LDA-AE Series Datasheet

- 25, 75, 150 mm travel options
- Up to 0.8 m/s speed and up to 4 g acceleration
- High repeatability (200 nm) and accuracy (1.5 µm), with 12 nm minimum incremental move
- Direct position measurement from 1 nm resolution linear encoder
- Non-contact ironless linear motor for high precision, high dynamic performance & zero backlash
- Designed for use with an X-MCC Series controller for coordinated motion
- With AutoDetect, the X-MCC controller configures its settings automatically for the connected peripheral
- Technical Article - Linear Motors: Overview and Selection Process

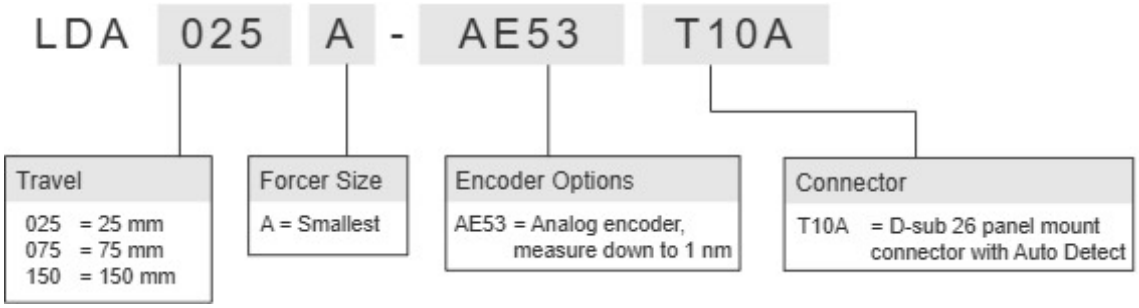
LDA-AE Series Overview

Zaber's LDA-AE Series devices are motorized linear stages delivering high speed, precision, and reliability in a compact package. A centrally mounted linear encoder results in up to 1 µm position accuracy and consistent movement steps down to 12 nm. LDA-AE devices feature non-cogging ironless linear motors, providing high speed and acceleration capabilities. Both the drive and encoder are non-contact and have no moving cables, resulting in an extremely robust system.

The stages are designed to connect directly to our X-MCC using a single cable. Set-up is easy with AutoDetect. Once connected, the X-MCC controller will automatically detect and configure the LDA-AE.

For more information visit: https://www.zaber.com/products/linear-stages/LDA-AE

LDA-AE Series Part Numbering & Options



LDA-AE Series Drawings

- dimensions_LDA-AE (Drawing for the LDA-AE)

LDA-AE Series Specifications

Built-in Controller	
Recommended Controller	X-MCC (48 V) Recommended
AutoDetect	Yes
Accuracy (unidirectional)	1.5 µm (0.000059")
Repeatability	< 0.2 µm (< 0.000008")
Minimum Incremental Move	12 nm
Maximum Speed	800 mm/s (31.496"/s)
Minimum Speed	0.61 nm/s
Speed Resolution	0.61 nm/s
Encoder Type	Linear analog encoder
Encoder Count Size	1 nm
Peak Thrust	16 N (3.6 lb)
Maximum Continuous Thrust	6 N (1.3 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	500 N-cm (708.1 oz-in)
Maximum Moment (Roll)	500 N-cm (708.1 oz-in)
Maximum Moment (Yaw)	500 N-cm (708.1 oz-in)
Typical Velocity Stability	± 0.33% at 100 mm/s with a 1.0 kg payload
Yaw	0.005° (0.087 mrad)
Motor Type	Moving Magnet Track Linear Motor
Motor Rated Current	1800 mA/phase
Force Constant	3.7 N/A (0.8 lbs/A)
Motor Winding Resistance	2.3 ohms/phase
Inductance	0.09 mH/phase
Motor Connection	D-sub 26
Guide Type	Crossed-Roller Bearing
Limit or Home Sensing	Optical Index Mark
Axes of Motion	1
Mounting Interface	M6 threaded holes
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes

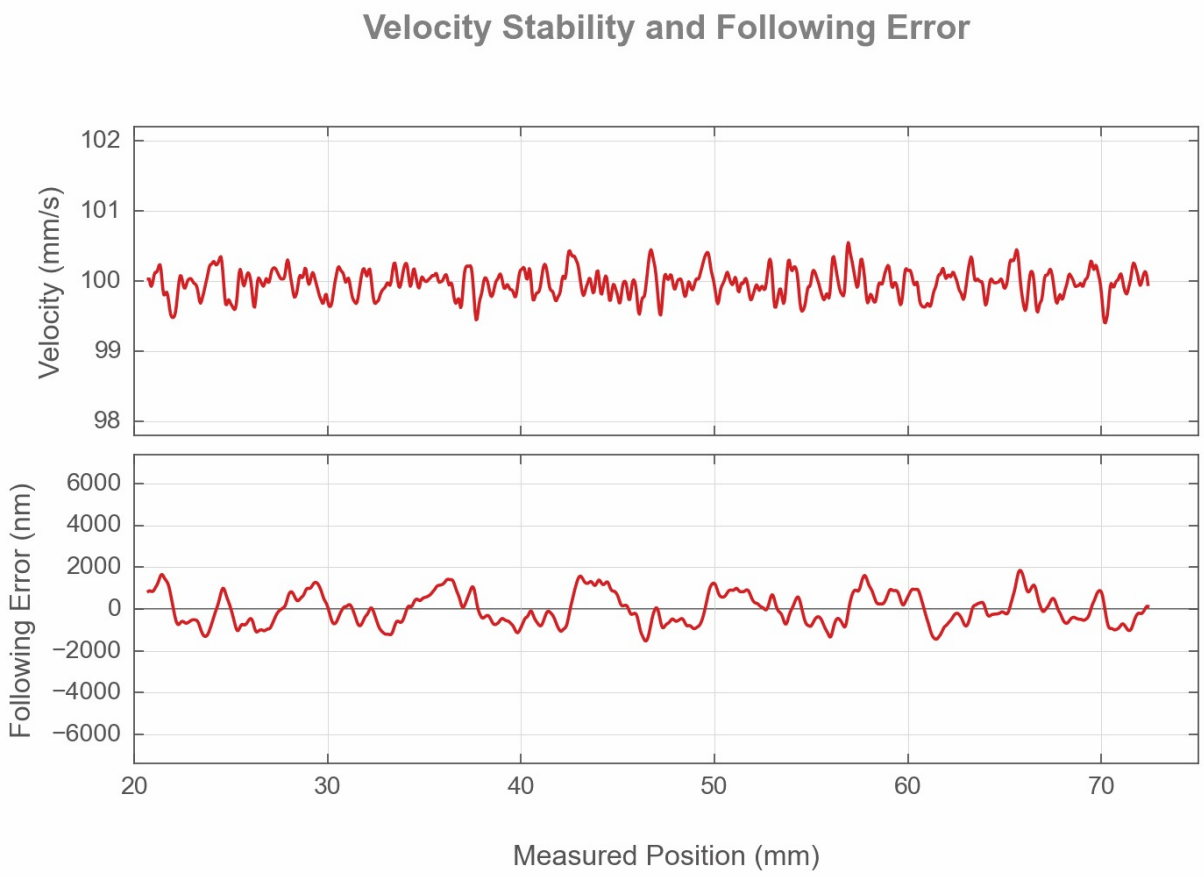
Built-in Controller	
Vacuum Compatible	No

Part Number	Travel Range	Maximum Acceleration	Vertical Runout	Horizontal Runout
LDA025A-AE53T10A	25 mm (0.984")	78.5 m/s2 (8.00 g)	< 4 µm (< 0.000157")	< 4 µm (< 0.000157")
LDA075A-AE53T10A	75 mm (2.953")	44.1 m/s2 (4.50 g)	< 8 µm (< 0.000315")	< 6 µm (< 0.000236")
LDA150A-AE53T10A	150 mm (5.905")	24.5 m/s2 (2.50 g)	< 15 µm (< 0.000591")	< 10 µm (< 0.000394")

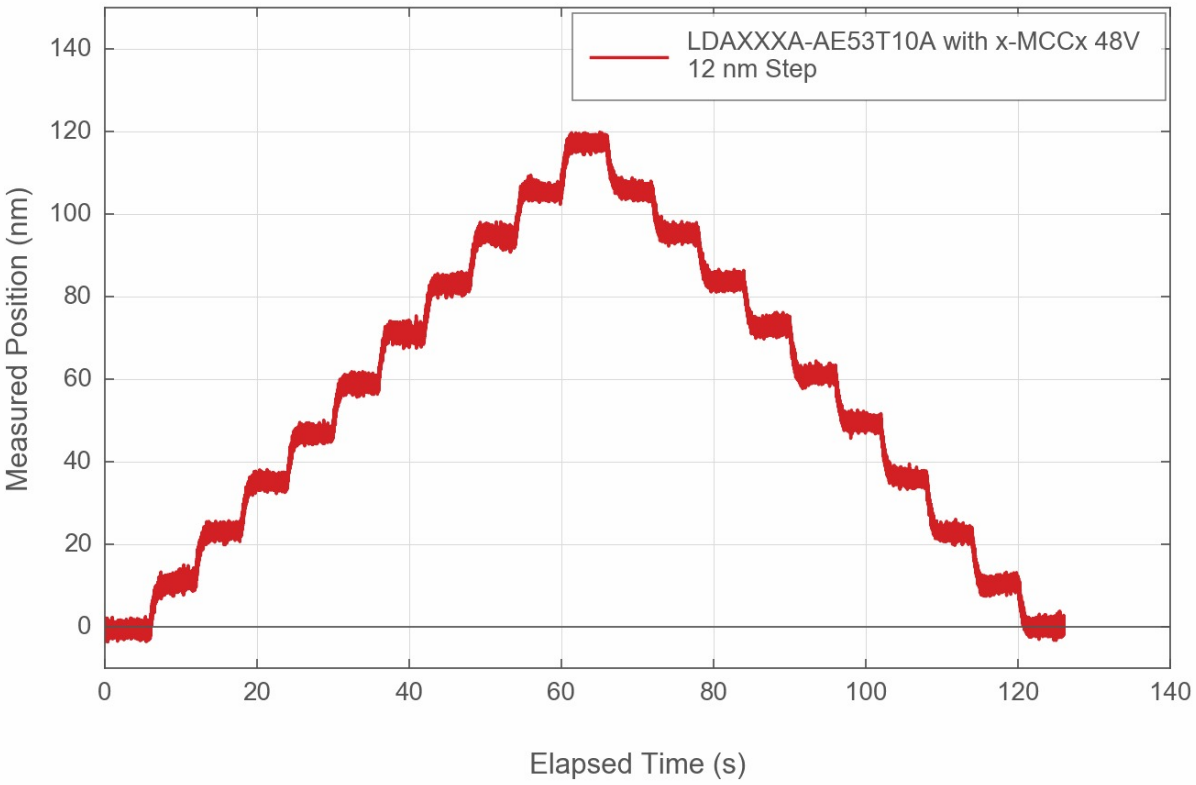
Part Number	Pitch	Roll	Stiffness in Pitch	Stiffness in Roll
LDA025A-AE53T10A	0.006° (0.105 mrad)	0.005° (0.087 mrad)	500 N-m/° (35 µrad/N-m)	500 N-m/° (35 µrad/N-m)
LDA075A-AE53T10A	0.016° (0.279 mrad)	0.007° (0.122 mrad)	1000 N-m/° (17 µrad/N-m)	600 N-m/° (29 µrad/N-m)
LDA150A-AE53T10A	0.02° (0.349 mrad)	0.015° (0.262 mrad)	3000 N-m/° (6 µrad/N-m)	700 N-m/° (25 µrad/N-m)

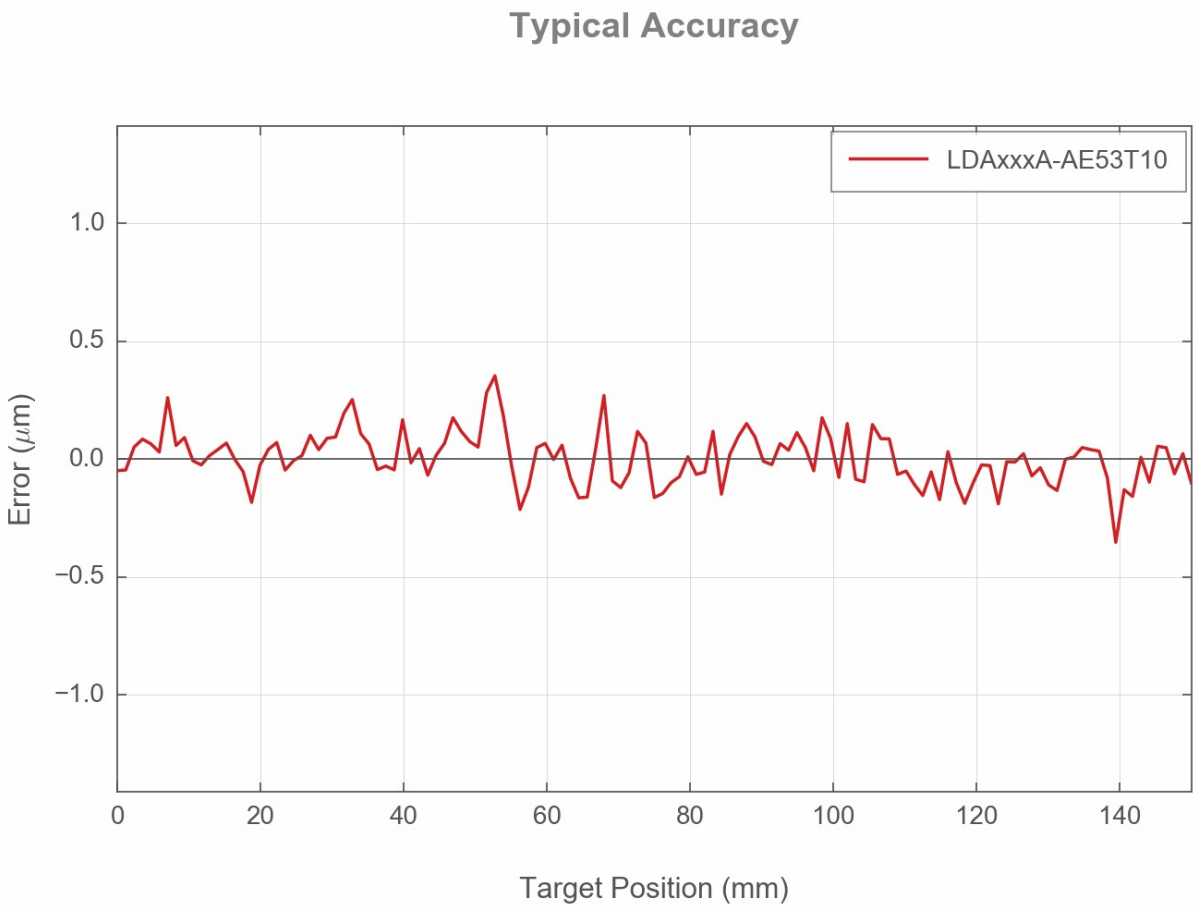
Part Number	Stiffness in Yaw	Moving Mass	Weight
LDA025A-AE53T10A	400 N-m/° (44 µrad/N-m)	0.29 kg (0.638 lbs)	0.88 kg (1.940 lb)
LDA075A-AE53T10A	900 N-m/° (19 µrad/N-m)	0.43 kg (0.946 lbs)	1.23 kg (2.712 lb)
LDA150A-AE53T10A	1750 N-m/° (10 µrad/N-m)	0.67 kg (1.474 lbs)	1.78 kg (3.924 lb)

LDA-AE Series Charts



Typical Minimum Incremental Move





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