

Servos, Steppers, and Step-Servos: Optimizing Your Motion Control with Applied Motion Products

Machine builders are under constant pressure to deliver higher performance while simultaneously shrinking machine footprints and accelerating design cycles. Traditional industrial setups introduce unnecessary design friction because the motor sits on the machine while a separate drive occupies space inside a bulky control cabinet. This separation creates a dual headache: it wastes critical panel real estate and introduces a logistical nightmare when managing individual cable runs back to that central enclosure.

The Applied Motion Products (AMP) Integrated Motor Series offers a streamlined solution to both challenges. By integrating high-performance drives directly onto the motor frame, AMP delivers a compact, unified automation solution that lives right on the machine. These integrated solutions feature flexible connectivity that allows users to daisy-chain products together. Instead of running a web of long cables across the machine, you can link one motor directly to the next, slashing installation labor, reducing cabling costs, and eliminating clutter.

Servos vs. Steppers:

Every machine build has unique performance requirements and budgetary constraints. Cross Automation engineers evaluate the exact data points of your application for the most effective component path forward:

- **Integrated Servos & Step-Servos:** For demanding high-speed, dynamic applications, the AMP MDX and MDX+ Series combine a low rotor-inertia servo motor, a 17-bit or 21-bit feedback encoder, and a digital controller into a compact housing up to 20% smaller than standard integrated models. Supporting a low-voltage power range of 100W to 750W, they provide native support for position, velocity, and torque control modes over industrial networks like EtherCAT, EtherNet/IP, CANopen, and RS-485. They also feature on-board functional safety hooks, including dynamic braking and functional Safe Torque Off.
- **Integrated Step-SERVOs:** When an application requires high holding torque and stiffness without continuous high speeds, AMP's closed-loop Step-SERVO technology serves as a unique middle ground. Utilizing high-resolution feedback to eliminate stalling and hunting, these units can achieve peak torques up to 50% higher than standard open-loop step motors, while decreasing heat generation and operating noise.
- **Integrated Steppers:** For cost-sensitive axes requiring high torque at low speeds (under 1,000 RPM), the AMP STM Series merges a traditional step motor and a digital microstepping drive into a single unit. Available in standardized NEMA 17, 23, and 24 frame sizes, they deliver low-speed positioning accuracy, eliminate high-speed tuning complexity, and strip hardware expenses out of non-dynamic axes.

Whether you are designing systems for high-speed packaging, precise medical device assembly, or sprawling warehouse automation, the math remains the same: shrinking your machine footprint and eliminating cabling clutter saves time and money. By combining the cabinet-saving design of AMP's Integrated Motor Series with the expertise of Cross Automation, you don't just get a component—you get a tailored engineering solution. No matter your industry, our technical experts are ready to evaluate your duty cycles, torque curves, and network architectures to configure the exact servo, stepper, or closed-loop step-servo system your next build demands.