

LSM050A-E03T4A Datasheet



- 25, 50, 100, 150 and 200 mm travel
- Recirculating ball bearing design for high load (25 kg) and long lifetime
- Encoder position feedback with slip/stall detection and automatic recovery
- Multiple LSM-E stages can be assembled in XY or XYZ configurations without additional hardware
- Designed for use with an X-MCC Series stepper motor controller or any 2-phase stepper motor controller
- With AutoDetect, the X-MCC controller configures its settings automatically for the connected peripheral
- Custom versions available

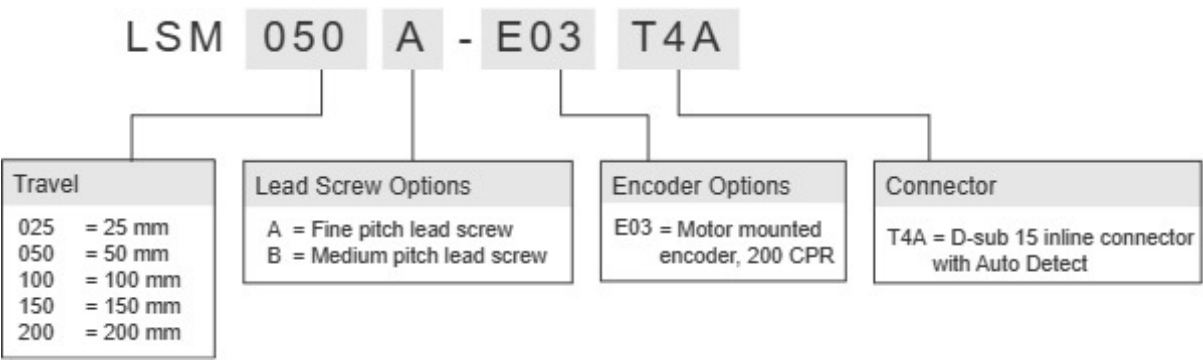
LSM-E Series Overview

Zaber's LSM-E Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a very compact size. They are designed to interface with our X-MCC Series universal motor controllers, offering high resolution daisy-chainable operation. Set up is easy with AutoDetect. Once connected, the X-MCC controller will automatically detect and configure the LSM-E.

The built-in motor encoder allows closed-loop operation and slip/stall recovery features. At only 21 mm high, these miniature stages are excellent for applications where a small profile is required. The LSM-E's innovative design allows speeds up to 104 mm/s and loads up to 25 kg. The stages can be mounted in XY and XYZ configurations with no additional hardware.

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

LSM-E Series Part Numbering

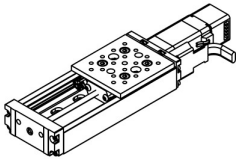


LSM050A-E03T4A Drawings

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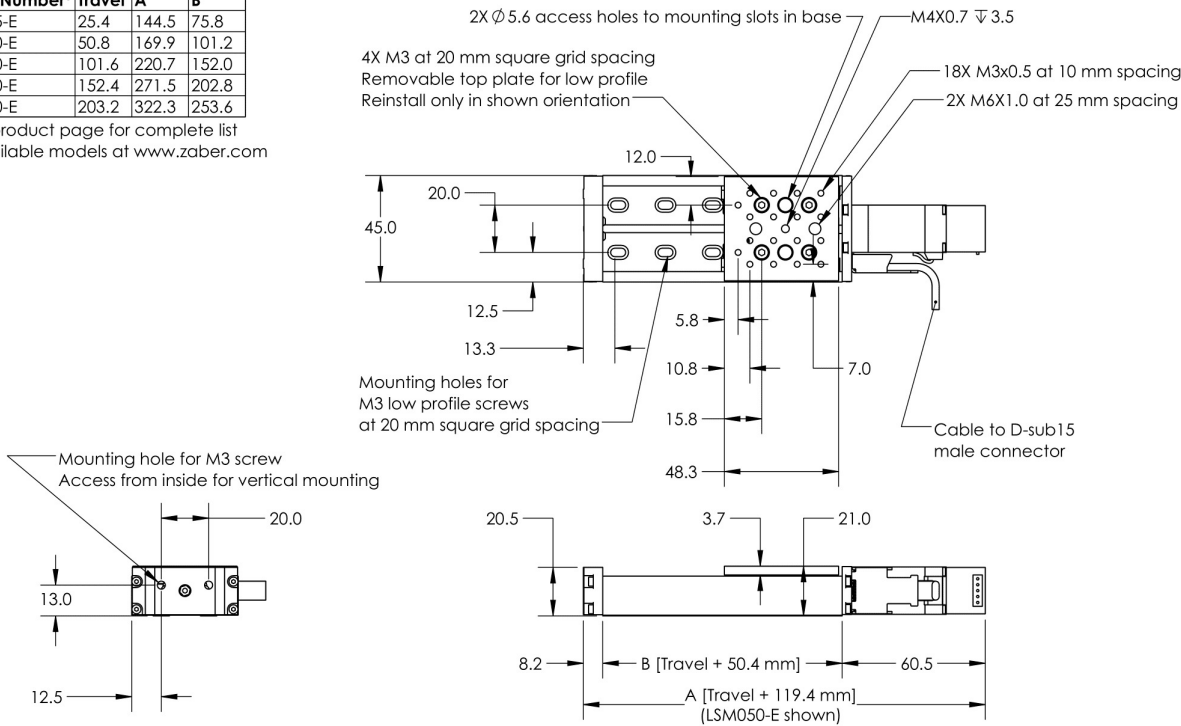
LSM-E Miniature Motorized Linear Stage

dimensions in mm



Model Number*	Travel	A	B
LSM025-E	25.4	144.5	75.8
LSM050-E	50.8	169.9	101.2
LSM100-E	101.6	220.7	152.0
LSM150-E	152.4	271.5	202.8
LSM200-E	203.2	322.3	253.6

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



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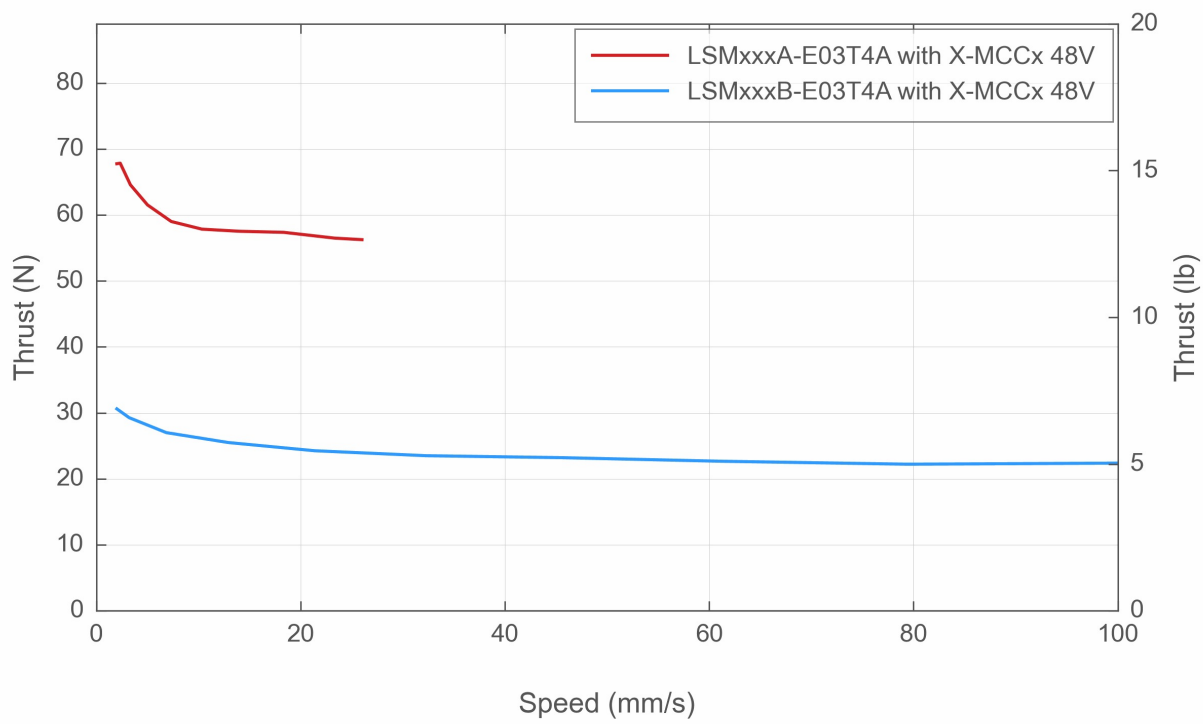
LSM050A-E03T4A Specifications

Specification	Value	Alternate Unit
Microstep Size (Default Resolution)	0.047625 μm	
Built-in Controller	No	
Recommended Controller	X-MCC (48 V) Recommended	
AutoDetect	Yes	
Travel Range	50.8 mm	2.000"
Accuracy (unidirectional)	20 μm	0.000787"
Repeatability	< 3 μm	< 0.000118"
Backlash	< 12 μm	< 0.000472"
Maximum Speed	26 mm/s	1.024"/s
Minimum Speed	0.000029 mm/s	0.000001"/s
Speed Resolution	0.000029 mm/s	0.000001"/s
Encoder Resolution	200 CPR	800 states/rev
Encoder Type	Rotary quadrature encoder	
Peak Thrust	55 N	12.3 lb
Maximum Continuous Thrust	25 N	5.6 lb
Maximum Centered Load	250 N	56.1 lb
Maximum Cantilever Load	10 N-m	7.4 ft-lb
Guide Type	Recirculating ball bearing	
Vertical Runout	< 11 μm	< 0.000433"
Horizontal Runout	< 14 μm	< 0.000551"
Pitch	0.03°	0.523 mrad
Roll	0.03°	0.523 mrad
Yaw	0.03°	0.523 mrad
Stiffness in Pitch	150 N-m/°	116 $\mu\text{rad/N-m}$
Stiffness in Roll	150 N-m/°	116 $\mu\text{rad/N-m}$
Stiffness in Yaw	150 N-m/°	116 $\mu\text{rad/N-m}$
Linear Motion Per Motor Rev	0.6096 mm	0.024"
Motor Steps Per Rev	200	
Motor Type	Stepper (2 phase)	
Motor Rated Current	600 mA/phase	

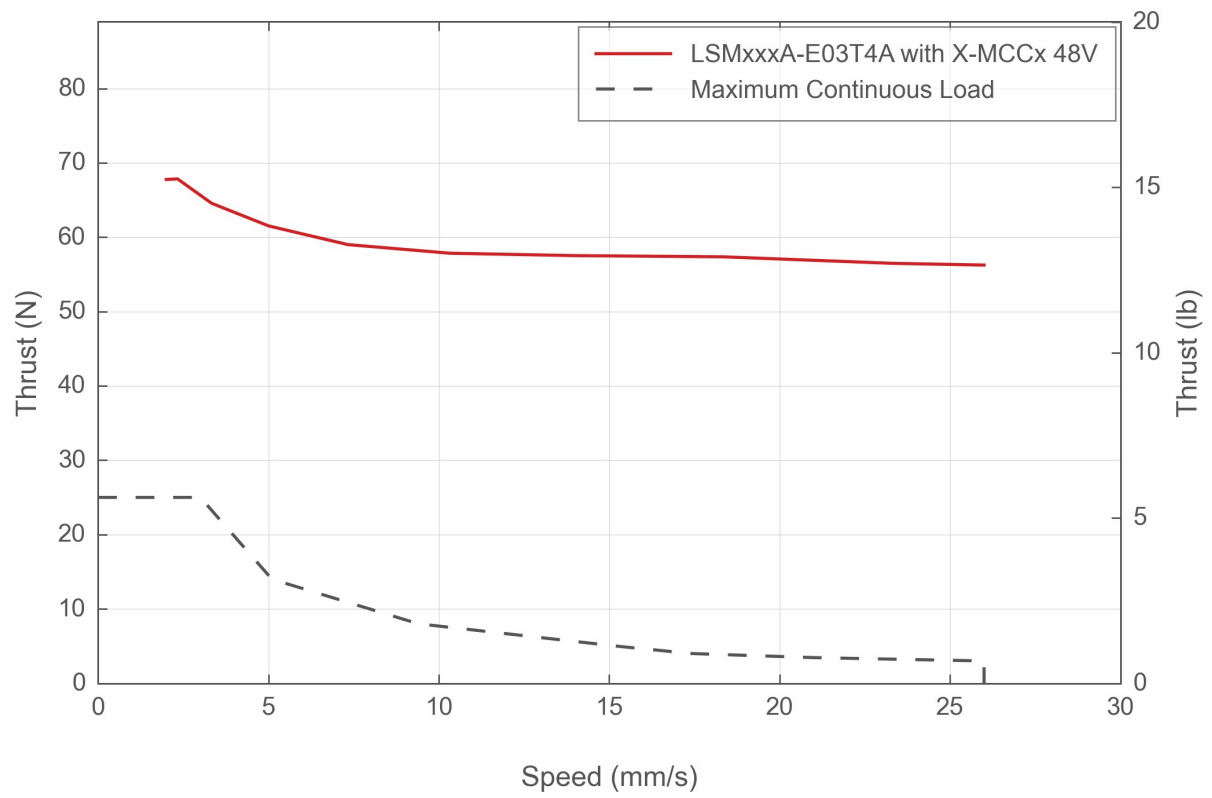
Specification	Value	Alternate Unit
Motor Winding Resistance	6.5 ohms/phase	
Inductance	3.5 mH/phase	
Motor Connection	D-sub 15	
Default Resolution	1/64 of a step	
Motor Frame Size	NEMA 08	
Mechanical Drive System	Precision lead screw	
Limit or Home Sensing	Magnetic hall sensor	
Axes of Motion	1	
Mounting Interface	M3 and M6 threaded holes and M4 threaded centre hole	
Stage Parallelism	< 25 µm	< 0.000984"
Operating Temperature Range	0 to 50 °C	
RoHS Compliant	Yes	
CE Compliant	Yes	
Vacuum Compatible	No	
Weight	0.28 kg	0.617 lb

LSM-E Series Charts

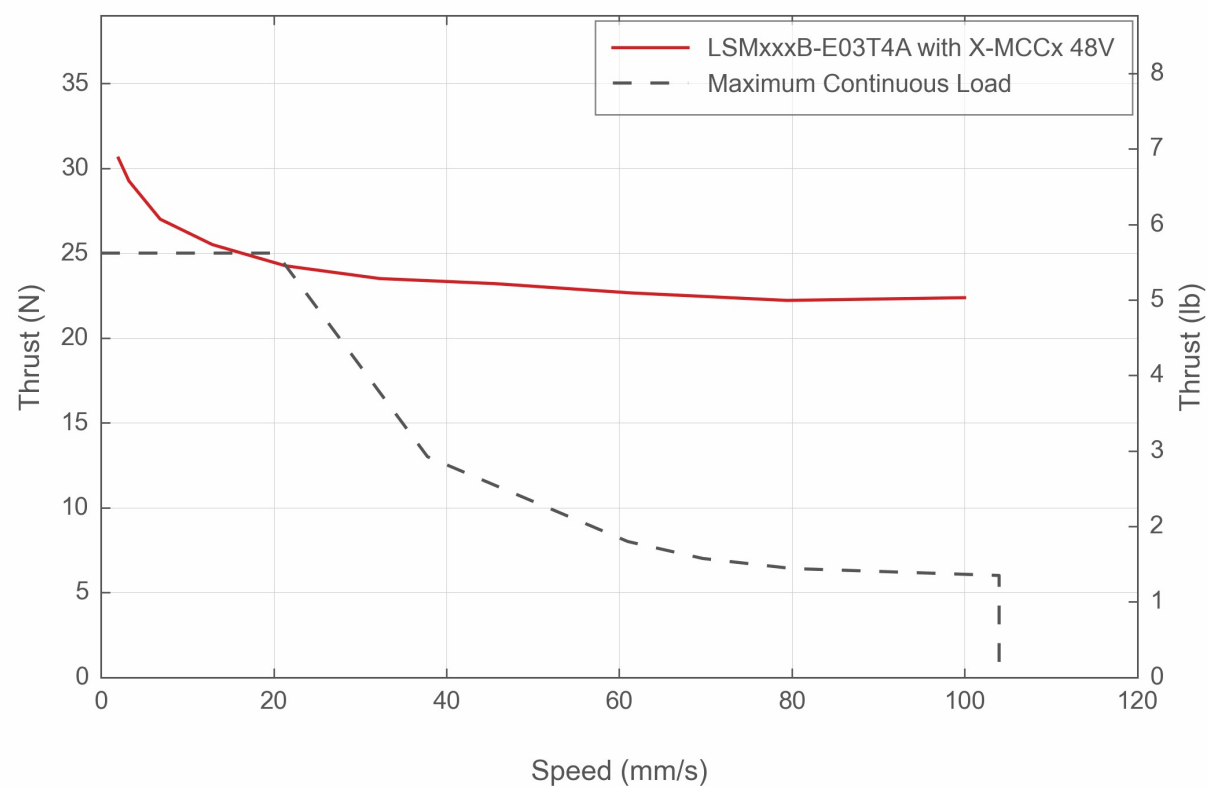
Thrust Speed Performance



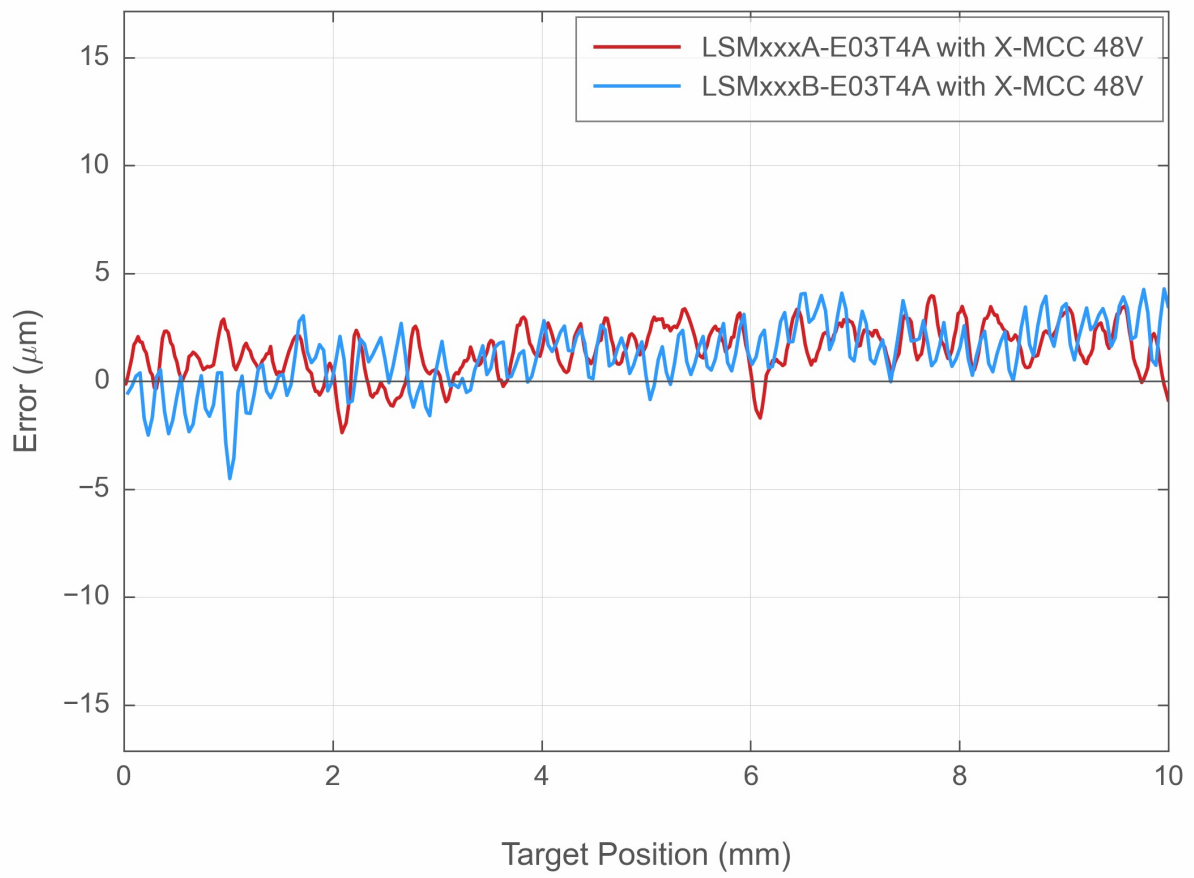
Thrust Speed Performance



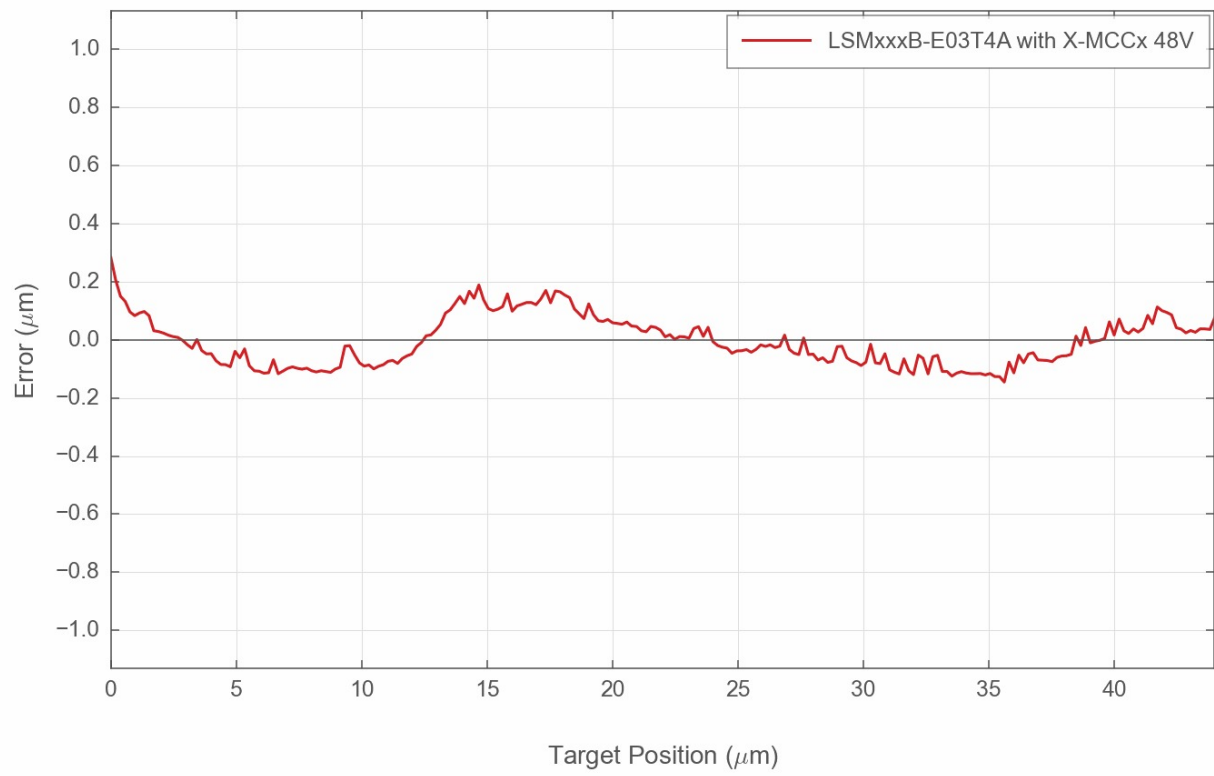
Thrust Speed Performance



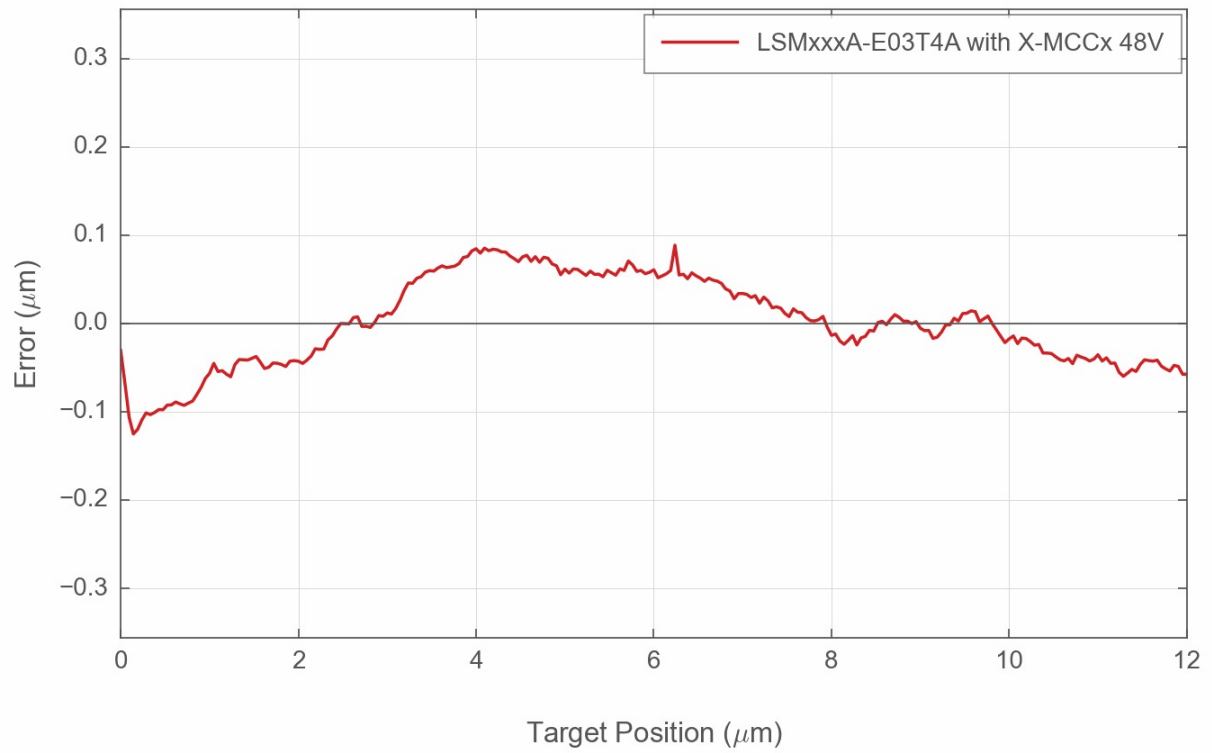
Typical Accuracy



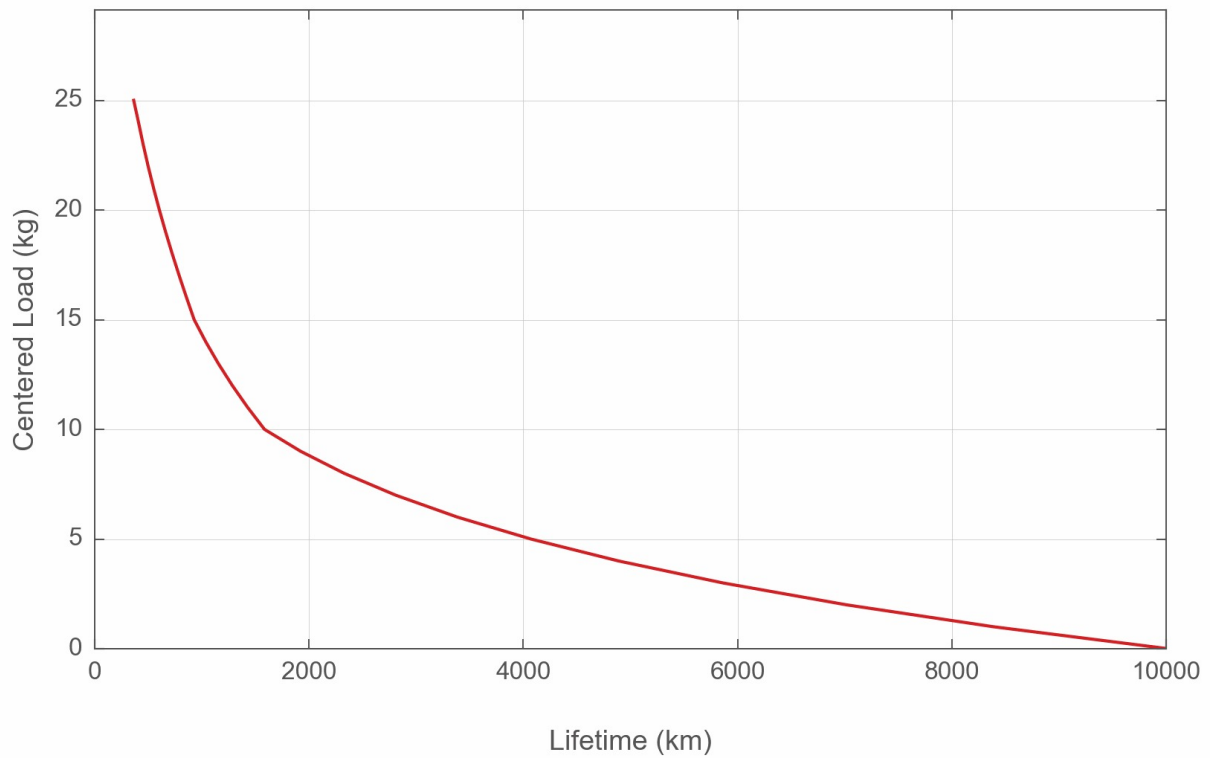
Typical Microstepping Accuracy



Typical Microstepping Accuracy



LSM Linear Bearing Lifetime



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