Zaber Technologies Inc.
#2 - 605 West Kent Ave.
Vancouver, BC

1-604-569-3780 *Direct*
1-888-276-8033 *Toll Free*
1-604-648-8033 *Fax*

X-LRM100B-DE51 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

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X-LRM100B-DE51 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?part=X-LRM100B-DE51

X-LRM100B-DE51 Part Numbering & Options

Part number: X-LRM100B-DE51

X-LRM 100 B - DE51

Travel	Lead Screw Options	Encoder Options
100 — **100 mm (this part)**	**A** — Fine pitch lead screw	**DE51** — **Linear quadrature encoder, 50 nm (this part)**
150 — 150 mm	**B** — **Medium pitch lead screw (this part)**	
200 — 200 mm		

X-LRM100B-DE51 Drawings

• X-LRM-DE.png (Drawing for the X-LRM-DE miniature, steel, motorized linear stage with built-in controllers and linear encoders)

• View all drawings and documents at zaber.com

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X-LRM100B-DE51 Specifications

Overview

Specification	Value
Built-in Controller	Yes
Travel Range	100 mm (3.937 ")
Manual Control	Yes
Axes of Motion	1
Weight	1.14 kg (2.513 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	15 µm (0.000591 ")
Repeatability	<4 µm (<0.000157 ")
Backlash	<5 µm (<0.000197 ")
Flatness of Travel	<8 µm (<0.000315 ")
Straightness of Travel	<12 µm (<0.000472 ")
Pitch Error	0.02 ° (0.349 mrad)
Roll Error	0.02 ° (0.349 mrad)
Yaw Error	0.02 ° (0.349 mrad)
Microstep Size (Default Resolution)	0.1905 µm
Default Resolution	1/64 of a step
Stage Parallelism	<10 µm (<0.000394 ")

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Load Performance

Specification	Value
Peak Thrust	50 N (11.2 lb)
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centred Load	500 N (112.1 lb)
Maximum Moment (Pitch)	6 N·m (4.4 lb·ft)
Maximum Moment (Roll)	15 N·m (11.07 lb·ft)
Maximum Moment (Yaw)	6 N·m (4.428 lb·ft)
Stiffness (Pitch)	750 N·m/°
Stiffness (Roll)	550 N·m/°
Stiffness (Yaw)	400 N·m/°

Speed

Specification	Value
Maximum Speed	100 mm/s (3.937 "/s)
Minimum Speed	0.000116 mm/s (0.000005 "/s)
Speed Resolution	0.000116 mm/s (0.000005 "/s)

Encoder & Sensing

Specification	Value
Encoder Type	Linear quadrature encoder
Limit or Home Sensing	Magnetic hall sensor

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Motor

Specification	Value
Linear Motion Per Motor Rev	2.4384 mm (0.096 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	600 mA/phase
Motor Winding Inductance	3.5 mH/phase

Power and Communication

Specification	Value
Communication Interface	RS-232, USB 2.0
Communication Protocol	Zaber ASCII (default), Zaber Binary
Data Cable Connection	Locking 4-pin M8
Power Supply	24-48 VDC
Power Plug	2-pin screw terminal
Maximum Current Draw	350 mA

Mechanical

Specification	Value
Guide Type	Recirculating ball bearing
Mechanical Drive System	Precision lead screw
Mounting Interface	M3 and M6 threaded holes

Environmental & Compliance

Specification	Value
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	No

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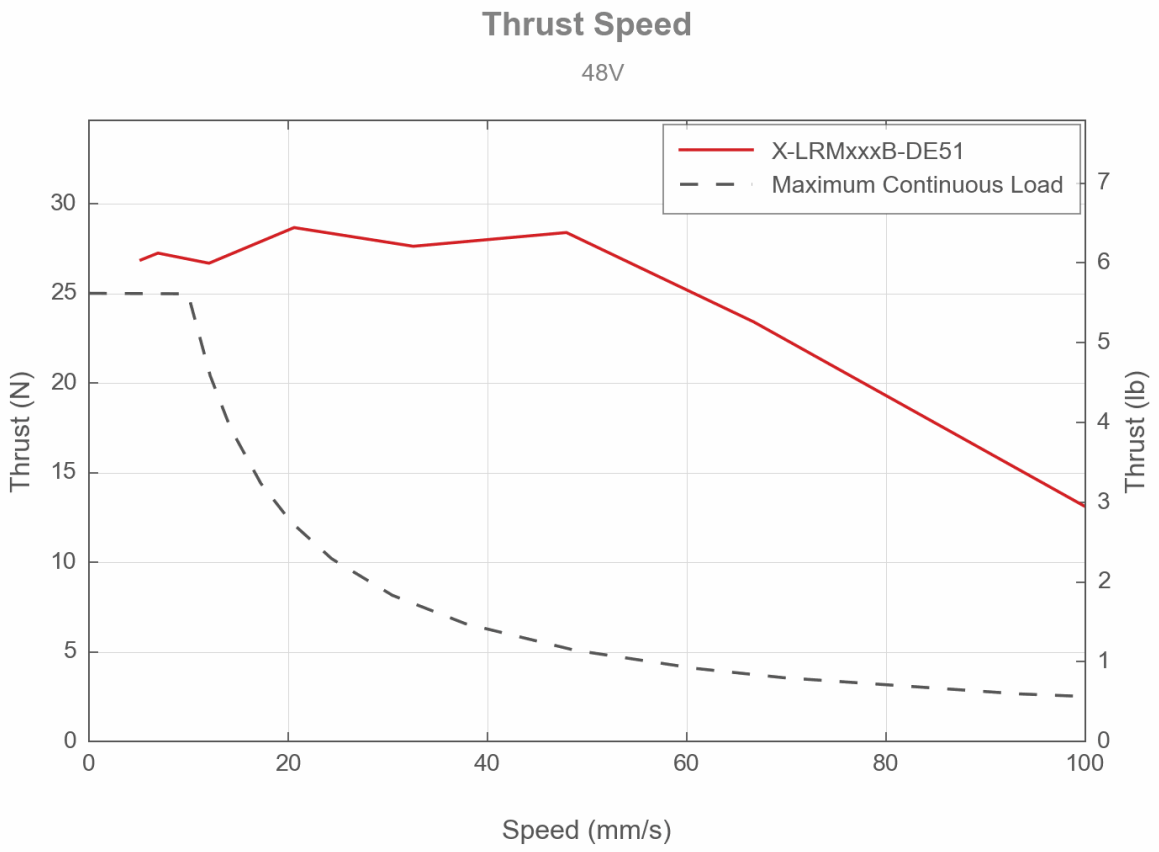
X-LRM100B-DE51 Charts

Thrust Speed



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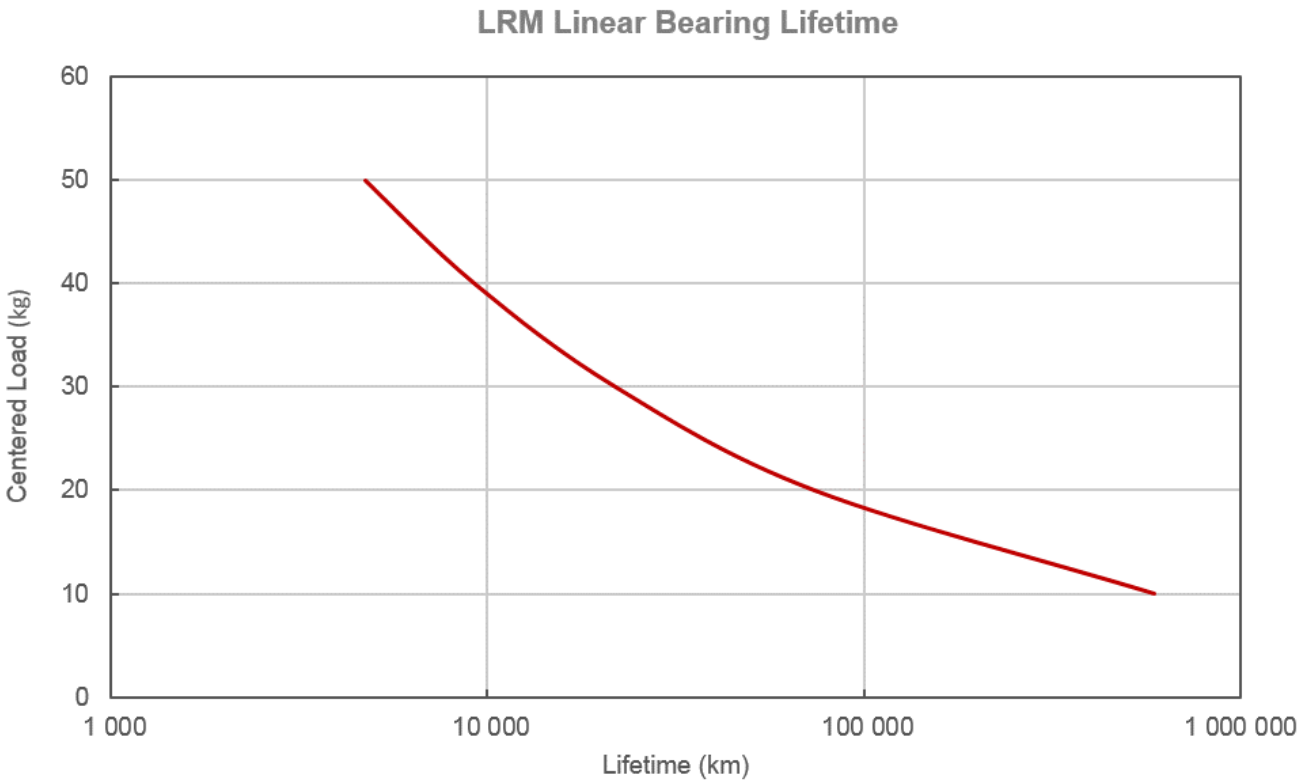
LRM Lifetime



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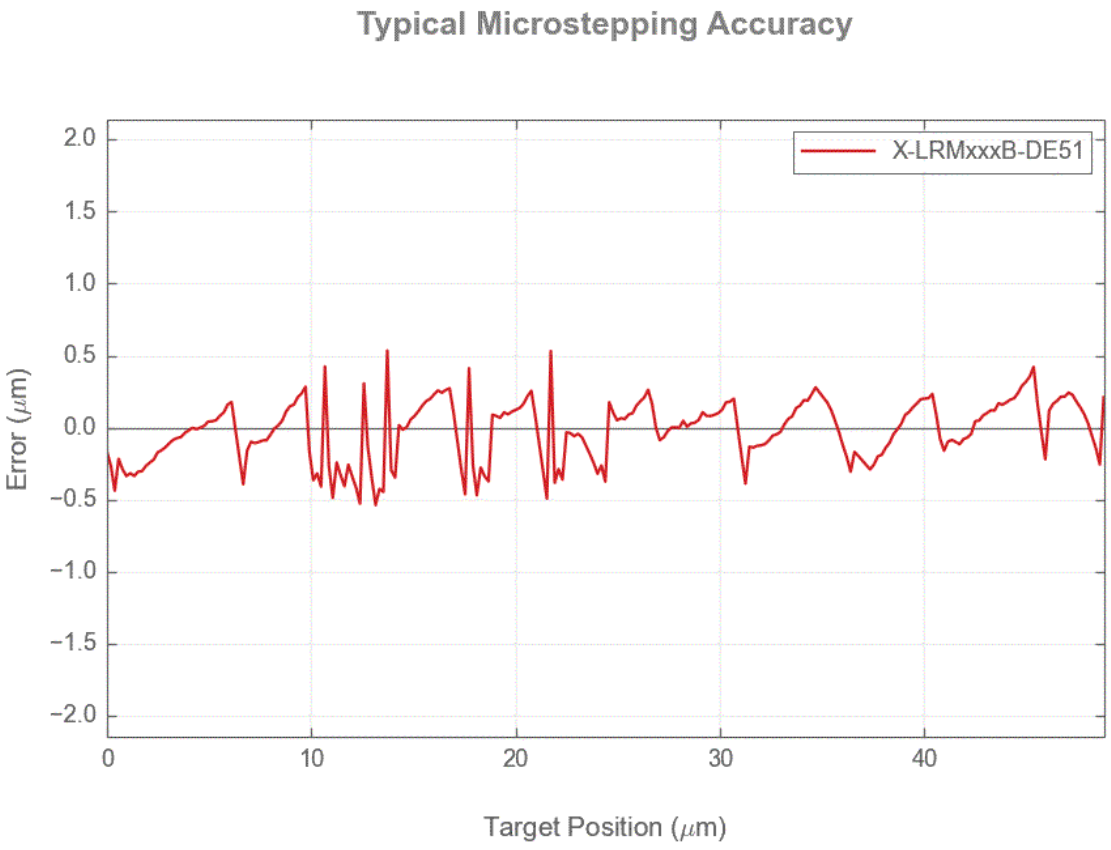
Microstep Accuracy



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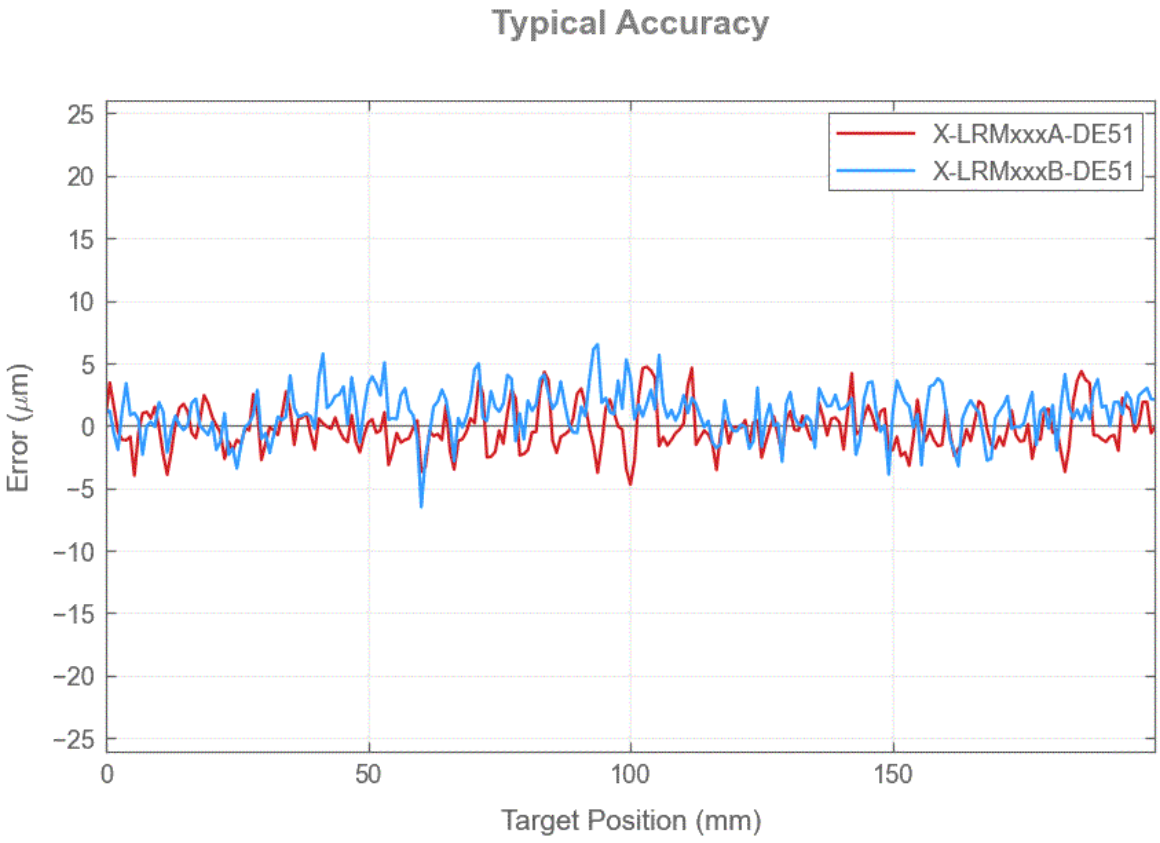
X LRMxxxB DE51 Full Travel Accuracy



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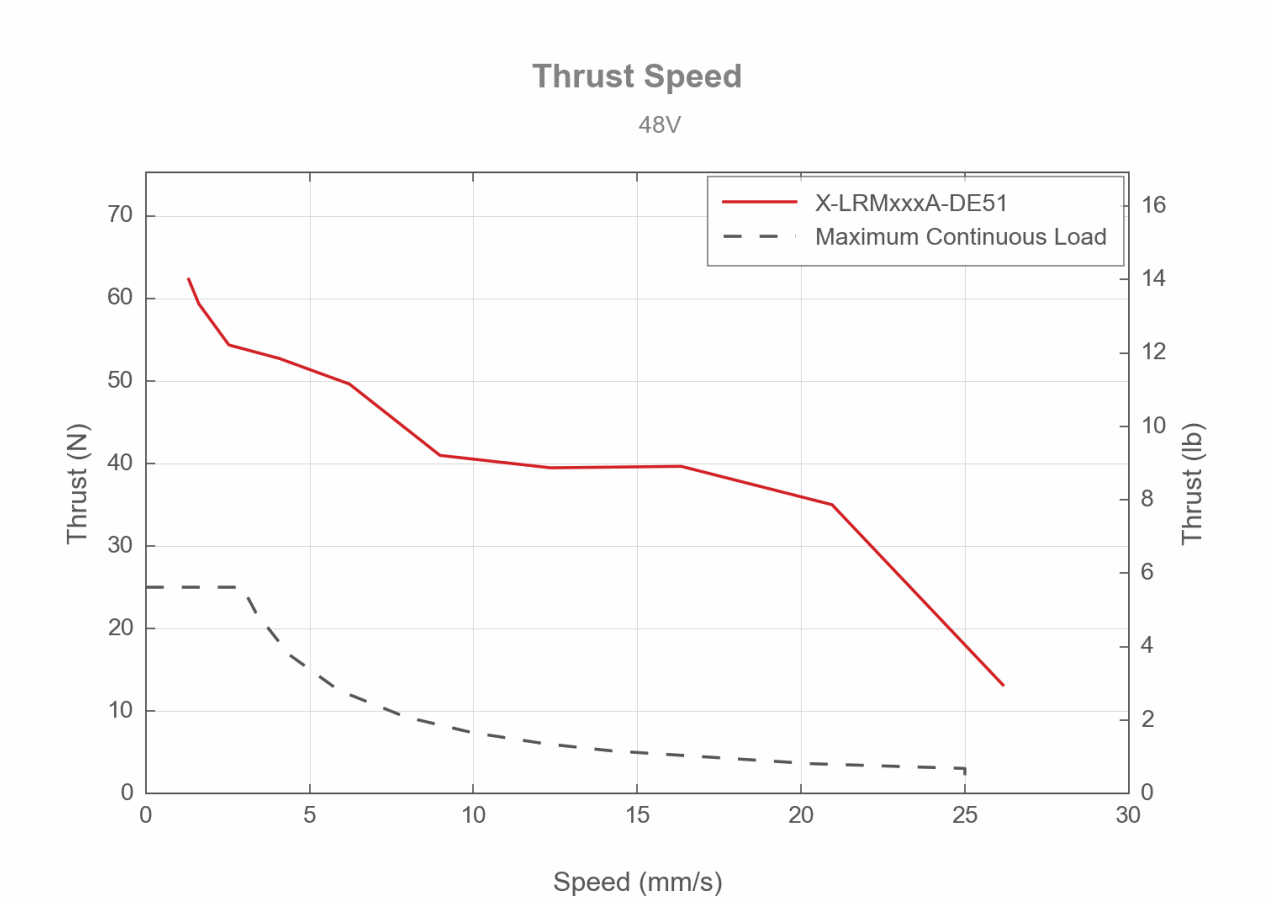
Thrust Speed



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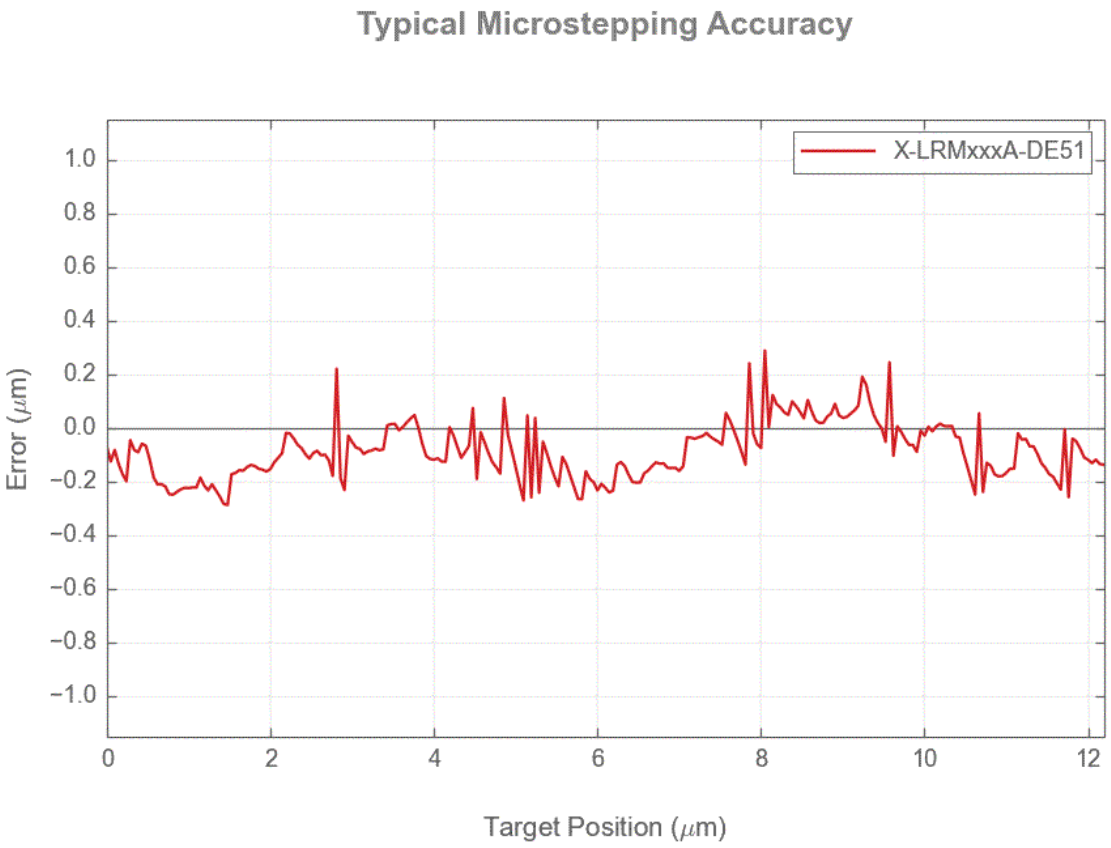
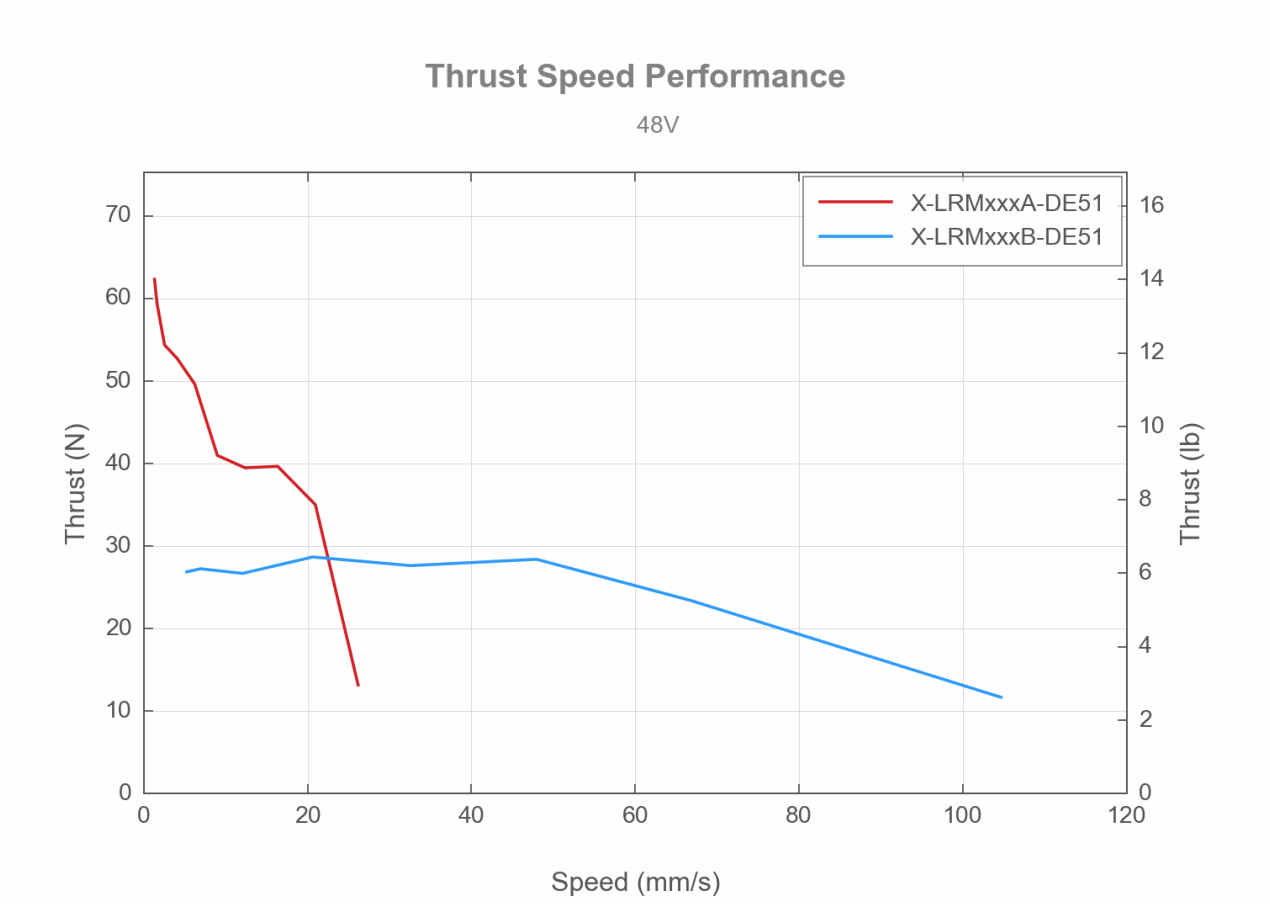
Microstep Accuracy



Thrust Speed



Contact

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