Beckhoff — AL Linear Motors

AL2003-0001-0001



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The **AL2003-0001-0001** is a coil unit from Beckhoff's AL Linear Motors series. As the moving primary part of a linear servo motor, it converts drive current into direct thrust so that gantries, pick-and-place axes, or high-speed transport stages can position loads without mechanical transmission elements. The unit weighs 0.9 kg, allowing it to be incorporated into motion systems without adding excessive moving mass.

This coil section delivers a continuous thrust of **75 N** while drawing a continuous phase current of **2.28 A**. For fast indexing moves or short overloads, it can reach a peak thrust of **225 N** with a momentary phase current of **6.5 A**. Heat generated by copper and iron losses exits through the aluminum housing. Its thermal resistance is rated at **0.96 °C/W**, and the winding dissipates a continuous loss of **90 W** at the rated operating point. Three individually wound coils use a speed winding pattern that lowers inductance to 60 mH and keeps resistance at 7.8 ?, supporting dynamic current changes. Magnetic attraction toward the secondary track reaches 500 N, so the mechanical mounting must withstand that preload. Electrical connections are routed through M23 power and D-Sub feedback connectors. No water-cooling circuit is provided, so convection or baseplate conduction must handle the thermal load.

The motor constant is **185 N²/W**, expressing the relationship between generated force and power loss for comparison with other coil sizes. A pole pitch of **24 mm** synchronizes the three-phase excitation with the permanent-magnet track, while the **80 mm**-wide lamination stack matches Beckhoff carriage plates without adapters. The power constant of 46.5 N/A relates commanded current to useful thrust, while the voltage constant of

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26.87 V·s/m indicates the expected back EMF for drive selection.

Specifications

Coil Unit Weight:	0.9 kg	**Connection:**	With M23 and D-Sub Connectors	**Continuous Current:**	2.28 A
Continuous Force:	75 N	**Continuous Power Loss:**	90 W	**Magnetic Attraction Force:**	500 N
Motor Constant:	185 N²/W	**Num. of Coils:**	3	**Peak Current:**	6.5 A
Peak Force:	225 N	**Pole Pitch:**	24 mm	**Power Constant:**	46.5 N/A
Product Range:	Linear servo motors	**Thermal Resistance:**	0.96 °C/W	**Voltage Constant:**	26.87 V/m/s
Water Cooling:	Without Water Cooling	**Width:**	80 mm	**Winding:**	Speed Winding
Winding Inductance:	60 mH	**Winding Resistance:**	7.8 ?	**Last Verified:**	11/22/2026 8:04 AM

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