

Beckhoff — AL Linear Motors

AL2403-0001

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The **AL2403-0001** coil unit is produced by Beckhoff for the AL Linear Motors series. It is the moving stator section of a linear servo system, designed to convert electrical current into thrust along a fixed magnet track. Integrated into gantries, Cartesian robots, or high-speed transport modules, this component enables direct linear motion without mechanical transmissions. The direct-drive arrangement reduces the number of moving components between the motor and the load, supporting responsive movement in automated equipment.

During operation, the machine guide maintains a 0.5 mm air gap between the coil and magnets while an attraction force of 300 N pulls the unit toward the secondary rail. With three embedded windings arranged over a 24 mm pole pitch, the motor delivers a continuous thrust of **60 N** at a winding current of **1.54 A**. These operating values are based on natural convection because the design does not use water cooling. Short-term loading is supported by a peak thrust of **120 N**, which can be reached when the drive supplies up to **4.10 A**. Electrical commutation uses a speed winding layout with a voltage constant of **22.63 V/m/s** and a power constant of 39 N/A, providing substantial force per ampere for rapid positioning. The coil weighs 0.6 kg, which helps limit the moving mass on fast axes.

Thermal behavior is characterized by a time constant of **75 s** and a thermal resistance of **1.5 °C/W**. These values indicate how quickly the winding temperature responds to load changes and how heat flows from the coil to the surrounding air. A rectangular body width of **50 mm** accommodates the track arrangement while leaving space for sensors or cable chains beside the mover. The motor constant of **95 N²/W** supports efficient thrust production while the coil dissipates 49 W at its continuous operating point. The compact body and low moving mass suit applications

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that require frequent acceleration, controlled deceleration, and precise linear positioning.

Specifications

Air Gap:	0.5 mm	Ambient Temperature (operation):	+5A-+40 AC	Approvals/markings:	CE, EAC, CSA
Attraction Force:	300 N	Coil Unit Weight:	0.6 kg	Connection Technology:	M23 plug (power) + D-sub plug (thermo-protective plug)
Continuous Current:	1.54 A	Continuous Current With Air Cooling:	1.54 A	Continuous Force (air):	60 N
Continuous Force With Air Cooling:	60 N	Continuous Power Loss:	49 W	Force Constant:	39 N/A
Material:	Aluminum	Motor Constant:	95 N²/W	Motor Type:	3-phase synchronous linear servomotors
Nominal Voltage:	100A-480 V AC	Num. of Coils:	3	Peak Current:	4.10 A
Peak Force:	120 N	Pole Pitch:	24 mm	Power Constant:	39 N/A
Product Range:	Linear servo motors	Protection Rating:	IP64	Thermal Resistance:	1.5 °C/W
Thermal Time Constant:	75 s	Voltage Constant:	22.63 V/m/s	Water Cooling:	Without Water Cooling
Width:	50 mm	Winding:	Speed Winding	Last Verified:	10/26/2026 9:58 AM

Contact Us

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