User Manual

Parallel-Capable 7.4-21kWh LiFePO4 Battery

JA-LF51.2V145AH
JA-LF51.2V280AH
JA-LF51.2V410AH



Version: V2
Date：20251225

How to Use This Manual

Read the manual and other related documents before performing any operation on the battery.
Documents must be stored carefully and be always available.
Contents may be periodically updated or revised due to product development. The information in this manual is subject to change without notice.

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The manufacturer shall not be liable for personal injury, property loss, product damage and subsequent losses under the following circumstances:
* Damages caused by force majeure, including earthquake, flood, volcanic eruption, mudslide,, lightning, fire, war, military conflict,typhoon, hurricane, and so on.
* Failure to comply with the provisions of this manual.
* The installation, operation and storage environment does not meet the relevant international, national or regional standards;
* Incorrect use of this product.
* Unauthorized or unqualified personnel repair the product, disassembly the rack and perform other operations.
* Use of unapproved spare parts.
* Unauthorized modifications or technical changes to the product or software.
* Incorrect shipment by yourself or the third party commissioned by you.
* Unsatisfactory materials and tools from you own that do not meet the relevant international, national or regional standards.
* Damage caused by yourself or the third party's negligence, intent, gross negligence, or improper operation.

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1 Safety Instructions

Warning!

Read and follow carefully all safety warnings and all instructions . Failure to do so may result in electrical shock, fire, serious injury, or death. Save these instructions for future reference.

1.1 Terms and Symbols

Terms /Symbols	Description
Danger	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
Warning	Indicates a hazard with a medium level of risk which, if not avoided, will result in death or serious injury.
Caution	Indicates a hazard with a low level of risk which, if not avoided, will result in minor or moderate injury.
Notice	Indicates a potentially hazardous situation which, if not avoided, could results in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
Note	Supplements the important information in the main text. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.
	Caution , risk of electric shock symbol indicates important safety instructions , which if not correctly followed , could result in electric shock.
	The DC input terminals of the inverter must not be grounded.
	Surface high temperature , Please do not touch the inverter case .
	Please read the instructions carefully before use .
	Indicate that this product is recyclable
	Do not place near open fire or incinerate. Do not use near heaters or hot temperature source.
	Attention! The risk of explosion.
+ −	Li-ion battery

	Do not tread
	Do not run and chase
	Do not touch with your palm
	Symbol for the marking of electrical and electronics devices according to Directive 2002/96/ EC. Indicates that the device , accessories and the packaging must not be disposed as unsorted municipal waste and must be collected separately at the end of the usage . Please follow Local Ordinances or Regulations for disposal or contact an authorized representative of the manufacturer for information concerning the decommissioning of equipment.

1.2 Safety Rules

1) After unpacking, please check product and packing list first, if product is damaged or lack of parts, please contact with the local retailer.
2) Before installation, be sure to cut off the grid power and make sure the battery is in the turned-off mode.
3) Wiring must be correct. Be careful to negative pole and positive of cable and terminals. Make sure no short circuit with the external device.
4) It is prohibited to connect the battery and AC power directly.
5) Please ensured the electrical parameters of battery system are compatible to related equipment.
6) Do not allow the terminals to contact exposed wire or metal.
7) Keep out of reach of children or animals.
8) Do not place batteries near fire, heater or high temperature sources. This will reduce the risk of explosion or possible injury.
9) Batteries can explode in the presence of a source of ignition, such as open flame. An exploded battery can propel debris and chemicals. If occurs, flush with water immediately.
10 Do not submerge the battery in water or expose it to moisture. Do not disassemble or alter the battery in any way.
11) If the battery system needs to be moved or repaired, the power must be cut off and the battery is completely shut down.
12) It is prohibited to connect the battery with different type of Battery.
13) It is prohibited to put the batteries into use with faulty or incompatible power conversion system (hereafter refers to inverter).
14) It is prohibited to disassemble the battery.
15) In case of fire, only dry fire extinguishers can be used. Liquid fire extinguishers are forbidden.
16) Please do not open, repair, or disassemble the battery except qualified personnel. We do not undertake any consequences or related responsibility which be- cause of violation of safety operation or violating of design, production, and equipment safety standards.
17) Battery needs to be recharged within 48 hours after fully discharged.
18) Do not expose cable outside.
19) Do not expose battery to flammable or harsh chemicals or vapors.
20) Do not paint any part of Battery, include any internal or external components.
21) Do not connect battery with PV solar wiring directly.
22) Any foreign object is prohibited to insert into any part of battery.
23) Do not strike, drop, puncture or step on the battery. A damaged battery is subjected to explosion. Properly dispose of damaged battery immediately.
24) In case of electrolyte leakage, keep leaked electrolyte away from contact with eye or skin, If that occurs, wash immediately with clean water for at least 10 minutes, then seek immediate medical attention.

2 Product Description

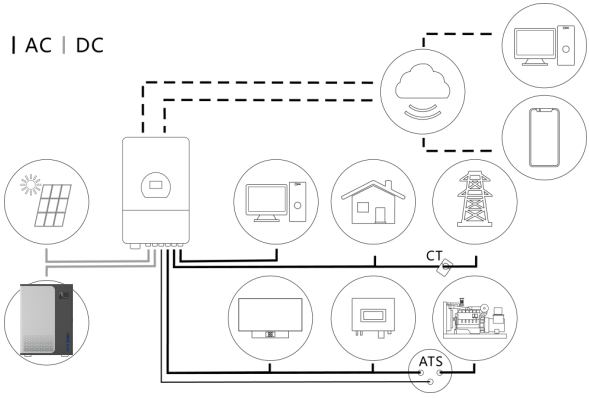
2.1 Product Features

1) The lithium iron phosphate battery is one of new energy storage products, which can be used to support reliable power for various types of equipment and systems.The whole module is non-toxic, non-polluting, and environmentally friendly.
2) This product has built-in BMS battery management system, which can manage and monitor cells information including voltage, current and temperature. What' s more, BMS can balance cells charging and discharging to extend cycle life.
3) Cathode material is made from $LiFePO_4$ with safety performance and long cycle life.
4) Flexible configuration. Multiple batteries can be in parallel for expanding capacity and power.
5) Adopted self-cooling mode rapidly reduces system noise.
6) The module has less self-discharge, no memory effect, excellent performance of shallow charge and discharge.
7) High-power density: flat design, saving installation space.

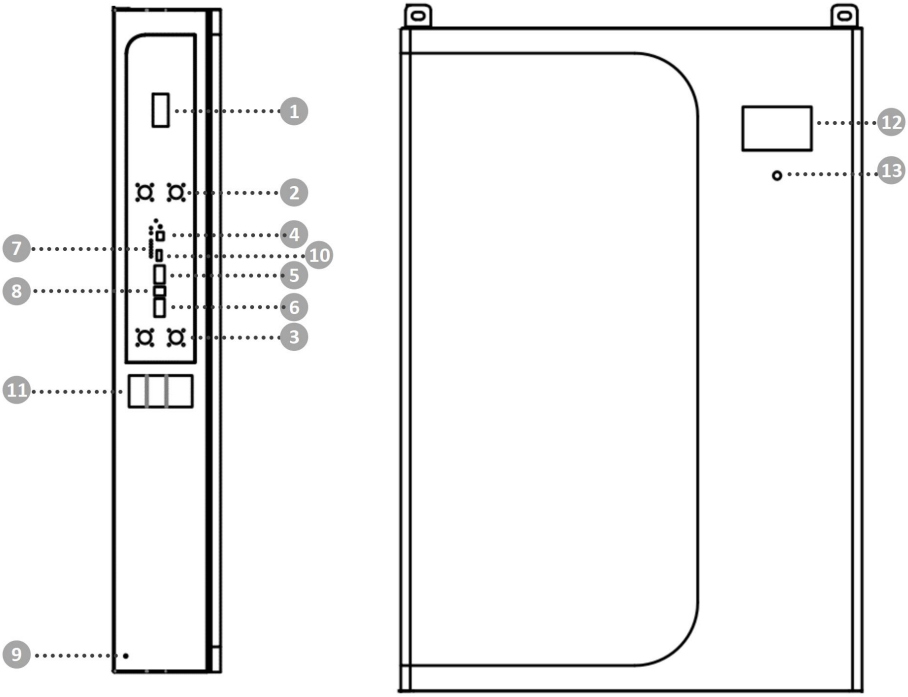
2.2 Application Scenarios

The following illustration shows basic application of this battery.
It also includes following devices to have a complete running system.
(not included in the battery packaging)
- Generator or Utility
- Solar panel
- Low voltage Hybrid inverter (Charge & Discharge)
- Cloud / internet / app icons
- PC / mobile phone icons
- Grid transmission tower icon
- CT (current transformer)
- ATS (automatic transfer switch)

Consult with your system integrator for other possible system architectures depending on your requirements.



2.3 Product Overview



1. Battery switch: 250A breaker	8. RS232 port
2. + Positive electrode (P+)	9. Grounding
3. - Negative electrode (P-)	10. DO Dry contact
4. ADD DIP switch	11. Handle
5. RS485-1 CAN (in port)	12. Touch screen
6. RS485-2 (out port)	13. BMS switch
7. SOC battery capacity light	

1. Battery switch (250 A DC circuit breaker): Mechanical DC isolation and overcurrent protection device. Physically disconnects the battery from the DC power circuit.
Used for emergency shutdown, installation, maintenance, or fault conditions.

2. Positive DC power terminals (P+):

Two parallel positive DC terminals: Used for battery power connection and parallel connection between batteries.

Power connection only.

3. Negative DC power terminals (P−):

Two parallel negative DC terminals: Used for battery power connection and parallel connection between batteries.

Power connection only.

4.Address DIP switch: Used to set battery address for parallel operation.

Refer to configuration instructions before use.

5. CAN communication port: Primary BMS communication interface for inverter connection.

Used for data exchange between the battery and compatible inverters.

RS485-1 communication port: BMS communication interface.

Used for inverter communication and for firmware upgrade and service functions.

6. RS485-2 communication ports: BMS communication ports for daisy-chain connection between multiple parallel batteries.

7. SOC indicator LEDs: Displays approximate battery state of charge.

For reference only.

8. RS232 service port: Service and diagnostic interface.

Used for configuration and maintenance.

Not required for normal operation.

9. Protective earth (ground) connection: Connect to building protective earth.

Required for safety.

10. DO dry contact: Two Potential-free output contacts.

Used for alarm or status indication.

Refer to 5.2 for specifications and contact rating.

11. Handle: Used for positioning only. Not intended for lifting or carrying the battery.

12. Touch screen: Displays battery status and basic operating information.

13. BMS power switch: Controls the battery management system.

When switched OFF, both charge and discharge MOSFETs are disabled and charging and discharging are stopped.

Used during installation, maintenance, or abnormal operating conditions.

Note: The circuit breaker provides physical disconnection, while the BMS power switch provides electronic control. Both serve different safety functions.

P+ and P− terminals are DC power connections only.

They are used for battery power output/input and for parallel connection between batteries.
They must not be used for communication or signal transmission.

Fire suppression system

The battery includes an integrated fire suppression module
This is a safety mitigation feature, not a fire guarantee

LED Status Indicators Instructions

SOC : Battery capacity indicator, green light strip.

Led status indicators

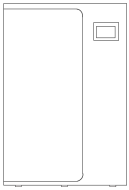
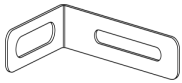
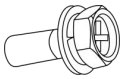
Status	Normal/Warning/Protection	ON/OFF	RUN	ALM	SOC Indicators LED					
Power Off	Normal	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Balancing	Normal	ON	ON	OFF	Per SOC Per SOC					
Charging	Normal	ON	ON	OFF	Per SOC Per SOC					
	Overcurrent/Over Temp/ Overvoltage/charge Fail	ON	ON	Blinking	Per SOC Per SOC					
Discharging	Normal	ON	ON	OFF	Per SOC Per SOC					
	Overcurrent/Over Temp/ Overvoltage/discharge Fail	ON	ON	Blinking	Per SOC Per SOC					
Other Warnings	Unmodified Password/Short Circuit/Abnormal Temp	ON	ON	Blinking	Per SOC Per SOC					

No.	Indicator Light	Remark
1		0% ≤ SOC ≤ 16%
2		17% < SOC ≤ 32%
3		33% < SOC ≤ 49%
4		50% < SOC ≤ 65%
5		66%< SOC ≤ 83%
6		84%< SOC ≤ 100%

3 Preparation for Installation

After unpacking, check that packing contents are intact and complete , and free from any damage. If any item listed in the Unpacking List is missing or damaged, contact your vendor.

3.1 Unpacking List

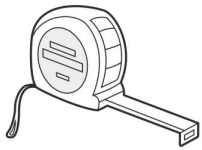
		
Battery pack*1	1000mm inverter communication line*1	Fixed support*2
		
User manual*1	1000mm Positive battery power cable*1	1000mm Negative battery power cable*1
		
Bolt*8		

The illustrations are for reference only. The actual product shall prevail.

- That parallel connection requires optional battery-to-battery power cables
- The connector type (Quick - Quick).
- That cable length may vary depending on installation layout

3.2 Required Tools

These tools are required to install the battery.

		
Hammer	Drill	Tape measure
		
Hex wrench	Phillips screwdriver	Marker

Note:

Use properly insulated tools to prevent accident tale electric shock or short circuits.
If insulated tools are not available, cover the entire exposed metal surfaces of the available tools, except their tips, with electrical tape.

3.3 Safety Gear

It is recommended to wear the following safety gear when dealing with the battery pack.

		
Insulated gloves	Safety shoes	Safety goggles

4 Installation Instructions

4.1 Installation Personnel

Lithium battery is designed for indoor use. But please avoid direct sunlight, rain exposure, snow laying up during installation and operation.
When equipped with external auxiliary waterproofing, it can be installed outdoors.
Make sure that the installation location meets the following conditions:
The installation area shall avoid of direct sunlight.
The floor and walls are completely water proof.
The wall is flat and level.
There are no flammable or explosive materials.
Ensure that the equipment is installed in a clean, dry and well ventilated area with proper temperature, humidity and altitude range.Check for more data in the "Technical Specifications" section.
There is minimal dust and dirt in the area.
Do not place the equipment near heat sources or fire sources, such as smoke, candies, heaters, or other heating devices. Overheat may damage the equipment or cause a fire.
The distance from air outlet of inverter is more than 0.5 meters.
Do not place at a children or pet touchable area.
There are no mandatory ventilation requirements for battery module, but please avoid of installation in confined area. Do not cover or wrap the battery case or cabinet.

⚠ **Caution!**

Cleaning. Before installing and powering up the system, dust and iron filings must be removed to keep the environment clean. The system cannot be installed in desert areas without a shell to protect against sand.

⚠ **Caution!**

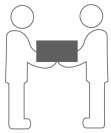
Temperature. If the ambient temperature is not within the operating range, the battery pack stops operating to protect itself. Frequent exposure to harsh temperatures may deteriorate the performance and life of the battery pack.

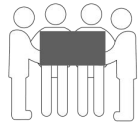
⚠ **Caution!**

Fire extinguisher system. For safety, it is best to have a fire extinguisher system. The fire protection system needs to be checked regularly to keep it in normal condition. For use and maintenance requirements, follow local fire equipment guidelines.

Caution!

Moving heavy objects. Be careful to prevent injury when moving heavy objects. Select an suitable way to moving heavy objects according to product weight. Refer to the table-5.



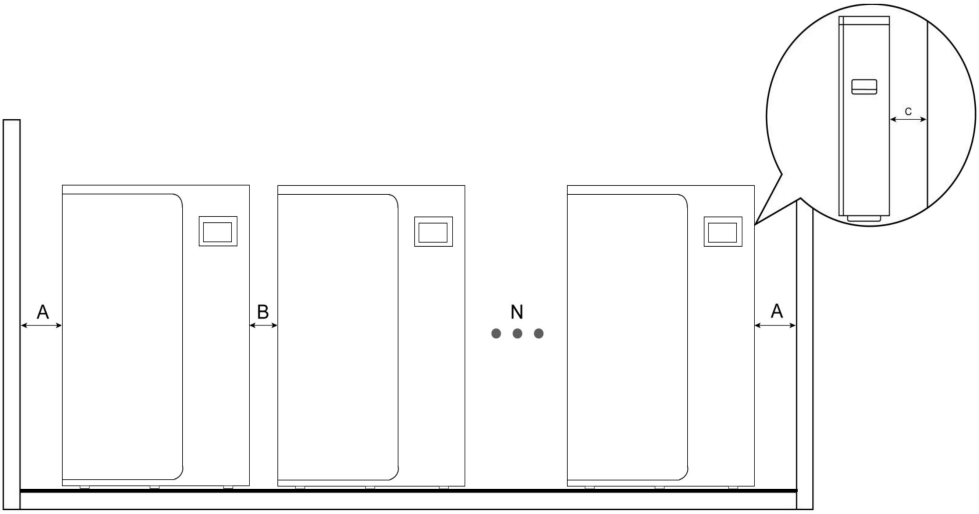

Weight	Method	Recommendation
<18 kg (40lbs)	Manual handling	1 person
18~32 kg (40~70lbs)	Manual handling	2 persons
32~55 kg (40~70lbs)	Manual handling	3 persons
55~68 kg (121~150lbs)	Manual handling	4 persons
> 68 kg (150lbs)	Moving device	Forklift

4.2 Selection of Installation Sites

Caution!

Batteries should be installed in a clean flat place with no direct sunlight, away from water and fire sources, and at a suitable temperature. The installation location is recommended to meet the size requirements of the figure below: **(0≤N≤13)**

NOTE: This requirement only applies to floor-mounted installation.

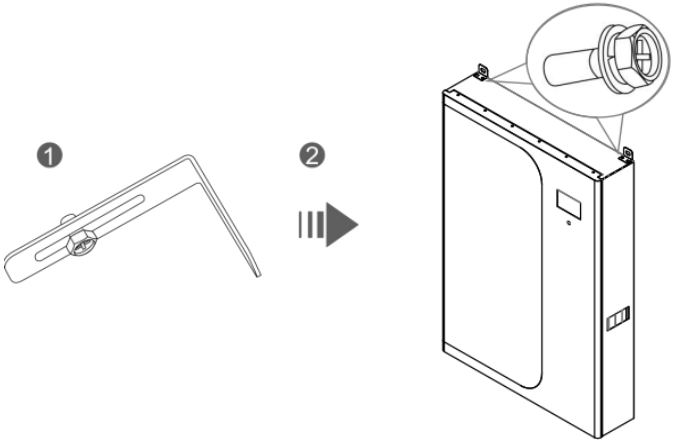


Item	Distance (mm)
A	200
B	100
C	0~25

4.3 Installing the Battery

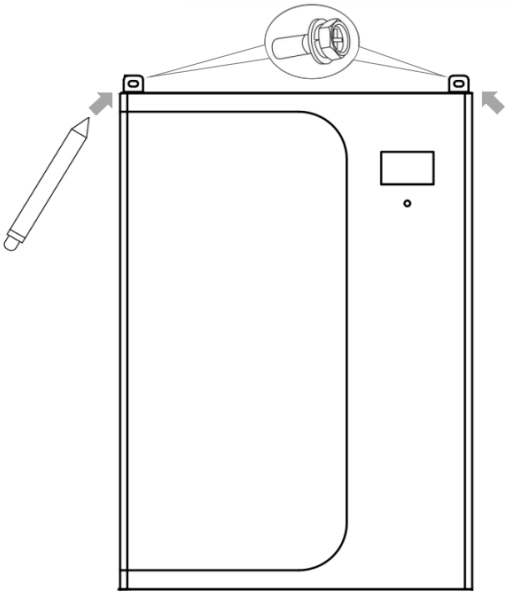
4.3.1 Floor-mounted

1）Use 2 screws of M6 to secure two fixed supports to the left and right side of the battery.



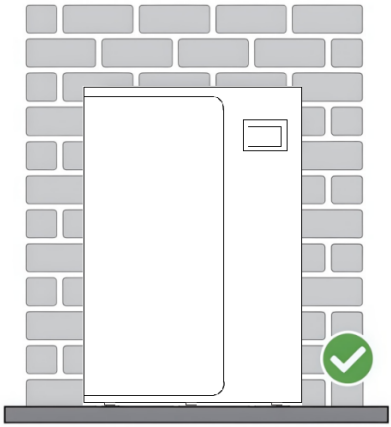
2) Make the back side of the battery close to the wall, and then mark locations of two assembly holes. Drill two holes and secure the battery to the wall in the same way as mentioned above in 4.3 1).

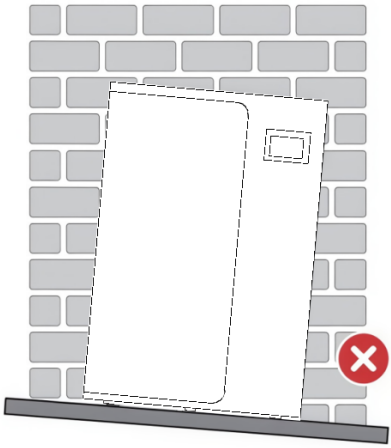
⚠ **Note:** For parallel battery installations, a rear clearance of 30 – 100 mm is required for power cable routing.



3) Please note:

Ensure the battery is installed horizontally, without tilting or inverting it.





5. Electrical Connection

5.1 Wiring

⚠ Note!

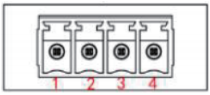
- Before wiring, ensure the battery circuit breaker and the BMS power switch are in the OFF position.
  * Avoid cross-connection of cables.
  * Clearly distinguish between positive (+) and negative (−) terminals.
  * Reversed polarity will cause immediate and permanent damage to the battery.f the positive and negative poles are connected reversely, the battery will be directly damaged.

- When connecting the battery to an inverter or when operating multiple batteries in parallel:
  * Use the specified power cables and communication cables.
  * Power cables are used only for DC power connection.
  * Communication cables are used only for BMS communication.

- For parallel battery systems:
  * Battery-to-battery parallel connection requires optional Quick - Quick power cables.
  * Cable length depends on installation layout.

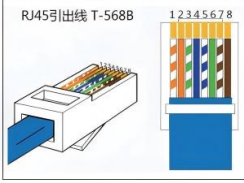
5.2 Communication port description

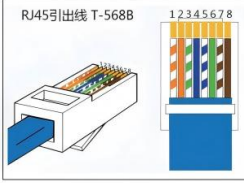
Use only the designated communication ports (CAN, RS485-1, RS485-2) and the specified pin assignments.
Do not connect, modify, or rewire communication cables without authorization,
as this may damage the BMS and cause abnormal battery operation.

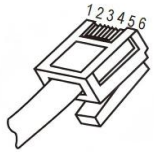
Definition of a dry contact interface	PIN number	PIN Definition	Remark
	1	COM1	
	2	S1	
	3	COM2	
	4	S2	

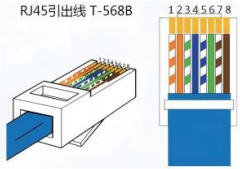
Dry Contact 1-PIN1 to PIN2: NC, closed during fault or protection;
Dry Contact 2-PIN3 to PIN4: NC, closed for low voltage alarm

Dry contact is a potential-free output.
Contact type and rating depend on configuration.
Do not connect external voltage without confirmation.

CAN Interface definition	PIN number	PIN Definition	Remark
	1,2,3,6,8	NC	
	4	CAN_L	
	5	CAN_H	
	7	GND	

RS485-1 Interface definition	PIN number	PIN Definition	Remark
	1,8	RS485_B1	
	2,7	RS485_A1	
	3,6	GND	
	4,5	NC	

RS232 Interface definition	PIN number	PIN Definition	Remark
	1~6	NC	Reserved interface, not in use for the time being.

RS485-2 Interface definition	PIN number	PIN Definition	Remark
	1	RS485_B2	
	2	RS485_A2	
	3	GND	
	4	NC	
	5	NC	
	6	GND	
	7	RS485_A2	
	8	RS485_B2	

Warning:

Power terminals (P+ / P-) must never be used for communication.

Only the designated communication ports (CAN, RS485-1, RS485-2) may be used.

Incorrect wiring may damage the BMS.

CAN port:

CAN port is used for BMS communication with the inverter.

RS485-1 port:

RS485-1 port is used for inverter communication and firmware upgrade.

RS232 port:

RS232 port is reserved and not used in the current product version.

Do not connect any external device.

RS485-2 ports (parallel batteries)

Add note: RS485-2 ports are used for communication between parallel batteries.Use daisy -chain topology only.

5.3 Battery parallel connection

This section describes battery addressing and communication configuration for both single and parallel battery installations.

For single battery installations, no address configuration or battery-to-battery communication is required.

For parallel battery installations, each battery pack must be assigned a unique communication address using the DIP switch on the BMS.

The battery connected to the inverter communication port operates as the primary unit. The remaining batteries operate as secondary units.

Secondary batteries communicate with the primary battery via the RS485-2 battery-to-battery communication interface.
Addresses must be set sequentially according to the physical installation order.
Do not use duplicate addresses in a parallel battery system.

The DIP switch settings for each address are shown in the table below.



Pack Address	Dip switch position			
	1	2	3	4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

Auto-Addressing Option

For certain models equipped with the auto-addressing function, this setting is not required.

Installation – Electrical Connection

Single Battery Installation

1. Communication connection:

Connect the communication cable from the battery to the inverter communication port (CAN or RS485-1, as applicable).

2. Power connection:

Connect the inverter-to-battery power cable positive lead to the P+ terminal.

Connect the inverter-to-battery power cable negative lead to the P− terminal.

Parallel Battery Installation

1. Communication connection:

Connect the inverter communication cable to the primary battery.

Connect secondary batteries to the primary battery using the RS485-2 battery-to-battery communication ports.

2. Power connection:

Connect the inverter-to-battery power cable to the P+ and P− terminals of the primary battery.

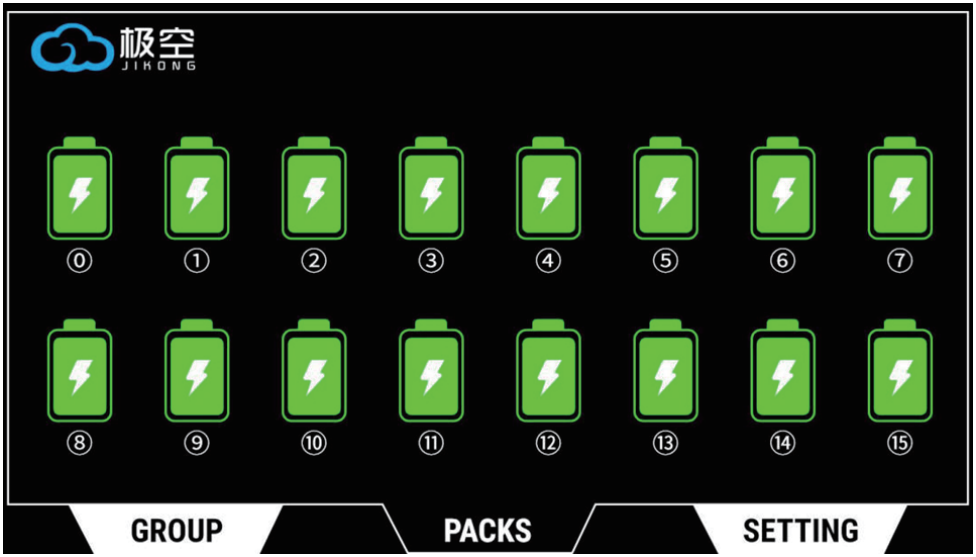
Connect battery-to-battery parallel power cables between batteries using the P+ and P− terminals according to the parallel connection layout.

Use only the specified battery-to-battery parallel power cables.

Display and Monitoring

In parallel mode, voltage and other operating parameters of each battery pack can be viewed on the display using the "PACKS" function.

Up to 16 battery packs are supported.



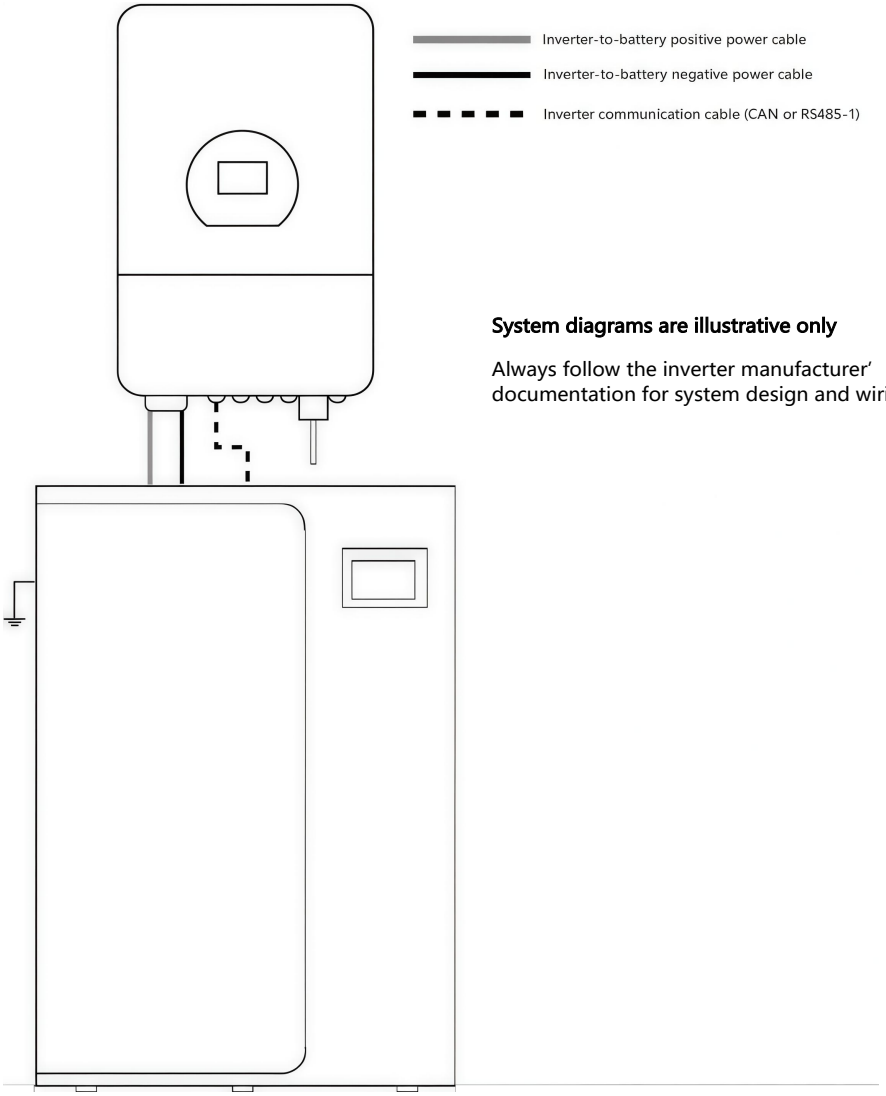
5.4 Single Battery Installation

Caution!

The maximum continuous current of a single battery pack is 200 A. Exceeding this current may cause excessive heating of connectors and power cables and may result in damage or safety hazards.

The inverter-to-battery power cables must be rated for at least 200 A.

A minimum conductor cross-section equivalent to **2 AWG** flexible copper cable is required.



System diagrams are illustrative only

Always follow the inverter manufacturer's documentation for system design and wiring.

5.5 Parallel Battery Installation

Caution!

The maximum number of batteries connected in parallel must not exceed 16.

Each battery pack has a maximum continuous current of 200 A.
In parallel battery systems, the total system current is shared between battery packs.
Ensure that all inverter-to-battery and battery-to-battery power cables are correctly rated for the expected current.

Important:

External DC overcurrent protection is required.
Each inverter must be protected by its own external DC circuit breaker or fuse (MCCB).
A separate external DC protection device shall be installed between each inverter and the battery system.
Battery pack internal circuit breakers do not provide protection for inverter DC cables or for the total inverter DC current.

Parallel Battery Connection Description

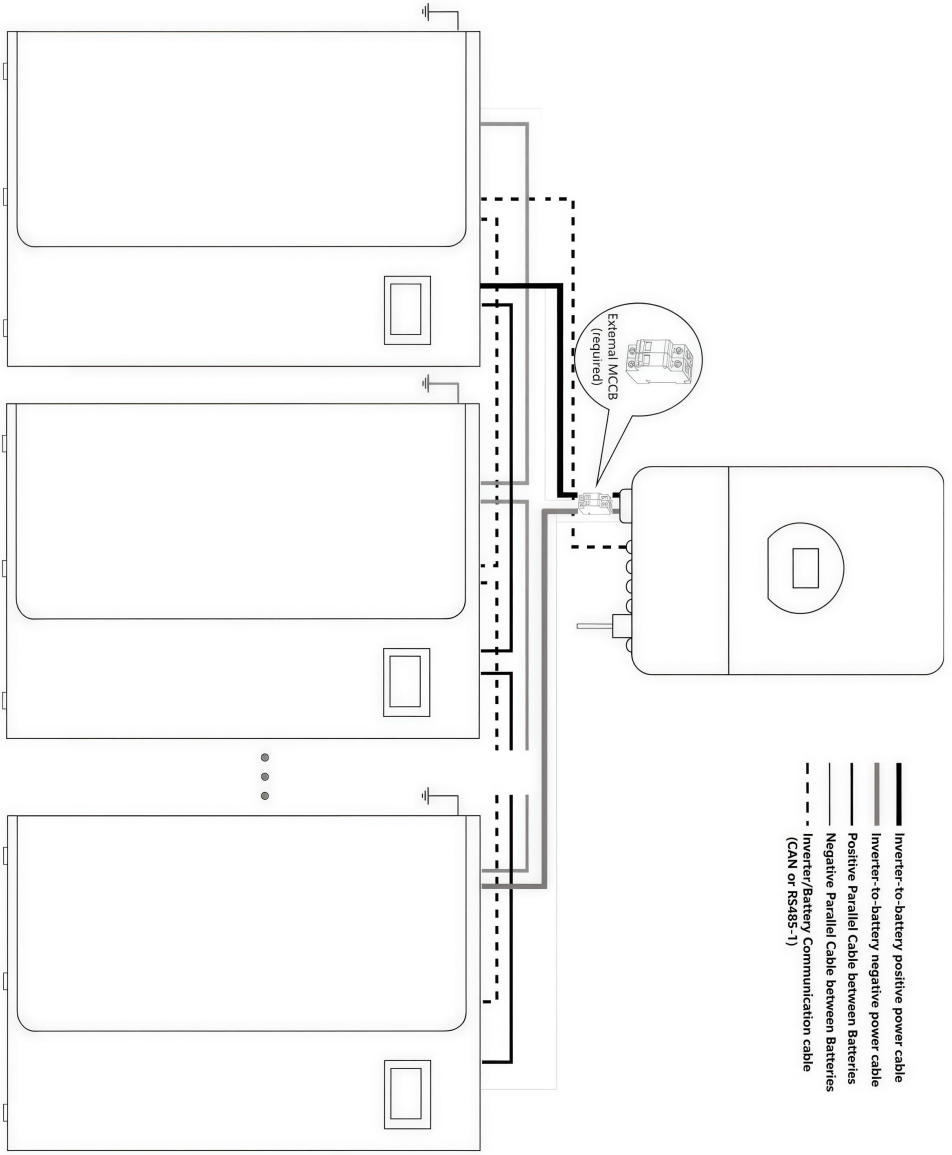
For parallel battery installations, one battery operates as the primary (master) unit.
The battery connected to the inverter communication port operates as the primary battery.

Secondary batteries communicate with the primary battery via the RS485-2 battery-to-battery communication interface.

DC power connections are made in parallel using the P+ and P− terminals.
Battery-to-battery parallel power connections are made using optional quick-to-quick parallel power cables between adjacent batteries.
These cables are used only for battery-to-battery connections.

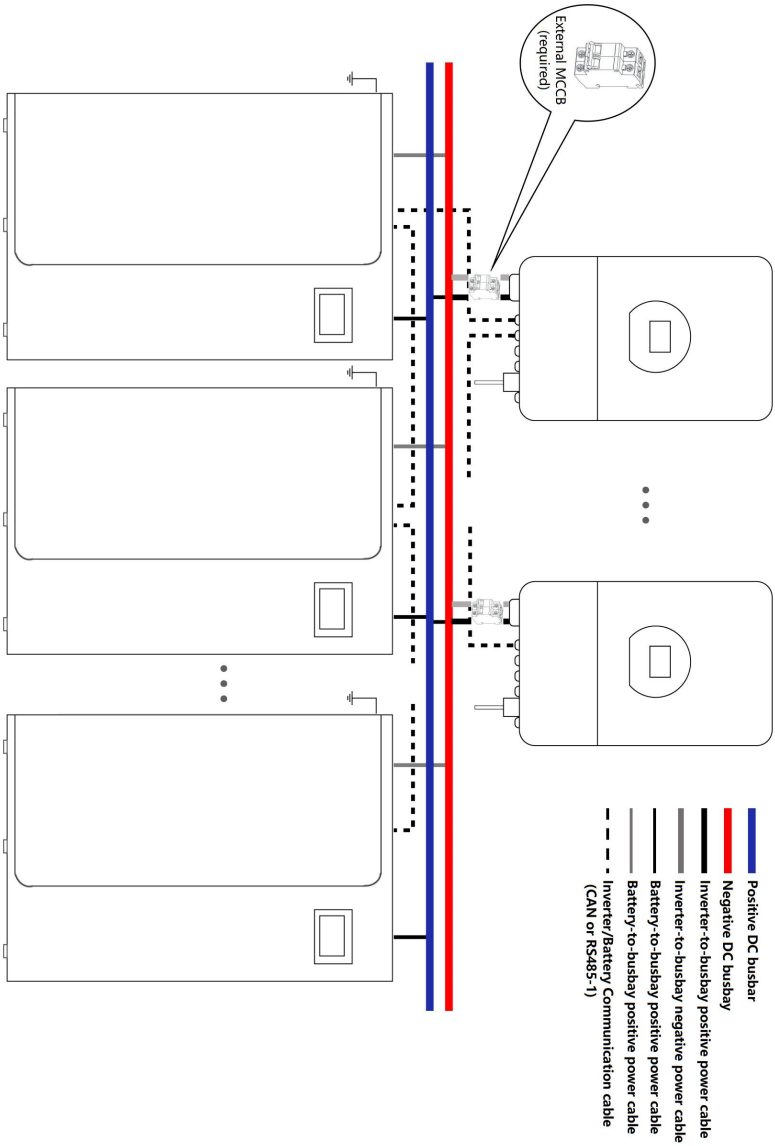
Warning:

- Connect only the positive terminal (P+) of the master battery to the inverter.
- Connect only the negative terminal (P-) of the last battery in the parallel array to the inverter.



System diagrams are illustrative only

Always follow the inverter manufacturer’ s documentation for system design and wiring.

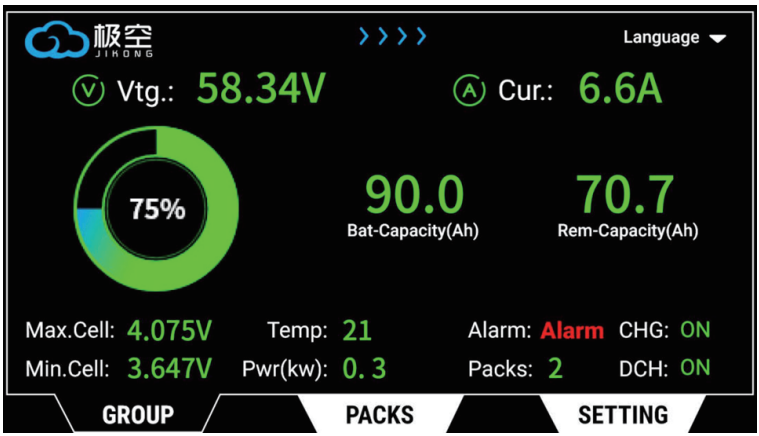


- External DC overcurrent protection (MCCB) must be shown for each inverter connected to the DC busbar.
- Each inverter shall be protected by its own dedicated DC circuit breaker or fuse located between the inverter and the DC busbar.
- Battery internal circuit breakers do not provide protection for inverter DC cables or busbar fault currents.

5.6 APP download

JK-BMS Mobile Application
The QR code provides access to the JK-BMS mobile application.
The app can be used for:
- Battery status monitoring
- Alarm and fault information
- Configuration and service functions (authorized personnel only):

Use of the mobile application is optional unless otherwise specified by the system integrator.



6 Power on/off the Product

Before operating the product, ensure that:
* All cables are wired correctly and firmly.
* All fasteners including bolts and screws are tightened firmly.
* No bystanders or animals enter into the working area.

Keep foreign objects , especially metal, away from the battery .

1. Turn the service switch to the "ON" position.
2. Turn on the BMS switch.Once the LED lights up, you can use the battery system normally.
3. After you finish your work, please switch off the BMS switch ,and then the service switch.

6.1 Power-On Procedure

1. Ensure that the external DC circuit breaker(s) (MCCB) between inverter(s) and the battery system are in the OFF position.
2. Turn the service switch on the battery to the ON position. (This switch connects the battery pack to the internal power circuit.)
3. Turn the BMS switch to the ON position. (This powers the Battery Management System and enables internal protection and control functions.)
4. Verify that the battery status LEDs illuminate normally.
5. Turn ON the external DC circuit breaker(s) (MCCB).
6. Power on the inverter according to the inverter manufacturer’ s instructions.
   The battery system is now ready for normal operation.

6.2 Power-Off Procedure

1. Shut down the inverter according to the inverter manufacturer’ s instructions.
2. Turn OFF the external DC circuit breaker(s) (MCCB).
3. Turn the BMS switch to the OFF position.
4. Turn the service switch to the OFF position.

⚠ Important Safety Notice

The battery system operates at hazardous DC voltage levels.
Only qualified personnel shall perform installation, wiring, commissioning, or maintenance of the battery system.

7 Inspection, Cleaning and Maintenance

7.1 General Information

• The battery is delivered in a partially charged state. It is recommended to complete installation and commissioning within 3 months after delivery.
• The battery system is a sealed, non-user-serviceable product. No internal components are serviceable by the user.
• Never attempt to open, dismantle, or modify the battery pack or any internal battery modules.
• Disconnect the battery system from all inverters and loads before performing any inspection, cleaning, or maintenance activities.
• Ensure that all external DC circuit breakers or fuses (MCCB) are switched OFF before maintenance.
• Place protective caps on all exposed power terminals during maintenance to prevent accidental contact.
• Do not use cleaning solvents, liquids, or abrasive materials on the battery enclosure.
• If any abnormal condition is observed, contact the supplier immediately.

7.2 Inspection

• Perform a visual inspection at regular intervals.
• Check for loose, damaged, or overheated cables and connectors, cracks, deformation, corrosion, leakage, or other mechanical damage to the battery enclosure.
• If any damage or abnormal condition is detected, do not charge or operate the battery, isolate the battery system using the external DC breaker(s), and contact the supplier or qualified service personnel.
• Regularly check the battery state of charge. Lithium Iron Phosphate (LiFePO) batteries may slowly self-discharge during long periods of inactivity.
• Consider battery replacement if the available runtime drops below approximately 70% of the original capacity or if charging time increases significantly under normal operating conditions.

7.3 Cleaning

• If cleaning is required, use a soft, dry cloth only.
• Do not use water, liquids, solvents, or abrasive materials.

7.4 Maintenance

• The LiFePO battery system is maintenance-free under normal operation.
• For long-term storage or extended periods of inactivity, maintain the battery at a state of charge of approximately 50 – 80% and recharge the battery at least once per year.
• All maintenance and service work shall be performed by qualified personnel only.

• For optimal accuracy, it is recommended to perform a full State of Charge (SOC) calibration every 6 months. The procedure is as follows:
1. Fully discharge the battery to 0% in a single, continuous operation.
2. Immediately afterwards, fully charge it to 100% in one uninterrupted cycle.

8 Storage

- The battery system shall be stored in a clean, dry, and well-ventilated indoor environment.

Avoid exposure to moisture, direct sunlight, heat sources, ignition sources, and flammable or explosive environments.

- For short-term storage (up to 6 months):

Store the battery at a state of charge (SOC) of approximately 40 – 60%.
No additional charging is required during this period if the battery remains within the recommended SOC range.

- For long-term storage (more than 6 months):

Store the battery at a state of charge (SOC) of approximately 40 – 60%.
Check the battery voltage and SOC at least once every 6 months.
If the SOC drops below approximately 40%, recharge the battery to 50 – 60% SOC.

- Charging during storage shall be performed using approved charging equipment and normal charging settings.

Do not discharge the battery to cut-off voltage for storage purposes.

- Before returning a stored battery to service:

Inspect the battery for any visible damage.
Ensure that the battery SOC is above 50%.
Reconnect the battery system according to the installation instructions.

- Storage and handling shall be performed by qualified personnel only.

9 Troubleshooting

Please replace Section 9 (Troubleshooting) with the following text:

Section 9 Troubleshooting

To determine the operating status of the battery system, use the battery monitoring interface (display or JK-BMS monitoring software) to identify alarms, warnings, or protection states.

Refer to the status information shown in the monitoring interface and the corresponding table in this section to identify possible causes and corrective actions.

If a protection state is active:
* Stop battery operation and isolate the system using the external DC circuit breaker(s) (MCCB).
* Do not attempt to bypass any protection functions.
* Verify installation conditions, wiring, and operating parameters.

If the fault or protection condition cannot be cleared:
* Do not continue operation.
* Contact the supplier or qualified service personnel for assistance.

All troubleshooting, configuration changes, and service actions shall be performed by qualified personnel only.

Fault: BMS communication fault
Symptom: Battery status not shown on inverter or display.
Possible cause: Communication cable disconnected, incorrect interface selected (CAN / RS485), or inverter settings mismatch.
Action: Isolate the system using the external DC breaker (MCCB). Verify communication cable type and connections. Check inverter communication settings. If the issue persists, contact the supplier.

Fault: Cell voltage imbalance
Symptom: Battery reports cell voltage imbalance or reduced available capacity.
Possible cause: Normal aging, imbalance after long storage, or system recently commissioned.
Action: Allow normal operation to enable balancing. If imbalance persists, contact the supplier. Do not open the battery.

Fault: Over-voltage protection active
Symptom: Battery stops charging, over-voltage alarm shown.
Possible cause: Charging voltage exceeds system limits or incorrect inverter battery parameters.
Action: Stop charging. Verify and correct inverter battery settings. Restart the system. If the condition persists, contact the supplier.

Fault: Under-voltage protection active

Symptom: Battery stops discharging, low voltage alarm shown.

Possible cause: Battery deeply discharged or excessive load demand.

Action: Reduce load and recharge the battery. Verify inverter cut-off settings. If the condition repeats, contact the supplier.

Fault: High temperature protection active

Symptom: Charging or discharging is stopped due to high temperature.

Possible cause: Ambient temperature too high or insufficient ventilation.

Action: Improve ventilation, remove heat sources, and allow the battery to cool. Operation will resume automatically when temperature returns to normal range.

Fault: Low temperature charge protection active

Symptom: Charging is disabled at low temperature.

Possible cause: Ambient temperature below charging threshold.

Action: Allow the battery heating system to operate or increase ambient temperature. Charging will re sume automatically.

Fault: Low temperature discharge protection active

Symptom: Discharging is limited or stopped at low temperature.

Possible cause: Ambient temperature below discharge threshold.

Action: Increase ambient temperature. Discharge operation will resume automatically.

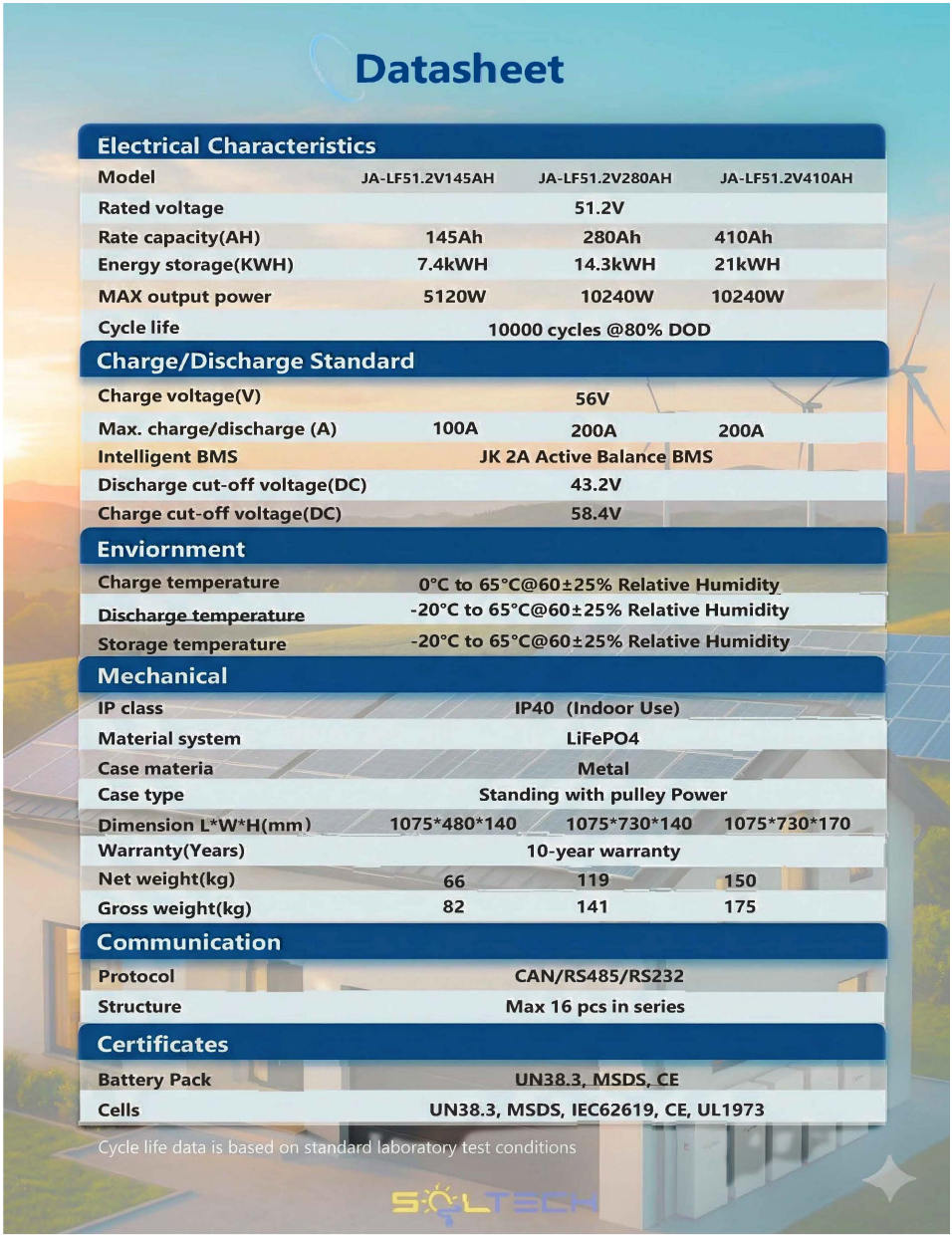
Fault: Internal battery fault

Symptom: Persistent alarm or protection state that cannot be cleared.

Possible cause: Internal battery hardware fault.

Action: Isolate the battery system using the external DC breaker (MCCB). Do not operate the battery. C ontact the supplier or qualified service personnel.

10 Technical Specifications



Datasheet

Electrical Characteristics			
Model	JA-LF51.2V145AH	JA-LF51.2V280AH	JA-LF51.2V410AH
Rated voltage	51.2V		
Rate capacity(AH)	145Ah	280Ah	410Ah
Energy storage(KWH)	7.4kWH	14.3kWH	21kWH
MAX output power	5120W	10240W	10240W
Cycle life	10000 cycles @80% DOD		
Charge/Discharge Standard			
Charge voltage(V)	56V		
Max. charge/discharge (A)	100A	200A	200A
Intelligent BMS	JK 2A Active Balance BMS		
Discharge cut-off voltage(DC)	43.2V		
Charge cut-off voltage(DC)	58.4V		
Enviornment			
Charge temperature	0°C to 65°C@60±25% Relative Humidity		
Discharge temperature	-20°C to 65°C@60±25% Relative Humidity		
Storage temperature	-20°C to 65°C@60±25% Relative Humidity		
Mechanical			
IP class	IP40 (Indoor Use)		
Material system	LiFePO4		
Case materia	Metal		
Case type	Standing with pulley Power		
Dimension L*W*H(mm)	1075*480*140	1075*730*140	1075*730*170
Warranty(Years)	10-year warranty		
Net weight(kg)	66	119	150
Gross weight(kg)	82	141	175
Communication			
Protocol	CAN/RS485/RS232		
Structure	Max 16 pcs in series		
Certificates			
Battery Pack	UN38.3, MSDS, CE		
Cells	UN38.3, MSDS, IEC62619, CE, UL1973		

Cycle life data is based on standard laboratory test conditions

10.1 Optional Configuration: Low-Temperature Charging & Battery Heating

Customer-specific variant

The system activates under low-temperature conditions to ensure charging safety and efficiency.

Users can set the minimum activation temperature (e.g., 0°C) via the dedicated app.

Activation Logic:

Heating initiates when Condition 1 is met concurrently with at least one of Conditions 2, 3, or 4.

Condition 1: The battery cell temperature drops below the user-set threshold (e.g., 0°C).

Condition 2: A charger output voltage is detected that is higher than the battery voltage.

Condition 3: A charging current greater than 0A is detected.

Condition 4: The battery discharge current exceeds the heating current (max. 10A).

10.2 Optional Configuration: External Active Balancing (10 A)

Customer-specific variant

This battery variant includes one additional external active balancing module not present in the standard product version.

The external module provides primary active cell balancing with a maximum balancing current of 10 A, reducing cell voltage deviation and improving cell consistency.

The battery is equipped with a JK 200A BMS, which provides all protection functions and secondary active balancing (2 A).
The external balancer operates automatically and in parallel with the BMS and does not interfere with BMS protection functions.

Balancing may occur during charge, discharge, and idle states.
No user configuration or maintenance is required.

11 Environmental Disposal

Used batteries can not be disposed of as household waste. You are obliged to handle waste batteries, such as removal of privacy on product, and return them to designated or authorized recovery point according to applicable regulations and standards on waste battery disposal.

Attention:

1. Do not dispose of batteries and rechargeable batteries as domestic waste!
You are legally obliged to return used batteries and rechargeable batteries.
2. Waste batteries may contain pollutants that can damage the environment or your health if improperly stored or handled.
3. Batteries also contain iron, lithium and other important raw materials, which can be recycled.







12 Transportation Requirements

1. The battery products should be transported after packaging and during the transportation process. Severe vibration, impact, or extrusion should be prevented to prevent sun and rain. It can be transported using vehicles such as cars, trains, and ships.
2. Always check all applicable local, national, and international regulations before transporting a Lithium Iron Phosphate battery.
3. Transporting an end-of-life, damaged, or recalled battery may, in certain cases, be specially limited or prohibited.
4. The transport of the Li-Ion battery falls under hazard class UN3480, class 9. For transport over water, air and land, the battery falls within packaging group PI965 Section I. Use Class 9 Miscellaneous Dangerous Goods and UN Identification labels for transportation of lithium-ion batteries which are assigned Class 9. Refer to relevant transportation documents.



Class 9 Miscellaneous Dangerous Goods and UN Identification Label