

LRM 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
- 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

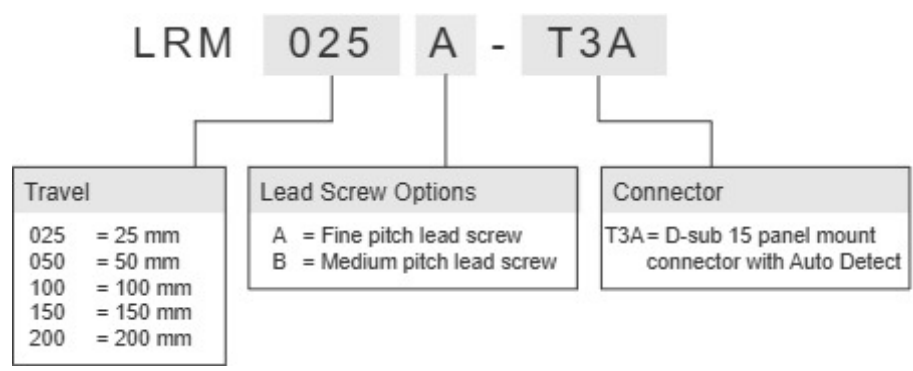
LRM Series Overview

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

The stages 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 LRM.

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

LRM Series Part Numbering & Options



LRM Series Drawings

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

LRM Series Specifications

Built-in Controller	
Recommended Controller	X-MCC (48 V) Recommended
AutoDetect	Yes
Repeatability	< 4 μm (< 0.000157")
Encoder Type	No
Maximum Continuous Thrust	25 N (5.6 lb)
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 $\mu\text{rad/N-m}$)
Stiffness in Roll	550 N-m/° (32 $\mu\text{rad/N-m}$)
Stiffness in Yaw	550 N-m/° (32 $\mu\text{rad/N-m}$)
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	600 mA/phase
Motor Winding Resistance	6.5 ohms/phase
Inductance	3.5 mH/phase
Motor Rated Power	6.9 Watts
Motor Connection	D-sub 15
Motor Rotor Inertia	2.9 g-cm ²
Default Resolution	1/64 of a step
Motor Frame Size	NEMA 08
Guide Type	Recirculating ball bearing
Mechanical Drive System	Precision lead screw
Limit or Home Sensing	Magnetic hall sensor

Built-in Controller	
Axes of Motion	1
Mounting Interface	M3 and M6 threaded holes
Stage Parallelism	< 10 μm (< 0.000394")
Operating Temperature Range	0 to 50 $^{\circ}\text{C}$
CE Compliant	Yes
Vacuum Compatible	No

Part Number	Microstep Size (Default Resolution)	Travel Range	Accuracy (unidirectional)	Backlash
LRM025A-T3A	0.047625 μm	25 mm (0.984")	8 μm (0.000315")	< 5 μm (< 0.000197")
LRM025B-T3A	0.1905 μm	25 mm (0.984")	8 μm (0.000315")	< 12 μm (< 0.000472")
LRM050A-T3A	0.047625 μm	50 mm (1.969")	15 μm (0.000591")	< 5 μm (< 0.000197")
LRM050B-T3A	0.1905 μm	50 mm (1.969")	15 μm (0.000591")	< 12 μm (< 0.000472")
LRM100A-T3A	0.047625 μm	100 mm (3.937")	30 μm (0.001181")	< 5 μm (< 0.000197")
LRM100B-T3A	0.1905 μm	100 mm (3.937")	30 μm (0.001181")	< 12 μm (< 0.000472")
LRM150A-T3A	0.047625 μm	150 mm (5.905")	45 μm (0.001772")	< 5 μm (< 0.000197")
LRM150B-T3A	0.1905 μm	150 mm (5.905")	45 μm (0.001772")	< 12 μm (< 0.000472")
LRM200A-T3A	0.047625 μm	200 mm (7.874")	60 μm (0.002362")	< 5 μm (< 0.000197")
LRM200B-T3A	0.1905 μm	200 mm (7.874")	60 μm (0.002362")	< 12 μm (< 0.000472")

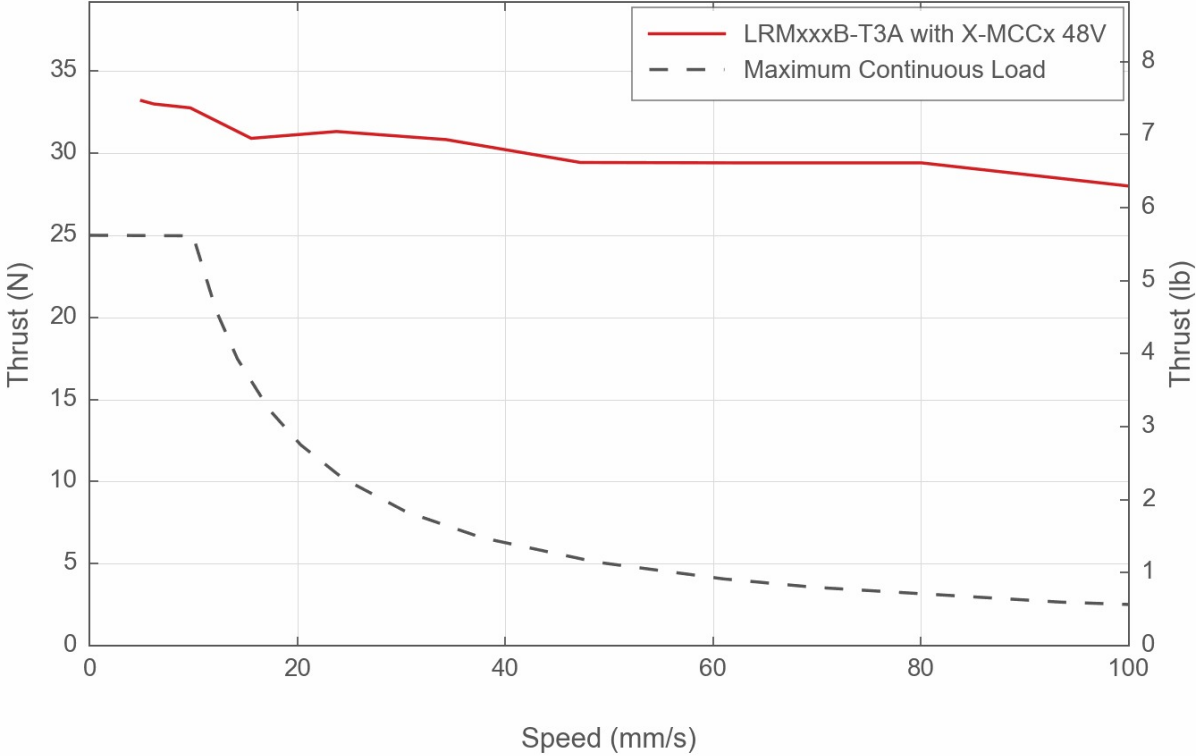
Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Peak Thrust
LRM025A-T3A	25 mm/s (0.984"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)	50 N (11.2 lb)
LRM025B-T3A	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)	25 N (5.6 lb)
LRM050A-T3A	25 mm/s (0.984"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)	50 N (11.2 lb)
LRM050B-T3A	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)	
LRM100A-T3A	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)
LRM100B-T3A	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)
LRM150A-T3A	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)
LRM150B-T3A	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)
LRM200A-T3A	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)
LRM200B-T3A	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)

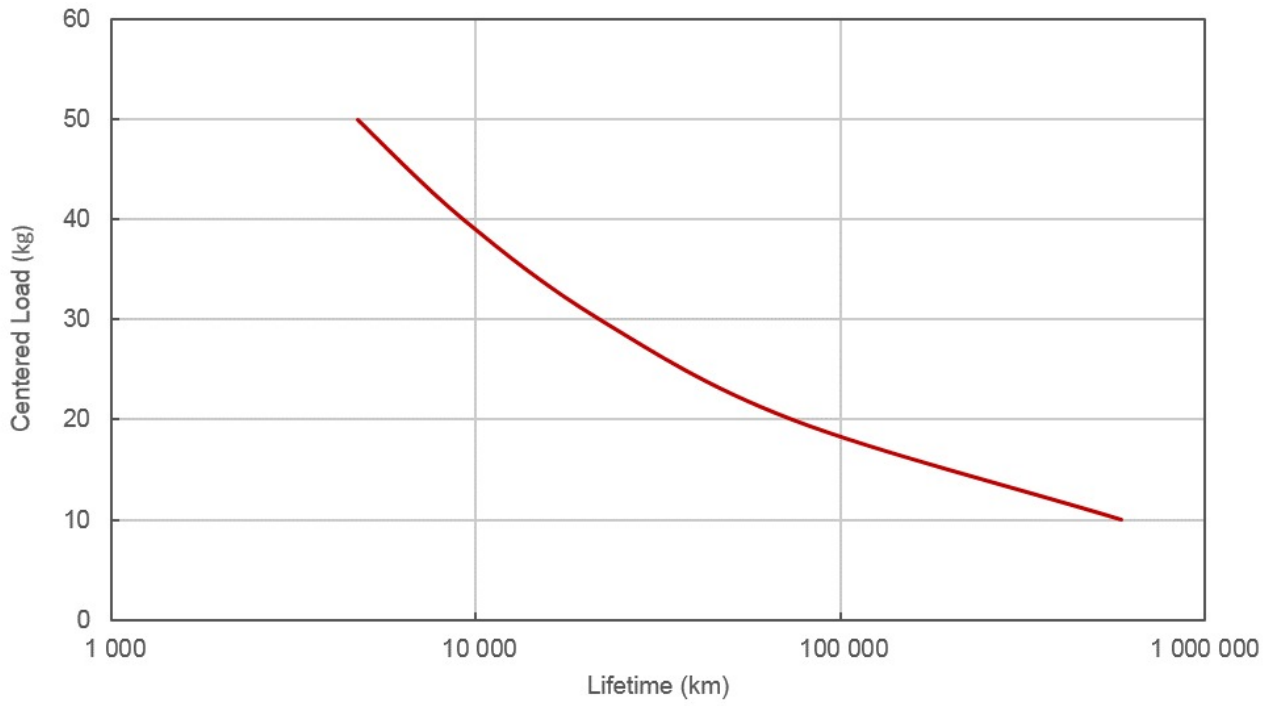
Part Number	Linear Motion Per Motor Rev	Weight
LRM025A-T3A	0.6096 mm (0.024")	0.71 kg (1.565 lb)
LRM025B-T3A	2.4384 mm (0.096")	0.71 kg (1.565 lb)
LRM050A-T3A	0.6096 mm (0.024")	0.79 kg (1.742 lb)
LRM050B-T3A	2.4384 mm (0.096")	0.79 kg (1.742 lb)
LRM100A-T3A	0.6096 mm (0.024")	0.95 kg (2.094 lb)
LRM100B-T3A	2.4384 mm (0.096")	0.95 kg (2.094 lb)
LRM150A-T3A	0.6096 mm (0.024")	1.11 kg (2.447 lb)
LRM150B-T3A	2.4384 mm (0.096")	1.11 kg (2.447 lb)
LRM200A-T3A	0.6096 mm (0.024")	1.29 kg (2.844 lb)
LRM200B-T3A	2.4384 mm (0.096")	1.29 kg (2.844 lb)

LRM Series Charts

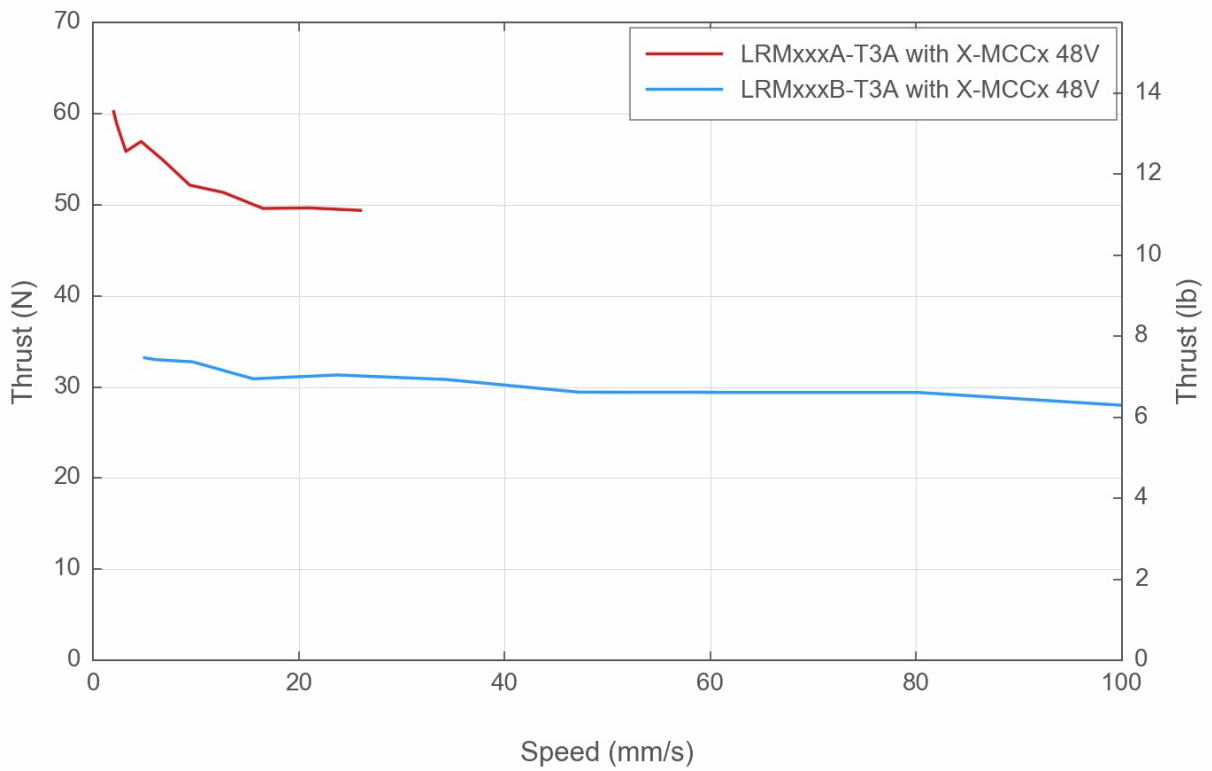
Thrust Speed Performance



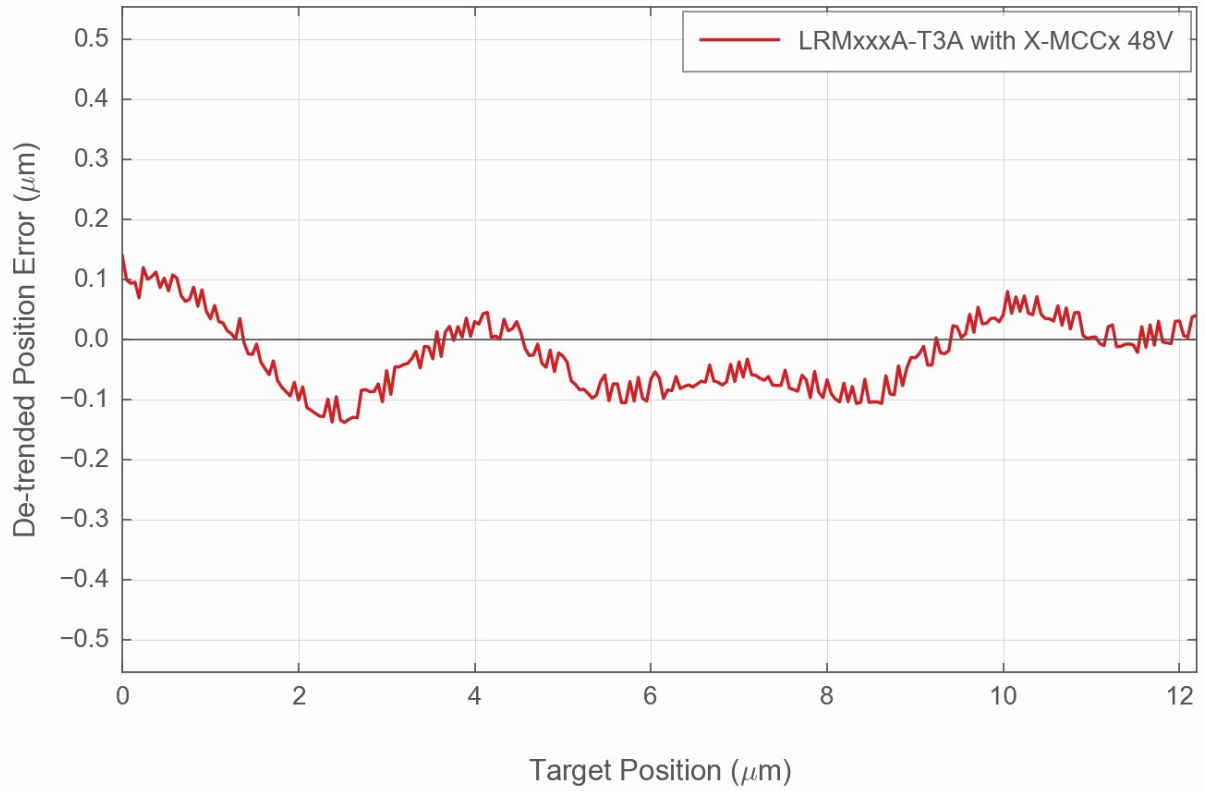
LRM Linear Bearing Lifetime



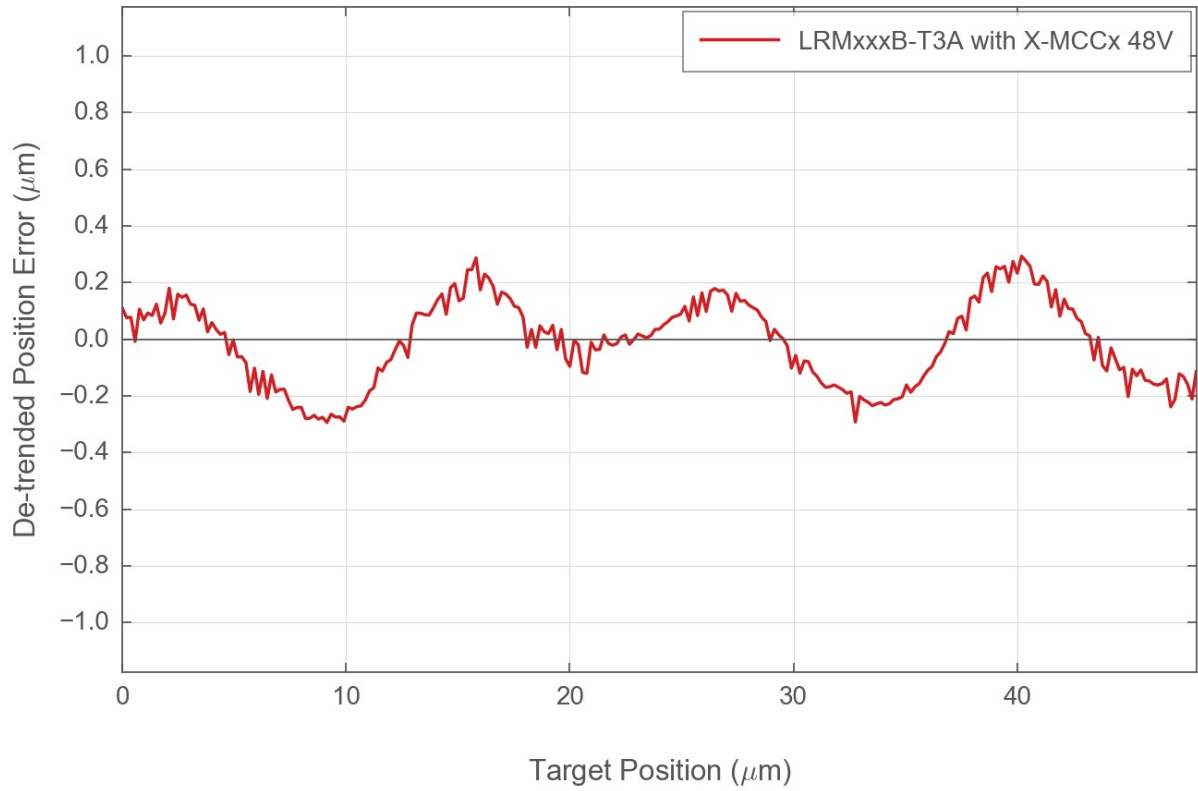
Thrust Speed Performance



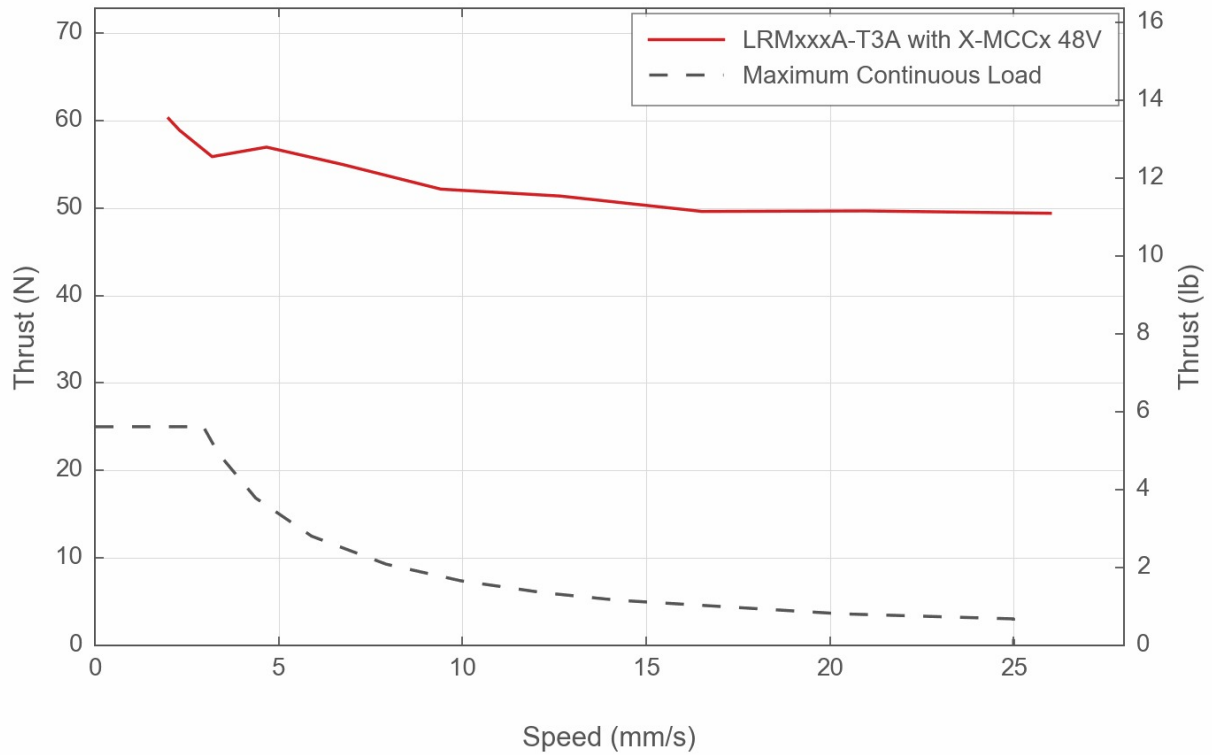
Typical Microstepping Accuracy



Typical Microstepping Accuracy



Thrust Speed Performance



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