Shenzhen Sako Solar Co., Ltd.

Specification Approval Sheet

Model： SK-LFP160kWh

Capacity：512V314Ah

Date： 2026-06-03

Material Code：908-053101-020

Contents

1 Safety Precautions

1.1 Personal Safety

Installation must never be performed with live parts.Do not install or remove cables while the system is energised. Cable cores contacting conductors may generate arcs, sparks, or fire explosion, which can cause fire or personal injury.

When the equipment is live, improper or incorrect operation may cause fire, electric shock, or explosion, leading to casualties or property damage.

During operation,do not wear conductive objectssuch as watches, bracelets, chains, rings, or necklaces to avoid electric burns.

Special insulated toolsmust be used during operation to prevent electric shock or short circuits. The insulation voltage rating must comply with local laws, standards, and regulations.

General requirements:

Do not disable protective devices or ignore warnings, cautions, and preventive measures in the manual or on the equipment.

If any fault that may cause personal injury or equipment damage is found during operation, stop work immediately, report to the person in charge, and take effective protective measures.

Do not power on the equipment until installation is completed or confirmed by qualified personnel.

Never directly touch live equipment, use other conductors, or touch through wet objects. Measure the voltage at any conductor surface or terminal before contact to confirm no shock hazard.

During operation, the enclosure may be hot risk of burns do not touch.

Do not insert fingers, components, screws, tools, or boards into operating fans risk of injury or damage.

In case of fire, immediately evacuate the building or equipment area, activate the fire alarm, or call the fire department. Under no circumstances reenter a burning building or equipment area.

1.2 Electrical Safety

Before making electrical connections, ensure the equipment is undamaged; otherwise electric shock or fire may occur.

Improper or incorrect operation may cause fire, electric shock, or other accidents.

During operation, prevent foreign objects from entering the equipment; otherwise short circuits, damage, load derating or power loss, and personal injury may occur.

For equipment that must be grounded, the protective earth (PE) wire must be connected first during installation and disconnected last during removal.

Note:No cables are allowed to pass through the air inlet or outlet of the equipment.

1.3 Environmental Requirements

Do not place the equipment in an environment with flammable or explosive gases or vapours, and do not perform any operation in such environments.

Do not store flammable or explosive materials near the equipment.

Keep the equipment away from heat sources or open flames, such as fireworks, candles, heaters, or other heating devices. Heat may damage the equipment or cause fire.

Install the equipment away from liquids. Do not install below water pipes, air outlets, or other locations prone to condensation; do not install below air conditioner vents, ventilation openings, or cable outlets where water leakage may occur, to prevent liquid ingress causing faults or short circuits.

During operation, do not block ventilation openings or cooling systems, or cover the equipment with any material, to prevent overheating or fire.

1.4 Mechanical Safety

When working at heights, wear safety helmets, safety belts, or lifelines securely attached to solid structural members. Do not attach to moving objects or sharp metal edges to prevent fall accidents.

Tools must be complete and certified by an authorised inspection agency. Do not use damaged, unqualified, or out of certification tools. Ensure tools are securely fixed and not overloaded.

Before installing equipment into a cabinet, ensure the cabinet is securely anchored to prevent tipping due to unstable centre of gravity, which could injure installers or damage equipment.

When pulling equipment out of a cabinet, be careful of unstable or heavy equipment inside to avoid crushing or impact injuries.

Do not drill holes in the equipment. Drilling destroys sealing, electromagnetic shielding, internal components, and wiring; metal chips entering the equipment may cause circuit board short circuits.

1.5 Equipment Safety

1.5.1 Energy Storage System Safety

Do not open the storage cabinet door while the system is running.

In case of a system fault, avoid standing near the cabinet door (including the area within the door swing range).

The equipment is equipped with a fire suppression system. Do not trigger the emergency fire extinguishing start button except in an emergency.

Do not disable protective devices.

1.5.2 Battery Safety

Do not short circuit the positive and negative terminals of the battery this will cause a short circuit. A short circuit instantly produces high current and releases massive energy, leading to leakage, smoke, flammable gas release, thermal runaway, fire, or explosion. To avoid short circuits, batteries must not be serviced while energised.

Do not expose batteries to high temperatures or near heat sources such as direct sunlight, fire, transformers, heaters, etc. Overheating may cause leakage, smoke, flammable gas release, thermal runaway, fire, or explosion.

Do not subject batteries to mechanical shock, dropping, collision, piercing by sharp objects, or pressure impact this may cause damage or fire.

Do not disassemble, modify, or damage batteries (e.g., inserting foreign objects, external pressure, immersion in water or other liquids) this may cause leakage, smoke, flammable gas release, thermal runaway, fire, or explosion.

Do not allow battery terminals to contact other metal objects may cause heating or electrolyte leakage.

Using or replacing with an incorrect battery type may cause fire or explosion. Use only the specified battery model recommended by the manufacturer.

Battery electrolyte is toxic and volatile. In case of leakage or abnormal odour, avoid contact with leaking liquid or gas. Nonprofessionals must stay away; immediately contact qualified personnel. Professionals should wear goggles, rubber gloves, gas masks, and protective clothing, power off the equipment, remove the leaking battery, and contact the technical engineer.

The battery is a sealed system and does not release gas under normal operation. In extreme abuse conditions (fire, puncture, crushing, lightning strike, overcharge, or other conditions that may cause thermal runaway), the battery may be damaged or internal abnormal reactions may occur, leading to electrolyte leakage or generation of gases such as CO and H_2. Ensure flammable gas venting measures are functional to avoid combustion or corrosion of equipment.

Gas generated from battery combustion may irritate eyes, skin, and throat take protective measures.

Install batteries away from liquids. Do not install below air conditioner vents, ventilation openings, cable outlets, water pipes, or other locations prone to water leakage, to prevent liquid ingress causing faults or short circuits.

During battery installation and commissioning, provide fire fighting equipment as required by construction standards, such as fire sand and CO_2 extinguishers. Before commissioning, ensure that fire fighting facilities comply with local laws and regulations.

Before removing packaging, when storing and transporting, keep the outer packaging intact and undamaged. Place according to package labels do not invert, lay on side, stand upright, or tilt. Stack according to stacking requirements on the package. Avoid any impact or dropping that could damage the battery.

After unpacking, place the battery in the required orientation do not invert, lay on side, stand upright, tilt, or stack. Avoid any impact or dropping.

Tighten busbars or cable terminal screws to the specified torque. Regularly check tightness, rust, corrosion, or foreign matter, and clean as needed. Loose connections may cause excessive voltage drop and, under high current, generate heat that can damage the battery.

After discharging, charge the battery promptly to prevent over discharge damage.

1.6 Label Descriptions

Symbol	Symbol Name	Symbol Meaning
	High Voltage Hazard	High voltage exists after the equipment is powered on. All operations on the equipment must be carried out under the supervision of professionals
	No Entry for Unauthorized Personnel	Remind staff that there is high voltage or other dangers in the cabinet to prevent accidental entry into the cabinet and causing accidents
	No Climbing	Remind that there are high-voltage equipment here to prevent climbing by mistake
	No parking or storage of miscellaneous items is allowed in the area in front of the entrance	Facilitate the later maintenance of the energy storage cabinet
	No Open Flame	Smoking can easily cause fire

2 Product Introduction

This air cooled outdoor energy storage cabinet with rating80kW/60kWh (0.5P)represents a new generation of commercial and industrial energy storage solutions. It integrates advanced technologies such as “high efficiency, high safety, long life, and easy expansion” into a modular, standardised, and intelligent outdoor storage system. The design philosophy is “safe and reliable”, with self developed or top tier supplier components, providing customers with a safe, affordable, high quality, easy to install, and user friendly product that simplifies project construction, operation, and maintenance.

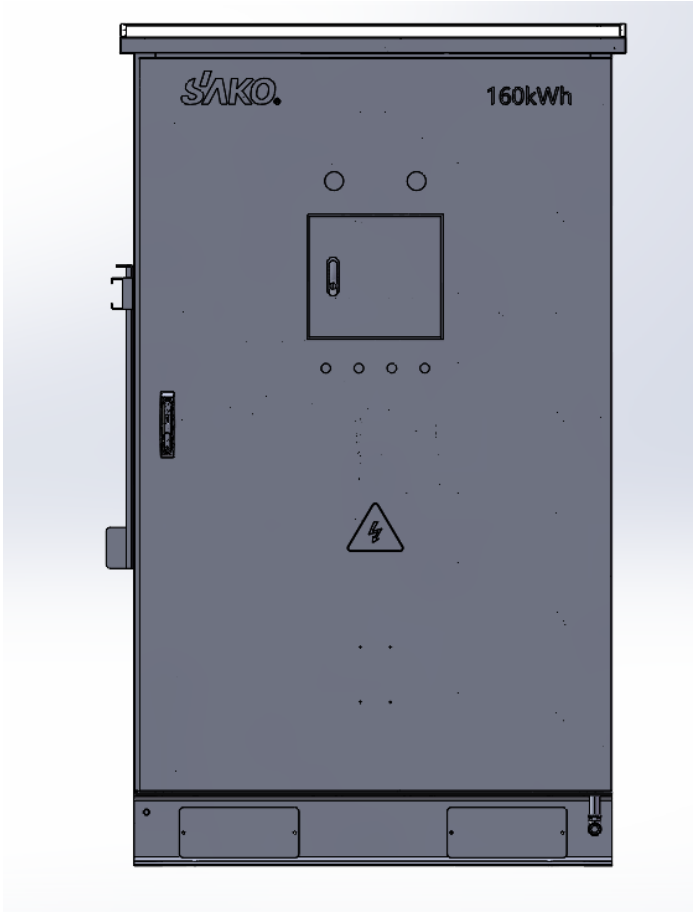

Figure 1 External view of the 160kWh outdoor storage cabinet

2.1 Internal Layout

To enhance system safety, reduce operational errors, lower fire risks, and save operating costs, the cabinet is divided into an equipment compartment and a battery compartment, separated by high grade thermal insulation and flame retardant materials. The equipment compartment houses the temperature control system; the battery compartment mainly contains the battery system. Functions are partitioned into three categories: temperature control, fire safety, and operational access. The internal functional partition is described in Table 1 and shown in Figure 2.

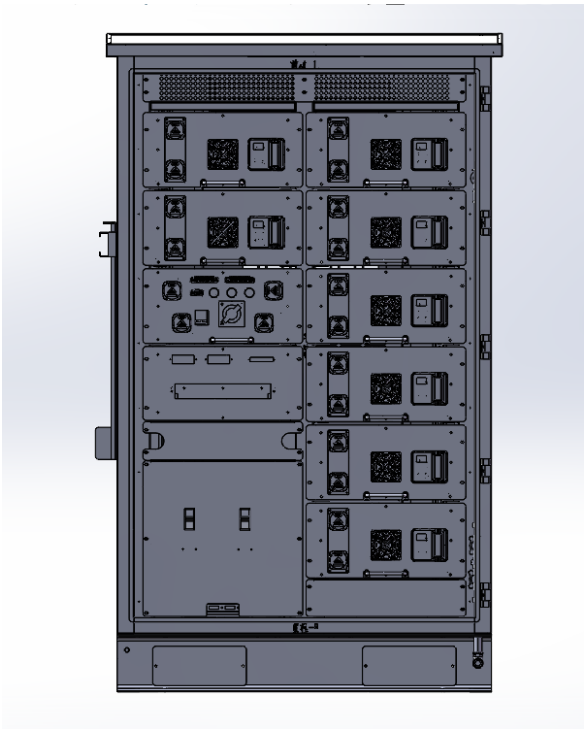

Figure 2 Internal partition diagram of the 160kWh outdoor cabinet

Table 1 Functional partition description

Compartment	Main equipment installed	Fire safety	Operational access	Temperature control
Equipment compartment	Temperature control system	Smoke detector, perfluorohexanone	Local operation, fault maintenance	Air-cooled
Battery compartment	Battery packs, high-voltage box, EMS/system control	/	Local operation, fault maintenance	Air-cooled

2.1.1 Product Configuration List

Table 2 Main equipment configuration for a single 160kWh outdoor cabinet

No.	Name	Main equipment / description	Unit	Qty
1	Battery system	20kWh battery pack using 314Ah cells	each	8
2	Battery management system slave modules	One slave per battery pack	each	8
	Battery management system master module	One master per 8 battery packs	each	1
3	Energy Management System (EMS)	Supports peak shaving, demand control, anti-reverse flow, etc.	set	1
4	Fire protection	Perfluorohexanone, smoke detector	set	1
5	Temperature control	Air conditioner, 5kW	set	1
6	Electrical auxiliary system	DC, grounding, cabling, etc.	set	1
7	High-voltage box	One per outdoor cabinet	each	1
8	Cabinet body	Sheet metal structure and mounting accessories	set	1

Note: Actual equipment names/specifications and quantities may vary with delivery.

2.2 Component Introduction

2.2.1 Battery System

Table 3 Battery system configuration

No.	Level	160kWh outdoor cabinet
1	Battery pack series configuration	1P20S
2	Number of cells	160
3	Number of battery packs	8
4	Number of battery clusters	1 cluster

1) Battery Cell

Long-life 3.2V/314Ah lithium iron phosphate (LFP) prismatic cells with high safety, high energy density, long cycle life, and low cost. Basic parameters in Table 4.

Table 4 Cell basic parameters

No.	Item	Specification	Remarks
1	Cell model	PF173-314A	
2	Cell weight (kg)	5.6 ±0.084	
3	Rated capacity (Ah)	314	Standard charge/discharge at 25±2 ℃
4	Rated energy (Wh)	1004.8	
5	Rated voltage (V)	3.2	
6	Charge limit voltage (V)	3.65	
7	Discharge limit voltage (V)	2.5	
8	Rated charge rate	0.5P	
9	Max charge rate	1P	
10	Rated discharge rate	0.5P	
11	Max discharge rate	1P	
12	Cycle performance	6000 cycles @ 80% SOH; 8000 cycles @ 70% SOH	25±2 ℃, 1P, 2.5V-3.65V
13	Operating temperature range	Charge: 0~60 ℃; Discharge: -20~60 ℃	
14	Dimensions (W*H*T, mm)	174.4 * 207.2 * 72.7 ±0.5	
15	AC internal resistance (mΩ)	0.19 ±0.05	

2) Battery Pack

Table 5 Battery pack parameters

No.	Item	Specification
1	Pack configuration	1P20S
2	Rated energy (kWh)	20
3	Rated voltage (V)	64
4	Operating voltage range (V)	400-584 (DC) cell voltage 2.5~3.65V

The air cooled battery pack is self developed, designed, and manufactured. It consists of cells, connecting busbars, acquisition/communication harnesses, fans, etc. Each pack has 20 voltage acquisition points and 10 temperature acquisition points, connected via harnesses to the BMU, enabling precise cell state estimation and temperature difference monitoring to reduce fault probability.

3) Battery Cluster

The battery cluster consists of battery packs and a high voltage box. Each pack is installed in the cabinet and connected via DC power cables and BMU communication

harnesses. The high voltage box serves as the input/output interface for energy and information, containing BCU master controller, contactors, fuses, pre charge resistors, switching power supplies, etc., configurable per project needs. The 160kWh cabinet has 8 battery packs and 1 high voltage box forming 1 cluster. Basic parameters in Table 6.

Table 6 Battery cluster parameters

No.	Item	Specification
1	Cell type	3.2V/314Ah
2	Pack series configuration	1P20S
3	Rated voltage (V)	512 (DC)
4	Rated charge/discharge energy (kWh)	160.76
5	Rated charge/discharge rate	0.5P
6	Thermal management	Air-cooled
7	Optimal cycle temperature (℃)	25±2
8	Protection	Fuses, contactors, circuit breakers
9	BMS configuration	BCU: 1; BMU: 8
10	High Voltage Box Quantity	1

2.2.2 Energy Management System (EMS)

Responsible for overall energy scheduling, arbitrage, and remote O&M strategies.

Structure and mounting dimensions

Figure 3 Appearance and structure

Dimensions: L×W×H = 265×203×50 mm (excluding mounting brackets)

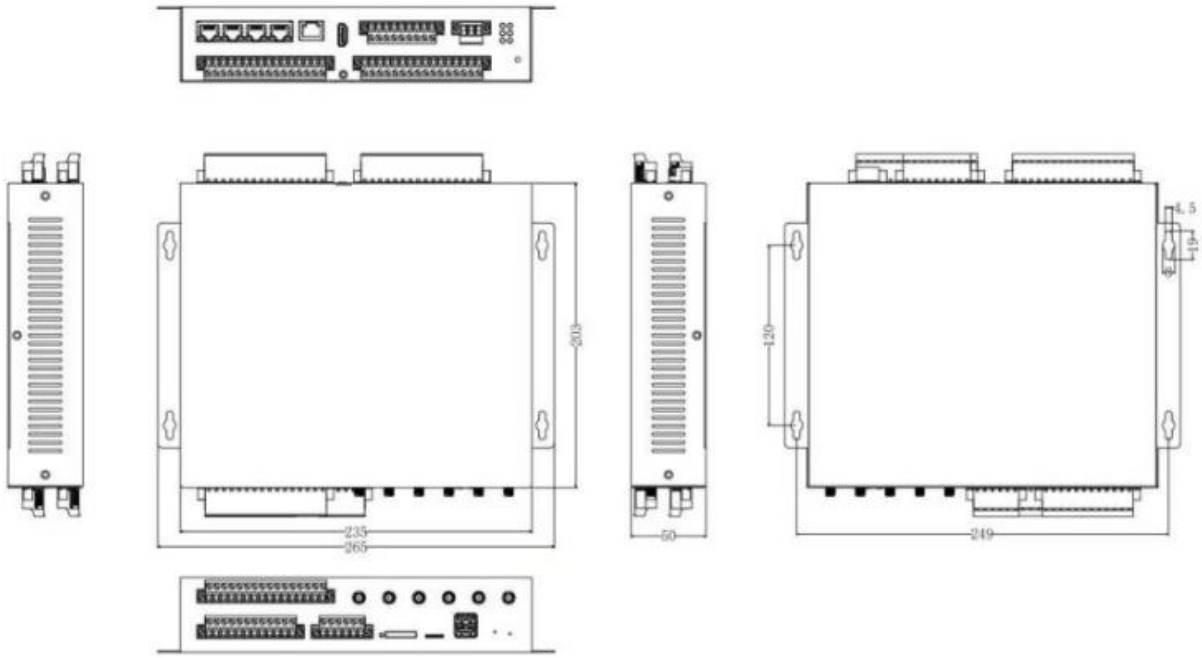

Figure 4 Dimensions

2.2.3 Battery Management System (BMS)

The BMS is the sole safety control core for the lithiumion battery system, responsible for cell monitoring, state calculation, multilevel protection, balancing, thermal coordination, communication, etc.

Master BCU appearance and dimensions

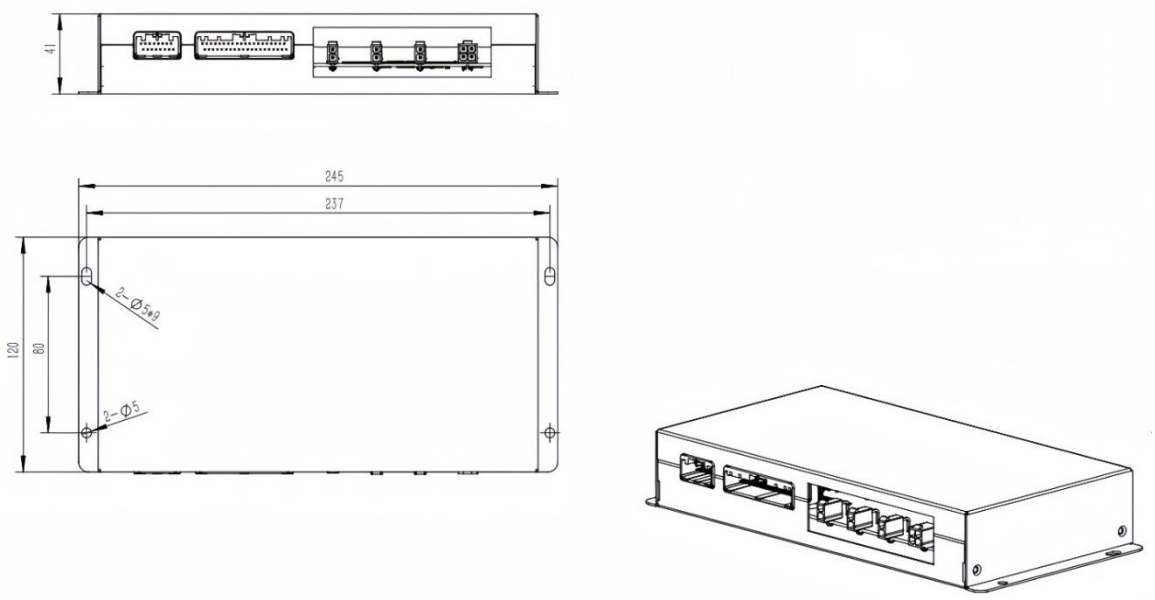

Figure 5 Master BCU appearance and dimensions

Slave BMU appearance and dimensions

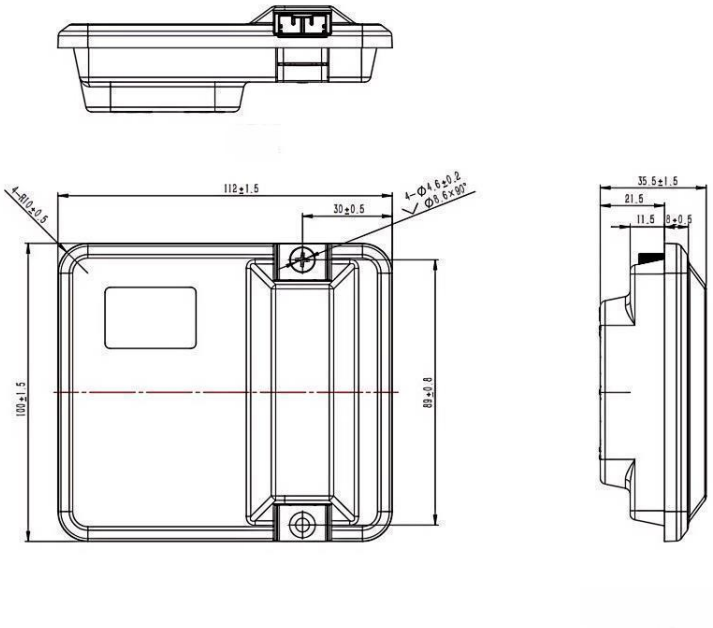

Figure 6 Schematic Diagram of the Appearance and Dimensions of the Controlled BMU

2.2.4 Temperature Control System

This product uses a 5kW cooling capacity air conditioner with high EER, low noise, compact appearance, and easy installation/maintenance, effectively controlling cabinet internal temperature.

Main interface display and key descriptions

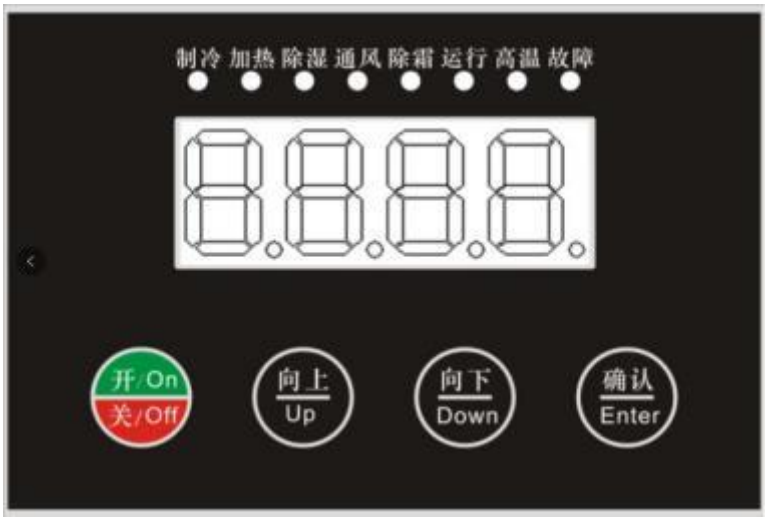

Figure 7 Main interface display

Table 7 Key functions

No.	Icon	Function
1	制冷	Cooling	Red LED on indicates cooling mode
2	加热	Heating	Red LED on indicates heating mode
3	除湿	Dehumidifying	Red LED on indicates dehumidification mode
4	通风	Ventilation	Red LED on indicates ventilation mode
5	除霜	Defrost	Red LED on indicates defrost mode
6	运行	Running	Red LED on indicates unit is running

	High temperature	Red LED on indicates high-temperature fault
	Fault	Red LED on indicates unit fault
	Power on/off	Power on/off, fault reset, return to main menu
	Up	Scroll up, decrease value
	Down	Scroll down, increase value
	Confirm	Enter sub-menu, return to previous menu

Technical parameters

Table 8 Air conditioner specifications

No.	Item
1	Nominal cooling capacity
2	Electric heating capacity
3	Cooling power consumption
4	Heating power consumption
5	Max operating current
6	Power supply
7	Refrigerant / charge
8	Unit weight
9	Dimensions

2.2.5 Fire Protection System

1) Smoke Detection Principle The detector uses infrared scattering to detect fire. In a smoke free state, only weak infrared light is received. When smoke enters the optical chamber, scattered light increases the received signal. When smoke concentration reaches a threshold, an alarm signal is output.

Appearance structure

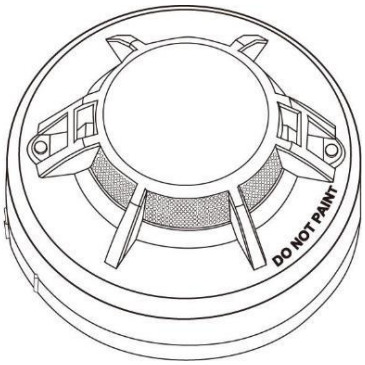

Figure 8 Smoke detector appearance

Technical specifications

Table 9 Smoke detector parameters

Item	Specification
Operating voltage	9～32 VDC
Operating current (standby)	≤0.5 mA
Alarm current	≤50 mA
Indicator	Flashes in standby, steady on during alarm
Operating temperature	-40 ℃ ~ +85 ℃
Relative humidity	≤95% RH (non-condensing)
Smoke sensitivity	0.2～0.3 dB/m (ionisation detector)
Standard	GB4715-2005 / GB4716-2005
Dimensions	φ102 × 55 mm
Relay contact output capacity	1A @ 30VDC
Alarm sound	80 dB / 1 m
Housing material/colour	ABS, white
Terminal material	Copper-nickel plated, stainless steel

Normal monitoring:The detector samples smoke parameters approximately every 6 seconds, assesses status, and flashes red LED.

Prealarm:When parameters reach the alarm threshold, sampling accelerates and the red LED flashes rapidly (about once per second), reconfirming if a real fire occurs.

Alarm state:Upon confirmation, red LED stays on, buzzer sounds continuously, and relay output activates.

Self test:Press the test button if normal, red LED stays on, buzzer sounds, relay activates. Release returns to monitoring.

2) Perfluorohexanone Fire Extinguishing Device Compact, unpressurised, no pipe network required; fast extinguishing without dead corners; nontoxic, noncorrosive, ozone friendly.

Dimensions and structure

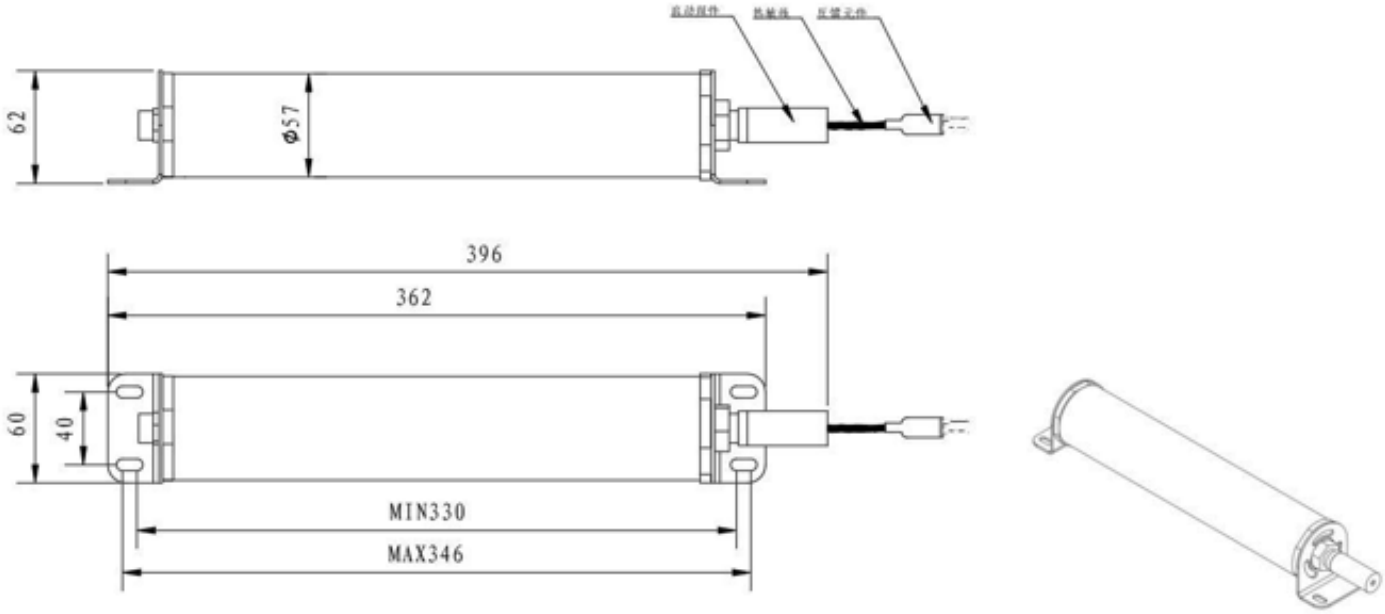

Figure 9 Fire extinguishing device dimensions

Technical parameters

Table 10 Fire extinguishing device specifications

Item	Parameter	Item	Parameter
Model	YF0.5-Q-Y-HS	Net weight	1935 ±50 g
Operating temperature range	-20 ℃ ~ +70 ℃	Dimensions	401 mm ×62 mm ×60 mm
Operating relative humidity	≤95% RH	Activation mode	Thermal activation
Discharge time	≤10 s	Feedback signal	Normally closed → open
Extinguishing agent	Perfluorohexanone	Protected volume	1 m ^{3}
Agent charge	500 ml	Shelf life	10 years
Thermal probe length	5 m	Feedback line length	1 m
Thermal activation temperature	170 ±10 ℃		

3 Site Requirements

3.1 Site Selection Requirements

The following recommendations refer to GB51048 “Code for Design of Electrochemical Energy Storage Stations”, NFPA 855 “Standard for the Installation of Stationary Energy Storage Systems”, and local regulations.

General siting requirements:

The energy storage system is only for outdoor scenarios indoor installation is not supported.

The installation surface must be above the historical highest flood level and at least 300 mm above ground level. Do not install in low lying areas.

No overhead obstructions above the system e.g.,not under carports, and no photovoltaic panels on top.

Safety distances from buildings:

≥12m from residential buildings.

30.5m from schools, hospitals, and other densely occupied buildings.

≥12m from industrial/commercial production buildings.

If the safety distance cannot be met, install a fire wall with at least 3 hour fire resistance between the system and the production building. The firewall must extend at least 1.5 m beyond the system outline in length and height.

Within 3 m around the installation site, there must be no vegetation or flammable plants to prevent wildfire spread.

Open outdoor electrochemical energy storage stations should be provided with fences or walls. If located within a substation or power distribution site, the external wall may serve as the barrier.

Safety distances must also comply with local fire codes.

The site must be free of explosion or fire hazards.

Convenient transport access and reliable fire suppression systems are required.

Reserve sufficient area for the full lifecycle and leave space for future expansion.

Choose a well ventilated location.

Corrosive/contaminated environments: Avoid installation in salt affected or polluted areas. The system can be installed in the following or better conditions:

> 2000m from the coast (outdoor).

Between 500m and 2000m not recommended without manufacturer confirmation.

< 500m not permitted.

Distance from heavy pollution sources (smelters, coal mines, thermal power plants) > 1500m ~ 3000m.

Distance from moderate pollution sources (chemical, rubber, electroplating) > 1000 m ~ 2000m.

Distance from light pollution sources (food, leather, heating boilers, slaughterhouses, waste dumps, sewage treatment) > 500m ~ 1000m.

Scenarios not recommended by codes/regulations:

Places with dust, oil fumes, harmful gases, corrosive gases, etc.

Production or storage of corrosive, flammable, or explosive materials.

Sites with underground utilities.

Poor soil conditions (soft soil, unstable ground), prone to waterlogging or settlement.

Below water reservoirs, water features, or pumping stations.

Earthquake fault zones or areas with seismic intensity above 9.

Areas with mudslides, landslides, quicksand, karst caves, etc.

Mining subsidence zones.

Blasting danger zones.

Areas that could be flooded by dam or levee failure.

Intersections of main roads or busy traffic areas.

Important water source protection zones.

Historical/cultural relic protection areas.

Densely populated areas, high rise buildings, underground buildings.

Flood prevention requirements:

Large scale systems (≥100 MW): site elevation >1% flood level or historical highest water level.

Medium/small scale systems (≤100MW): site elevation >2% flood level or historical highest level.

If elevation cannot meet these, choose another site or implement flood protection measures.

For coastal/lake/river sites, include 2% wind wave height plus 0.5m freeboard.

If external catchment flows cross the site, construct drainage ditches or flood channels.

Antiintrusion fencing: It is recommended to use solid walls or fences ≥ 2.2m high with locks. Firewalls may replace part or all of the fence as per design.

3.2 Space Requirements

≥3000mm maintenance clearance alongside cabinet long edge; ≥23000mm reserved space beside control compartment.

3.3 Foundation Requirements

Foundation must be above historical highest water level and at least 300 mm above ground.

Supporting foundation strength average >100 kg/cm².

Levelness error between foundation and cabinet contact surface <5mm.

Cabinet grounding contact resistance ≤0.12 Ω.

Cabling is bottom entry preburied conduits must be placed below the integrated control compartment.

Inner diameter of protective conduits ≥ 1.5× the cable outer diameter (including insulation).

Provide drainage facilities according to local geology and municipal requirements to prevent water accumulation at the foundation. Drainage must meet local maximum rainfall requirements and comply with local regulations for discharge.

After foundation excavation, avoid soaking or disturbance; if disturbed, continue excavation and refill with suitable material.

If a cable trench is used, it must not serve as a drainage channel. Cable openings (through walls, floors) must be fire stopped.

4 Transportation and Installation

Packaging: The cabinet is packaged with shock proof and moisture proof protection.

4.1 Transportation

Vehicle: Use a flatbed truck with a load capacity ≥ 4 tons, with bed length/width fully supporting the cabinet base, and reliable tie down points.

Securing method:

Place cabinet at vehicle centre; place antislip rubber pads between base and bed.

Use 4 high strength straps (each rated ≥ 2 tons) through dedicated base holes, tensioned diagonally in four directions to prevent shifting.

Do not use nondedicated points or ropes alone.

Driving: Drive smoothly, avoid sudden braking or sharp turns; slow down on rough roads.

4.2 Installation

Preinstallation checks:

Foundation (concrete platform) levelness ≤ 3 mm/m, load bearing capacity ≥ 3 tons (≥ 1.5× equipment weight recommended).

Confirm cabinet orientation, access door swing, and cable entry positions according to drawings.

Method 1 Forklift placement (recommended for short horizontal moves):

Use a counterbalanced forklift with rated capacity ≥ 3 tons, forks long enough to fully enter the fork pockets at the cabinet base.

Steps:

Approach slowly, adjust fork height, align with fork pockets.

Insert forks fully into pockets, ensuring they extend beyond the cabinet rear but do not contact rear components.

Lift slowly to raise cabinet 50~100 mm above ground/deck; confirm level.

Move slowly to foundation; cabinet doors must be locked.

Use fine movement to align with positioning marks.

Lower slowly to place cabinet on foundation.

Withdraw forks horizontally after stability confirmed.

Cautions:

Do not insert forks partially or use single fork; do not lift from bottom only use fork pockets.

No one may stand or walk near the cabinet during transport.

On soft ground, lay steel plates to distribute pressure.

Method 2 Crane hoisting (for no forklift access or elevated foundations):

Use a truck-mounted crane or mobile crane with rated capacity ≥ 4 tons, with 4 equal-length slings (or wire ropes with edge protectors), each rated ≥ 2 tons.

Rigging:

Use 4 equal-length slings (with edge protection) connected to the fork pockets.

Angle between sling and vertical ≤ 45° (larger angles increase individual load use spreader beam if needed).

Steps:

Trial lift: slowly tension slings until cabinet just clears ground (10~20 mm); pause to check: sling connections secure, cabinet level, no abnormal noise or deformation.

Formal lift: smoothly raise, with two guides using tag lines to control rotation and prevent swinging.

Move to above foundation, adjust orientation slowly.

Lower extremely slowly and smoothly until fully seated on foundation.

Release slings after stability confirmed.

Cautions:

Never attach slings to door frames, top covers, cable trays, etc.

No one under the boom or near the cabinet during lifting/lowering.

Entire operation must be directed by a certified crane signal person with clear communication.

Postinstallation check and fixing:

Recheck levelness with a spirit level on multiple top frame positions. If uneven, insert thin stainless steel shims between base and foundation (do not use brittle or soft

materials).

Secure cabinet to concrete foundation using chemical anchors or expansion bolts through base mounting holes, with torque per bolt size.

For multiple cabinets side by side, use joining brackets to align and level top surfaces.

Final checks:

Doors open/close freely, locks intact.

No scratches, dents, or impacts.

Remove all temporary transport fixing parts and lifting gear.

Clean site: remove packaging waste and restore work area.

5 Cable Installation

Danger Do not smoke or use open flames near batteries. Fire fighting equipment (fire sand, CO_2 extinguishers) must be available on site. Use special protective and insulated tools to prevent electric shock or short circuits.

Attention Do not connect two or more cables to the same battery positive/negative power terminal. When preparing cables, keep away from equipment to prevent debris from entering and causing sparks, injury, or damage.

Note Do not install battery packs in rain, snow, or foggy weather to avoid moisture ingress.

Cable selection Cables must comply with local standards. Consider electrical ratings, application environment, including rated current, cable type, installation method, maximum allowable voltage drop, temperature ratings, ambient temperature, chemical resistance, acidity, settling, environmental requirements, etc.

6 Power-On Inspection and Switching Operations

Table 11 Inspection checklist

Category	No.	Inspection item	Acceptance criteria
General inspection	1	Equipment appearance	No damage, rust, or paint peeling; labels clear and undamaged
	2	Cable appearance	Cable sheath intact, no obvious damage; conduit/flexible tube intact
	3	Cable connections	Connections match design; terminals properly made and secure; labels clear and uniformly oriented
	4	Cable routing	Separation of high- and low-voltage cables; neat and orderly; cable ties trimmed without sharp edges; proper slack at bends, not tight; no crossing inside cabinet
	5	Switches	External DC distribution switch OFF; battery cluster switch OFF
Cabinet inspection	1	Installation	Conforms to drawings; cabinet level; all doors open properly
	2	Cabinet grounding	At least two grounding points per cabinet, secure; contact resistance ≤ 0.1 Ω
	3	Labels	Correct, clear, and complete
	4	Cleanliness	Inside cabinet clean, no loose cables, wire ends, terminals, or tools; outside no visible trash
Component inspection	1	Circuit breakers	All moulded-case circuit breakers in OFF position
	2	Busbars	No obvious deformation, no foreign objects
	3	Fuses	Fuse indicators not popped
	4	Cable bolts	Tightened; pulling cables shows no looseness
	5	Cable opening sealing	Cable entry openings sealed
	6	Component appearance	No damage visible
	7	Foreign object removal	All tools, leftover materials, etc. removed from storage compartment

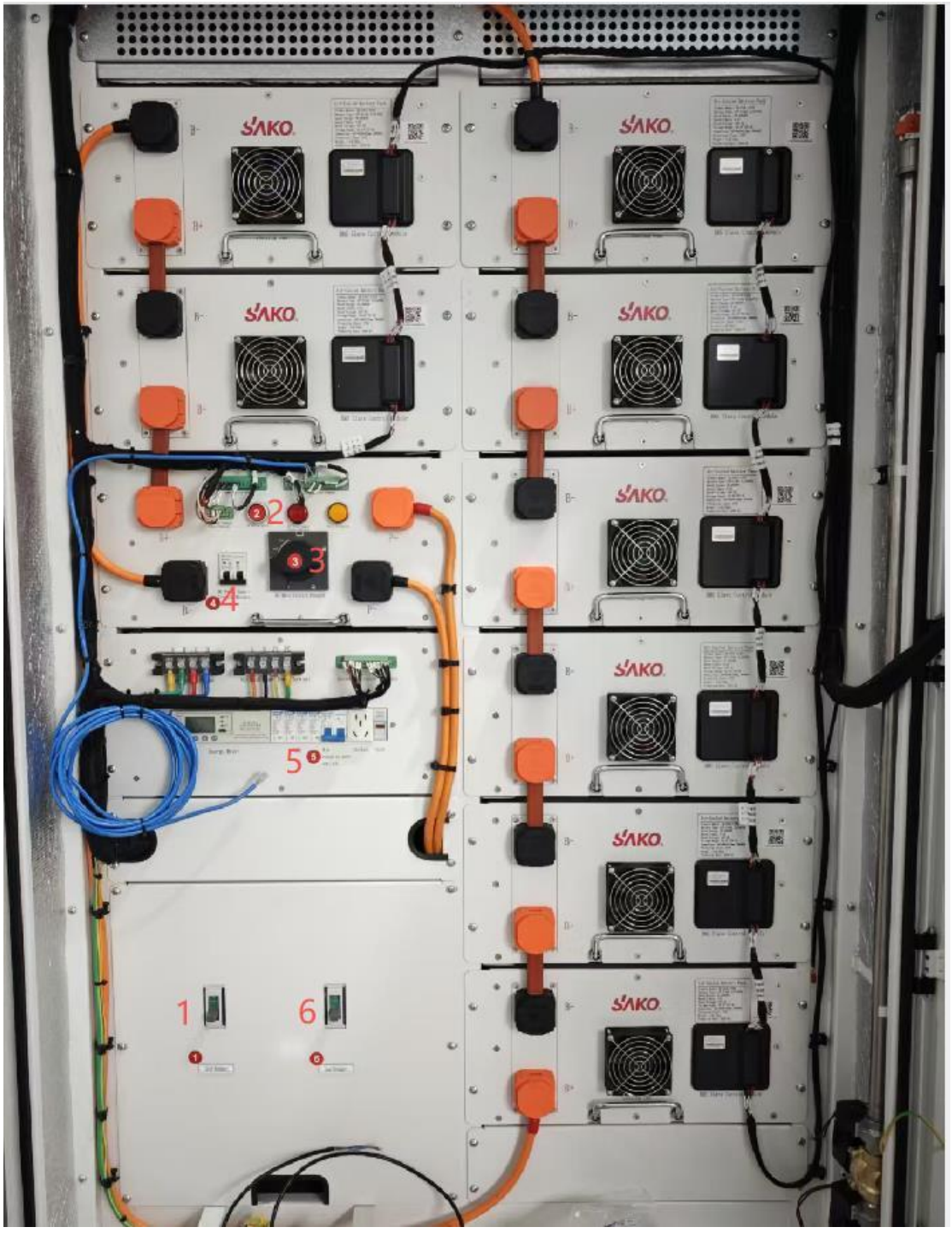

Figure 10 Power on/off sequence

Power on sequence: 1→7 Power off sequence: 7→1

7 EMS Operation Guide

Access the system URL as shown in Figure 11. Enter username and password on the login screen, then click Login to enter the system backend (Figure 12).

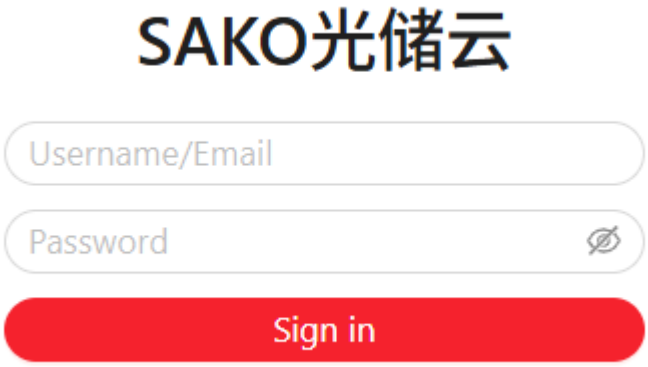

Figure 11 EMS login interface

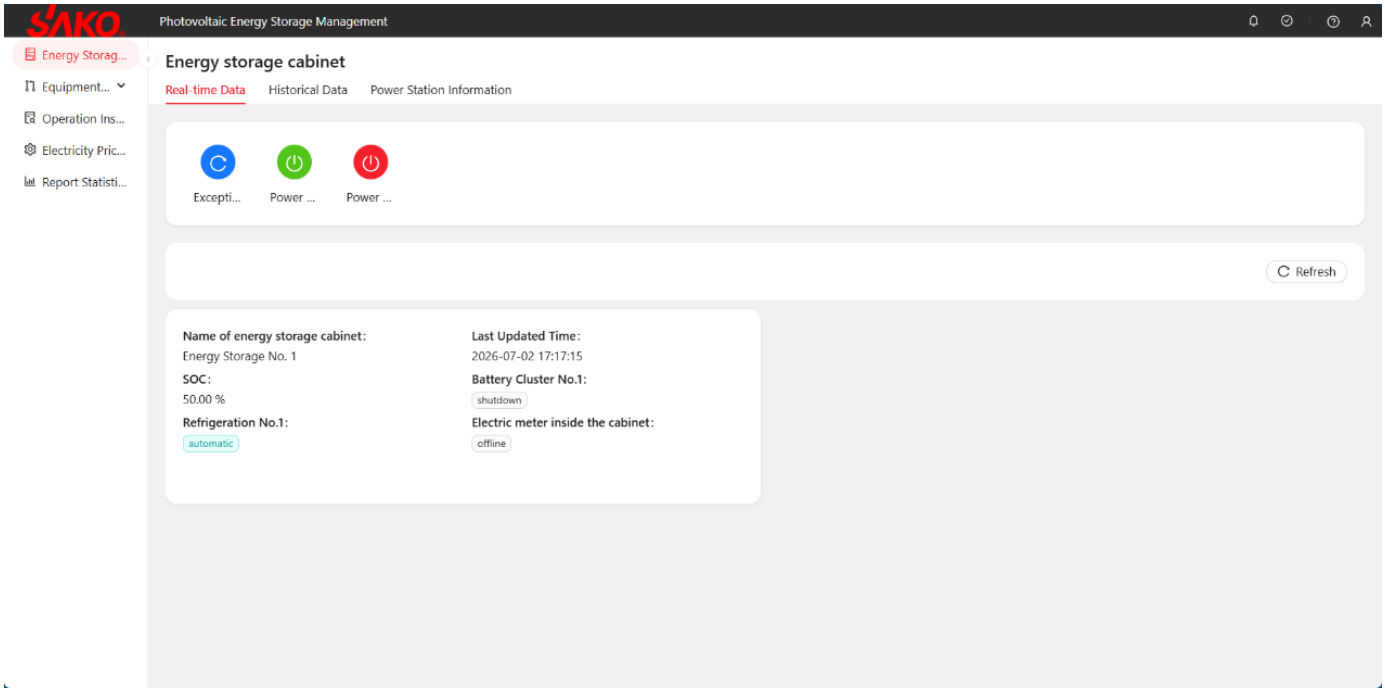

Figure 12 Successful login interface

1) Device data query Click “Device Data” to view battery cluster BCU data, air conditioner data, internal meter data, etc. (Figure 13).

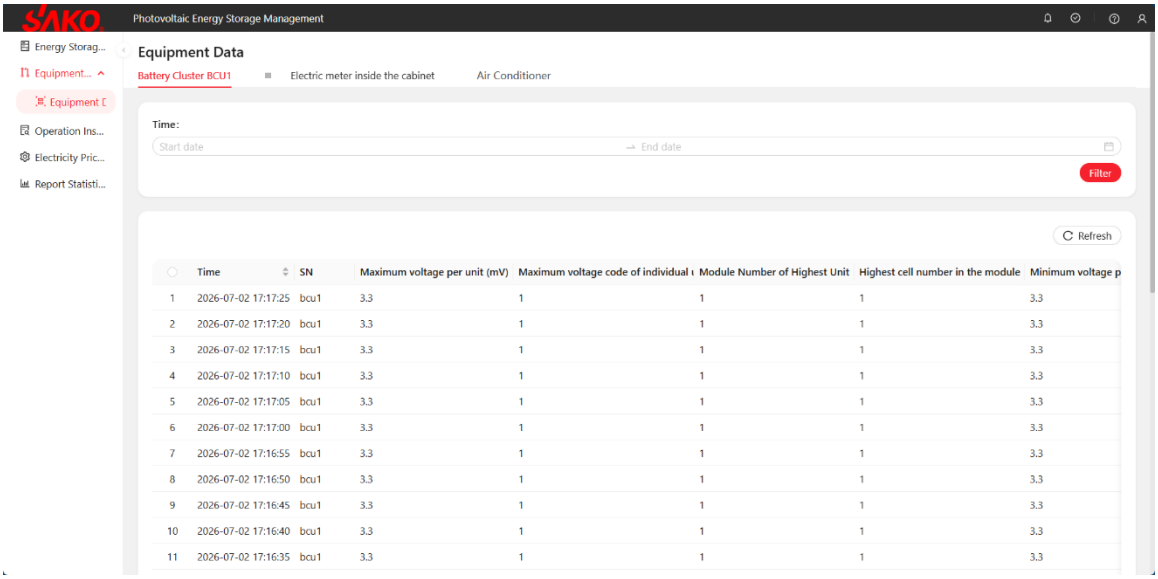

Figure 13 Device data query

2) Electricity tariff and peak/flat/valley period setting Click “Tariff Periods”. Two methods:Method 1: Click on each time slot to set peak/flat/valley, sequentially for all 24 hours.Method 2: Batch select multiple time slots with the same type and edit together.After setting, modify the corresponding electricity prices, then click “Submit” to update.See Figure 14. Adjustments are typically made on the 1st of each month and take effect for that month.

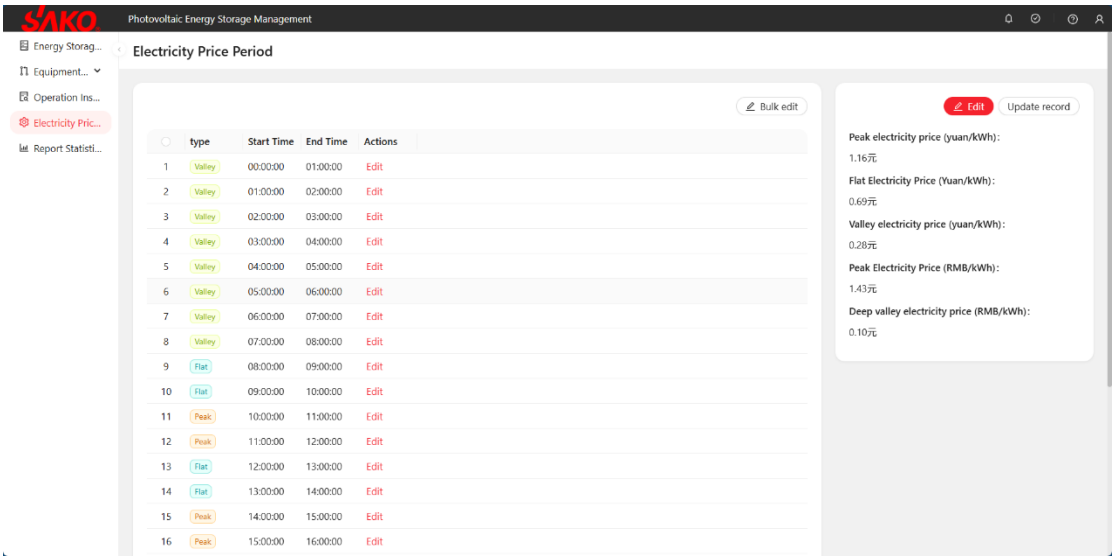

Figure 14 Tariff and peak/flat/valley setting

3) Data reports and revenue query Click “Report Statistics” to view daily or monthly peak/flat/valley energy and revenue (Figure 15).

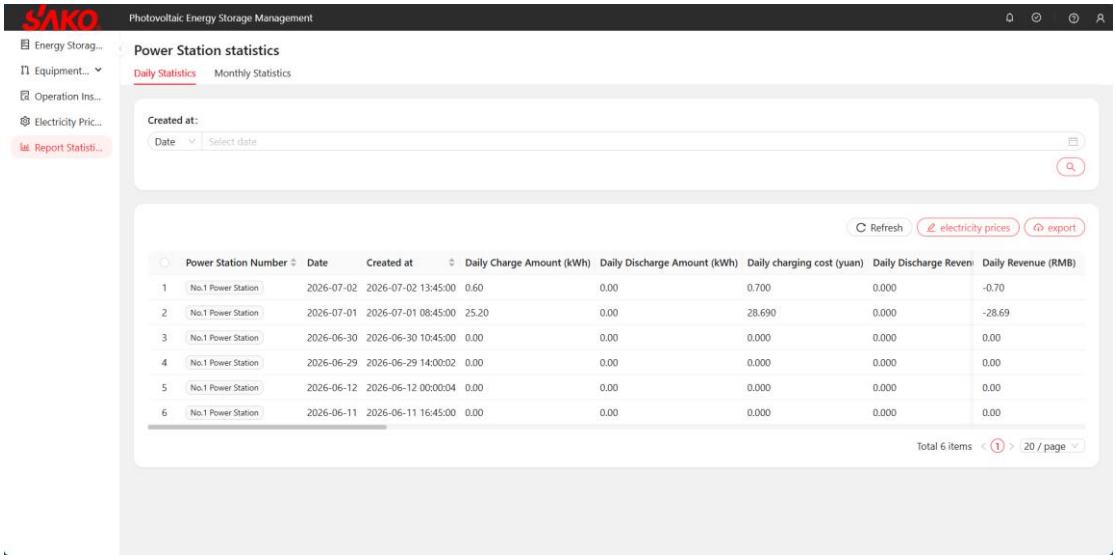

Figure 15 Data reports and revenue query