Elecnova

All-in-one Air-cooled

ESS Cabinet ECO-E215WS Specifications

Shanghai Elecnova Energy Storage Co., Ltd.

Revision History

Version	Description	Editor	Date	Remarks
A/1	Release (first draft)	Qian Zhihao	February 4, 2024	
A/2	Parameters of energy storage cabinet updated	Qian Zhihao	March 1, 2024	
A/3	Add air conditioner/PCS information	Qian Zhihao	July 26, 2024	

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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 ECO-E215WS (hereafter referred to as ECO-E215WS, or the ESS Cabinet, or the Cabinet, or the Product) produced by Shanghai Elecnova Energy Storage Co., Ltd. (hereinafter referred to as “Elecnova”) 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

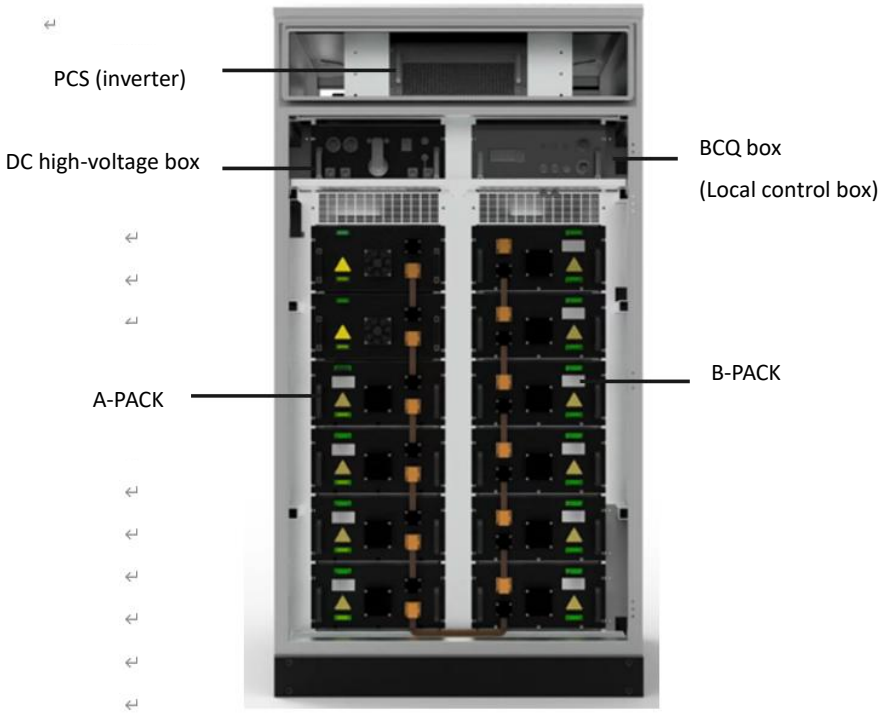
GB 4208-2008 Degrees of protection provided by enclosure (IP code)

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



Layout of ECO-E215WS

No.	Part	Quantity	Remarks
1	PCS (inverter)	1	
2	High-voltage box	1	/
3	BCQ box	1	/
4	A-PACK	6	Grouping mode is 1P20S
5	B-PACK	6	Grouping mode is 1P20S
6	Cabinet body	1	W_1250 * D_1300 * H_2400 mm

4. Technical Parameters of System

Physical Image of ECO-E215WS

Item	Specifications	Remarks
Product model	ECO-E215WS	
DC Side Parameters		
Battery type	LFP 280Ah	
Grouping method	1P240S	
Rated energy	215.04kWh	100%DOD, 25℃, 0.5P
Rated capacity	280Ah	
Rated voltage	768V	
Recommended voltage range	DC 672-864V	Cell volt lower limit 2.8V Cell volt upper limit 3.6V
AC Side Parameters		
Rated output power	100kW	
Maximum AC power	110kW (continuous 1 minute)	
Grid Voltage	400Vac/3P+N+PE	
Grid frequency	50Hz/60Hz	
THDi	＜3%	
DC component	＜0.5%Ipn	

Power factor range	-0.98～0.98	
System Parameters		
Energy conversion efficiency	≥89%	Excluding auxiliary power consumption
Charging/discharging rate	0.5P	Constant power
Discharge depth	95%DOD	
Cycle life	≥8000 times (25±2℃)	Rated operating conditions: 25±2℃, 0.5P, and 95%DOD
Protection level	IP55	
Cooling method	Forced air cooling	
Operating temperature	-25 to 55℃	
Relative humidity	0-95%RH, without condensation	
Altitude	≤2000m	Derated use for altitude above 2,000m
Dimensions (W*D*H)	1250*1300*2400mm	
Total weight	Approximately 2,500kg	
Fire protection system	Smoke/temperature detection + fully-submerged aerosol fire extinguishing	
Communication interface	Ethernet/RS485	
Standards complied with	GB/T 36276, GB/T 34120, GB/T 34131, UN38.3, IEC62619, UL1973, UL9540, and CE-EMC	

5. Product Introduction

5.1 PACK

This cabinet contains two types of battery PACK: A PACK and B PACK:

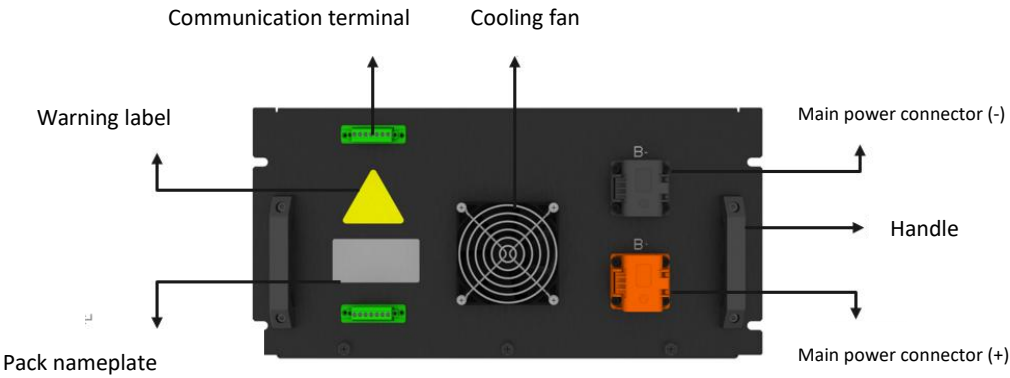
A-PACK is located on the left side of the cabinet, while B-PACK is on the right. They are with symmetrical front panels and the same internal module composition.

Diagram of B-PACK

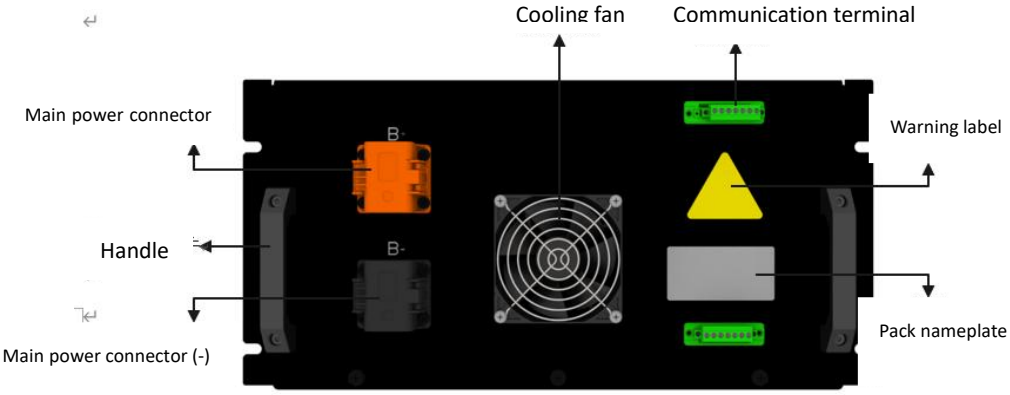
Diagram of A-PACK

The parameters are as per the table below:

No.	Item	Parameter	Condition
1	Model	ECO-P1P20WS	/
2	Cell capacity	280Ah	Standard charge/discharge
3	Grouping mode	1P20S	/
4	Nominal energy	17.92kWh	Standard charge/discharge
5	Nominal voltage	DC 64V	Standard charge/discharge
6	Recommended voltage range	56-72V	Cell voltage 2.8-3.6V
7	Charging rate	0.5P	Constant power
8	Cooling method	Air-cooling	
9	Dimensions (W * D * H)	470*950*230mm	See drawings
10	Weight	Appr. 143kg	Including copper bars
11	Ingress Protection level	IP20	
12	Operating temperature range	-20 to 55℃ (discharging)	Cell temperature
13		0-55℃ (charging)	
14	Recommended working temperature range	20-30℃	
15	Storage temperature range	-20 to 45℃	Batteries must be charged and maintained once every 3 months of storage
16	Storage humidity	＜75%RH, without condensation	
17	Applicable system voltage level	≤1500Vdc	
18	Communication method	CAN	/
19	Shipping SOC	30%-50%	(25±2)℃
20	Varranty operating conditions	(25±2)℃	/



Schematic Diagram of A-PACK Panel



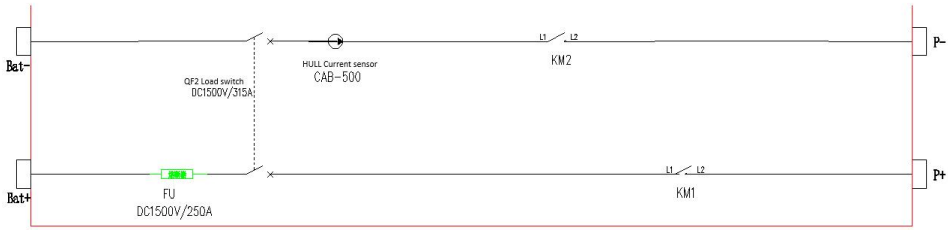
Schematic Diagram of B-PACK Panel:

No.	Part	Model	Q'ty	Remarks
1	B+	C-ES-FTB 25-70 OG	1	High voltage output (+) from module
2	B-	C-ES-FTB 25-70 BK	1	High voltage output (-) from module
3	Communication terminal	LC2AM-5.08-7P-140-00A	2	BMU communication
4	Cooling fan	TX9232H24B-G	1	/
5	Warning label	Live label	1	Pay attention to the

				danger of electrification
6	PACK nameplate	80×50 self-adhesive	1	Displaying PACK parameters
7	Handle	Equipped on shell	2	PACK handling

5.2 DC High-voltage Box

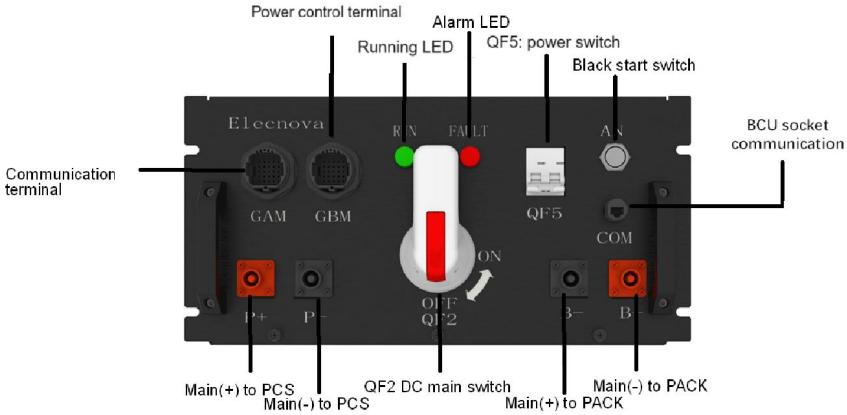
Diagram of High-voltage Box



Main Wiring Diagram of High-voltage Box

No.	Item	Parameter	Remarks
1	Dimensions(W*D*H)	470*950*230mm	See drawings
Z	Weight	Approximately 37.4kg	
3	Power input	AC 220V	Power supply of high-voltage box
4	Low voltage output	DC 24V	High-voltage box controls power output
5	Rated high-voltage	DC 768V	DC 672V - DC 864V

	output		
6	Operating temperature	-20 to 55℃	
7	Current accuracy	±1%FSR	
8	Voltage accuracy	±1%FSR	
9	Protection level	IP20	



High-voltage Box Panel Layout:

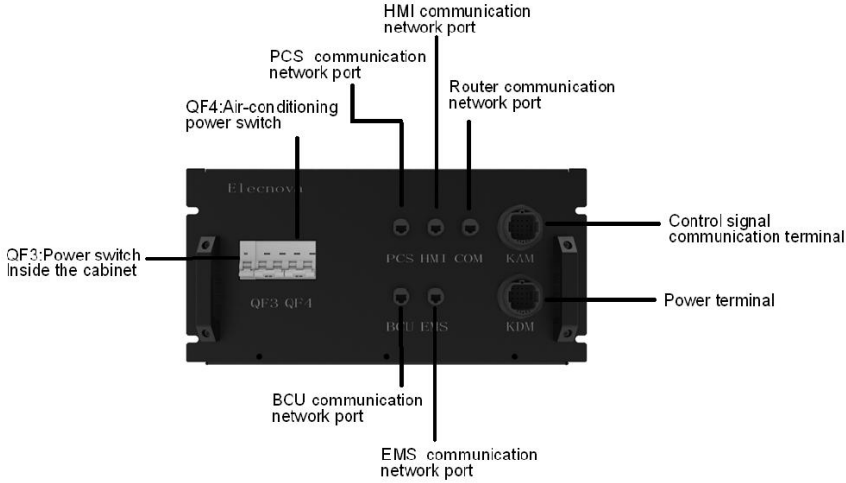
No.	Part	Model	Q'ty	Remarks
1	P+	ES-FT-BPC-B/S 35-70 OG	1	+ Polarity to PCS
2	P-	ES-FT-BPC-B/S 35-70 BK	1	- Polarity to PCS
3	B+	ES-FT-BPC-B/S 35-70 OG	1	+ Polarity to PACK
4	B-	ES-FT-BPC-B/S 35-70 BK	1	- Polarity to PACK
5	GAM	USCM016-004	1	Communication terminal
6	GBM	USCM016-004	1	Power signal terminal
7	QF2	NDG3VH-315	1	DC main switch
8	QF5	SFB3-100H C10A	1	Power control switch
9	AN	LA38-22/20E	1	Black start switch
10	RUN	AD11-16/21 green	1	BCU output RUN signal
11	Fault	AD11-16/21 red	1	BCU output fault signal

12	COM	SPRJS-5EPFFJ-TC7002	1	BCU socket communication

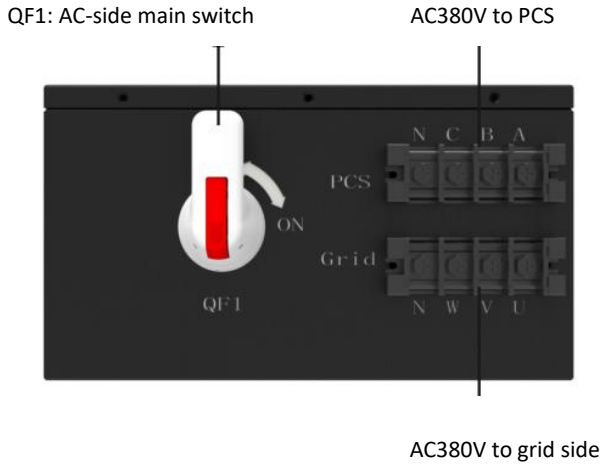
5.3 Control Box

Schematic Diagram of BCQ Box

No.	Item	Parameter	Remarks
1	Dimensions (W*D*H)	470*950*230mm	See drawings
2	Weight	Approximately 35.4kg	
3	Power output	AC 220V	Power supply for whole cabinet
4	Secondary side power input	DC 24V	Controlled power input of high-voltage box
5	Primary side AC voltage	AC 380V	Grid-tied side voltage
6	Operating temperature	-20 to 55℃	
7	Current accuracy	±1%FSR	
8	Voltage accuracy	±1%FSR	
9	Low-voltage power consumption	≤40W	Power consumption of BCQ box
10	Ingress Protection level	IP20	



Schematic Diagram of Front Panel Layout of BCQ Box:



Schematic Diagram of Rear Panel Layout of BCQ Box:

No.	Part	Model	Q'ty	Remarks
1	QF1	NDG3-250	1	AC side main switch
2	QF3	SFB3-100H C25A/2P	1	Power switch inside the cabinet
3	QF4	SFB3-100H C20A/2P	1	HVAC power switch
4	KAM	USCM025-004	1	Control signal communication socket
5	KDM	USCM124-004	1	Power socket
6	LYQ	SPRJS-5EPFFJ-TC7002	1	Router communication network port
7	HMI	SPRJS-5EPFFJ-TC7002	1	Touch screen communication network port
8	PCS (front)	SPRJS-5EPFFJ-TC7002	1	PCS communication network port
9	BCU	SPRJS-5EPFFJ-TC7002	1	BCU communication network port
10	BCQ	SPRJS-5EPFFJ-TC7002	1	EMS communication network port
11	PCS (rear)	DSTB80-04 C4	1	AC380V to PCS
13	Grid	DSTB80-04 C4	1	AC380V to grid-tied side

5.4 Air Conditioner

Physical appearance of outdoor wall mounted air conditioner

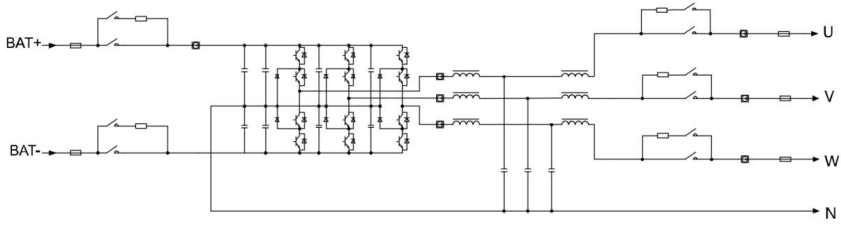
ECO-E215WS adopts two 2kW AC power supply outdoor wall mounted air conditioners. The air conditioner adopts an integrated mechanism that is easy to integrate with the cabinet/chassis. Two 2000W (L35 L35) air conditioners for cooling/heating can ensure that the cabinet is not affected by high and low temperatures outdoors. The IP55 protection level can adapt to the usage conditions of most regions, and the outside of the cabinet can be directly flushed and cleaned, making maintenance convenient. Supports multiple functions such as RS485 communication, power-off memory, self start, intelligent cooling and heating.

The air cooling method has the advantages of low energy consumption, low maintenance cost, environmental protection and energy saving, which can effectively reduce the maintenance cost of on-site labor in the later stage.

5.5 PCS

PCS physical appearance diagram

Energy Storage Converter (PCS) is a bidirectional current controllable conversion device that connects the energy storage battery system and the power grid. Its main function is to achieve energy exchange between lithium batteries and the power grid, and to control and manage the charging and discharging of the lithium battery system.



6. Packaging, Transportation and Storage

6.1 Packaging of Product

By default, this product is packed in one package upon delivery:

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 battery 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;

⑤ Put corrugated card board outside the fixed pearl cotton, attaching a packing list of ESS Cabinet, and fix it again with wrapping film.

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 copper bars 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

1) The transportation of ESS Cabinet assembly shall meet the relevant requirements of UN 3536;

2) 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;

3) The battery PACKs shall be protected from inversion, severe vibration, external impact, and compression during transportation;

4) The ESS Cabinet may be transported by vehicles such as truck, train and ship;

5) During transportation, recommended speed of vehicle is below 80km/H on Grade-1 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;

6) The spare parts and other components shipped together with the cabinet shall be packed 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 SOC of EC0-E215WS shall be maintained within the range of 20%-50% during storage. In case that the Cabinet is to stay idle for a period of 1~3 months, the cabinet shall be charged and discharged (one cycle) in advance to keep the SOC at 20%-50%. Elecnova shall not be held liable for any loss of capacity due to failure of complying with this requirement.

7. Warranty Statement

Refer to Limited Warranty Letter for Elecnova ESS Products (Standard Edition).

The warranty conditions are also subject to terms and conditions of a contract.

For the purpose of continuously improving client satisfaction, our products and product manuals are being constantly updated. Due to version difference, discrepancies of warranty conditions and product specifications may take place: In this case, confirmed contract shall prevail. For any question, please contact us.

Software Licensing

It is prohibited to use all or any of the data in the firmware or software developed by us for commercial purposes in any way.

It is prohibited to decompile, decrypt, or perform any other operation that may damage the original program design on the software developed by us.

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;

● If it is necessary to replace the battery, the battery produced by the same manufacturer shall be used. mixing batteries from different manufacturers may cause performance degradation, even 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 Elecnova, it is prohibited to dismantle the Cabinet, or modify or change the design and architecture of the Product; otherwise, the performance of the battery may get affected.