

LDQ-AE Series Datasheet



- 75, 150, 300, 450, 600 and 1000 mm travel
- Up to 1.5 m/s speed, 35 N continuous thrust
- Minimum incremental move of 25 nm
- Integrated linear encoder provides high accuracy closed loop servo positioning
- Designed for use with an X-MCC Series controller for coordinated motion
- Capable of providing peak thrust of 95 N when paired with X-MCC
- With AutoDetect, the X-MCC controller configures its settings automatically for the connected peripheral
- Technical Article - Linear Motors: Overview and Selection Process

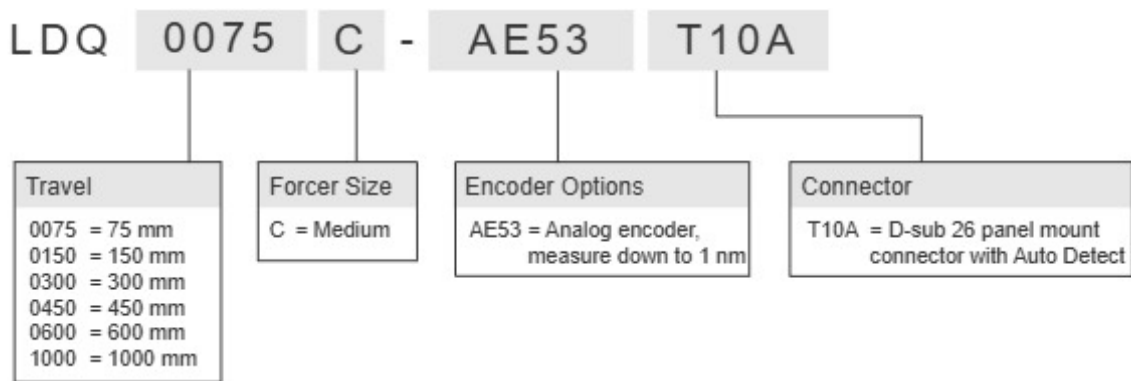
LDQ-AE Series Overview

Zaber's LDQ-AE Series devices are motorized linear motor stages with high precision and speed capabilities. The built-in linear encoder allows closed-loop servo positioning. The LDQ-AE's innovative design allows speeds up to 1.5 m/s and a minimum incremental move of 25 nm.

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 LDQ-AE.

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

LDQ-AE Series Part Numbering & Options



LDQ-AE Series Drawings

- [LDQ-AE \(Drawing for the LDQ-AE\)](#)

LDQ-AE Series Specifications

Built-in Controller	
Recommended Controller	X-MCC (48 V) Recommended
AutoDetect	Yes
Accuracy (unidirectional)	2.5 μm (0.000098")
Repeatability	< 0.3 μm (< 0.000012")
Minimum Incremental Move	25 nm
Maximum Acceleration	39.24 m/s ² (4.00 g)
Maximum Speed	1500 mm/s (59.055"/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	95 N (21.3 lb)
Maximum Continuous Thrust	35 N (7.8 lb)
Maximum Centered Load	200 N (44.9 lb)
Maximum Moment (Pitch)	30 N-m (22.1 ft-lb)
Maximum Moment (Roll)	30 N-m (22.1 ft-lb)
Maximum Moment (Yaw)	30 N-m (22.1 ft-lb)
Typical Velocity Stability	\pm 0.54% at 100 mm/s with a 5 kg payload
Stiffness in Pitch	8000 N-m/ $^{\circ}$ (2 $\mu\text{rad/N-m}$)
Stiffness in Roll	3800 N-m/ $^{\circ}$ (5 $\mu\text{rad/N-m}$)
Stiffness in Yaw	4000 N-m/ $^{\circ}$ (4 $\mu\text{rad/N-m}$)
Motor Type	Moving Coil Linear Motor
Motor Rated Current	2400 mA/phase
Force Constant	15.8 N/A (3.5 lbs/A)
Motor Winding Resistance	6.4 ohms/phase
Inductance	1.24 mH/phase
Guide Type	Recirculating Ball Linear Guide
Limit or Home Sensing	Optical Index Mark
Axes of Motion	1
Mounting Interface	M6 threaded holes

Built-in Controller

Moving Mass 1.5 kg (3.300 lbs)

Operating Temperature Range 0 to 50 °C

CE Compliant Yes

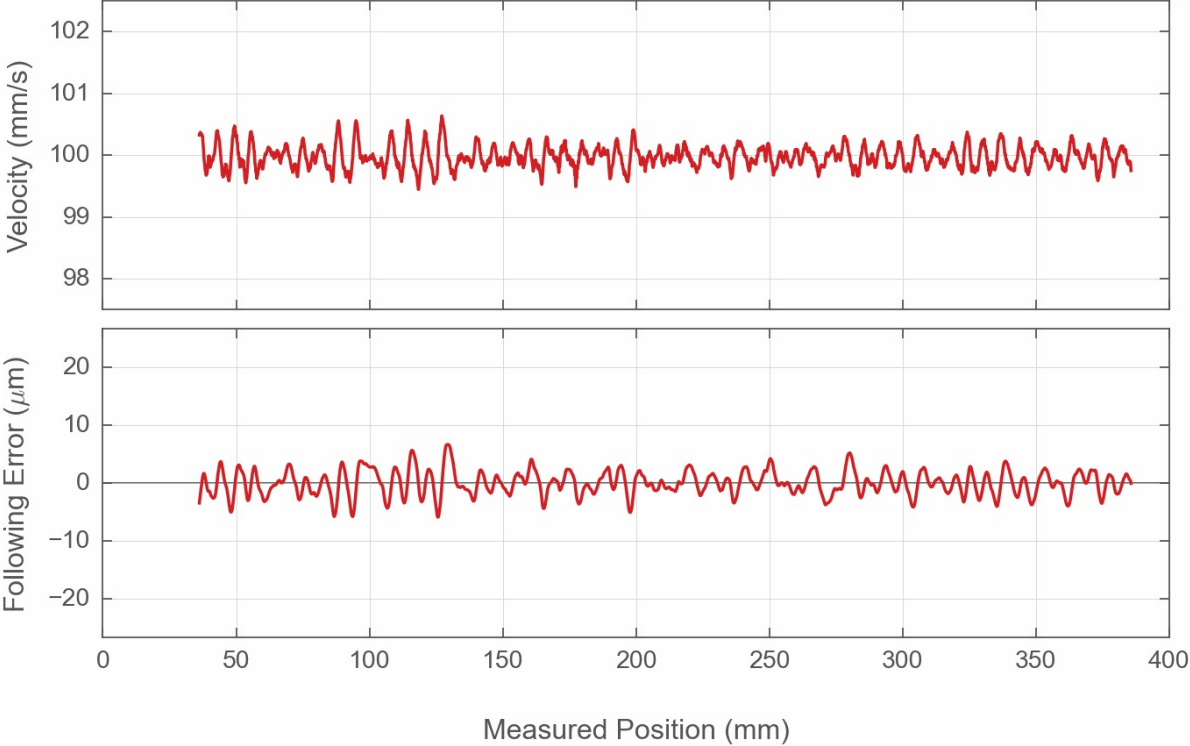
Vacuum Compatible No

Part Number	Travel Range	Vertical Runout	Horizontal Runout	Pitch
LDQ0075C-AE53T10A	75 mm (2.953")	< 20 µm (< 0.000787")	< 6 µm (< 0.000236")	0.008° (0.140 mrad)
LDQ0150C-AE53T10A	150 mm (5.905")	< 25 µm (< 0.000984")	< 12 µm (< 0.000472")	0.015° (0.262 mrad)
LDQ0300C-AE53T10A	300 mm (11.811")	< 35 µm (< 0.001378")	< 25 µm (< 0.000984")	0.03° (0.523 mrad)
LDQ0450C-AE53T10A	450 mm (17.716")	< 40 µm (< 0.001575")	< 30 µm (< 0.001181")	0.05° (0.873 mrad)
LDQ0600C-AE53T10A	600 mm (23.622")	< 60 µm (< 0.002362")	< 50 µm (< 0.001968")	0.05° (0.873 mrad)
LDQ1000C-AE53T10A	1000 mm (39.370")	< 70 µm (< 0.002756")	< 70 µm (< 0.002756")	0.06° (1.047 mrad)

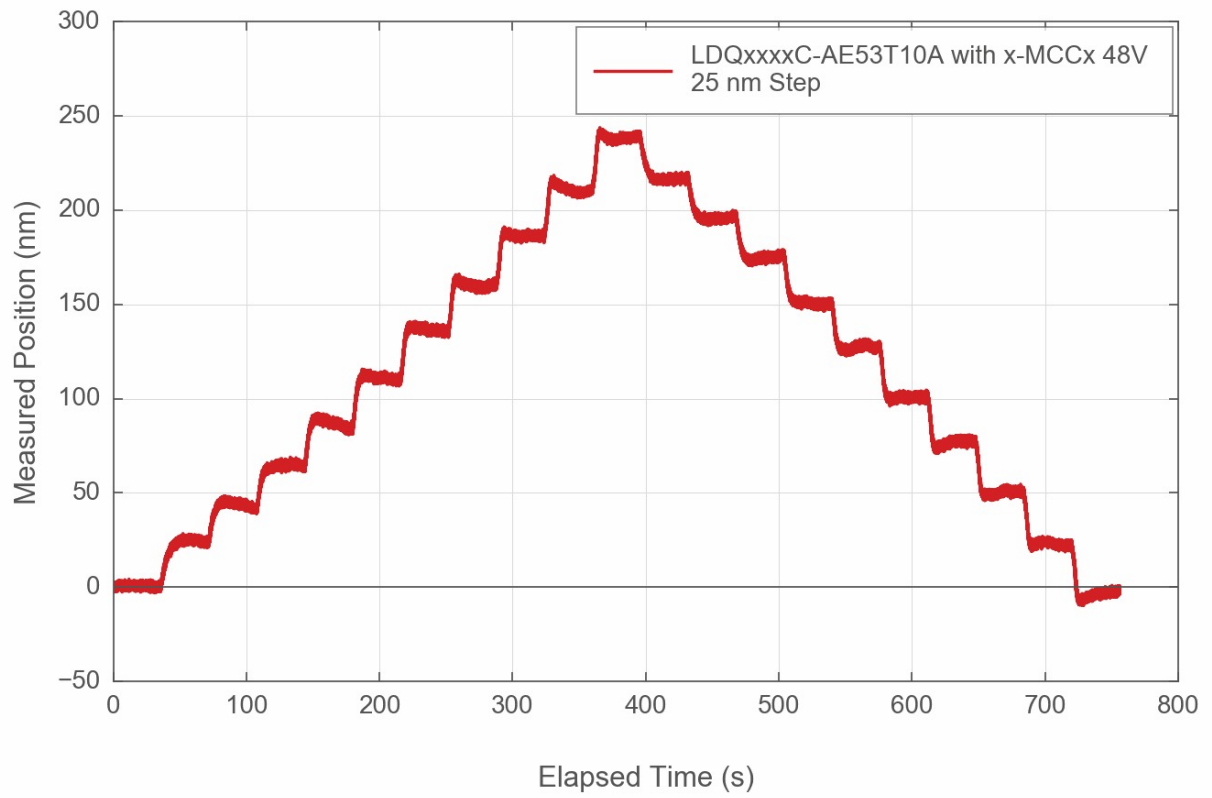
Part Number	Roll	Yaw	Weight
LDQ0075C-AE53T10A	0.005° (0.087 mrad)	0.02° (0.349 mrad)	6.37 kg (14.043 lb)
LDQ0150C-AE53T10A	0.008° (0.140 mrad)	0.025° (0.436 mrad)	7.27 kg (16.028 lb)
LDQ0300C-AE53T10A	0.015° (0.262 mrad)	0.03° (0.523 mrad)	9.37 kg (20.657 lb)
LDQ0450C-AE53T10A	0.02° (0.349 mrad)	0.035° (0.611 mrad)	10.87 kg (23.964 lb)
LDQ0600C-AE53T10A	0.04° (0.698 mrad)	0.04° (0.698 mrad)	13.2 kg (29.101 lb)
LDQ1000C-AE53T10A	0.06° (1.047 mrad)	0.06° (1.047 mrad)	18.6 kg (41.006 lb)

LDQ-AE Series Charts

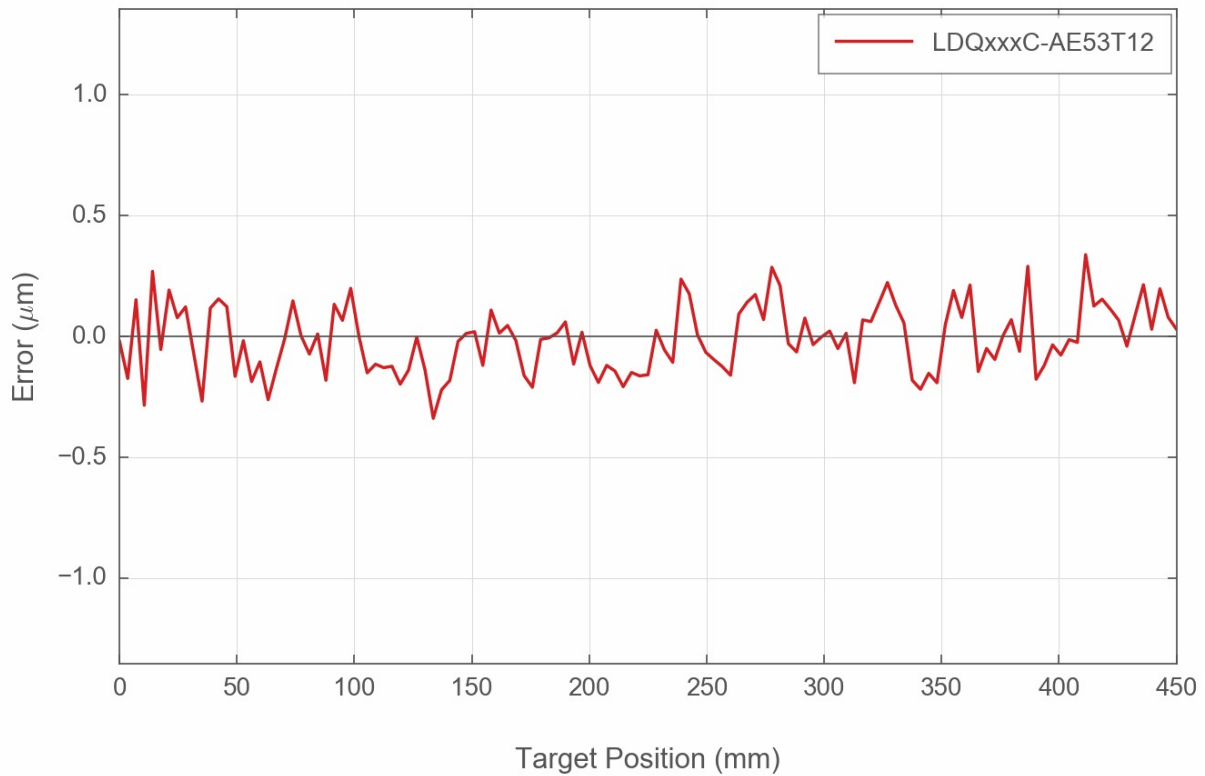
Typical Velocity Stability and Following Error



Typical Minimum Incremental Move



Typical Accuracy



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