

POWERING THE FUTURE, ONE CELL AT A TIME

Enabling Safe, High-Efficiency Energy Storage



The rapid expansion of renewable energy and the growing need for grid stability are driving unprecedented demand for high-performance energy storage systems. Engineers face the challenge of maximizing round-trip efficiency, ensuring multi-level safety, and scaling modular architectures, all while meeting stringent cost and regulatory requirements.

Allegro MicroSystems' market-leading current sensors and isolated gate drivers reduce system power loss and enhance thermal management, directly increasing energy throughput and system lifespan. Our robust, automotive-grade heritage ensures the high-voltage safety and long-term reliability required for critical energy infrastructure.

What can you achieve with Allegro solutions

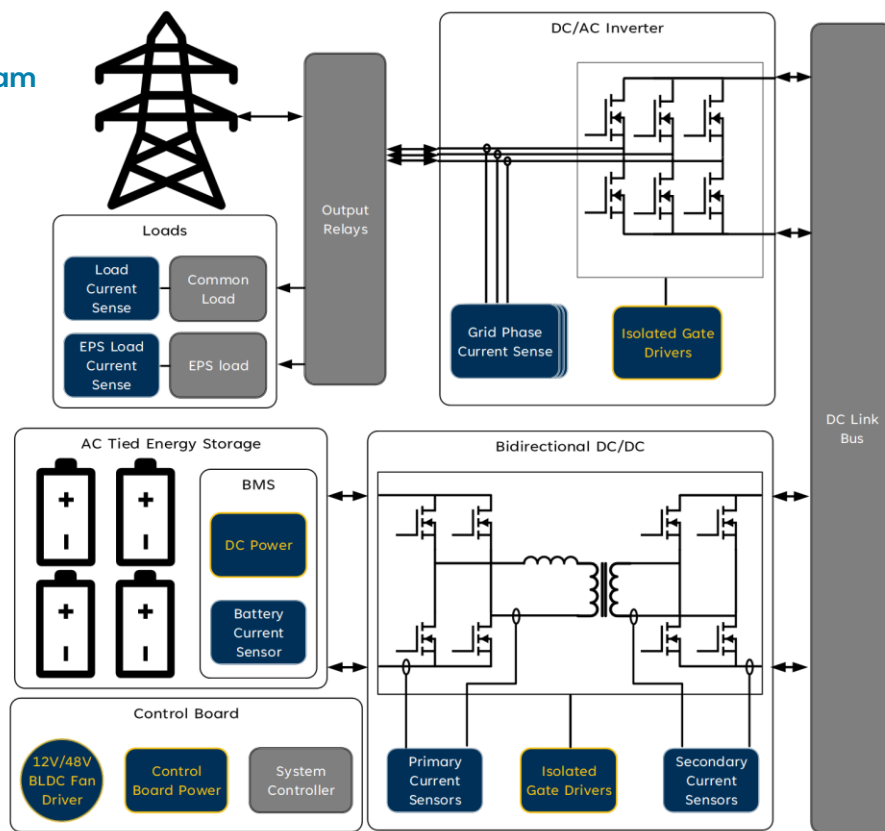
- **Maximize Round-Trip Efficiency:** High-performance SiC/GaN isolated gate drivers and ultra-low resistance current sensors reduce conversion losses across bidirectional DC/DC and DC/AC power stages. This allows for smaller magnetics and cooling systems, increasing the energy density of each storage module
- **Enhanced Safety & Reliability:** Robust current sensors with reinforced isolation and stray field immunity provide precise charge/discharge feedback and ground fault detection, even in electrically noisy, high-voltage environments. This ensures functional safety for both grid-tied and behind-the-meter installations.
- **Simplified Design & Reduced Cost:** "Power-Thru" isolated gate drivers eliminate separate bias supplies, significantly shrinking BOM and PCB footprint for scalable, modular system architectures.



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Block Diagram



Key Products and Solutions

Subsystem	Component	Allegro Parts	Key Differentiator
DC/AC	Current Sensor	ACS37035	High-speed control with reinforced isolation for safer, more efficient inverter loops
	Isolated Gate Drivers	AHV85110/1	Self-powered "Power-Thru" technology eliminates external bias supplies, reducing system size and complexity
Bidirectional DC/DC	Current Sensor	ACS37030/2	Extreme bandwidth enables faster switching frequencies and higher power density in converters
	Isolated Gate Drivers	AHV85110/1	Compact, floating drive capability simplifies gate drive architecture for SiC and GaN FETs
AC Tied Energy Storage	Current Sensor	ACS37220	Ultra-low resistance minimizes thermal loss and maximizes efficiency in high-current AC paths
	DC Power	APM81815	Low-EMI design with integrated components simplifies 48V housekeeping power regulation
Output Loads	Load Sensor	ACS71010	Robust high-voltage isolation ensures system safety while monitoring heavy output loads
	EPS Sensor	ACS772/3	High-current handling delivers reliable performance for critical emergency power monitoring



To learn more about the Allegro family of products and to explore available design resources, visit [allegromicro.com](https://www.allegromicro.com)