X-LRM-DE Series Datasheet

- 100, 150, 200 mm travel
- 15 µm accuracy over 200 mm
- 50 kg load capacity
- Hardened steel construction and recirculating ball bearing guide provide exceptional stiffness and thermal stability
- Integrated linear encoders with 50 nm resolution provide slip/stall detection and position correction
- Built-in controller, daisy chains with other Zaber products

X-LRM-DE Series Overview

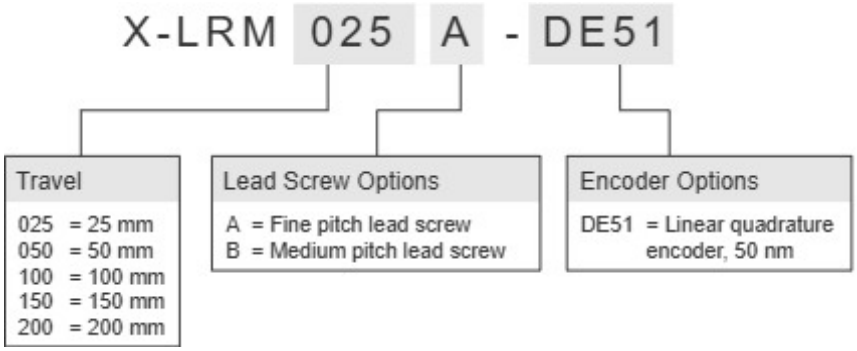
Zaber's X-LRM-DE series products are motorized linear stages with integrated controllers. An integrated linear encoder combined with stage calibration provides high accuracy positioning over the full travel of the device. The X-LRM-DE's hardened steel construction and recirculating ball bearing guide provide exceptional rigidity and thermal stability. High stiffness makes this stage ideal for multi-axis configurations or applications where excellent stability under moment loads is required.

They are stand-alone units requiring only a standard 24-48 V power supply. A 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.com/products/linear-stages/X-LRM-DE

X-LRM-DE Series Part Numbering & Options



X-LRM-DE Series Drawings

- X-LRM-DE.png (Drawing for the X-LRM-DE)

X-LRM-DE Series Specifications

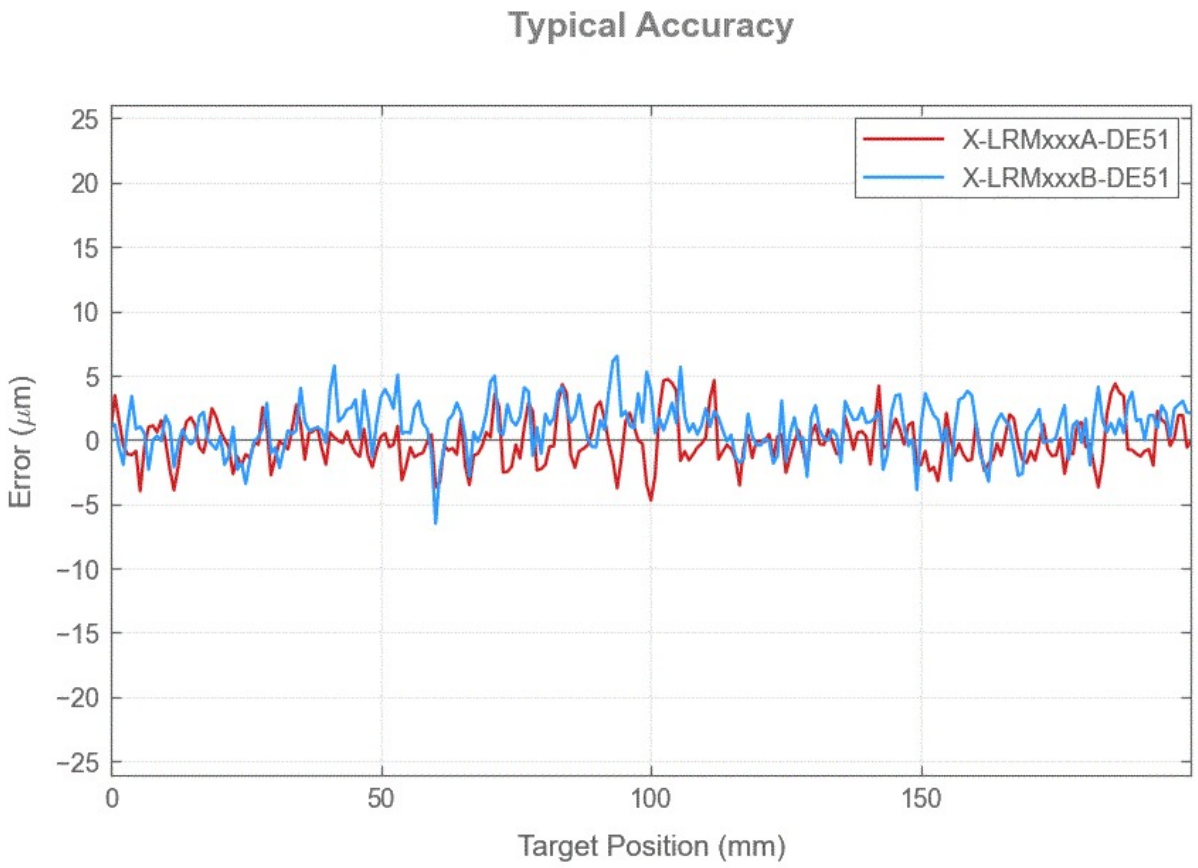
Built-in Controller	
Accuracy (unidirectional)	15 µm (0.000591")
Repeatability	< 2.5 µm (< 0.000098")
Backlash	< 5 µm (< 0.000197")
Encoder Type	Linear quadrature encoder
Encoder Resolution	50 nm
Peak Thrust	50 N (11.2 lb)
Maximum Continuous Thrust	25 N (5.6 lb)
Communication Interface	RS-232, USB 2.0
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Locking 4-pin M8
Maximum Centered Load	500 N (112.1 lb)
Maximum Moment (Pitch)	6 N-m (4.4 ft-lb)
Maximum Moment (Roll)	15 N-m (11.1 ft-lb)
Maximum Moment (Yaw)	6 N-m (4.4 ft-lb)
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	550 N-m/° (32 µrad/N-m)
Stiffness in Roll	550 N-m/° (32 µrad/N-m)
Stiffness in Yaw	550 N-m/° (32 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

Built-in Controller	
Guide Type	Recirculating ball bearing
Mechanical Drive System	Precision lead screw
Limit or Home Sensing	Magnetic hall sensor
Manual Control	Yes
Axes of Motion	1
Mounting Interface	M3 and M6 threaded holes
Stage Parallelism	< 10 µm (< 0.000394")
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	No

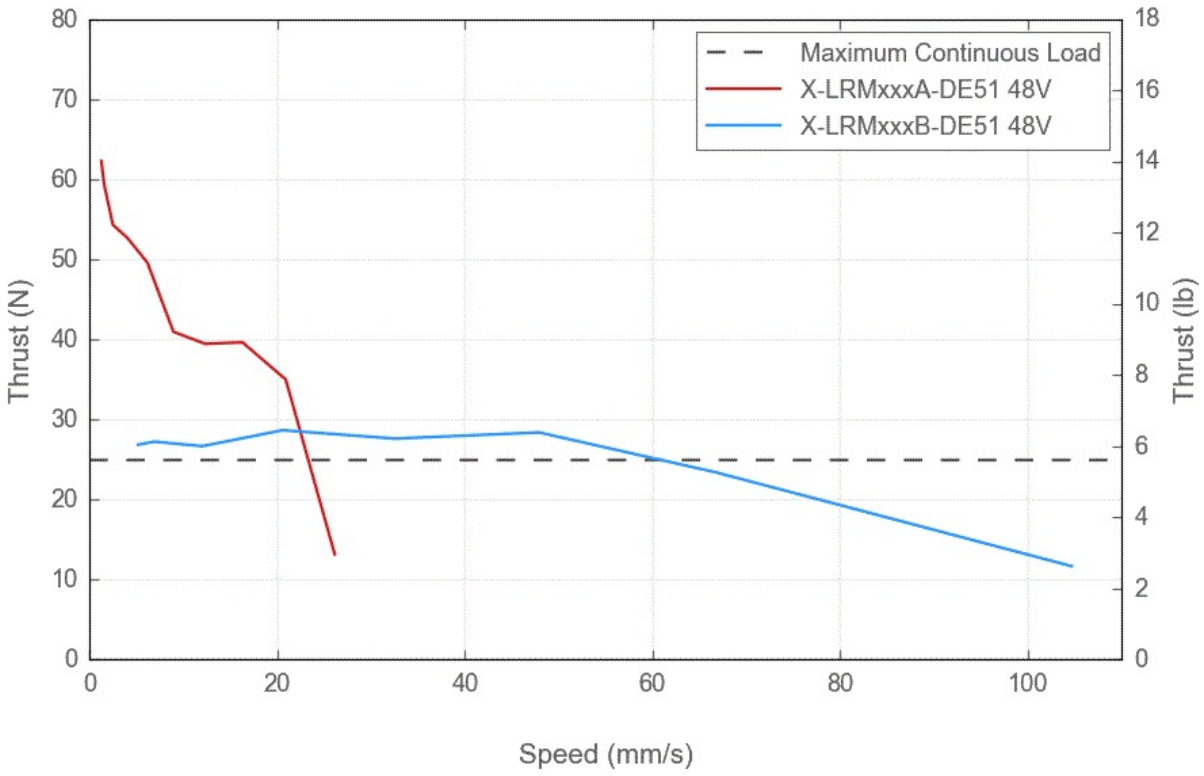
Part Number	Microstep Size (Default Resolution)	Travel Range	Maximum Speed	Minimum Speed
X-LRM100A-DE51	0.047625 µm	100 mm (3.937")	25 mm/s (0.984"/s)	0.000029 mm/s (0.000001"/s)
X-LRM100B-DE51	0.1905 µm	100 mm (3.937")	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)
X-LRM150A-DE51	0.047625 µm	150 mm (5.905")	25 mm/s (0.984"/s)	0.000029 mm/s (0.000001"/s)
X-LRM150B-DE51	0.1905 µm	150 mm (5.905")	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)
X-LRM200A-DE51	0.047625 µm	200 mm (7.874")	25 mm/s (0.984"/s)	0.000029 mm/s (0.000001"/s)
X-LRM200B-DE51	0.1905 µm	200 mm (7.874")	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)

Part Number	Speed Resolution	Linear Motion Per Motor Rev	Weight
X-LRM100A-DE51	0.000029 mm/s (0.000001"/s)	0.6096 mm (0.024")	1.14 kg (2.513 lb)
X-LRM100B-DE51	0.000116 mm/s (0.000005"/s)	2.4384 mm (0.096")	1.14 kg (2.513 lb)
X-LRM150A-DE51	0.000029 mm/s (0.000001"/s)	0.6096 mm (0.024")	1.32 kg (2.910 lb)
X-LRM150B-DE51	0.000116 mm/s (0.000005"/s)	2.4384 mm (0.096")	1.32 kg (2.910 lb)
X-LRM200A-DE51	0.000029 mm/s (0.000001"/s)	0.6096 mm (0.024")	1.50 kg (3.307 lb)
X-LRM200B-DE51	0.000116 mm/s (0.000005"/s)	2.4384 mm (0.096")	1.50 kg (3.307 lb)

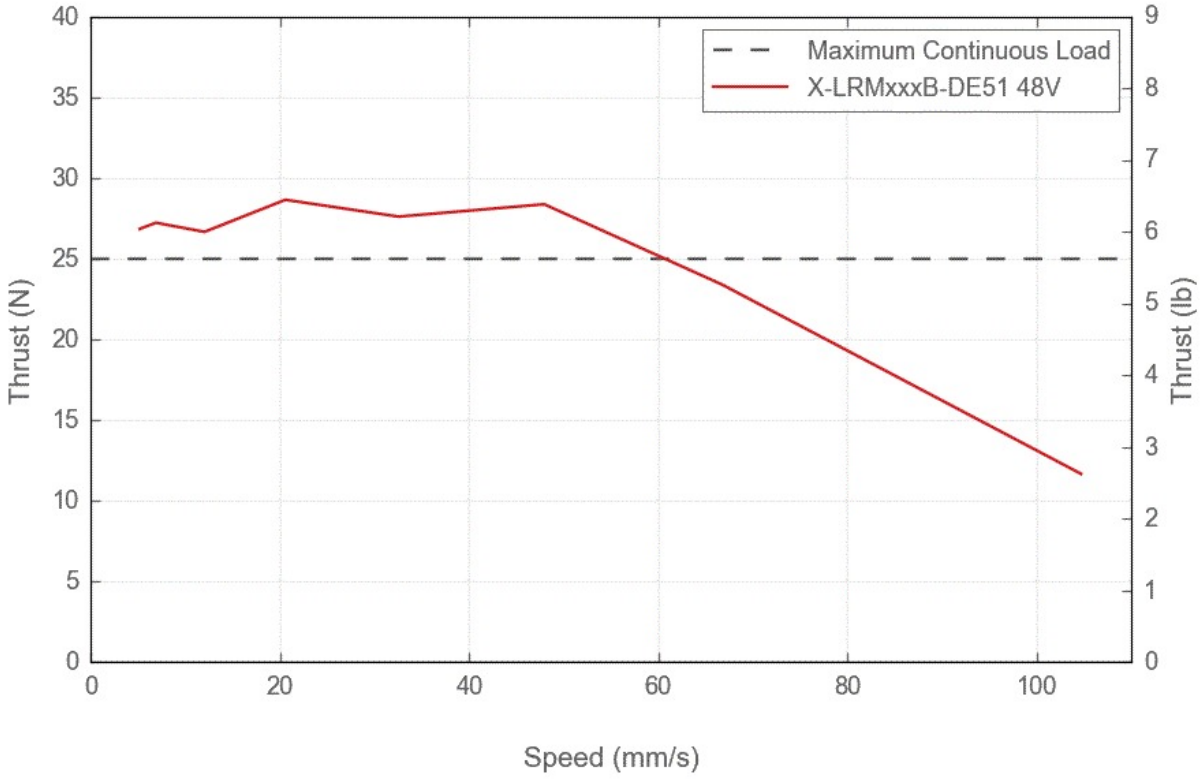
X-LRM-DE Series Charts



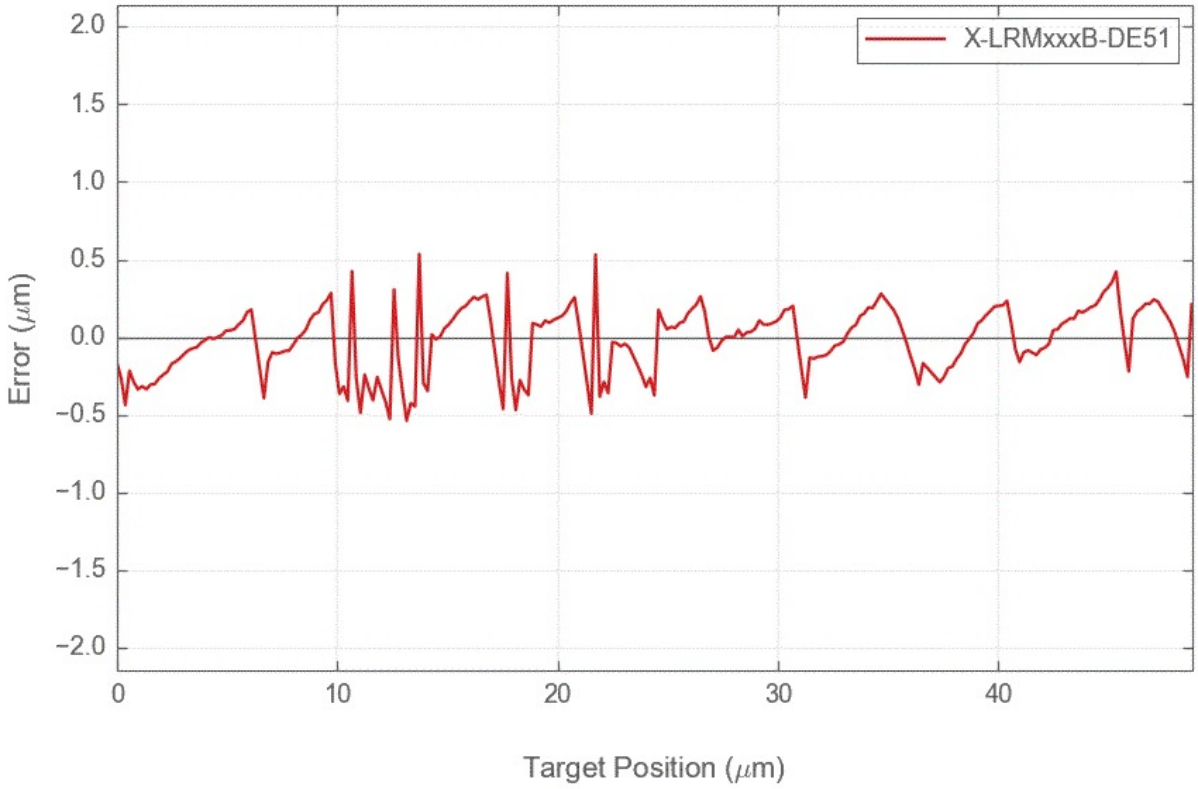
Thrust Speed Performance



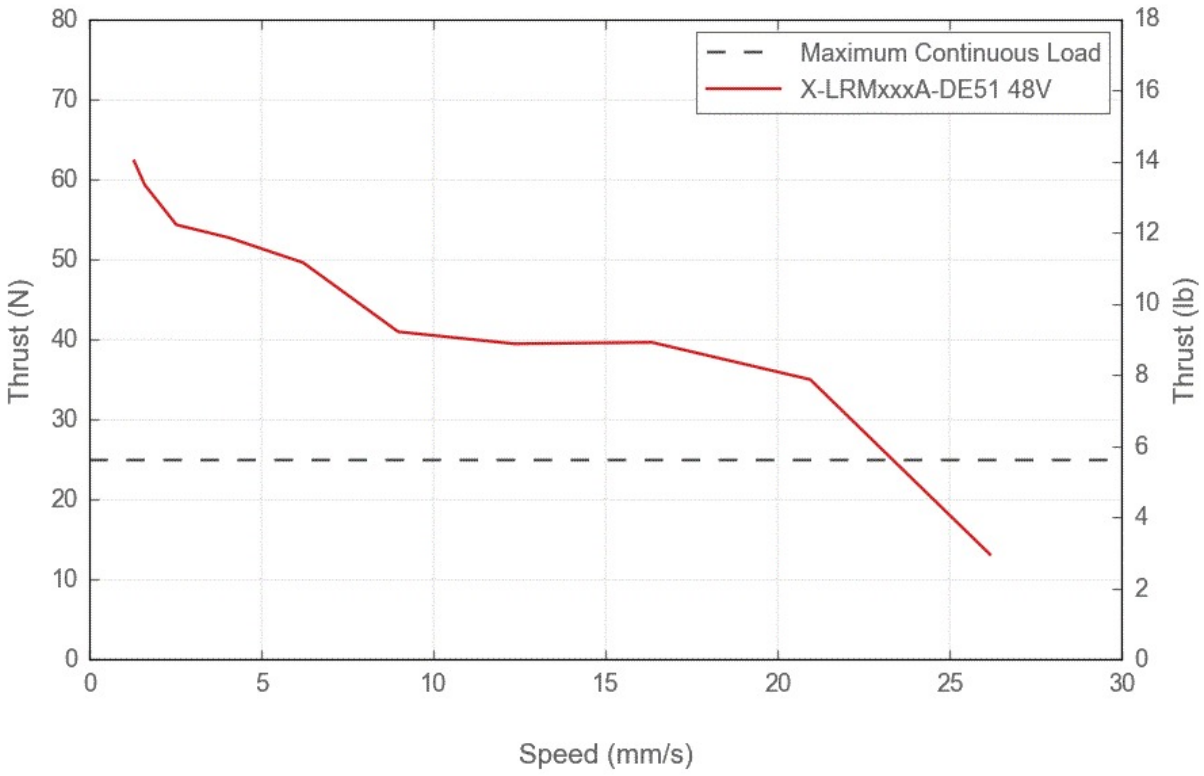
Thrust Speed Performance



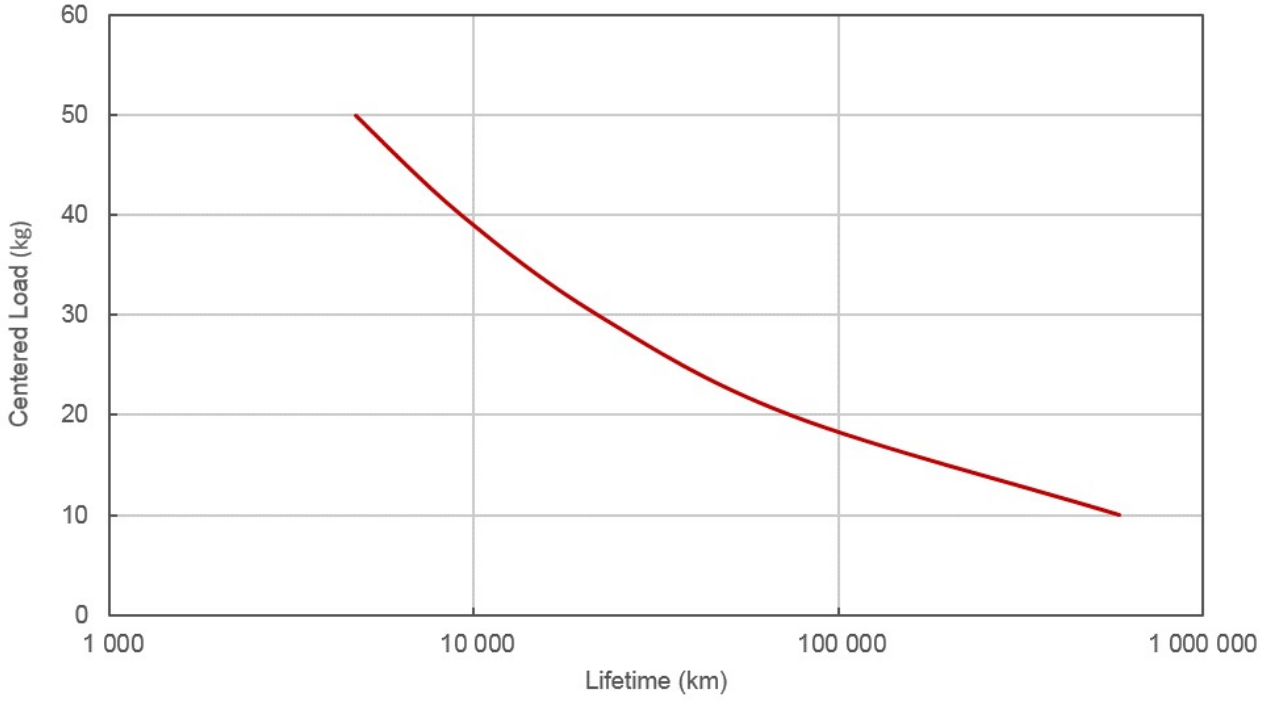
Typical Microstepping Accuracy

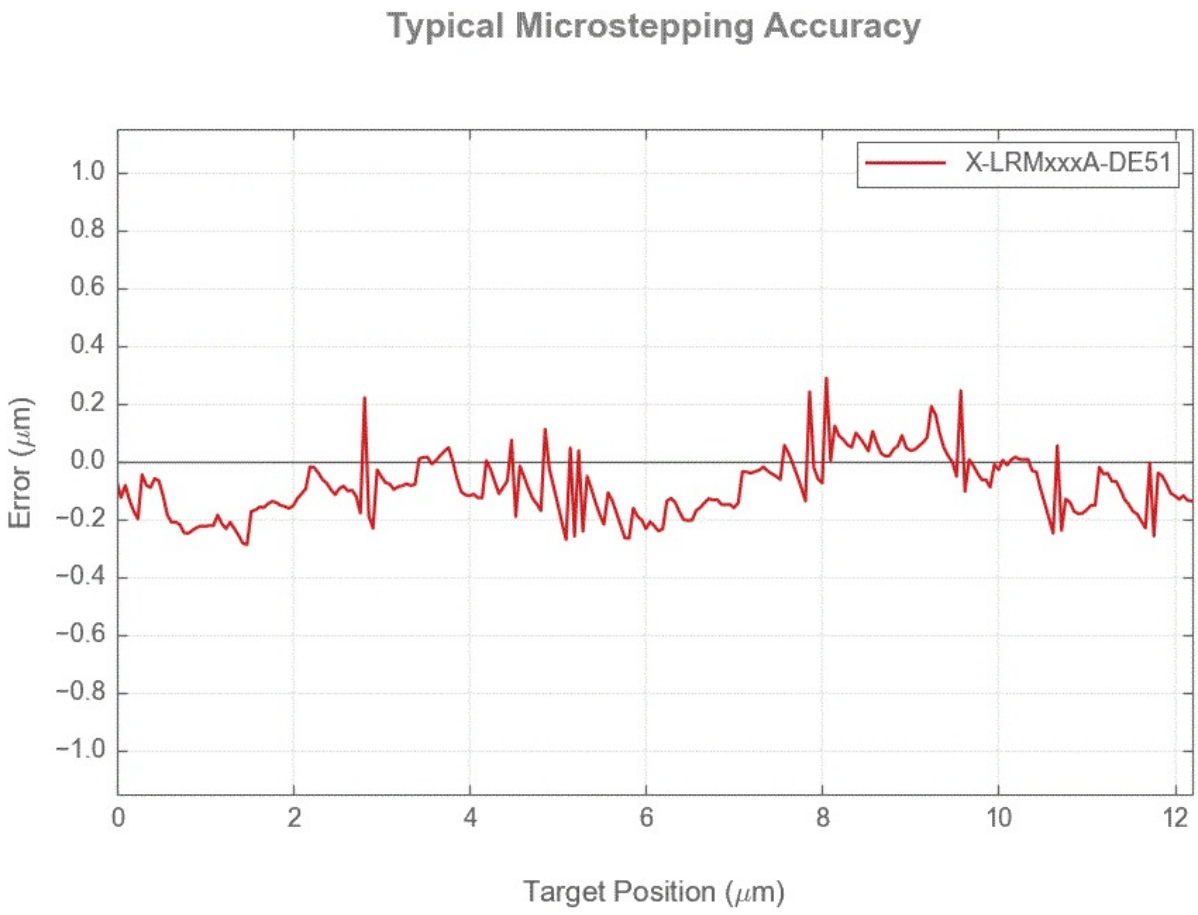


Thrust Speed Performance



LRM Linear Bearing Lifetime





Contact

Email: contact@zaber.com
Phone (toll free Canada/USA): 1-888-276-8033
Phone (direct): 1-604-569-3780
Fax: 1-604-648-8033

Zaber Technologies Inc.
#2 - 605 West Kent Ave. N.
Vancouver, British Columbia
Canada, V6P 6T7
https://www.zaber.com