

DMQ12L-AE55T10A Datasheet



- 12 mm travel and 26 N peak thrust
- Up to 1400 mm/s speed, 25 Hz full-travel cycling
- Direct position measurement from 1 nm resolution linear encoder
- Designed for use with an X-MCC Series controller for coordinated motion
- With AutoDetect, the X-MCC controller configures its settings automatically for the connected peripheral
- [Technical Article - Linear Motors: Overview and Selection Process](#)

DMQ-AE Series Overview

Zaber's DMQ-AE Series devices are computer-controlled, motorized linear stages with high acceleration, precision, and accuracy in a compact package. At only 30 mm tall, they are excellent when a low profile is required. The innovative moving-coil actuator design has a very flat force-vs-position profile for applications requiring smooth force output throughout travel.

The technology also allows for a minimal moving mass for rapid acceleration, and no exposed moving cables for a high duty-cycle. The force output allows the light carriage to reach speeds up to 1400 mm/s within the 12mm travel.

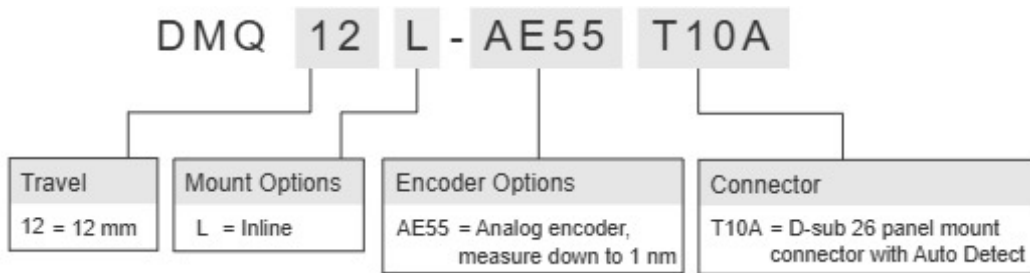
The built-in analog linear encoder is interpolated to 1 nm resolution and allows closed-loop servo control of position and velocity. Switch to force control mode for applications requiring direct control of

the force output of the stage instead of position or velocity based control.

The stages are designed to connect directly to our X-MCC using a single cable. Set-up is easy with AutoDetect; once connected, the X-MCC controller will automatically detect and configure the DMQ-AE.

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

DMQ-AE Series Part Numbering & Options



DMQ12L-AE55T10A Drawings

- [DMQ-AE.png \(Drawing for the DMQ-AE\)](#)

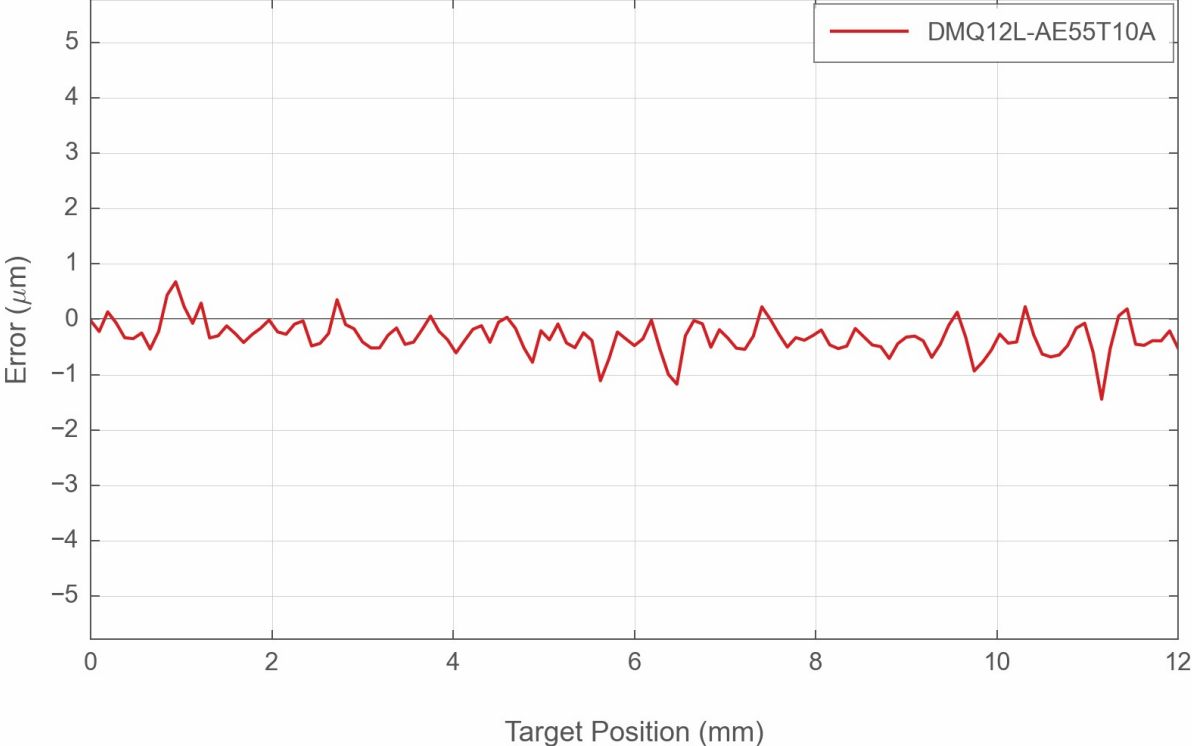
DMQ12L-AE55T10A Specifications

Built-in Controller	
Recommended Controller	X-MCC (48 V) Recommended
AutoDetect	Yes
Travel Range	12 mm (0.472")
Accuracy (unidirectional)	4 μm (0.000157")
Repeatability	< 0.5 μm (< 0.000020")
Minimum Incremental Move	200 nm
Maximum Acceleration	245 m/s ² (24.97 g)
Maximum Speed	1400 mm/s (55.118"/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	26 N (5.8 lb)
Maximum Continuous Thrust	12 N (2.7 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	120 N-cm (169.9 oz-in)
Maximum Moment (Roll)	320 N-cm (453.2 oz-in)
Maximum Moment (Yaw)	120 N-cm (169.9 oz-in)
Vertical Runout	< 6 μm (< 0.000236")
Horizontal Runout	< 5 μm (< 0.000197")
Typical Velocity Stability	\pm 4.7% at 10 mm/s with a 0.38 kg payload
Pitch	0.01° (0.174 mrad)
Roll	0.01° (0.174 mrad)
Yaw	0.01° (0.174 mrad)
Stiffness in Pitch	50 N-m/° (349 $\mu\text{rad/N-m}$)
Stiffness in Roll	70 N-m/° (249 $\mu\text{rad/N-m}$)
Stiffness in Yaw	85 N-m/° (205 $\mu\text{rad/N-m}$)
Motor Type	Voice Coil Linear Actuator
Force Constant	12.6 N/A (2.8 lbs/A)
Motor Connection	D-sub 26

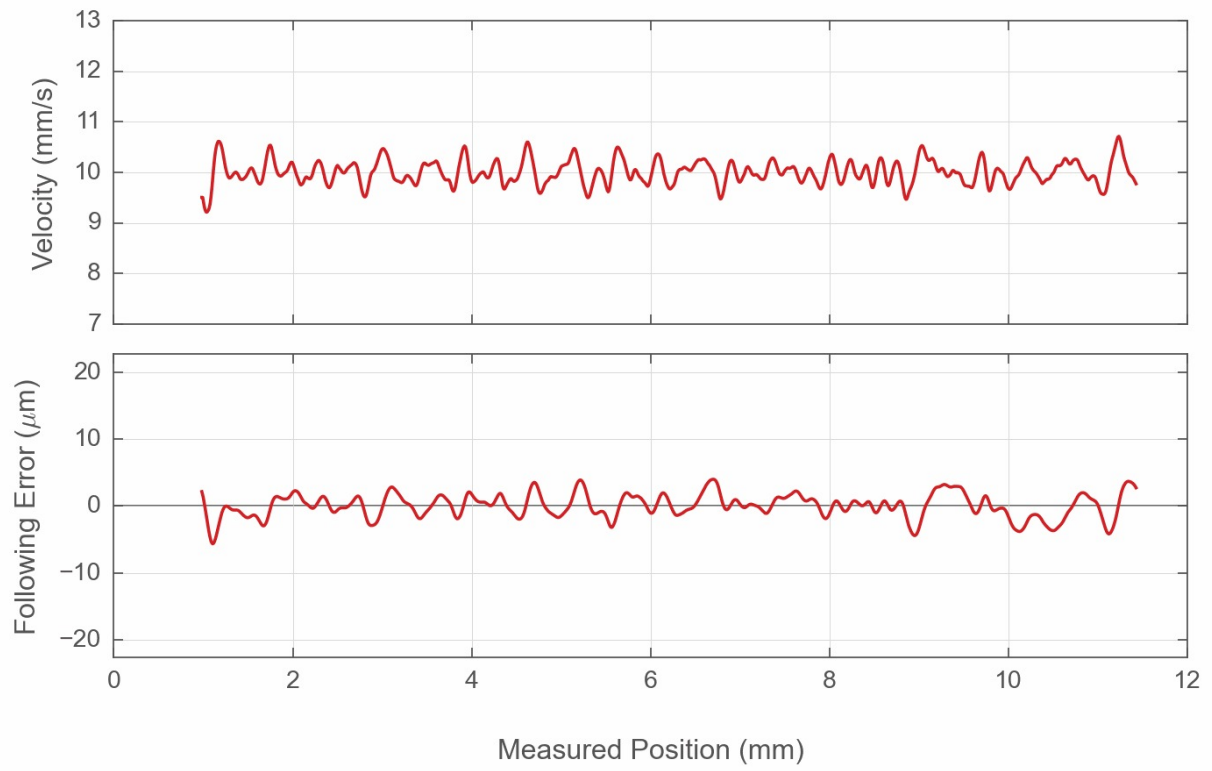
Built-in Controller	
Guide Type	Crossed-Roller Bearing
Mechanical Drive System	Moving Coil, Direct Drive
Limit or Home Sensing	Optical Index Mark
Axes of Motion	1
LED Indicators	Yes
Mounting Interface	M6 and M3 threaded holes
Moving Mass	0.095 kg (0.209 lbs)
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No
Weight	0.8 kg (1.764 lb)

DMQ-AE Series Charts

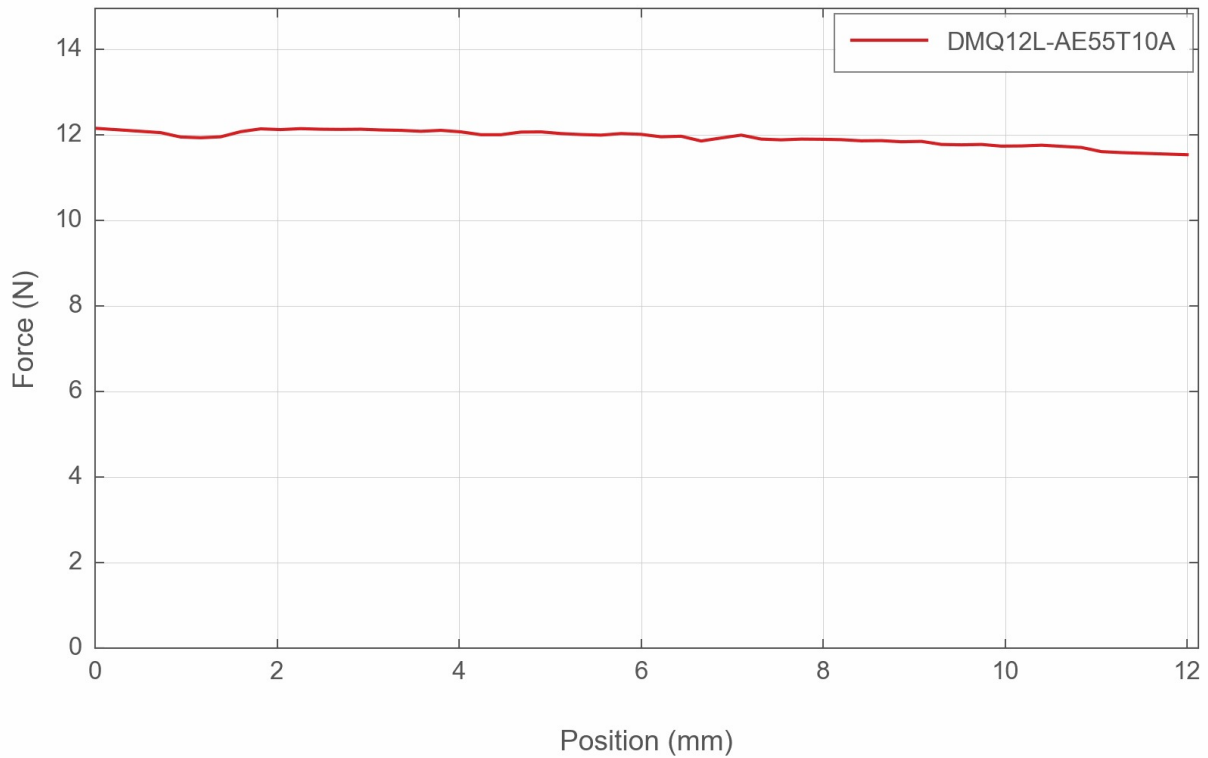
Typical Accuracy



Typical Velocity Stability and Following Error



Typical Force Over Travel



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