

261 kWh Datasheet

Date: 2025.01

Version No.: V1.0.1 Official

Website: <https://www.rochenergy.cn/>

Table of Contents

1. Overview	1
1.1 Design Principles	1
1.2 Reference Standards	1
2. System Scheme Design	1
2.1 System Composition	1
2.2 System Parameters	2
3. Scheme Design	2
3.1 Scheme Overview	2
3.2 Scheme Design	2
3.3 Battery System Scheme Design	3
3.4 Outdoor Cabinet Design	6
4. System One-Time Diagram	10
5. Configuration List	10
6. Installation Instructions	11
7. Safety Regulations	11
7.1 Operating Environment	12
7.2 Safety Warning Label	12
8. Packaging and Transportation	12
8.1 Storage Requirements	12
8.2 Transportation Requirements	13
8.3 Product Packaging	13
8.4 Transportation Conditions	13
9. Installation	14
9.1 Preparation Before Installation	16
9.2 Unboxing Inspection	18

9.3 Mechanical Installation	18
9.4 Electrical Connections	18
9.5 Post-Installation Inspection	18
10. Safety Precautions	19
11. Other Instructions	20
11.1 Disclaimer	20

1. Overview

1.1 Design Principles

- 1) Adopt mature technologies and established processes;
- 2) The product meets the requirements of relevant national standards and energy storage standards;
- 3) It satisfies the technical performance indicators of the product;
- 4) Implement standardized, modular, and universal design principles to ensure the universality and interchangeability of products.

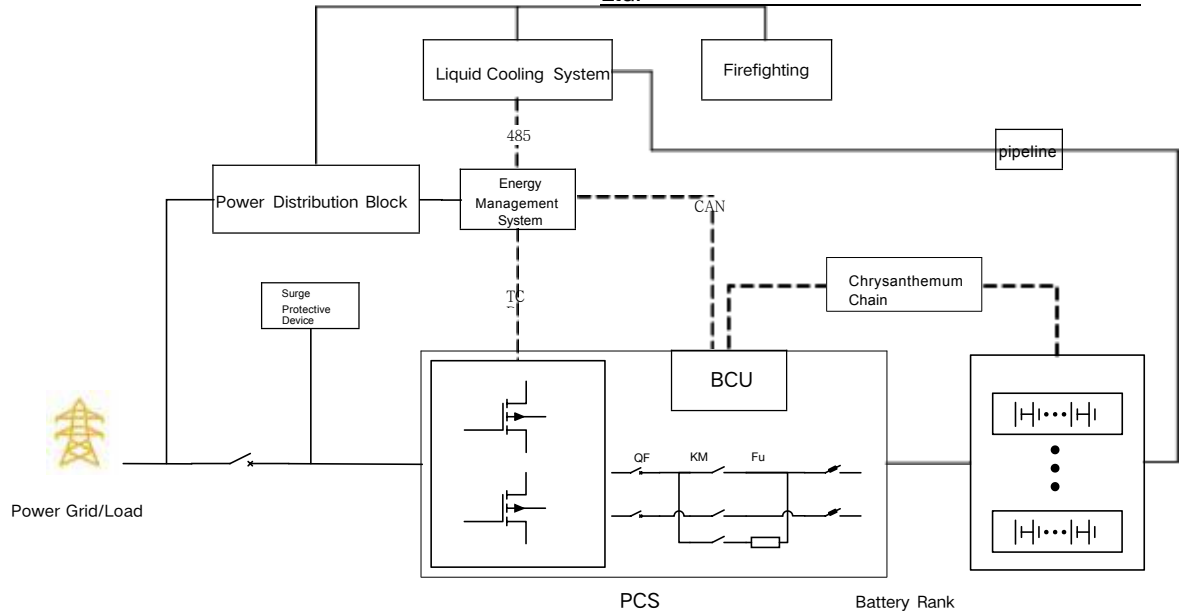
1.2 References

GB/T 36276-2023	Lithium-ion batteries for electric energy storage
GB/T 36558-2018	General technical conditions for electrochemical energy storage systems in power systems
GB/T 34131-2023	Battery management systems for electric energy storage
GB/T 36547-2018	Technical Specifications for Accessing Electrochemical Energy Storage Systems to the Grid

2.system Scheme Design

2.1 System Composition

According to the product design requirements, the system consists of an inverter, battery cluster, liquid cooling unit, and fire protection system, along with protection against lightning and water immersion. It can achieve peak shaving and valley filling, demand control, and anti-back flow functions.



System Parameters:

DC Parameters	Battery Capacity	261kWh
	Cell Capacity	314Ah (LFP)
	Battery Pack Configuration	1P260S
	Rated Voltage	832VDC
	DC Voltage Range	728Vdc ~ 936Vdc
	Charge/Discharge Rate	0.5P
AC parameters	Rated Power	125kW
	Rated Voltage (AC)	380V/400V, -15%~15%
	Connection Method	3P4W+PE
	Rated Frequency	50Hz
	Power Factor	-1 (leading) ~ +1 (lagging)
	Thdi	≤3% (at rated power)
Protection functions	AC Side	Molded Case Circuit Breaker
	DC Side	Isolator Switch + Fuse
	Fire Protection	Perfluorohexanone+Water Fire Suppression
Environmental conditions	Operating Temperature	-30°C ~ 50°C (derating above 45°C)
	Altitude	≤2000m
	Relative Humidity	0~95% (non-condensing)
Physical	Weight	~2.8T

Properties	Dimensions (Width Height Depth)	~990mm*2470mm*1465mm
	Corrosion Protection Level	C4
	Protection Rating	IP54
Others	Cooling Method	Water Cooling
	Communication Interface	CAN/Ethernet/485

3. Design Plan

3.1 Scheme Overview

According to the design requirements, the battery system adopts the design scheme of a liquid-cooled outdoor cabinet with lithium iron phosphate batteries, the battery outdoor cabinet internally configured with batteries, battery management system (BMS), energy management system (EMS), fire protection system, and other auxiliary equipment.

3.2 Scheme Design

1) The energy storage inverter is configured at 125kW, and the battery capacity uses the industry mainstream safe and reliable 314Ah;

2) The system adopts an AC busway method for multiple parallel connections, allowing the owner to perform daily monitoring and control of the system through the cloud functionality matched with the EMS system, to achieve the highest utilization value of the system

3) The outdoor integrated cabinet layout is convenient for installation and transportation.

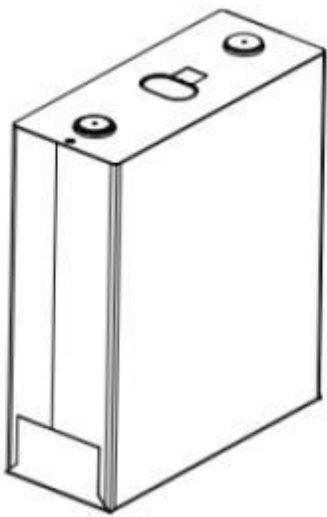
3.3 Battery System Design

The system design this time uses lithium iron phosphate batteries, which mainly consist of the battery positive electrode, battery negative electrode, electrolyte, separator, positive electrode lead, negative electrode lead, central terminal, PTC, battery casing, and other components. Lithium iron phosphate batteries have significant application advantages, being smaller in size compared to similar batteries, having a greater energy density, being environmentally friendly and pollution-free, and exhibiting no memory effect during use.

In lithium iron phosphate batteries, iron and lithium occupy the octahedral center positions of oxygen atoms, forming FeO_6 and LiO_6 respectively. The arrangement of FeO_6 and LiO_6 is interleaved, ultimately forming a layered scaffold structure. The olivine structure of lithium iron phosphate cathode material has stronger stability, higher safety, and good cycling performance, especially at high temperatures. Additionally, the increase in operating temperature can enhance the high-rate discharge performance of the battery pack, while also providing a high stacking density and volumetric energy density.

3.3.1 Cell Design

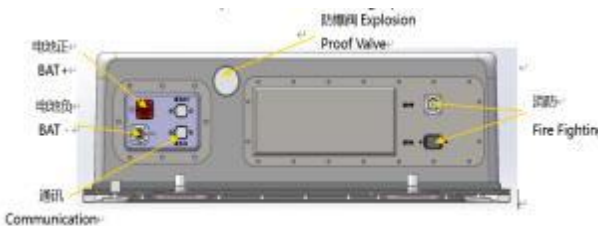
This project uses a 3.2V/314Ah square aluminum shell battery, which has a large capacity, high energy density, and a prismatic structure. Using safe, reliable, and long-lasting lithium iron phosphate materials, the unit specifications are as follows:

Specifications	Parameters	Appearance
Chemical Material	LFP	
Dimensions	~L174*H207*T71.6	
Weight	5.60±0.2Kg	
Capacity	314 Ah	
Nominal Energy	1004.8Wh	
Voltage	3.2V	
Voltage range	2.5-3.65V (T>0C) 2.0-3.65V (T≤0C)	
Temperature range	Charging: 0°C~60°C Discharging: -20°C~60°C	
Storage Temperature	-35°C~60°C	
Storage Humidity	≤ 90%RH	
Internal Resistance	≤ 0.25mΩ	

3.3.2 Battery PACK Design

The 1P52S liquid-cooled battery module box consists of 2 1P26S battery modules, 1 BMU, 1 liquid cooling plate, and several wires. The battery management unit is the smallest modular unit of the battery management system, consisting of a power module, cell acquisition module, temperature sampling module, channel switching module, balancing control module, communication module, CPU, and its peripheral circuits. It measures the voltage of individual batteries, the total voltage of battery strings, the voltage of external power sources, the environmental temperature of the batteries, balancing voltage (over/under voltage protection), and balancing current (charging/ discharging) in real-time. It can actively report real-time monitoring data to the battery cluster management unit via the 485 communication bus and receive control commands from the battery cluster management unit.

The detailed specifications and parameters are as follows:

Specifications	Parameters	Appearance
Grouping Method	1P52S	
Main Components	Cell, BMU, CCS	
Size	~L1140*W790*H245mm	
Weight	~325kg	
Capacity	314Ah	
Energy	52.2496kWh	
Voltage	153.6Vdc	
Voltage range	145.6~187.2V	
Operating Ratio	0.5P	
Storage Temperature	-30~60°C	
Storage Humidity	5%~95% RH	

3.3.3 Battery Cluster

Each battery cluster in this energy storage system consists of 5 battery modules, controlled by 1 BCU. The battery cluster management unit collects information from the battery modules and provides information to the upper-

level EMS. The battery cluster management unit gathers data on battery voltage, current, temperature, etc., to protect and control the battery cluster, ensuring its safe operation.

The detailed specifications are as follows:

Specifications	Parameters
Grouping Method	1P260S
Main Components	PACK, high-pressure box
Size	~L1140*W790*H1300mm
Weight	~2.1T
Capacity	314Ah
Energy	261kWh
Voltage	832Vdc

3.3.4 Battery Management System BMS

The battery management system matches and coordinates according to the grouping method of the energy storage battery system, adopting a hierarchical topological configuration. The aforementioned battery management system, which includes battery modules and a two-tier architecture for battery clusters, optimizes control and comprehensive management of the battery operating status. The specific implementation levels of each function in the battery management system's functional requirements are determined by the topological configuration of the battery management system, implemented hierarchically on-site.

3.3.5 BMS System Description

The energy storage system's battery management system adopts a two-level structure with Battery Management Units (BMU) and Battery Cluster Management Units (BCMU). Management structure; the BMU collects data such as voltage, temperature, individual SOC, SOH, etc. of the battery cells in the battery box through the control module, and transmits it to the high-voltage box BCU main control module via a daisy chain; the BCU module in the PCS mainly uploads slave control data, controls the closing/opening of contactors, detects cluster current, and measures total cluster voltage; the BCU uploads all information within the cluster to the EMS; the BCU is responsible for communication with the PCS, dry contact output, etc.; the BCU is also responsible for communication with the EMS, sending BMS-related information; the BMS can achieve optimized control and comprehensive management of the battery operating status.

The technical parameters of the slave control module are shown in the table below:

Serial number	Parameter name	Unit	Parameter	Remarks
1	Voltage Sampling Quantity	String	52	
2	Number of temperature readings	pieces	28	
3	Single voltage measurement range	V	0~5	
4	Cell voltage detection accuracy	mV	$\leq \pm 3$	
5	Cell voltage sampling period	ms	≤ 100	
6	Cell temperature detection range	$^{\circ}\text{C}$	-40~125	
7	Cell temperature detection accuracy	$^{\circ}\text{C}$	≤ 2	
8	Cell temperature sampling period	ms	≤ 500	
9	Battery balancing method	/	Passive balancing	
10	Battery balancing current	mA	100	
11	Communication method	/	Chrysanthemum chain	

The technical parameters of the main control module are shown in the table below:

No.	Parameter name	Unit	Parameter	Remarks
1	Total voltage	V	50~1500	

	measurement range			
2	Total voltage measurement accuracy	%	$\leq \pm 0.5$	
3	Total voltage measurement period	ms	100ms	
4	Current measurement accuracy	%	0.5	
5	Current measurement cycle	ms	50ms	
6	SOC calculation	%	5	
7	Energy calculation error	%	5	
8	BCMU power supply	VDC	9~36	
9	BCMU Power Consumption	W	2	
10	Operating temperature range	°C	-25~65	
11	Maximum operating humidity	%	95	
12	Insulation status monitoring	/	Yes	
13	Temperature detection range	°C	-40~125	
14	Operating power consumption	W	2	
15	Communication method	/	CAN/Modbus	
16	Communication Interface	/	CAN/485	

3.4 Outdoor Cabinet Design

The product adopts an outdoor cabinet design, which integrates a battery cluster, PCS,BMS,EMS,and a cooling system inside the outdoor

cabinet, as well as a fire protection system. The protection level of the outdoor cabinet is IP54.

3.4.1 Outdoor Cabinet Design

The outdoor cabinet has excellent functions such as corrosion resistance, fire resistance, waterproofing, dust proofing (sand proofing), shock resistance, UV resistance, and anti-theft.

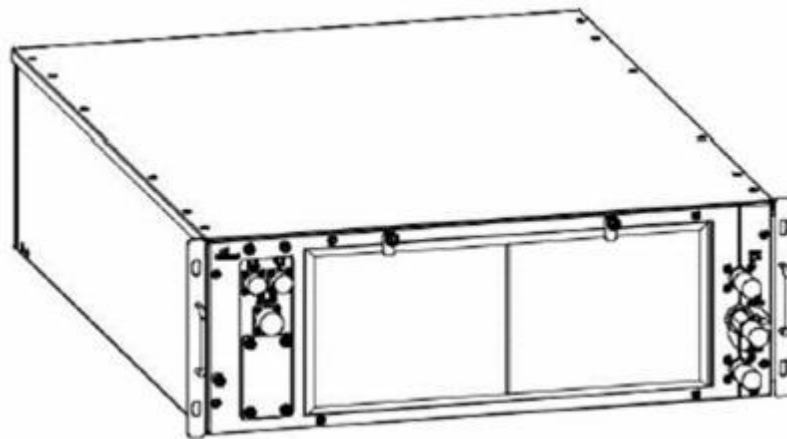
It guarantees that there will be no failures due to corrosion, fire, water, dust, and UV factors within 10 years. Among them, the corrosion resistance function ensures that the appearance, mechanical strength, and corrosion level of the outdoor cabinet meet actual usage requirements within 10 years; the fire resistance function ensures that the shell structure, thermal insulation materials, and internal and external decorative materials of the outdoor cabinet are all made of flame-retardant materials; the waterproof function ensures that there is no water accumulation, seepage, or leakage at the top of the cabinet, no rain entering from the sides, and no seepage from the bottom; the dust proof (sand proof) function ensures that the outdoor cabinet can effectively prevent dust from entering when encountering strong winds and sandstorm; ensure the long-term effectiveness of the outdoor cabinet's dust proof (sand proof) function; the shockproof function ensures that the mechanical strength of the outdoor cabinet and its internal equipment meets the requirements under transportation and seismic conditions, without deformation, functional abnormalities, or failures such as not operating after an earthquake; the ultraviolet-proof function ensures that the properties of the materials inside and outside the outdoor cabinet do not degrade due to ultraviolet exposure and do not absorb ultraviolet heat.



3.4.2 Heat Dissipation System Design

Based on the operating conditions of the entire energy storage system, analyze the cooling and heating requirements of the entire system and conduct a reasonable system layout. The design work of the thermal management system includes the selection of liquid cooling units and pipelines, as well as thermal management control strategies. Through the thermal management system, it ensures that the battery is maintained during charging, discharging, and idle stages. The outdoor cabinet temperature control system consists of one 5kW liquid cooling unit and liquid cooling pipelines, which can achieve temperature control inside the cabinet. The control system automatically regulates the operation of the temperature control system based on indoor and outdoor temperature and humidity, ensuring that the cooling capacity of the chiller unit can maintain the outlet water temperature within the range of $18^{\circ}\text{C} \leq T \leq 20^{\circ}\text{C}$ under extreme temperature conditions of 45°C after the chiller unit is placed in the cabinet.

The liquid cooling unit features self-diagnosis, safety voltage protection, high and low pressure protection for refrigeration, and protection against discharge and suction temperature extremes. It also has liquid level protection and abnormal pressure protection capabilities for the circulation pipeline.



3.4.3 Fire Protection System Design

A total flooding fire extinguishing system using perfluorohexane as the extinguishing agent is adopted. This includes automatic detection of fires within the protected area, alarm systems, and fire-fighting linkage with gas extinguishing devices. The fire alarm controller is hardwired to the main control system of the protected area. The fire protection system equipment mainly includes gas extinguishing devices, smoke fire detectors, heat fire detectors, multi-functional detectors (cabinet level), and fire sound and light alarms, according to different specifications.

The perfluorohexane extinguishing agent primarily extinguishes flames through the mechanism of physical cooling, and it also has the ability to isolate oxygen and chemical.

The role of suppression in fire control. Its extinguishing mechanisms include: (1) cooling and lowering temperature; (2) isolating oxygen; (3) chemical suppression.

3.4.4 Power Distribution System and Grounding Design

The system is equipped with a modular power distribution module, integrating input circuit breakers, energy meters, SPDs, and distribution circuit devices. Users only need to connect the AC power to the input terminal to operate the machine; this makes the entire unit relatively clear and tidy. The outdoor cabinet provides 2 grounding points that meet electrical standards in the form of copper busbars and grounding bolts.

The grounding points provided to the user form a reliable equipotential connection with the non-functional conductive components of the entire outdoor cabinet, and the grounding points should be located inside the outdoor cabinet and at the base position.

3.4.5 Energy Storage Inverter

The PCS module adopts a modular design, featuring constant voltage, constant current, and constant power modes, supporting both off-grid and grid-connected operations. It can intelligently switch between various modes while

also providing reactive power compensation and harmonic compensation functions. It uses advanced control. The algorithm implements multi-machine parallel operation, demonstrating excellent load adaptability and grid adaptability.



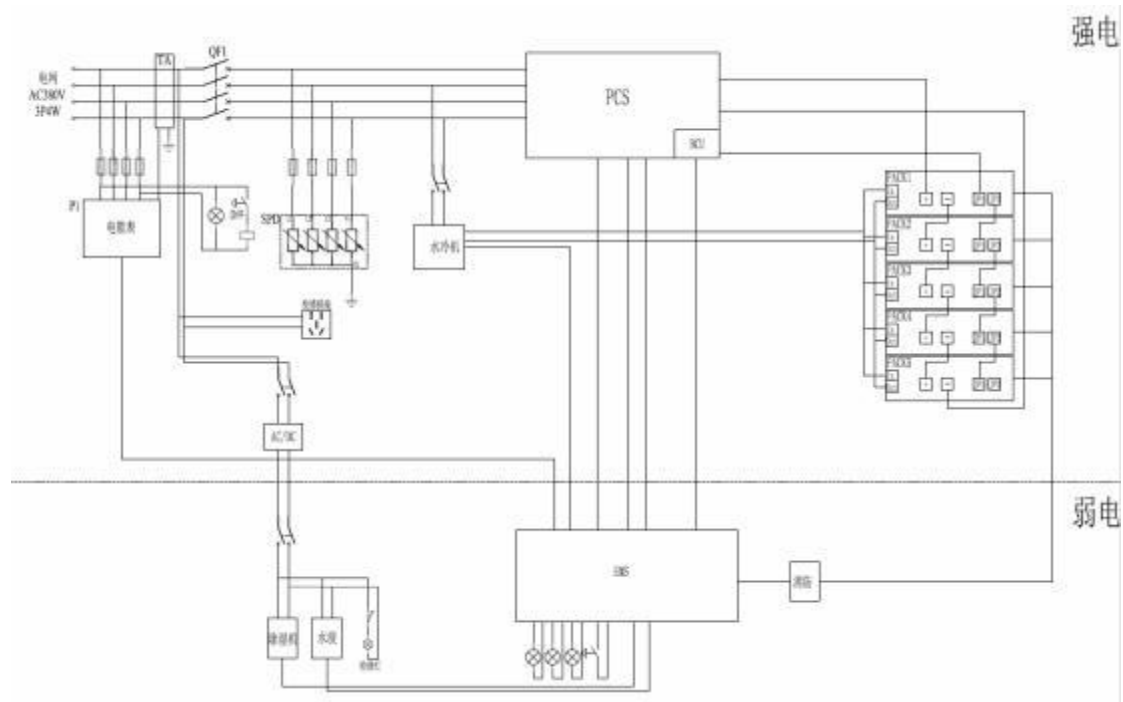
- Bidirectional flow of energy, quick response, charge and discharge conversion time <100ms
- High reliability protection performance, resistant to high and low temperatures, humidity, salt spray, and other harsh environments
- Wide operating temperature range: -25°C to 55°C
- Three-phase 100% unbalanced load, supports connection of single-phase load, flexible load configuration

Energy storage inverter technical parameters

DC side parameters	
Voltage range	650~950 Vdc
Maximum DC current	≥170A
Communication side parameters	
Rated power	125kW
Overload capacity	110%
Rated input voltage	400Vac, 3P+N+PE
Total current harmonic distortion rate	<3% (full load)
Power factor	1cap~1ind
General parameters	
Operating temperature range	-20 ~55°C (derating above 45°C)
Operating altitude	≤2000m

Maximum conversion efficiency	99%
Dimensions (Width*Depth*Height)	700mm*790mm*265mm
Weight	~95kg

4. System Diagram



5. Configuration List

Serial number	Name	Model Specification	Unit	Quantity
1	Energy Storage Inverter	125kW	Platform	1
2	EMS	BAU-B30	Platform	1
3	DC System	3.2V 314Ah 1P52S*5 battery pack	set	1
4	liquid cooling machine	5kW	set	1
5	Firefighting	Perfluorohexane	set	1
6	Molded Case Circuit Breaker	NDM3-315	Platform	1
7	Fuse	FGB-A-3E	Only	8

8	Surge Protector	ZGG40	Only	1
9	Multifunctional Digital Display Meter	ADW300	Only	1
10	Current Transformer	AKH-0.66/30I	Only	3
11	Miniature Circuit Breaker	NDB1	Only	8

6. Installation Instructions

- Before using the product, please read the installation instructions carefully. For more information, please contact our company;
- All operations of the equipment must be carried out by qualified and professional electrical technicians who are familiar with the relevant standards and safety regulations of the project location;
- Before installing the equipment, please check whether the type of delivered items matches the order, whether the quantity is complete, and whether there is any damage to the appearance. If there are any abnormalities, please contact the after-sales service center;
- When performing operations, insulated tools must be used, and personal protective equipment must be worn to ensure personal safety;
- Due to product version upgrades or other reasons, the content of the documentation will be updated periodically. Unless otherwise specified, the content of the documentation cannot replace product labels or other safety precautions;
- All introductions in the document are for installation guidance only.

7. Safety Regulations

- When transporting the product, please pack it with the original packaging materials to prevent and mitigate accidental impacts.

- It is generally recommended to use road transport for vehicles, and the equipment wooden boxes should also be secured to the truck using appropriate methods to prevent tilting and shaking during transportation;
- It is advised to use forklifts or cranes for loading and unloading products, and stacking multiple wooden boxes together for loading and unloading is prohibited to prevent the upper boxes from sliding off and causing damage to the equipment or injury to personnel;
- If the battery is completely discharged, please strictly follow the corresponding model's battery manual for charging;
- Use a multimeter to measure the positive and negative terminals of the DC cable, ensuring that the polarity is correct and that the voltage is within the allowable range; After the product is installed, the labels and warning signs on the casing must be clearly visible; it is prohibited to cover, alter, or damage them.
- Personnel involved in product installation must have the relevant qualifications; the product can only be maintained and repaired by professional maintenance personnel. Unauthorized disassembly or modification may cause damage to the equipment, which is not covered under warranty.
- Damage to the equipment or injury to personnel caused by failure to install, use, or configure the product according to this document or related manuals is not covered within the responsibility of the equipment manufacture

7.1 Operating Environment

The operation of any electronic device in a flammable air environment poses extreme danger; the use and storage of the product must comply with the environmental requirements set forth in the product specification.

Prohibited in the following locations:

- 1) The product may be damaged if the effective input voltage exceeds the limit specified in the technical specifications;
- 2) Locations with high or low temperature and humidity that exceed the limits specified in the technical specifications;
- 3) Environments where temperature and humidity are uncontrolled (such as situations where humidity can occasionally reach 100%);
- 4) A place close to a heat source.

7.2 Safety Warning Sign

When staff are installing, inspecting, or performing other work on the product, measures are taken to prevent unrelated personnel from approaching and making erroneous operations or causing disturbances. In case of an emergency, please adhere to the following requirements:

Establish clear warning signs in potentially charged areas to prevent dangerous accidents caused by improper operations. Set up warning signs or safety warning tape near the operating area.

标识	标识释义
	此标识表示高压危险，触摸可能导致电击危险
	此标识表示此处为保护接地（PE）端，需要牢固接地以保证工作人员安全

Figure 7-1 Safety Warning Sign

8. Packaging and Transportation

The energy storage integration system has undergone rigorous testing and inspection, but it may still be damaged during transportation.

Please check carefully before installation, and if any transportation damage or missing items are found, report it immediately to the carrier and our company.

8.1 Storage Requirements

■ If the device is not installed and used immediately, please ensure that the storage environment meets the following conditions:

■ The initial energy state should be between 30% and 50%. It must be charged to this range every 6 months to prevent irreversible damage caused by over-discharge;

■ The storage environment temperature range should be -30°C to 50°C , preferably not exceeding 35°C ;

■ The storage environment should be protected from rain, sunlight, kept clean, dry, well-ventilated, and secure, away from fire sources, heat sources, corrosive media, and heavy object hazards;

■ Place according to the requirements of the product manual.

8.2 Transportation Requirements

- The product should be packaged in boxes before transportation, and the battery's charge state during transportation should be between 30% and 50% or meet specified requirements;
- During transportation, prevent severe vibrations, impacts, and compression, protect from sunlight and rain, and do not tilt or invert; During loading and unloading, handle with care to prevent throwing, rolling, or heavy pressure;
- All circuit breakers should be disconnected during transportation.

8.3 Product Packaging

- The product needs to be packaged as a whole to ensure it is protected from any harmful gases and chemicals during handling, transportation, and storage. Learn about pollution,
 - static electricity, humidity, and mechanical damage.
- Place the product in the base support limit block, ensuring that the product's bottom foot holes align with the reserved holes in the base, and secure the product to the base with bolts, nuts, and washers;
- Place a packet of desiccant with each product, then cover it with a PE bag from top to bottom, and use EPE sleeves to separate and secure the product around its perimeter;
- Wrap the EPE padding around the product with a cardboard box to prevent it from falling, seal the box, and place fixed sleeves around it;
- Cover the lid properly, affix the shipping label, and then use packing straps in a "井" shape to tightly secure the box.

8.4 Transportation Conditions

During the entire process of loading, unloading, and transportation, the outdoor work safety regulations of the: country or region where the project is located must be followed!

■ All components of the product have been installed and secured within the product cabinet before leaving the factory; during transportation, the energy storage product can be transported as a whole by lifting it.

■ Any tools used during the lifting process of the product should be maintained.

■ All personnel involved in loading, unloading, and securing should receive appropriate training, especially in safety aspects.

1) Forklift Transportation

The installation site is level, and products can be moved using a forklift, with the bottom of the product equipped with slots specifically designed for forklift transportation.

- The forklift should have sufficient load capacity ($t \geq 3t$);
- During the transportation, movement, and placement of the product, it should be kept slow and steady;
- The product can only be placed in a flat area with sufficient support, which should be well-drained and not in an area prone to flooding.



Figure 8-1

2) Lifting

During the lifting process of the product, each operational step should be carried out according to the following requirements:

- The product should be lifted vertically, and there should be no dragging on the ground or overhead during the lifting process; the product should not be pushed or dragged on any surface.
- After the product is lifted 300mm off the supporting surface, it should be paused to check the connection between the lifting device and the energy storage integrated system.
- Lifting can only proceed after confirming that the connection is secure.
- The product should be placed gently and land steadily after arrival, and it is strictly prohibited to place the product outside the vertical drop area by swinging the lifting device;
- The area where the product is placed should be solid and flat, well-drained, and free of obstacles or protrusions;
- On the site, the product should be secured by four corner pieces;
- Due to site conditions, please use non-vertical forces to lift from the four lifting rings of the energy storage integrated system.

9. Install

Mainly introduces the installation of the product, including unboxing inspection, installation process, installation preparation, mechanical installation, and electrical wiring.

Information on products such as cable connections. Installation precautions:

- The product must be installed on a surface with sufficient load-bearing capacity and flatness; if the surface does not have adequate support and flatness, other means must be employed to ensure this (such as laying a foundation).

- Sufficient door opening space must be reserved for product installation; Do not place any items above the energy storage integrated system;
- Do not place it in areas containing corrosive gases or liquids;
- Do not install in areas accessible to children;
- Do not place flammable, explosive, or corrosive materials around the device;
- Installation, maintenance, and misuse of the product beyond its intended scope by unqualified personnel is strictly prohibited;
- Avoid installation in high-temperature and high-salt mist areas, as this may shorten the service life or cause internal short circuits; Avoid installation near high-temperature heat sources or low-temperature cold sources;
- Avoid installation in strong interference environments;
- Avoid installation in areas prone to water accumulation;
- A certain amount of maintenance and heat dissipation space must be reserved for the product.

Note: Only personnel who have undergone professional training and obtained the relevant qualifications can perform product installation.

The product installation process is shown in the flowchart in Figure 9-1:

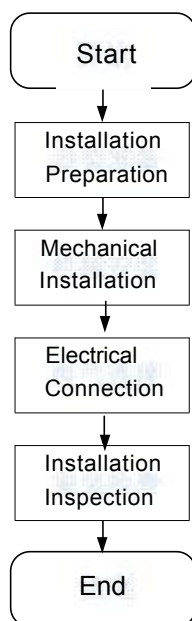


Figure 9-1 Installation Flowchart

9.1 Pre-installation Preparation

1) Installation Environment

Do not install the product in locations that exceed the specified high or low temperature and humidity technical specifications;

The product should be kept away from water sources, heat sources, and flammable or explosive materials. Avoid installing the product in environments with dust, volatile gases, corrosive substances, and high salt content;

It is strictly prohibited to install the product in a working environment with metallic conductive dust;

The optimal operating temperature for the battery is 20°C to 30°C; prolonged exposure to high or low temperatures will reduce the battery's lifespan.

2) Cable selection

The cables to be connected include power cables and signal cables. When designing the cables, actual wiring regulations should be followed, and environmental conditions should be considered; if necessary, relevant wire harnesses can be purchased from the equipment manufacturer.

3) Installation Tools

The tools that may be used during the installation process are shown in Figure 9-2.

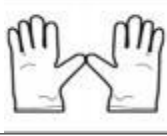
Note: Installation tools must be insulated to prevent electric shock.

Chart 9-2 Installation Tools Table

Tool name	Image	Main function
Clamp Meter		Detecting Current

Multimeter		Check electrical connections and electrical parameters
Label paper		Make labels
Cross screwdriver		Connecting cables, removing cover plates, tightening screws, etc.
Flathead screwdriver		Connecting cables, removing cover plates, tightening screws, etc.

Socket wrench		Connecting cables, tightening bolts
Adjustable Wrench		Connecting cables, tightening bolts
Torque Wrench		Connecting cables, tightening bolts
Crimping Pliers		Crimped Cold-pressed Terminals
Diagonal Cutting Pliers		Cutting Cables
Wire Strippers		Stripping Wire
Claw hammer		For striking, installing, and removing components
Impact drill, drill bit		Drilling
Insulation tape		Electrical insulation
Cotton cloth		For cleaning panels and housings

Brush		For cleaning panels and housings
Heat shrink tubing		Electrical insulation
Heat gun		Blow heat shrink tubing
Electrician's knife sheath		Stripping Wire
Labor protection gloves		Protect the worker's hands
Anti-static gloves		Anti-static
Insulated gloves		Insulation
Hydraulic pliers		Crimped Cold-pressed Terminals
Cable tie		Tie

9.2 Unboxing Inspection

After the equipment arrives, open the packaging and check the following items: Visually inspect the product's appearance and check for any transportation damage. If there is any damage, please notify the carrier immediately; Cross-reference the shipping attachment list to ensure that the attachment models are complete and correct. If any attachments are missing or the models do not match, please make a timely on-site record and contact our company's marketing department immediately.

During the handling of the equipment, it is prohibited to tilt or lay it down, as this may cause significant stress on the internal components, potentially resulting in damage to the components and affecting performance.

9.3 Mechanical Installation

After confirming that the foundation construction meets the requirements and is sufficiently dry, solid, and level, lift the product onto the foundation. Use fastening bolts to secure the product to the foundation.

Note: Please ensure that the forklift used complies with regulations, and place the product according to its center of gravity to avoid tipping, which could cause unnecessary loss.

9.4 Electrical connections

First lay out the communication cables in order, then lay out the power cable assemblies; Connect the power cables according to the labels, and do not connect them incorrectly;

The cables should be properly secured as necessary.

Note: When connecting, be sure to ensure a firm contact between the plug and the socket; do not allow poor contact or reverse connection.

9.5 Post-installation Inspection

The inspection items after installation are shown in Table 9-3:

Chart 9-3 Check Items After Installation Completion

No.	Inspection Item	Acceptance Criteria
-----	-----------------	---------------------

1	Product Appearance	Check for deformation or damage on the product
2	Operating Environment	Clean conductive dust and other debris inside and outside the cabinet; The temperature, humidity, and ventilation conditions of the environment meet the requirements; There are no flammable, explosive, or other hazardous materials near the installation location;
3	Electrical Safety	The product is properly and securely grounded; the insulation protection is complete and reliable, and the danger warning labels are clear and firmly attached.
4	Cable Layout	Cables should be arranged reasonably and comply with construction requirements.
5	Cable Connection	All cable connections must be secure, correctly connected, and free from damage.
6	Cable Labeling	Both ends of the cables must be labeled, and the labels should be clear and easy to understand.
7	Others	Prominent warning signs should be installed near the installation location.

10. Safety precautions

- 1) Batteries should be placed in a cool, dry environment to avoid prolonged exposure to high temperatures (>45°C) or humid conditions (humidity greater than 95%);
- 2) Do not use or store batteries near heat sources (such as fire, heaters, etc.);
Do not throw batteries into fire or heaters;
- 3) The product should not be subjected to severe mechanical shocks, explosions, or rain;
- 4) Do not immerse batteries in water; Do not remove the battery at will;
- 5) Do not directly connect the positive and negative terminals of the battery;
Do not pierce the battery with nails or other sharp tools;
- 6) Do not hit, throw, or step on the battery;
- 7) Do not mix batteries from different manufacturers or of different types;
Prohibit any reverse charging, violent disassembly, informal testing, etc.;
- 8) If the battery emits odor, heats up, changes color, deforms, or exhibits any abnormal usage, storage, or charging, if it occurs, please remove the battery from the room and discontinue use immediately.

11. Other instructions

11.1 Disclaimer

This specification is for reference only. For any matters not mentioned in this specification, please consult our company. When this specification is updated, our company will not provide separate notice.

The specific parameters of the battery at the time of delivery shall be subject to the signed technical agreement and must strictly comply with the relevant requirements of this product specification to avoid improper charging and discharging methods, storage, and maintenance that may affect the battery's lifespan and personal safety. The company is not responsible for accidents caused by misuse of the battery or battery box.