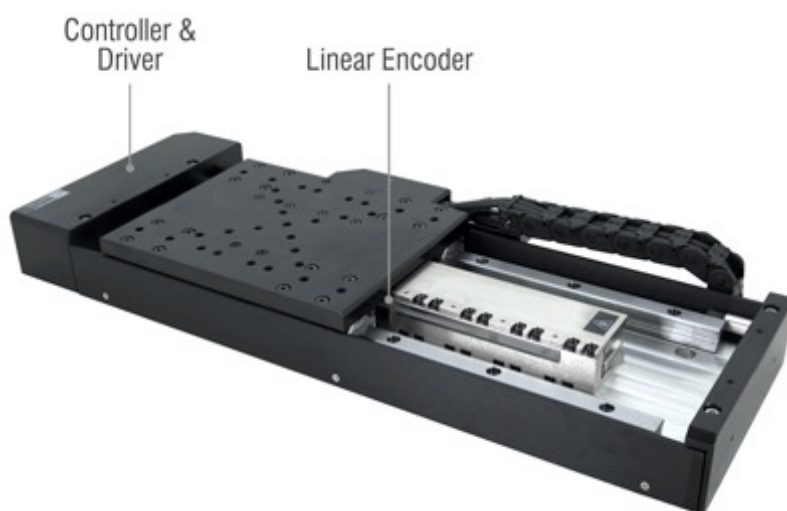


X-LDQ-AE Series Datasheet



- 75, 150, 300, 450, 600 and 1000 mm travel
- Up to 1.5 m/s speed and up to 2 g acceleration
- Up to 2.5 μm accuracy over 1000 mm travel
- Minimum incremental move of 50 nm
- Zero backlash
- One digital input and two digital outputs
- Integrated linear encoder provides high accuracy closed loop servo positioning
- Built-in controller; daisy-chains with other Zaber products
- Technical Article - Linear Motors: Overview and Selection Process

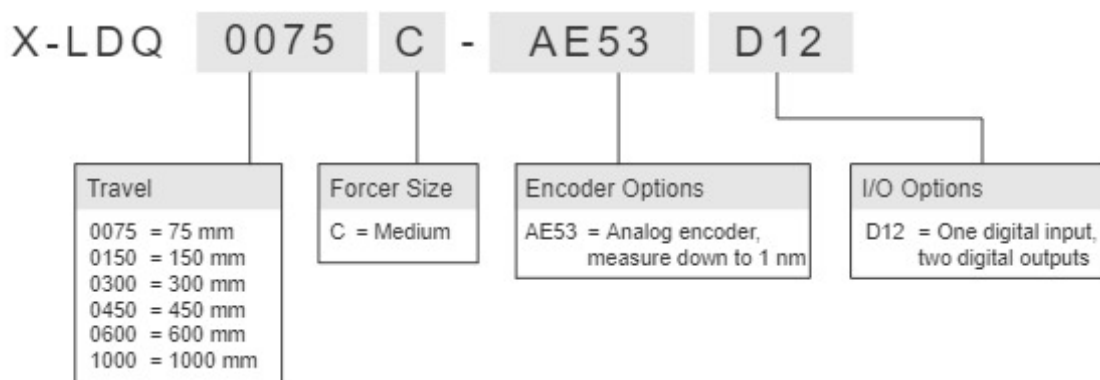
X-LDQ-AE Series Overview

Zaber's X-LDQ-AE Series devices are computer-controlled, motorized linear motor stages with high precision and speed capabilities. They are stand-alone units requiring only a standard 48 V power supply. The built-in controller and linear encoder allows pre-tuned closed-loop servo positioning with adjustable tuning parameters. An optional indexed knob provides convenient manual control for versatile operation even without a computer. These stages connect to the RS-232 port or USB port of any computer, and they can be daisy-chained with any other Zaber products.

The daisy-chain also shares power, making it possible for multiple X-Series products to share a single power supply. Convenient locking, 4-pin, M8 connectors on the unit allow for secure connection between units. The X-LDQ-AE's innovative design allows speeds up to 1.5 m/s and minimum incremental move of 50 nm. Like all of Zaber's products, the X-LDQ-AE Series is designed to be 'plug and play' and very easy to set up and operate. X-LDQ-AE devices also include a digital input and two digital outputs for interfacing with external systems. An event-driven trigger system allows devices to be programmed for stand-alone operation based on I/O, time, or movement stimuli.

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

X-LDQ-AE Series Part Numbering



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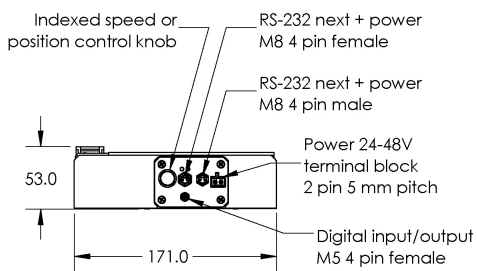
X-LDQ-AE Series Drawings

ZABER

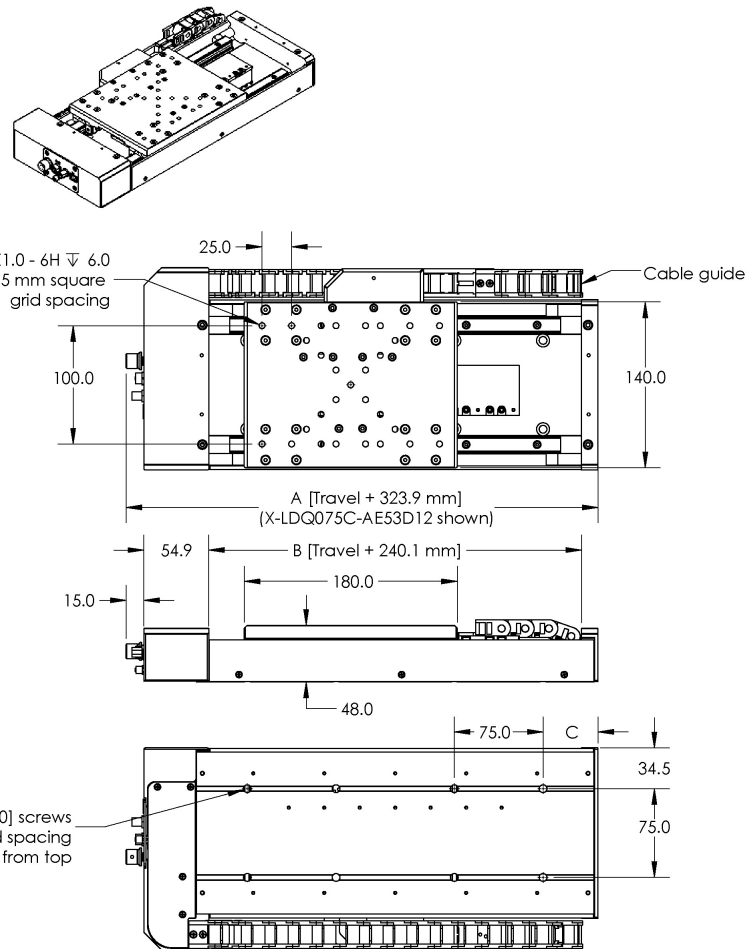
X-LDQ-AE Direct Drive Linear Stage
dimensions in mm

Model Number*	Travel	A	B	C
X-LDQ0075C-AE53D12	75.0	398.9	315.1	46.5
X-LDQ0150C-AE53D12	150.0	473.9	390.1	46.5
X-LDQ0300C-AE53D12	300.0	623.9	540.1	59.0
X-LDQ0450C-AE53D12	450.0	773.9	690.1	59.0
X-LDQ0600C-AE53D12	600.0	923.9	840.1	59.0
X-LDQ1000C-AE53D12	1000.0	1323.9	1240.1	71.5

*See product page for complete list
of available models at www.zaber.com



Mounting holes for M6 or [1/4"-20] screws
at 75 mm square grid spacing
accessed from top



X-LDQ-AE Series Specifications

Specification	Value	Alternate Unit
Built-in Controller	Yes	
Accuracy (unidirectional)	2.5 μm	0.000098"
Repeatability	< 0.3 μm	< 0.000012"
Minimum Incremental Move	50 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	40 N	9.0 lb
Maximum Continuous Thrust	35 N	7.8 lb
Communication Interface	RS-232	
Communication Protocol	Zaber ASCII (Default)	
Data Cable Connection	Locking 4-pin M8	
Maximum Centered Load	200 N	44.9 lb
Maximum Cantilever Load	3000 N-cm	4248.4 oz-in
Guide Type	Recirculating Ball Linear Guide	
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 $\mu\text{rad/N-m}$
Power Supply	24-48 VDC	
Power Plug	2-pin screw terminal	
Maximum Current Draw	3000 mA	
Motor Type	Moving Coil Linear Motor	
Force Constant	15.8 N/A	3.5 lbs/A
Limit or Home Sensing	Optical Index Mark	
Manual Control	Indexed knob with push switch	
Axes of Motion	1	

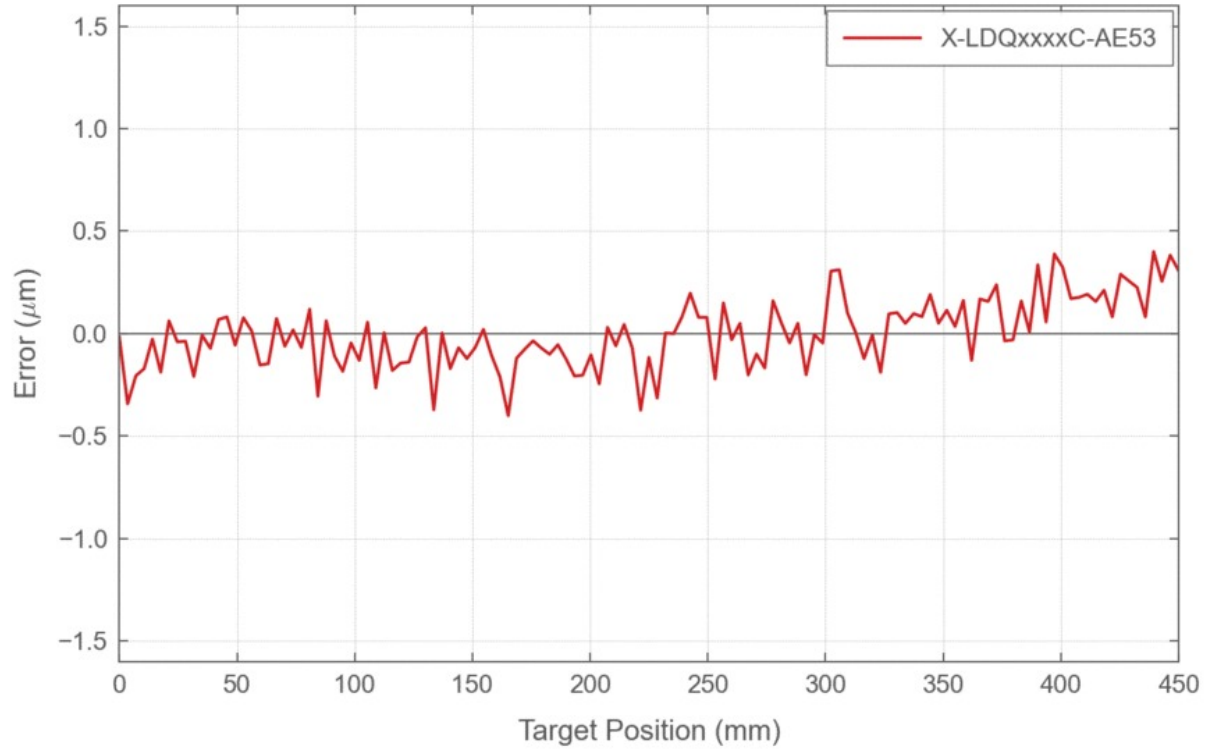
Specification	Value	Alternate Unit
LED Indicators	Yes	
Mounting Interface	M6 threaded holes	
Moving Mass	1.5 kg	3.300 lbs
Digital Input	1	
Digital Output	2	
Operating Temperature Range	0 to 50 °C	
RoHS Compliant	Yes	
CE Compliant	Yes	
Vacuum Compatible	No	

Part Number	Travel Range	Vertical Runout	Horizontal Runout	Pitch
X-LDQ0075C-AE53D12	75 mm (2.953")	< 20 µm (< 0.000787")	< 6 µm (< 0.000236")	0.008° (0.140 mrad)
X-LDQ0150C-AE53D12	150 mm (5.905")	< 25 µm (< 0.000984")	< 12 µm (< 0.000472")	0.015° (0.262 mrad)
X-LDQ0300C-AE53D12	300 mm (11.811")	< 35 µm (< 0.001378")	< 25 µm (< 0.000984")	0.03° (0.523 mrad)
X-LDQ0450C-AE53D12	450 mm (17.716")	< 40 µm (< 0.001575")	< 30 µm (< 0.001181")	0.05° (0.873 mrad)
X-LDQ0600C-AE53D12	600 mm (23.622")	< 45 µm (< 0.001772")	< 35 µm (< 0.001378")	0.05° (0.873 mrad)
X-LDQ1000C-AE53D12	1000 mm (39.370")			

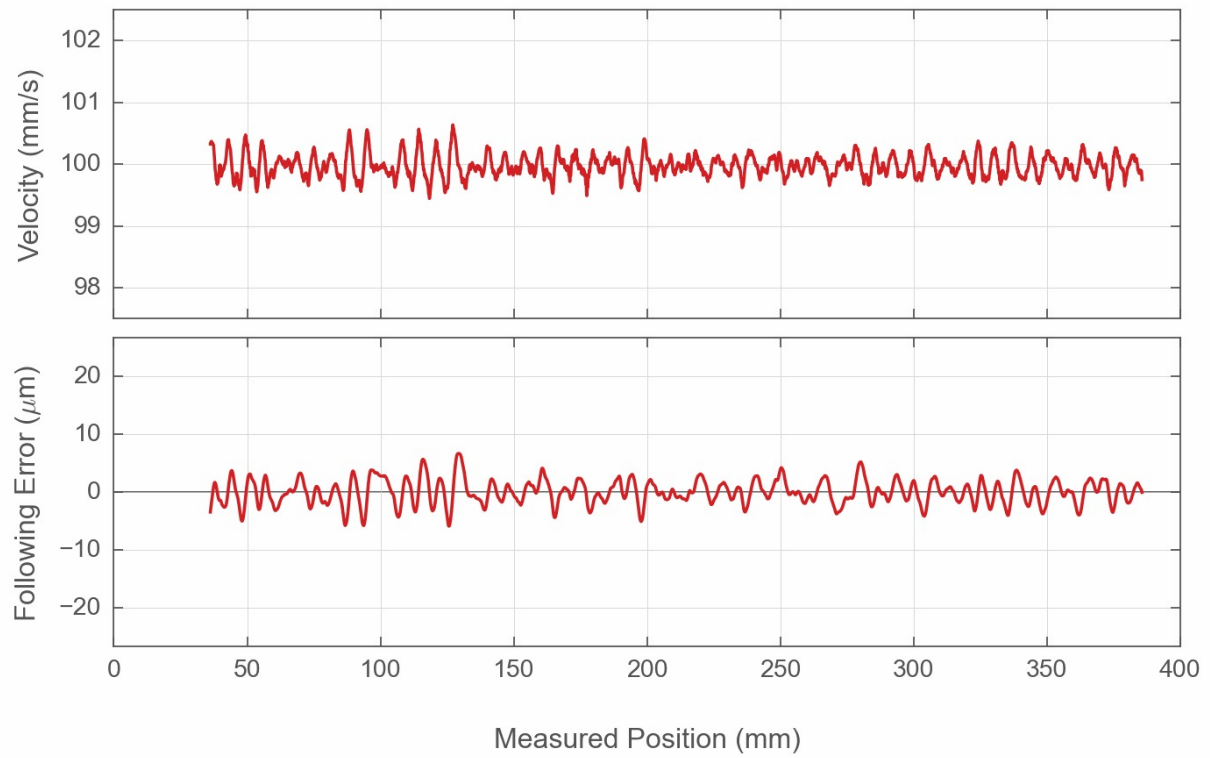
Part Number	Roll	Yaw	Weight
X-LDQ0075C-AE53D12	0.005° (0.087 mrad)	0.02° (0.349 mrad)	6.4 kg (14.110 lb)
X-LDQ0150C-AE53D12	0.008° (0.140 mrad)	0.025° (0.436 mrad)	7.3 kg (16.094 lb)
X-LDQ0300C-AE53D12	0.015° (0.262 mrad)	0.03° (0.523 mrad)	9.4 kg (20.723 lb)
X-LDQ0450C-AE53D12	0.02° (0.349 mrad)	0.035° (0.611 mrad)	10.9 kg (24.030 lb)
X-LDQ0600C-AE53D12	0.02° (0.349 mrad)	0.04° (0.698 mrad)	13.2 kg (29.101 lb)
X-LDQ1000C-AE53D12			18.6 kg (41.006 lb)

X-LDQ-AE Series Charts

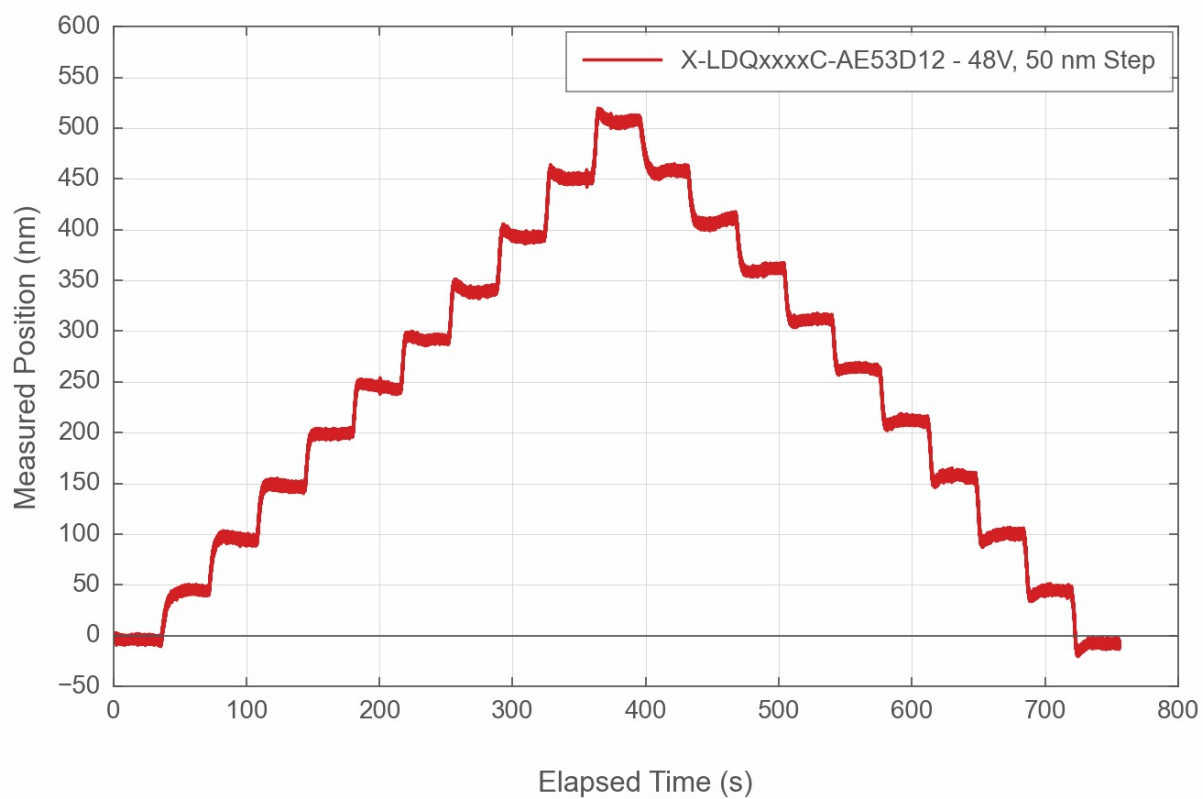
Typical Accuracy



Typical Velocity Stability and Following Error



Typical Minimum Incremental Move



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