Beckhoff — AL Linear Motors

AL2024-0000-0001



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The **AL2024-0000-0001** is a primary section from the AL Linear Motors series manufactured by Beckhoff. As a linear servo motor, it delivers direct thrust without rotary-to-linear conversion, making it suitable for positioning gantries and high-speed transport axes in automated equipment. The unit belongs to Beckhoff's modular product range and connects to the drive chain through M23 and D-Sub connectors for power, feedback, and temperature sensing.

The stator carries a normal winding supplied by a continuous phase current of **8.60 A**. With standard air cooling, the electromagnetic stack sustains a continuous force of **800 N** while dissipating **600 W** of power as heat. A pole pitch of **24 mm** sets the spacing between alternating north and south poles, establishing the electrical cycle length and affecting the commutation frequency. The three-phase coils have an inductance of **28 mH**, limiting the rate of current change and smoothing current ripple when driven by a pulse-width modulated inverter. Winding resistance is 3.62 ?, so copper losses increase with the square of the commanded current. The assembly has 24 individual coils, and the 80 mm-wide housing leaves clearance for mounting rails and cable chains. The unit is built without an integrated water jacket and therefore relies on air cooling.

During dynamic movement, the mover can be accelerated by a peak force of **1800 N**. The permanent-magnet track exerts a magnetic attraction of **3400 N**, which must be counteracted by the carriage guides. A motor constant of **1520 N²/W** relates continuous force to thermal dissipation and provides a quick estimate of efficiency at different load points. Thermal resistance is **0.12 °C/W**, meaning the temperature rises 0.12 °C for every watt lost in the

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winding. The thermal time constant of 77 seconds indicates how quickly the assembly approaches a new steady-state temperature after a load change.

Specifications

Connection:	With M23 and D-Sub Connectors	**Continuous Current:**	8.60 A	**Continuous Force Air Cooling:**	800 N
Continuous Power Loss:	600 W	**Magnetic Attraction Force:**	3400 N	**Motor Constant:**	1520 N²/W
Num. of Coils:	24	**Peak Force:**	1800 N	**Pole Pitch:**	24 mm
Product Range:	Linear servo motors	**Thermal Resistance:**	0.12 °C/W	**Thermal Time Constant:**	77 s
Water Cooling:	Without Water Cooling	**Width:**	80 mm	**Winding:**	Normal Winding
Winding Inductance:	28 mH	**Winding Resistance:**	3.62 ?	**Last Verified:**	11/23/2026 11:05 AM

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Payment Methods

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