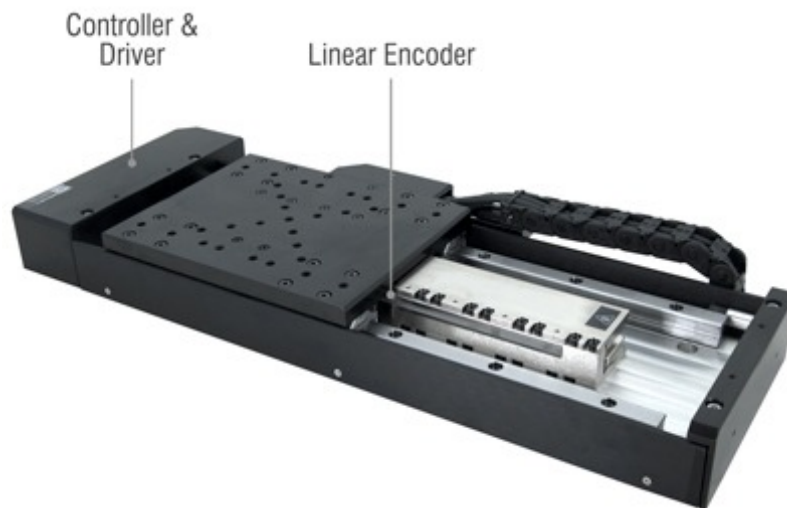


## X-LDQ-AE Series Datasheet



- 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  $\mu\text{m}$  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

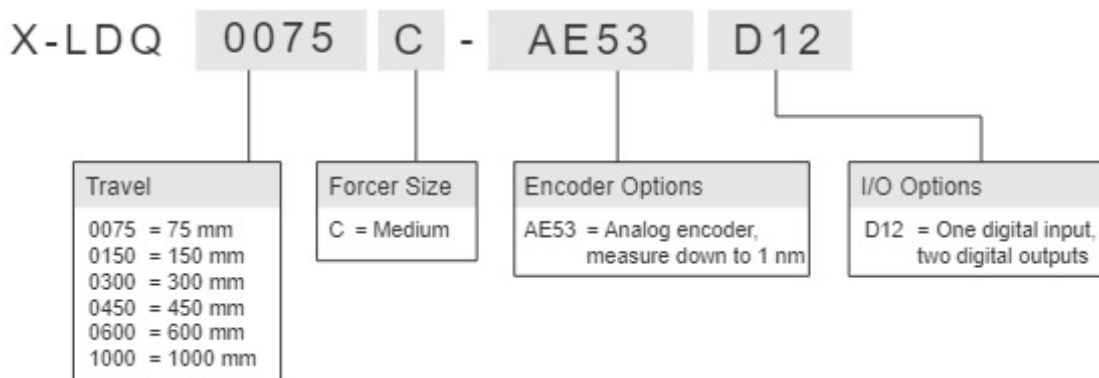
## X-LDQ-AE Series Overview

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>

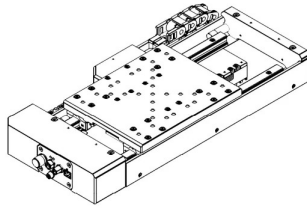
## X-LDQ-AE Series Part Numbering & Options



# X-LDQ-AE Series Drawings

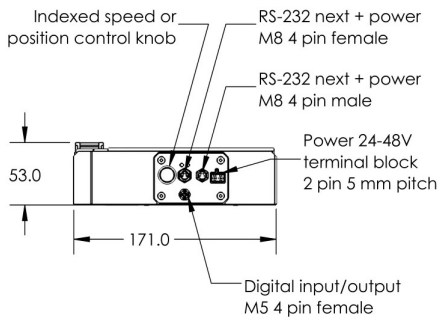
## ZABER

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

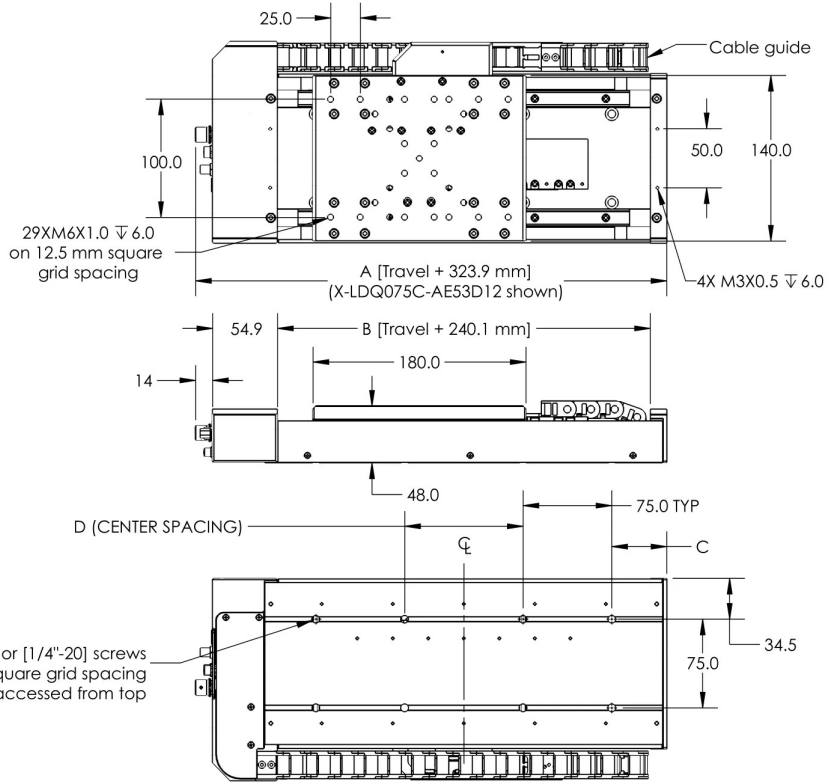


Model Number*	Travel	A	B	C	D
X-LDQ0075C-AE53D12	75.0	398.9	315.1	46.5	100.0
X-LDQ0150C-AE53D12	150.0	473.9	390.1	46.5	25.0
X-LDQ0300C-AE53D12	300.0	623.9	540.1	59.0	75.0
X-LDQ0450C-AE53D12	450.0	773.9	690.1	59.0	75.0
X-LDQ0600C-AE53D12	600.0	923.9	840.1	59.0	75.0
X-LDQ1000C-AE53D12	1000.0	1323.9	1240.1	71.5	75.0

\*See product page for complete list of available models at [www.zaber.com](http://www.zaber.com)



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



DWG 2030 R020

## X-LDQ-AE Series Specifications

<b>Built-in Controller</b>	
Accuracy (unidirectional)	2.5 $\mu\text{m}$ (0.000098")
Repeatability	< 0.3 $\mu\text{m}$ (< 0.000012")
Minimum Incremental Move	50 nm
Maximum Acceleration	39.24 m/s <sup>2</sup> (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
LED Indicators	Yes

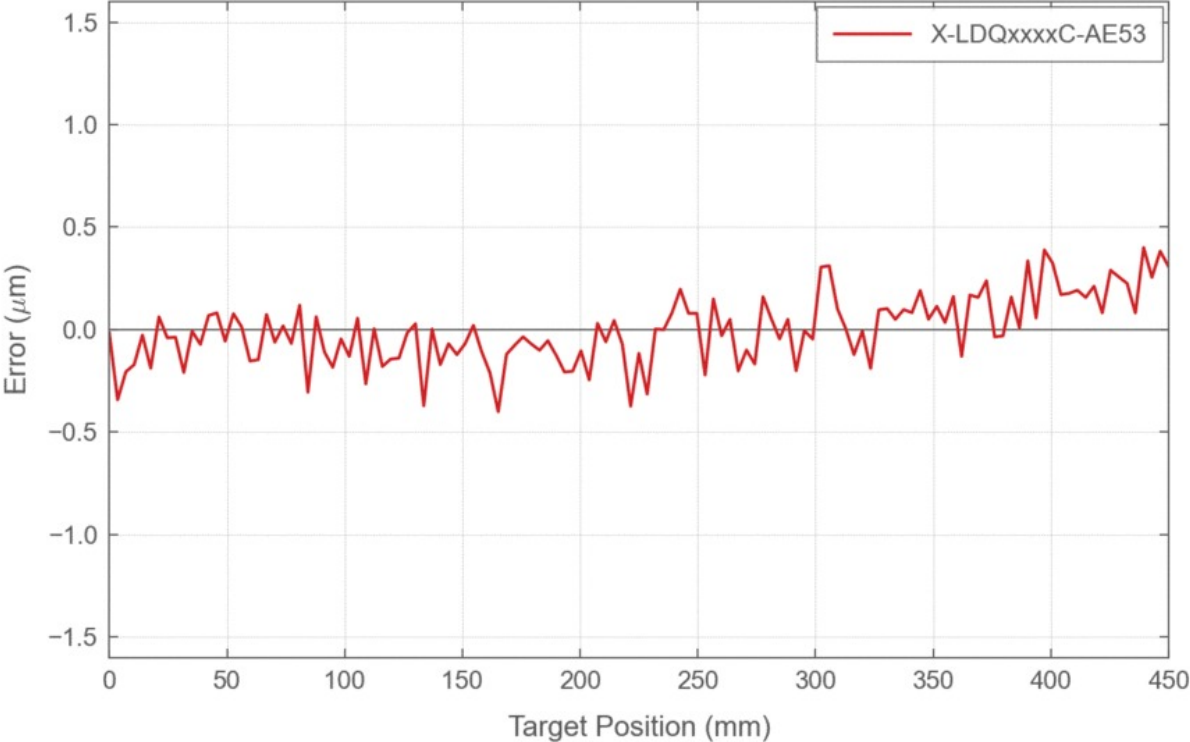
<b>Built-in Controller</b>	
Mounting Interface	M6 threaded holes
Moving Mass	1.5 kg (3.300 lbs)
Digital Input	1
Digital Output	2
Operating Temperature Range	0 to 50 °C
RoHS Compliant	Yes
CE Compliant	Yes
Vacuum Compatible	No

<b>Part Number</b>	<b>Travel Range</b>	<b>Vertical Runout</b>	<b>Horizontal Runout</b>	<b>Pitch</b>
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")			

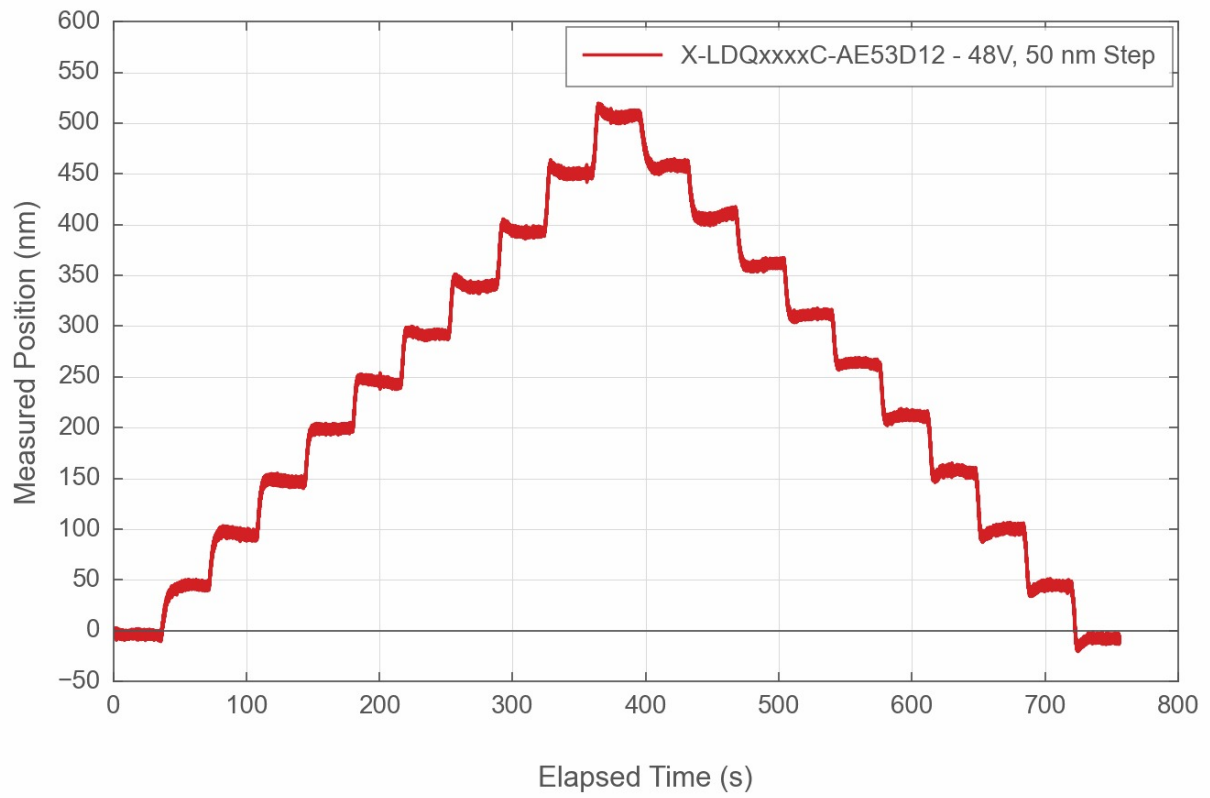
<b>Part Number</b>	<b>Roll</b>	<b>Yaw</b>	<b>Weight</b>
X-LDQ0075C-AE53D12	0.005° (0.087 mrad)	0.02° (0.349 mrad)	6.4 kg (14.110 lb)
X-LDQ0150C-AE53D12	0.008° (0.140 mrad)	0.025° (0.436 mrad)	7.3 kg (16.094 lb)
X-LDQ0300C-AE53D12	0.015° (0.262 mrad)	0.03° (0.523 mrad)	9.4 kg (20.723 lb)
X-LDQ0450C-AE53D12	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

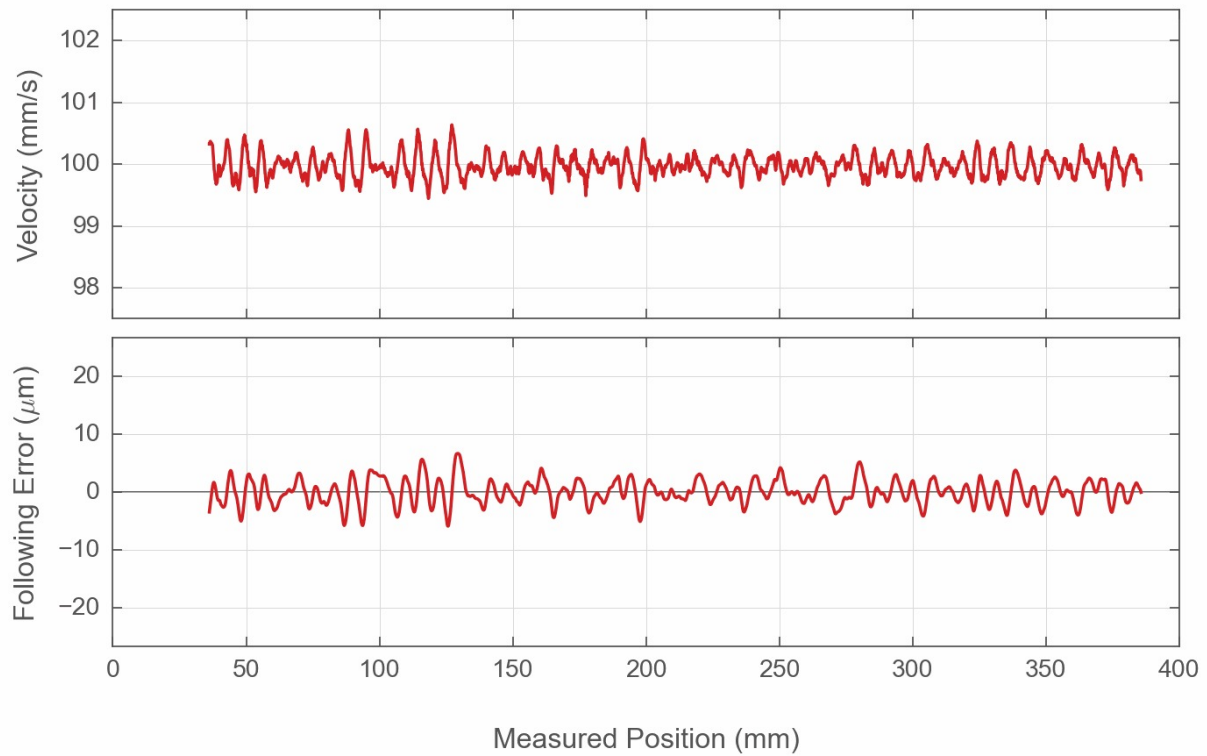
Typical Accuracy



## Typical Minimum Incremental Move



## Typical Velocity Stability and Following Error



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