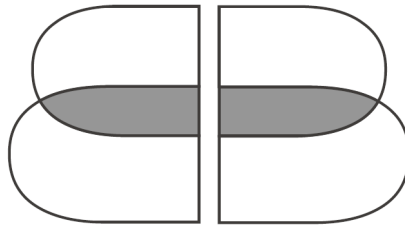


Technical Specification



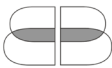
BRUNSTOCK *Symm* 261

125 kW modular BESS

261 kWh Liquid-cooled battery system

Models: BRUN-BESS-SYMM-261-D and BRUN-BESS-SYMM-261-P





CONTROL MATRIX		
PREPARED BY	CHECKED BY	APPROVED BY
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19/12/2025	19/12/2025	8/06/2026

Version	Reviser	Date of change	Explanation of the revision
1.0	Sean L.	19 Dec 2025	First edition
1.1	Amanda G	10 Feb 2026	Recreated from the user manual, for formatting efficiency, while comparing to the original for content. Confirmed by DT 8/06/2026
1.2	Amanda G	30 Mar 2026	Updates based on clarified specs and remove typos
1.3	Amanda G	15 June 2026	Add system scalability graphic from DT and other updates, based on technical review of test reports, by DT and CL
1.4	Amanda G	6 July 2026	Final minor tweaks for consistency





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1. Product positioning

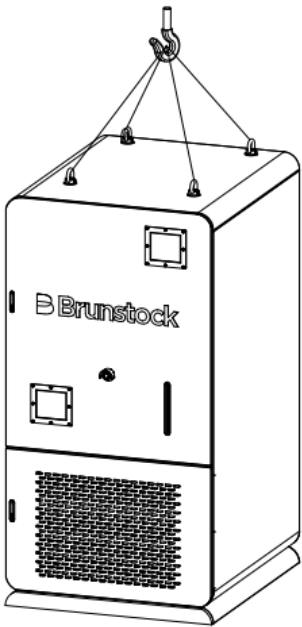
Symm 261 C&I BESS is suitable for markets that require CE-marked components. It is an electrochemical energy storage cabinet designed for applications in industrial and commercial energy storage systems, integrated photovoltaic and storage systems, microgrids and backup power supply scenarios. It is available in two varieties:

- 1) **Symm 261 with PCS:** power conversion system (PCS), energy management systems (EMS), fire protection and environmental control systems.

Model no. BRUN-BESS-SYMM-261-P

- 2) **Symm 261 for DC connection:** energy management system (EMS), fire protection and environmental control systems.

Model no. BRUN-BESS-SYMM-261-D





2. Application

The Symm 261 C&I BESS is mainly used in industrial and commercial storage applications as it is equipped to handle peak shaving, demand management, power capacity increase and more.

Peak shaving and valley filling for commercial and industrial (C&I) applications

Symm 261 charges during off-peak tariff periods and discharges during peak demand windows, reducing demand charges and lowering total energy costs. It integrates with Brunstock's enterprise EMS for automated scheduling based on load forecasting and tariff structures, with built-in control strategies for dynamic and static demand management, counter-current (export) control, peak shaving and valley filling, and demand-side response.

Backup power and resilience

Symm 261 provides UPS-level backup power with seamless transfer (<20ms) when grid supply fails, ensuring continuous operation of critical loads. The power conversion system supports on-grid and off-grid operation with automatic switching, low- and high-voltage ride-through (LVRT/HVRT), anti-islanding protection and black-start capability. Suitable for hospitals, data centers, manufacturing facilities, and other applications requiring high power reliability.

Solar-storage integration

When operated in conjunction with the photovoltaic system, it increases photovoltaic self-consumption by storing excess solar generation and releasing during non-solar periods or peak demand. Supports automatic grid-connected and islanded mode operation with seamless transition capability.

Microgrid and off-grid operation

Energy storage cabinets can be used together with local generators and wind and solar systems to form autonomous microgrids. Symm 261 supports pure on-grid, pure off-grid and on/off-grid switching modes, and can supply up to 100% three-phase unbalanced load when operating off-grid. It provides grid-forming capability for frequency and voltage regulation, black start functionality and islanded operation in areas with limited grid infrastructure.

Grid services and market participation

Symm 261 is capable of providing demand response, frequency regulation (FCAS where available) and capacity services to grid operators. Through its power conversion system it also offers active and reactive power control, reactive power compensation, harmonic governance (total harmonic distortion <3%) and three-phase unbalance compensation, supporting power-quality and network-support services. Supports participation in energy arbitrage and capacity markets when integrated with appropriate EMS and market



systems.



3. Product feature summary

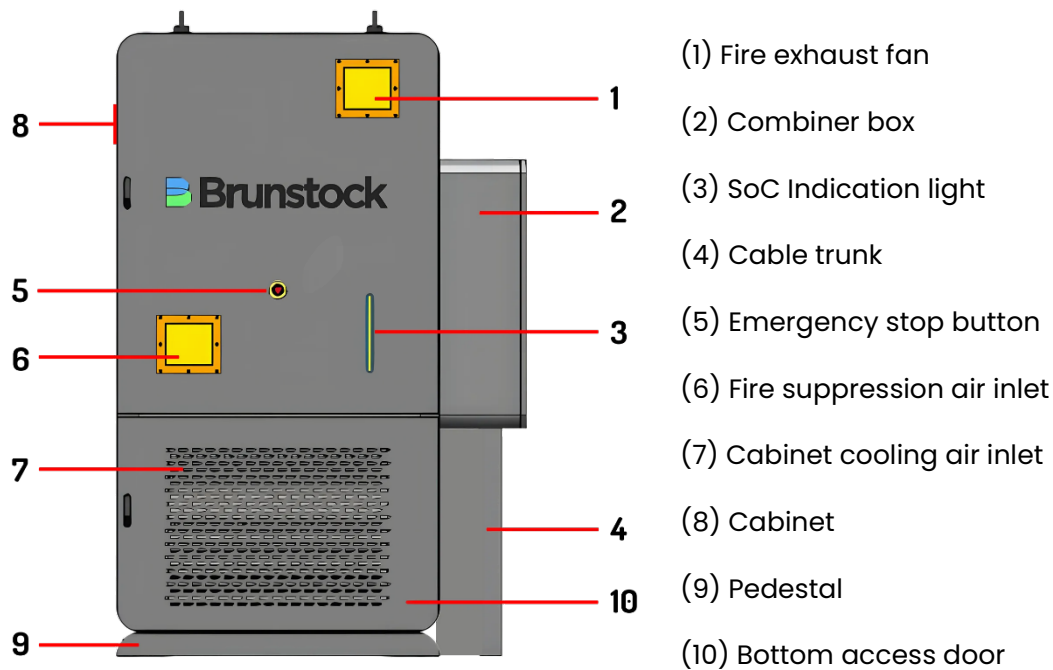
- 1) **All-in-one design:** It's different from the common DC side (battery cabinet) + AC side (PCS) that are available in the market. The battery pack, PCS and their assisting components are arranged in the same cabinet. The parallel connection communication is in the energy storage cabinet, which enables more flexible AC coupling and product configurations.
- 2) **Side by side layout:** Traditional liquid-cooling energy storage systems let cool air in through the front and expel hot air out the back. Such cabinets cannot be installed back-to-back. Whether it is for local compact load-side applications or source network-side applications, it is necessary to reserve an air-out channel. The system air channel of Symm 261 has a front-in-front-out scheme, which means our units can be arranged side-to-side. This type of connection is known as parallel layout.
- 3) **Efficient fire protection system:** Symm 261 has cabinet-level aerosol; smoke, heat and gas detection; and an explosion-proof exhaust. It ships with a fire-fighting plan in the user manual to improve system safety.



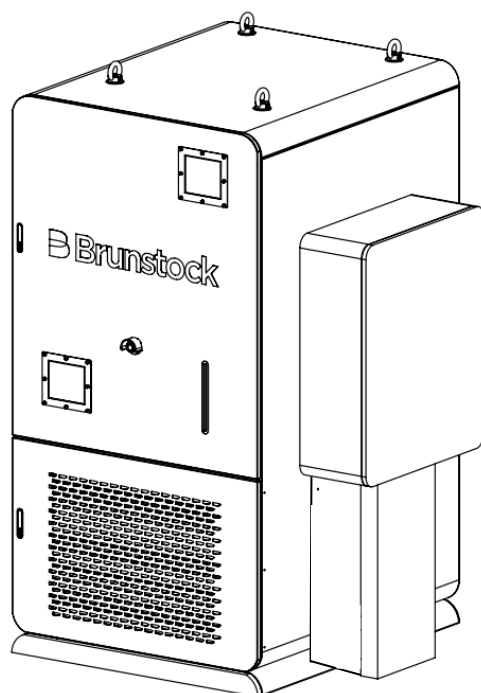
3.1 System composition and structure

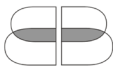
Composition of a single energy storage cabinet

Single energy storage cabinet configuration diagram (door closed)

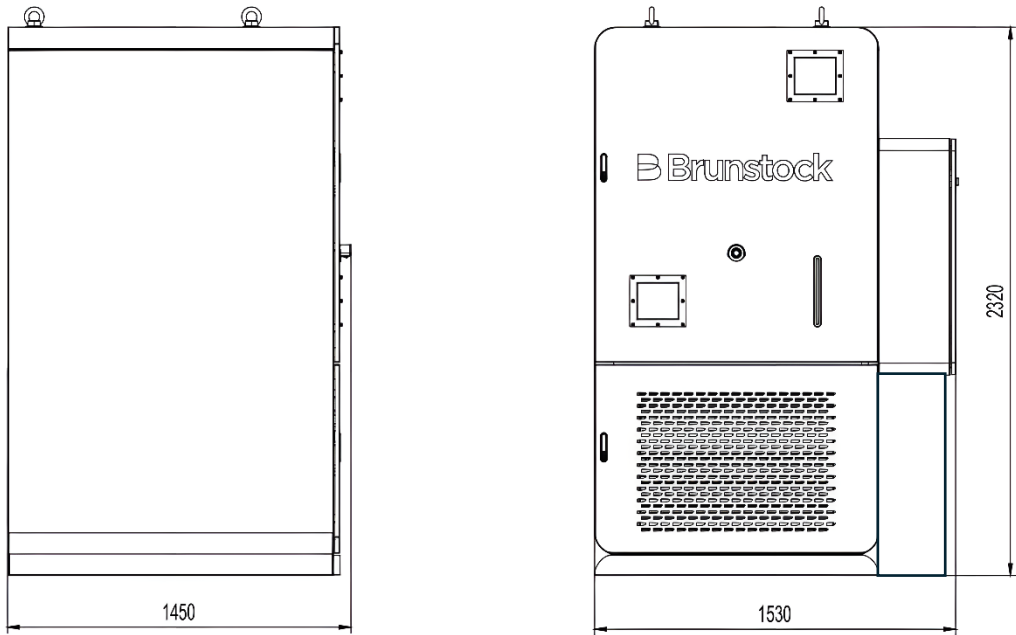


Note: Colours not actual

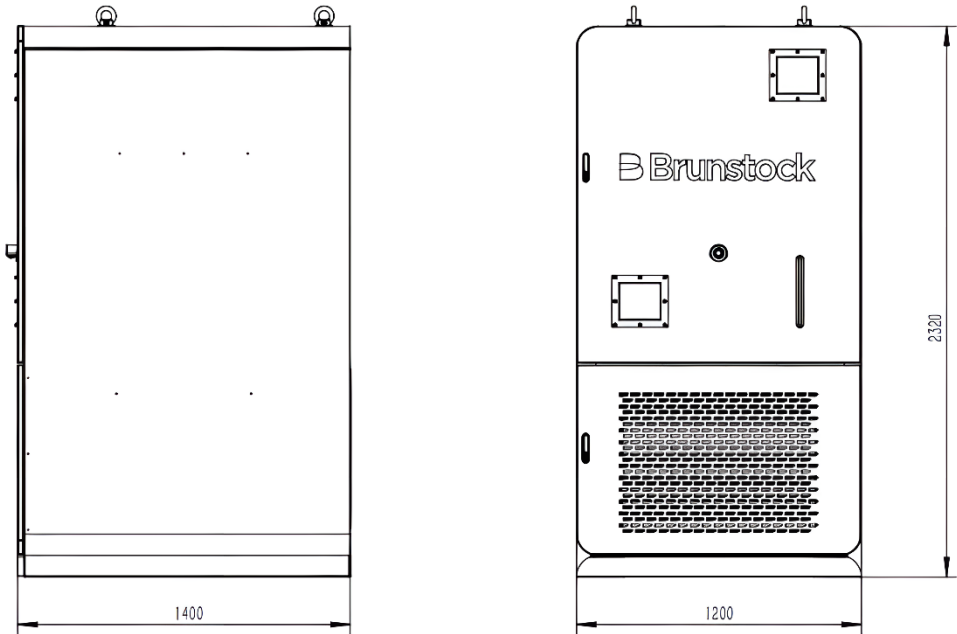


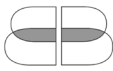


Dimensions of energy storage cabinet with AC combiner cabinet

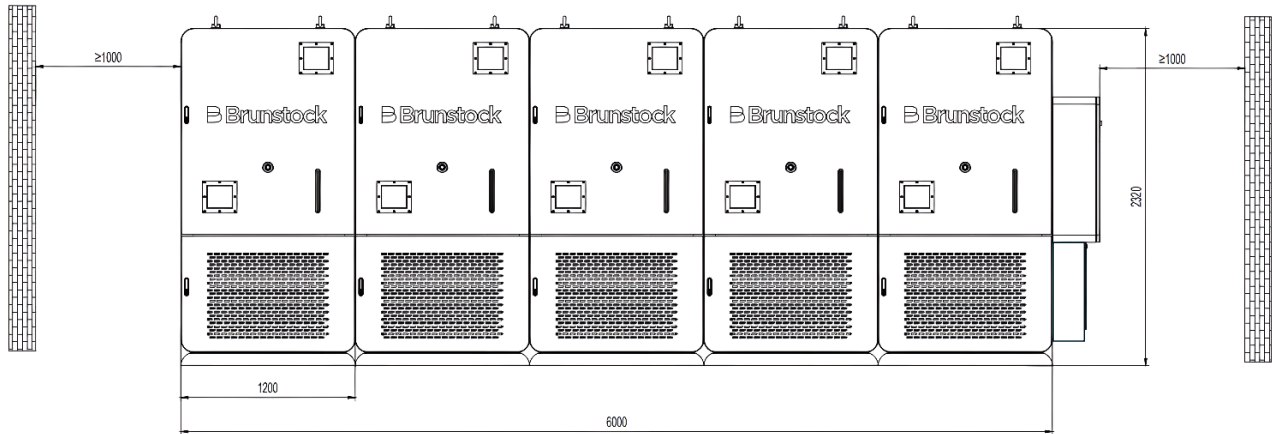


Dimensions of energy storage cabinet without AC combiner cabinet

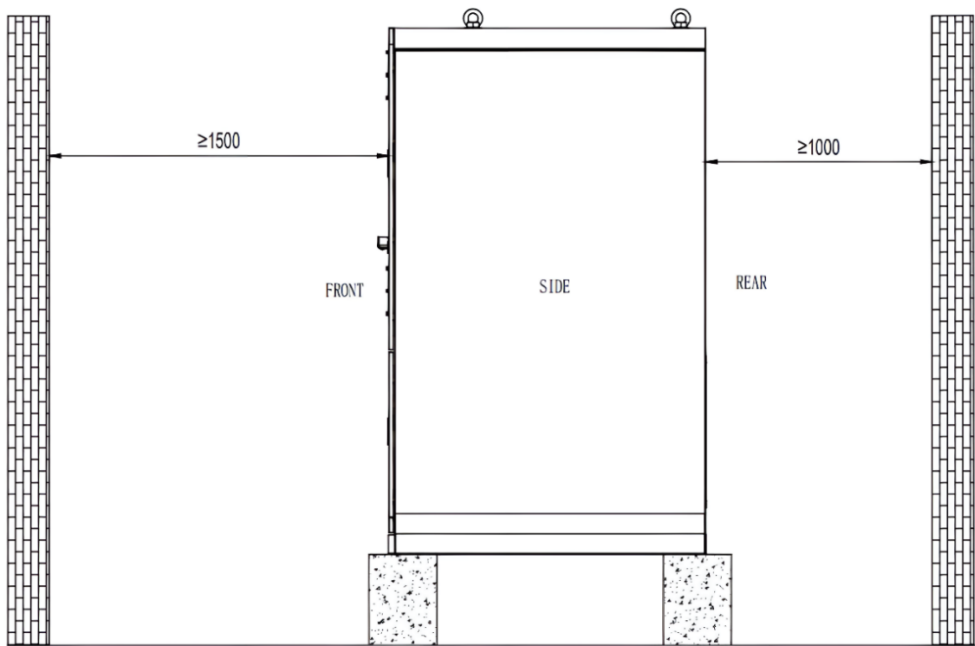




Cabinet left and right space requirements



Cabinet front and rear space requirements





4. Product description

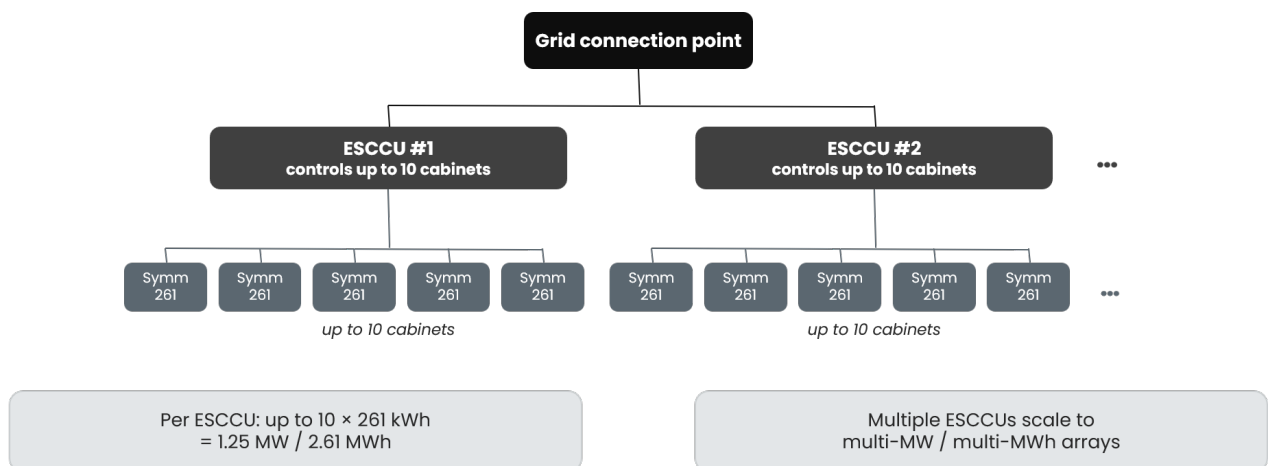
4.1 General description

Symm 261 is a distributed energy storage system with an integrated design. This energy storage product integrates the power conversion system (PCS), energy storage battery system (pack), battery management system (BMS), temperature control system, fire protection system, etc.

Its two main parts are the energy storage cabinet and the combiner box. The energy storage cabinet offers peak shaving, demand management, power capacity increase and more. The combiner box is an option that can support up to 5 x 261 kWh energy storage cabinets, with a maximum output power of 625 kW.

Symm 261 is ideal for flexible deployment and rapid capacity expansion to meet the needs of various small and medium-sized energy storage applications.

Symm 261 – System Scalability



A single AC combiner box aggregates up to 5 cabinets (625 kW / 1.3 MWh).

4.2 Main features

The main functions and technical parameters of Symm 261 are as follows:

- The main circuit of the combiner box is equipped with a 1-way max 1,250A switch
- The combiner box can support up to 5 x 261 kWh energy storage cabinets
- A single ESCCU (system control unit) can manage up to 10 cabinets at a common grid-connection point, giving a system scalable to 1.25 MW / 2.61 MWh; multiple ESCCUs extend the system to multi-MW arrays.
- Each energy storage cabinet is equipped with a 125 kW PCS



- The battery packs are liquid-cooled and the temperature difference of a single cluster is $\leq 3^{\circ}\text{C}$.
- Each energy storage cabinet contains 5 battery packs
- Our battery cell is made of lithium iron phosphate, which offers high energy and a long cycle life
- Symm 261 has a three-level BMS architecture, with a variety of functions such as battery data acquisition, control protection, fault diagnosis, etc. to ensure the efficient and stable operation of the battery system
- **Lightning protection:** the AC side has (8/20 μs , $I_n=20\text{KA}$, $I_{\text{max}}=40\text{KA}$) lightning protection
- The fire-fighting system provides cabinet-level aerosol, two detectors and an explosion-proof exhaust scheme
- **Installation method:** floor installation.
- Emergency stop button



4.3 Installation and site requirements

- The Symm 261 is floor-mounted and must be installed on a flat, stable surface able to bear the full operating weight of the cabinet. Provide adequate drainage and protection from flooding at the installation site.
- Maintain the minimum clearances shown in the left/right and front/rear spacing diagrams in Section 3.1, to allow for ventilation and maintenance access. Greater spacing is required where external equipment is installed alongside the unit.

4.4 Site selection

- Do not install the Symm 261 in any of the following environments without suitable protective measures: areas with high levels of dust, sand or salt spray; locations exposed to corrosive or flammable gases or potentially explosive atmospheres; or spaces with insufficient ventilation, which may cause components to overheat. For coastal installations, contact Brunstock for a validated protection solution before proceeding.

4.5 Grounding

- The cabinet provides protective earth (PE) and functional ground (FG) connection points. Use a flame-retardant grounding cable of at least 35 mm² (2 AWG), sized in accordance with the applicable electrical installation standards and the cabinet's fault-



current rating, fitted with the specified ring terminals, and ensure the measured ground resistance does not exceed 1 Ω . The customer is responsible for external grounding construction and verification.

4.6 Handling and lifting

- Use appropriate lifting equipment and follow all applicable workplace safety standards when handling the cabinet. Avoid impact or collision during transport and installation. Crane lifting is recommended; where a forklift is used, select one with a load capacity appropriate to the cabinet's shipping weight (see the Weight specification in Appendix 1). Do not use a forklift when the side inverter wiring harness is connected at the base of the cabinet.

4.7 Energy retention

- In the shutdown state the Symm 261 retains stored energy with a low self-discharge rate. Self-discharge increases at higher ambient temperatures, which should be allowed for in long-term storage. As a typical guide for a system of this type, monthly self-discharge in the shutdown state is approximately 3% or less, and energy retention over 24 hours is 99% or greater.

4.8 Application scope

- The Symm 261 is intended for stationary energy storage installations in commercial and industrial settings, including peak shaving and demand management, time-of-use energy arbitrage, backup and uninterruptible power supply, photovoltaic self-consumption, and microgrid or grid-support applications. It is designed for fixed, floor-mounted installation in a suitably prepared indoor or sheltered outdoor location, within the environmental limits given in Appendix 1.
- **Exclusions:** The Symm 261 is not approved for mobile or vehicle-mounted applications, for use in hazardous or explosive atmospheres, or for any application outside its rated electrical and environmental limits. Any use beyond the conditions described in this document should be referred to Brunstock for assessment.



Model numbers

Item	Model number	What these codes mean
Symm 261 with PCS	BRUN-BESS-SYMM-261-P	SYMM Short for 'symmetry' this is Brunstock's C&I BESS brand 261 the rated capacity KWh
Symm 261 for DC connection	BRUN-BESS-SYMM-261-D	DC direct current

Identification numbers can be added to identify customers, which can also be used to distinguish scenarios, version numbers, add AC and DC instructions etc. For the model numbers of our components and parts, please request a copy of the Symm 261 Order Form for your region.

Battery pack characteristics (single pack)

- The parameters below describe a single battery pack. Each Symm 261 energy storage cabinet (the complete 125 kW / 261 kWh unit) contains 5 of these packs. For complete-unit figures, see the table that follows.

Item	Parameter	Notes
Battery cell type	LFP	
Battery capacity	314 Ah	
String mode	1P52S	
Rated voltage	166.4 V	
Rated charge and discharge rate	0.5P	
Nominal capacity	52.24 kWh	
Battery pack weight	700 kg	
Battery pack size (W x H x D)	790 mm x 250 mm x 2180 mm	
Protection level	IP67	
Heat dissipation method	Liquid cooling	
Storage ambient temperature	-30 to 55 °C	
Communication method	CAN	



Main technical parameters of the Symm 261 energy storage cabinet

- The parameters below describe the complete Symm 261 unit (the 125 kW / 261 kWh energy storage cabinet), not a single battery pack.

Parameter name	Parameter description
Specifications	MESC832261-CE
AC parameters	
Rated AC voltage	400 Vac (line voltage, 3W+N+PE)
AC voltage range	340 to 440 Vac (-15% to 10% range adjustable)
Rated AC current	180.4 A
Rated output power	125 kW
Maximum output power	137.5 kW (1.1 times rated output power)
Maximum output current	233.4 A (10-minute overload)
AC-side conversion	$\geq 90\%$ @ 25 °C, 0.5P, single charge and discharge conversion efficiency (auxiliary electricity is not included)
Rated frequency	50/60 Hz (adaptive)
Power factor	-1 to +1 (leading to lagging, at rated output power)
Maximum harmonic distortion	$< 3\%$ (rated output power)
DC parameters	
Battery configuration	1P260S
Rated DC voltage	832 Vdc
DC voltage range	767 to 923 Vdc
Rated DC power	125 kW
Rated DC current	150 A (rated DC power/832 Vdc)
Maximum DC power	137 kW (1.1 times the rated DC power, 10 min overload)
The maximum current	163 Adc (peak)
Rated charge and discharge rate	0.5 P
DC side conversion efficiency	$\geq 95\%$ @25 °C, 0.5P, single charge and discharge conversion efficiency



Parameter name	Parameter description
Battery type	LFP
Battery capacity	261 kWh
Depth of discharge	95% DOD
Battery cycle life	~8,000 cycles at 25 °C, 0.5P, 1 cycle/day, 95% DOD (@ 25 °C, 0.5P charge and discharge, the battery cell decays to 70% of the initial capacity under 95% DOD operation)
Balanced strategy	Passive balancing (balancing current 100 mA)
Operation ambient temperature	-30 °C to 55 °C (power derating when the temperature is below 0 °C or above 45 °C)
Transport temperature	-30 °C to 55 °C
Storage temperature	-30 °C to 55 °C
Operation humidity	0% RH to 95% RH, no condensation
Storage humidity	0% RH to 95% RH, no condensation
Altitude requirements	0 to 3000 m (output power is derated above 2,000 m)
Other parameters	
Temperature control method	Battery compartment liquid cooling, electrical compartment forced air cooling
Communication port	LAN/CAN
Weight	≤3000 kg
Dimensions (with AC return cabinet) W x D x H	1200 x 1400 x 2320 mm
Protection level	IP55

Main technical parameters of combiner box

Parameter name	Parameter description
Specifications	MBSC4001250
Rated AC voltage	400 Vac (line voltage, 3W+N+PE)



Parameter name	Parameter description
Rated AC current	1250 A
Rated frequency	50/60 Hz
Number of input channels	Can connect to 5 x 261 kWh energy storage cabinets
Weight	≤100 kg
Dimensions (W x D x H)	325 x 820±5 x 1000 mm
Protection level	IP55

Related standards

No.	Standard No.	Standard name
1.	EN/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
2.	IEC 60730-1 Annex H	Automatic electrical controls for household and similar use – Part 1: General requirements – Annex H: Requirements for electronic controls
3.	EN IEC 61000-6-2:2019	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
4.	EN IEC 61000-6-4:2019	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments
5.	EN 62477-1:2012+A11:2014+A1:2017+A12:2021	Safety requirements for power electronic converter systems and equipment – Part 1: General
6.	EN 18031	Stationary energy storage systems (SESS) – Safety requirements
7.	IEC 63056:2020	Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for lithium batteries for use in stationary applications
8.	UN 38.3	Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, Sub-section 38.3: Lithium metal and lithium ion batteries

