



TECHNICAL SPECIFICATION **CITADEL SERIES**

208kWh - BAT - L
156kWh - BAT - L
104kWh - BAT - L

Version 2.0

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2. PRODUCT SUMMARY

The Citadel 208kWh – BAT – L is a commercial and industrial (C&I) liquid-cooled battery energy storage cabinet designed for outdoor energy storage applications. Featuring high environmental protection, long cycle life, advanced safety mechanisms, and flexible scalability, it can be integrated with a 50kW hybrid inverter to form a complete photovoltaic (PV) and battery energy storage solution for commercial and industrial projects.

Key Features

High Environmental Adaptability

- IP55-rated enclosure suitable for outdoor installation.
- Wide operating temperature range from -20°C to $+55^{\circ}\text{C}$.
- Designed to withstand demanding environmental conditions while ensuring reliable performance.

Flexible Configuration

- Supports up to 16 battery cabinets in parallel for convenient capacity expansion.
- Compatible with mainstream Power Conversion Systems (PCS).
- Suitable for both centralized and string-type energy storage system architectures.
- Modular design enables flexible system sizing to meet various project requirements.

Safe and Reliable

- Three-level active protection system provides comprehensive safety management.
- Real-time monitoring of:
 - Short circuits
 - Overcurrent conditions
 - Overvoltage events
 - Overtemperature conditions
 - Other abnormal operating states
- Optional pack-level fire suppression and cluster-level fire suppression solutions available for enhanced safety.

Long Service Life

- Optional active-balancing Battery Management System (BMS) maintains high cell consistency and improves overall battery performance.
- High-efficiency liquid cooling system reduces temperature variations between cells and extends battery service life.
- Designed for $\geq 6,000$ charge/discharge cycles under specified operating conditions.

Typical Applications

- Commercial and industrial energy storage systems
- Solar PV + Battery Energy Storage Systems (BESS)
- Peak shaving and load shifting
- Demand charge management
- Backup power applications
- Microgrids and distributed energy systems

3. TECHNICAL SPECIFICATION

Parameter	208kWh-BAT- L	156kWh-BAT-L	104kWh-BAT-L
Cell Nominal Capacity	314 Ah	314 Ah	314 Ah
Battery Pack Nominal Energy	52.24 kWh	52.24 kWh	52.24 kWh
System Energy	208.96 kWh	156.72 kWh	104.48 kWh
Nominal Voltage	665.6 V	499.2 V	332.8 V
Operating Voltage Range	582.4–759.2 V	436.8–569.4 V	291.2–379.6 V
Compatible Inverter Power	50/100 kW	50 kW	50 kW
Max Charge/Discharge Rate	0.5C		
Cycle Life	≥ 6,000 cycles (25°C, 0.5C/0.5C, 80% EOL)		
Max Parallel Units	16 (DC-side parallel, grid-tied mode)		
Dimensions (W × D × H)	1000 × 1350 × 1850 mm		
Weight	≈ 2,050 kg	≈ 1,720 kg	≈ 1,390 kg
Ingress Protection	IP55		
Cooling Method	Liquid cooling		
Fire Suppression	Aerosol-based system		
Installation Environment	Outdoor		
Operating Temp. Range	-30°C to +55°C		
Altitude	≤ 3,000 m (derating above 2,000 m)		
Certifications	UN 38.3, CE		
Compatible Inverters	Solis S6-EH3P50K-H		

Important Note: Although the battery cabinet is designed to support hybrid inverters from 50 kW to 100 kW, only 50 kW inverter configurations have completed validation and are currently available. Projects requiring other inverter sizes should be reviewed with the manufacturer's technical team.

4. COMPATIBLE INVERTER PARAMETERS

Model	S6-EH3P50K-H
Input DC (PV side)	
Recommended max. PV array size	100 kW
Max. usable PV input power	96 kW
Max. input voltage	1000 V
Rated voltage	600 V
Start-up voltage	180 V
MPPT voltage range	150 – 850 V
Max. input current	4 * 40 A
Max. short circuit current	4 * 60 A
MPPT number / Max. input strings number	4/8
Battery	
Battery type	Li-ion
Battery voltage range	150-800 V
Max. charge / discharge power	55 kW
Max. charge / discharge current	70 A*2 (supporting parallel 140A input)
Number of battery ports	2
Max. charge / discharge power of each input	35 kW
Communication	CAN/RS485
Output AC (Grid side)	
Rated output power	50 kW
Max. apparent output power	50 kVA
Rated grid voltage	3/N/PE, 220 V / 380 V, 230 V / 400 V
Rated grid frequency	50 Hz / 60 Hz
Rated grid output current	76 A / 72.2 A
Max. output current	76 A / 72.2 A
Power factor	>0.99 (0.8 leading – 0.8 lagging)
THDi	< 3%
Input AC (Grid side)	
Max. AC passthrough current	152 A / 144.4 A
Rated input voltage	3/N/PE, 220 V / 380 V, 230 V / 400 V
Rated input frequency	50 Hz / 60 Hz
Input Generator	
Max. input power	50 kW
Rated input current	76 A / 72.2 A
Rated input voltage	3/N/PE, 220 V / 380 V, 230 V / 400 V
Rated input frequency	50 Hz / 60 Hz
Output AC (Back-up)	
Rated output power	50 kW
Max. apparent output power	1.6 times of rated power, 2s
Back-up switch time	<10 ms
Rated output voltage	3/N/PE, 220 V / 380 V, 230 V / 400 V
Rated frequency	50 Hz / 60 Hz
Rated output current	76 A / 72.2 A
THDv (@linear load)	<2%

Efficiency	
Max. efficiency	97.80%
EU efficiency	97.40%
BAT charged by PV max. efficiency	98.50%
BAT charged / discharged to AC max. efficiency	97.50%
Protection	
Anti-islanding protection / Output over current protection / Short circuit protection / Integrated DC switch / DC reverse-polarity protection	
Surge Protection	DC Type II / AC Type II
Integrated AFCI 2.0	Optional
General Parameters	
Dimensions (W*H*D)	530 * 880 * 290 mm
Weight	73 kg
Topology	Transformerless
Self-consumption (night)	<35W
Operating ambient temperature range	-25 ~ +60°C
Relative humidity	0 - 100 %
Ingress protection	IP66
Cooling concept	Intelligent fan-cooling
Max. operation altitude	4000 m
Grid connection standard	G99, VDE-AR-N 4105/VDE V 0124, EN 50549-1/EN 50549-10, VDE 0126/UTE C 15/VFR:2019, NTS 631/RD 1699/RD 244/UNE 206006/UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC 60068, IEC 61683, EN 50530, MEA, PEA, PORTARIA N° 140, DE 21 DE MARÇO DE 2022
Safety / EMC standard	IEC /EN 62109-1/-2, IEC/EN 61000-6-2/-4, EN 55011
Key Features	
PV connection	MC4 Quick connection plug
Battery connection	Terminal connector
AC connection	Terminal Block
Display	7.0 "LCD display & Bluetooth + APP
Communication	CAN / RS485/Ethernet / Optional: Wi-Fi, Cellular, LAN

5. CONTACT & SUPPORT

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