Beckhoff — AL Linear Motors

AL2024-0001-0001



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The **AL2024-0001-0001** linear motor is manufactured by Beckhoff as part of the AL Linear Motors series. Positioned in the company's range of linear servo motors, this mover is installed on a magnet track to generate controlled thrust and velocity for gantries, machining centers, and high-speed handling modules. By translating drive current directly into linear motion, it removes mechanical transmissions and delivers accurate, repeatable positioning along the production axis.

An air gap of **0.5 mm** must be maintained between the forcer and the magnet rail for optimal flux linkage. During continuous duty, the motor produces an air-cooled force of **800 N** while dissipating 600 W of power loss through its aluminum housing. The rated operating point requires **17.20 A**, and the motor uses integrated M23 power and D-Sub feedback connectors. A peak force of **1800 N** is available when the servo drive delivers short-term currents up to 52.0 A, enabling rapid acceleration toward a maximum velocity of **7 m/s**. Performance is supported by a 24 mm pole pitch, a winding inductance of 6.8 mH, a resistance of 0.92 ?, and a speed winding that distributes current through 24 coils inside an 80 mm-wide frame.

The magnetic attraction force reaches **3400 N**, so linear guides must counteract this load during installation. A motor constant of **1520 N²/W** relates developed thrust to thermal dissipation, and the power constant of 46.5 N/A supports current-loop tuning. Thermal performance is characterized by 0.12 °C/W of thermal resistance and a thermal time constant of **77 s**. Without water cooling, the coil temperature follows this thermal profile under varying duty cycles. Back EMF rises according to a voltage constant of **26.87 V/m/s**, which assists with drive selection for

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high-speed applications.

Specifications

Air Gap:	0.5 mm	**Air-cooled Force:**	800 N	**Connection:**	With M23 and D-Sub Connectors
Continuous Current:	17.20 A	**Continuous Power Loss:**	600 W	**Magnetic Attraction:**	3400 N
Maximum Velocity:	7 m/s	**Motor Constant:**	1520 N²/W	**Num. of Coils:**	24
Peak Current:	52.0 A	**Peak Force:**	1800 N	**Pole Pitch:**	24 mm
Power Constant:	46.5 N/A	**Product Range:**	Linear servo motors	**Thermal Resistance:**	0.12 °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:**	6.8 mH
Winding Resistance:	0.92 ?	**Last Verified:**	11/23/2026 3:48 AM		

Contact Us

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