

X-DMQ-DE Series Datasheet



- * 2.2 μm accuracy; < 0.5 μm repeatability
- * 12 mm travel and 15.5 N peak thrust with adjustable force control mode
- * Up to 1400 mm/s speed, 25 Hz full-travel
- * Built-in controller; daisy-chains with other Zaber products
- * Integrated 200 nm resolution linear encoder provides closed-loop, high precision position control

Zaber's X-DMQ-DE Series devices are computer-controlled, voice coil driven, linear stages with high acceleration and precision capabilities in a compact size. They are stand-alone units requiring only a standard 24 V or 48 V power supply.

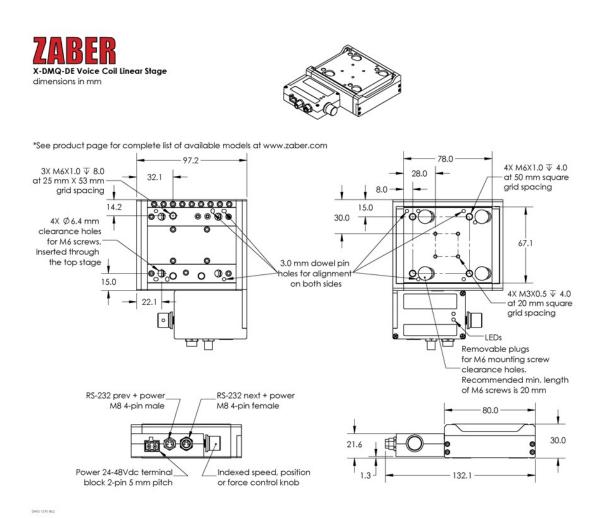
At only 30 mm high, these miniature stages are excellent for applications where a low profile is required. The X-DMQ-DE's innovative design allows speeds up to 1400 mm/s and loads up to 10 kg. Like all of Zaber's products, the X-DMQ-DE Series is designed to be 'plug and play' and very easy to set up and operate.

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The built-in linear encoder with 200 nm resolution allows closed-loop servo control of position and velocity. Zaber's controller comes pre-tuned out of the box, while still allowing easy access to settings for users to fine tune the servo control to their application if desired. The DMQ's direct-drive actuator also allows it to operate in force-control mode with very high bandwidth. The innovative moving-coil actuator design has a very flat force-vs-position profile, a minimal moving mass for high acceleration, and no exposed moving cables.

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.

Drawings



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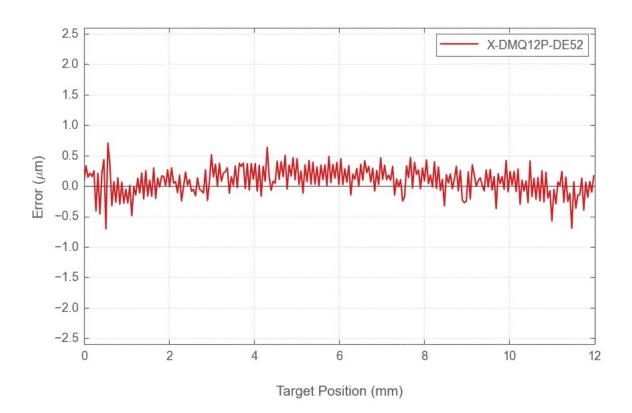
Specifications

Specification	Value	Alternate Unit	
Built-in Controller	Yes		
Travel Range	12 mm	0.472 "	
Accuracy (unidirectional)	2.2 μm	0.000087 "	
Repeatability	$< 0.5 \ \mu m$	< 0.000020 "	
Maximum Speed	1400 mm/s	55.118 "/s	
Minimum Speed	0.000122 mm/s	0.000005 "/s	
Encoder Type	Linear quadrature encoder		
Encoder Resolution	200 nm		
Peak Thrust	15.5 N	3.5 lb	
Force Resolution	25 mN	0.09 oz	
Maximum Continuous Thrust	12 N	2.7 lb	
Communication Interface	RS-232		
Communication Protocol	Zaber ASCII (Default), Zaber B	Zaber ASCII (Default), Zaber Binary	
Maximum Centered Load	100 N	22.4 lb	
Maximum Cantilever Load	320 N-cm	453.2 oz-in	
Guide Type	Crossed-Roller Bearing		
Vertical Runout	< 6 µm	< 0.000236 "	
Horizontal Runout	< 5 μm	< 0.000197 "	
Pitch	0.03 °	0.523 mrad	
Stiffness in Pitch	50 N-m/°	349 μrad/N-m	
Roll	0.03 °	0.523 mrad	
Stiffness in Roll	70 N-m/°	249 μrad/N-m	
Yaw	0.03 °	0.523 mrad	
Stiffness in Yaw	85 N-m/°	205 μrad/N-m	
Maximum Current Draw	1500 mA		
Power Supply	24 - 48 VDC		
Power Plug	2-pin screw terminal		
Motor Type	Voice Coil Linear Actuator		
Force Constant	12.6 N/A	2.8 lbs/A	
Data Cable Connection	Locking 4-pin M8		

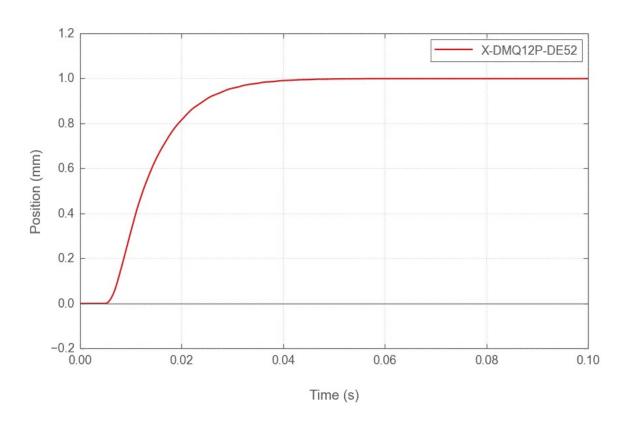
Specification	Value	Alternate Unit
Mechanical Drive System	Moving Coil, Direct Drive	
Limit or Home Sensing	Optical Index Mark	
Axes of Motion	1	
LED Indicators	Yes	
Mounting Interface	M6 and M3 threaded holes	
Vacuum Compatible	No	
Operating Temperature Range	0 - 50 °C	
RoHS Compliant	Yes	
CE Compliant	Yes	
Moving Mass	0.095 kg	0.209 lbs
Weight	0.76 kg	1.676 lb

Charts

Typical Accuracy



Typical Step Response



Typical Force vs Position

