Beckhoff — AL Linear Motors

AL2012-0001-0001



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The **AL2012-0001-0001** linear motor is produced by Beckhoff and belongs to the AL Linear Motors series. Classified within the company's linear servo motor product range, the mover interfaces with a magnet track to generate controlled thrust through 12 distributed coils. It is suitable for contact-free transport systems, accurate gantry axes, and fast pick-and-place slides in automated machinery.

This mover delivers a continuous force of **400 N** while drawing a continuous phase current of **8.60 A**. For short duty cycles, it reaches a peak force of **900 N** at a peak current of **26.2 A**, enabling rapid payload acceleration. The achievable traverse speed reaches **7 m/s**, while the 24 mm pole pitch establishes the magnetic wavelength that supports this travel rate. The evenly wound coils use a speed winding and sit inside an 80 mm-wide housing. Power flows through preassembled M23 and D-Sub connectors, simplifying cable routing on moving carriages. The motor does not use water cooling, so heat from the continuous power loss of 300 W must be removed through the machine frame.

The electromagnetic constants support appropriate drive selection. A motor constant of **760 N²/W** relates force output to resistive heating, while the power constant of 46.5 N/A relates force to drive current. The thermal path has a thermal resistance of **0.24 °C/W** and a thermal time constant of **77 s**, so temperature changes occur gradually during load variations. Control loops use a voltage constant of **26.87 V/m/s**; together with the 14 mH winding inductance and 1.8 ? resistance, this value governs back electromotive force and current response. Forced air or conductive metal mounting surfaces can provide the heat dissipation needed to maintain continuous operation.

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Specifications

Connection:	With M23 and D-Sub Connectors	**Continuous Current:**	8.60 A	**Continuous Force:**	400 N
Continuous Power Loss:	300 W	**Max Velocity:**	7 m/s	**Motor Constant:**	760 N²/W
Num. of Coils:	12	**Peak Current:**	26.2 A	**Peak Force:**	900 N
Pole Pitch:	24 mm	**Power Constant:**	46.5 N/A	**Product Range:**	Linear servo motors
Thermal Resistance:	0.24 °C/W	**Thermal Time Constant:**	77 s	**Voltage Constant:**	26.87 V/m/s
Water Cooling:	Without Water Cooling	**Width:**	80 mm	**Winding:**	Speed Winding
Winding Inductance:	14 mH	**Winding Resistance:**	1.8 ?	**Last Verified:**	11/21/2026 11:29 AM

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