X-LRM-E Series Datasheet



- 25, 50, 100, 150, 200 mm travel
- Up to 8 µm accuracy and 50 nm resolution
- 50 kg load capacity
- Hardened steel construction and integrated recirculating ball bearing guide provide exceptional stiffness and thermal stability
- Motor encoder position feedback with slip/stall detection and automatic recovery
- Built-in controller, daisy-chains with other Zaber products

X-LRM-E Series Overview

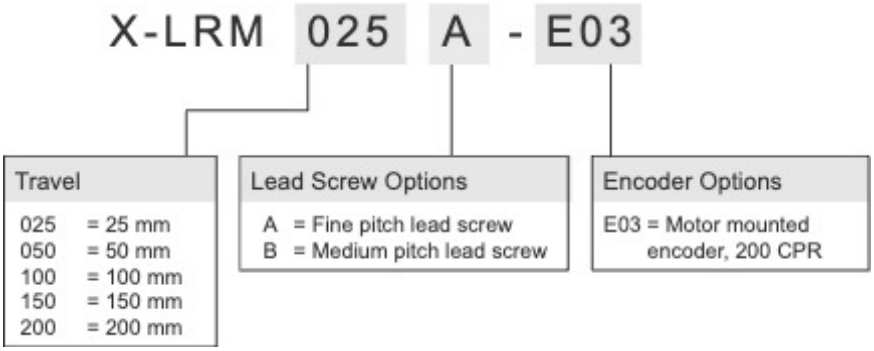
Zaber's X-LRM-E Series products are motorized linear stages with integrated controllers. The X-LRM-E's hardened steel construction and recirculating ball bearing guide provide exceptional rigidity and thermal stability. High stiffness makes the X-LRM-E ideal for multi-axis configurations or applications where excellent stability under cantilever loads is required.

The X-LRM-E stages are stand-alone units requiring only a standard 24-48 V power supply. An indexed knob at the end of the unit permits manual control - press and hold to switch between velocity mode and position mode, turn to move the stage, and press to stop.

The stages connect to the USB 2.0 or RS-232 port of any computer and can be chained with several units per chain. They can be chained with any other Zaber products. Convenient locking, 4-pin, M8 connectors on the unit allow for easy and secure connection between products. The chain also shares power, so multiple X-Series products can use a single power supply.

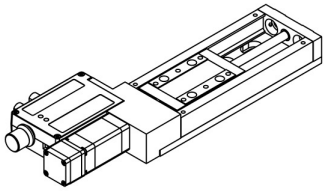
For more information visit: https://www.zaber.comproducts/linear-stages/X-LRM-E

X-LRM-E Series Part Numbering & Options



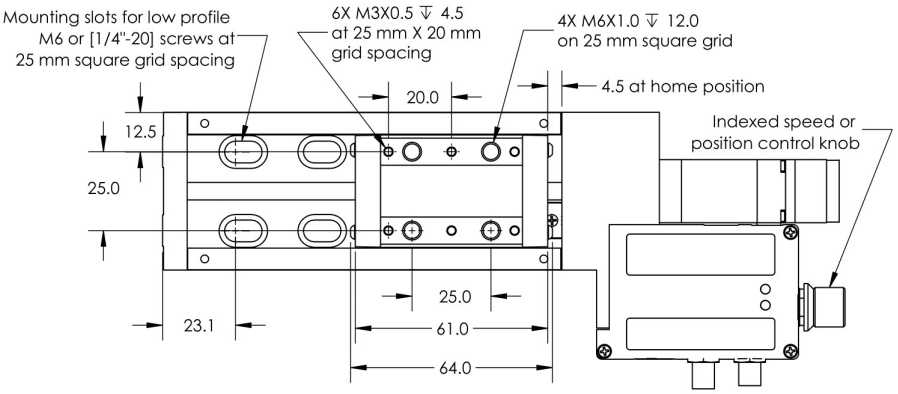
X-LRM-E Series Drawings

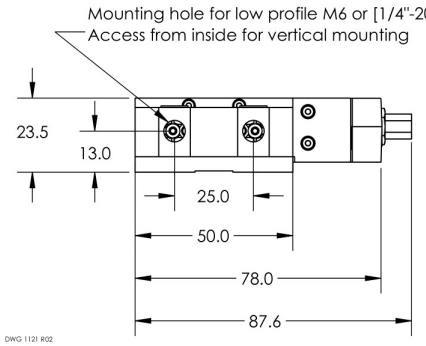
X-LRM-E Motorized Linear Stage
dimensions in mm

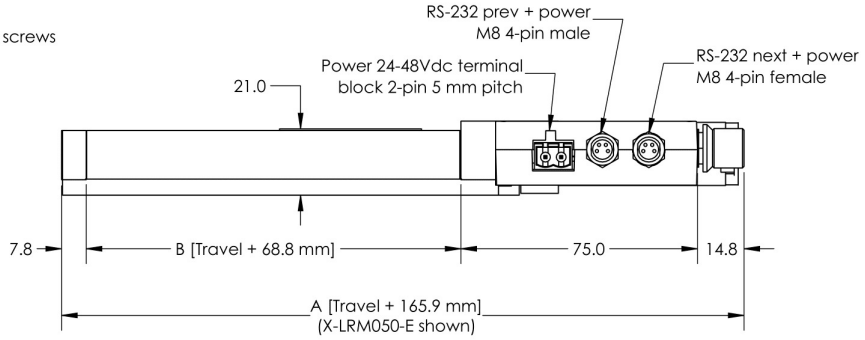


Model Number*	Travel	A	B
X-LRM025-E	25.0	190.9	93.8
X-LRM050-E	50.0	215.9	118.8
X-LRM100-E	100.0	265.9	168.8
X-LRM150-E	150.0	315.9	218.8
X-LRM200-E	200.0	365.9	268.8

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







X-LRM-E Series Specifications

Built-in Controller	
Repeatability	< 4 µm (< 0.000157")
Encoder Resolution	200 CPR (800 states/rev)
Encoder Type	Rotary quadrature encoder
Maximum Continuous Thrust	25 N (5.6 lb)
Communication Interface	RS-232, USB 2.0
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Locking 4-pin M8
Maximum Centered Load	500 N (112.1 lb)
Maximum Cantilever Load	1500 N-cm (2124.2 oz-in)
Guide Type	Recirculating ball bearing
Vertical Runout	< 8 µm (< 0.000315")
Horizontal Runout	< 12 µm (< 0.000472")
Pitch	0.02° (0.349 mrad)
Roll	0.02° (0.349 mrad)
Yaw	0.02° (0.349 mrad)
Stiffness in Pitch	750 N-m/° (23 µrad/N-m)
Stiffness in Roll	550 N-m/° (32 µrad/N-m)
Stiffness in Yaw	400 N-m/° (44 µrad/N-m)
Power Supply	24-48 VDC
Power Plug	2-pin Screw Terminal
Maximum Current Draw	350 mA
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	600 mA/phase
Inductance	3.5 mH/phase
Default Resolution	1/64 of a step
Mechanical Drive System	Precision lead screw
Limit or Home Sensing	Magnetic hall sensor
Manual Control	Yes
Axes of Motion	1

Built-in Controller	
Mounting Interface	M3 and M6 threaded holes
Stage Parallelism	< 10 µm (< 0.000394")
Operating Temperature Range	0 to 50 °C
RoHS Compliant	Yes
CE Compliant	Yes
Vacuum Compatible	No

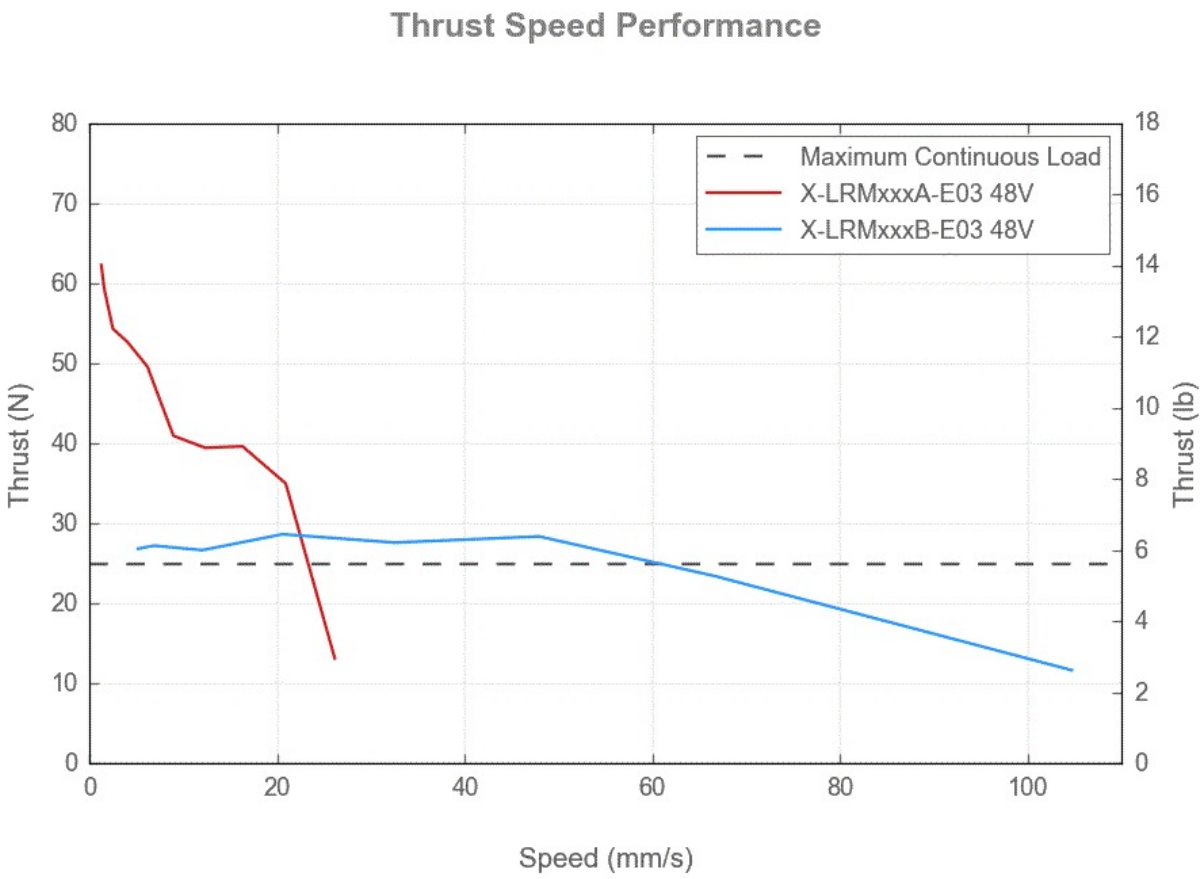
Part Number	Microstep Size (Default Resolution)	Travel Range	Accuracy (unidirectional)	Backlash
X-LRM025A-E03	0.047625 µm	25.0 mm (0.984")	8 µm (0.000315")	< 5 µm (< 0.000197")
X-LRM025B-E03	0.1905 µm	25.0 mm (0.984")	8 µm (0.000315")	< 12 µm (< 0.000472")
X-LRM050A-E03	0.047625 µm	50.0 mm (1.969")	15 µm (0.000591")	< 5 µm (< 0.000197")
X-LRM050B-E03	0.1905 µm	50.0 mm (1.969")	15 µm (0.000591")	< 12 µm (< 0.000472")
X-LRM100A-E03	0.047625 µm	100.0 mm (3.937")	30 µm (0.001181")	< 5 µm (< 0.000197")
X-LRM100B-E03	0.1905 µm	100.0 mm (3.937")	30 µm (0.001181")	< 12 µm (< 0.000472")
X-LRM150A-E03	0.047625 µm	150.0 mm (5.905")	45 µm (0.001772")	< 5 µm (< 0.000197")
X-LRM150B-E03	0.1905 µm	150.0 mm (5.905")	45 µm (0.001772")	< 12 µm (< 0.000472")
X-LRM200A-E03	0.047625 µm	200.0 mm (7.874")	60 µm (0.002362")	< 5 µm (< 0.000197")
X-LRM200B-E03	0.1905 µm	200.0 mm (7.874")	60 µm (0.002362")	< 12 µm (< 0.000472")

Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Peak Thrust
X-LRM025A-E03	25 mm/s (0.984"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)	50 N (11.2 lb)
X-LRM025B-E03	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)	25 N (5.6 lb)
X-LRM050A-E03	25 mm/s (0.984"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)	50 N (11.2 lb)
X-LRM050B-E03	100 mm/s	0.000116 mm/s	0.000116 mm/s	25 N (5.6 lb)

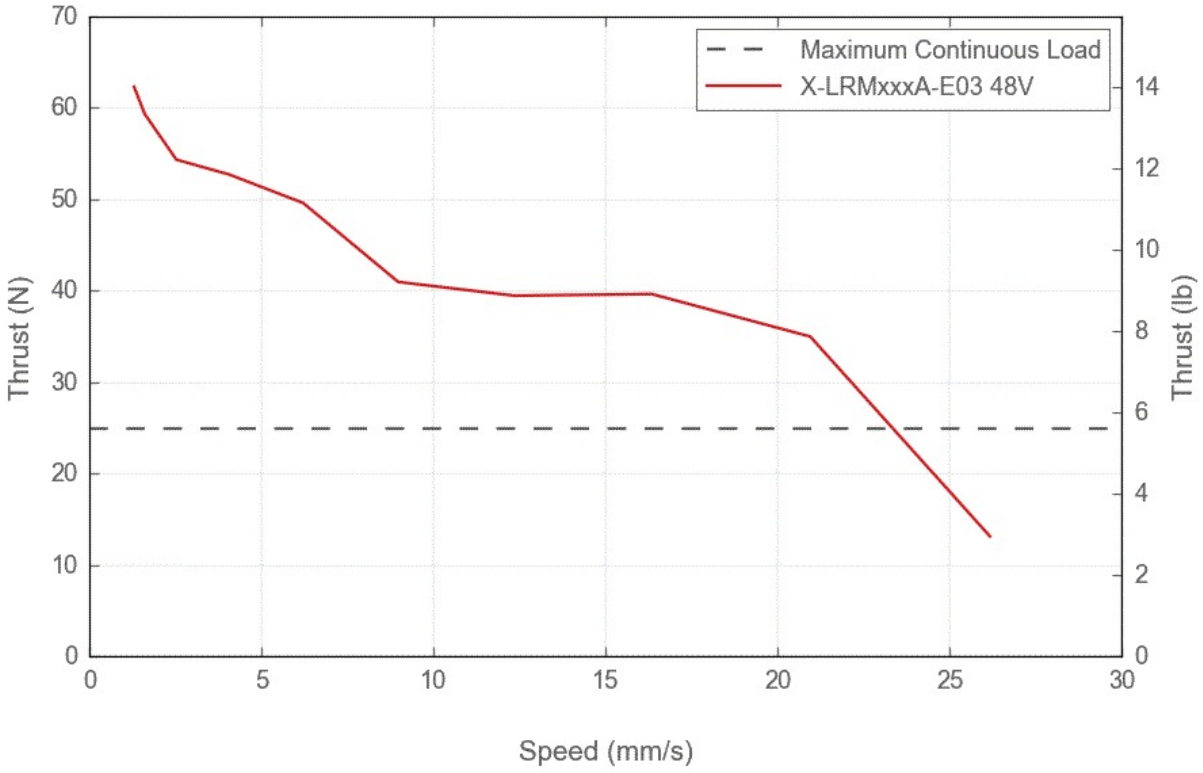
Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Peak Thrust
	(3.937"/s)	(0.000005"/s)	(0.000005"/s)	
X-LRM100A-E03	25 mm/s (0.984"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)	50 N (11.2 lb)
X-LRM100B-E03	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)	25 N (5.6 lb)
X-LRM150A-E03	25 mm/s (0.984"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)	50 N (11.2 lb)
X-LRM150B-E03	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)	25 N (5.6 lb)
X-LRM200A-E03	25 mm/s (0.984"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)	50 N (11.2 lb)
X-LRM200B-E03	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)	25 N (5.6 lb)

Part Number	Linear Motion Per Motor Rev	Weight
X-LRM025A-E03	0.6096 mm (0.024")	0.75 kg (1.653 lb)
X-LRM025B-E03	2.4384 mm (0.096")	0.75 kg (1.653 lb)
X-LRM050A-E03	0.6096 mm (0.024")	0.83 kg (1.830 lb)
X-LRM050B-E03	2.4384 mm (0.096")	0.83 kg (1.830 lb)
X-LRM100A-E03	0.6096 mm (0.024")	0.98 kg (2.161 lb)
X-LRM100B-E03	2.4384 mm (0.096")	0.98 kg (2.161 lb)
X-LRM150A-E03	0.6096 mm (0.024")	1.15 kg (2.535 lb)
X-LRM150B-E03	2.4384 mm (0.096")	1.15 kg (2.535 lb)
X-LRM200A-E03	0.6096 mm (0.024")	1.31 kg (2.888 lb)
X-LRM200B-E03	2.4384 mm (0.096")	1.31 kg (2.888 lb)

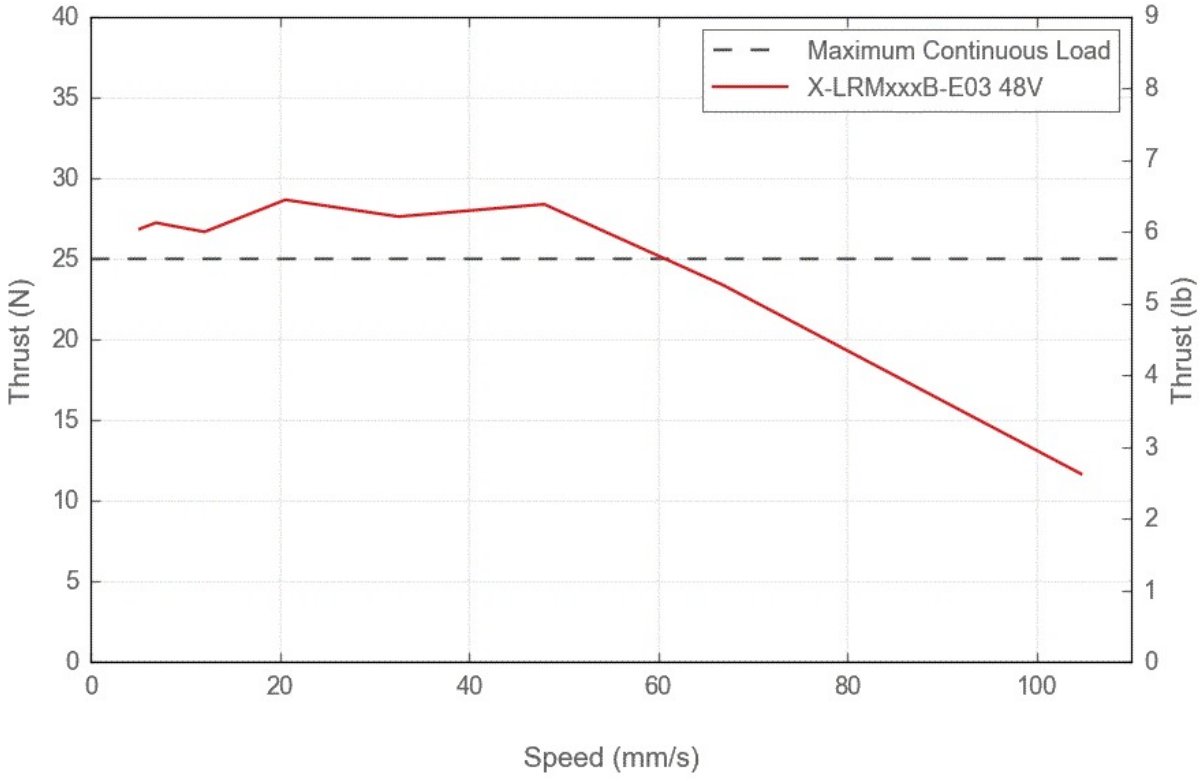
X-LRM-E Series Charts



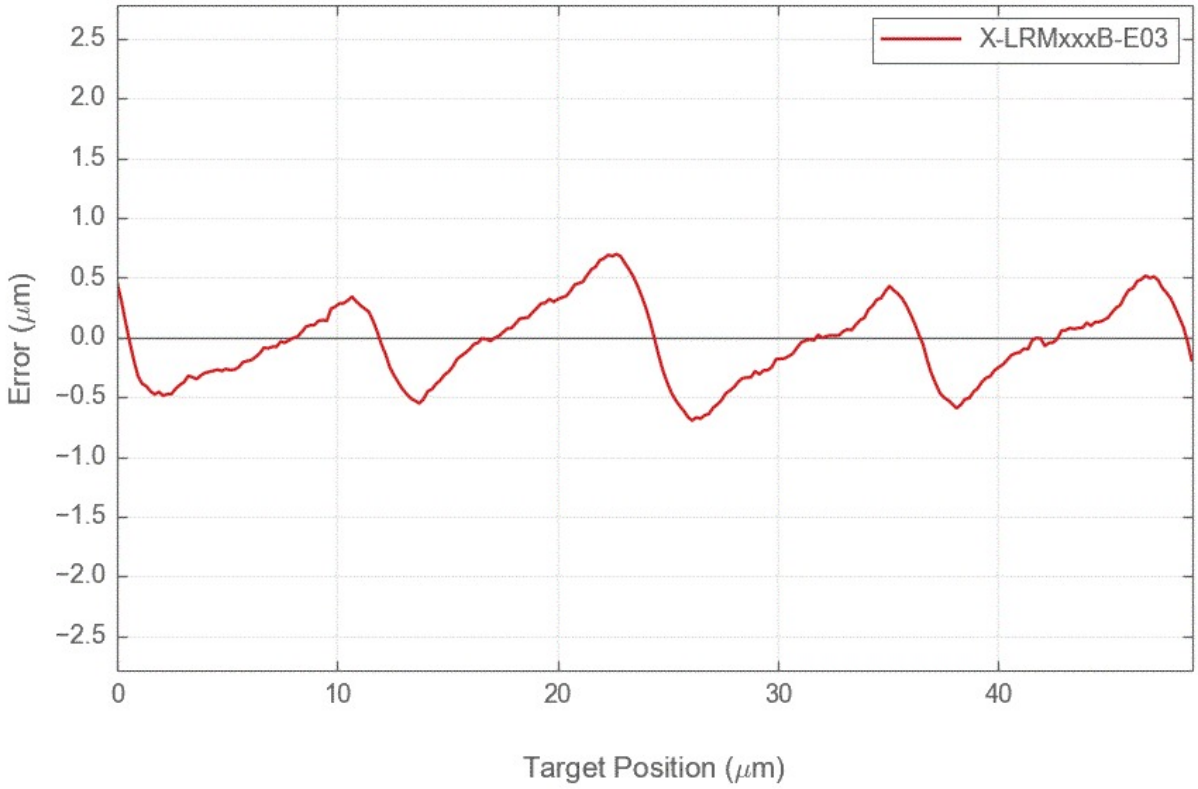
Thrust Speed Performance



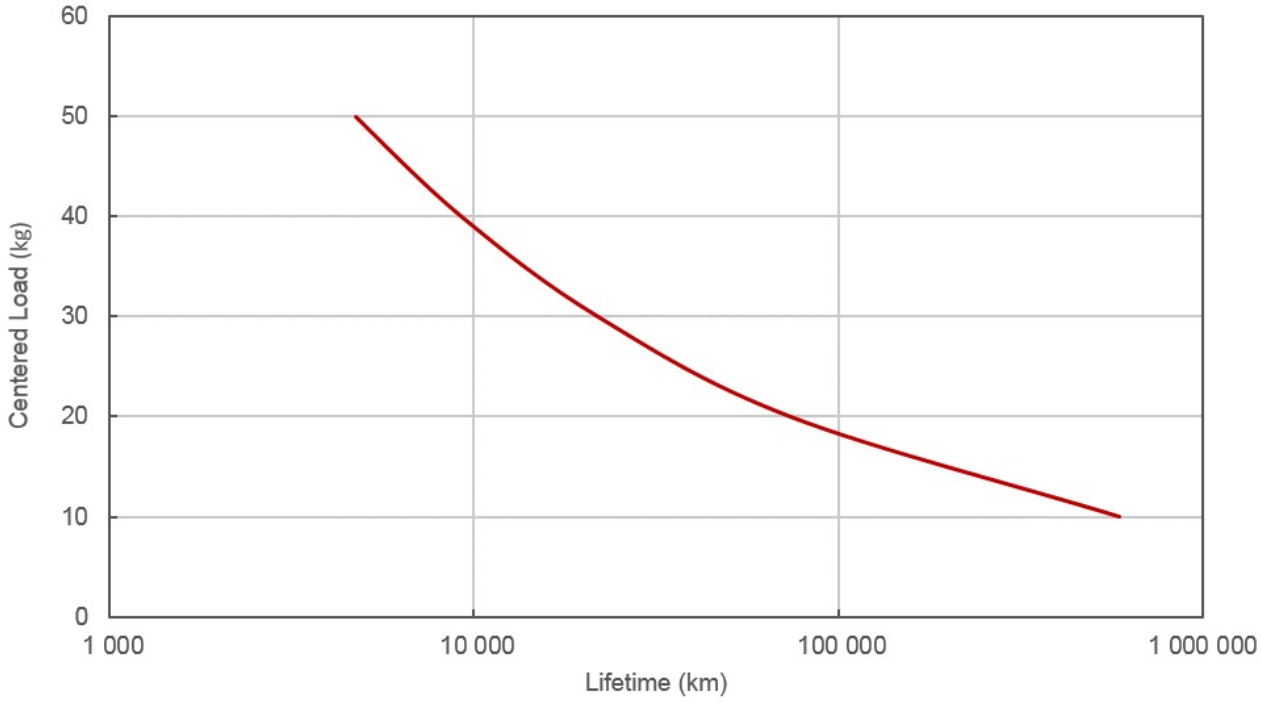
Thrust Speed Performance

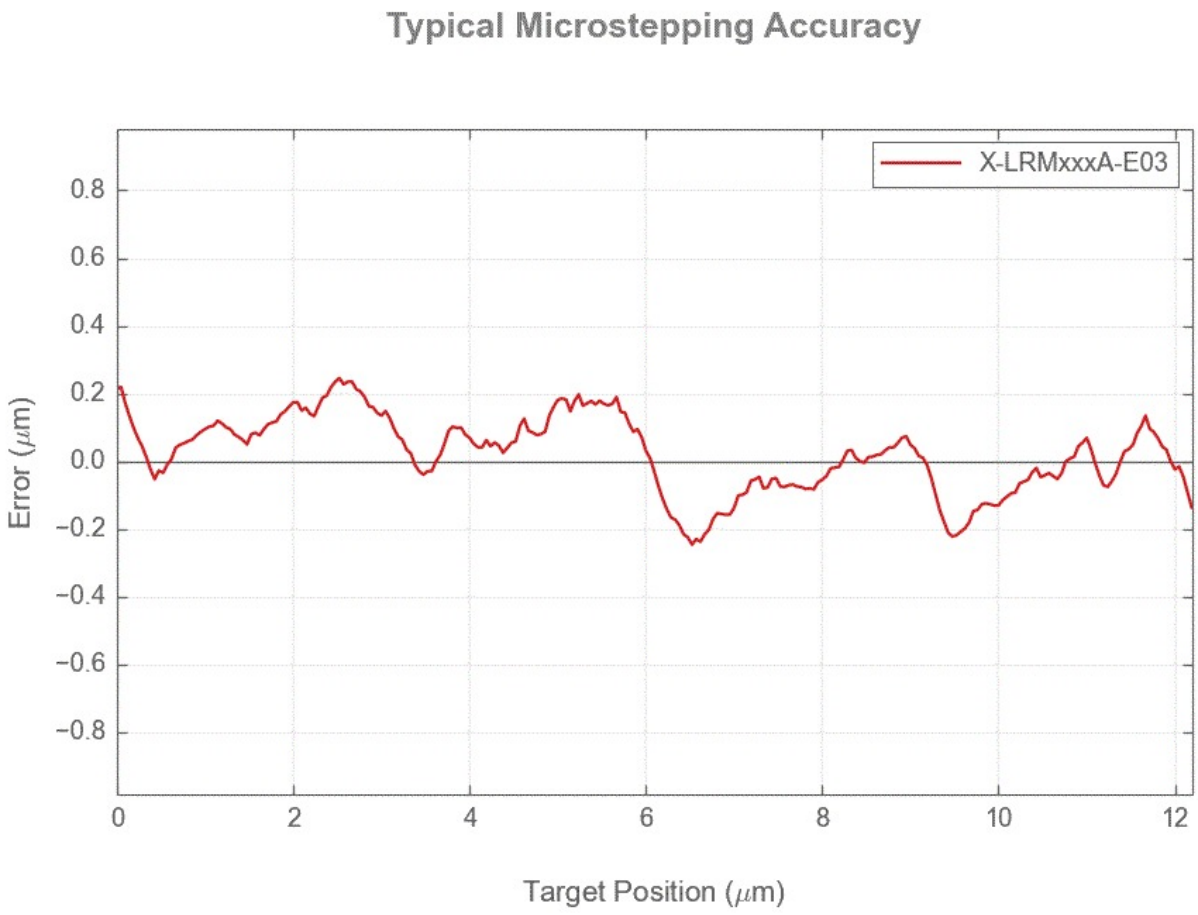


Typical Microstepping Accuracy



LRM Linear Bearing Lifetime





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