



Energy Storage

# FREEN-BSH

SODIUM  
Na<sup>+</sup>

High voltage sodium-ion battery systems

The Freen-BSH series features high-voltage rechargeable sodium-ion battery modules tailored for residential and commercial applications where performance, safety, and efficiency are non-negotiable. Their floor-mounted design and modular build make integration simple across a wide range of energy storage scenarios, from grid support to renewables integration.



your wind your power your way



Outstanding Efficiency

Round-trip efficiency exceeds 97%, allowing maximum utilization of every kilowatt stored.



Extended Durability

Engineered for over 5,000 full charge and discharge cycles, EOL capacity over 80%, supporting long-term system value and reduced maintenance.



Wide Operating Temperature Range

With a discharge temperature range of -40°C to +60°C, the FREEN-BSH series excels in extreme climates.



Sodium-ion Technology

A fire-safe, and sustainable alternative with stable performance across various conditions.



Scalable Configuration

Modular design supports tailored energy system sizing for various project scales and technical requirements.



Minimal Maintenance

Built-in fan cooling, a safety-focused design, and CAN/RS485 -based system communication ensure minimal maintenance requirements.

With a nominal voltage of 288 V and modular configurations, compatible with modern inverters, Freen-BSH systems provide high power output, extended cycle life, and dependable operation.

# FREEN–BSH Specifications



BATTERY MODULE	FREEN-BSH
Module quantity <sup>1</sup>	1 - 4
Operating voltage	144-379.2 V
Nominal voltage	288 V
Rated capacity	17.5 Ah
Usable energy	10 kWh
Max. charging / discharging current	17.5 A
Max. charge / discharge power	5 kW
Dimensions, mm (W / D / H)	360 × 680 × 418
Battery module weight	120 kg
Cell type	Sodium-ion (Layered oxide)
Installation	Indoor / Floor stand
Operating temperature range	Charge 0 – +55 C° / Discharge -40 – +60 C°
Storage temperature range	-10 – +35 C°
Certificates, Standards compliance	CE, UN 38.5, IEC62619
IP rating	IP20
Cooling	Natural convection
Communication	CAN / RS485
Relative humidity	< 70%
Battery efficiency <sup>2</sup>	> 97%
Expected service life <sup>3</sup>	> 5000 cycles (80% SOH) or MTE 45 MWh

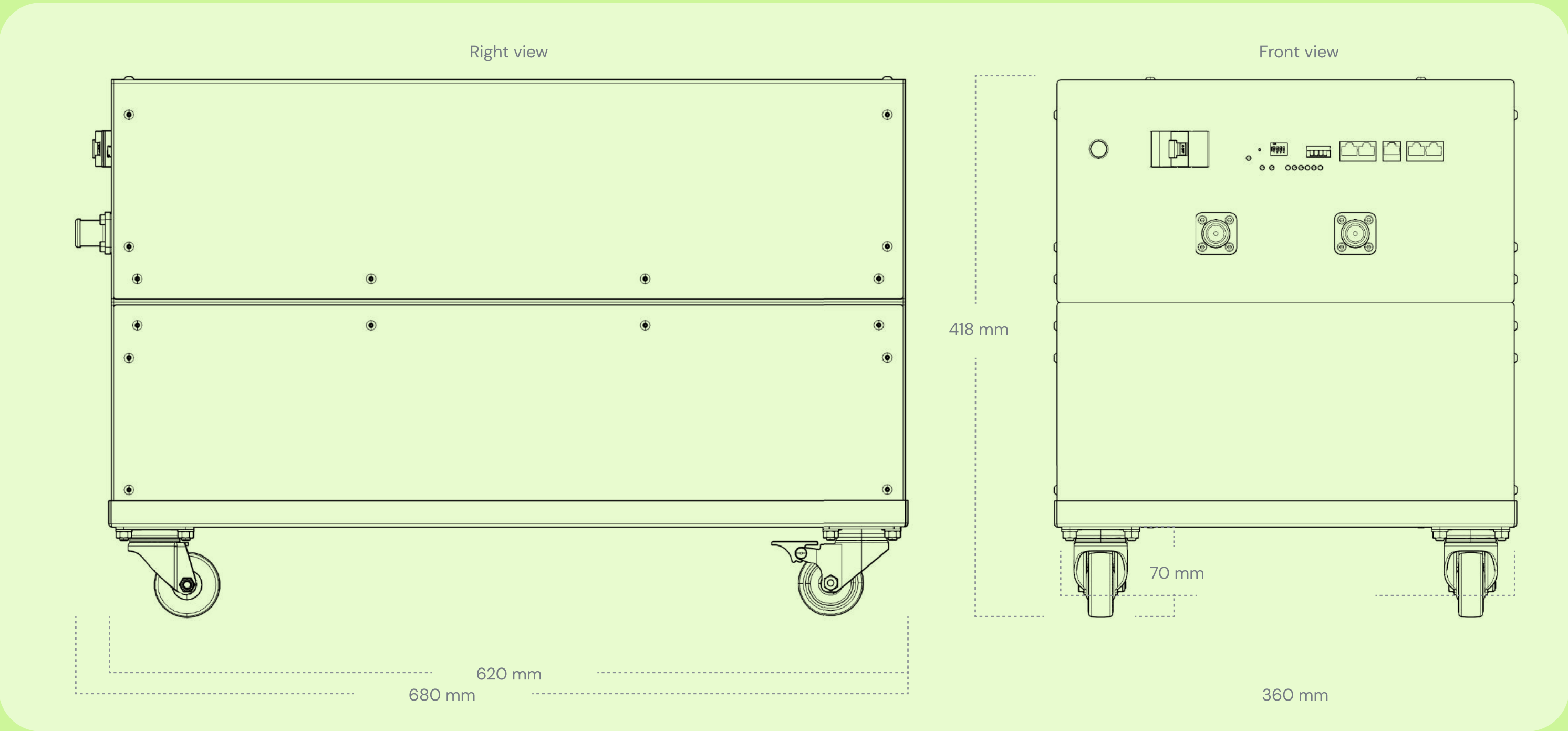
<sup>1</sup> Maximum parallel connection is 4 units, total capacity is 40 kWh.

<sup>2</sup> At a charge/discharge rate of 0.5C, temperature of 25C°.

<sup>3</sup> At a charge/discharge rate of 0.5C. The warranty for the battery is that it will retain at least 80% of its Usable energy for 10 years from the date of dispatch from Freen, or until it reaches the Minimum Throughput Energy, whichever occurs first.

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## Drawings



## Engineered Safety

Freen–BSH batteries are engineered with safety and reliability at their core. To minimize the risk of internal short circuits, overheating, or fire, we apply a strategy of partial capacity utilization, keeping the battery consistently undercharged and under discharged. This approach greatly reduces the likelihood of thermal runaway, even during high–voltage and high–load operations. Each module is structurally reinforced to withstand mechanical stress and prevent the ingress of moisture or oxygen, which could trigger exothermic reactions. The result: a stable, safe, and resilient high–voltage energy storage system built for long–term performance.

## Freen OÜ

Arenduse 6, Kohtla–Järve, 30328, Ida–Virumaa, Estonia

[contact@freen.com](mailto:contact@freen.com)

