

All-in-one Air-cooled Hybrid Cabinet ECO-B64WX User Manual



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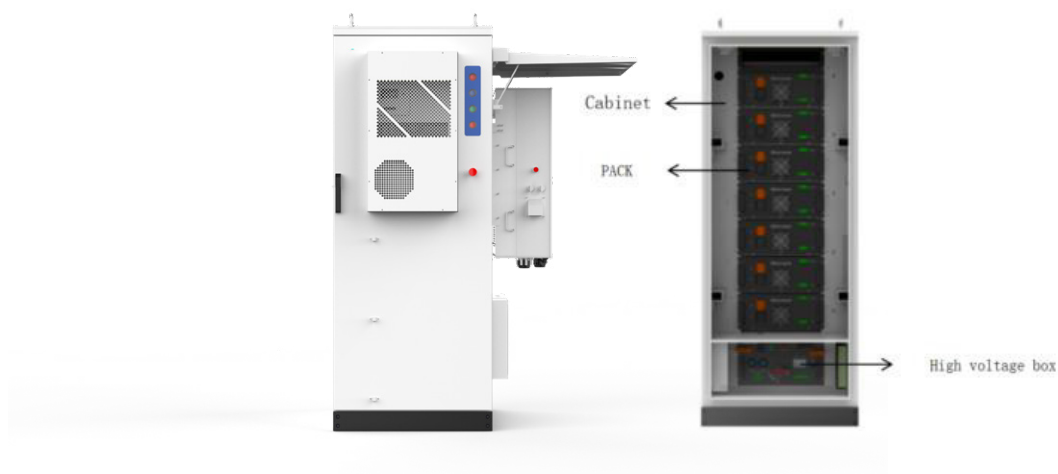
1. Application Scope

The Specification sets forth the performance indicators, transportation and storage requirements, usage conditions, precautions, and risk warnings of the all-in-one Air-cooled ESS Cabinet Sunpal (hereafter referred to as Sunpal, or the ESS Cabinet, or the Cabinet, or the Product) produced by Sunpal (hereafter referred to as “Sunpal”) for energy storage scenarios.

2. Normative References

IEC 62619-2022	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications
IEC 63056-2020	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries for use in electrical energy storage systems
IEC 62477-1	Safety requirements for power electronic converter systems and equipment - Part 1 General
GB/T 36276-2023	Lithium ion battery for electrical energy storage
GB/T 34131-2023	Battery management system for electrical energy storage
GB/T 34120-2023	Technical requirements for power conversion system of electrochemical energy storage system
GB/T 36547-2018	Technical rule for electrochemical energy storage system connected to power grid
GB 4208-2008	Degrees of protection provided by enclosure (IP code)
GB/T 17626	Electromagnetic compatibility - Testing and measurement techniques
GB/T 14048.1-2006	Low-voltage switchgear and control-gear - Part 1: General rules
IEC 60068-2-6	Environmental testing - Part 2-6: Test Fc: Vibration (sinusoidal)

3. Product Introduction



ECO-B64WX Physical and layout diagram of energy storage cabinet

No.	Part	Quantity	Remarks
1	High voltage box	1	
2	PACK	7	The PACK series parallel connection method is 1P24S
3	Cabinet	1	800(W)*1200(D)*2030(H)(mm)

4. Technical Parameters of System

Item	Specifications	Remarks
PRODUCT MODEL	ECO-B64WX	
DC Side Parameters		
Cell type	LFP 120Ah	
Grouping method	1P168S	
Rated energy	64.512kWh	100%DOD, 25℃
Rated capacity	120Ah	
Rated voltage	537.6V	
Recommended voltage range	DC 470.4V~604.8V	Lower limit of individual voltage 2.8V Upper limit of individual voltage 3.6V

System parameter		
Energy conversion efficiency	$\geq 86\%$	
Charge discharge rate	0.8P	constant power
Depth Of Discharge	95%DOD	
Cycle life	≥ 5500 times ($25 \pm 2^{\circ}\text{C}$)	Rated operating conditions: $25 \pm 2^{\circ}\text{C}$, 95%DOD
Protection level	IP55	
Cooling method	Forced air cooling	
Operation temperature	$-25 \sim 55^{\circ}\text{C}$	
Relative humidity	0~95%RH	
Working Altitude	$\leq 2000\text{m}$	Derated above 2,000m,maximum application altitude $\leq 4000\text{m}$
Dimensions (W*D*H)	800*1200*2030mm	
Total weight	Appr. 1.3T	
Fire protection system	Smoke/temperature detection+fully submerged gas fire extinguishing (aerosol)	
Communication	Ethernet/RS485	
Standards complied with	GB/T 36276、GB/T 34120、 GB/T 34131、UN38.3、 IEC62619、UL9540A 、 CE-EMC	

5. Product Introduction

5.1 PACK

This cabinet contains 7 PACKs:

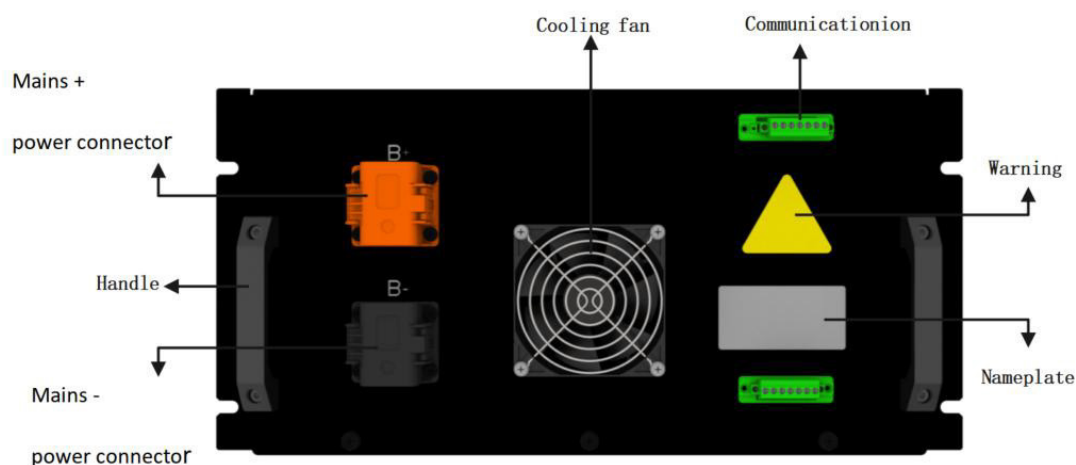


PACK (Battery Pack) Appearance Diagram

The parameters are as per the table below:

No.	Item	Parameter	Condition
1	Model	ECO-P1P24WX	/
2	Cell capacity	120Ah	Standard charge/discharge
3	Grouping mode	1P24S	/
4	Nominal energy	9.216kWh	Standard charge/discharge
5	Nominal voltage	DC 76.8V	Standard charge/discharge
6	Recommended voltage range	67.2V~86.4V	Cell voltage 2.8V~3.6V
7	Charge/discharge rate	≤0.8P	Constant power
8	Cooling method	Forced air cooling	
9	Dimensions (W * D * H)	470*830*196mm	See drawings
10	Weight	Appr.98kg	Including connecting copper bars
11	Protection level	IP20	
12	Cell operating temperature range	-20~55℃	Discharging
13		0~55℃	Charging
14	Recommended working temperature range	20~30℃	
15	Storage temperature range	-20~45℃	Batteries shall be charged and maintained once every 3 months in storage

16	Storage humidity	<75%RH, without condensation	
17	Applicable system voltage level	$\leq 1000\text{Vdc}$	
18	Communication method	CAN	/
19	Shipping SOC	30%~50%	$(25\pm 2)^{\circ}\text{C}$
20	Warranty operating conditions	$(25\pm 2)^{\circ}\text{C}$	/



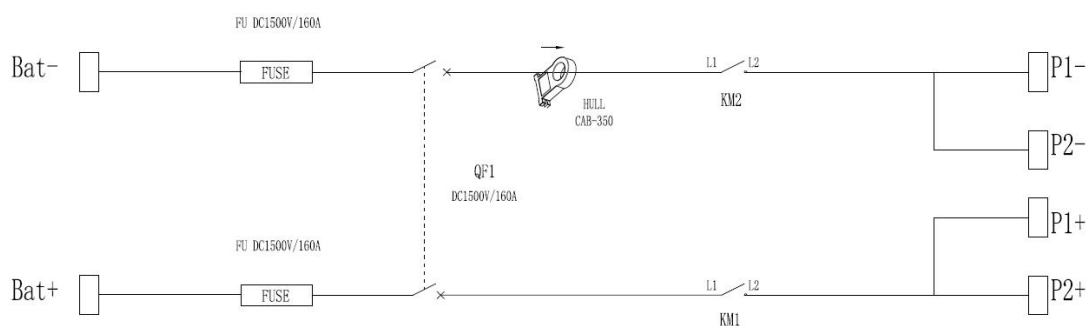
PACK panel schematic diagram

No.	Part	Model	Quantity	Remarks
1	B+	C-ES-FTB 25-70 OG	1	Module high voltage output+
2	B-	C-ES-FTB 25-70 BK	1	Module high voltage output-
3	Communication	LC2AM-5.08-7P-140-00A	2	BMU 通讯
4	Cooling fan	TX9232H24B-G	1	/
5	Warning	Electric identification	1	Pay attention to the danger of electric charges
6	Nameplate	80×50	1	Display PACK parameters
7	Handle	Shell matching	2	PACK maintenance

5.2 DC High-voltage Box



Physical appearance of high-voltage control box



DC main wiring diagram of high-voltage control box

No.	Item	Parameter	Remarks
1	Dimensions(W*D*H)	470*830*196mm	See drawings
2	Weight	Appr. 37.4kg	
3	Power input	AC 220V	Auxiliary supply of high-voltage box
4	Low-voltage output	DC 24V	Communication power of high-voltage box
5	Rated high-voltage output	DC 537.6V	DC 470.4V~604.8V
6	Operating temperature	-20~55℃	
7	Current accuracy	±1%FSR	
8	Voltage accuracy	±1%FSR	
9	Protection level	IP20	



High-voltage Box Panel Layout

No.	Part	Model	Q'ty	Remarks
1	P1+,P2+	ES-FT-BPC-B/S 35-70 OG	1	+ Polarity to PCS
2	P1-,P2-	ES-FT-BPC-B/S 35-70 BK	1	- Polarity to PCS
3	B+	ES-FT-BPC-B/S 35-70 OG	1	+ Polarity to PACK
4	B-	ES-FT-BPC-B/S 35-70 BK	1	- Polarity to PACK
5	GAM	USCM016-004	1	Communication terminal
6	GBM	USCM016-004	1	Control feedback terminal
7	QF1	EVHB250A-24B	1	DC main switch
8	QF2	NDB2-63 C25/2	1	Whole-cabinet power switch
9	QF3	NDB2-63 C20/2	1	HVAC power switch
10	RUN	XB6EAV3BF	1	BCU output operation signal
11	FAULT	XB6EAV4BF	1	BCU output fault signal
12	COM	SPRJS-5EPFFJ-TC7002	1	BCQ network communication

6. Packaging, Transportation and Storage

6.1 Packaging of Product

The default factory packaging for this product is the full container package:

- ① Remove the copper bars connecting the PACKs, wrap the bars together in one parcel, attaching

packing-list; The bar parcel is shipped together with ESS Cabinet;

- ② Place shock-absorbing cotton between PACKs;
 - ③ Place ESS Cabinet on a wood pallet and fix the cabinet to the pallet with bolts by the feet of cabinet;
 - ④ Place pearl cotton around the cabinet and fix it with wrapping film;
- Arrange cardboard outside the fixed pearl cotton and paste the corresponding energy storage cabinet information, and finally fix it with wrapping film.



Packaging physical picture

6.2 Transportation of Product

◆ Transportation Status

Upon delivery, the SOC of this product is 30%-50%, and all power (circuit) shall be disconnected. The positive and negative power cables between PACKs, as well as the power cables of high-voltage box and control box, are removed to ensure the safety during transportation. This cabinet shall be transported in one package.

◆ Transportation Requirements

- ✓ The transportation of the ESS Cabinet shall meet the relevant requirements of UN 3536;
- ✓ The lifting point for the Cabinet is the lifting rings on top of cabinet, and the lifting equipment's load capacity shall meet the requirements;

- ✓ The battery PACKs shall be protected from inversion, severe vibration, external impact, and compression during transportation;
- ✓ The ESS Cabinet may be transported by vehicles such as truck, train and ship;
- ✓ During transportation, recommended speed of vehicle is below 80km/H on Grade-I highway, below 60km/H on Grade-II highway and below 36km/H on Grade-III highway. Measures shall be taken to avoid damage or deformation to the Cabinet;
- ✓ The spare parts and other components shipped together with the cabinet must be packaged in good condition, with basic information of names and quantities showing on the attached packing list so as to meet the requirements of sea transportation.

6.3 Storage of Product

The storage SOC of ECO-B64WX air-cooled energy storage cabinet should be maintained within the range of 30% to 50%. The customer expects to store the energy storage cabinet for more than 1 month but not more than 3 months, and should perform a charge and discharge in advance to adjust the SOC to 30%~50%. Sunpal will not be held responsible for any loss of energy storage cabinet capacity or other damages caused by the customer's failure to store according to the manufacturer's recommendations.

7. Warranty Statement

The shelf life of the product is determined by the business contract. During this period, if there are various issues such as safety, performance degradation, abnormal attenuation, etc. caused by non manufacturer design, process, and quality control reasons, Sunpal can only provide technical consulting support and paid replacement or repair services, and does not promise free repair, replacement, or other services.

Without permission from Sunpal, it is not allowed to disassemble and assemble the ECO-B64WX air-cooled energy storage cabinet and its accessories. If the customer disassembles and installs without authorization, Sunpal will not be held responsible for any related accidents or quality assurance services;

Sunpal shall not be held responsible for any problems or accidents caused by unauthorized

personnel operations or non product abnormalities, as follows:

- Various problems and accidents arising from violations of regulations, industry standards, technical agreements, safety usage guidelines, and usage restrictions described in this article;
- Abnormalities caused by the behavior of non Sunpal personnel during installation and use;
- Problems arising from improper use of electrical devices in conjunction with this product;
- Exceeding the boundary of battery performance indicators, that is, problems caused by using beyond the range;
- Connect this product directly to battery products of other types, models, and manufacturers;
- Unauthorized modification of this product without the manufacturer's permission.

8. Safety Usage Guidelines

In order to avoid battery damage or personal injury caused by misuse of square lithium-ion battery module, please carefully read the following safety guidelines before using square lithium-ion battery:

- Improper use and storage of battery poses a risk of fire, explosion, and burn. Do not decompose, crush, incinerate or heat battery, or put battery into fire;
- It is necessary to replace the battery or PACK with the one from the same manufacturer. The use of batteries from different manufactures may result in reduced performance, and even the risks of fire and explosion;
- Do not put the battery into water or wet it;
- Do not short-circuit, overcharge, or over discharge the battery;
- Do not install, use, or store the battery-based energy storage device near any heat source (such as fire or heater);
- Do not puncture the battery shell, and do not hit, throw, step on, press heavily, or roll the battery;
- Do not dismantle, repair or modify the battery product in any way without authorization;

- If the battery emits any odor, heats up, gets deformed, gets discolored, or has any other abnormal phenomenon, immediately stop using it, and transfer the abnormal battery to the emergency disposal site;
- If the battery catches fire, immediately cut off the high and low voltage circuits and use dry powder fire extinguishers or sand to extinguish the fire. If water is used for fire extinguishing, it is necessary to use an absolutely sufficient amount of water for long-term submergence, and it is prohibited to splash insufficient water onto the battery device.
- Without the consent of Sunpal , it is prohibited to dismantle the main device of the energy storage cabinet, modify or alter the design and architecture of the energy storage cabinet system, in order to avoid affecting the performance of the battery.

(END)