



SY New Energy(Shangrao)Co.,Ltd

50KW/110KWh Integrated cabinet air-cooled energy storage system Technology Solution

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	Date: date:
	Company Name: (Company Stamp) Company name (seal):

1. Scope of application

This specification is suitable for the 50KW/110KWh industrial and commercial energy storage system developed by SY describing its overall dimensions, performance indicators, battery management system parameter settings, battery pack appearance identification, usage environment, storage and transportation requirements, and usage precautions.

2. Battery system design reference technical documents

GB/T 191-2008 Packaging, storage and transportation pictorial markings

GB/T 2423.1-2008 Environmental testing of electrical and electronic products Part 2:

Test method test A: Low temperature

GB/T 2423.2-2008 Environmental testing of electrical and electronic products Part 2:

Test method test B: High temperature

GB/T 2423.3-2006 Environmental testing of electrical and electronic products Part 2:

Test method test Cab: Constant humidity and heat test

GB/T 2423.2008 Environmental testing of electrical and electronic products Part 2: Test

method test Db: Alternating damp heat (12h+12h cycle)

GB/T 2900.33-2004 Electrical Terminology Power Electronics Technology

GB 3859.1-1993 Basic requirements for semiconductor converters

GB 3859.2-1993 Application Guidelines for Semiconductor Converters

GB 3859.3-1993 Semiconductor converters, transformers and reactors

GB4208-2008 Shell protection level (IP code)

GB 5226.1-2008 Mechanical and electrical safety Mechanical and electrical equipment
Part 1: General technical conditions

GB 7947-2006 Basic and safety rules for human-machine interface marking Color or number
identification of conductors

GB/T 12325-2008 Power quality supply voltage deviation

GB/T 12326-2008 Power quality voltage fluctuation and flicker

GB/T 13382008 General technical conditions for mechanical and electrical product
packaging

GB/T 13422-2013 Electrical test methods for semiconductor power converters

GB 14048.1-2006 Low-voltage switchgear and control equipment Part 1: General provisions

GB/T 14549-1993 Power Quality Public Grid Harmonics

GB/T 15543-2008 Power quality three-phase voltage allowable unbalance

GB/T 14598.27-2008 Measuring relays and protective devices Part 27: Product safety
requirements

GB/T 15543-2008 Power quality three-phase voltage imbalance

GB/T 15945-2008 Power quality power system frequency tolerance

GB/T 17626-2006 Electromagnetic compatibility testing and measurement technology

GB 17799.2012 General standard for electromagnetic compatibility Emission standards in
industrial environments

GB/T 50062014 Design specifications for overvoltage protection and insulation
coordination of AC electrical installations

GB/T 50065-2011 Grounding design specifications for AC electrical installations

GB 51048-2014 Design specifications for electrochemical energy storage power stations

GB/T-36549-2018 Operation indicators and evaluation of electrochemical energy storage
power stations

GB/T-36558-2018 General technical conditions for electrochemical energy storage systems
in power systems

GB/T 36547-2018 Technical regulations for connecting electrochemical energy storage systems to the power grid

GB/T 34133-2017 Technical specifications for energy storage converter testing

GB/T 34120-2017 Technical specifications for energy storage converters for electrochemical energy storage systems

GB/T-36545-2018 Technical requirements for mobile electrochemical energy storage systems

GB/T-36548-2018 Test specifications for electrochemical energy storage systems connected to the power grid

NB/T-1815-2018 Electrochemical energy storage power station equipment reliability evaluation procedures

三、Supply list

sequence	name	unit	quantity	Remark
1	50KW/110KWhEnergy storage system	set	1	
2	ProductSpecification	share	1	
3	Certificate	share	1	

4. Product performance technical indicators

This energy storage product has three unique advantages: safety, reliability, intelligence, efficiency, simplicity and flexibility. In terms of safety, the system has a six-layer safety design of body safety, design safety, structural safety, system safety, management safety, and fire safety, with no omissions in safety precautions. It can accurately locate every abnormal battery, accurately detect faults, and provide efficient fire protection operation and maintenance; it adopts the design idea of

explosion-proof + fire protection to comprehensively protect the safety of the power station system from multiple dimensions of cell level, pack level, and cabinet system level; it realizes triple insulation monitoring and Guarantee, that is, DC insulation within the battery system and DC AC insulation between the battery and PCS.

This energy storage system adopts air-cooled thermal management scheme, energy storage system nominal capacity110KWh, output power50KW; set by1451.2V150Ah/1 set of

19. 2V150Ah Lithium iron phosphate battery pack, using certified lithium iron phosphate battery cells, and 1 set of BMS battery management system, 1 set of EMS energy management system, 1 set of management system, 1 set of fire protection The system and a set of 50KW integrated optical and storage PCS are collected in a set of customized cabinets.

4.1 Product configuration list

Table 5-1 System configuration list

50KW/110KWh configuration list

serial number	Device name	Specifications	quantity	unit	brand	Remark
1	energy storage system	50KW/110KWh	1	set		Please see 1.1~1.9 for details of single set items.
1.1	battery module	150-1P16S7.68kWh	14	Group		
		150-1P6S2.88kWh	1	Group		
1.2	High pressure box	736V high voltage box	1	set		
1.3	Single cell	3.2V150A battery cell	230	piece		
1.4	thermal management system	2KW industrial air conditioner	1	set		
1.5	Fire Fighting System	Hot gas solution fire extinguishing device	1	set		
1.6	BMS	1 master, 15 slaves	1	set		
1.7	EMS	energy management system	1	set		
1.8	PCS	50KW Optical storage integrated machine	1	pcs		
1.9	Cabinet	Non-standard customization	1	set		

4.2 Function introduction

(1) Reliable charging and discharging. Efficient charging and discharging through lithium iron phosphate batteries, long service life and high reliability.

(2) Automatic protection function. Quick response, high-precision data sampling, and complete and reliable protection functions:

◇ Overvoltage and undervoltage protection for the entire battery pack and overvoltage and undervoltage protection for individual cells;

◇ Charge and discharge overcurrent protection;

◇ Charge and discharge temperature over-temperature protection;

◇ Short circuit protection;

◇ Adopt new customized hot aerosol fire extinguishing device;

(3) Protection removal method. When the battery pack or cell is under overcharge protection, the voltage returns to the overcharge reset voltage value and the alarm is automatically released.

(4) Battery balancing function. Balance control is performed based on the voltage of each cell, energy transfer type balancing method (reserved).

(5) Same port for charging and discharging, supports charging and discharging 75A, with 485/CAN communication function.

4.3 Technical specifications

sequen	project	index		Remark
Battery cell parameters				
1	Battery Type	Lithium iron phosphate power		LiFeP04150A
2	Rated	3.2V/150Ah		
3	Single cell voltage	2.50V-3.65V		
4	Single battery weight	2.816±0.05kg		
5	size	width	174±0.3mm	
		thickness	54.2±0.7mm	
		Height	147.6±0.5mm	
		height (body)	145.43±0.5mm	
		pole center	123±0.3mm	

6	Operating temperature	Charging temperature	0℃~60℃	
		Discharge temperature	-20℃~60℃	
7	charge retention	97% (25℃, 30days)		
8	Cycles	Greater than 3000 times (0.5C cycle, normal temperature,		
Battery pack parameters				
1	Rated voltage	51.2V		16 skewers
2	Battery pack voltage range	40~58.4V		According to single cell 2.8V-3.6V
3	Rated Capacity	150Ah		
4	total energy	7.68KWh		
5	Series and parallel connection	16 serial 1 parallel		
6	SOC scope	20%-100%		
7	Charge and discharge capacity efficiency	≥95%		
8	Maximum continuous charging current (A)	150		
9	Overcurrent protection(A)	200		
10	Maximum continuous discharge current (A)	150		
11	gross weight	59KG (valuation)		
12	ambient relative humidity	10%-90%		
13	Water and dust protection standards	IP55		
14	Battery system charging and discharging ambient	Charge and discharge -20℃-60℃		
15	Battery box size	486*510*177mm		
Energy storage system parameters				
1	Rated voltage	736V		230string
2	Battery pack voltage range	644~828V		According to single cell 2.8V-
3	Rated Capacity	150Ah		
4	total energy	110.4KWh		
5	Series and parallel connection	230S1P		

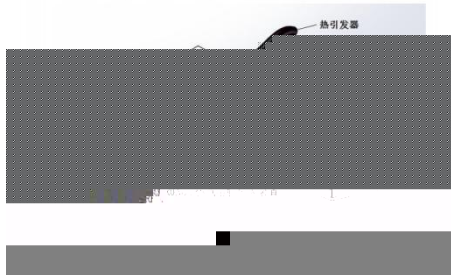
6	Number of battery	15
7	Inverter	50KW
8	cycle life	Greater than 7000 times (0.2C cycle, normal temperature, charger)
9	Operating temperature	operati 0°C ~ 60°C Dischar ger -20°C ~ 60°C
10	Maximum charging	50KW
11	Maximum discharge	55KW
12	Rated frequency	50/60Hz
13	Maximum output power	55KW
14	The amount of	30%-50% battery will be
15	communication method	CAN0/RS485
16	Cabinet Dimensions	1480*1000*2000mm
17	Battery box	

4.5 Security features

proj	Specification	Remark
Insulate elect	$\geq 10M\Omega$	Use an insulation resistance tester with a DC test voltage of 500V to test the positive and negative interfaces (terminals) of the battery pack on the
Strong insul	No breakdown or arcing phenomenon	The positive and negative terminals of the battery respectively ensure that the metal shell of the battery pack can withstand an AC voltage of 50Hz and
Anti-immersion	Does not leak, smoke, catch fire or explode	Immerse the fully charged battery pack into the 3.5% NaCl solution. The water depth should completely submerge the battery pack. Keep it for 2 hours. After taking it out, place it at an ambient temperature of
Resistant to drops	There is no obvious damage, leakage, shell rupture, fire or explosion, etc.	When the battery pack is fully charged, randomly select 6 angles and freely fall to the concrete floor once from the set highest point height (0.8 meters to 1.8 meters).
constant humidity	There is no obvious deformation, corrosion, smoke or explosion, and its	After the battery pack is fully charged, put it into 60°C with BMS After leaving it for 12 hours in a constant temperature and humidity chamber with a relative humidity of $\pm 2^\circ C$ and a relative humidity of 90% to
Vibration test	No explosion, no fire, no deformation, no parts falling off,	After the battery pack is fully charged, it is fixed on the vibration table in a large plane direction. The amplitude of the vibration is 5mm, the maximum stroke is 10mm, and the vibration frequency is 10Hz ~ 55Hz. The vibration test is in the x, y, and z directions of

4.6 Thermal aerosol fire extinguishing device

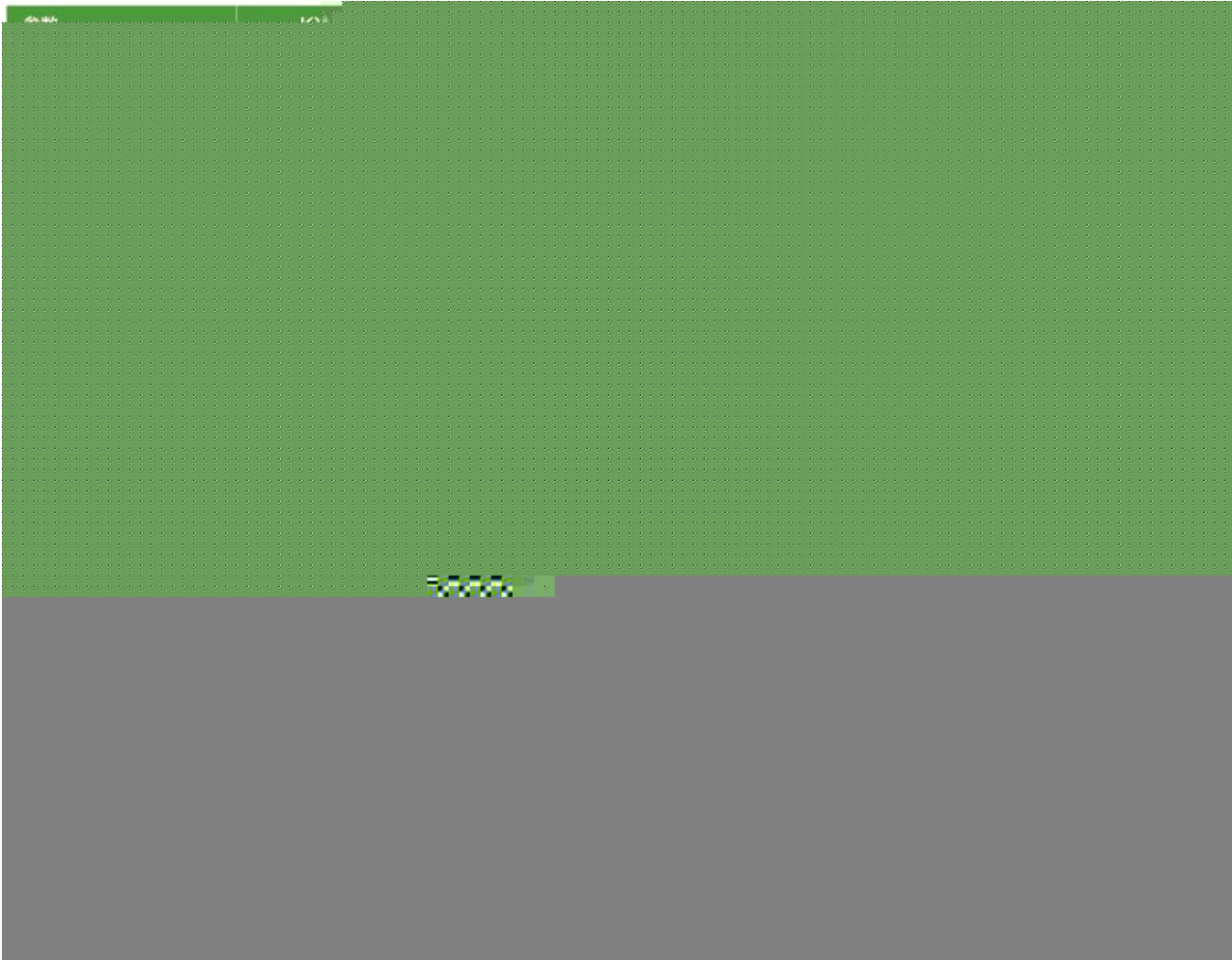
- The hot aerosol automatic fire extinguishing device consists of a shell, starter (electric initiator or thermal initiator), insulation system, aerosol generating agent, cooling system, mounting screws, mounting bracket, GX12-4 four-core aviation plug-in, etc.



- The controller adopts a rocker switch controller with audible and visual alarm and manual start functions. When the temperature detected by the detector exceeds 80° C and the CO concentration exceeds 190PPM, the detector is triggered to realize an audible and visual alarm through the controller. When a fire is confirmed, you can manually activate the emergency button on the controller to start the fire extinguishing device, thereby releasing the aerosol fire extinguishing gas to extinguish the fire. Controller working voltage: DC12V/24V.

4.7 50KW PCS

4.7.2 PCS technical parameters and appearance drawing





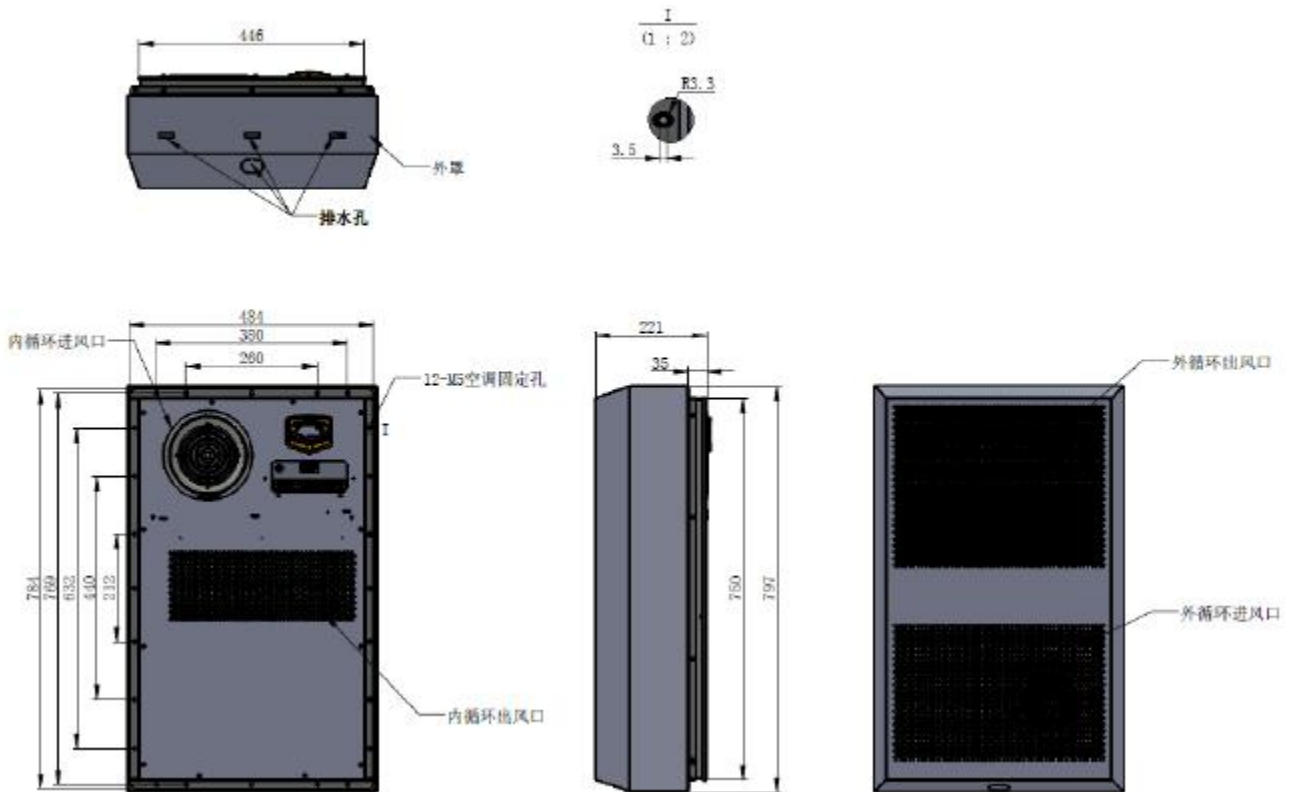
- ◆ KY-EST30KH ◆ KY-EST50KH
 - ◆ KY-EST40KH ◆ KY-EST60KH
- **光储一体**
集PV及储能于一体，支持多种电池，集成EMS智慧能源管理系统；
 - **安全可靠**
IP54防护等级，全铝机身，内置防雷高精度漏电保护；
 - **多机并联、智能切换**
模块化设计、支持多机并联，功率、容量可扩展；
 - **智慧友好**
超静音设计，通讯方式灵活，支持远程升级/本地USB升级；
 - **宽压范围**
超宽PV电压范围180V-900V，电池超宽电压范围220V-800V；
 - **高效发电**
大电流瞬间充放切换，提高发电效率。

4.8 Thermal Management System

4.8.1 Air conditioner product parameters

project	unit	Parameters
Working temperature	°C	-40 to +55
Rated AC input power		220±15%VAC~50Hz
Refrigeration capacity (L35/L35)	W	2000
Rated AC input power (L35/L35)	W	785
Rated current (L35/L35)	A	3.6
Heating capacity	W	1000
Box dimensions (height*width*depth)	mm	750*450*200
Overall dimensions including flange (height*width*depth)	mm	784*484*200
weight	Kg	40
Installation method		Door embedded35mm
Maximum sound pressure level noise	dB(A)	65
Waterproof and dustproof grade		IP55
refrigerant		R134a
life	Years	>10
surface treatment		Electrostatic spraying (RAL7025)

4.8.2 Dimensional drawing of air conditioner



4.8.3 Product functions

● Refrigeration

The parameters of the air conditioner can be set through the display screen or background software: cooling set temperature and cooling deviation temperature. When the temperature inside the cabinet is higher than (cooling set point + cooling deviation), cooling starts; when the temperature inside the cabinet is lower than the cooling set temperature, cooling stops.

Refrigeration parameter set point

parameter	Default	Set	unit
Refrigeration	29	[16~38]	°C
Refrigeration	6	[1~10]	°C

● heating

The air conditioner can set parameters: heating set temperature and heating deviation temperature. When the temperature inside the cabinet is lower than the heating set temperature, heating starts; when the temperature inside the cabinet is higher than (heating set temperature + heating deviation temperature), heating is stopped.

Heating parameter set point

parameter	Default	Set	unit
Heating set	5	[5~26]	°C
Heating	10	[0~10]	°C

● **Supply air**

The air conditioner can achieve uniform temperature distribution in the cabinet through the air supply function to avoid local overheating in the cabinet. When the temperature inside the cabinet is lower than the cooling start temperature, the air supply function is automatically turned on.

● **Dehumidification**

When the humidity in the cabinet is greater than the dehumidification start humidity (default 80%, range 50% ~ 99%), and the temperature inside the cabinet is less than the dehumidification start temperature (default 25° C, range 20 ~ 40° C), the electric heating dehumidification is turned on; when the cabinet Heating stops when the internal temperature rises to the dehumidification stop temperature (default 30° C, range 25-50° C), or the humidity drops back to the dehumidification stop humidity (default 75%, range 50%-99%).

parameter	Default value	Set range	unit
Dehumidificat	25	20~40°C	°C
Dehumidificat	30	20~45°C	°C
Dehumidificat	80	50~99	%
Dehumidificat	75	45~95	%

Note: The dehumidification function and the cooling function cannot be turned on at the same time.

4.9 BMS battery management system

4.9.1 BCMU system functions

BCMU-H mainly controls and manages the information of the entire battery pack (1500V battery system), collects the total voltage, current and temperature of the entire battery pack, collects information of individual batteries, and provides alarms and protection for abnormalities in the battery pack. It can protect the battery pack according to the requirements of safety handling rules to ensure the safe and stable

operation of the battery system. When the battery has serious overvoltage, undervoltage, overcurrent (short circuit), leakage (insulation) and other abnormal fault conditions, the battery pack will The control management unit can control the on-off of the entire battery pack to prevent the battery from being overcharged, over-discharged and over-current. BCMU-Hmainly has the following functions:

- Monitor the terminal voltage, current, temperature and insulation resistance of the battery pack in real time;
- Calculate the SOC and SOH of the entire battery pack in real time;
- The module has wet contact, dry contact output, switch input detection port, etc.;
- The module has CAN and RS485 communication interfaces, which can receive and upload data and alarm information in real time to achieve remote monitoring of battery packs.

4.9.2 BCMU technical parameters

project		parameter		Remark
		Technical	unit	
powered by	Supply	DC24V±10%	Vdc	
	Rated power	<3	W	
Group termi	Collection	0~1500	V	
	Accuracy	0.2%FS		
Current sampling	Collection	±300	A	Based on shunt & hall
	Collection	0.2%FS		full range
Temperature	Number of	4	individual	
	Collection	-40~125	°C	
	Collection	±1	°C	
DO	Number of	8	individual	6 low-side outputs,
	Output	2A@30VDC		2 dry contact
DI	Number of	6	individual	Connect to passive feedback signal input
	Switch input	Passive 24VDC		
Insulation	Collection	0~100	MΩ	
	Collection	10%FS		
CAN	CAN0	1	road	Communication between
	CAN1	1	road	Communication between
	CAN2	1	road	reserved
	baud rate	250	Kbps	(default)
RS485	RS485-0	1	road	reserved
	RS485-1	1	road	reserved
	baud rate	9600	bps	(default)
Dimensions and		220*98*45mm/0.34kg		
Installation method		wall hanging		

4.9.3 BMU system functions

- Real-time monitoring of single cell voltage and temperature;
- Real-time calculation of SOC and SOH of single cells;
- The module has two-way active balancing, which improves the consistency of the battery pack and effectively extends the battery life;
- The module has dry contact output, which can provide on-site alarm or remote control;
- The module has a CAN communication interface that can send data and alarm information in real time to remotely monitor the battery pack;
- Modular design is convenient for installation, use and maintenance, and the modules are isolated from each other and have high reliability.

4.9.4 BMU technical parameters

7HFKQLFDC8DUDP HMLUJ	5DMGVSHFLILFDMRQV	5HP DUN
Module supply	DC24V±20%	
Module power	<2W	Does not include
Battery monitoring cells	Verse 26	Maximum support for a single unit (13+13)
Voltage detection	0~5V	
Voltage detection	±3mV	
Temperature	28	Maximum support for
Temperature	-40~125°C	
Temperature	±1°C	
Battery balancing	Two-way active	
Battery balancing	2A	
Fan control method	Start and stop; PWM	Support fan feedback
Input insulation	≥50MΩ, 2500VDC	
Data communication interface	CAN	

The energy management system monitors the operation of the main equipment in the energy storage station. The operation monitoring equipment includes:

A. The electrical parameters of the main equipment of the energy storage system, the converter (PCS) and the battery management system (BMS), are monitored in real time. The monitoring parameters include the main electrical parameters of the PCS, the stack data, string data, and unit data of the battery management system. Body voltage, current, SOC data, as well as fault and alarm data during equipment operation.

B. Auxiliary monitoring equipment of the energy storage system, including fire protection system and temperature control system. The energy management system is linked according to the signal provided by the fire protection system. When the fire alarm is activated, the system stops the operation of all equipment. The energy management system monitors the operating temperature of the energy storage cabinet through the air conditioning system, and performs operation control with reference to the temperature conditions.

In the normal operation mode of the system, the automatic operation mode and the manual operation mode are adopted. In the automatic operation mode, the PCS is automatically controlled according to the operation strategy, and the manual operation interface is closed. In the manual operation mode, the manual operation interface of the equipment is provided and the manual setting control is accepted.

The system workstation provides a visual monitoring and operation interface. The system displays all measurement information in a variety of ways such as topology diagrams, equipment data lists, curve charts, histograms, and distribution charts. The system operation interface is simple, convenient and efficient.

2) Alarm and fault prompt function

The system provides leveled alarm and fault prompt functions, and supports setting the alarm type, level and alarm method according to user needs and equipment manufacturer requirements.

The alarm signals supported by the system include: alarm information provided by the equipment itself, and system operation alarm information provided by the energy management system master station.

Supports multiple alarm methods such as text, voice, and flashing. Supports manual

and automatic confirmation and deletion of alarm information. Supports query of historical alarm information by type and alarm source.

The system provides historical storage of all event alarm information.

3) Historical data query

The system completely stores the original operating data of all equipment and the historical operating data of the system according to the collected time intervals. The data includes: equipment data, alarm data, system operating data, operation control data, etc. The system supports a variety of relational databases, and users can choose the database according to the system conditions.

The system provides a friendly and convenient human-machine interface to complete the query and display of historical data, historical warning and fault information, and operation event records. Supports querying by date, type, and device number, and displays the queried historical instantaneous data records, real-time statistical data, and historical statistical data in tables, curves, histograms, etc.

Historical storage can store real-time data for at least the past two years (appropriate physical storage devices must be configured according to the amount of data stored and the storage interval).

4) Statistical analysis function

The system's analysis and statistics functions include statistics on the operation of the energy storage system, including the charge and discharge capacity, maximum and minimum power, charge and discharge cycle statistics of each energy storage unit, etc., which are divided into time periods and can provide data between each energy storage unit. Compared.

At the same time, it also includes statistics on the operation of a single device, including statistics on the number of failures, cumulative safe operation time and other information.

5) Report function

The report functions of the system include: report production, report display, report release, and report printing. The report subsystem can generate daily, monthly and annual reports very conveniently and flexibly.

The data that can be displayed in the report includes: various statistical values,

maximum and minimum values, such as the charge and discharge capacity and charge and discharge power of the energy storage system.

4.10.2. Energy management system operation indicators

Table 1 Energy management system operating indicators

serial number	Technical parameter name	parameter
1	Current and voltage measurement errors	$\leq 0.2\%$
2	Active power and reactive power measurement error	$\leq 0.5\%$
3	Site sequence of events recording resolution (SOE)	$\leq 2\text{ms}$
4	Screen real-time data refresh cycle	$\leq 2\text{s}$
5	Grid frequency measurement error	$\leq 1\text{Hz}$
6	The analog quantity transmits the minimum value across the dead zone and is adjustable point by point.	$\geq 0.1\%$
7	Transmission time of analog quantity beyond dead zone (to station control layer)	$\leq 2\text{s}$
8	Status variable transmission time (to station control layer)	$\leq 1\text{s}$
9	Analog information response time (from I/O input to remote communication equipment outlet)	$\leq 3\text{s}$
10	Status quantity change response time (from I/O input terminal to remote communication equipment outlet)	$\leq 2\text{s}$
11	Control the time from generation to output of the execution command	$\leq 1\text{s}$
12	Control operation accuracy	$=100\%$
13	Remote control action accuracy	$=100\%$
14	Telemetry pass rate	$=100\%$
15	Correct action rate of remote communication during accident	$\geq 99\%$
16	System availability	$\geq 99.9\%$
17	System mean time between failures (MTBF) Among them, I/O unit module MTBF $\geq 50000\text{h}$	$\geq 20000\text{h}$
18	Mean time between failures of the bay layer measurement and control unit	$\geq 40000\text{h}$
19	Average CPU load rate of each workstation:	
	Normally (within any 30 minutes)	$\leq 30\%$
	When the power system fails (within	$\leq 50\%$



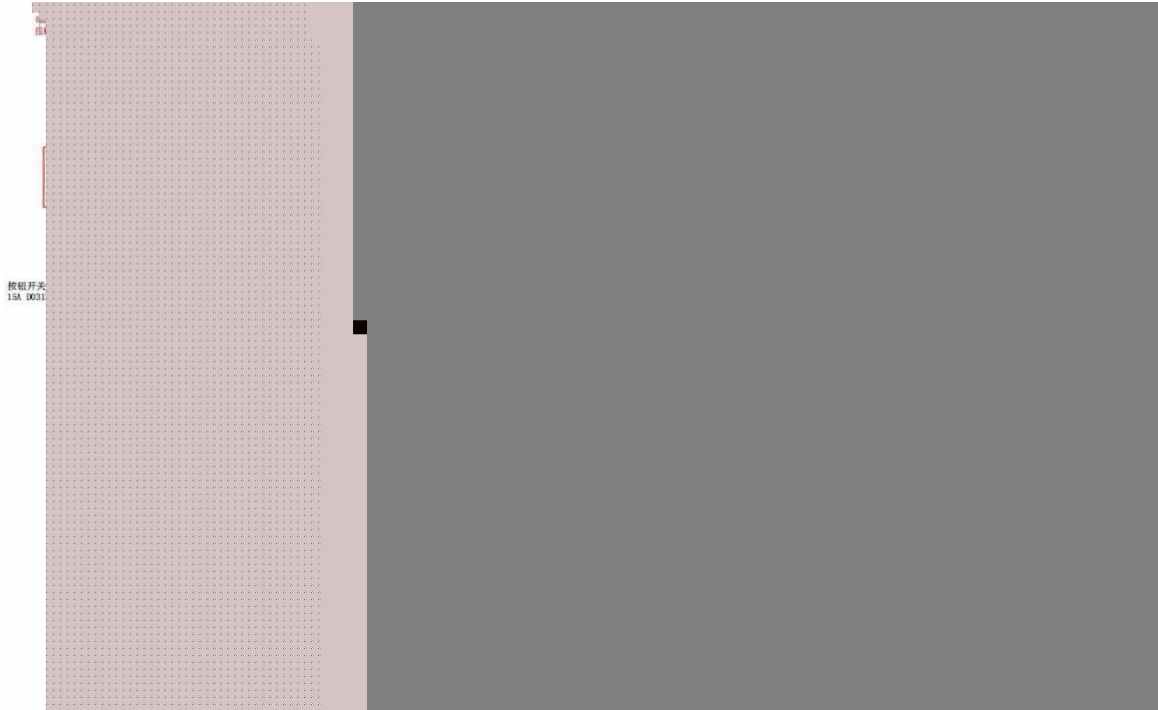
5.2 Schematic diagram of battery module

5.3 Battery cell size diagram

- : NK HGZKX_ I KRY [YK S G4 X YZGTJGX ' MGJK ' N PZNS OUT VNUYNGK 2, 6
YW GK GR S O [S YNKRHGZKX Y VXUJ [I KJ H_ G4 R G ZUS GZD VXUJ [I ZOT ROK : NO

HGZKX_1 UXK NGY

6. Battery electrical principle and energy storage system working principle diagram



7. Conditions of use

7.1. Packaging

7.1.1 Method: Neutral carton (domestic) Dangerous package carton (export)
Wooden pallet (batch container export).

7.1.2 Each battery pack should have an outer packaging, and should be accompanied by a product manual and certificate. Packaged products should be placed in dry, dust-proof and moisture-proof packaging boxes. The product name, model, voltage, capacity, quantity, gross/net weight, LOGO, battery serial number, etc. should be marked on the outside of the dangerous goods packaging box. Neutral packaging The box does not contain the above contents. There should be necessary signs such as "Handle with care", "Afraid of moisture", "Upward", "Afraid of fire", etc.

7.1.3 Information accompanying the shipment: shipment inspection report, product manual, host computer software, communication protocol (electronic file), etc.

7.1.4 Anti-shock and anti-pressure measures: The outer sides (upper and lower) of the battery module need to be filled with anti-shock materials.

7.1.5 Waterproof, anti-scattering, and transportation: the battery module is placed in a nylon bag, tightened with strapping, and placed on a pallet.

7.2. Transportation

The battery pack should be packed into boxes for transportation. During transportation, it should be protected from severe vibration, impact or extrusion, and protected from sunlight and rain. It can be transported by cars, trains, ships, airplanes and other means of transportation.

7.3. Storage

7.3.1 The battery pack is usually stored at 20% to 40% state of charge in a clean, dry, ventilated and accessible environment with an ambient temperature of -5°C to 35°C and a relative humidity of no more than 75%. Indoors that are protected from rain and snow, and should be placed flat and elevated, with a distance of not less than 100MM from the ground;

7.3.2 Batteries must not be stored with active chemicals or dust-generating items;

7.3.3 The battery cannot be subjected to any mechanical impact or heavy pressure;

7.3.4 The battery should be kept away from direct sunlight, away from fire sources, and the distance from heat sources should not be less than 2M;

7.3.5 From the date of manufacture, the battery should be recharged at a current of

0.2~0.5C for 30~60min every 3 months of storage, and the temperature range is 25°C±5°C.

8. Use Responsibility Letter

Users must follow the instructions on the battery label or SY battery specification sheet to use it. If the power system overheats or even catches fire or explodes due to improper use by the user, the company will not bear any responsibility.

9. Dangerous matters

Failure to read the following carefully may result in battery leakage, explosion or fire.

- (1) Do not put the battery into water or get it wet;
- (2) Do not use or store batteries near heat sources (such as fire or heaters);
- (3) Do not reverse the positive and negative poles;
- (4) Do not connect the battery directly to the wall socket or car cigarette lighter socket;
- (5) Do not throw the battery into fire or heat the battery;
- (6) It is prohibited to use wires or other metal objects to short-circuit the positive and negative terminals of the battery, and it is prohibited to transport or store the battery together with necklaces, hairpins or other metal objects;
- (7) It is prohibited to hit, throw or subject the battery to mechanical shock;
- (8) It is prohibited to pierce the battery case with nails or other sharp objects, and it is prohibited to hammer or step on the battery;
- (9) It is prohibited to disassemble the battery in any way;
- (10) Do not charge the battery under fire or extreme heat conditions.
- (11) It is prohibited to place batteries in microwave ovens or pressure vessels;
- (12) It is prohibited to use it in combination with primary batteries (such as dry

batteries) or batteries of different capacities, models, and varieties;

(13) Do not use the battery if it emits a peculiar smell, generates heat, is deformed, discolored or has any other abnormal phenomena; if the battery is being used or charged, it should be removed from the electrical appliance or charging equipment immediately and stopped using it;

(14) Batteries should be kept out of the reach of children;

(15) If the battery leaks or emits a peculiar smell, move it away from an open flame immediately; leaking electrolyte may cause a fire or explosion;

(16) If electrolyte gets into your eyes after a battery leaks, do not rub them, rinse them with water, and seek medical assistance immediately. If not treated in time, eyes will be damaged.

10. Precautions

- Please use the lithium battery pack strictly in accordance with the instructions. If the battery leaks and the electrolyte gets on your skin or clothes, wash the affected area with running water immediately, otherwise it may cause skin inflammation.
- Read the device instructions for the battery and install and remove the battery correctly.
- If the battery pack's terminals become dirty, wipe them clean with a dry cloth before use. Otherwise, the battery pack will have poor contact, causing energy loss or failure to charge.
- No professionals are allowed to handle it, It is strictly prohibited to disassemble or repair the battery system.
- It must be charged with a charger specifically designed for this battery system.
- It is strictly forbidden to immerse the power system in water or salt water. Please keep the battery in a cool and dry environment when not in use.
- If the power system emits a peculiar smell, generates heat, changes color or deformation, or appears abnormal in any way during the charging or discharging

process, stop the operation immediately and find a professional to handle it.

- When a battery catches fire, use dry sand or nitrogen fire extinguishers to extinguish the fire.
- It is strictly prohibited to put the battery system into fire or heat source.
- When installing or using the battery, please remove metal jewelry or other metal objects, and be careful when handling the battery, especially when placing it in a metal container.