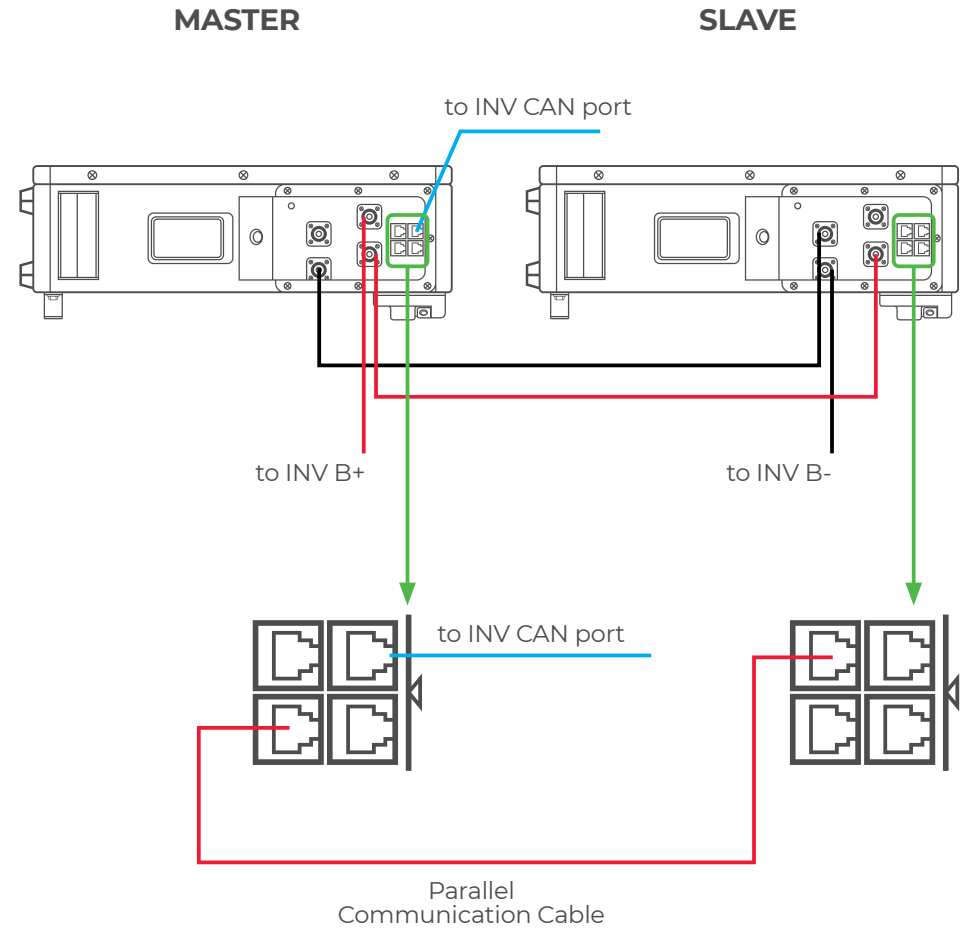
STEP 6

Connect the communication cable.



STEP 7

When multiple batteries are connected in parallel, follow the following wiring mode.



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Maintenance

4.1 Recharge Requirements During Normal Storage

Battery should be stored in an environment with a temperature range between -10°C \sim $+45^{\circ}\text{C}$, and maintained regularly according to the following table with 0.2C (20A) current till 40% SOC after a long storage time.

Recharge conditions when in storage

Storage Environment Temperature	Relative Humidity of Storage Environment	Storage Time	SOC
Below -10°C	/	Prohibit	/
$-10^{\circ}\text{C} \sim 25^{\circ}\text{C}$	5% \sim 70%	≤ 12 months	$30\% \leq \text{SOC} \leq 60\%$
$25^{\circ}\text{C} \sim 35^{\circ}\text{C}$	5% \sim 70%	≤ 6 months	$30\% \leq \text{SOC} \leq 60\%$
$35^{\circ}\text{C} \sim 45^{\circ}\text{C}$	5% \sim 70%	≤ 3 months	$30\% \leq \text{SOC} \leq 60\%$
Above 45°C	/	Prohibit	/

4.2 Recharge Requirements When Over Discharged

Over discharged (90% DOD) battery should be recharged according to the following table, otherwise the over-discharged battery will be damaged.

Recharge conditions when battery is over discharged

Storage Environment Temperature	Storage Time	Note
$-10^{\circ}\text{C} \sim 25^{\circ}\text{C}$	≤ 15 days	Battery Pack disconnected from INV
$25^{\circ}\text{C} \sim 35^{\circ}\text{C}$	≤ 7 days	Battery Pack disconnected from INV
$-10^{\circ}\text{C} \sim 45^{\circ}\text{C}$	≤ 12 hours	Battery Pack connected to INV





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