Beckhoff — AL Linear Motors

AL2003-0001-0000



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The **AL2003-0001-0000** is a mover segment from Beckhoff's AL Linear Motors series, positioned within the company's linear servo motor portfolio. The module converts current into direct thrust for high-precision pick-and-place axes, gantry stages, or transport shuttles in automated production. It uses a speed winding arrangement to reach high translation rates, while heat is removed through the mounting surface and ambient airflow because no water-cooling circuit is provided. Power and feedback lines are supplied without connectors for hardwired installation.

During operation, the mover supplies a continuous thrust of **75 N** while drawing **2.28 A**, providing force for continuous duty. For short overloads, it delivers **225 N** at a momentary current of **6.5 A**, providing additional force during acceleration. The three-phase winding has a resistance of **7.8 ?**, so the drive must provide suitable voltage, while an inductance of 60 mH helps filter current ripple. A motor constant of 185 N^2/W relates thrust to power loss, while the force constant of 46.5 N/A relates thrust to phase current. The 24 mm pole pitch allows the mover to operate with matching magnetic tracks. Its 500 N attraction force requires bearings and guides capable of supporting the resulting mechanical load. All three coils generate back electromotive force in accordance with the 26.87 V s/m voltage constant.

The mover can translate at **7 m/s**, provided the magnetic air gap and track length permit sustained commutation. During operation, copper and iron losses total **90 W**. This heat passes through the laminated stack with a thermal resistance of **0.96 °C/W**, producing a temperature rise moderated by a 77-second thermal time constant. The **80**

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mm frame width supports mounting alongside other Beckhoff segments while conserving space in compact machine frames. Adequate airflow across the mounting plate helps transfer heat away from the mover during continuous operation.

Specifications

Attraction Force:	500 N	**Connection:**	Without Connectors	**Continuous Current:**	2.28 A
Continuous Force:	75 N	**Max Velocity:**	7 m/s	**Motor Constant:**	185 N²/W
Num. of Coils:	3	**Peak Current:**	6.5 A	**Peak Force:**	225 N
Phase Inductance:	60 mH	**Phase Resistance:**	7.8 ?	**Pole Pitch:**	24 mm
Power Constant:	46.5 N/A	**Power Loss:**	90 W	**Product Range:**	Linear servo motors
Thermal Resistance:	0.96 °C/W	**Thermal Time Constant:**	77 s	**Voltage Constant:**	26.87 V/m/s
Water Cooling:	Without Water Cooling	**Width:**	80 mm	**Winding:**	Speed Winding
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