Beckhoff — AL Linear Motors

AL2006-0000-0001



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The **AL2006-0000-0001** is a primary section from Beckhoff's AL Linear Motors series within the company's linear servo motor product range. It is a moving-coil module that produces controlled thrust directly along a magnet track, eliminating the need for mechanical conversion. In industrial automation, the unit is used for material-handling stations, high-speed pick-and-place heads, and gantry positioning tasks where compact size and high force density are essential.

During continuous operation, the mover generates a thrust of **200 N** while drawing **2.15 A** per phase and releasing 150 W as thermal loss. Dynamic motion is supported by a peak thrust of **450 N** when the drive supplies **6.5 A**. The electromagnetic system allows the carriage to reach linear speeds of up to **3.5 m/s**. Because the housing does not use water cooling, heat must dissipate into the surrounding air through the aluminum shell, and the thermal time constant is 77 s. The normal winding has an inductance of 108 mH, a resistance of 14.4 ?, and a force constant of 93 N/A, while the back-EMF gradient is 53.74 V/m/s. Six evenly distributed coils help limit thermal loading during steady operation.

A pole pitch of **24 mm** allows the primary section to operate with standard Beckhoff secondary tracks, while an overall width of 80 mm accommodates narrow carriages. Magnetic preload on the rail reaches **950 N**, so the guidance components must withstand this attraction during assembly and operation. The motor constant is **380 N²/W**, indicating the relationship between electrical loss and force output. Thermal coupling to the machine frame has a resistance of **0.48 °C/W**. Power and feedback connections use M23 and D-Sub connectors, supporting

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organized cable routing in modular machinery.

Specifications

Connection:	With M23 and D-Sub Connectors	**Continuous Current:**	2.15 A	**Continuous Force:**	200 N
Continuous Power Loss:	150 W	**Magnetic Attraction Force:**	950 N	**Max Velocity:**	3.5 m/s
Motor Constant:	380 N²/W	**Num. of Coils:**	6	**Peak Current:**	6.5 A
Peak Force:	450 N	**Pole Pitch:**	24 mm	**Power Constant:**	93 N/A
Product Range:	Linear servo motors	**Thermal Resistance:**	0.48 °C/W	**Thermal Time Constant:**	77 s
Voltage Constant:	53.74 V/m/s	**Water Cooling:**	Without Water Cooling	**Width:**	80 mm
Winding:	Normal Winding	**Winding Inductance:**	108 mH	**Winding Resistance:**	14.4 ?
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