your wind your power your way

Energy Storage

FREEN-BSL

SODIUM Na+

Low voltage sodium-ion battery systems

The Freen-BSL series offers scalable, low-voltage rechargeable sodium-ion battery modules ideal for residential and small commercial energy storage systems. With excellent cycle life, high round-trip efficiency, and a robust operating temperature range, these floor-mounted units are designed for performance and reliability — even in extreme climates.

High Efficiency

Over 97% round-trip energy efficiency ensures minimal energy loss during storage and retrieval.

Long Lifetime

Delivers over 10,000 full charge-discharge cycles with >60% of end capacity for long-term performance and reliability.

Sodium-ion Technology

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

Modular Design

Scalable architecture allows flexible system sizing to meet different energy storage needs.

Broad Temperature Tolerance

Consistent performance even in the harshest environmental conditions. Capable of discharging between -40°C and +60°C.

Low Upkeep Requirements

Integrated fan-based cooling, robust safety engineering, and smart CAN/RS485 communication.

With a nominal voltage of 48 V and modular configurations, Freen-BSL systems are compatible with most inverters, providing high power output, extended cycle life, and dependable operation.

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FREEN-BSL Specifications

BATTERY MODULE	FREEN-BSL
Module quantity [1]	1 - 16
Operating voltage	40-60 V
Nominal voltage	48 V
Rated capacity	158 Ah
Usable energy	7.6 kWh
Max. charging / discharging current	100 A
Max. charge / discharge power	4.8 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^{o} / Discharge -40 – +60 C^{o}
Storage temperature range	-10 – +35 C^{o}
Certificates, Standards compliance	CE, UN 38.3, IEC62619
IP rating	IP20
Cooling	Natural convection
Communication	CAN / RS485
Relative humidity	< 70%
Battery efficiency [2]	> 97%
Expected service life [3]	> 10000 cycles (60% SOH)

[1] Maximum parallel connection is 16 units, total capacity is 121,6 kWh.

[2] At a charge/discharge rate of 0.5C, temperature of 25C^{o}.

[3] At a charge/discharge rate of 0.5C

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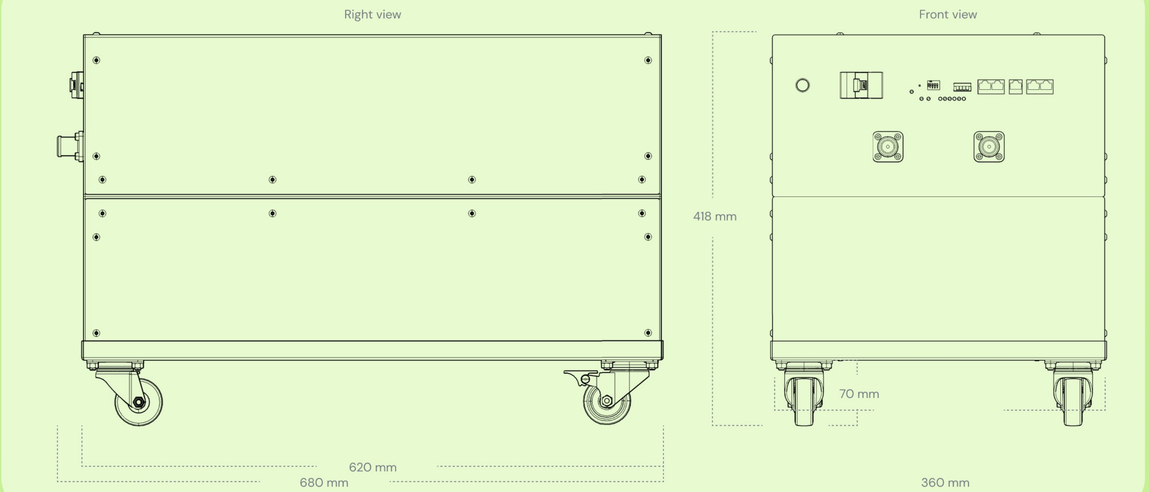
Drawings



Engineered Safety

Freen-BSL storage solutions are engineered with safety as a top priority.

To mitigate the risk of internal short circuits, fires, and explosions, we implement a strategy of partial capacity utilization, keeping the battery consistently undercharged and under discharged. This approach significantly reduces the chance of thermal runaway, even under high load conditions.

Our modules are designed to resist mechanical damage that might allow moisture or oxygen to enter the cell, preventing exothermic reactions that could otherwise lead to overheating or ignition.

Freen OÜ

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

contact@freen.com