Beckhoff — AL Linear Motors

AL2406-0001-0000



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The **AL2406-0001-0000** is a moving coil segment manufactured by Beckhoff within the AL Linear Motors series. As a flat linear servo motor, it generates thrust directly along the machine axis and removes the need for rotary-to-linear conversion in pick-and-place modules, gantry stages, and packaging lines. The coil unit weighs 0.9 kg, so it can be mounted on lightweight carriages without substantially increasing inertia. The component is supplied without connectors, allowing cable orientation to be adapted to the installation.

The nominal air gap is **0.5 mm**, which establishes the required distance between the coil and magnetic track for consistent magnetic flux. Under continuous operation, the windings draw **3.08 A** and deliver **120 N** of force. The air-cooled design does not use a liquid cooling circuit. A pole pitch of **24 mm** supports sinusoidal commutation, and dynamic motion profiles can use a peak current of **8.20 A**. Six coils interact with the magnet rail and produce an attraction force of 500 N that must be supported by the machine guides. Electrical characteristics include a voltage constant of 22.63 V/m/s, a motor constant of 190 N^2/W, and a force constant of 39 N/A. Copper losses reach 99 W at the nominal load, while the module has a width of 50 mm for installation beside adjacent axes.

Transient positioning tasks can use a peak thrust of **240 N**, providing additional force for rapid acceleration. The thermal resistance is **0.75 °C/W**, meaning that each watt of loss raises the winding temperature by three-quarters of a degree Celsius under the stated conditions. A thermal time constant of 75 seconds indicates how quickly heat accumulates in the winding. The drive electronics see the coil as an inductive load of **34 mH** in series with a resistance of **5.4 ?**. These electrical values correspond to the speed winding configuration used by this moving coil

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segment. Accurate current regulation helps the drive manage force during repetitive indexing and other dynamic linear-motion tasks.

Specifications

Air Gap:	0.5 mm	**Coil Unit Weight:**	0.9 kg	**Connection:**	Without Connectors
Continuous Current:	3.08 A	**Continuous Force:**	120 N	**Continuous Force Air Cooling:**	120 N
Continuous Power Loss:	99 W	**Emf Constant Ph-ph:**	22.63 V/m/s	**Magnetic Attraction:**	500 N
Magnetic Attraction Force:	500 N	**Motor Constant:**	190 N²/W	**Num. of Coils:**	6
Peak Current:	8.20 A	**Peak Force:**	240 N	**Pole Pitch:**	24 mm
Power Constant:	39 N/A	**Product Range:**	Linear servo motors	**Thermal Resistance:**	0.75 °C/W
Thermal Time Constant:	75 s	**Voltage Constant:**	22.63 V/m/s	**Water Cooling:**	Without Water Cooling
Width:	50 mm	**Winding:**	Speed Winding	**Winding Inductance:**	34 mH
Winding Inductance Ph-ph:	34 mH	**Winding Resistance:**	5.4 ?	**Winding Resistance Ph-ph:**	5.4 ?
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