VCLB-15-BC

A1-20241108

VCLB-15-BC Operation Manual

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TECHNICAL DATA

NOTE

Operating current derating according to cell voltage and battery temperature.

Performance	
Nominal Voltage	51.2Vdc
Nominal Capacity	280Ah
Battery Energy	14336Wh
Charge Voltage	57.6Vdc
Discharge Voltage	44.8Vdc
Nominal Charge/Discharge Current	140A
Nominal Charge/Discharge Power	7168W
Max Charge / Discharge Current	200A
Max Charge / Discharge Power	10240W
Communication	
Display	SOC status indicator, LED indicator
Communication	RS232、RS485、CAN
General Specification	
Dimension(W×D×Hmm)	800x500x227mm
Weight (Kg)	128kg
Installation	Floor stand or Wall mounted
Charging Temperature Range	0℃ ~ 55℃
Discharge Temperature Range	-20℃ ~ 55℃
Operating / Storage / humidity	≤95%RH
Max Operating Altitude	≤3000m
IP Rating	IP65
Cell Technology	$LiFePO_4$，Lithium Iron Phosphate
Cycle life	6000 Cycles @ 80% DOD /25℃ /0.5C，60% EOL
Scalability	Max 15 batteries in parallel
Standard Compliance	
Certification	

1. Test conditions: 100% depth of discharge (DoD), 0.2C rate charge & discharge at 25℃.
2. Charge/discharge derating occurs when the operating temperature from -10℃ to 5 ℃.& 45 ℃ to 55 ℃.
3. Condition apply. Refer to VCLB-15-BC Warranty.Letter

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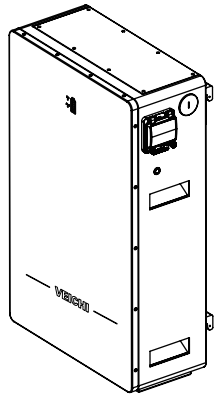
PRODUCT OVERVIEW

2.1 Brief Introduction



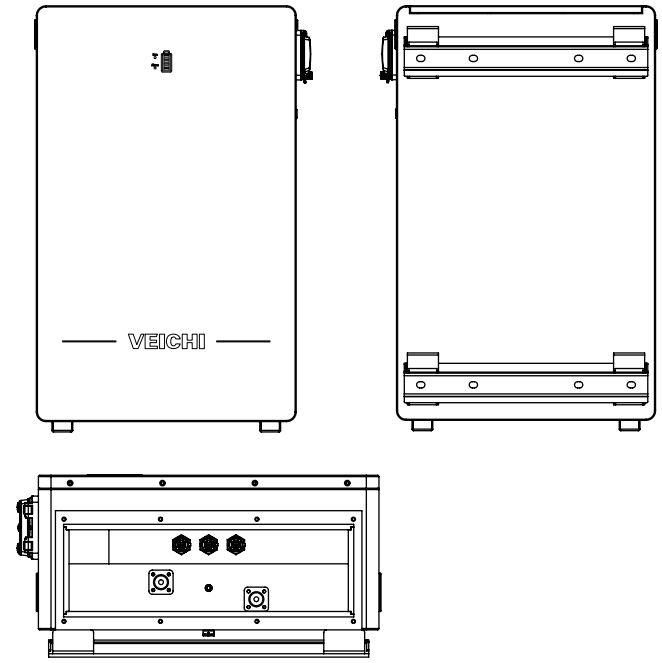
PRODUCT OVERVIEW

VCLB-15-BC is a lithium battery with an operating voltage range between 44.8~57.6V It is designed for residential energy storage applications and works together with a 48v battery hybrid inverter. **VCLB-15-BC is not suitable for supporting life-sustaining medical devices.**

VCLB-15-BC has built-in BMS (Battery Management System), which can manage and monitor cells information including voltage, current and temperature. Besides that, BMS can balance cells charging to extend cycle life. BMS has protection functions including over-discharge, over-charge, over-current and high/low temperature; the system can automatically manage charge state, discharge state and balance state.

Multiple VCLB-15-BC can be connected in parallel to expand capacity and power, 15 VCLB-15-BC can be connected in parallel at most.

2.2 Interface Introduction



2.2.1 Switch ON/OFF

1. Switch ON
Turn on a single VCLB-15-BC, turn on the air switch, then press the circular weak current switch (more than 3 seconds) on / off button, the LED flashes and the battery works normally. L1 to L6 display the battery SOC,L7/L8 to indicate the battery status.

For multiple VCLB-15-BC in parallel, switch ON circular weak current switch on all batteries, long press (more than 3 seconds) ON/OFF button of MASTER battery, LED will flash. battery system will automatically encode and assign ID to each slave battery, then battery system will operate normally.

2. Switch OFF

Press the Circular weak current switch of the master pack for more than 3 seconds and then release the button. When all slave pack are closed, the master pack will be closed (sleep mode). For a single VCLB-15-BC, turn off the Circular weak current switch. For multiple VCLB-15-BC in parallel, turn off the Circular weak current switch on the main battery first. Then turn off the Circular weak current switch on all subordinate 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
Discharg	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 discharging
Fault		OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging and Discharging

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%	Flash 3	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 inverter, follow CAN / RS485 protocol.

PIN	Definition
Pin 1、	RS485-B (to PCS, reserved)
Pin 2、	RS485-A (to PCS, reserved)
Pin 3	GND
Pin 4	CANH (to PCS)
Pin 5	CANL (to PCS)
Pin 6	RS232_RX
Pin 7	RS232_GND
Pin 8	RS232_TX

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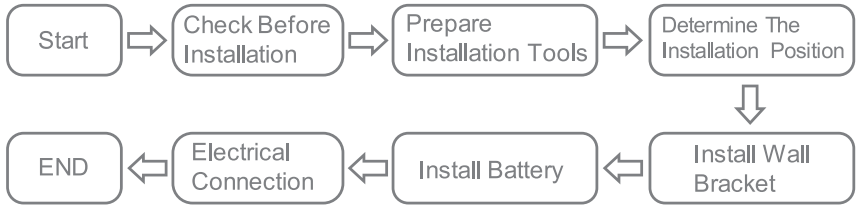
INSTALLATION GUIDE

Installation flow chart



3.1 Checking Before Installation

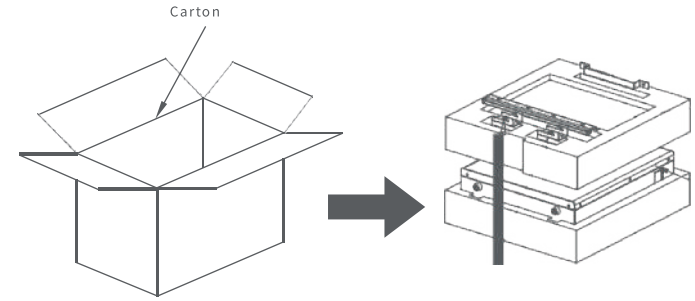
3.1.1 Checking Outer Packing Materials

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. You are advised to remove the packing materials within 24 hours before installing the battery.

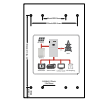
3.1.2 Checking Deliverables

After unpacking the battery, check whether 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.	Pictures of accessories	Quantit	Uses
1		1	Battery box
2		2	Wall mounting bracket
3		8	Lock Wall Pendant
4		1	Crossed external hexagonal triple combination screws M5*12m
5		2	Crossed external hexagonal triple combination screws M8*16mm
6		4	Crossed external hexagonal triple combination screws M4*16mm
7		1	Power line

No.	Pictures of accessories	Quantit	Uses
8		1	Power line
9		4	RJ45 Crystal head
10		2	Communication network cable
11		1	yellow-green two-color grounding cable
12		1	User manual
13		1	Positioning sticker

3.2 Tools

Tools			
Installation	Knife	Measuring tape	Socket wrench（10/16mm）
	Rubber mallet	Cross Screwdriver	Hammer drill (12mm)
Protection	ESD gloves	Safety goggles	Anti-dust respirator
	Safety shoes		

3.3 Installation requirements

3.3.1 Installation environment requirements

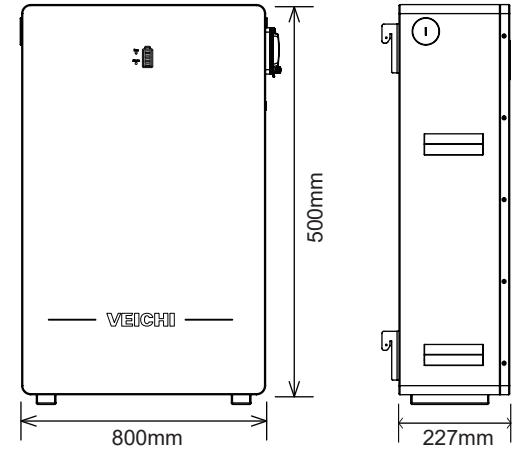
- Install the battery in the indoor environment.
- Place battery in secure location away from children and animals.
- Do not place the battery near any heat sources and avoid sparks.
- Do not expose the battery to moisture or liquids.
- Do not expose the battery to direct sunlight.
- Short-term suitable for Marine environment.

3.3.2 Installation carrier requirements

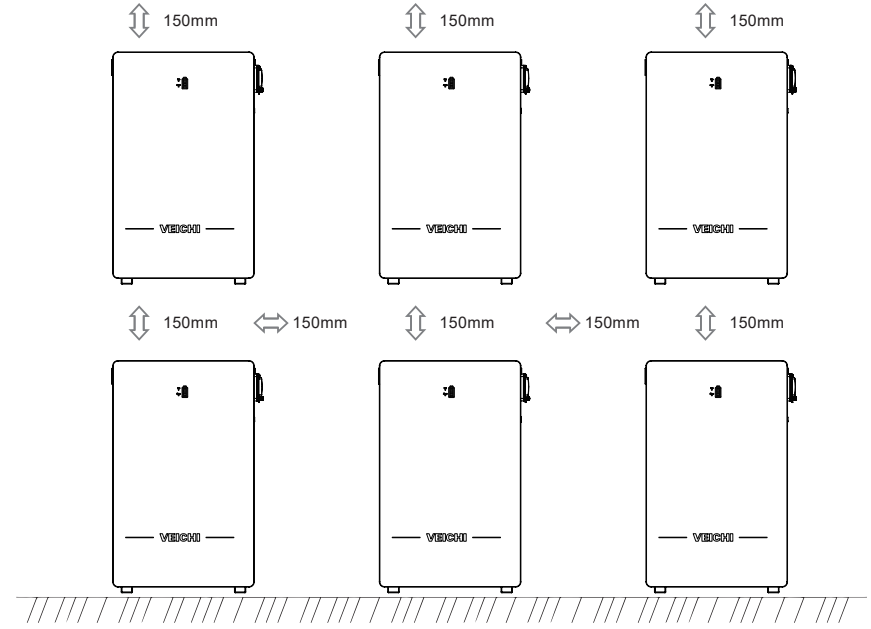
- Only mount battery on fire resistant building. Do not install batteries on flammable buildings.
- Battery is quite heavy, make sure the wall/ground can meet the load bearing requirements.

3.4 Installation Instructions

3.4.1 Dimensions



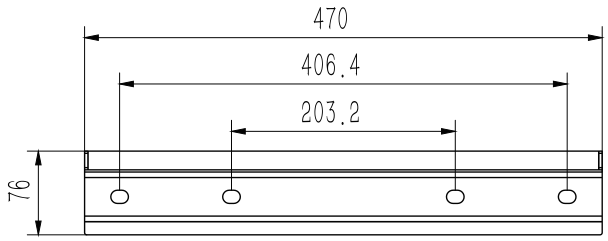
Minimum mounting distance between battery pack and equipment:



3.4.2 Installation Procedure

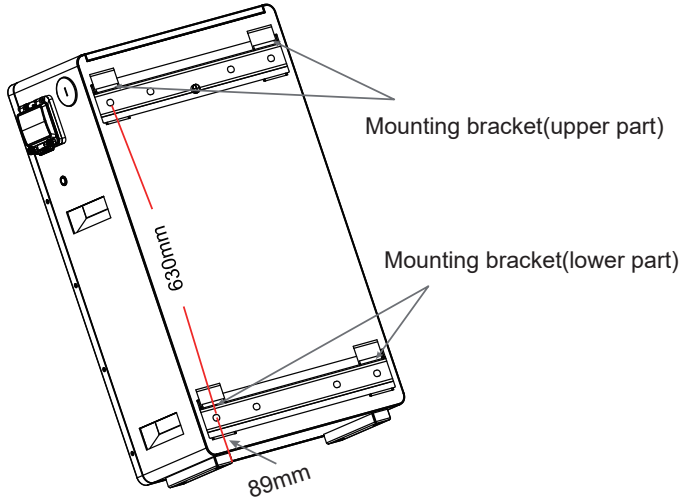
STEP 1

Drill the hole with an 12mm drill bit as follows and fix the wall bracket to the wall.



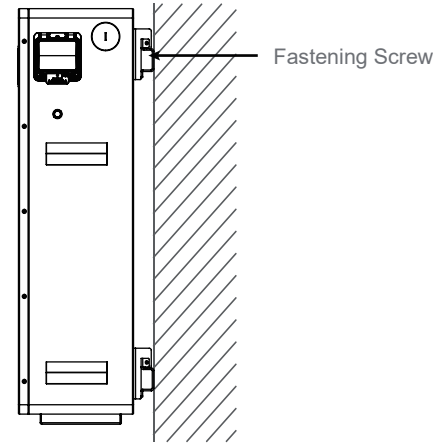
STEP 2

Secure the mounting bracket.



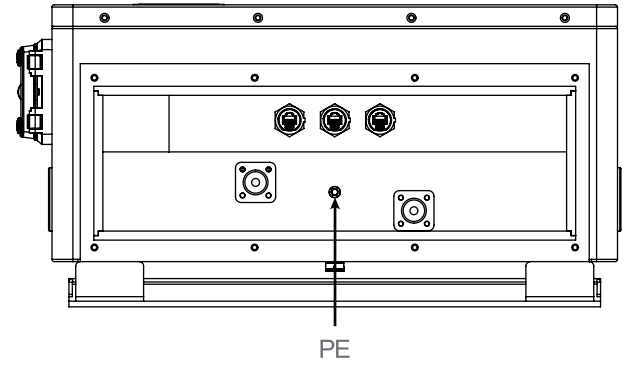
STEP 3

Hang the VCLB-15-BC battery on the wall mounting bracket and secure it tightly.



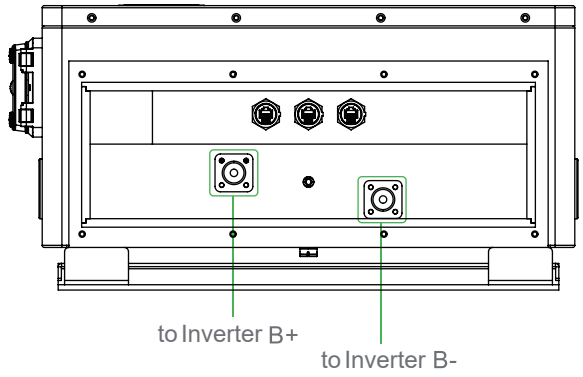
STEP 4

Connect to ground.



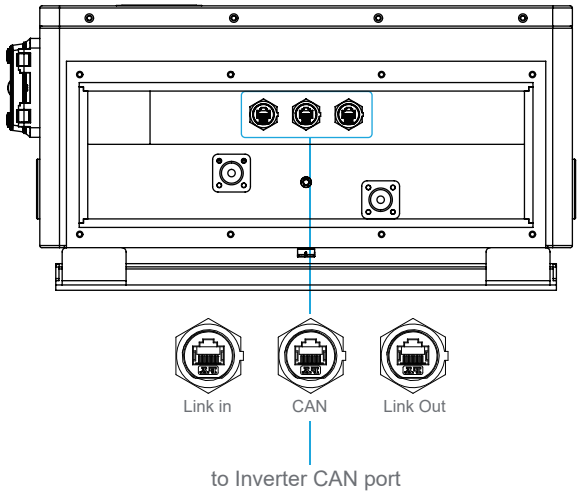
STEP 5

Connect power cable.



STEP 6

Connect communication cable.

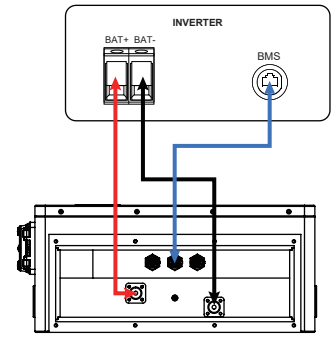


STEP 7

1. Load power exceeding 16kW requires at least 2 units Parallel operation.
2. The maximum number of Number of parallel machines is 15. The power of the inverter selected for the battery module must be less than the maximum output power of the battery module.

Parallel operation	Load power	Connection mode
1units	Below 16kW	7.1
2-15units	Below 16kW	7.2
2-15units	Over 16kW	7.3

Danger	Ensure power cables are installed with the correct polarity. A dangerous situation may arise if the polarities are reversed.
Danger	Do not create a short circuit between the positive and negative terminals of the battery. Ensure the polarity is correct during installation.
Warning	Incorrect communication cable connection will cause the battery system to operate in unexpected ways which may lead to system failure.

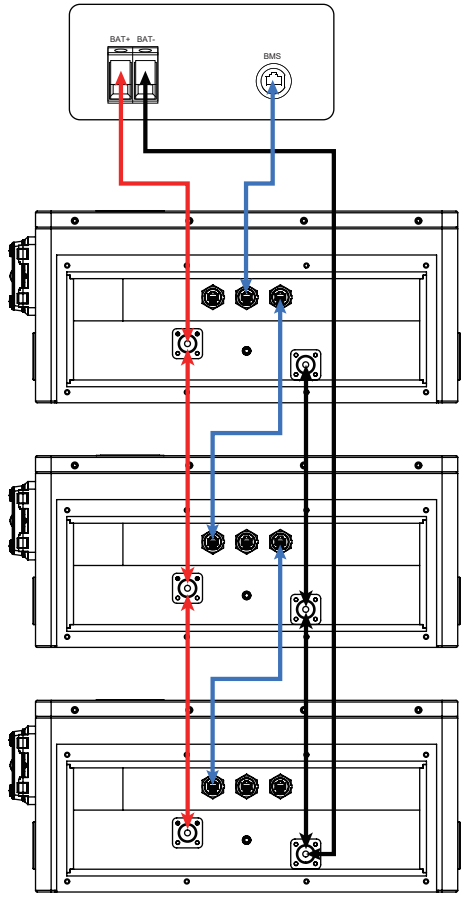


Cable connection in all the following views

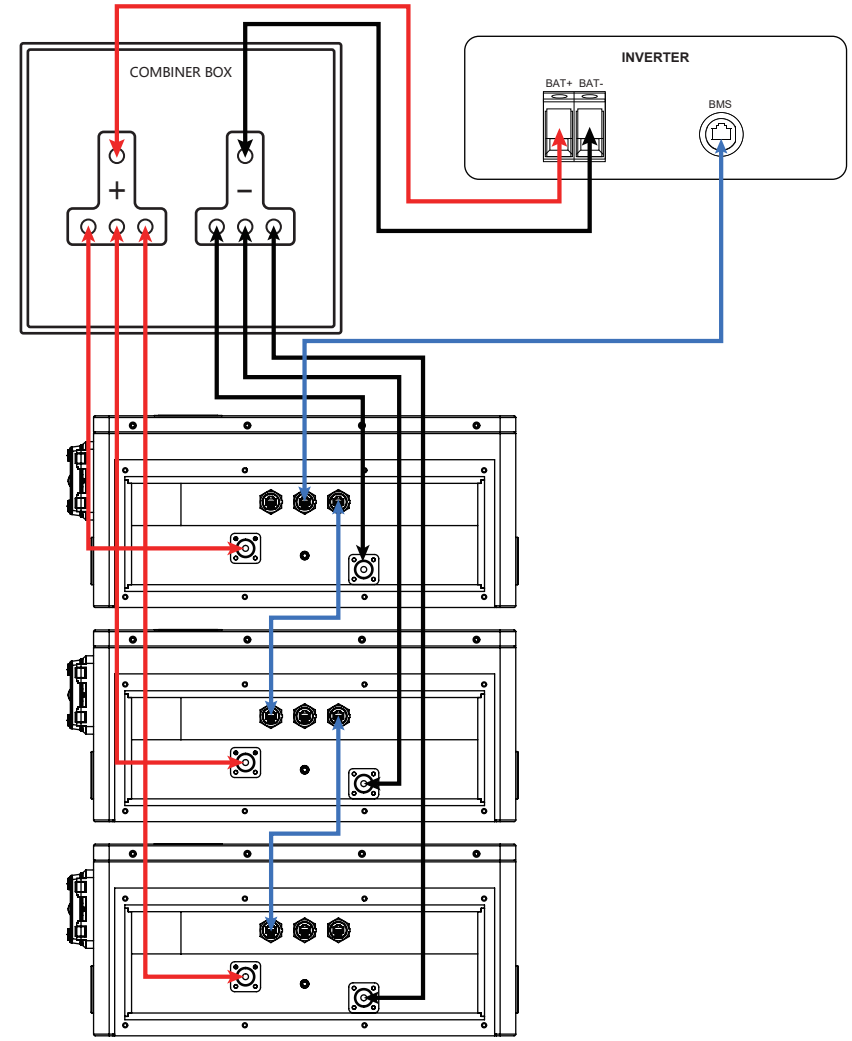
- Lithium battery positive power cable
- Lithium battery negative power cable
- Lithium battery communication cable

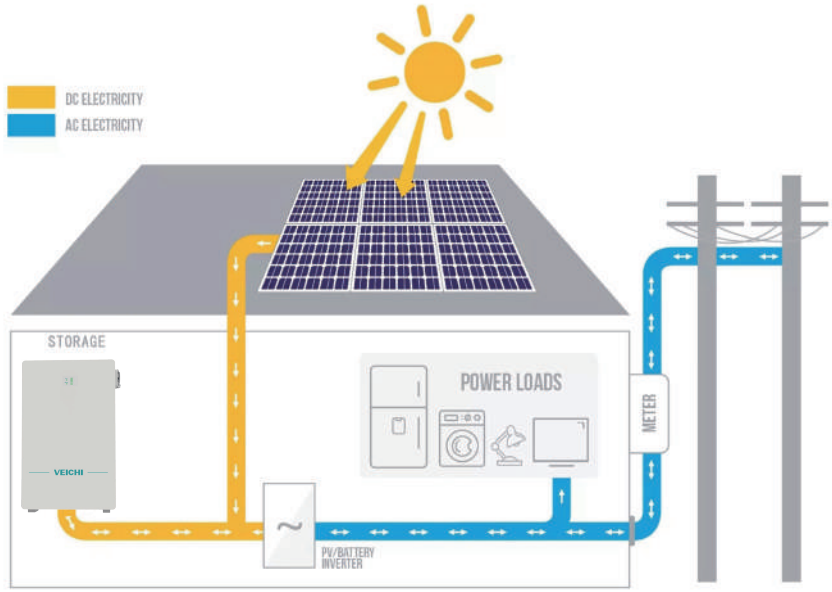
7.1	⚠ Warning Wiring method of 1 units module with power below 16kW

7.2	⚠ Warning
	For 2 units -15 units is-layer module with power below 16kW. (The number of units in the middle of the diagram is omitted, the length of the two positive and negative poles connecting lines must be the same.)



7.3	⚠ Warning
	When using an inverter of 10kW or above, the positive and negative ports of each battery must be connected to the combiner cabinet in the wiring method shown in the figure below. For 2 units -15 units is Over 16kW. (The number of units in the middle of the diagram is omitted.In order to ensure equal current flow, the length of the positive and negative poles connecting lines must be the same.)





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Commissioning Procedure

After all the cable (power and communication) connections are completed, please ensure the following:

- Ensure the DC switch on the inverter is OFF
- Ensure the AC switch that is connected to the grid and EPS output (if used) of the inverter is OFF
- Ensure the DC switch is OFF

For commissioning we recommend the following steps:

- Turn the DC switch ON
- Refer to section 2.2.1 Start for turning on the battery
- Wait until the LED´s on
- Wait until the inverter LED´s on
- Turn on the DC switch on the inverter
- Set up the battery and the inverter on the App
- Turn on the AC switch that is connected to the grid and EPS output of the inverter

05

MAINTENANCE

5.1 Recharge Requirements During Normal Storage

Battery should be stored in an environment with temperature range between -10°C ~+45°C, and maintained regularly according to following table with 0.5C (25A) current till 40% SOC after long storage time.

Recharge Conditions When In Storage

Storage Environment Temperature	Relative Humidity of Storage Environment	Storage Time	SOC
Below -10℃	/	prohibit	/
-10~25℃	5%~70%	≤12 months	30%≤SOC≤60%
25~35℃	5%~70%	≤6 months	30%≤SOC≤60%
35~45℃	5%~70%	≤3 months	30%≤SOC≤60%
Above 45℃	/	prohibit	/

5.1 Recharge Requirements When Over Discharged

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

Recharge conditions when battery is over discharged

Storage Environment Temperature	Storage Time	Note
-10~25℃	≤15 days	Battery Pack disconnected from to Inverter
25~35℃	≤7 days	
35~45℃	<12 hours	Battery Pack connected to Inverter