Beckhoff — AL Linear Motors

AL2418-0001-0000



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The **AL2418-0001-0000** coil unit is a linear servo motor segment produced by Beckhoff within the AL Linear Motors series. As a moving primary part, it converts stator current into direct thrust along a magnet track, eliminating rotary-to-linear conversions in automated gantries, pick-and-place modules, and packaging axes. By delivering precise force under closed-loop control, the unit supports the high acceleration and repeatable positioning required in industrial automation cells.

At nominal loading, the coil produces **360 N** of continuous force while drawing **9.23 A** per phase. This operating point causes **296 W** of power loss that must be removed through the mounting surface because the motor does not use water cooling. A thermal resistance of **0.25 °C/W**, combined with a thermal time constant of 75 seconds, determines the allowable duty cycle before the winding reaches its temperature limit. With an EMF constant of **22.63 V/m/s**, the required drive voltage rises predictably with carriage velocity, while the 39 N/A force constant relates the supplied current to the generated thrust. The package has a width of **50 mm**, and its coil mass of 2.3 kg reduces the dynamic load on the bearing system. Eighteen individually insulated coils share a 24 mm pole pitch, forming a speed winding with an inductance of 11 mH and a resistance of 1.7 ? to smooth inverter current ripple. The terminals are supplied without connectors, allowing custom cable sets to be installed for the application.

During rapid indexing moves, the winding can be driven at **25.10 A** to produce **720 N** of peak force for short periods. The permanent-magnet secondary creates 1,300 N of magnetic attraction, which the slide mechanism must counteract even when the motor is stationary. A motor constant of **570 N²/W** indicates the relationship between

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generated force and resistive power loss during operation. The direct-drive arrangement eliminates mechanical transmission components between the coil unit and the moving load.

Specifications

Coil Unit Weight:	2.3 kg	**Connection:**	Without Connectors	**Continuous Current:**	9.23 A
Continuous Force:	360 N	**Continuous Power Loss:**	296 W	**Emf Constant:**	22.63 V/m/s
Magnetic Attraction Force:	1300 N	**Motor Constant:**	570 N²/W	**Num. of Coils:**	18
Peak Current:	25.10 A	**Peak Force:**	720 N	**Pole Pitch:**	24 mm
Power Constant:	39 N/A	**Product Range:**	Linear servo motors	**Thermal Resistance:**	0.25 °C/W
Thermal Time Constant:	75 s	**Water Cooling:**	Without Water Cooling	**Width:**	50 mm
Winding:	Speed Winding	**Winding Inductance:**	11 mH	**Winding Resistance:**	1.7 ?
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