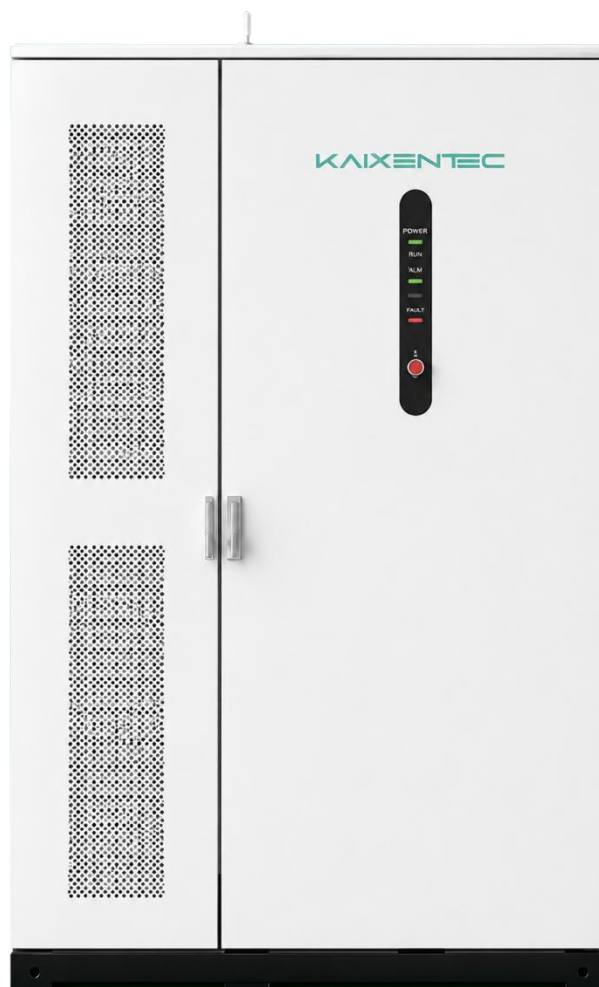




TECHNICAL SPECIFICATION

CITADEL HELIOS 800

215 kW – 418 kWh – 800 V AC-coupled ESS

Version 1.0

1. PRODUCT INFORMATION

The Citadel Helios 800 is a 215kW / 418kWh, 800V AC-coupled Energy Storage System (ESS) engineered to maximize Balance of System (BOS) savings and operational performance. Designed for seamless integration with utility-scale PV plants, it eliminates the need for step-up transformers, reducing infrastructure costs and improving efficiency. Advanced VSG technology provides virtual inertia for enhanced grid stability, while active cell balancing and precision liquid cooling ensure optimal battery performance and long-term reliability.

Transformerless 800V AC The Citadel Helios 800 connects directly to photovoltaic systems without requiring step-up transformers, reducing BOS costs while increasing overall system efficiency by up to 2%.

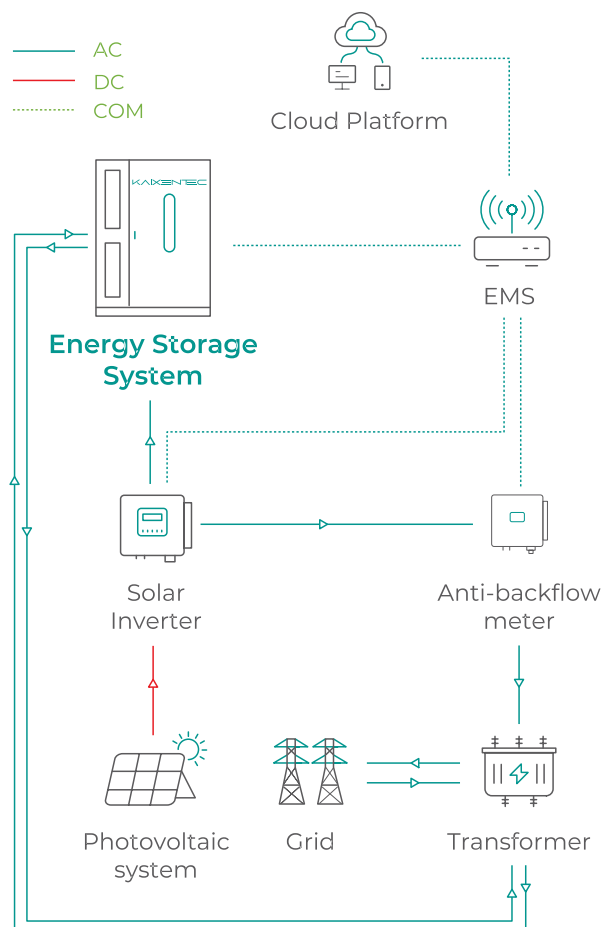
Grid-Forming (VSG) Integrated Virtual Synchronous Generator (VSG) technology delivers virtual inertia and advanced Fault Ride-Through (FRT) capabilities, strengthening grid support and enabling reliable operation in weak-grid environments.

Active Cell Balancing High-performance dynamic balancing of $\geq 3A$ minimizes cell imbalance and reduces the barrel effect, unlocking 5–8% more usable battery capacity throughout the system lifecycle.

Precision Liquid Cooling Intelligent liquid cooling maintains module temperature variance below $1.5^{\circ}C$, optimizing battery health and extending service life beyond 8,000 cycles.

Low Noise Design An optimized enclosure limits noise to ≤ 70 dB(A), while a dual-layer safety architecture prevents thermal propagation and enhances system protection.

Compact Engineered with a high-energy-density footprint for simplified transportation, faster installation, and lower deployment costs.



2. TECHNICAL SPECIFICATION

Parameter	Value
DC Side	
Cell Type	LFP (LiFePO ₄), 314 Ah
System Battery Configuration	1P416S
Nominal Capacity	418 kWh
Usable Capacity	≥ 389 kWh
Cycle Life	≥ 8000 cycles
Nominal Voltage Range	1150 – 1500 V 1000 – 1500 V
DC Max Current	190 A
AC Side (on grid)	
Nominal Power	215 kW
Nominal Voltage	800 V 690 V
Voltage Range	-15% to +10%
Grid Type	3P3W
Nominal Frequency	50 Hz / 60 Hz ± 2.5 Hz
Max THD (Current)	< 3% (at nominal power)
Power Factor Range	-0.99 ~ +0.99
AC Side (off grid)	
Nominal Voltage	800 V 690 V
Nominal Frequency	50 Hz / 60 Hz
Max THD (Voltage)	< 3% (linear load)
System Parameters	
Dimensions (W × D × H)	1500 × 1500 × 2350 mm
Weight	~3600 kg
Protection Degree	IP55
Anti-corrosion Grade	C3 / C4 / C5
Operating Temperature	-20 ~ +55 °C
Cooling Method	Liquid cooling
Noise* (optional)	≤ 70 dB(A)
Altitude	≤ 3000 m (derating > 2000 m)
Communication Protocol	Modbus TCP
Standard	IEC 62619, IEC 63056, IEC 62477, IEC 61000, UN 38.3

Important Note:

*In the on-grid operating scenario, the ambient temperature is assumed to be 25 °C, and the AC output voltage is 800 Vac.

*Product design and technical specifications are preliminary and may be subject to change without prior notice. The manufacturer reserves the right of final interpretation. The specifications of the officially released product shall prevail.