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NUTEC COMPONENTS INCORPORATED

LINEAX-10

LINEAX 10-1500 HP-CLS

Product Summary

LINEAX-10® *A powerful precision stage integrating modern positioning technology with robust payload capability, expanding the high precision performance envelope to include high payload and long travel applications.*

- Precision guiding system provides stable trajectory across long travel and at high speeds.
- Powerful linear motors are used in the LINEAX series; provide driving force to position high payloads.
- High-resolution linear encoders are incorporated to allow precise position feedback and closed loop digital servo control.
- LINEAX built rugged for reliable operation and long service life.

LINEAX-10 Features & Benefits

Direct drive linear motors for stage positioning exhibit advantages over conventional screw driven

stages. Lacking the elastic deformation seen in screw drive systems allows direct drive systems to produce more compliant positioning trajectories, faster settling times, higher repeatability and faster servo response. Free of rotating inertia, much faster acceleration and higher velocities are achievable. Wear of rotating components is eliminated increasing reliability, uptime, and extending servicing intervals each of these contributes to reducing cost of ownership. The direct drive linear motor with the high-resolution encoder allows precise velocity regulation. The linear motor and other components in LINEAX can be prepared for vacuum compatibility.

LINEAX-10 *all structural materials are high-strength aluminum alloys, all surfaces are precision machined, finished with hard coat-anodize in light gray. Two precision square type guide rails with integrally pre-loaded, recirculating, linear bearings are guided by 6 ball tracks on each rail. The guide system requires only standard lubrication service.*

LINEAX-10 *utilizes a self-managing internal cable loop system featuring ultra-high flex cables for linear motor, encoder's, and sensors, all terminated at a single DB-type connector.*

Applications

A linear motor driven stage lacks the mechanical gearing advantage of a screw driven stage and therefore is more application specific. When the application is for high precision positioning, temperature rise has the effect of influencing accuracy via thermal induced dimensional distortion. Careful motor sizing, proper heat sinking and attention to drive current modulation optimize performance for either short term or for a life time duration of high precision operations.

	LX-10 –SP
Travel Length (mm)	*300-1200*
Drive System	*Brushless Linear Motor*
Maximum Acceleration	*Payload Dependent*
Recommended Maximum Speed	*Unladen 3 m/s*
Peak Force	*1,680 Newton*
Continuous Force	*325 Newton*
Recommended Maximum Load	
***L1** Parallel to Base*	*100 kg*
***L2** Tension Perpendicular to base*	*100 kg*
***L3** Compression Perpendicular to base*	*100 kg*
Feedback	*Non-Contact Linear Encoder System*
Sinusoidal Output	*1 V (P-P) 20-micrometers/cycle 4096x interpolation*
TTL Output	*5 µm, 1µm, 0.5µm, 0.25µm, 0.2µm, 100nm & 50 nm*
Repeatability	*5x Resolution*
Construction	*Aluminum Alloy Body Hard Coat Gray Anodize*

LINEAX 10 Specifications

	LX-10300	LX-10450	LX-10600	LX-10900	LX-101200
Travel Length (mm)	300	450	600	900	1200
Trajectory Control					
Accuracy					
Standard SP	± 10 µm	± 15 µm	± 20 µm	± 20 µm	± 30 µm
High Precision HP	± 5 µm	± 7.5 µm	± 10 µm	± 10 µm	± 15 µm
Straightness/Flatness					
Standard SP	± 2.0 µm	± 3.0 µm	± 3.5 µm	± 4.0 µm	± 5.0 µm
High Precision HP	± 1.0 µm	± 1.5 µm	± 2.0 µm	± 2.0 µm	± 2.5 µm
Yaw/Pitch/Roll					
Standard SP	10 arc-sec	10 arc-aec	10 arc-sec	10 arc-sec	10 arc-sec
High Precision HP	4 arc-sec	4 arc-sec	4 arc-sec	4 arc-sec	4 arc-sec
2 axis system					
Orthogonality					
Standard SP	20 arc-sec	20 arc-sec	20 arc-sec	20 arc-sec	20 arc-sec
High Precision HP	5 arc-sec	5 arc-sec	5 arc-sec	5 arc-sec	5 arc-sec
Extra High Precision XHP	3 arc-sec	3 arc-sec	3 arc-sec	3 arc-sec	3 arc-sec

Notes:

- All trajectory data based on axis uniformly supported over full length on precision mounting surface with vibration isolation.
- *Payload capacities are recommended values to achieve maximum lifetime in the worst-case scenario featuring maximum dynamic operation and off-center loading.*
- *Force, acceleration and speed performance are based on operations with NUTEC ELECTRONIC controls.*