Beckhoff — AL Linear Motors

AL2018-0001-0000



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The **AL2018-0001-0000** is a linear servo motor coil unit produced by Beckhoff within the AL Linear Motors series. Designed for direct-drive positioning stages, the coil interacts with a separate magnet track to generate translation without mechanical transmission. As part of Beckhoff's linear motion platform, the unit delivers synchronized thrust along straight axes, making it useful for pick-and-place gantries, packaging feeders, and high-speed process equipment in industrial automation.

The stator winding draws a continuous phase current of **13.36 A**, producing an air-cooled continuous thrust of **600 N** while dissipating 450 W of power. During rapid accelerations the current can rise to **41.0 A**, enabling a peak force of **1350 N** that overcomes inertial loads before the drive settles at the commanded setpoint. Travel velocity can reach **7 m/s**, limited by the voltage constant of 26.87 V/m/s and the drive bus voltage. The motor contains 18 coils wired as a speed winding and is supplied without connectors so the user can terminate the leads directly in a junction box. Magnetic attraction toward the track reaches 2450 N, so the carriage must include guidance rated for that preload.

Thermal characteristics are tied to the small operating air gap of **0.5 mm**, which must be kept uniform to avoid force ripple across the **24 mm** pole pitch. Heat moves from the copper to the frame with a thermal resistance of 0.16 °C/W, yielding a motor constant of **1140 N²/W** that relates force production to loss. With a thermal time constant of 77 s, the coil temperature follows load changes slowly, giving the drive time to react before limits are reached. The phase-to-phase inductance is **8.8 mH** and the winding resistance is 1.18 ?; together they define

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electrical time behavior and influence current loop tuning. The unit is 80 mm wide, operates without water cooling, and maintains full performance when the prescribed air convection path is unobstructed.

Specifications

Air Gap:	0.5 mm	**Connection:**	Without Connectors	**Continuous Current:**	13.36 A
Continuous Force Air Cooling:	600 N	**Continuous Power Loss:**	450 W	**Magnetic Attraction Force:**	2450 N
Max Velocity:	7 m/s	**Motor Constant:**	1140 N²/W	**Num. of Coils:**	18
Peak Current:	41.0 A	**Peak Force:**	1350 N	**Pole Pitch:**	24 mm
Product Range:	Linear servo motors	**Thermal Resistance:**	0.16 °C/W	**Thermal Time Constant:**	77 s
Voltage Constant Ph-ph:	26.87 V/m/s	**Water Cooling:**	Without Water Cooling	**Width:**	80 mm
Winding:	Speed Winding	**Winding Inductance Ph-ph:**	8.8 mH	**Winding Resistance Ph-ph:**	1.18 ?
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