sonnen

Engineering Design Tech Specs - sonnenCore+

The sonnenCore+ is an intelligent energy storage solution that is safe, long-lasting and offers up to 20kWh of battery capacity. The sleek design combines smart energy management software with the safest and longest lasting batteries to efficiently manage home energy usage throughout the day, store excess solar power for use at night and provide reliable backup power during power outages.

Model number	SCORE-P10	SCORE-P20
Usable capacity	10 kWh	20 kWh
Weight (approximate)	408 lbs (185 kg)	525 lbs (238 kg)
Nominal power rating (Grid-tied output at 40°C)	4.8 kW	
Dimensions W"/H"/D" (adjustable height from ground)	27 / 69.5 / 14 27 / 71.5 / 14 (with legs elevated)	
Grid integration	AC coupled	
Applications	Time-of-use Virtual Power Plant Solar self-consumption Emergency backup power	
Usable capacity[1]	5 kWh per battery module	
Inverter efficiency	94.4% peak	
On-Grid pass-through	35 A	
Max round-trip efficiency[2]	85.8%	
Operation temperature range	14°F - 122°F 32°F - 104°F (MAX power)	
System cooling	Natural convection	
Comm. ports	Ethernet	
Communication protocols / Control	SunSpec Alliance / API available to select partners	
Seismic rating	IEEE 693	
Noise emission	<25 dB	
Total harmonic distortion	<5%	
Altitude	6562 ft (2000 m)	
Maximum compatible PV inverter	6 kW	

Off-grid specifications

Nominal Off-Grid current (Continuous)	20 A / 4.8 KVA
Max AC Off-Grid current (Max 30min)	25 A / 6 KVA
Max AC Off-Grid current (Max 5s)	30 A / 7.2 KVA

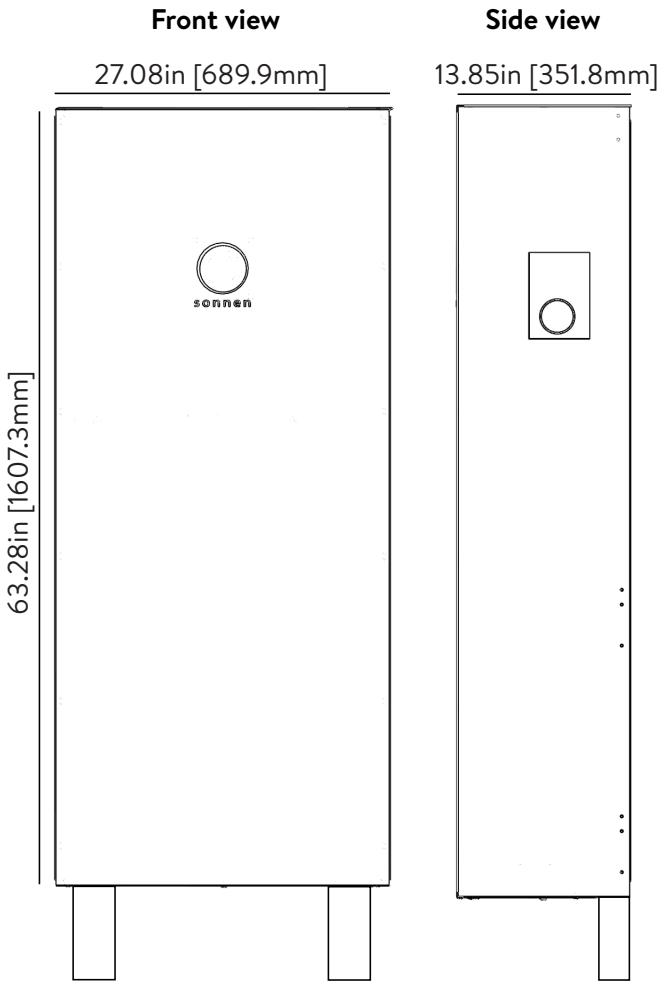
Compliance information

Certifications	UL1741, UL1741SA, UL1973, UL9540, UN38.3
Grid Connections	IEEE 1547, IEEE 2030.5, Rule 21
Emissions	FCC Part 15 Class B (inverter)
Transient protection	IEEE C62.41 Class B
Warranty[3]	10 year or 10,000 cycle system warranty – includes inverter, battery modules, cabinet and components
Enclosure rating	Type 12

Battery specification

Nominal DC voltage	102 VDC
DC battery input voltage	96 - 112 VDC
Max charge current	19 A per module
Cell discharge[1]	5 kWh with 100% DoD
Cell chemistry	Lithium iron phosphate
Over-current Protection	Fuse protection

Measurements



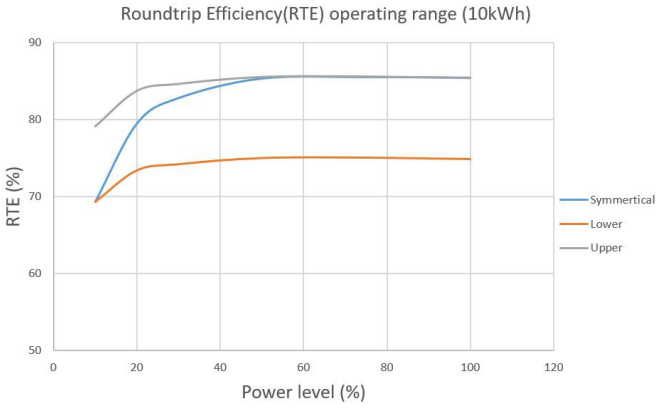
We reserve the right to make technical changes. The values, outputs, other technical data, images, and diagrams in this prospectus and in data sheets, advertisements, and other promotional documents are approximate guidelines in all cases where they have not been identified as binding.

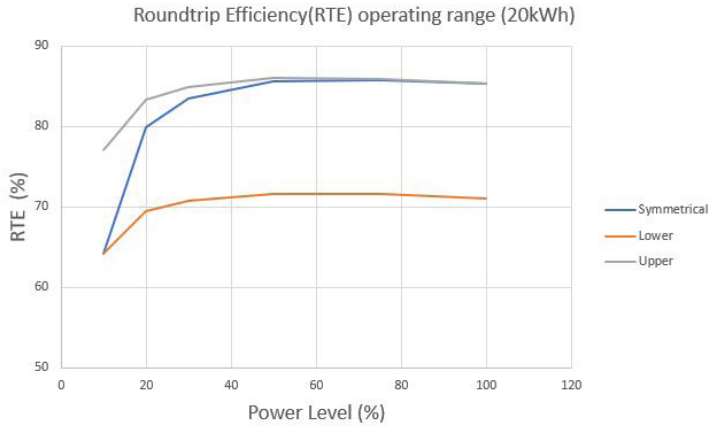
1 The sM4 battery modules are 5.5 kWh in total capacity and represent 5kWh of usable capacity per module.
2 Maximum round trip efficiency shown is calculated using the single cycle round trip efficiency (SCRTE) formula used by SGIP admin.
3 Please observe our applicable warranty conditions.
4 Based on full system AC/AC RTE “round-trip efficiency” for the sonnenCore+ 20 kWh system at ambient temperature of 25°C (77°F), beginning of life. Test conducted by sonnen Inc. R&D. Backup data available.

Design Considerations

Detailed round-trip efficiency range[4]

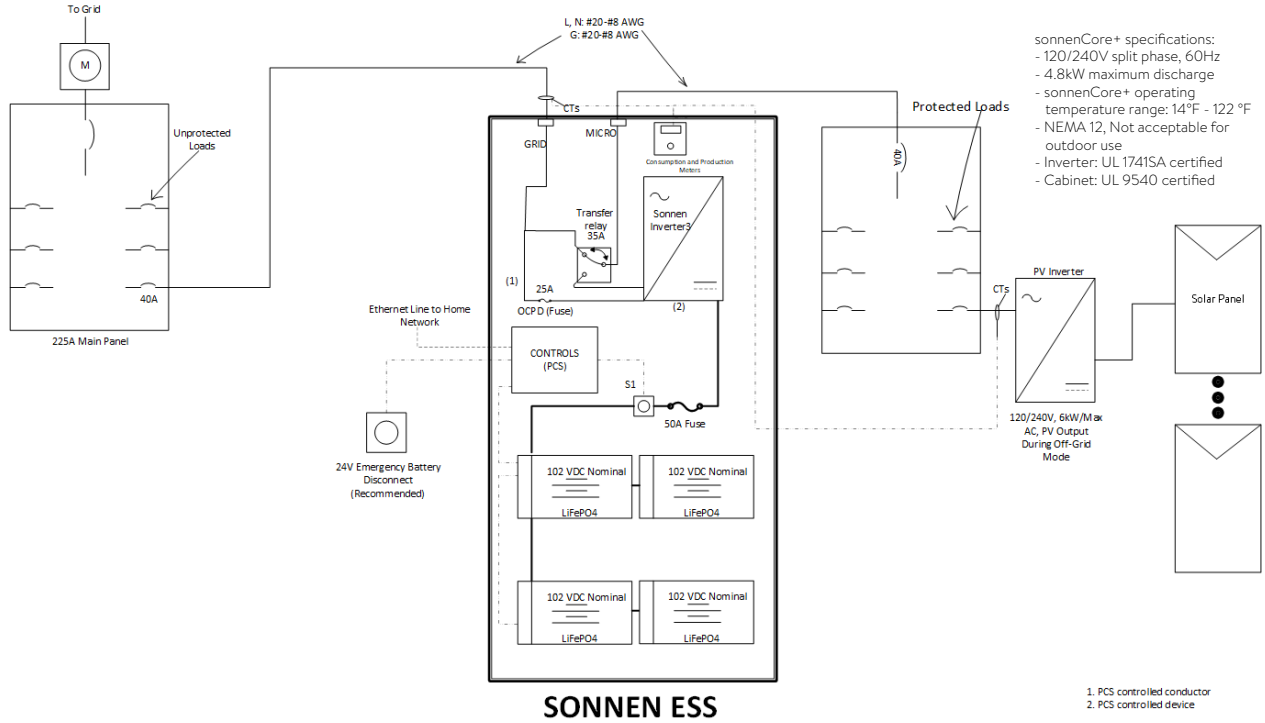
Round-trip efficiency of the entire sonnen system varies depending on charge/discharge power levels with an expected efficiency range shown below. The “Symmetric” curve within the range shows the efficiency when charge and discharge rates are equal. The upper and lower limits indicate the operating region of the system based on variations of those charging and discharging rates.





Single Line Diagram for System Design

Below is an overview of the design layout for a single sonnenCore+ system with a protected loads panel for backup power. Specific project design consultation for custom installations is available through sonnen Applications Engineering at design@sonnen-batterie.com.



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