

X-LDM-AE Series Datasheet



- High repeatability (80 nm) and accuracy (1 μm), with 25 nm minimum incremental move
- Direct position measurement from 1 nm resolution linear encoder
- Up to 1.2 m/s speed and up to 3.5 g acceleration
- 60, 110, 210 mm travel options
- Built-in controller; daisy-chains with other Zaber products
- Non-contact ironless linear motor for ultra precision, high dynamics and zero backlash
- Mounts directly in XY
- [Technical Article - Linear Motors: Overview and Selection Process](#)

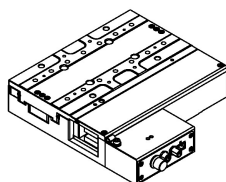
Zaber's X-LDM-AE Series devices are computer-controlled, motorized linear stages suited for applications demanding outstanding precision, throughput, and reliability. A centrally mounted linear encoder results in 1 μm position accuracy and consistent movement steps down to 25 nm. X-LDM-AE devices feature 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.

Drawings

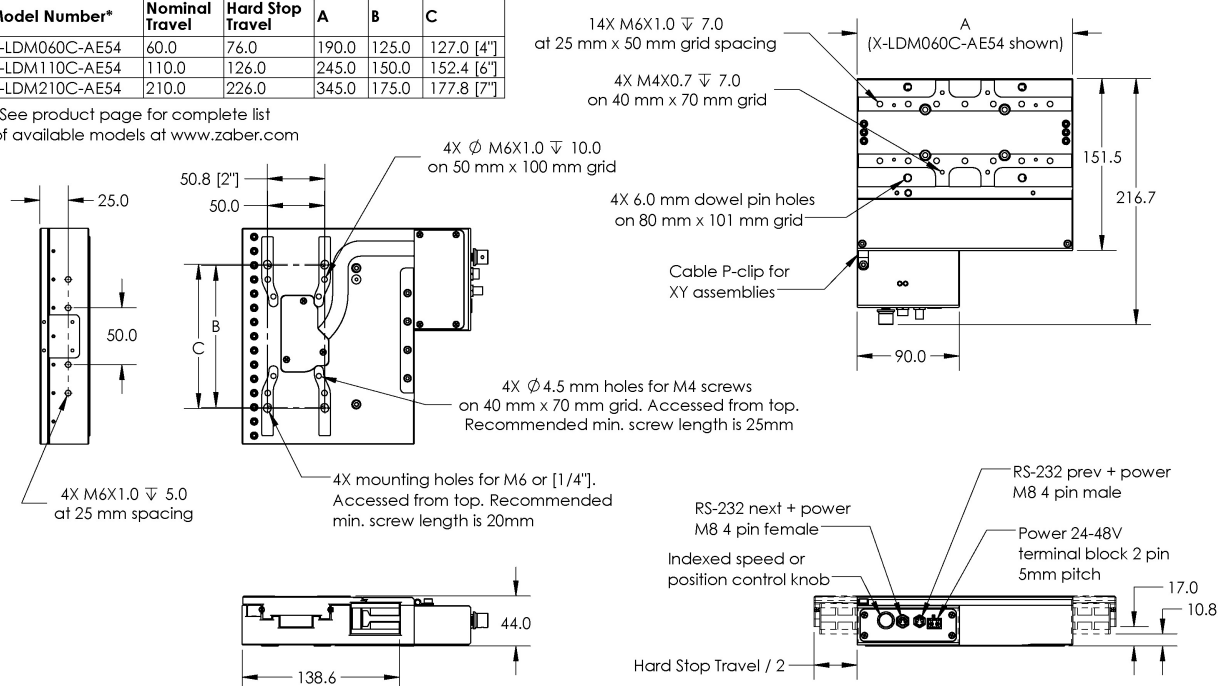
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X-LDM-AE Direct Drive Linear Stage
dimensions in mm



Model Number*	Nominal Travel	Hard Stop Travel	A	B	C
X-LDM060C-AE54	60.0	76.0	190.0	125.0	127.0 [4"]
X-LDM110C-AE54	110.0	126.0	245.0	150.0	152.4 [6"]
X-LDM210C-AE54	210.0	226.0	345.0	175.0	177.8 [7"]

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



DWG 2168 R01

Specifications

Specification	Value	Alternate Unit
Built-in Controller	Yes	
Accuracy (unidirectional)	1 μm	0.000039 "
Repeatability	< 0.08 μm	< 0.000003 "
Minimum Incremental Move	25 nm	
Maximum Speed	1200 mm/s	47.244 "/s
Encoder Count Size	1 nm	
Encoder Type	Linear analog encoder	
Peak Thrust	60 N	13.5 lb
Maximum Continuous Thrust	35 N	7.8 lb
Communication Interface	RS-232	
Communication Protocol	Zaber ASCII (Default)	
Maximum Centered Load	120 N	26.9 lb
Maximum Cantilever Load	1200 N-cm	1699.3 oz-in
Guide Type	Crossed-Roller Bearing	
Maximum Current Draw	3000 mA	
Power Supply	48 VDC	
Power Plug	2-pin screw terminal	
Motor Type	Moving Magnet Track Linear Motor	
Motor Rated Current	2400 mA/phase	
Inductance	1.24 mH/phase	
Data Cable Connection	Locking 4-pin M8	
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	
Vacuum Compatible	No	
Operating Temperature Range	10 to 40 °C	
RoHS Compliant	Yes	
CE Compliant	Yes	

Part Number	Travel Range	Maximum Acceleration	Vertical Runout	Horizontal Runout
X-LDM060C-AE54	60 mm (2.362 ")	34.3 m/s ² (3.50 g)	< 4 µm (< 0.000157 ")	< 3 µm (< 0.000118 ")
X-LDM110C-AE54	110 mm (4.331 ")	24.5 m/s ² (2.50 g)	< 4 µm (< 0.000157 ")	< 3 µm (< 0.000118 ")
X-LDM210C-AE54	210 mm (8.268 ")	14.7 m/s ² (1.50 g)	< 8 µm (< 0.000315 ")	< 5 µm (< 0.000197 ")

Part Number	Pitch	Roll	Yaw	Moving Mass
X-LDM060C-AE54	0.003 ° (0.052 mrad)	0.002 ° (0.035 mrad)	0.002 ° (0.035 mrad)	1.74 kg (3.828 lbs)
X-LDM110C-AE54	0.005 ° (0.087 mrad)	0.005 ° (0.087 mrad)	0.002 ° (0.035 mrad)	2.29 kg (5.038 lbs)
X-LDM210C-AE54	0.01 ° (0.174 mrad)	0.005 ° (0.087 mrad)	0.005 ° (0.087 mrad)	3.17 kg (6.974 lbs)

Part Number	Weight
X-LDM060C-AE54	3.76 kg (8.289 lb)
X-LDM110C-AE54	4.84 kg (10.670 lb)
X-LDM210C-AE54	6.60 kg (14.550 lb)

Charts

Typical Accuracy

