Beckhoff — AL Linear Motors

AL2018-0000-0000



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The **AL2018-0000-0000** linear motor primary section is produced by Beckhoff within the AL Linear Motors series. It generates electromagnetic thrust for positioning stages and other industrial automation axes that require backlash-free motion. The mover occupies only 80 mm of track width, and its 24 mm pole pitch aligns with standard permanent-magnet plates. Electrical termination is simplified because the unit is delivered without connectors and uses a normal winding. Thermal management depends on ambient airflow because the unit is supplied without water cooling.

During steady operation, the coil draws a continuous current of **6.45 A** and produces a continuous thrust of **600 N** across the 0.5 mm air gap. Under these conditions, copper and iron losses reach **450 W**, which must be considered when sizing cabinet ventilation. The electromagnetic circuit is segmented into 18 coils with a combined winding inductance of **36 mH**; this value influences current-control bandwidth when the motor is powered by a servo inverter. Direct-current resistance is **4.82 ?**, so the resistive portion of the loss accounts for much of the thermal load at rated current. With a motor constant of 1140 N^2/W, the design provides high thrust per watt and reduces energy demand in continuous-duty linear axes.

For short operating periods, the coil can deliver a peak thrust of **1350 N**. A magnetic attraction force of 2450 N must be supported by the slide bearings and the permanent-magnet plate, which weighs 3.8 kg/m. The active coil section weighs **3.8 kg**, contributing thermal mass to the assembly. Its thermal resistance of **0.16 °C/W** influences the rate at which heat moves from the coil section to its surroundings. The copper and iron stack has a thermal time

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constant of **77 s**, allowing brief overload operation while the controller monitors motor temperature. Temperature monitoring is handled by a KTY83-122 sensor and an integrated PTC rated at 1 k?, enabling the drive to respond before critical temperature thresholds are reached.

Specifications

Air Gap:	0.5 mm	**Coil Unit Weight:**	3.8 kg	**Connection:**	Without Connectors
Continuous Current:	6.45 A	**Continuous Force Air:**	600 N	**Continuous Power Loss:**	450 W
Kty Type:	KTY83-122	**Magnetic Attraction Force:**	2450 N	**Magnetic Plate Weight:**	3.8 kg/m
Motor Constant:	1140 N²/W	**Num. of Coils:**	18	**Peak Force:**	1350 N
Pole Pitch:	24 mm	**Product Range:**	Linear servo motors	**Ptc Resistance:**	1 k?
Thermal Resistance:	0.16 °C/W	**Thermal Time Constant:**	77 s	**Water Cooling:**	Without Water Cooling
Width:	80 mm	**Winding:**	Normal Winding	**Winding Inductance:**	36 mH
Winding Resistance:	4.82 ?	**Last Verified:**	11/23/2026 10:51 AM		

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