X-DMA-AEZ Series Datasheet

- The DMA objective focus stage is a high-performance, direct-drive solution for microscope system builders and OEMs requiring rapid, accurate focus for high-magnification imaging.
- The DMA is ideal for demanding, high-accuracy imaging applications including: Spatial Biology: Rapid Z-stacking for high-throughput spatial workflows. Digital Pathology & Cell Morphology: High-speed tile scanning with fast objective focusing. Drug Discovery: Reliable 24/7 operation for high content screening campaigns. Optical Metrology & Semiconductor Inspection: Precision positioning with 1 nm resolution optical encoders.
- Technical Highlights: Exceptional Precision: Achieve 50 nm repeatability and 10 nm minimum incremental moves at one-third the cost of piezo alternatives. High Throughput: Maximize imaging efficiency with sub-15 ms move and settle times. Reliable Performance: Ensure long-term reliability with a non-contact direct-drive motor and 1 nm resolution linear encoder.

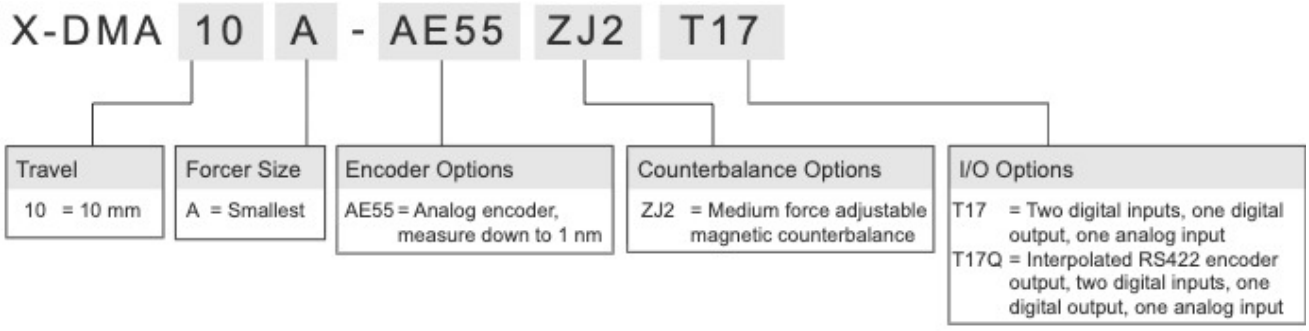
Compact Footprint: Integrate easily into tight spaces with a 77 mm x 100 mm x 30.5 mm package, including the controller. Extended Travel: Utilize 10 mm of travel, higher than industry standard for this class. Adjustable Counterbalance: Accommodate payloads up to 1 kg with a user-tunable magnetic counterbalance.

X-DMA-AEZ Series Overview

Features for streamlining initial prototyping to production:Plug-and-Play Architecture: Start moving in minutes with a built-in controller and a simple two-cable setup. No-Code Optimization: Use the Zaber Launcher Oscilloscope & Servo Tuning to maximize throughput without writing a single line of code. Easy Synchronization: Connect with third-party hardware and sensors via integrated I/O and encoder outputs. Developer-Friendly API: Integrate quickly using a modern, open-source API with sample code for Python, C#, C++, and more. Simplified Topology: Daisy-chain with XY stages and other modules using a single data/power cable to eliminate the "cable nest." Instant Availability: Accelerate timelines with transparent pricing, downloadable CAD files, and shipping in less than one week. Rapid Support: Stay on schedule with one-business-day response times from our technical support team.

For more information visit: https://www.zaber.com/products/vertical-stages/X-DMA-AEZ

X-DMA-AEZ Series Part Numbering & Options



X-DMA-AEZ Series Drawings

- X-DMA-AEZ.pdf (Drawing for the X-DMA-AEZ)

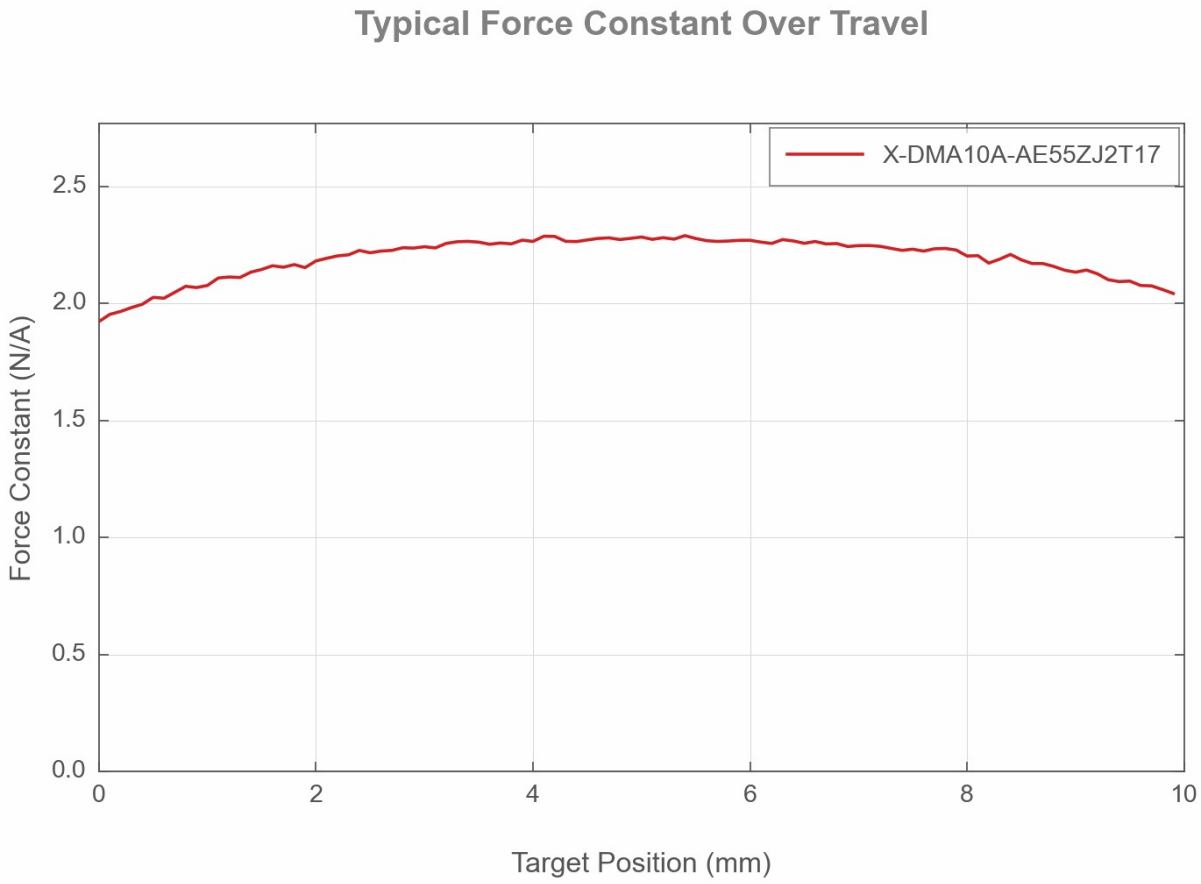
X-DMA-AEZ Series Specifications

Built-in Controller	
Travel Range	10 mm (0.394")
Accuracy (unidirectional)	8 µm (0.000315")
Repeatability	< 0.05 µm (< 0.000002")
Minimum Incremental Move	10 nm
Maximum Acceleration	20 m/s2 (2.04 g)
Maximum Speed	365 mm/s (14.370"/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	15 N (3.4 lb)
Maximum Continuous Thrust	5 N (1.1 lb)
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default)
Data Cable Connection	Locking 4-pin M8
Maximum Moment (Pitch)	300 N-cm (424.8 oz-in)
Maximum Moment (Roll)	1000 N-cm (1416.1 oz-in)
Maximum Moment (Yaw)	300 N-cm (424.8 oz-in)
Vertical Runout	< 3 µm (< 0.000118")
Horizontal Runout	< 3 µm (< 0.000118")
Pitch	0.01° (0.174 mrad)
Roll	0.005° (0.087 mrad)
Yaw	0.005° (0.087 mrad)
Stiffness (Pitch)	180 N-m/° (97 µrad/N-m)
Stiffness (Roll)	320 N-m/° (55 µrad/N-m)
Stiffness (Yaw)	135 N-m/° (129 µrad/N-m)
Counterbalance Type	Adjustable Magnetic
Counterbalance Payload Range	2.5-10 N (0.6-2.2 lb)
Power Supply	48 VDC
Power Plug	2-pin screw terminal

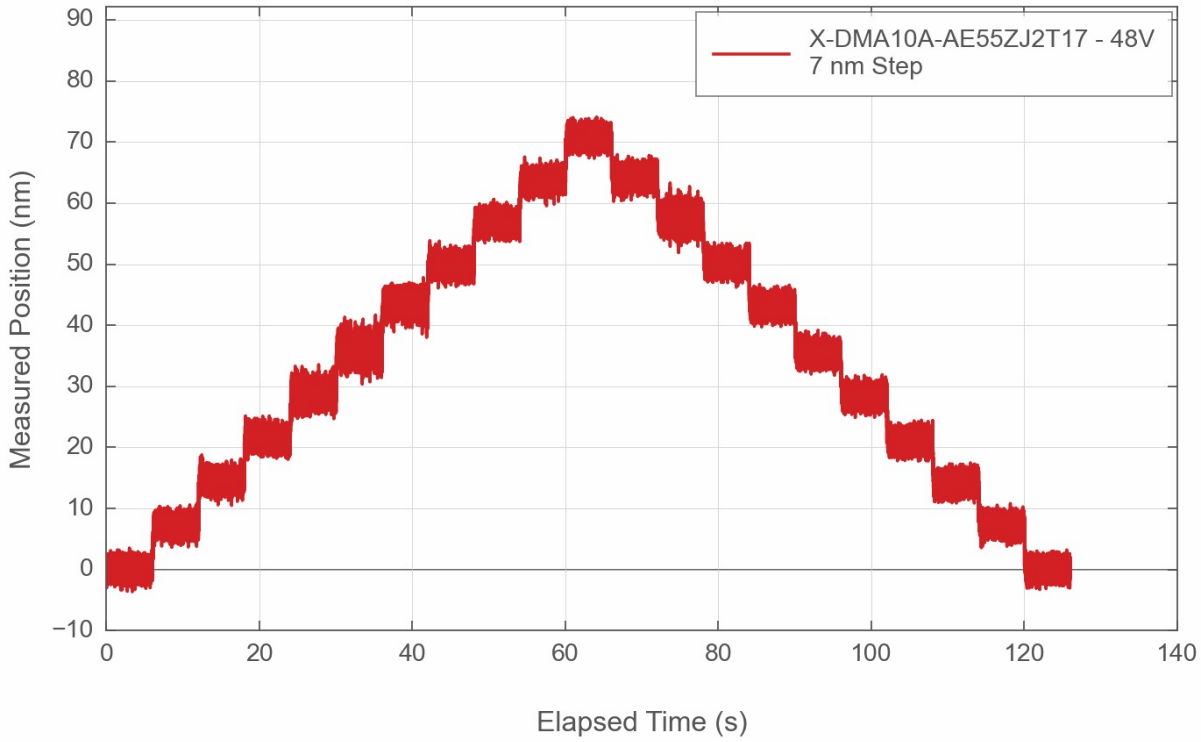
Built-in Controller	
Maximum Current Draw	3750 mA
Motor Type	Moving Magnet Voice Coil
Force Constant	2.26 N/A (0.5 lbs/A)
Guide Type	Anti-Creep Crossed-Roller Bearing
Limit or Home Sensing	Optical Index Mark
Manual Control	No
Axes of Motion	1
LED Indicators	Yes
Mounting Interface	M3 and M6 threaded holes
Moving Mass	0.175 kg (0.385 lbs)
Digital Input	2
Digital Output	1
Analog Input	1
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No
Typical Move and Settle Time (100 nm move, < 15 nm, 250 g load)	< 15 ms
Typical Move and Settle Time (250 nm move, < 15 nm, 250 g load)	< 15 ms
Weight	0.53 kg (1.168 lb)

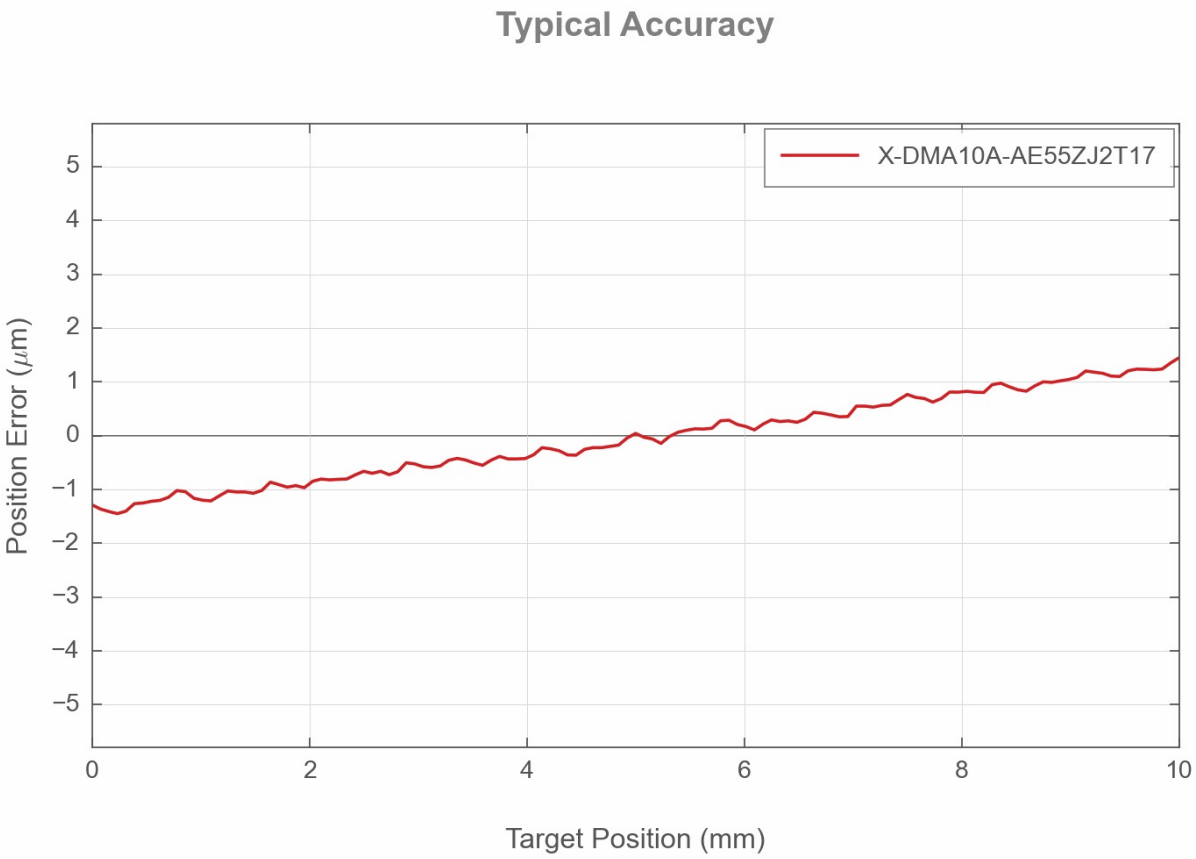
Part Number	Encoder Output Type
X-DMA10A-AE55ZJ2T17	No
X-DMA10A-AE55ZJ2T17Q	Interpolated relative quadrature signal with differential RS422 levels

X-DMA-AEZ Series Charts



Typical Minimum Incremental Move





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