

Residential Energy Storage Collections - Official Commercial BESS Technical Overview & Datasheet

EXECUTIVE SUMMARY

The Residential Energy Storage Collections platform represents a comprehensive, modular architecture engineered to deliver high-efficiency power backup, peak shaving, and solar self-consumption for modern residential applications. Designed for global deployment, this collection integrates Tier-1 LFP cell chemistry with advanced smart liquid cooling and a unified Energy Management System (EMS) to ensure maximum safety, longevity, and return on investment. This document serves as the authoritative technical overview for installers, system integrators, and homeowners seeking a reliable, scalable, and intelligent home energy storage solution.



SYSTEM ARCHITECTURE & SAFETY

The Residential Energy Storage Collections feature a high-voltage battery architecture, coupled with a bi-directional hybrid inverter and an intelligent Battery Management System (BMS). The system employs a multi-layered safety design, including active cell balancing, real-time thermal monitoring, and a multi-level fire suppression protocol. The enclosure is rated for indoor and outdoor installation, offering IP65 protection against dust and water ingress. The architecture supports seamless parallel expansion, allowing capacity to scale from a single cabinet to a multi-unit micro-grid configuration without complex re-wiring.

KEY FEATURES

- Modular Expandability: Supports up to 6 battery cabinets in parallel, enabling capacity expansion from 10 kWh to over 200 kWh.
- Smart Liquid Cooling: Integrated liquid cooling pipeline ensures uniform temperature distribution, extending cell lifespan and maintaining optimal performance in extreme climates.
- High-Voltage Efficiency: 99% round-trip efficiency via a high-voltage DC bus, minimizing conversion losses for maximum energy retention.
- Seamless Grid Interfacing: Bi-directional PCS enables automatic islanding, peak shaving, and demand response participation.

- Cloud-Connected EMS: Real-time monitoring and remote firmware updates via a secure IoT gateway.

COMPLIANCE & STANDARDS

The Residential Energy Storage Collections are designed to meet the most stringent international safety and performance standards. The system is certified to UL 9540 for energy storage systems, IEC 62619 for industrial battery safety, and UL 1973 for stationary battery applications. Additional compliance includes CE, UN 38.3 for transport, and grid-code specific certifications (e.g., IEEE 1547, VDE-AR-N 4105).

TECHNICAL SPECIFICATIONS

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Parameter	Specification
Nominal Capacity	10 kWh / 20 kWh / 30 kWh per cabinet
Cooling Method	Smart Liquid Cooling
Cell Chemistry	Tier-1 LFP (Lithium Iron Phosphate)
Round-Trip Efficiency	≥ 99% (DC-DC)
Voltage Range	200 V - 800 V DC

Communication	CAN / RS485 / Ethernet / Wi-Fi
Protection Rating	IP65 (Indoor/Outdoor)
Operating Temperature	-20°C to 55°C
Certifications	UL 9540, IEC 62619, UL 1973, CE, UN 38.3

INDUSTRIAL DEPLOYMENT

For residential deployment, the system can be installed in garages, utility rooms, or outdoor pad-mounted enclosures. The compact cabinet design (e.g., 600mm x 800mm x 2000mm) allows for flexible installation in space-constrained environments. The system supports both wall-mounted and floor-standing configurations. For micro-grid applications, multiple cabinets can be paralleled via a DC busbar to form a centralized energy storage plant, enabling community-level energy sharing and backup.

