

LIFT DESIGNS TO THE NEXT LEVEL

Drive mobile robots with unmatched precision and control

Autonomous mobile robots (AMRs) and automated guided vehicles (AGVs) have become the backbone of modern warehouse, logistics, and industrial automation. Unlike fixed automation, AMRs dynamically navigate complex environments — transporting goods, managing inventory, and executing precision lift and placement tasks alongside human workers. For engineers, designing next-gen AMRs demands exceptional performance in current sensing, position sensing, gate driving, and power management across every subsystem, from traction drives and steering to lift actuators.

High-accuracy inline current sensing enables precise motor torque control and real-time fault protection in both drive and lift motors. Magnetic position sensing provides a compact, stray-field immune alternative to optical encoders for steering and actuator feedback, eliminating sensitivity to the electromagnetic noise generated by nearby motors and power electronics. Gate drivers and power ICs must support 12V-to-48V platforms while delivering the integration and robustness needed for demanding 24/7 operation. Allegro MicroSystems offers a comprehensive portfolio of current sensors, position sensors, gate drivers, and power ICs purpose-built to address these challenges across AMRs and AGVs.

What you can achieve with Allegro solutions

- **Maximum Motor Efficiency:** Allegro's lossless current sensors — with as low as 0.55% accuracy — displace shunt resistors to maximize power density and enable precise field-oriented control for smoother, more efficient drive and lift motor operation.
- **48V High-Safety Architecture:** Robust gate drivers with 80-100V absolute maximum ratings and SIL-2 compliant position sensors enable 48V platforms that meet stringent functional safety requirements without sacrificing compactness or integration.
- **Reduced System Cost and Size:** High-resolution magnetic position sensors replace costly optical encoders, reducing BOM cost and PCB footprint. Highly integrated power ICs with stray-field immune sensing and advanced packaging simplify design and lower total system cost across wheel, lift, and steering subsystems.



As AMRs scale to meet rising demands for payload capacity, fleet size, and operational safety, the underlying sensing and drive technologies become increasingly critical.

Allegro MicroSystems' advanced magnetic current sensors, high-resolution position sensors, gate drivers, and power management ICs provide the precision, reliability, and robustness required for consistent performance in the most demanding warehouse and industrial AMR environments.

