Zaber Technologies Inc.
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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

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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 100 A - DE51

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

X-LRM-DE Series Drawings

- X-LRM-DE.png (Drawing for the X-LRM-DE)
- View all drawings and documents at zaber.com

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X-LRM-DE Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	Yes
Axes of Motion	1

Positioning Performance

Specification	Value
Accuracy (unidirectional)	15 µm (0.000591 ")
Repeatability	<2.5 µm (<0.000098 ")
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)
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 Centered 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)	550 N·m/°
Stiffness (Roll)	550 N·m/°
Stiffness (Yaw)	550 N·m/°

Encoder & Sensing

Specification	Value
Encoder Type	Linear quadrature encoder
Encoder Resolution	50 nm
Limit or Home Sensing	Magnetic hall sensor

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	600 mA/phase
Motor Winding Inductance	3.5 mH/phase

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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

Part Number	Travel Range	Weight	Microstep Size (Default Resolution)	Maximum Speed
X-LRM100A-DE51	100 mm (3.937 ")	1.14 kg (2.513 lb)	0.047625 µm	25 mm/s (0.984 "/s)
X-LRM100B-DE51	100 mm (3.937 ")	1.14 kg (2.513 lb)	0.1905 µm	100 mm/s (3.937 "/s)
X-LRM150A-DE51	150 mm (5.905 ")	1.32 kg (2.91 lb)	0.047625 µm	25 mm/s (0.984 "/s)

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X-LRM150B-DE51	150 mm (5.905 ")	1.32 kg (2.91 lb)	0.1905 µm	100 mm/s (3.937 "/s)
X-LRM200A-DE51	200 mm (7.874 ")	1.5 kg (3.307 lb)	0.047625 µm	25 mm/s (0.984 "/s)
X-LRM200B-DE51	200 mm (7.874 ")	1.5 kg (3.307 lb)	0.1905 µm	100 mm/s (3.937 "/s)

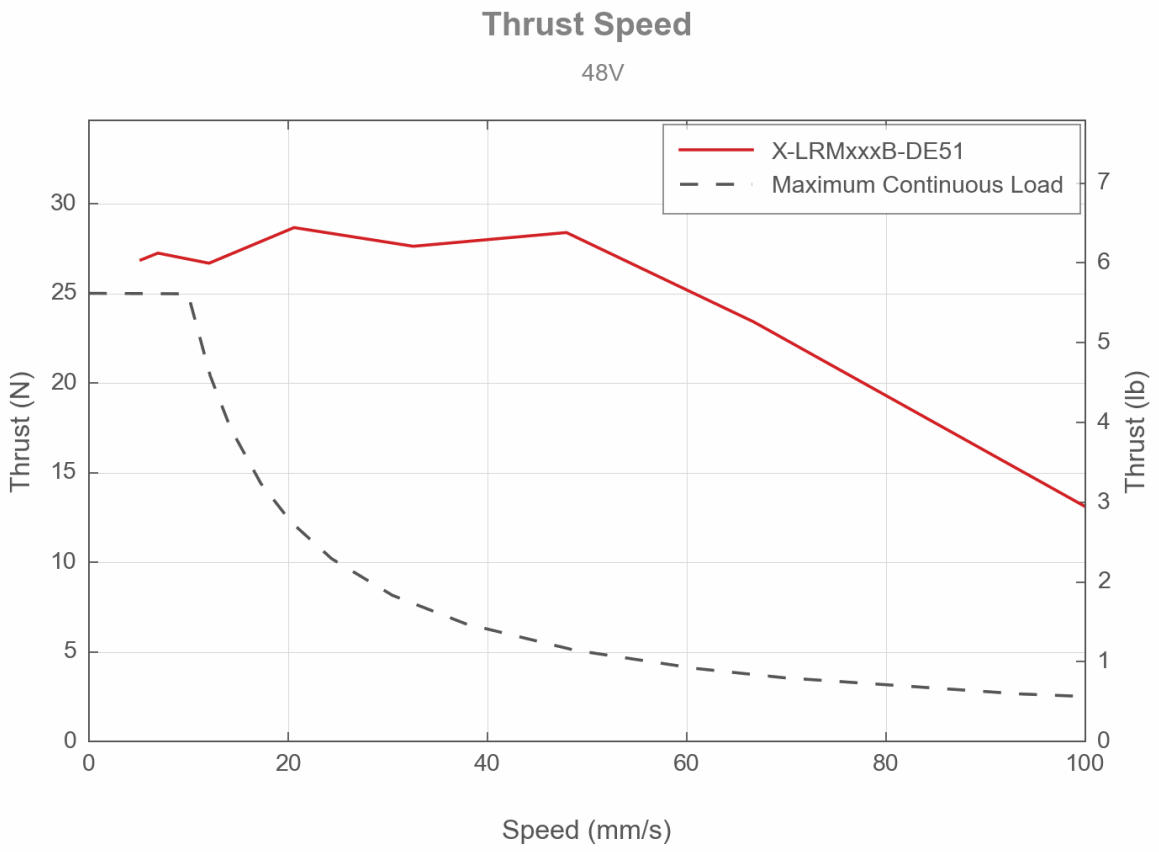
Part Number	Minimum Speed	Speed Resolution	Linear Motion Per Motor Rev
X-LRM100A-DE51	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LRM100B-DE51	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LRM150A-DE51	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LRM150B-DE51	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LRM200A-DE51	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LRM200B-DE51	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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X-LRM-DE Series Charts

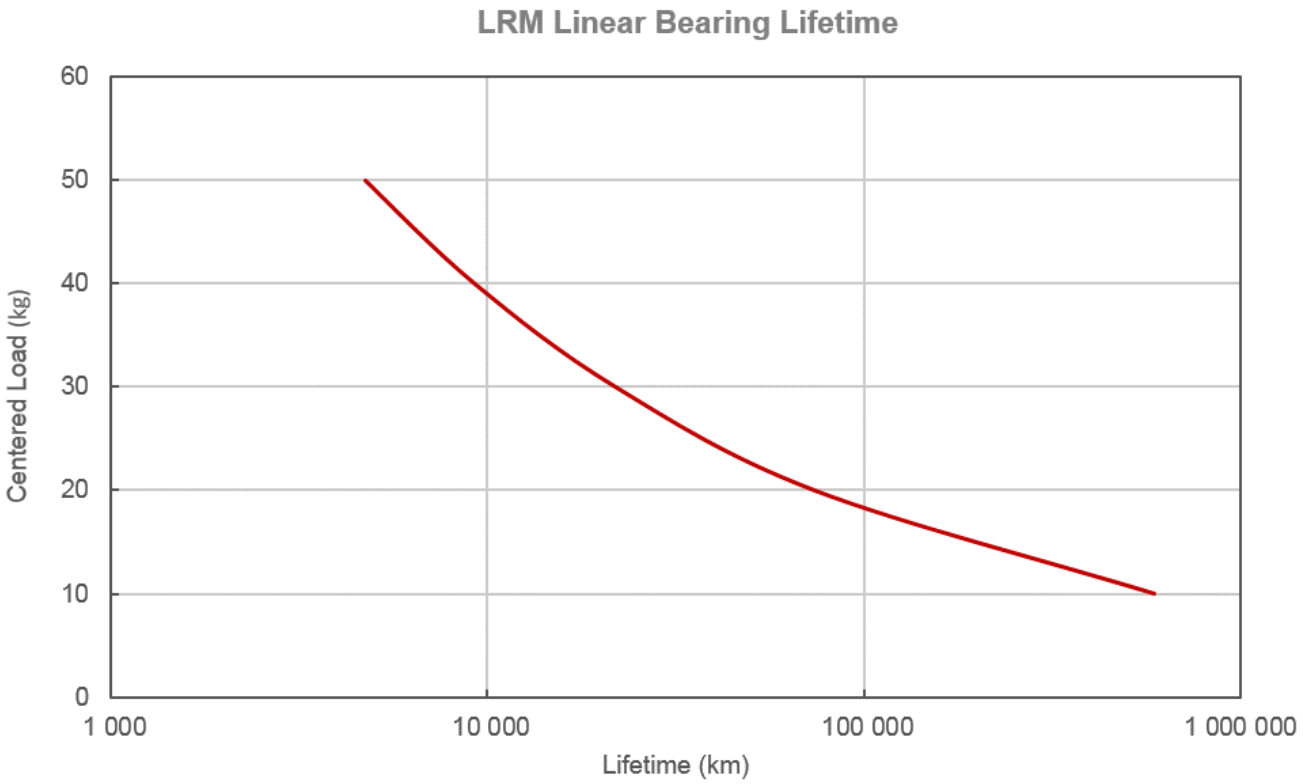
Thrust Speed



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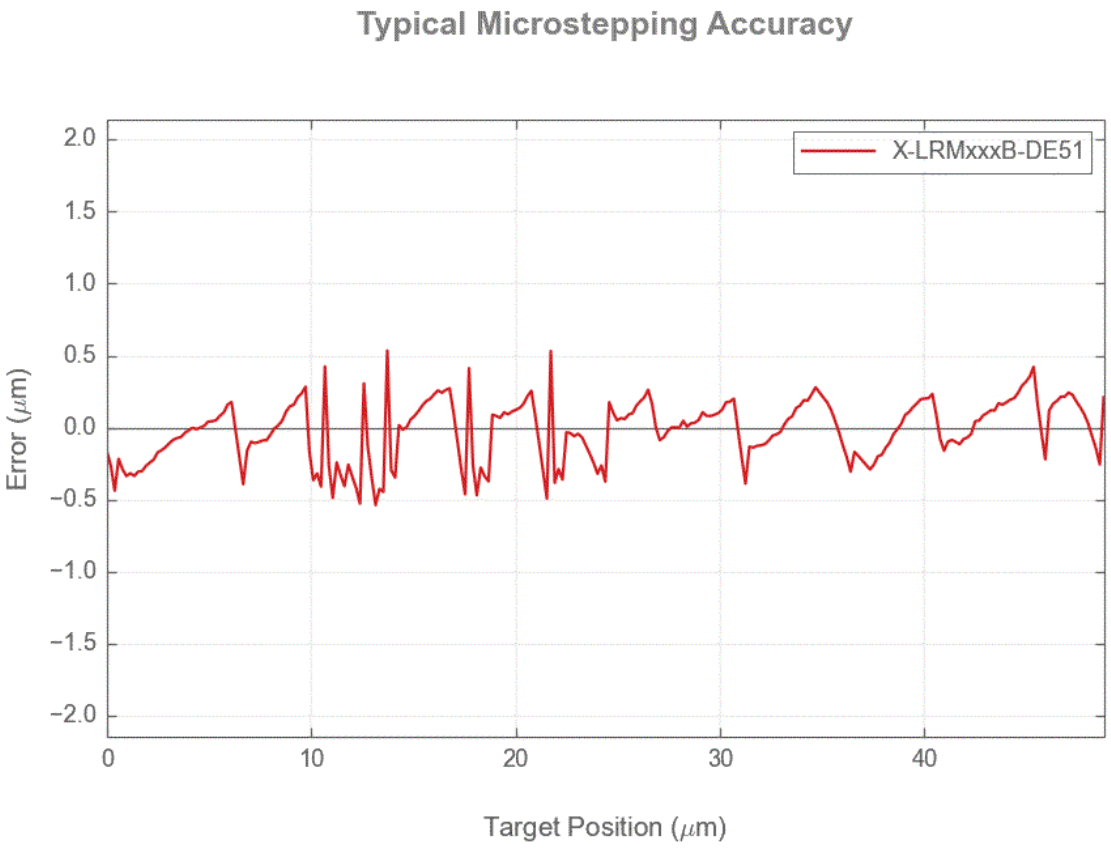
LRM Lifetime



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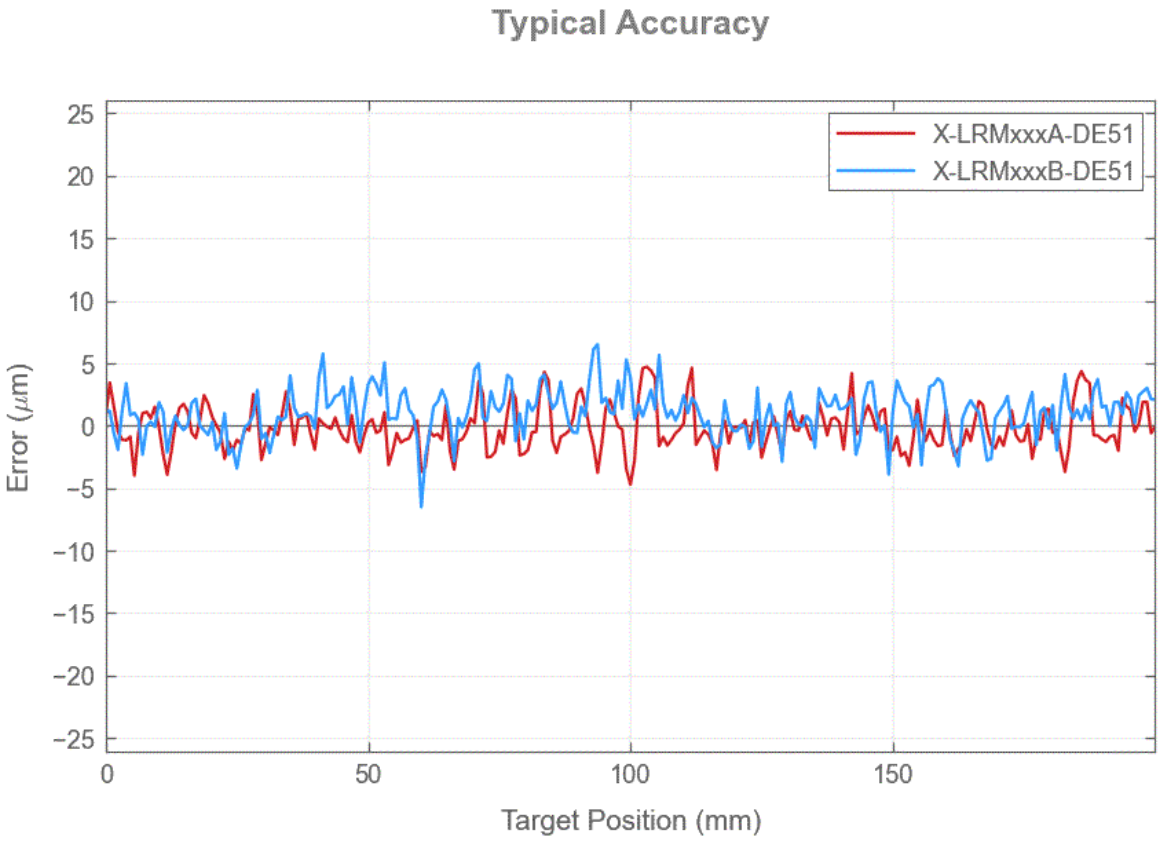
Microstep Accuracy



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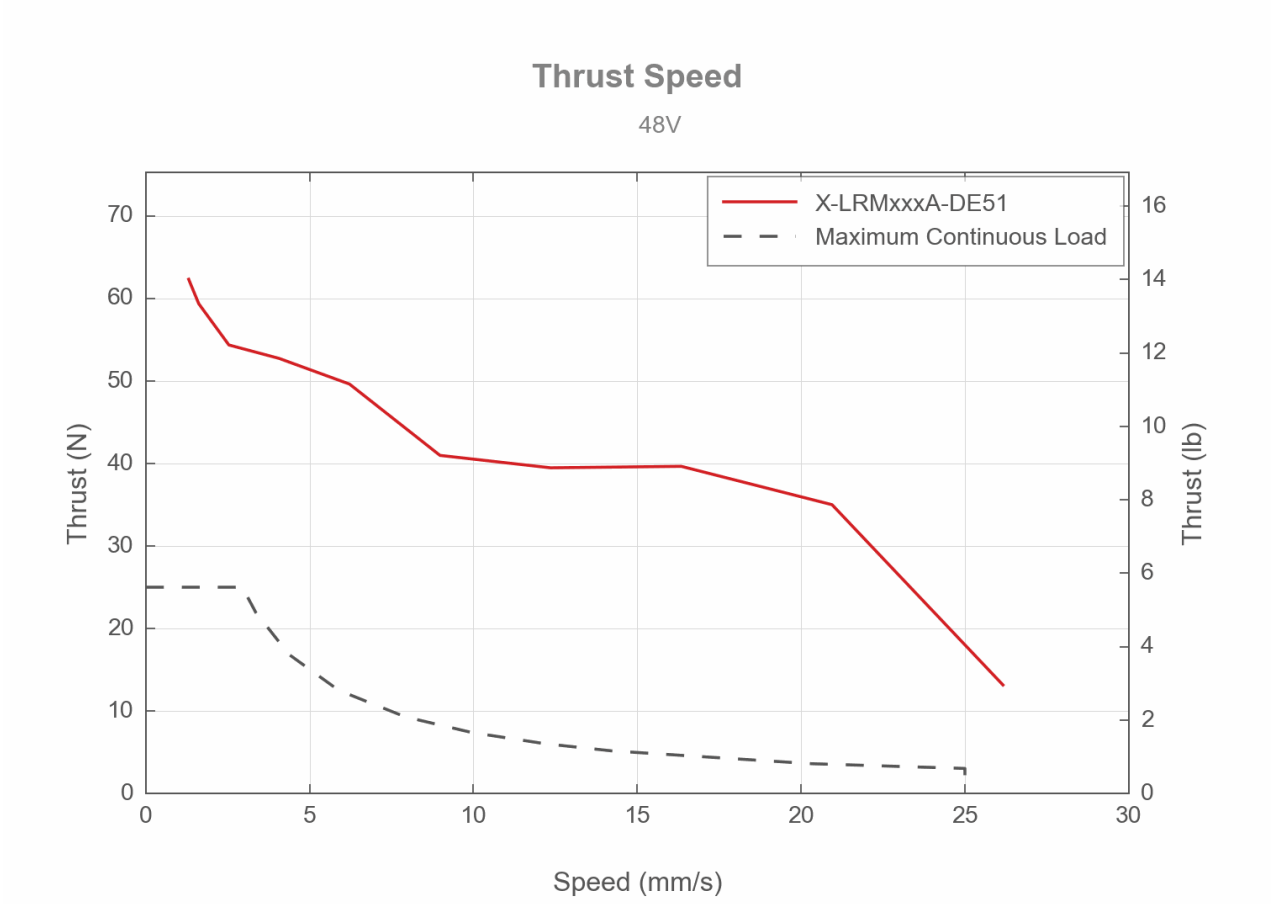
X LRMxxxB DE51 Full Travel Accuracy



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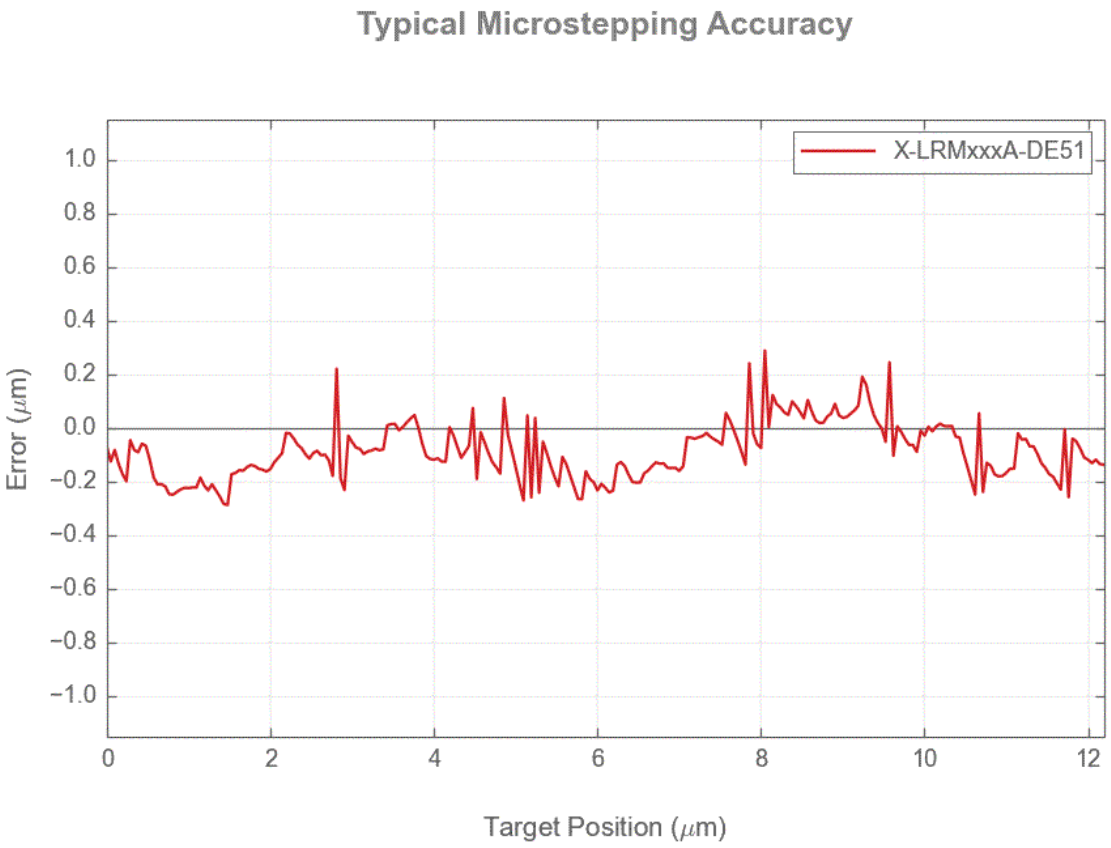
Thrust Speed



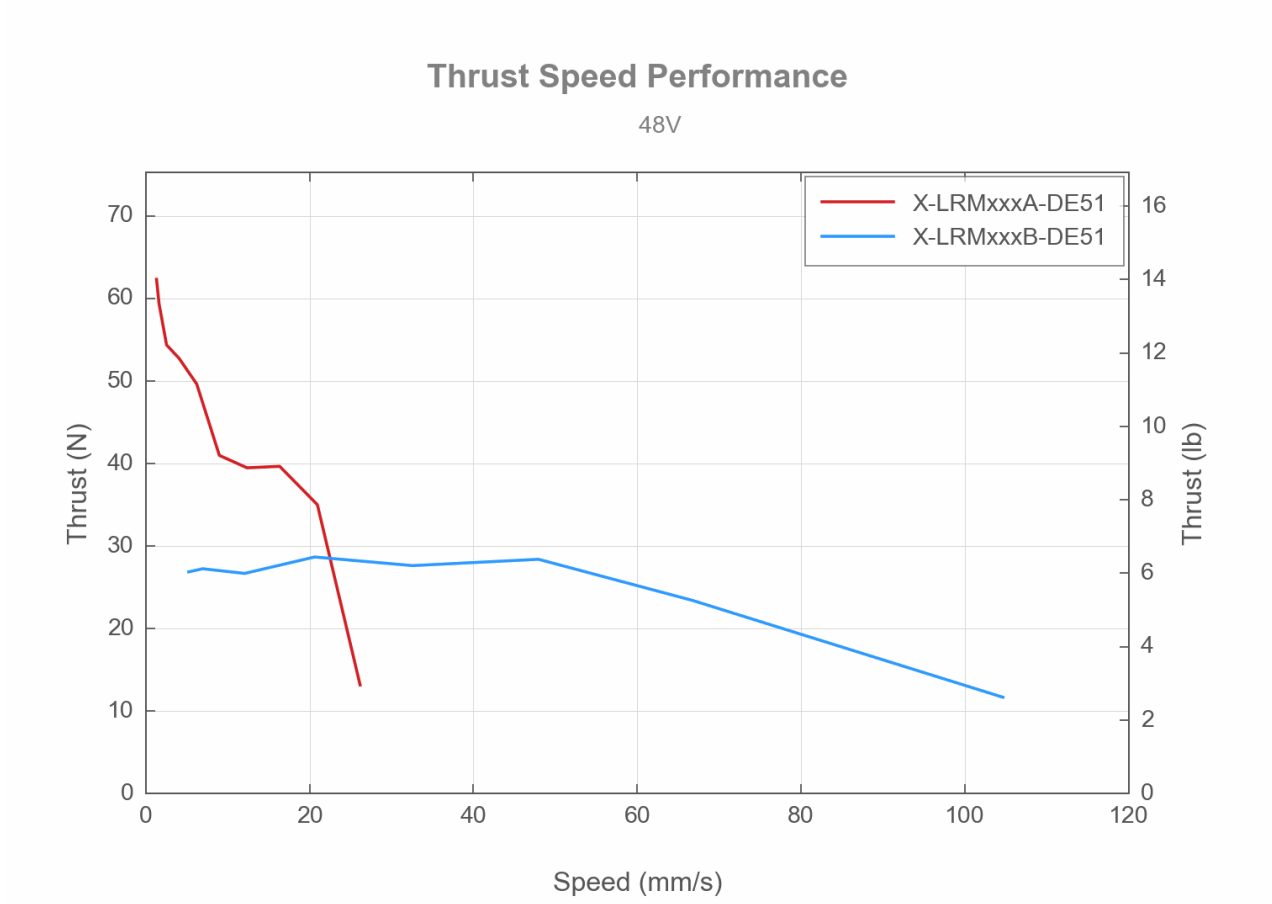
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Microstep Accuracy



Thrust Speed



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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

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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 moment 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.com/products/linear-stages/X-LRM-E

X-LRM-E Series Part Numbering & Options

X-LRM 025 A - E03

Travel

- **025** — 25 mm
- **050** — 50 mm
- **100** — 100 mm
- **150** — 150 mm
- **200** — 200 mm

Lead Screw Options

- **A** — Fine pitch lead screw
- **B** — Medium pitch lead screw

Encoder Options

- **E03** — Motor Encoder, 200 CPR

X-LRM-E Series Drawings

- X-LRM-E.png (Drawing for the X-LRM-E)
- View all drawings and documents at zaber.com

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X-LRM-E Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	Yes
Axes of Motion	1

Positioning Performance

Specification	Value
Repeatability	<4 µm (<0.000157 ")
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)
Default Resolution	1/64 of a step
Stage Parallelism	<10 µm (<0.000394 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	500 N (112.1 lb)
Maximum Moment (Pitch)	6 N·m (4.4 lb·ft)

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Maximum Moment (Roll)	15 N·m (11.07 lb·ft)
Maximum Moment (Yaw)	6 N·m (4.428 lb·ft)
Stiffness (Pitch)	550 N·m/°
Stiffness (Roll)	550 N·m/°
Stiffness (Yaw)	550 N·m/°

Encoder & Sensing

Specification	Value
Encoder Type	Rotary quadrature encoder (incremental)
Encoder Resolution	200 CPR (8 states/rev)
Limit or Home Sensing	Magnetic hall sensor

Motor

Specification	Value
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

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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

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Backlash
X-LRM025A-E03	25.0 mm (0.984 ")	0.75 kg (1.653 lb)	8 µm (0.000315 ")	<5 µm (<0.000197 ")
X-LRM025B-E03	25.0 mm (0.984 ")	0.75 kg (1.653 lb)	8 µm (0.000315 ")	<12 µm (<0.000472 ")
X-LRM050A-E03	50.0 mm (1.969 ")	0.83 kg (1.83 lb)	15 µm (0.000591 ")	<5 µm (<0.000197 ")
X-LRM050B-E03	50.0 mm (1.969 ")	0.83 kg (1.83 lb)	15 µm (0.000591 ")	<12 µm (<0.000472 ")
X-LRM100A-E03	100.0 mm (3.937 ")	0.98 kg (2.161 lb)	30 µm (0.001181 ")	<5 µm (<0.000197 ")
X-LRM100B-E03	100.0 mm (3.937 ")	0.98 kg (2.161 lb)	30 µm (0.001181 ")	<12 µm (<0.000472 ")
X-LRM150A-E03	150.0 mm (5.905 ")	1.15 kg (2.535 lb)	45 µm (0.001772 ")	<5 µm (<0.000197 ")
X-LRM150B-E03	150.0 mm (5.905 ")	1.15 kg (2.535 lb)	45 µm (0.001772 ")	<12 µm (<0.000472 ")
X-LRM200A-E03	200.0 mm (7.874 ")	1.31 kg (2.888 lb)	60 µm (0.002362 ")	<5 µm (<0.000197 ")
X-LRM200B-E03	200.0 mm (7.874 ")	1.31 kg (2.888 lb)	60 µm (0.002362 ")	<12 µm (<0.000472 ")

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Part Number	Microstep Size (Default Resolution)	Peak Thrust	Maximum Speed	Minimum Speed
X-LRM025A-E03	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
X-LRM025B-E03	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
X-LRM050A-E03	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
X-LRM050B-E03	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
X-LRM100A-E03	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
X-LRM100B-E03	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
X-LRM150A-E03	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
X-LRM150B-E03	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
X-LRM200A-E03	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
X-LRM200B-E03	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)

Part Number	Speed Resolution	Linear Motion Per Motor Rev
X-LRM025A-E03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LRM025B-E03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LRM050A-E03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LRM050B-E03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LRM100A-E03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LRM100B-E03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LRM150A-E03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")

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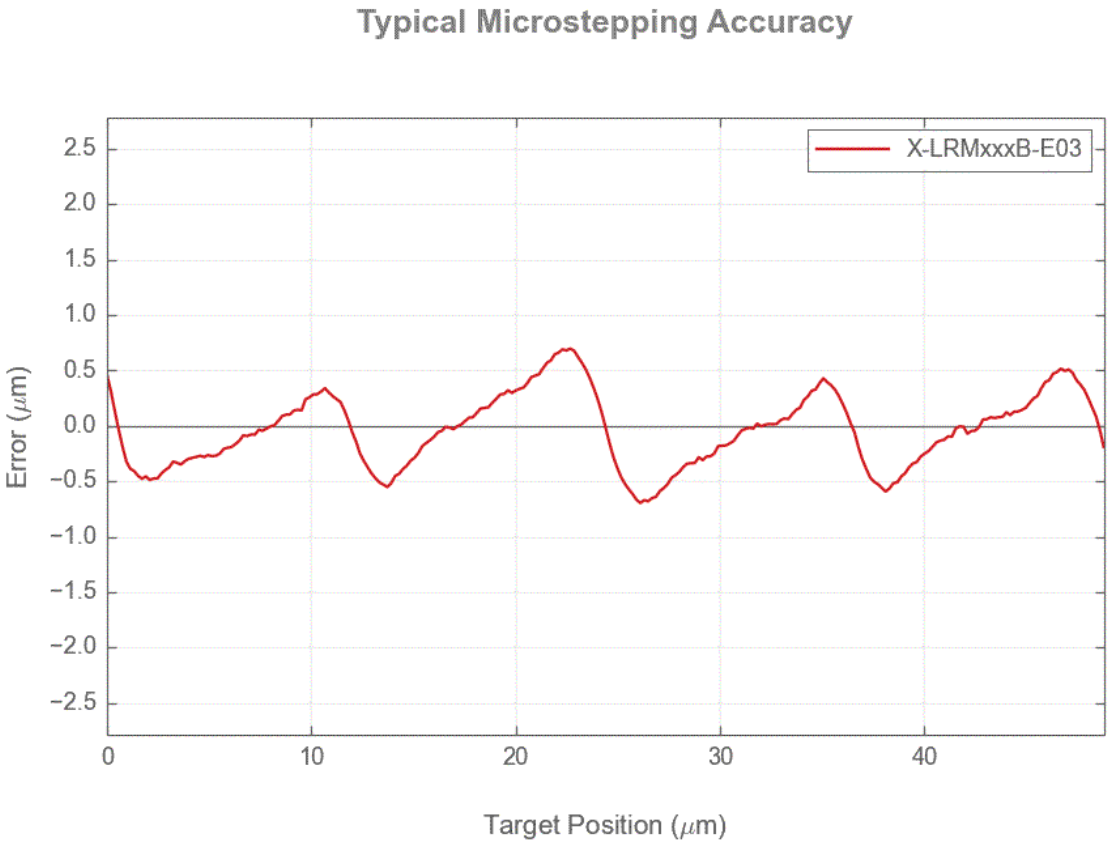
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X-LRM200A-E03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LRM200B-E03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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X-LRM-E Series Charts

Microstep Accuracy



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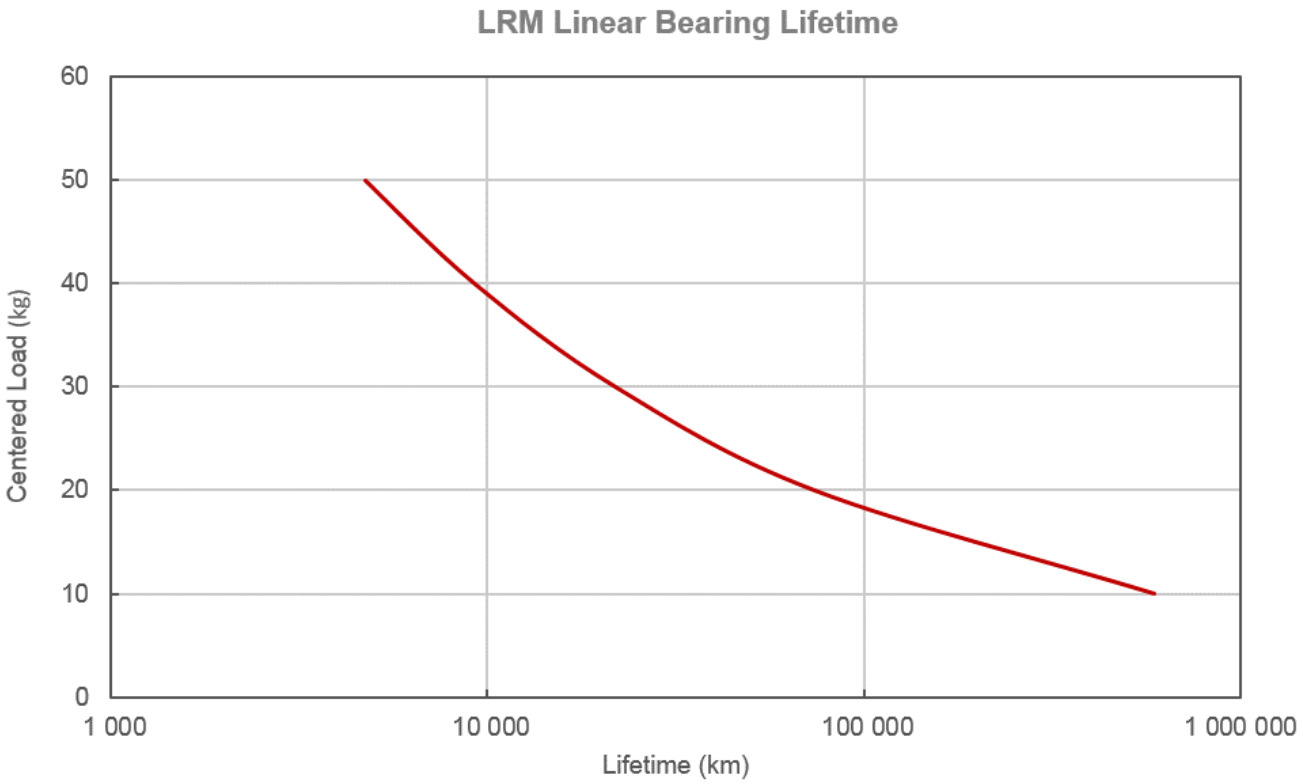
Thrust Speed



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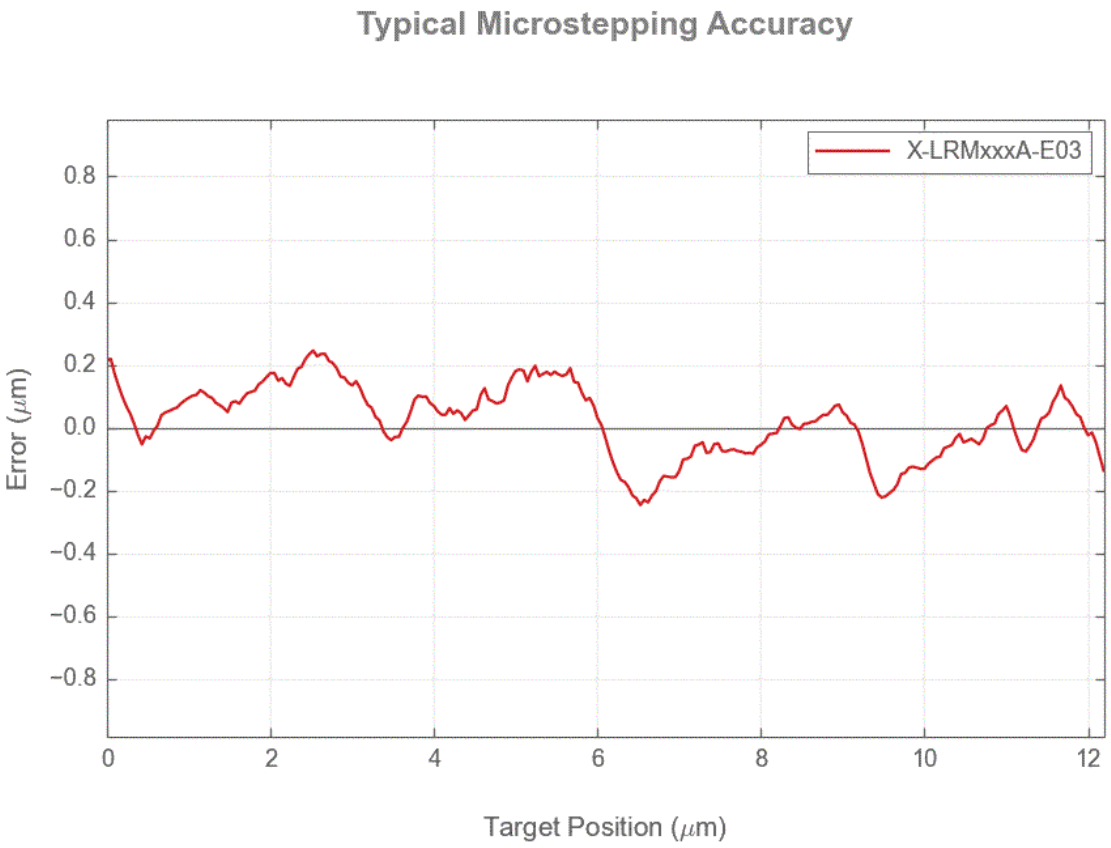
LRM Lifetime



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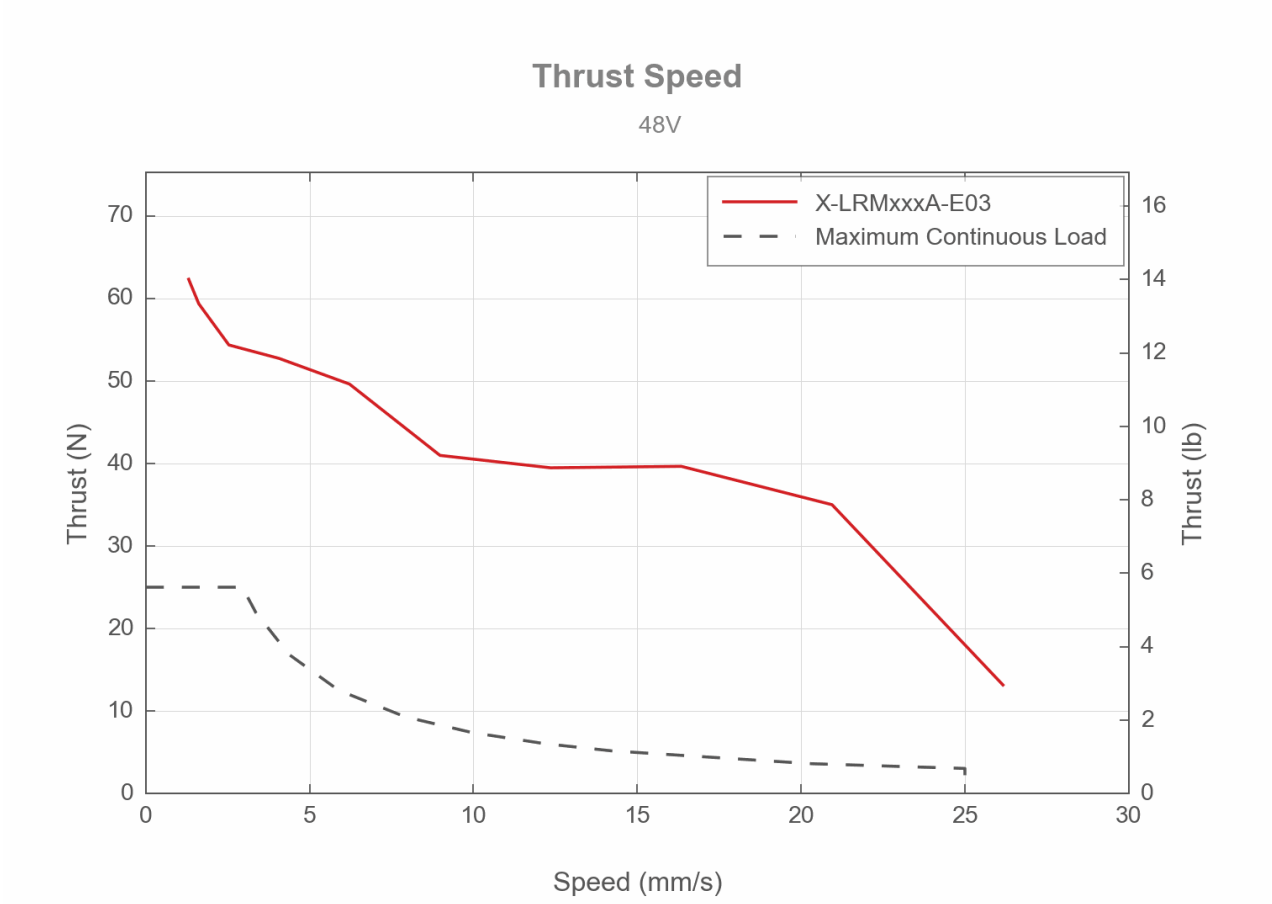
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Microstep Accuracy

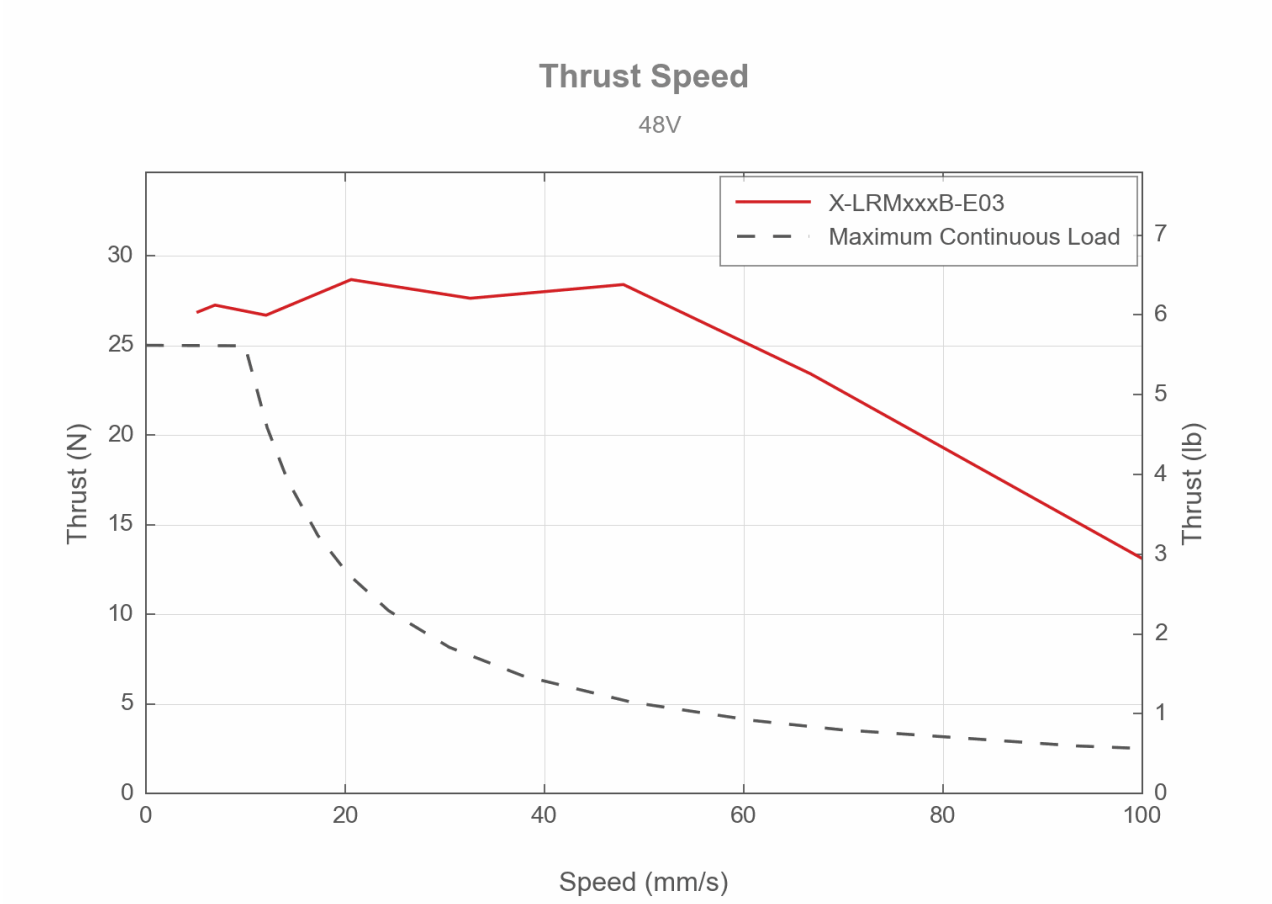


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Thrust Speed



Thrust Speed



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X-LRM Series Datasheet



- 25, 50, 100, 150, 200 mm travel options
- 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
- Built-in controller, daisy-chains with other Zaber products

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

The X-LRM 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.com/products/linear-stages/X-LRM

X-LRM Series Part Numbering & Options

X-LRM 025 A

Travel	
025	25 mm
050	50 mm
100	100 mm
150	150 mm
200	200 mm

Lead Screw Options	
A	Fine pitch lead screw
B	Medium pitch lead screw

X-LRM Series Drawings

- X-LRM.png (Drawing for the X-LRM)
- View all drawings and documents at zaber.com

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X-LRM Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	Yes
Axes of Motion	1

Positioning Performance

Specification	Value
Repeatability	<4 µm (<0.000157 ")
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)
Default Resolution	1/64 of a step
Stage Parallelism	<10 µm (<0.000394 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	500 N (112.1 lb)
Maximum Moment (Pitch)	6 N·m (4.4 lb·ft)

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Maximum Moment (Roll)	15 N·m (11.07 lb·ft)
Maximum Moment (Yaw)	6 N·m (4.428 lb·ft)
Stiffness (Pitch)	550 N·m/°
Stiffness (Roll)	550 N·m/°
Stiffness (Yaw)	550 N·m/°

Encoder & Sensing

Specification	Value
Encoder Type	None
Limit or Home Sensing	Magnetic hall sensor

Motor

Specification	Value
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

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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

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Backlash
X-LRM025A	25.0 mm (0.984 ")	0.72 kg (1.587 lb)	8 µm (0.000315 ")	<5 µm (<0.000197 ")
X-LRM025B	25.0 mm (0.984 ")	0.72 kg (1.587 lb)	8 µm (0.000315 ")	<12 µm (<0.000472 ")
X-LRM050A	50.0 mm (1.969 ")	0.8 kg (1.764 lb)	15 µm (0.000591 ")	<5 µm (<0.000197 ")
X-LRM050B	50.0 mm (1.969 ")	0.8 kg (1.764 lb)	15 µm (0.000591 ")	<12 µm (<0.000472 ")
X-LRM100A	100.0 mm (3.937 ")	0.95 kg (2.094 lb)	30 µm (0.001181 ")	<5 µm (<0.000197 ")
X-LRM100B	100.0 mm (3.937 ")	0.95 kg (2.094 lb)	30 µm (0.001181 ")	<12 µm (<0.000472 ")
X-LRM150A	150.0 mm (5.905 ")	1.12 kg (2.469 lb)	45 µm (0.001772 ")	<5 µm (<0.000197 ")
X-LRM150B	150.0 mm (5.905 ")	1.12 kg (2.469 lb)	45 µm (0.001772 ")	<12 µm (<0.000472 ")
X-LRM200A	200.0 mm (7.874 ")	1.28 kg (2.822 lb)	60 µm (0.002362 ")	<5 µm (<0.000197 ")
X-LRM200B	200.0 mm (7.874 ")	1.28 kg (2.822 lb)	60 µm (0.002362 ")	<12 µm (<0.000472 ")

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Part Number	Microstep Size (Default Resolution)	Peak Thrust	Maximum Speed	Minimum Speed
X-LRM025A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
X-LRM025B	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
X-LRM050A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
X-LRM050B	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
X-LRM100A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
X-LRM100B	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
X-LRM150A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
X-LRM150B	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
X-LRM200A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
X-LRM200B	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)

Part Number	Speed Resolution	Linear Motion Per Motor Rev
X-LRM025A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LRM025B	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LRM050A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LRM050B	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LRM100A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LRM100B	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LRM150A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")

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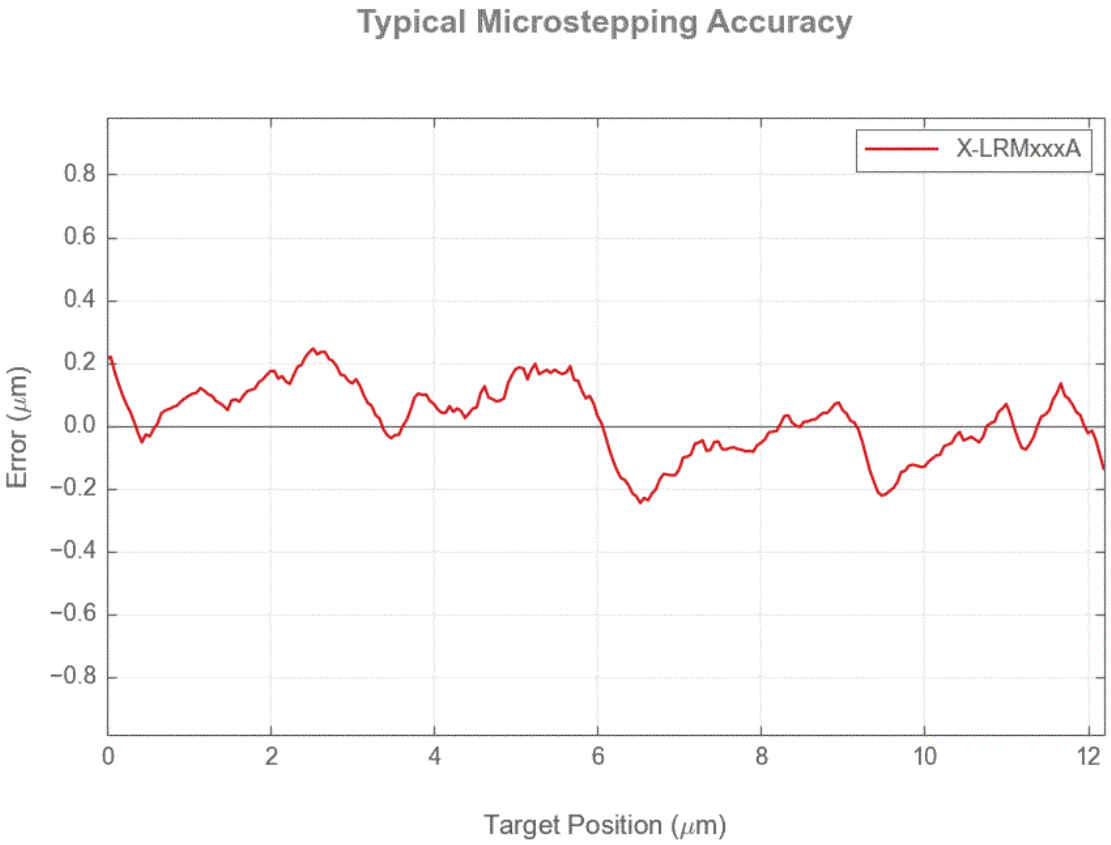
X-LRM150B	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LRM200A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LRM200B	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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X-LRM Series Charts

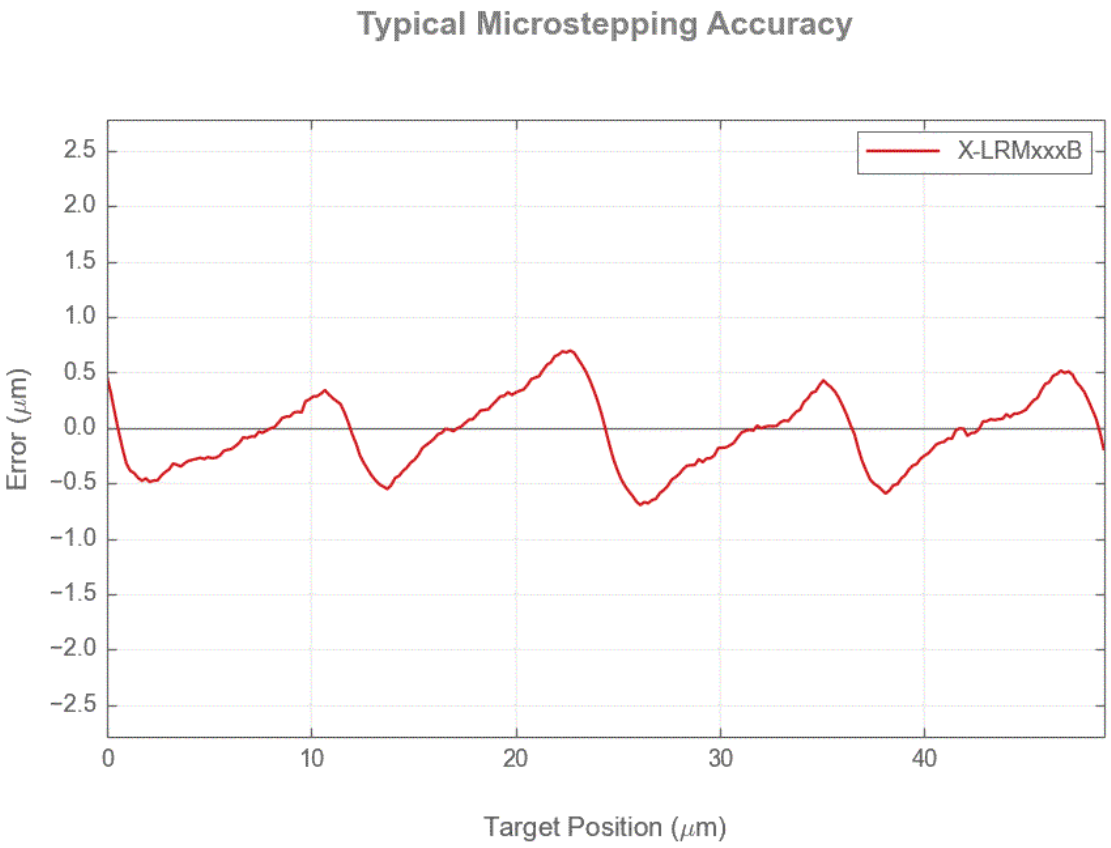
Accuracy



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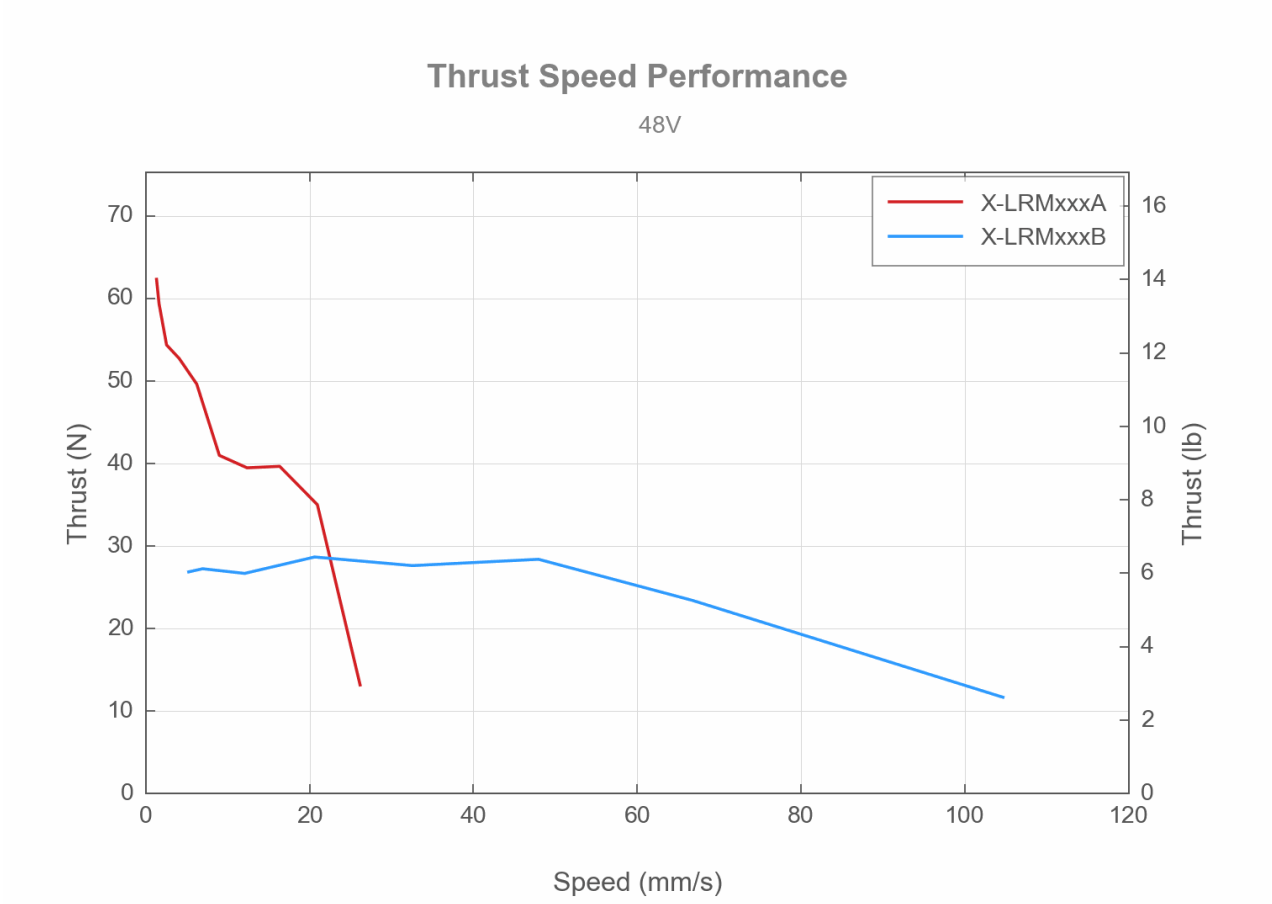
Accuracy



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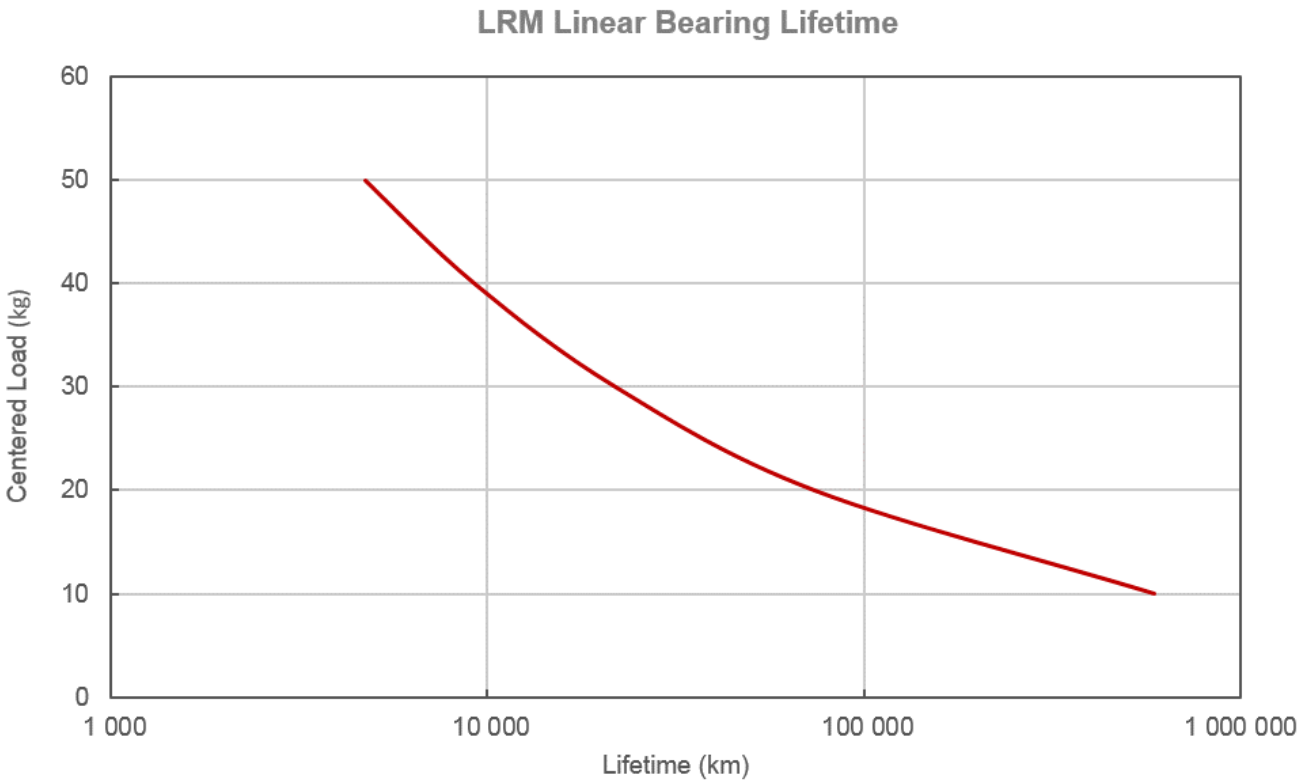
Speed



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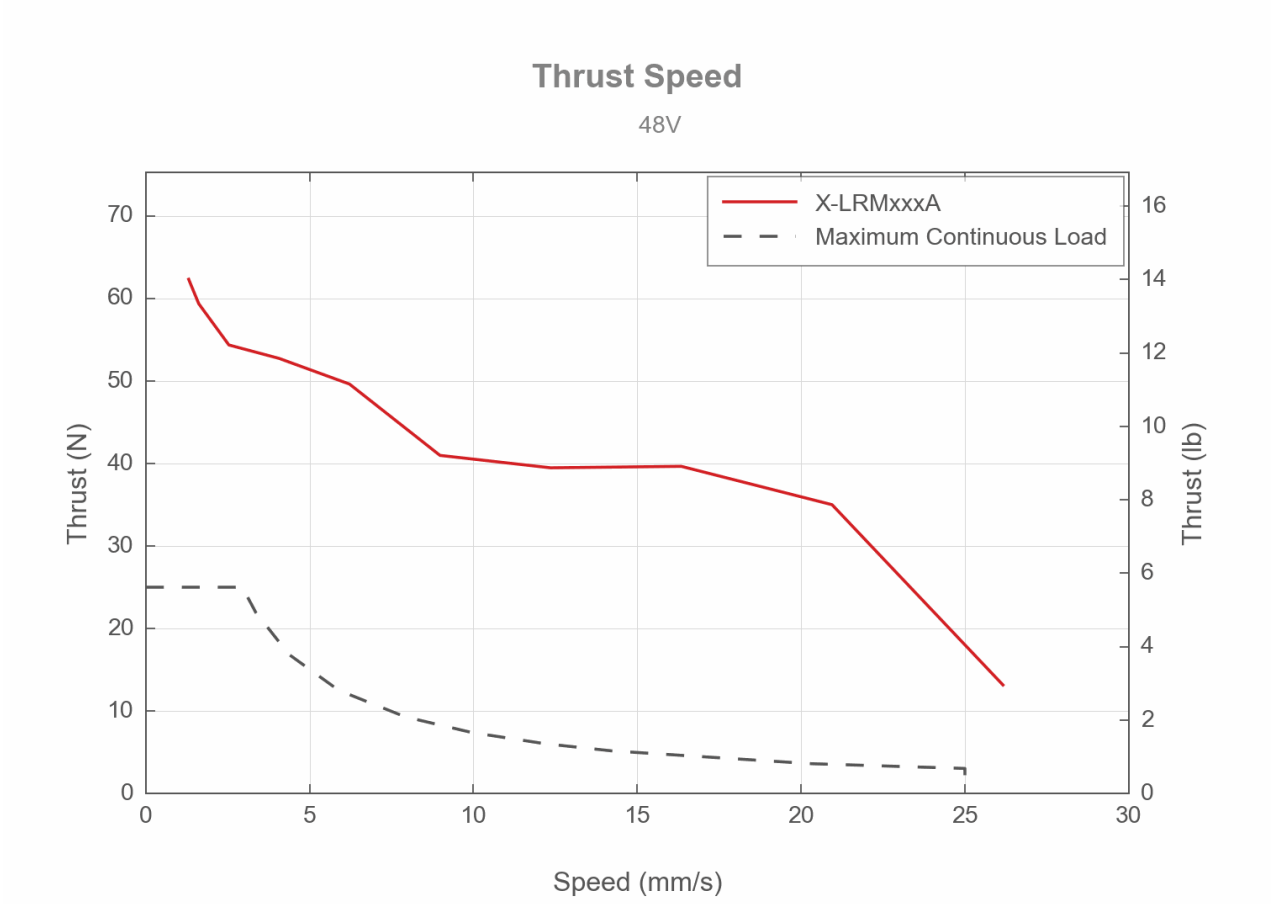
LRM Lifetime



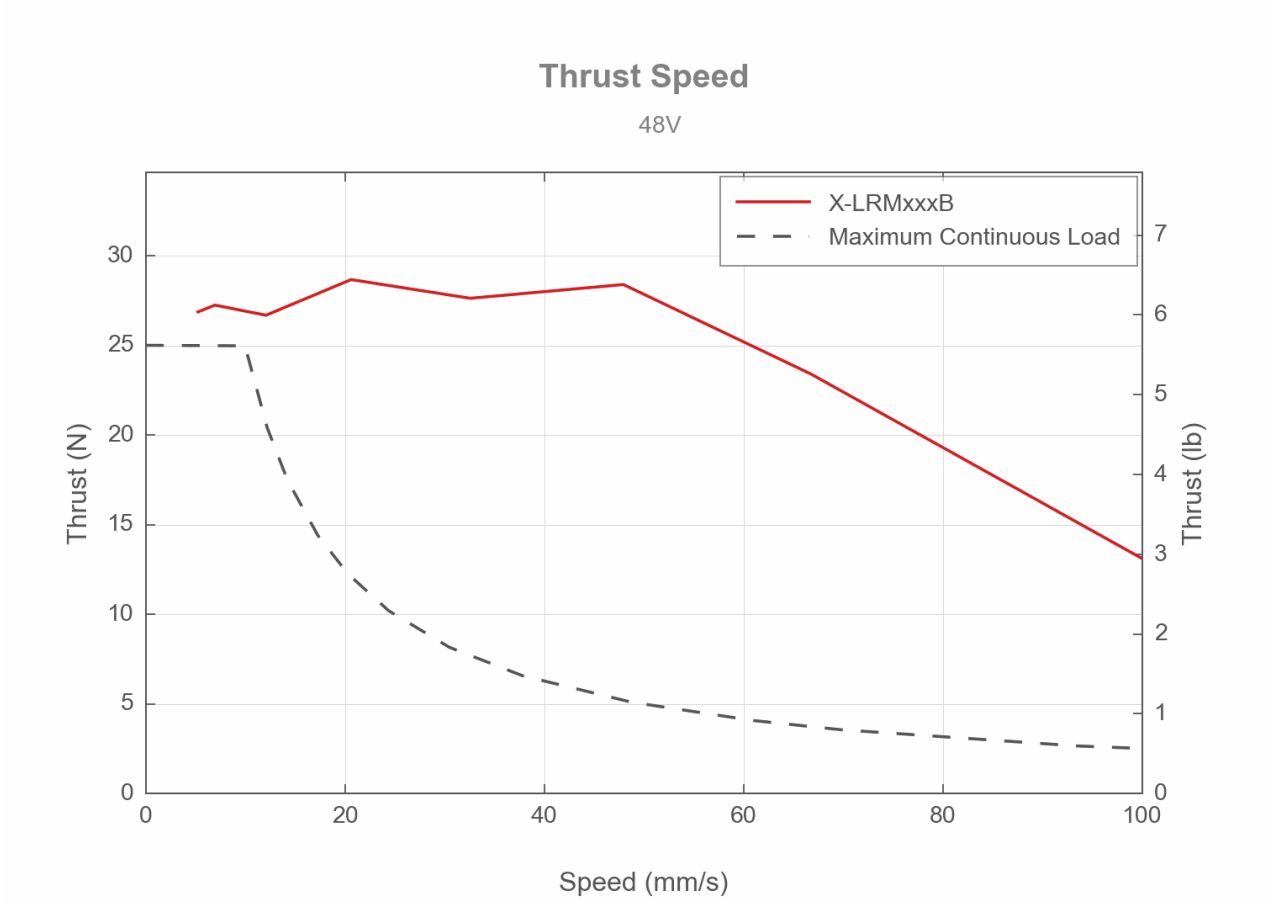
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Speed



Speed



Contact

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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
- Encoder position feedback with slip/stall detection and automatic recovery
- Designed for use with MCC Family controllers or any 2-phase stepper motor controller
- With AutoDetect, Zaber controllers automatically configure settings for the connected peripheral

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LRM-E Series Overview

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

The stages are designed to interface with our MCC Family universal motor controllers, offering high resolution daisy-chainable operation. Set up is easy with AutoDetect. Once connected, the controller will automatically detect and configure the LRM-E.

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

LRM-E Series Part Numbering & Options

LRM 025 A - E03 T3A

Travel
- **025** — 25 mm
- **050** — 50 mm
- **100** — 100 mm
- **150** — 150 mm
- **200** — 200 mm

Lead Screw Options
- **A** — Fine pitch lead screw
- **B** — Medium pitch lead screw

Encoder Options
- **E03** — Motor Encoder, 200 CPR

Connector
- **T3A** — D-sub 15 panel mount connector with Auto Detect

LRM-E Series Drawings

- LRM-E.png (Drawing for the LRM-E)
- View all drawings and documents at zaber.com

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LRM-E Series Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Axes of Motion	1

Positioning Performance

Specification	Value
Repeatability	<4 µm (<0.000157 ")
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)
Default Resolution	1/64 of a step
Stage Parallelism	<10 µm (<0.000394 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	500 N (112.1 lb)
Maximum Moment (Pitch)	6 N·m (4.4 lb·ft)

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Maximum Moment (Roll)	15 N·m (11.07 lb·ft)
Maximum Moment (Yaw)	6 N·m (4.428 lb·ft)
Stiffness (Pitch)	550 N·m/°
Stiffness (Roll)	550 N·m/°
Stiffness (Yaw)	550 N·m/°

Encoder & Sensing

Specification	Value
Encoder Type	Rotary quadrature encoder (incremental)
Encoder Resolution	200 CPR (8 states/rev)
Limit or Home Sensing	Magnetic hall sensor

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	600 mA/phase
Motor Winding Resistance	6.5 ohms/phase
Motor Winding Inductance	3.5 mH/phase
Motor Rated Power	6.9 watts
Motor Connection	D-sub 15
Motor Rotor Inertia	2.9e-7 kg·m2
Motor Frame Size	NEMA 08

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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

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Backlash
LRM025A-E03T3A	25 mm (0.984 ")	0.73 kg (1.609 lb)	8 µm (0.000315 ")	<5 µm (<0.000197 ")
LRM025B-E03T3A	25 mm (0.984 ")	0.73 kg (1.609 lb)	8 µm (0.000315 ")	<12 µm (<0.000472 ")
LRM050A-E03T3A	50 mm (1.969 ")	0.81 kg (1.786 lb)	15 µm (0.000591 ")	<5 µm (<0.000197 ")
LRM050B-E03T3A	50 mm (1.969 ")	0.81 kg (1.786 lb)	15 µm (0.000591 ")	<12 µm (<0.000472 ")
LRM100A-E03T3A	100 mm (3.937 ")	0.97 kg (2.138 lb)	30 µm (0.001181 ")	<5 µm (<0.000197 ")
LRM100B-E03T3A	100 mm (3.937 ")	0.97 kg (2.138 lb)	30 µm (0.001181 ")	<12 µm (<0.000472 ")
LRM150A-E03T3A	150 mm (5.905 ")	1.13 kg (2.491 lb)	45 µm (0.001772 ")	<5 µm (<0.000197 ")
LRM150B-E03T3A	150 mm (5.905 ")	1.13 kg (2.491 lb)	45 µm (0.001772 ")	<12 µm (<0.000472 ")
LRM200A-E03T3A	200 mm (7.874 ")	1.31 kg (2.888 lb)	60 µm (0.002362 ")	<5 µm (<0.000197 ")
LRM200B-E03T3A	200 mm (7.874 ")	1.31 kg (2.888 lb)	60 µm (0.002362 ")	<12 µm (<0.000472 ")

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Part Number	Microstep Size (Default Resolution)	Peak Thrust	Maximum Speed	Minimum Speed
LRM025A-E03T3A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
LRM025B-E03T3A	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
LRM050A-E03T3A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
LRM050B-E03T3A	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
LRM100A-E03T3A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
LRM100B-E03T3A	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
LRM150A-E03T3A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
LRM150B-E03T3A	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
LRM200A-E03T3A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
LRM200B-E03T3A	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)

Part Number	Speed Resolution	Linear Motion Per Motor Rev
LRM025A-E03T3A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LRM025B-E03T3A	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LRM050A-E03T3A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LRM050B-E03T3A	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LRM100A-E03T3A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LRM100B-E03T3A	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LRM150A-E03T3A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")

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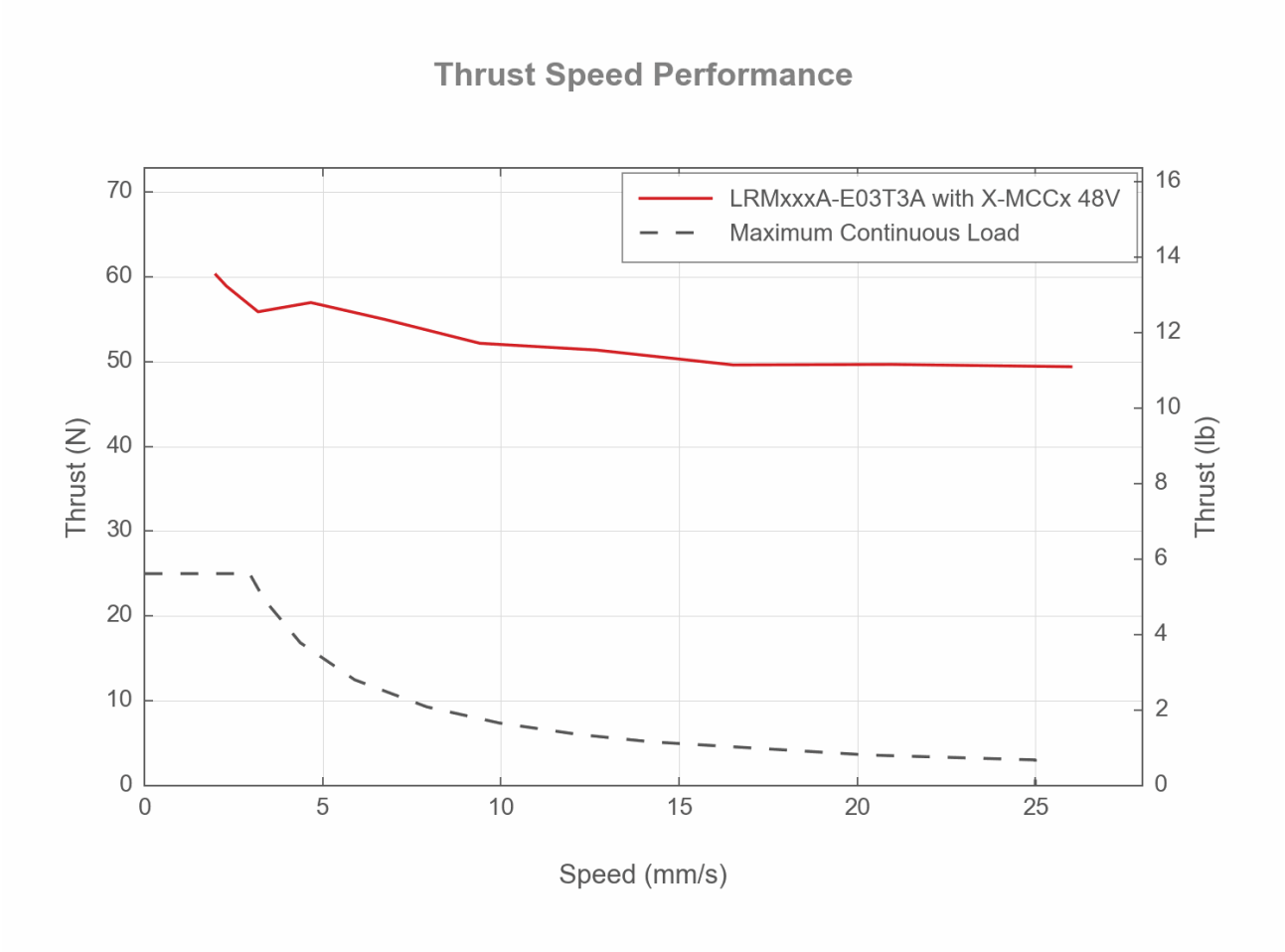
LRM150B-E03T3A	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LRM200A-E03T3A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LRM200B-E03T3A	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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LRM-E Series Charts

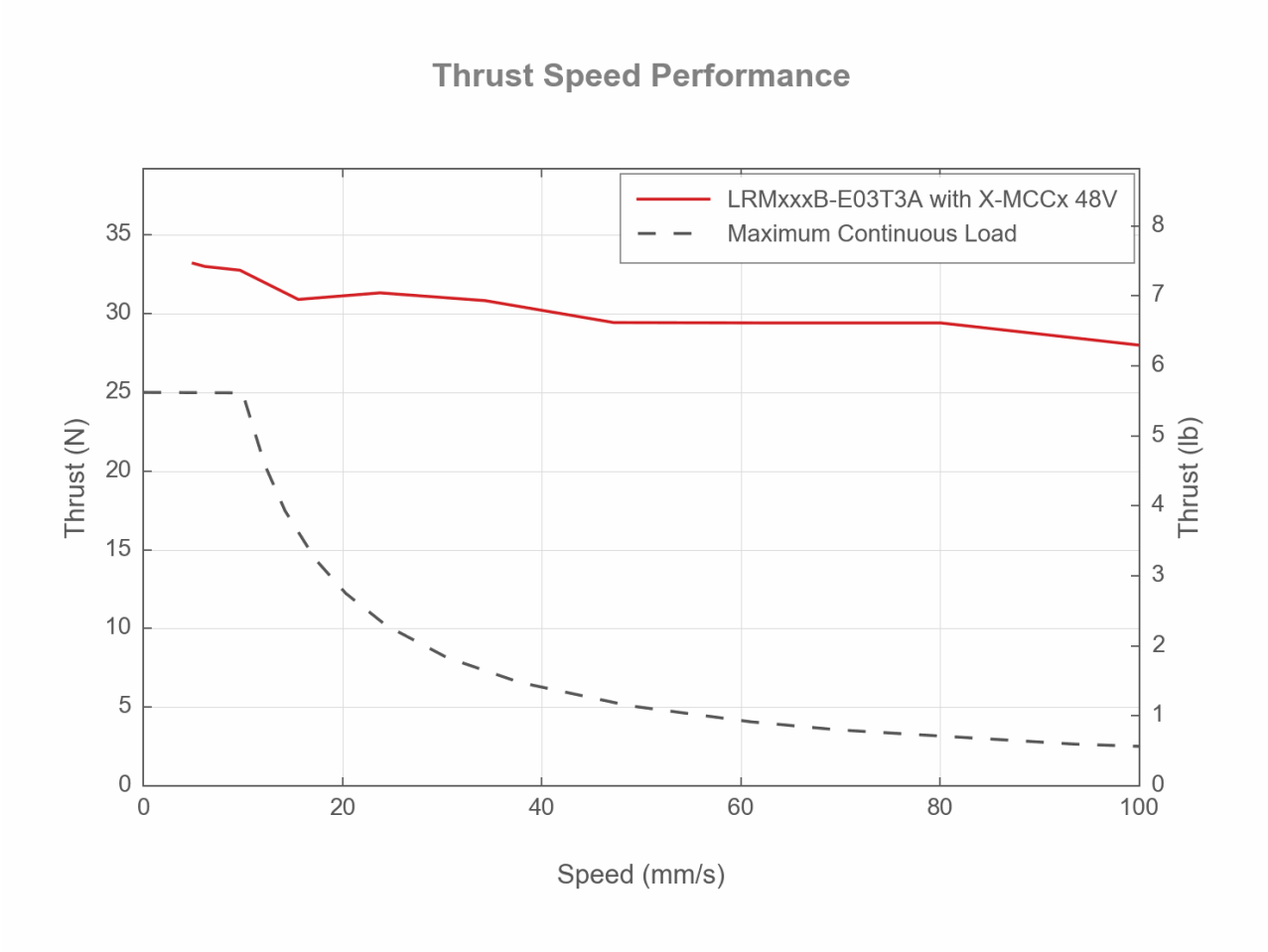
LRMxxxA E03T3A THRUST SPEED



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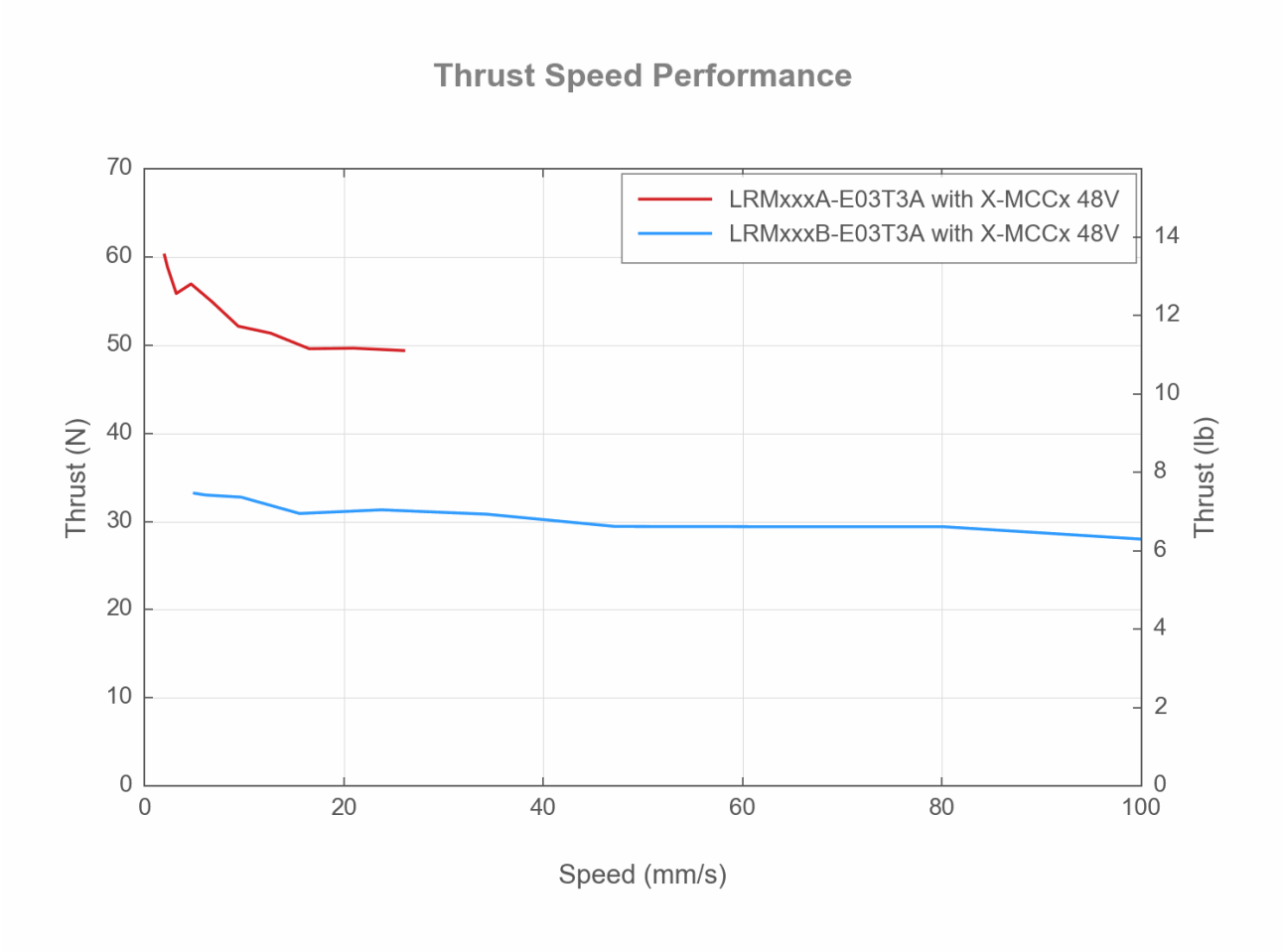
LRMxxxB E03T3A THRUST SPEED



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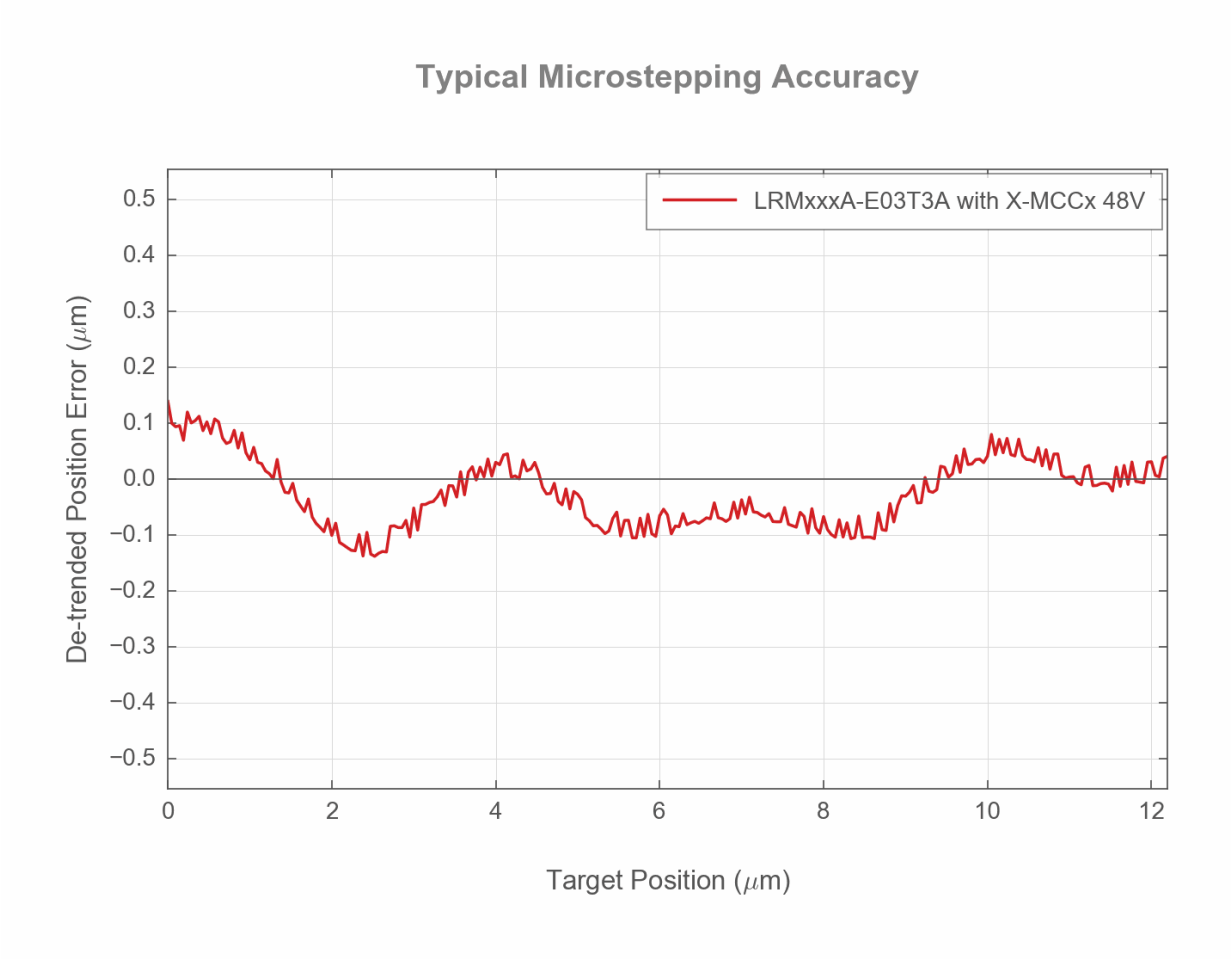
LRMxxxx E03T3A THRUST SPEED



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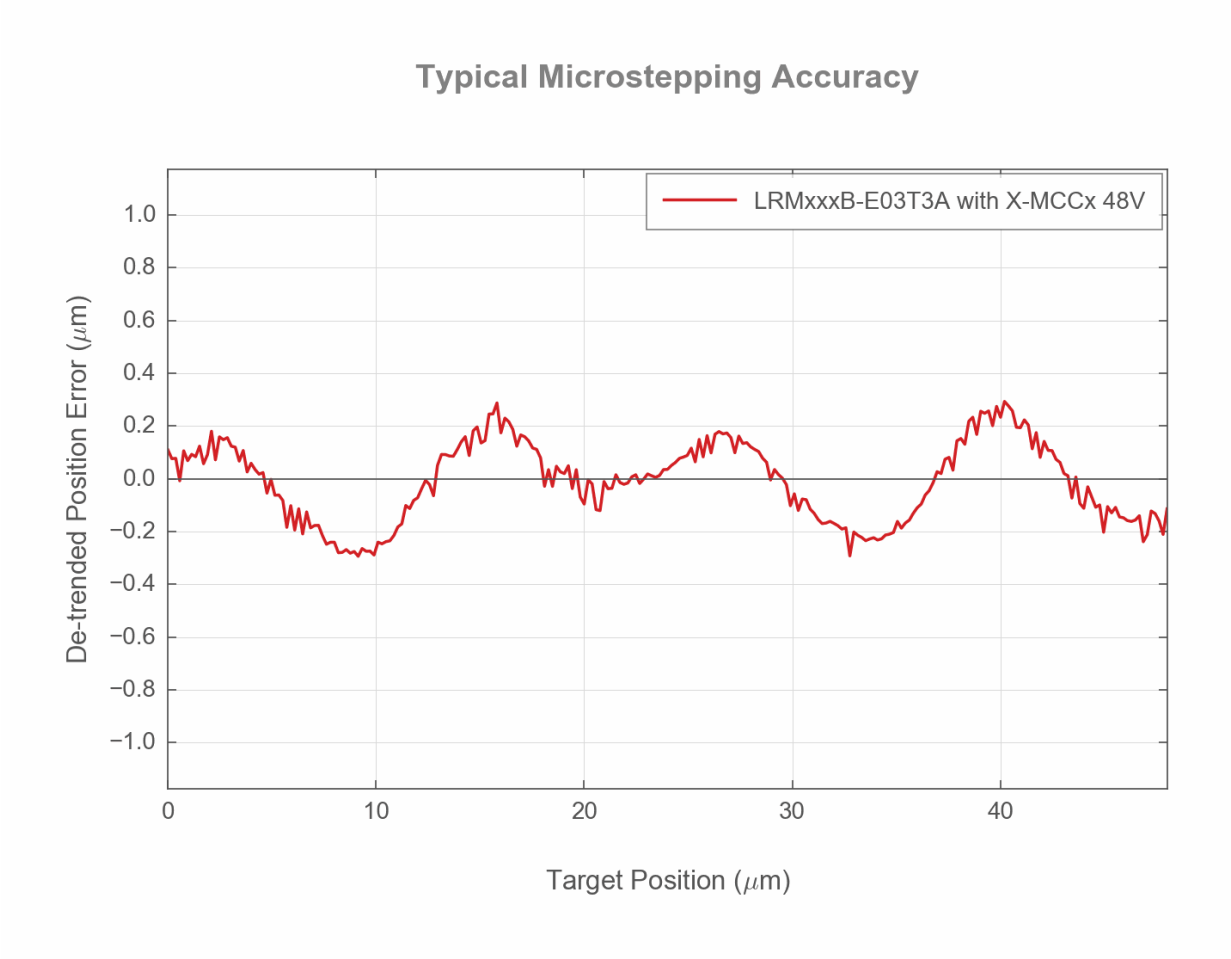
LRMxxxA E03T3A USTEP ACCURACY



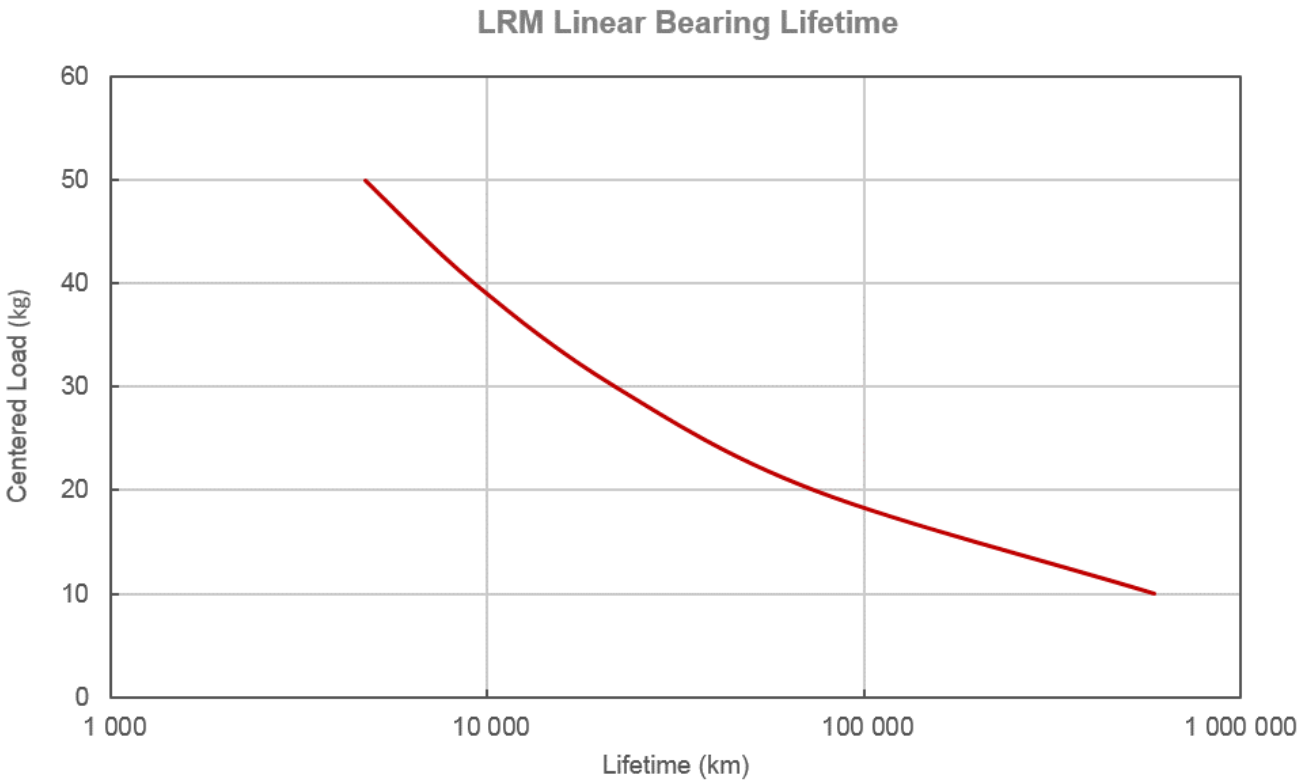
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LRMxxxB E03T3A USTEP ACCURACY



LRM Lifetime



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https://www.zaber.com

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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 MCC Family controllers or any 2-phase stepper motor controller
- With AutoDetect, Zaber controllers automatically configure settings for the connected peripheral

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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 MCC Family universal motor controllers, offering high resolution daisy-chainable operation. Set up is easy with AutoDetect. Once connected, the 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 025 A - T3A

Travel

- **025** — 25 mm
- **050** — 50 mm
- **100** — 100 mm
- **150** — 150 mm
- **200** — 200 mm

Lead Screw Options

- **A** — Fine pitch lead screw
- **B** — Medium pitch lead screw

Connector

- **T3A** — D-sub 15 panel mount connector with Auto Detect

LRM Series Drawings

- LRM.png (Drawing for the LRM)
- View all drawings and documents at zaber.com

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LRM Series Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Axes of Motion	1

Positioning Performance

Specification	Value
Repeatability	<4 µm (<0.000157 ")
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)
Default Resolution	1/64 of a step
Stage Parallelism	<10 µm (<0.000394 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	500 N (112.1 lb)
Maximum Moment (Pitch)	6 N·m (4.4 lb·ft)

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Maximum Moment (Roll)	15 N·m (11.07 lb·ft)
Maximum Moment (Yaw)	6 N·m (4.428 lb·ft)
Stiffness (Pitch)	550 N·m/°
Stiffness (Roll)	550 N·m/°
Stiffness (Yaw)	550 N·m/°

Encoder & Sensing

Specification	Value
Encoder Type	None
Limit or Home Sensing	Magnetic hall sensor

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	600 mA/phase
Motor Winding Resistance	6.5 ohms/phase
Motor Winding Inductance	3.5 mH/phase
Motor Rated Power	6.9 watts
Motor Connection	D-sub 15
Motor Rotor Inertia	2.9e-7 kg·m2
Motor Frame Size	NEMA 08

Mechanical

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

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Environmental & Compliance

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

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Backlash
LRM025A-T3A	25 mm (0.984 ")	0.71 kg (1.565 lb)	8 µm (0.000315 ")	<5 µm (<0.000197 ")
LRM025B-T3A	25 mm (0.984 ")	0.71 kg (1.565 lb)	8 µm (0.000315 ")	<12 µm (<0.000472 ")
LRM050A-T3A	50 mm (1.969 ")	0.79 kg (1.742 lb)	15 µm (0.000591 ")	<5 µm (<0.000197 ")
LRM050B-T3A	50 mm (1.969 ")	0.79 kg (1.742 lb)	15 µm (0.000591 ")	<12 µm (<0.000472 ")
LRM100A-T3A	100 mm (3.937 ")	0.95 kg (2.094 lb)	30 µm (0.001181 ")	<5 µm (<0.000197 ")
LRM100B-T3A	100 mm (3.937 ")	0.95 kg (2.094 lb)	30 µm (0.001181 ")	<12 µm (<0.000472 ")
LRM150A-T3A	150 mm (5.905 ")	1.11 kg (2.447 lb)	45 µm (0.001772 ")	<5 µm (<0.000197 ")
LRM150B-T3A	150 mm (5.905 ")	1.11 kg (2.447 lb)	45 µm (0.001772 ")	<12 µm (<0.000472 ")
LRM200A-T3A	200 mm (7.874 ")	1.29 kg (2.844 lb)	60 µm (0.002362 ")	<5 µm (<0.000197 ")
LRM200B-T3A	200 mm (7.874 ")	1.29 kg (2.844 lb)	60 µm (0.002362 ")	<12 µm (<0.000472 ")

Part Number	Microstep Size (Default Resolution)	Peak Thrust	Maximum Speed	Minimum Speed
LRM025A-T3A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)

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LRM025B-T3A	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
LRM050A-T3A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
LRM050B-T3A	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
LRM100A-T3A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
LRM100B-T3A	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
LRM150A-T3A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
LRM150B-T3A	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)
LRM200A-T3A	0.047625 µm	50 N (11.2 lb)	25 mm/s (0.984 "/s)	0.000029 mm/s (0.000001 "/s)
LRM200B-T3A	0.1905 µm	25 N (5.6 lb)	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)

Part Number	Speed Resolution	Linear Motion Per Motor Rev
LRM025A-T3A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LRM025B-T3A	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LRM050A-T3A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LRM050B-T3A	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LRM100A-T3A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LRM100B-T3A	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LRM150A-T3A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LRM150B-T3A	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LRM200A-T3A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")

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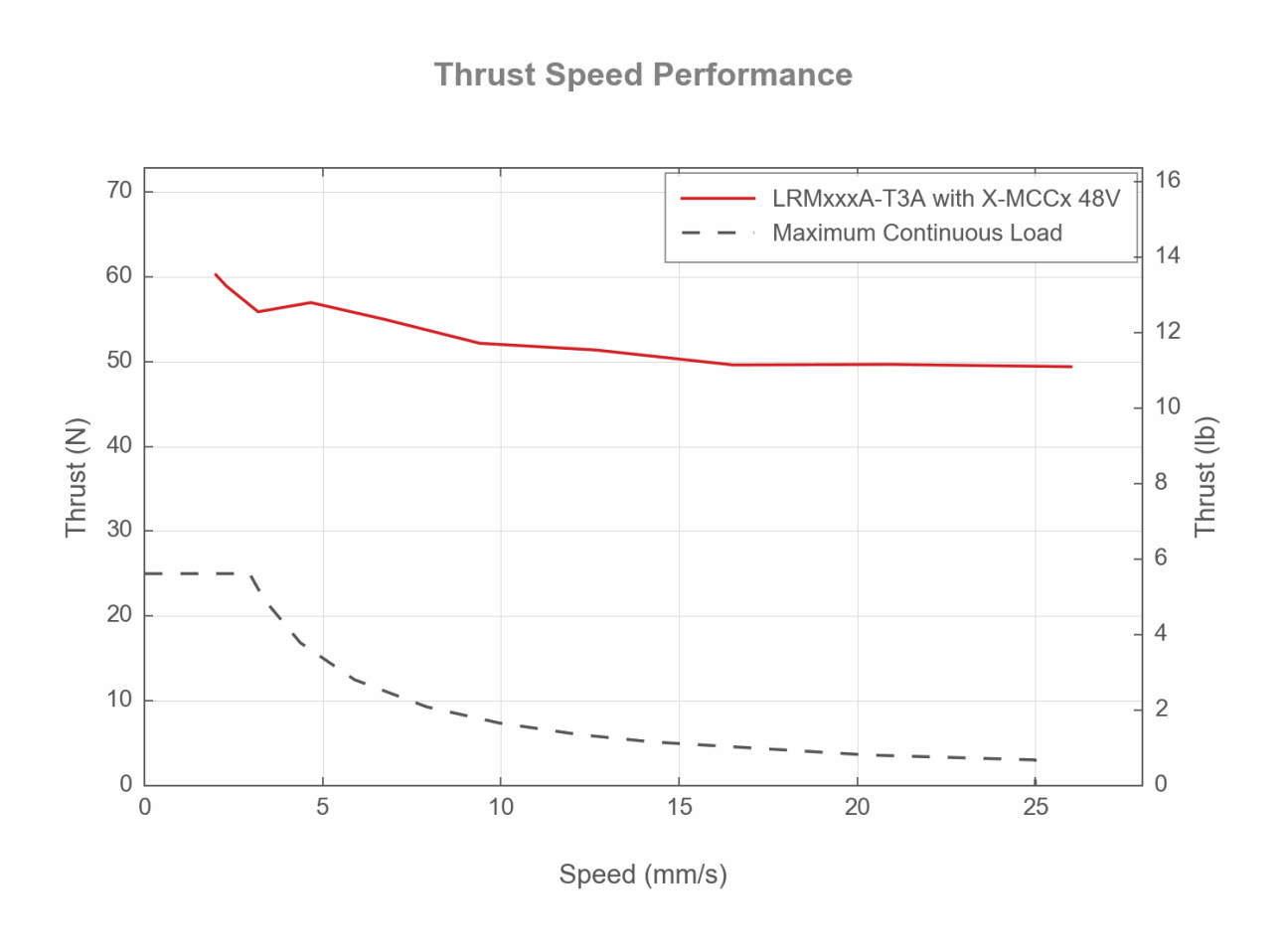
LRM200B-T3A	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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LRM Series Charts

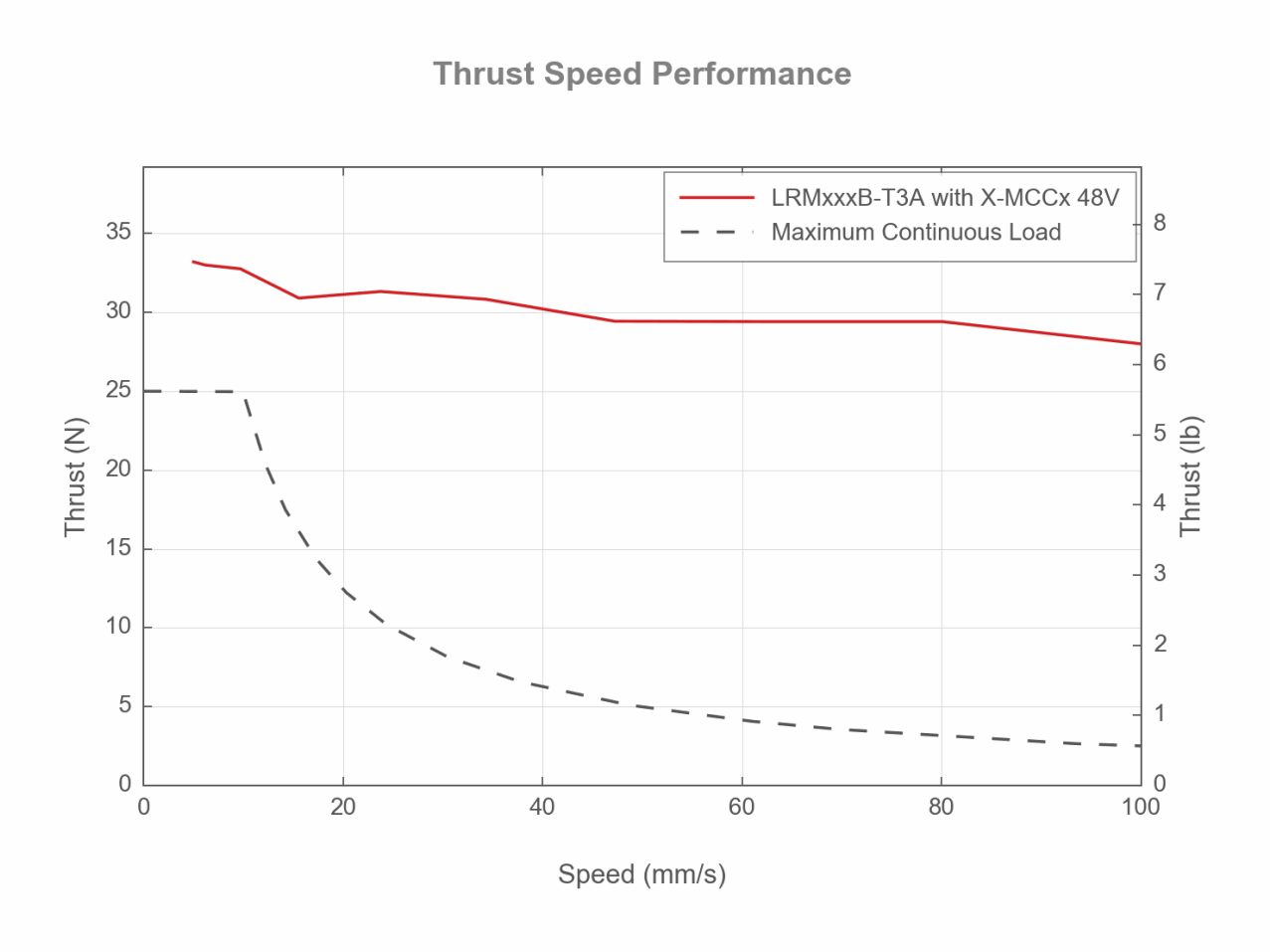
LRMxxxA T3A THRUST SPEED



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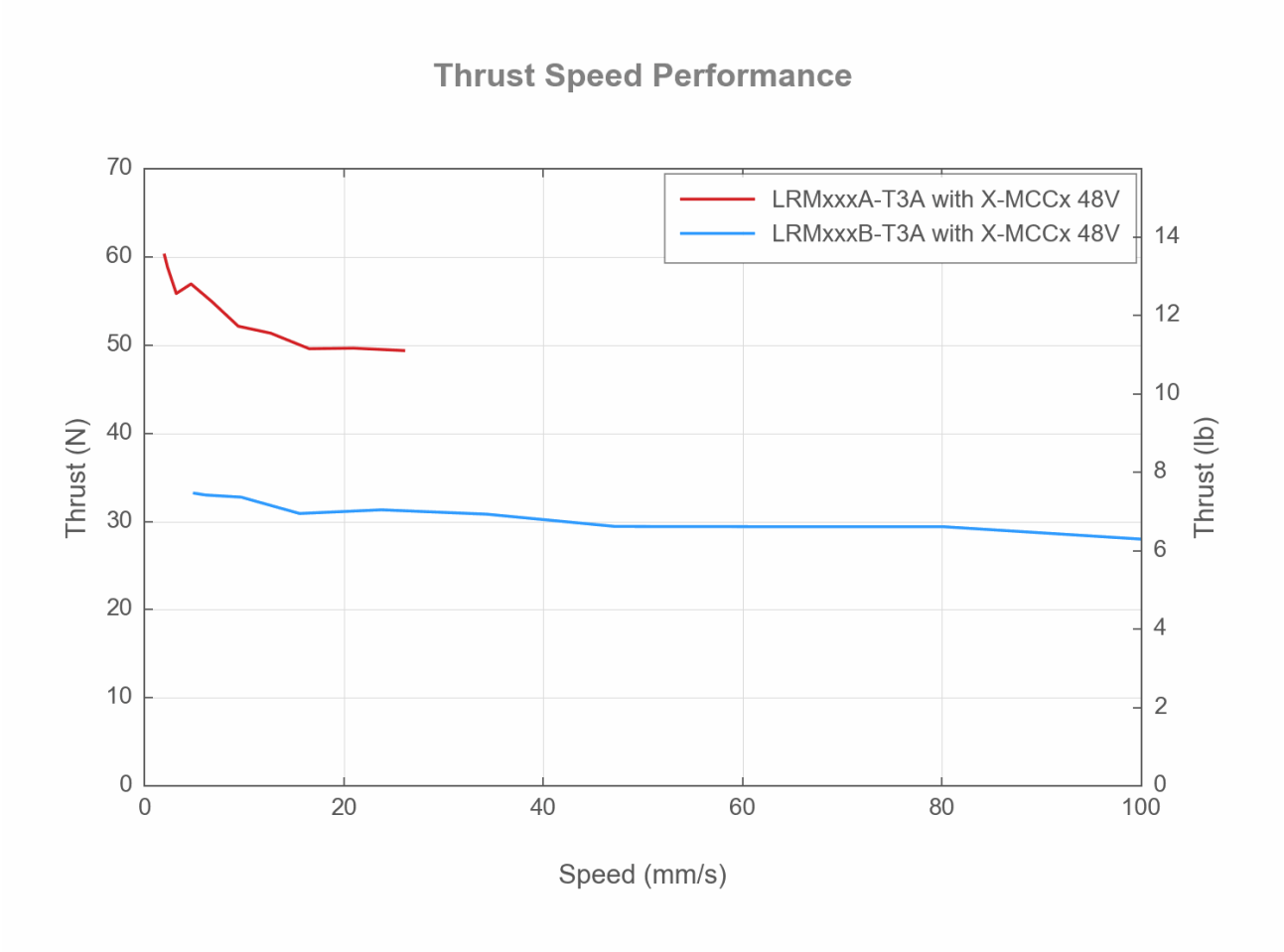
LRMxxxB T3A THRUST SPEED



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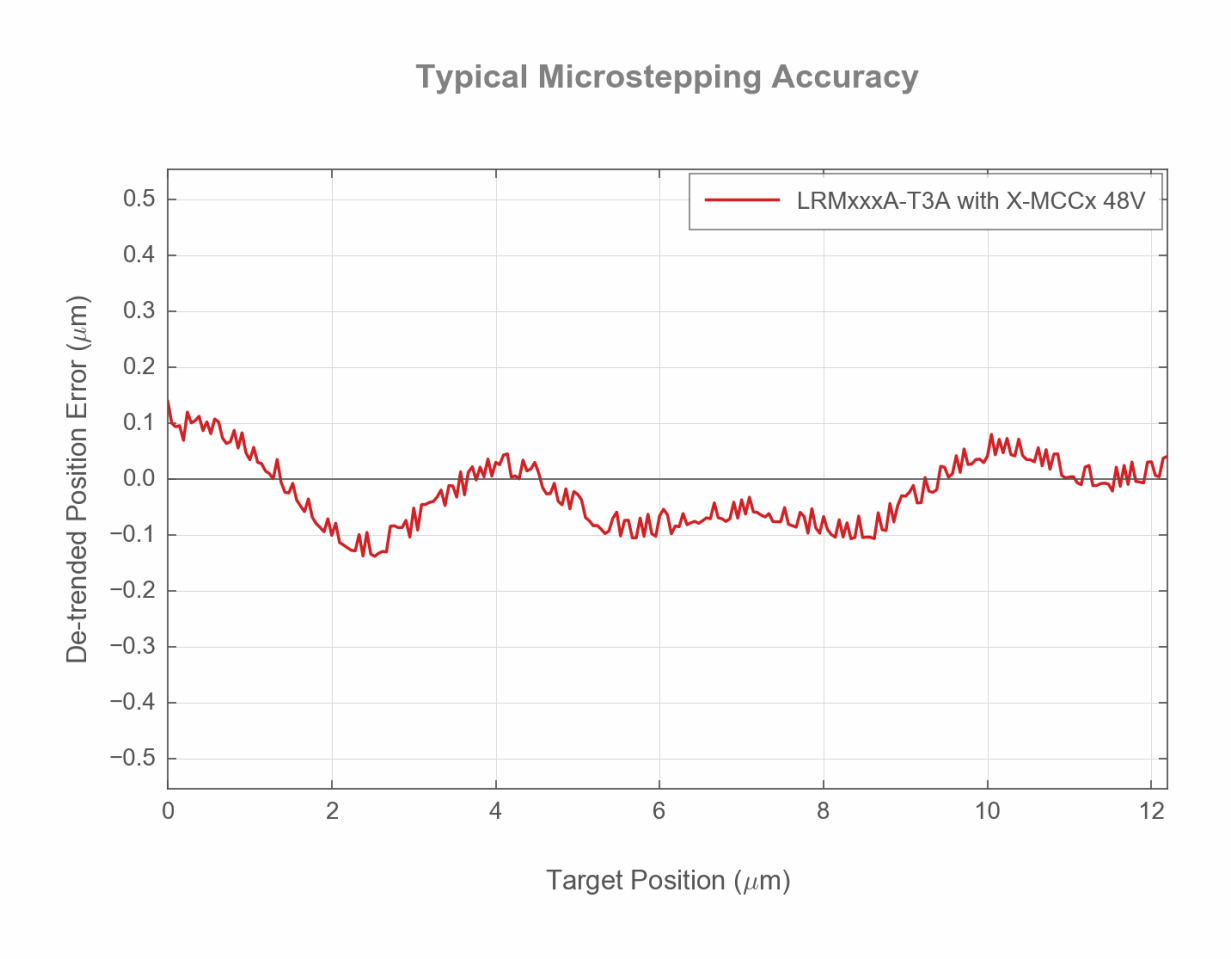
LRMxxxx T3A THRUST SPEED



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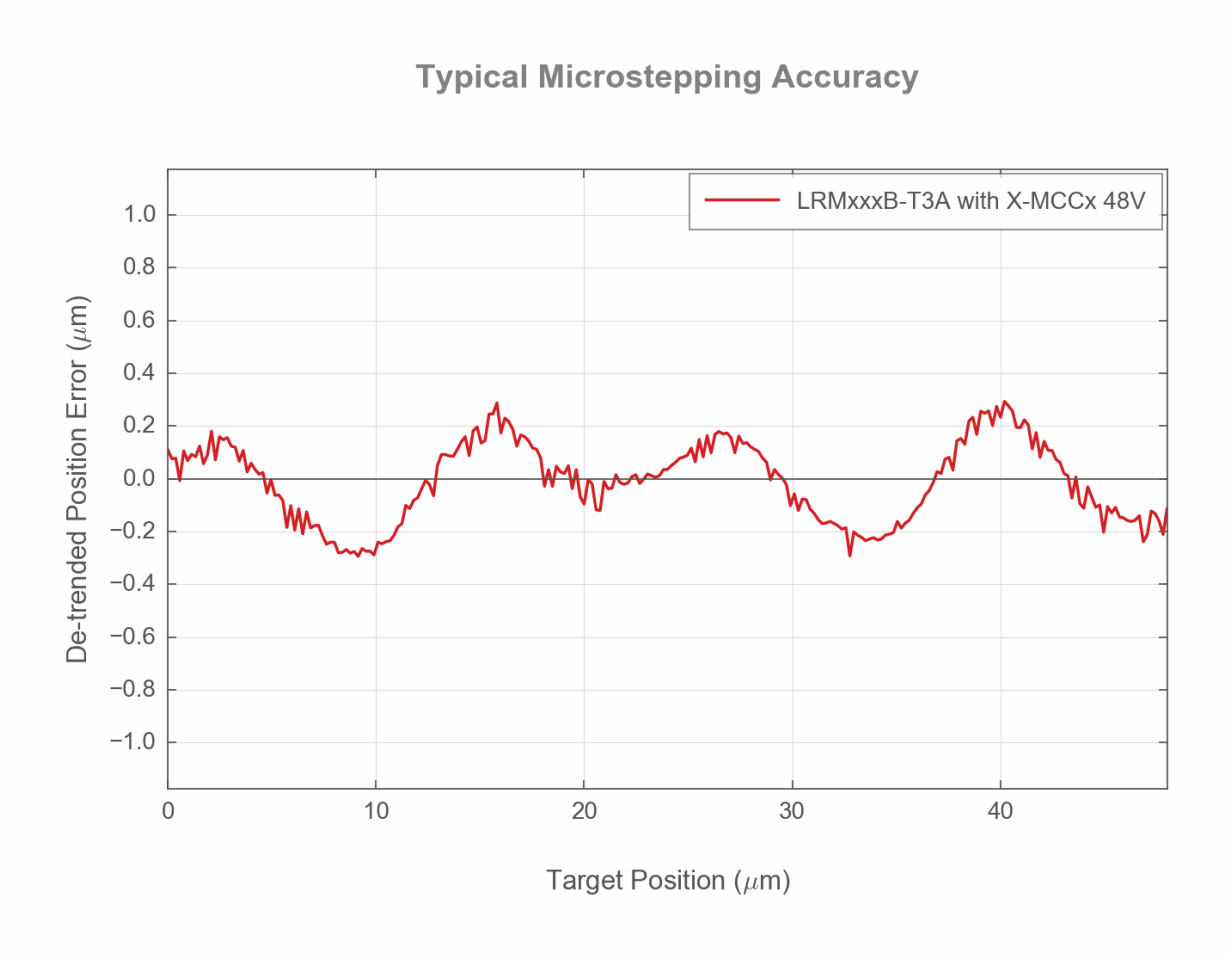
LRMxxxA T3A USTEP ACCURACY



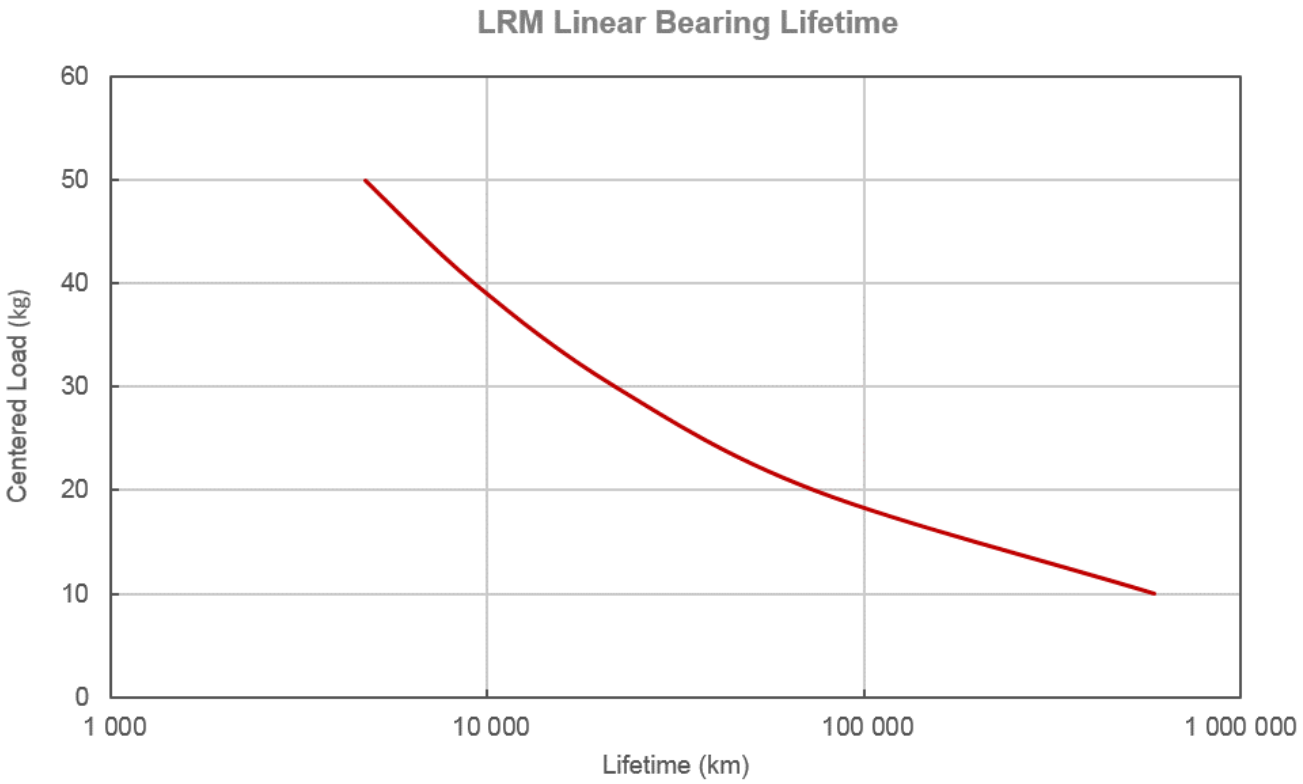
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LRMxxxB T3A USTEP ACCURACY



LRM Lifetime



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