

## X-LDM-AE Series Datasheet



- 60, 110, 210 mm travel options
- Up to 1.2 m/s speed and up to 3.5 g acceleration
- High repeatability (80 nm) and accuracy (1  $\mu$ m), with 25 nm minimum incremental move
- Direct position measurement from 1 nm resolution linear encoder
- Non-contact ironless linear motor for high dynamic performance & reliability
- Built-in controller; daisy-chains with other Zaber products
- Digital IO for interfacing with external hardware

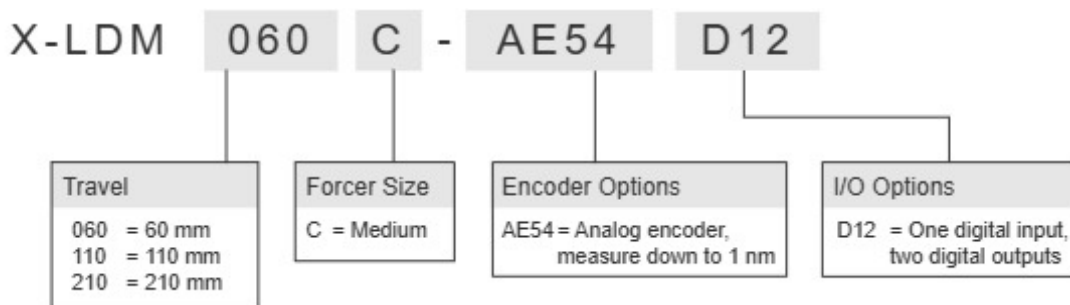
## X-LDM-AE Series Overview

Zaber's X-LDM-AE Series devices are computer-controlled, motorized linear stages suited for applications demanding outstanding precision, throughput, and reliability. A centrally mounted linear encoder results in 1  $\mu\text{m}$  position accuracy and consistent movement steps down to 25 nm. X-LDM-AE devices feature high efficiency ironless linear motors, providing high speed and acceleration, while minimizing heat generation to improve repeatability. Both the drive and encoder are non-contact and have no moving cables, resulting in an high lifetime system.

These stages are stand-alone units requiring only a standard 48 V power supply. They 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. Like all of Zaber's products, the X-LDM-AE Series is designed to be 'plug and play' and very easy to set up and operate. X-LDM-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-LDM-AE>

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



## X-LDM-AE Series Drawings

- [dimensions\\_X-LDM-AE \(Drawing for the X-LDM\\_AE\)](#)

## X-LDM-AE Series Specifications

<b>Built-in Controller</b>	
Accuracy (unidirectional)	1 $\mu\text{m}$ (0.000039")
Repeatability	< 0.08 $\mu\text{m}$ (< 0.000003")
Minimum Incremental Move	25 nm
Maximum Speed	1200 mm/s (47.244"/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	60 N (13.5 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	185 N (41.5 lb)
Maximum Moment (Pitch)	1200 N-cm (1699.3 oz-in)
Maximum Moment (Roll)	1200 N-cm (1699.3 oz-in)
Maximum Moment (Yaw)	1200 N-cm (1699.3 oz-in)
Typical Velocity Stability	$\pm 0.11\%$ at 100 mm/s with a 1.0 kg payload
Power Supply	48 VDC
Power Plug	2-pin screw terminal
Maximum Current Draw	3000 mA
Motor Type	Moving Magnet Track Linear Motor
Force Constant	15.8 N/A (3.5 lbs/A)
Guide Type	Crossed-Roller Bearing
Limit or Home Sensing	Optical Index Mark
Manual Control	Indexed knob with push switch
Axes of Motion	1
LED Indicators	Yes
Mounting Interface	M6 threaded holes
Digital Input	1

<b>Built-in Controller</b>	
Digital Output	2
Operating Temperature Range	10 to 40 °C
CE Compliant	Yes
Vacuum Compatible	No

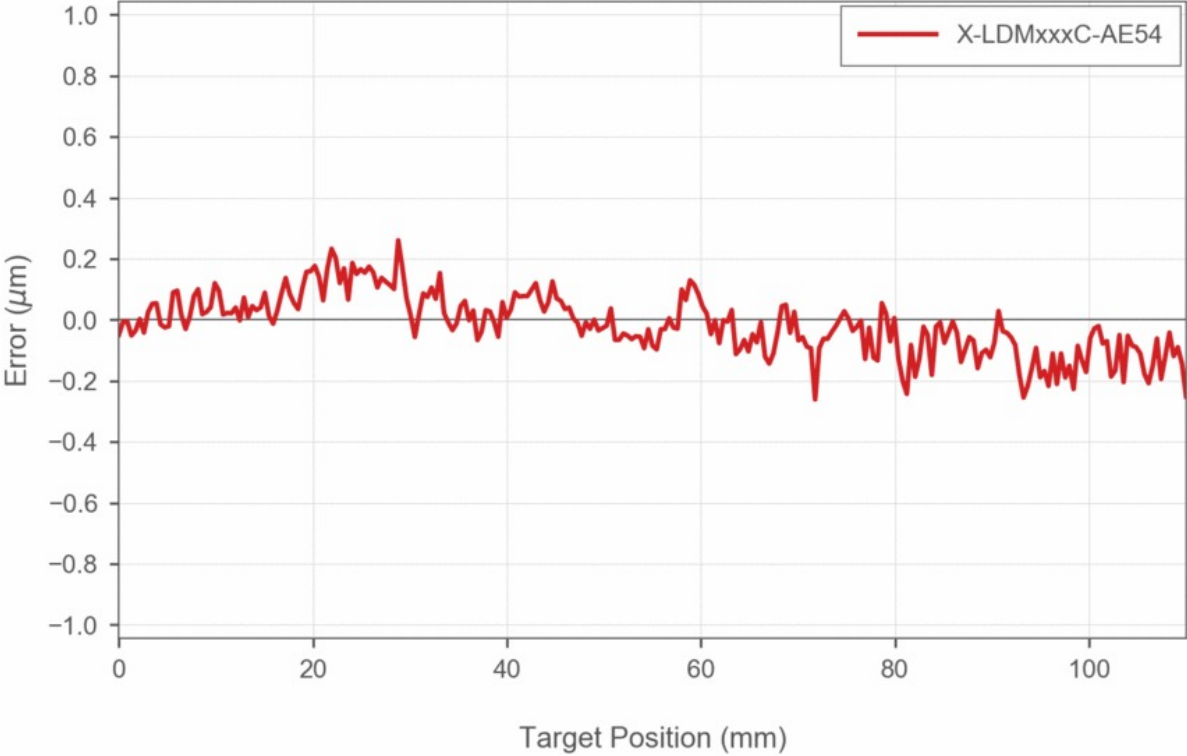
<b>Part Number</b>	<b>Travel Range</b>	<b>Maximum Acceleration</b>	<b>Vertical Runout</b>	<b>Horizontal Runout</b>
X-LDM060C-AE54D12	60 mm (2.362")	34.3 m/s <sup>2</sup> (3.50 g)	< 4 µm (< 0.000157")	< 3 µm (< 0.000118")
X-LDM110C-AE54D12	110 mm (4.331")	24.5 m/s <sup>2</sup> (2.50 g)	< 4 µm (< 0.000157")	< 3 µm (< 0.000118")
X-LDM210C-AE54D12	210 mm (8.268")	14.7 m/s <sup>2</sup> (1.50 g)	< 8 µm (< 0.000315")	< 5 µm (< 0.000197")

<b>Part Number</b>	<b>Pitch</b>	<b>Roll</b>	<b>Yaw</b>	<b>Moving Mass</b>
X-LDM060C-AE54D12	0.003° (0.052 mrad)	0.002° (0.035 mrad)	0.002° (0.035 mrad)	1.74 kg (3.828 lbs)
X-LDM110C-AE54D12	0.005° (0.087 mrad)	0.005° (0.087 mrad)	0.002° (0.035 mrad)	2.29 kg (5.038 lbs)
X-LDM210C-AE54D12	0.01° (0.174 mrad)	0.005° (0.087 mrad)	0.005° (0.087 mrad)	3.17 kg (6.974 lbs)

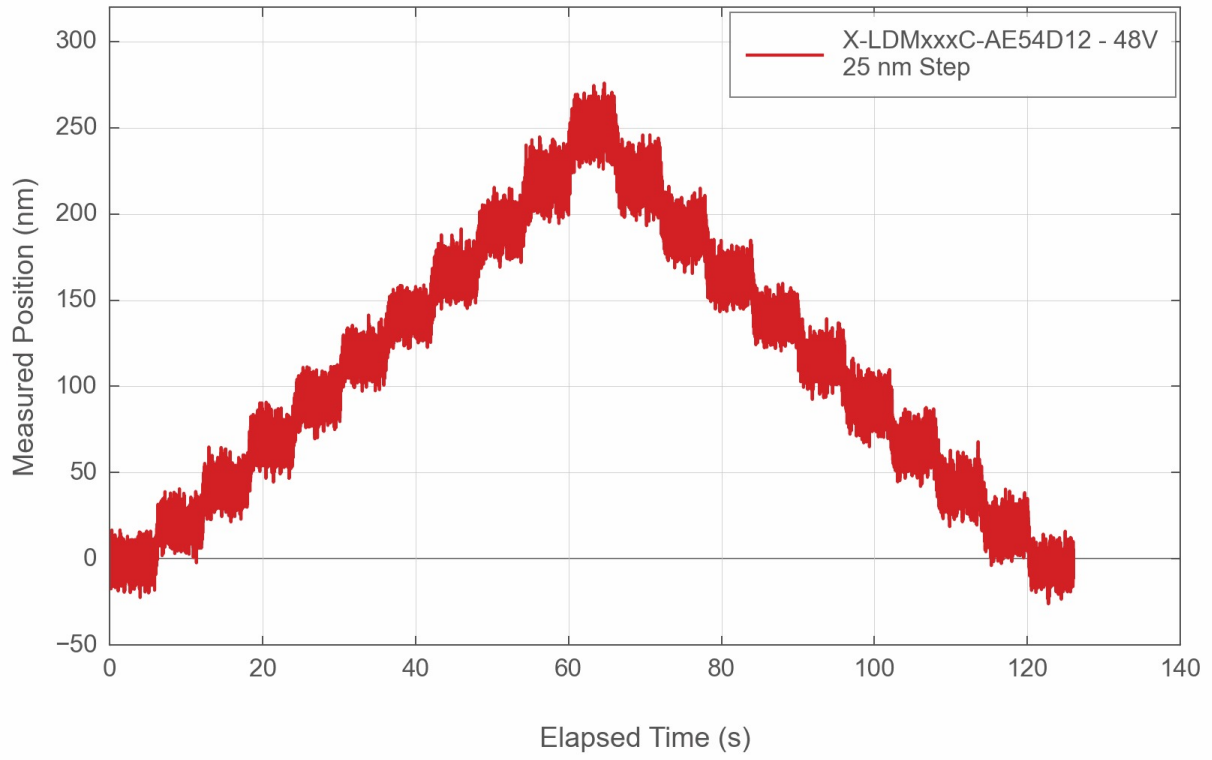
<b>Part Number</b>	<b>Weight</b>
X-LDM060C-AE54D12	3.76 kg (8.289 lb)
X-LDM110C-AE54D12	4.84 kg (10.670 lb)
X-LDM210C-AE54D12	6.60 kg (14.550 lb)

X-LDM-AE Series Charts

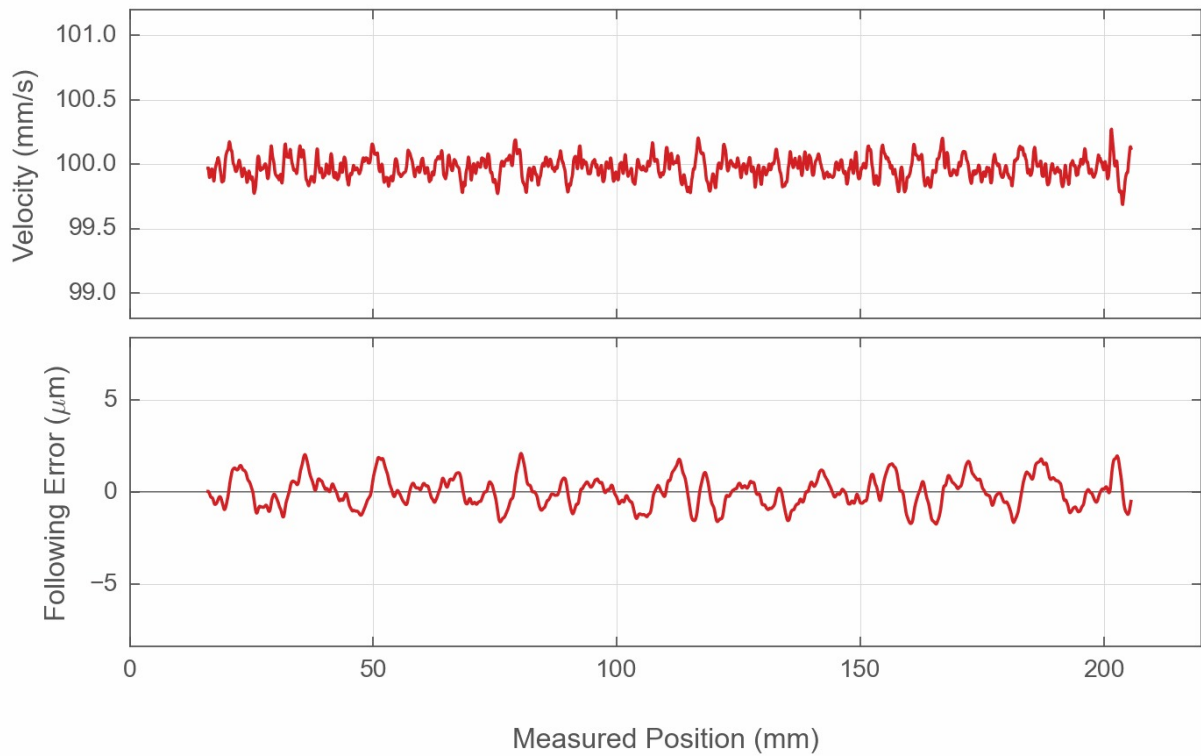
Typical Accuracy



## Typical Minimum Incremental Move



## Typical Velocity Stability and Following Error



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