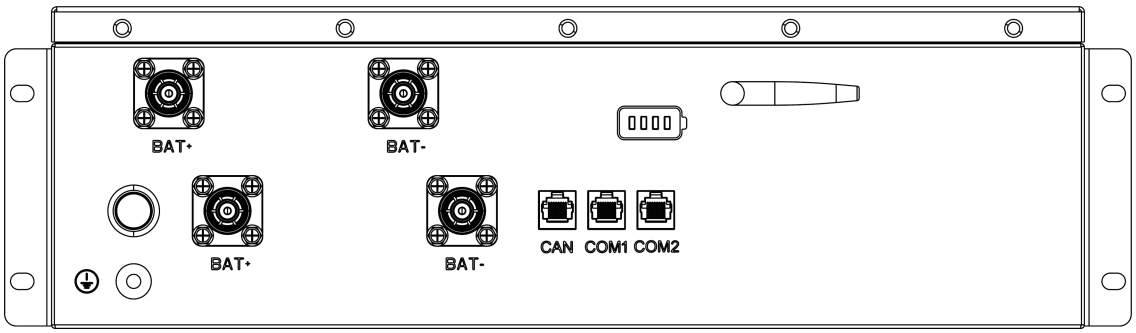
CBLV 5120-B1

Lithium battery 48V 100Ah

User Manual



Content

1 Safety precaution

Read the manual carefully and operate in accordance with the safety precautions. Refer to local safety regulations on items not covered in this manual. Electrical installation, maintenance must be performed by professional / qualified personnel.

1.1 Storage and installation environment

- Handle the product gently, prevent from dropping
- Avoid open flame; keep away from flammables, explosives or corrosive chemicals
- Choose cool and dry place for storage and installation
- Prevent from water or humid intrusion
- Prevent from accidental access (children and animals)
- Do not step on the product packaging
- Do not place any foreign objects on top of the battery pack
- Do not store the battery pack upside down

1.2 Battery safety guidelines

- Prevent from electrostatic discharge
- Wear insulating gloves when handling batteries
- Do not energize auxiliary power during installation
- Check the polarity carefully before switching on the system
- Defected or damaged batteries shall not be charged or discharged

1.3 Warning signs and stickers

	Warning generic hazard		DO not mix with domestic
	Warning High Voltage - Electrical shock hazard		Please recycle
	No flame		This side up
	No stepping on		User manual
	Warning Single handling		Protective Earth (general identification)

1.4 Emergency handling

Wear personal protective equipment (PPE) such as goggle, facemask, insulated gloves and boots. Evaluate the situation before taking remedy action. When it is safe to do so, disconnect external AC or DC power connection.

Damaged or deformed battery enclosure
Risk of chemical leakage (i.e. electrolyte) and internal short-circuit.

 Warning

Deformed or severely damaged battery pack can lead to piercing of cell pouch (chemical leakage) or internal short-circuit (thermal runaway). The damaged battery pack can release toxic gas. Keep away from it.
In case of accidental skin contact, wash the skin thoroughly with soap and seek medical advice. For eye contact, wash under running water (~15 minutes) and require immediate medical attention.

Fire hazard
If the fire is not from the battery or not spread to the battery, use FM-200 or CO_2 fire extinguisher to put out the fire.
If the battery pack catches fire, do not attempt to put out the fire and evacuate immediately.
Seek medical in case of inhalation of pungent and toxic fumes.

Keep damaged batteries isolated and call your local fire department. Contact service for further support.

Note：
1. If a fire occurs during battery charging, disconnect the battery pack circuit breaker and cut off the power supply for charging under safe conditions.
2. If the battery string does not catch fire, extinguish the fire before the battery string catches fire.
3. If the battery pack catches fire, do not attempt to extinguish the fire. Evacuate immediately.

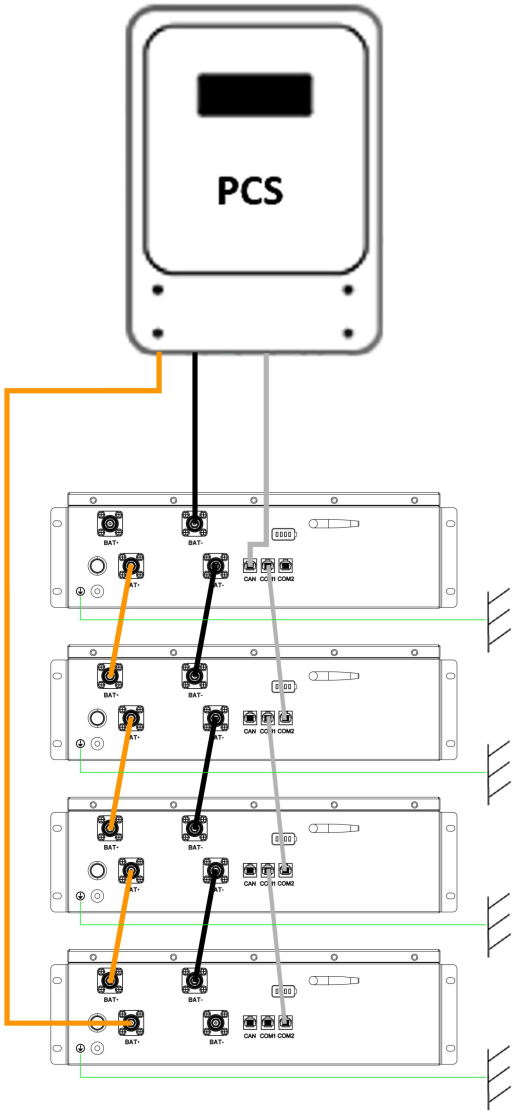
Water damage
Risk of electric shock and internal short-circuit. In case of splash or water spillage, when it is safe to do so, dry the product. If any part of the battery system is submerged, keep away from water.
Do not reuse the submerged battery. Contact a service for support.

2 Product Description

This document mainly introduces the product, installation, commissioning, maintenance, troubleshooting, packaging, and transportation of the CBLV 5120-B1 energy storage system.

2.1 Product Introduction

- This product is a lithium battery energy storage system based on the chemical composition of Lithium Iron Phosphate (LFP), and adopts a module parallel design.
- A single system consists of multiple battery modules, and supports up to 4 battery modules in parallel.
- The battery energy storage system can be used with the inverter, and the communication adopts CAN .
- The battery management system provides data collection, status monitoring and control to ensure safe and reliable operation of the system.
- The system adopts IP20 protection design to support indoor use.



It is recommended to add circuit breakers to PCS and battery power lines

System Diagram

2.2 Product appearance description

Product size chart:

The battery module size diagram and effect diagram are shown in the following figure:

Size: W*H*D=480*137*460 mm

Weight: 48kg

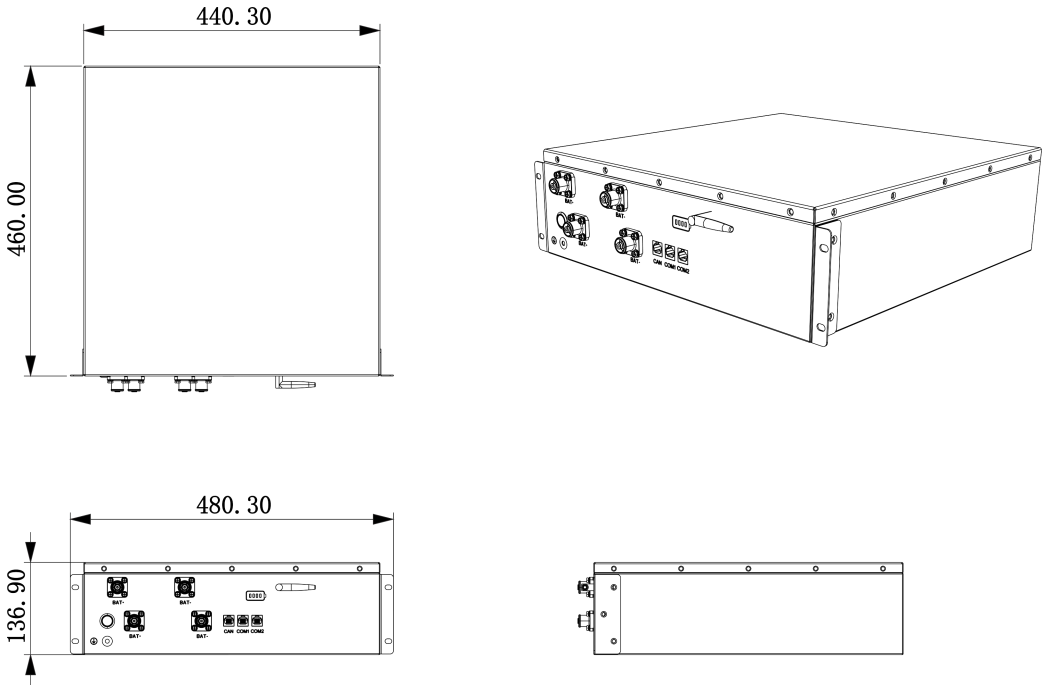
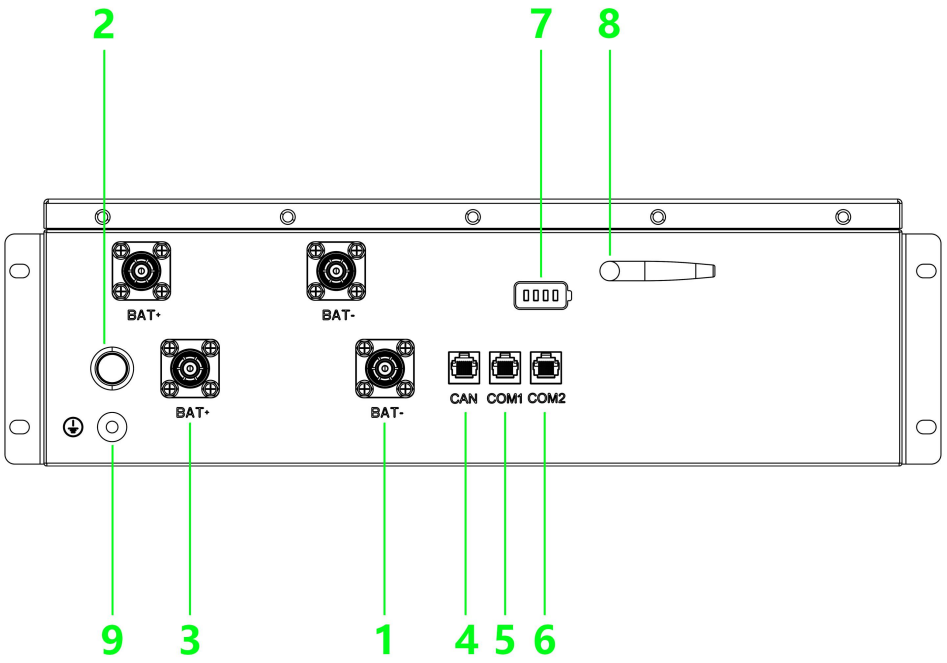


Figure 4.3 Dimensions of module

Product Front Panel Definition：



Item	Name	Description	Remark
1	BAT-	Battery output negative port	
2	POWER	Battery module switch button	
3	BAT+	Battery output positive port	
4	CAN	Communication interface with PCS	CAN
5	COM1	Automatic addressing and internal RS485 communication interface	
6	COM2	Automatic addressing and internal RS485 communication interface	
7	SOC	Battery module SOC indicator LED light	
8	WIFI	Real-time monitoring of battery system health	optional
9	PE	ground hole	

3 Installation Guide

3.1 Installation site requirements

3.1.1 Environmental requirements

a. Ambient temperature: -10℃～+50℃ (recommended: 10℃～35℃ or 50℉～95℉).

b. Ambient humidity: 10-95%.

c. Altitude <= 2000 meters.

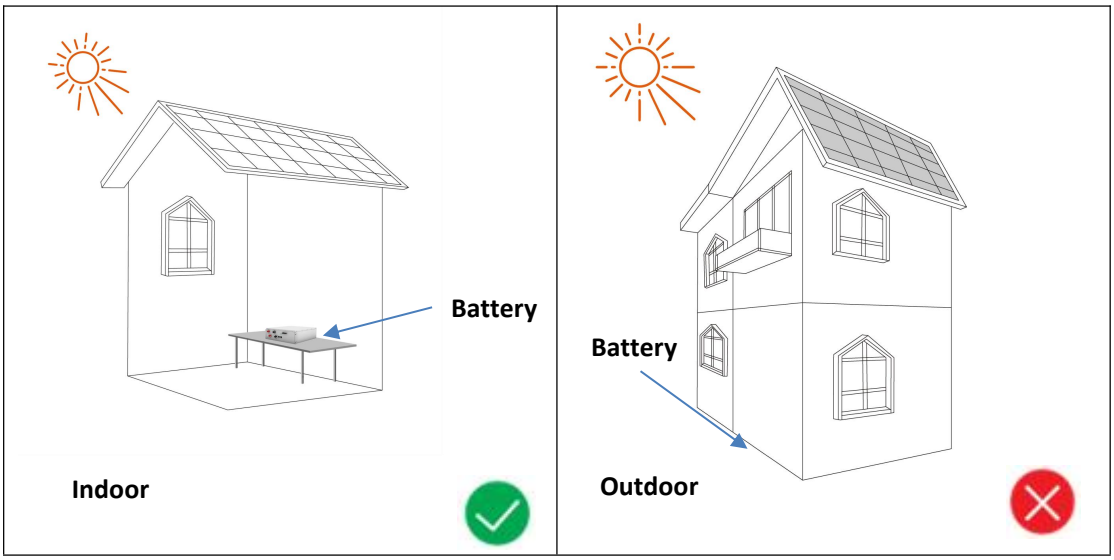
d. For indoor installation

- Avoid direct sunlight
- Avoid rain and snow
- Avoid flood-prone locations
- Install under shed if possible
- 3 feet of clearance from doors, windows, driveways, or other batteries
- Keep away from heating equipment.
- Protection against corrosive chemicals
- Prevent water from spilling

e. Consider locations with ventilation fans, smoke, heat or combustible gas detectors.

Warning!

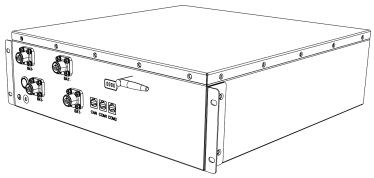
Use of CBLV 5120-B1 series product outside of the temperature range may cause irreversible damage to it.



3.1.2 Physical installation requirements

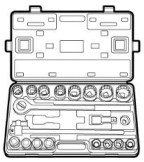
This simple bracket is optional. Assuming that the client has a cabinet or bracket designed to meet the standard 19inch and 3U height installation, it is not necessary to choose this suggestion and ignore the following installation methods.

a. Weight



⚠48kg (105.8lbs)

3.1.3 Preparation of installation tools

Tools and Personal Protective Equipment			
			
Electric screwdriver	Wrench	Wrench	Wrench

3.1.4 Unboxing guide

Unpacking checklist

Components				
 Battery	 M6*12mm*3	 SC terminal *2	 User Manual	

Wiring Harness kit Packaging Components Between Battery module			
 Positive wire harness *1	 Negative wire harness *1	 PCS-CAN communication cable *1	

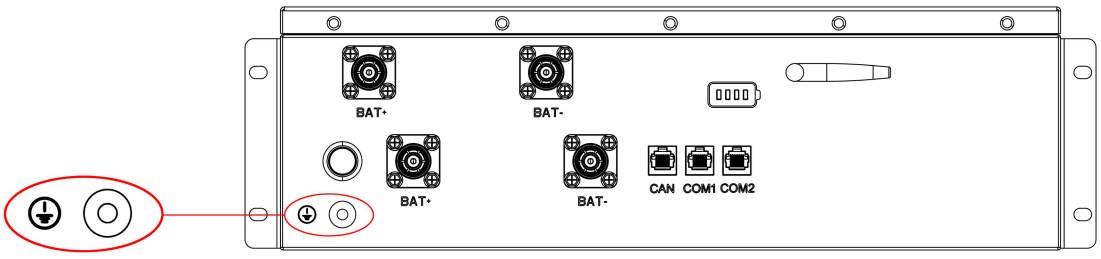
Note: If the customer has customization, the above accessories can be ignored, and the accessory package selected by design customization shall prevail.

4 Electrical connection

4.1 Grounding

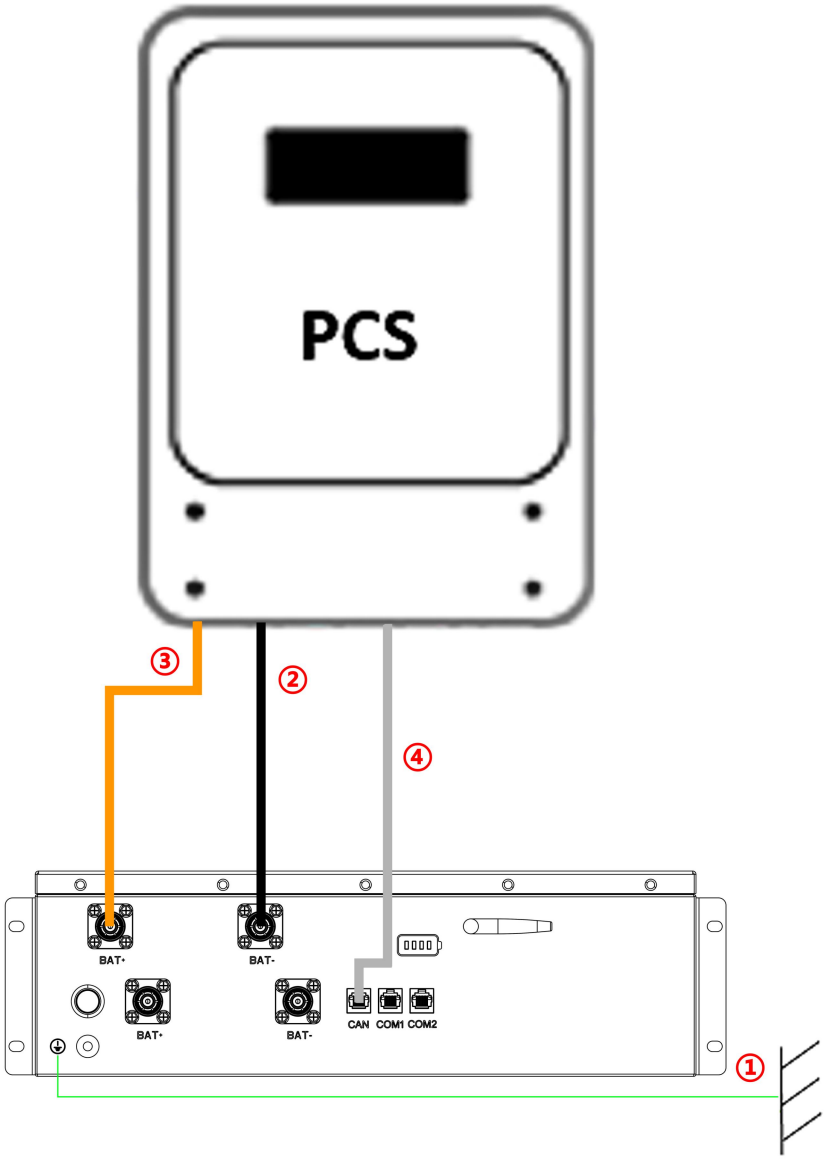
Grounding point

Introduce the product ground point to the nearby ground point



4.1.2 Guide of electrical connection

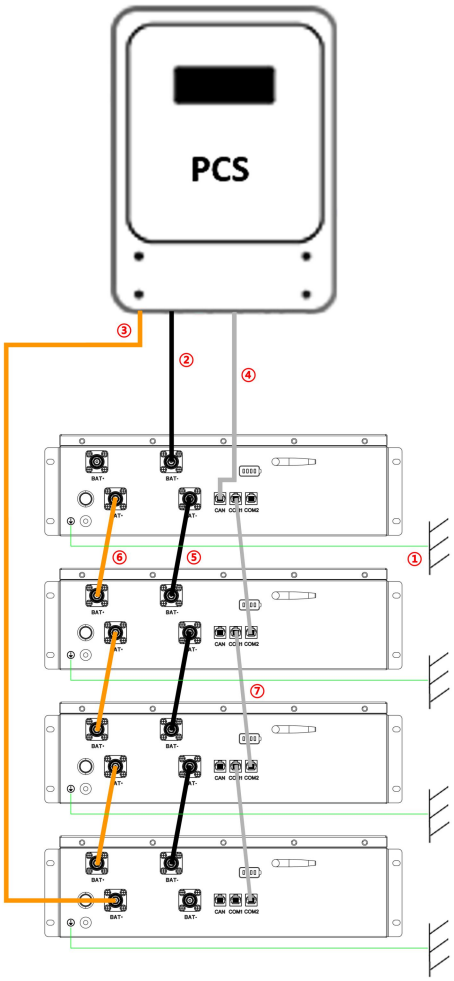
Electrical connection for single module shown as follows, PCS: 48V input



It is recommended to add circuit breakers to PCS and battery power lines

No.	Electrical connection	Wire specifications	Mark
1	Battery module grounding	Non	With grounding terminal
2	Connect the battery negative with PCS negative, typical color BLACK	1/0 AWG,2000mm	PCS- to BAT-
3	Connect the battery positive with PCS positive, typical color RED	1/0 AWG,2000mm	PCS+ to BAT+
4	Connect the battery with PCS-CAN, typical color GRAY	8P8C Type 5 Shielded network cable	BAT-CAN to PCS -CAN

One cluster of parallel connection shown as follows, PCS: 48V input



It is recommended to add circuit breakers to PCS and battery power lines

No.	Electrical connection	Wire specifications	Mark
1	Battery module grounding	Non	With grounding terminal
2	Connect the battery negative with PCS negative, typical color BLACK	1/0 AWG,2000mm	PCS- to BAT-
3	Connect the battery positive with PCS positive, typical color RED	1/0 AWG,2000mm	PCS+ to BAT+
4	Connect the battery with PCS-CAN, typical color GRAY	8P8C Type 5 Shielded network cable,2000mm	BAT-CAN to PCS-CAN
6	Negative wiring between battery modules, typical color BLACK	1/0 AWG,70mm	BAT- to BAT-
7	Positive wiring between battery modules, typical color RED	1/0 AWG,70mm	BAT+ to BAT+
8	Connect the battery with BAT-RS485, typical color GRAY	8P8C Type 5 Shielded net workcable,220mm	BAT-RS485 to BAT-RS485

5 Maintenance and troubleshooting

5.1 Routine maintenance

- Maintenance charge every 6 months

From the date of manufacturer shipment, the battery shall be maintained every 6 months. Action must be taken in case SOC reaches 0% according to,

Ambient temperature	**Must be recharged within**
(45, 50] °C	7 days
(35, 45] °C	15 days
≤35°C	30 days

- Disconnect the battery if not being used

  BMS consumes power even when the battery is not being used. Disconnect the battery output to prevent the battery from becoming empty. For store-away, make sure the SOC is between 45% and 55% before disconnect.
- Check the battery system regularly. Contact your support if any anomaly detected.

5.2 Fault checklist

Fault	**Cause**	**Solution**
POWER button no response	Damaged POWER button Damaged cable or poor contact	Repair or replace the control module Please contact the supplier
Short discharge time	battery SOC is low	Keep the product charged continuously and keep the energy storage battery system fully charged
	low ambient temperature	Guarantee the product to work within the recommended suitable temperature range
	Product overload	Check load status and remove non-essential loads
	Batteries age and capacity decreases	To replace the battery, please contact the supplier for the battery and its components
Unable to charge and discharge	After the battery is discharged to the SOC protection value, it needs to be charged for a period of time before it is allowed to discharge.	The battery is charged to the SOC value set by the restart
	battery over temperature	Stand at room temperature for more than 3 hours
After the system is powered on, the LED cannot be lit	LED failure	Please contact the supplier to repair or replace the control module
The LED cannot wake up during system operation	1. If the LED is off, the POWER button is faulty or the button wiring is loose 2. If the LED still does not light up after restarting, the LED is faulty	Please contact the supplier to repair or replace the control module
Abnormal battery communication	Communication disconnection	Check whether the battery stack is installed reliably.

The inverter is powered on for the first time through the battery, and the battery reports short-circuit protection	The parallel capacitor value of the input terminal on the battery side of the inverter is large	Battery protection can be automatically restored
Inverter won't start	The battery voltage is too low or the SOC is lower than the shutdown protection value	Charge the battery after starting the inverter from the grid

6 Warehouse storage guidelines

6.1 Packaging guidelines

Lithium-ion batteries is recognized as dangerous goods. The packaging requirements for battery products are as follows:

a. The packaging manufacturer with the packaging qualification for dangerous goods is responsible for providing product packaging, and the packaging manufacturer has a record in the local Commodity Inspection Bureau;

b. After the packaging manufacturer completes the packaging, the supplier needs to apply to the Commodity Inspection Bureau, and the Commodity Inspection Bureau will provide the "Dangerous Package Product Use Inspection Sheet" and "Dangerous package product performance inspection sheet", and complete the dangerous package commodity inspection;

c. All battery packs should be packaged with product instruction manuals. The packaged product should be placed in a dry, dust-proof and moisture-proof packing box;

d. The product name, model, quantity, gross weight, manufacturer, and ex-factory date should be marked on the outside of the packing box.

e. The necessary signs such as "upward" and "fear of fire" shall meet the requirements of GB/T 191;

f. The packing method is: packing in a carton with molded foam buffer material in the carton;

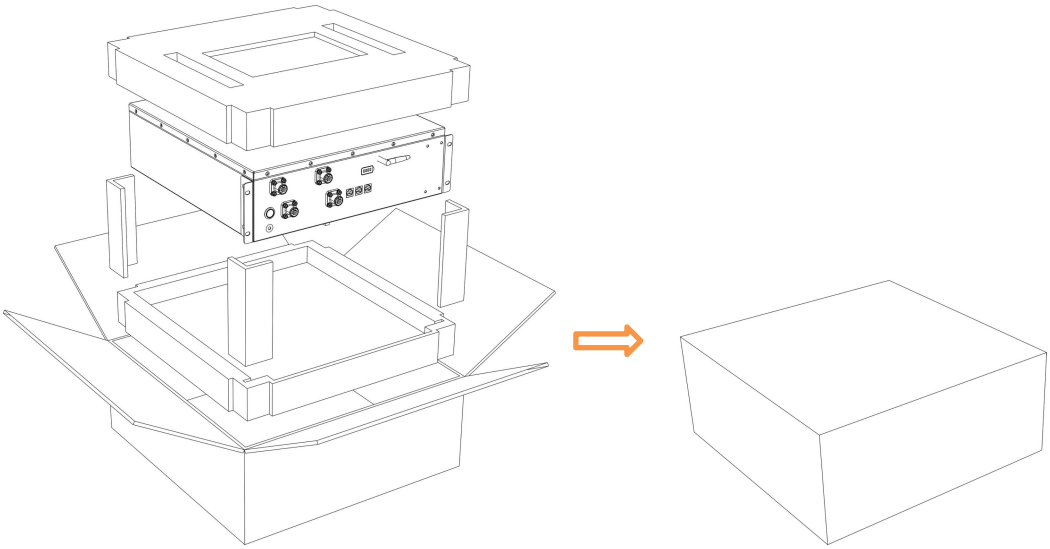
g. Accessories packaging: single accessories are first fastened with cardboard or plastic film or braided straps, neatly placed in the carton, and filled with regular fillers (foam pads, cardboard, etc.) to prevent the accessories from shifting in the box. The following documents should be included with the product when leaving the factory:

   1) Product certificate (both in Chinese and English);
   2) Product use (installation) manual ;
   3) Product packing list (both in Chinese and English);
   4) Factory inspection report (both in Chinese and English).

h. Clean battery

i. Regular cleaning of the battery system is recommended. If the case is dirty, use a soft dry brush or dust collector to remove the dust. Cleaning liquid materials include solvents, abrasives, etc. Corrosive liquids should not be used to clean the housing.

j . Packing



6.2 Storage

The battery pack is stored in a clean, dry and ventilated room with an ambient temperature of 25°C±5°C and a relative humidity of not more than 75%. The battery pack has a state of charge of 45% to 55%. Avoid contact with corrosive substances and keep away from fire and heat sources.

7 Dispose of used batteries

Comply with applicable local regulations for the disposal of electronic waste and used batteries.

- Do not mix with your household waste.
- Do not expose the battery to high temperatures or direct sunlight.
- Do not expose batteries to high humidity or corrosive environments.

Contact supplier or original manufacturer for disposal options.

8 Detailed parameter

Table 1 System parameter

Item	Parameter				Note
Model	CBLV 5120-B1-1	CBLV 5120-B1-2	CBLV 5120-B1-3	CBLV 5120-B1-4	
Parallel No.	1	2	3	4	
Rated energy	4.8kWh	9.6kWh	14.4kWh	19.2kWh	
Rated charging and discharging current for system	50A	100A	200A	200A	
Maximum charging and discharging current for system	100A	200A	200A	200A	
Rated voltage	48V				
Working voltage range	42V~54V				
Communication	CAN/RS485				
Protection function	Charging over voltage, discharging under voltage, over current, over temperature, short circuit protection				
Cycle life	5000 cycles (25℃, 0.5C/0.5C, 90%DOD, residual capacity 80%)				
Protection level	Simple rack IP20				
Working ambient temperature	Charging: [0,55]℃				
	Discharging: [-20,60]℃				
Working ambient humidity	10%~95%RH				
Working altitude	<3000m				Derating above 2000m
Certificate	UN 38.3, IEC 62619, CE				

8.1 Battery module parameter

Table 2 Battery module parameter

Item	Parameter	Note
model	CBLV 5120-B1	
Cell type	LFP	
Rated voltage	48V	
Connection	1P15S	
Rated energy	4.8kWh	
Working voltage range	42V~54V	
Rated charging and discharging current	50A	
Maximum charging and discharging current	100A	
Dimension	480*137*460 mm	W*H*D
Weight	48kg	
Internal resistance	<30mΩ	
Dissipation	Natural dissipation	
Working ambient temperature	Charging: [0,55]℃	
	Discharging: [-20,60]℃	
Working ambient humidity	10%~95%RH	
Storage temperature	-10℃~35℃	
Protection level	IP20	
Certificate	UN 38.3, IEC 62619, CE	
Bluetooth	/	optional

Table 3 Description of capacity indication

Status		Charging				Discharge			
Capacity indicator light		L4 ●	L3 ●	L2 ●	L1 ●	L4 ●	L3 ●	L2 ●	L1 ●
Electric quantity（%）	0%～25%	Extinguish	Extinguish	Extinguish	Blinking 2	Extinguish	Extinguish	Extinguish	Steady on
	26%～50%	Extinguish	Extinguish	Blinking 2	Steady on	Extinguish	Extinguish	Steady on	Steady on
	51%～75%	Extinguish	Blinking 2	Steady on	Steady on	Extinguish	Steady on	Steady on	Steady on
	76%～100%	Blinking 2	Steady on	Steady on	Steady on	Steady on	Steady on	Steady on	Steady on
Running light●		Steady on				Blinking（Blinking 3）			