

Integrated servo motor for mobile robots

Applied Motion Products (USA) introduced a series of integrated servo motors that combine a high torque density, low inertia servo motor with an on-board drive and controller. They support CANopen.

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The servo motors save on space, wiring, and cost over conventional servo systems with separate motor and drive components (Photo: Applied Motion Products)

The MDX servo motors provide greater design modularity and simplicity for a wide range of applications including automated guided vehicles and autonomous mobile robots in the accurate positioning of drive and lift axes, said the company. The servo motor's house control electronics at the back, near the feedback device. No other external electronics package is required to drive or control the motor. The back of the motor also contains connectors for power, communications, and I/O. The on-board controllers utilize the same command interfaces as external motor controllers including CANopen, EIA-485, Modbus, and Ethernet connections as well as discrete I/O interfaces like pulse and direction. Command signals from a robot or machine's central processing unit can be wired directly to the integrated servo motor.

Eliminating the need to connect motor power and feedback cables to an external motor controller, the servo motors free space in a robot or machine to accommodate other critical components, such as material handling mechanisms, sensors, additional axes of motion, or operator-interface components. Robot designers can focus less on controller placement and wiring and more on non-motor system components for faster design iterations. The product benefits the robot designer by reducing the number of components in the system, eliminating cables or wire harnesses, freeing valuable space, simplifying the bill of materials, enabling faster design cycles, and saving money, said the company.

The motors also provide a better solution to brushed DC and AC induction motors in serving as the main drive motors for forward/reverse motion and the material handling axes for accurate lifting, clamping, and engagement of the payload during transfer to different locations. In addition to providing more accurate speed and positioning than AC induction motors, the introduced products do not have motors brushes that wear out.

Every integrated servo motor can run stored programs created with Q Programming that incorporates commands for various kinds of motion, I/O control, and machine sequencing, as well as math functions that enable users to create complex motion profiles and control algorithms. Two environmental ratings are available including IP65 and IP20. The IP65-rated motor includes M12 connectors for all connection points. IP20-rated motors feature pluggable connectors.

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