

BREWING PERFECTION

Driving Precision and Reliability in Modern Coffee Machines

The coffee machine market has evolved significantly, driven by the expansion of popular coffee culture and a rising demand for premium, sustainable brewing experiences. Consumers now expect professional-grade quality, consistency, and convenience from their home appliances. Trends such as smart connectivity, bean-to-cup automation, and eco-conscious designs are driving greater system complexity. For engineers, the challenge lies in delivering precise temperature control, consistent grinding, and ultra-quiet operation, all while ensuring the machine remains compact, hygienic, and reliable. This requires significant advancements in motor control, sensing, and power management technologies.

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What can you achieve with Allegro solutions:

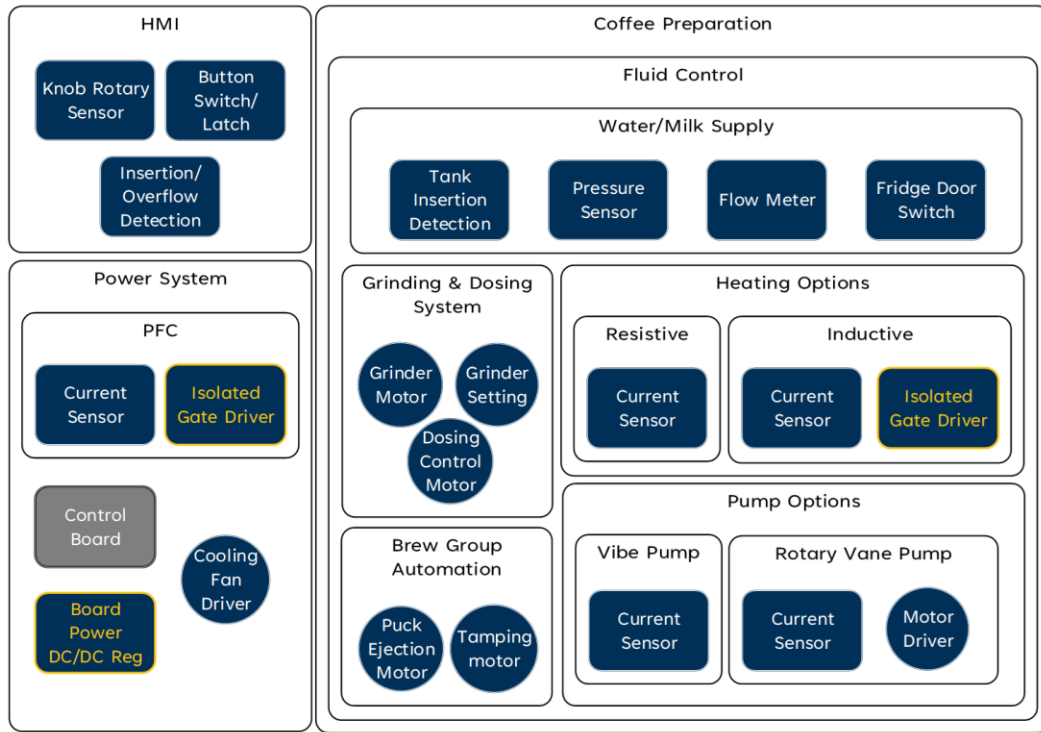
- **Deliver a Premium, Ultra-Quiet User Experience:** Our advanced motor-control algorithms enable exceptionally quiet grinder and pump operation, minimizing noise and vibration for a more refined brewing experience. Combined with high-accuracy current and position sensors, the system delivers smoother motion, consistent dosing, and precise control that elevate the overall feel and performance of the machine.
- **Enhance Hygiene, Durability & Long-Term Reliability:** Contactless magnetic position sensing supports fully sealed mechanisms, eliminating the mechanical switches that often fail due to moisture, coffee grounds, and scale buildup. This improves long-term reliability, prevents jamming, and makes machines easier to clean.
- **Reduce System Cost, PCB Size & Design Complexity:** Highly integrated components, such as isolated gate drivers with built-in power supplies and compact magnetic current sensors, minimize external circuitry and simplify system architecture. This reduces BOM cost and saves valuable PCB area, while maintaining high performance.



As coffee machines become more sophisticated to meet consumer tastes, the underlying electronics that power them become increasingly critical.

Allegro MicroSystems' advanced solutions provide the accuracy, robustness, and efficiency required for the next generation of high-performance coffee makers.

Block Diagram



Key Products and Solutions

Subsystem	Component	Allegro Parts	Key Differentiator
Vibration Pump	Current sensor	ACS71010	Integrated isolation & overcurrent protection
Rotary Vane Pump & Grinder	BLDC Driver	A89301	Code-free, sensorless FOC for quiet operation
	Brush DC Driver	A89505K	High-efficiency drive with integrated protection
	Phase current sensor	ACS37041	Compact, high-performance phase current sensing
Brew control	Stepper motor	A4985	Quiet, high-resolution microstepping control
Heating	Current Sensor	ACS71010	High-accuracy sensing with integrated isolation
	Gate Driver	AHV85311	"Plug-and-play" isolated gate driver
Water & Milk Supply	Flow Meter	APS12753	Debris-immune contactless magnetic latching
	Pressure sensing	A17701	Flexible, programmable pressure sensor IC
	On/Off Switch	APS11753	Contactless detection for hygienic design
Power System	Board Power	APM81815	Integrated PMIC with selectable output voltage
	PFC	ACS71010	Direct inductor current sensing with isolation
		AHV85311	Integrated power simplifies high-voltage design



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