

LIFT DESIGNS TO THE NEXT LEVEL

Drive mobile robots with unmatched precision and control

The increasing demands on Autonomous Mobile Robots (AMRs) and Autonomous Guided Vehicles (AGVs) across diverse sectors like warehouse automation, healthcare and manufacturing necessitate robust and reliable hardware. Consistent performance, comprehensive diagnostics and efficient power management are crucial for ensuring peak productivity throughout operational cycles.

These industrial mobile robots are used to haul items and packages, and in some cases, lift them to and from elevated places. This is why it's important to use efficient motor drivers to power the wheels, enabling precise speed and position control for navigation and material transport. The push towards 48V systems aligns perfectly with Allegro's high-voltage capabilities, enabling higher payloads and longer operating times. Additionally, accurate current and position sensing are crucial for ensuring smooth and efficient motor operation. Current sensors can also be used for optimizing battery life by accurately measuring power flowing in and out of the battery.

What you can achieve with Allegro solutions

- **Speed and efficiency:** Achieve optimal motor performance and minimize power consumption by reducing downtime and maximizing operational efficiency.
- **Compact design:** Allegro's highly integrated and small solutions allow for improved maneuverability, maximized payload capacity and optimized workspace utilization by decreasing PCB footprint.
- **Safety and reliability:** Protect against overcurrent, voltage spikes and other fault conditions with advanced circuit protection. Eliminate mechanical wear and enhance reliability with magnetic sensing technology.

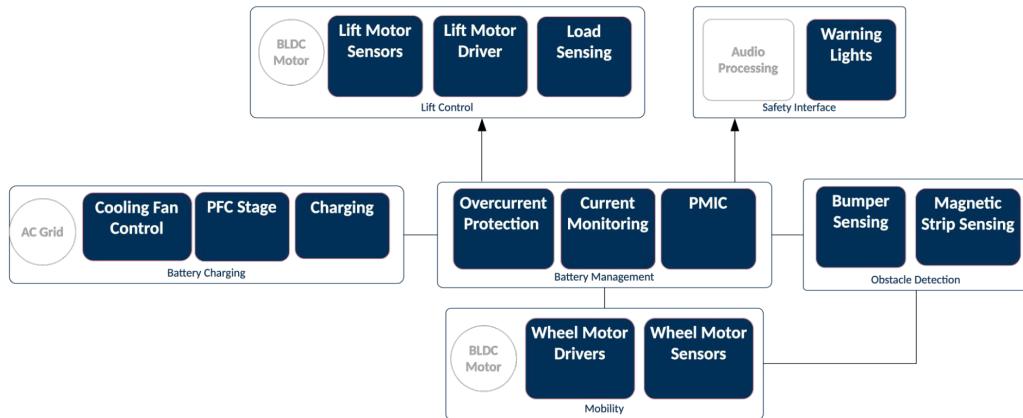


Invest in quality solutions to enhance efficiency, productivity and safety in any dynamic environment.

Allegro's robust selection of motor drivers and sensors enables AMRs to achieve exceptional performance in operation time and motor control.

Market-Leading Portfolios that Sense, Regulate and Drive

Block Diagram



Key Products and Solutions

Subsystem	Component	Allegro Parts	Key Differentiator
Wheel and Lift Motor Sensors	2D Position Sensor	AAS33001	Easy to integrate via multiple output formats, and on-chip linearization to calibrate out errors due to misalignment.
	Hall Latch	APS12202	Stable performance over temperature with reverse battery and output short circuit protection.
	Current Sensor	ACS71240	Small 3mm x 3mm package saves space on board and operates with low ohmic losses for efficient battery life.
Magnetic Strip Sensing	1D Position Sensor	ALS31000	Production calibration output to optimize device sensitivity for higher accuracy and optimized performance across temperature.
Bumper Sensor	1D Position Sensor	A139x	Small 3x2 mm Package. Enable pin for user controlled low power operation.
	Hall Switch	APS11753	Micropower option with low switch points that work with smaller magnets. Push pull output for energy savings.
Wheel Motor Drivers	Brush DC Driver	A4955, A4952	Capable of 50V Operation. Includes adjustable gate drive and current limit for safe and efficient operation.
Lift Motor Driver	BLDC Driver	AMT49413	BLDC motor driver with integrated Hall-effect sensing and trapezoidal control with single PWM input.
PFC Stage	Buck/Boost Current Sensor	ACS37002, ACS37010	Optimized for DC/DC switching with wide bandwidth, high isolation voltages of up to 5 kVrms, and a low internal resistance option of 0.28 mΩ
	Buck/Boost Gate Driver	AHV85110, AHV85111	Integrated isolated bias supply simplifies design and reduces common-mode capacitance. Designed for GAN Power Devices.
Charging	DC/DC Current Feedback	CT433	High bandwidth and low noise enable precise control over current feedback.
	Fan Control	A5931, A5932	Sensorless sinusoidal BLDC fan driver in 4mm x 4mm size to reduce PCB footprint.
Battery Monitoring	PMIC	APM81815	Small 4mm x 4mm x 2mm size with integrated components takes up less space on PCB.
	Current Sensor	ACS37800	Integrated voltage and current sensor with battery charge monitoring to optimize battery life.
Illumination	Warning Lights	A6263	Simplify control over multiple light modules with 4 outputs and fewer components.



To learn more about the Allegro family of products and to explore available design resources, visit allegromicro.com